



A Monthly Report from EPRI's Generation Sector

Second Quarter 2008

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DEAR EPRI GENERATION MEMBERS

EPRI recently announced its 2009 Annual Research Portfolio. Thanks to our collaboration with you and your technical advisors, our 2009 research offerings consist of 23 programs that address a broad range of industry needs, including:

- Safe, reliable, economic operation of the existing fleet;
- A focus on asset availability and controlling O&M costs;
- Risk-based management of critical plant components;
- Efficient, low-emitting, flexible, natural gas-fired turbines;
- Cost-effective coal-based generation with CO₂ capture and storage;
- Cost-effective, easily integrated renewables; and
- Accurate information for operation and build decisions.

Our member services team is ready to assist you in selecting R&D programs that address your immediate and long-term business and technical needs. We extend this support throughout the R&D process, working with you to apply EPRI results to achieve your operational and strategic objectives.

In May, with the approval of our Board of Directors, EPRI launched several industry technology demonstration projects designed to deploy technologies that could prove essential to achieving a low-carbon future. The response from you has been positive, and we are moving ahead with early planning and contracting. Three of these projects demonstrate technologies from our Advanced Generation area, including a pair of post-combustion carbon capture and storage (CCS) projects, a set of three IGCC with CCS activities, and development of a new method for low-cost oxygen supply for IGCC and oxy-fuel combustion plants. You can find more information about these projects on epri.com in the 2009 portfolio details for Programs 66 and 165.

In addition, we are significantly increasing our support for renewable energy. For those looking to own and operate their own renewable energy generators, operations and maintenance will be a key concern in the years ahead. EPRI is building on its experience with O&M and non-destructive evaluation of thermal plant components to provide similar support to its members who own renewable resources such as wind turbines, gearboxes and other major components. We are hiring new staff, preparing new projects, and developing a next set of demonstrations of renewable technologies needed to advance analysis to action. You'll read more about this exciting new work in the coming months.

Thank you, as always, for your continued support of EPRI and its Generation activities.

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CoalFleet for Tomorrow-Future Coal Generation Options (Program 66)

EPRI Report Details New IGCC Plant Design Specs.

Summary offers comprehensive information on Nuon's Magnum IGCC plant.

CoalFleet's second IGCC Pre-Design Specification (PDS) report was issued in March 2008 (EPRI Technical Update 1014216). This report contains the most comprehensive public information available in English on the proposed design of Nuon's Magnum IGCC plant. Approximately 1,000 pages of Dutch language documents related to Nuon's permit application have been distilled and translated into a 150-page summary.

One of the goals of EPRI's CoalFleet program is to promote the deployment of standard IGCC designs, to avoid the expense and risk of building a "first-of-a-kind" IGCC plant. By providing the best available nonproprietary information on commercial IGCC projects in a PDS, EPRI can help potential IGCC owners determine whether design might be a good fit for their applications. For more information on the Nuon Magnum PDS, contact Jeff Phillips (jphillip@epri.com, 704-595-2250).

Canadian Utilities Discuss their R&D Efforts.

EPRI trio talks with research leaders about trends and technologies at meetings in Calgary.

Electric industry leaders in Canada are more interested than ever in advanced coal and carbon capture and storage (CCS) technologies, thanks in large part to their government's March 10 release of its report, *Turning the Corner: Taking Action to Fight Climate Change*. As part of that release, the government announced it will require greenhouse gas emissions reductions by large industry of 165 megatonnes from projected levels by 2020. It also intends to develop CCS regulatory targets effective 2018 for upgraders and in-situ facilities that begin operations in 2012 or later.

Those announcements made the next week's visits by EPRI staffers Rob Steele, Jeff Phillips, and Charlie Mengers especially timely. During meetings at 11 utility companies, consulting firms and research institutes, they talked with industry leaders about their activities and EPRI research, especially in the CoalFleet for Tomorrow (Program 66) and CO₂ Capture and Storage (Program 165) areas. For more information, contact Steele (rsteale@epri.com, 704-595-2025).

Engineering Results are in for Study of USC with Sub-Bituminous Coal.

Evaluations show emissions targets are achievable.

The engineering portion of a study evaluating the performance of a 1300°F Series ultra-supercritical pulverized coal plant fired with sub-bituminous coal has been completed. The materials of construction for the boiler and steam turbine were identified and all are ready for use at the temperatures and pressures identified. The unit was designed for SO₂ and NO_x emissions of 0.03 lb/MBtu and these levels are considered achievable using commercially available technology, although this remains to be demonstrated in an operating unit. The full-load efficiency was determined to be 42.7 percent, producing more than 22 percent less CO₂ per MWh than a sub-critical unit. Using double reheat and improved methods of back-end heat recovery, the efficiency can be raised to 44.5 percent, producing almost 28 percent less CO₂. For more information, contact John Wheeldon (jowheeld@epri.com, 205-670-5857).

CoalFleet for Tomorrow Holds Spring Technical Meeting.

Group tours coke gasification plant.

A tour of the Coffeyville Resources Nitrogen Fertilizers' petroleum coke gasification-based plant was one of the highlights when more than 80 members, staff and guests of EPRI's CoalFleet for Tomorrow program met in Tulsa April 15-18. The tour was one of more than 40 presentations on CoalFleet programs. The plant resembles the front end of an IGCC plant with CO₂ capture and the tour provided a chance to see equipment firsthand and to quiz plant personnel on practical O&M issues.

Other meeting highlights included:

Updates on EPRI's proposed large-scale demonstration projects, including PC and IGCC plants with high efficiency, low emissions, and carbon capture and storage (CCS).

Brian Mundt of MidAmerican Energy described the newly commissioned Walter Scott, Jr. Energy Center Unit 4. This 790-MW unit is the first supercritical pulverized coal plant completed in the U.S. in almost 20 years.

Jim Davis of SNC Lavalin and Dan Lumma of Kiewit presented issues associated with building new plants today from the EPC point of view. In particular, they stressed that traditional lump-sum turnkey bids likely are a thing of the past.

Air Products presented a detailed review of air separation unit fundamentals and progress in development of the relatively lower-energy-consuming ITM oxygen production technology.

EPRI announced several new supplementals related to CCS, including both a unit-specific project focusing on retrofits and a fleet-wide strategic project. For more information, contact John Wheeldon (jowheeld@epri.com, 205-670-5857).

For more information about CoalFleet for Tomorrow, contact Jeff Phillips (jphillips@epri.com, 704-595-2250).

Meeting Focuses on Clean Coal Technology Roadmap.

EPRI, CURC and DOE meet to discuss R&D.

On April 10, EPRI participated in a Coal Utilization Research Council (CURC) meeting at the DOE National Energy Technology Laboratory (NETL) in Pittsburgh. NETL shared the status of its R&D programs and CURC made recommendations for additional R&D required to meet the goals of the CURC-EPRI Clean Coal Technology Roadmap. For more information, contact Ron Schoff (rschoff@epri.com, 704-595-2054).

Article Looks at Challenges of High-Temperature Components.

Story draws on findings of EPRI research.

"Fabricating USC Boiler components," an article in the recent DOE *Clean Coal Today* newsletter, is based on the results of EPRI's ultrasupercritical boiler project. The article describes the success achieved in fabricating the advanced, high-strength alloys selected by the project, using a variety of operations such as cold bending, welding, swaging, machining and others processes typical of component manufacture. Fabricability is an important criterion in building a power plant capable of operating at 1400F/5000psi. For more information, contact R. (Vis) Viswanathan (rviswana@epri.com, 650-855-2450).

CO₂ Post-Combustion Capture is Highlighted in Webcast.

Study to examine retrofits of PC plants.

A new EPRI supplemental project investigates the thermal and economic impacts of retrofitting post-combustion carbon capture (PCC) to an existing PC or CFB plant or one to one currently under development. The project will build on the knowledge gained from an ongoing base-funded PCC study for new build plants. A webcast was held May 29 to provide information to possible project participants and was very well attended, with 55 participants from 29 member companies. The topics covered included:

- The potential market for CO₂ retrofit on PC plants
- The necessary plant modifications for CO₂ retrofit to PC plants
- Ongoing EPRI studies on post-combustion CO₂ capture
- The specifics of the supplemental retrofit study
- Benefits of being a host site participant
- Benefits of being a non-host site participant

For more information on how to participate in this study or to view the recorded webcast, please contact Des Dillon (ddillon@epri.com, 503-908-0151) or John Wheeldon (jowheeld@epri.com, 205-670-5857).

EPRI Team Completes Generic Design Specification for the Orlando Gasification Project.

Work will help standardize designs for future IGCC plants.

EPRI staff and members of the CoalFleet IGCC Design Guidelines Experts group have completed work with Southern Company Services, Inc. and KBR, Inc. on the development of a generic design specification for the

Orlando Gasification Project. Although Southern Company announced the cancellation of the IGCC project at Orlando Utilities Commission's Stanton Energy Center, citing in part the continuing uncertainty about potential state regulations on greenhouse gas emissions, this generic specification still contributes to design standardization. The nominally-rated 270 MW IGCC plant would have demonstrated an advanced air-blown transport gasifier technology and the cost-effective integration with a combined-cycle power plant based on the GE 7FA combustion turbine. Design standardization would lower initial capital cost; support repeatable, reliable performance, and reduce the time and cost to develop decision-quality economics for potential IGCC plant owners. For more information, contact Jose Marasigan (jmarasigan@epri.com, 650-855-2939).

EPRI's Phillips, Trudell Join in ACES Panel.

Discussion of CO₂ emissions was part of member conference.

Dr. Jeff Phillips, senior program manager for Advanced Generation, was a member of a panel on "Coal Technology Options for Reducing CO₂ Emissions" at the May 29 ACES Power Marketing Members Conference in Indianapolis. Phillips presented slides on the Chilled Ammonia CO₂ Capture Pilot at the WE Energies Pleasant Prairie Power Plant, a project which has been co-funded by 37 EPRI members and participants. Kathy Trudell, market leader for EPRI's Environment Sector, also participated on the panel. For more information or a copy of his presentation, contact Phillips (jphillip@epri.com, 704-595-2250).

CO₂ Capture & Storage (Program 165)

Chilled Ammonia 1.7 MW Pilot begins Testing on Flue Gas.

An important "first step" demo In Pleasant Prairie, Wisconsin is making progress.

After overcoming problems with leaks while running with flue gas and water only, the project team introduced flue gas and conducted baseline testing. Ammonia was to be added stepwise to the system in early April until the concentration is high enough to begin parametric testing. For more information, contact Richard Rhudy (rrhudy@epri.com, 650- 855-2421).

CO₂ Capture Process Receives State Funding.

A technology supported by EPRI's TI Showcase will be tested.

A University of Wyoming post-combustion CO₂ capture technology, based on a carbonaceous sorbent in a temperature swing adsorption (TSA) process, might reduce parasitic load by < 20% and have a sorption medium that is less costly and easier to manage than other sorption materials. EPRI, through the Generation Sector's Showcase TI project, is supporting the development and sub-scale demonstration of this process, being developed by Prof. Maciej Radosz. The novel features of this sorbent are its low cost, good capacity for CO₂, good selectivity for CO₂ over N₂, low levels of hysteresis, and water tolerance.

The university recently received notice that the State of Wyoming will support the further development of this sorbent together with a project collaborative that includes EPRI, PacifiCorp and Xcel Energy. EPRI will conduct computation modeling of this TSA process using data from laboratory tests of the sorbent's performance. This information will aid the developer in scaling and engineering the sorbent vessels and overall process. A small test rig will be constructed and tested on coal-fired flue gas slip streams from both PacifiCorp's and Xcel Energy's plants in 2009. For more information, contact Brice Freeman (bfreeman@epri.com, 650-855-1050).

Emerging Post-Combustion CO₂ Capture Technology Evaluations Updated.

EPRI staff revisited Skyonic's Skymine™ and Membrane Technology and Research's membrane-based process.

EPRI continues to identify and evaluate new processes and has begun to offer letters of support for state or federal funding to select developers, mostly of solid sorbent-based processes. In April, EPRI staff attended a Global Climate and Energy Project (GCEP) conference at Stanford University. The meeting focused on reducing CO₂ emissions from the manufacturing industry, particularly energy-intensive industries such as concrete and steel. Oxyfiring, pre-combustion capture, and post-combustion capture were analyzed; post-combustion capture generally emerged as the preferred method for many applications. Currently no CO₂ capture technologies are being used other than increasing efficiency of the core process. A technology that captures CO₂ to make cement was presented, and EPRI is following up to learn more under a non-disclosure

agreement. For more information, contact Abhoyjit Bhowan (abhown@epri.com, 650-855-2383 or Brice Freeman (bfreeman@epri.com, 650-855-1050).

Wells Completed for CO₂ Injection.

Work continues on developing pilot site.

Both the injection and the monitoring wells have been completed (including the collection of core samples) for the Phase 2 effort (3000 tons CO₂ injection) of the Southeast Regional Carbon Sequestration (SECARB) CO₂ capture and injection project. MIT re-created the GIS maps for Atlas 2 using updated data, including CO₂ sources, oil and gas reservoirs, coal seams and gas shales, deep saline formations, and a composite map of sources and sinks (new).

EPRI and Southern Company representatives met with the potential CO₂ capture pilot supplier at the expected host site to answer technical questions that will allow the supplier to provide a detailed engineering and cost estimate for the pilot. For more information, contact Richard Rhudy (rrhudy@epri.com, 650-855-2421).

EPRI is Active at Major Carbon Capture and Storage (CCS) Conferences.

Both meetings featured highlights of new technologies.

EPRI staff presented at two major CO₂ capture conferences in May – the 7th Annual Conference on Carbon Capture and Sequestration, and the International Energy Agency's 11th International Post-combustion CO₂ Capture Network. Both of these technical conferences featured updates from the capture developers and university researchers. Reports indicated continued incremental improvements to process designs, further assessment of the concept of "capture ready" new plant designs, and preparations for several announced projects, but no large-scale demonstrations have been launched yet. The EPRI team also did not learn of any breakthrough technologies (those capable of removing 90% of the CO₂ in the flue gas and compressing it to the 2000 psia range at a parasitic energy load on the power plant that could realistically approach 10%). For more information, please contact Abhoyjit Bhowan (abhown@epri.com, 650-855-2383) or Brice Freeman (bfreeman@epri.com, 650-855-1050).

MAJOR COMPONENT RELIABILITY

EPRI's Viswanathan Contributes to New Book.

More than two dozen global experts co-authored text.

Creep Resistant Steels has been published by the Institute of Materials, UK. EPRI's Dr. R. (Vis) Viswanathan is a co-editor and contributor. The book covers a broad range of subjects relating to the manufacture, properties, mechanisms and applications of steels and was authored by 25 invited international experts. For more information, contact R.(Vis) Viswanathan (rviswana@epri.com, 650-855-2450).

OPERATIONS AND MAINTENANCE

I&C and Automation for Improved Plant Operations (Program 68)

Wireless Sensor Networks Research Underway.

Studies examine application of low-power and low-cost networks for equipment condition monitoring.

Program 68 and EPRI's Technology Innovation program are conducting fundamental research for implementation of wireless sensor networks technologies. Fossil plant applications in 2008 will focus on key requirements, including the documentation of a site survey at a coal-fired plant, installation of a mesh network with local data processing, and assessment of long-term performance of the network. For more information, contact Steve Hesler (shesler@epri.com, 704-595-2183).

Maintenance Management and Technology (Program 69)

EPRI another Step Closer to Diagnostic Advisor.

A new report details case-based basis for new OMX software.

A technical approach for the case-based reasoning process that will be used in EPRI's future Diagnostic Advisor software is detailed in new technical report 1015180, titled "Diagnostic Advisor Module Process Specification." The Operations and Maintenance Excellence (OMX) supplemental project will deploy the Diagnostic Advisor, developed jointly in Programs 69 and 68, in the PlantView enterprise software suite over the next two years. Members of the Generation Sector's Fleetwide Monitoring Interest Group is providing technical guidance.

The vision of OMX is to develop and deploy a new and integrated approach to fossil plant condition-based maintenance that relies on more effective use of on-line monitoring data to automatically assess equipment condition. The Diagnostic Advisor will play a key role in this new process, coupled with new risk-based tools that allow plant maintenance staff to use enhanced condition assessment data to make better decisions on resource allocation and maximize unit availability. The risk processes are described in an earlier Program 69 report, number 1014243, titled "Risk-Informed Maintenance Decision Analysis Methodology," released in December 2007. For more information, contact Steve Hesler (shesler@epri.com, 704-595-2183).

Members Weigh in on New PlantView Features.

Feedback will help shape new risk-informed planning.

A series of meetings with five members of Program 69 provided feedback on concepts for a new risk-informed approach to maintenance planning. Specifications will be the subject of a 2008 technical report and will form the basis for future enhancements to the PlantView enterprise software tool under EPRI's Operations and Maintenance Excellence (OMX) initiative. One element will be access to NERC reliability data on mean time to failure and time to repair. A June meeting between EPRI, NERC, and the PlantView developer will focus on future capability within PlantView. For more information, contact Steve Hesler (shesler@epri.com, 704-595-2183).

Fossil Maintenance Applications Center (Program 104)

EPRI Staff Helps KOWEPO Apply Software Tools.

An analysis at a plant followed training in use of the PMBD tool.

EPRI recently followed up on training last summer for Korea Western Power (KOWEPO) on the Preventive Maintenance Basis (PMBD) when staffers Justin Thibault and Charles Mengers helped their KOWEPO counterparts in the first application of the latest version of the tool. The group analyzed a feedwater system at one of the company's combined-cycle plants. The methods will help KOWEPO increase maintenance effectiveness as part of its internal maintenance optimization efforts. For information, contact Justin Thibault (jthibault@epri.com, 704-595-2103).

New Projects Help Members Use EPRI Database.

Training, implementation helps utilities get the most from PMBD.

Program 104 recently launched two supplemental projects to help EPRI member utilities get the most value from the Preventive Maintenance Basis Database Version 2.0 (PMBD 2.0). The first project (SPN 1016919) offers classroom-style training options for groups of 4 to 12, either at the client site or at an EPRI location. The second project (SPN 1016920) offers a four-day implementation assistance option in which EPRI experts work with member utility personnel at a system level. The implementation project is eligible for Tailored Collaboration (TC) funds. For more information, contact Justin Thibault (jthibault@epri.com, 704-595-2103).

EPRI Information Helps Address Stakeholder Concerns about Future Mercury Rules.

The recent federal court ruling vacating the Environmental Protection Agency's (EPA) cap-and-trade-based Clean Air Mercury Rule left utilities and the public with many unanswered questions about when and how mercury, as well as other air toxics, may be regulated. EPRI has an extensive library of information on emissions, transport and fate of mercury and other toxics, as well as health effects and control technologies. This information is useful in responding to stakeholder concerns. In addition, EPRI's current information and future research likely will be important resources for the EPA, state regulatory bodies, and other stakeholders as they reexamine technical issues and develop new rules and regulations for mercury or other emissions. To access EPRI's mercury-related issue briefs, click on this link:
<http://my.epri.com/portal/server.pt?open=514&mode=2&objID=218874>.

To learn more about EPRI mercury research, click on the following links: [Environmental Controls](#), [Air Toxics Health and Risk Assessment](#), [PISCES – Plant Multimedia Toxics Characterization](#).

Combustion Performance and NO_x Control (Program 71)***New Phase of Demonstration Focuses on Circumferential Cracking.***

Project studies root causes and mitigation.

During the May outage of PPL's Brunner Island Unit 3, additional instrumentation was added to support Phase 2 of the Circumferential Cracking Demonstration Project. The new instrumentation will allow for measurement of flow instabilities, pressures and temperatures in the waterwall, as well as determination of slag falls. In addition, the Rowan Technologies advanced temperature and heat flux mapping system was upgraded to increase the scanning rate. All of these efforts will allow better identification and analysis of the root causes of circumferential cracking. In Phase I of the project, several thermal events were identified as potential root causes of the severe circumferential cracking currently plaguing both bare and weld-overlayed waterwalls in supercritical units. In Phase 2, parametric tests will better quantify primary root causes and to yield insights into mitigation methods. For more information, contact Jeff Stallings (jstallin@epri.com, 650-855-2427), Sylvio Cardoso (scardoso@epri.com, 650-855-1056) or Tony Facchiano (afacchia@epri.com, 650-855-2494).

Everything You Always Wanted to Know about Waterwall Coatings.

Presentation included recommendations for tools and inspections.

An April 30 Webcast gave members of the Waterwall Interest Group (WWIG) a more complete view of the state of knowledge of waterwall coatings. With its potential to minimize slagging, erosion, and fireside corrosion (with significantly less risk of exacerbating circumferential cracking than weld overlays), fireside coatings currently is the highest priority in the WWIG. Topics covered in the Webcast included current thermal sprays application methodologies (such as Wire Arc, HVCC, and HVOF and application of cold applied coatings) and initial findings on minimization of slag, corrosion and erosion to boiler waterwalls. Previous laboratory tests and field exposed sample analysis, as well as recommendations on thickness measurement tools and inspection methods, also were covered. For more information, contact Sylvio Cardoso (scardoso@epri.com, 650-855-1056).

Intelligent Sootblowing Workshop Draws Big Crowd.

Tour looks at new technology in Luminant's Martin Lake Plant.

Nearly 50 participants representing 13 utilities were on hand for EPRI's Seventh Intelligent Sootblowing Workshop, held May 20-21 in Shreveport, Louisiana. All of the major ISB technologies were discussed, including traditional sootblowers, water cannons, impulse cleaning, acoustic cleaning, and even coatings which inhibit ash accumulation. Presentations described ISB demonstrations in all of these areas. The highlight of the workshop was the tour of Luminant's Martin Lake Plant to see the installation of the most recent Clyde-Bergemann ISB technology. A CD will be published containing all of the presentations. For more information, contact Jeff Stallings (jstallin@epri.com, 650-855-2427).

Post-Combustion NO_x Control (Program 73)

Flue Gas Effects on SCR Catalyst Performance Tested.

A pilot-scale SCR yields data on mercury oxidation.

Testing of one commercial SCR catalyst, examining for the response of mercury oxidation to variations in flue gas parameters including chlorine levels, temperature, velocity, and ammonia, has been completed at a 5 MW pilot-scale SCR reactor at Golf Power's Plant Crist. The selected fuel is a Columbian coal with very low chlorine levels to allow for HCl injection. The project has been very successful in isolating flue gas parameters. Future project work will examine three additional catalyst types. These findings will provide information to optimize mercury oxidation performance, and on the use of chlorine injection for improving mercury capture performance. For more information, contact Alex Jimenez (ajimenez@epri.com, 650-855-2051) or Chuck Dene (cdene@epri.com, 650-855-2425).

Two New Interest Groups Launched.

SCR Catalyst Management and Large Particle Ash groups hold first sessions.

Kickoff meetings for the two new interest groups were held April 22 and 23 near Cincinnati. A total of 41 representatives of Ameren, Aquila, Inc., Babcock and Wilcox, Consumers Energy, Duke Energy, Dynegy Midwest Generation, E.ON U.S., FirstEnergy, Hoosier Energy, Kansas City P&L, Luminant, Northern Indiana Public Service Co., New York Power Authority, Ontario Power Generation, Progress Energy, Southern Company, and Tri-State G&T – all members of Program 73 – attended the meetings. For more information, contact Dave Broske (dbroske@epri.com, 704-595-2255).

Integrated Environmental Control (Program 75)

Sorbent Injection Reaches Mercury Capture Targets.

Results from full-scale tests were achieved at very low injection rates, retaining ash salability. Xcel Energy is working with EPRI to evaluate sorbent injection options that can achieve >70% mercury controls while preserving ash sales at its Harrington and Tolk Stations, both PRB-fired and equipped with a baghouse. The team determined the performance of various sorbents (activated carbon, brominated activated carbon, non-carbon) and of boiler bromide addition (marketed as KNXTM by Alstom), with and without activated carbon. The results at Harrington and Tolk show the use of brominated activated carbons or KNXTM (with occasional activated carbon injection) can achieve >70% mercury removal. Ash from both sites was deemed acceptable for use with concrete. Non-carbon sorbents did not perform well. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

Annual Report on Mercury Control Provides Major Update.

An EPRI update on technologies using sorbent injection is now available.

"Mercury Control Technology: Sorbent Injection for Mercury Control and Boiler Bromide Addition for Mercury Control," EPRI report 1014172, is available for download and order from EPRI. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

Large-Scale Mercury Oxidation Catalyst Demonstration Set.

Testing begins in May at LCRA's Fayette Station.

During a recent planned outage, the ductwork was modified to accept the catalyst. Located just upstream of a 200-MW wet FGD, the 20-inch-thick catalyst section is expected to deliver high proportions of soluble oxidized mercury to the flue gas entering the FGD, where it can be captured. For more information, contact Brice Freeman (bfreeman@epri.com, 650-855-1050).

Mercury Re-Emissions Reductions Might Require Different Injection Rates.

Tests on an additive, effective in reducing re-emissions from FGD on incinerators in Europe, was not as effective in power plant flue gas.

A recently-published EPRI report (1014262) summarized tests conducted in late 2007/early 2008 on chemical additives intended to reduce the re-emissions of mercury captured by wet FGD. Company A's additive was tested at bench scale in four formulations; one showed better than a 50% reduction from baseline

re-emissions. However, this was not as effective as Nalco's 8034 additive at similar FGD conditions. It is possible that at similar dosage rates, both additives might perform as well. Also, after these tests EPRI learned that Company A recommends its FGD additive be used in conjunction with bromine addition to the flue gas, which has not yet been tested in this bench-scale apparatus or at a power plant in the U.S. For more information, contact Richard Rhudy (rrhudy@epri.com, 650-855-2421).

Analyses Suggest Connection between Absorber Slurry Content and Mercury Partitioning.

Results showed more mercury is found in the liquor in which gypsum particles are coarser and/or contain more iron.

Recent efforts have focused on analyzing data from full-scale FGD system sampling conducted in 2005 through 2007. One site was sampled on four occasions (five times including absorber-only samples), and showed a wide range of mercury partitioning, from very low to relatively high percentages of the mercury found in the absorber liquor. These data – in particular, the hydrocyclone overflow (HCOF) solid data – were analyzed and suggested that more mercury appeared in the solids when the HCOF solids were finer and/or higher in iron content. Further, more absorber mercury was found in the HCOF solids when these solids also contained higher concentrations of As and Se. This might suggest the same mechanisms that control mercury partitioning in the FGD slurry also impact As and Se partitioning. For more information, contact Richard Rhudy (rrhudy@epri.com, 650-855-2421).

Collaboration Site Shares FGD Operating Experiences.

A new resource is available to SOXIG members.

A collaboration site now is available to members of the Sulfur Oxides Control Interest Group (SOXIG, the combination of AECIG and SOCIG). It starts with previous experiences on recently raised issues, including H₂S generation and foaming. Member input on these or other topics is encouraged. For more information, contact Chuck Dene (cdene@epri.com, 650-855-2421).

Survey of Low-Capital-Cost SO₂ Controls Finds More Effective Sorbents.

Suppliers suggest some sorbent/injection changes can bring significant improvements.

Some location combinations can provide up to 70% SO₂ removals with specially-processed materials, while other improvements can reduce sorbent consumption rates up to 50% with no loss in collection efficiency, EPRI has learned from discussions with suppliers. The low-capital-cost SO₂ emissions control technologies study will be delivered in the next few months. It will include cost and performance evaluations of various sorbent injection methods, mixing and sorbent enhancement methods, and several source and delivery alternatives. Preliminary findings suggest the applicability and availability of several technologies that will deliver SO₂ reductions > 50% for ultra-low (\$5-15/kW) or low (<\$75/kW) cost. Other improvements in existing technologies appear to reduce sorbent consumption by up to 50% without loss of removal efficiency. For more information, contact Todd Nordgren (tnordgren@epri.com, 817-295-5167).

Boiler Bromide Addition Tests Confirm Earlier High Mercury Removal Results.

Calcium bromide offers promise of high mercury oxidation and removals.

In the presence of an SCR, the amounts of bromide needed to achieve >90% total removal for PRB coals were very low in two recent field tests (600 MW with pilot wet FGD and 700 MW with full-scale FGD). This approach might offer a very low-cost method for reducing mercury emissions from power plants equipped with SCR-ESP-wet FGD. EPRI recently initiated a project to gather solid, liquid, and gas streams at two bromide addition test sites and will evaluate the potential effects of the added bromide in the ash on leaching and ash use, and in the scrubber on corrosion. This project currently is funded by the two hosts, but additional participants are sought to enable a comprehensive scope and provide test guidance. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

Sorbent Injection Provides High Mercury Removals while Preserving Ash Sale.

Recent tests indicate a variety of approaches might achieve high mercury reductions.

Various sorbent injection approaches to maximize mercury removal while preserving ash sales were tested at full-scale on Entergy's Independent Station Unit 2, an 800-MW PRB-fired unit equipped with a cold-side ESP. The approaches included a novel ash-use-compatible carbon, TOXECON II®, reduction of sorbent size,

and injection before the air heater. The tests showed reduction of sorbent size and injection before the air heater can drastically reduce the amount of sorbent needed to achieve high mercury reductions; greater than 90% removal was achieved with only 1 lb/MMacf. High mercury reductions also were achieved with a fine brominated carbon injected before the ESP or in the TOXECON II configuration, but only with much higher injection rates. A novel ash-use-compatible sorbent was found to produce similar mercury removal effectiveness as the brominated carbon, and the concrete mix prepared using partial cement replacement by this ash required much less air entraining agent than when using ash containing conventional activated carbon. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

EPRI to Upgrade its FGD Chemistry Codes.

The Sulfur Oxides Control Interest Group (SOXIG) asks for a tool to help operators assess FGD health.

EPRI's scrubber chemistry computer models, FGDLIQEQ and FGDPRIISM, are pre-Windows and data-intensive, but their core science and computations remain valid. At the April 22-23 SOXIG meeting, members agreed with an EPRI suggestion to upgrade these models by combining them, simplifying them, and migrating them into Windows format. The group asked for a simple upgrade of FGDLIQEQ to provide a tool for the FGD chemist to evaluate lab results; addition of a material balance calculation to predict reagent/additive needs, wastewater treatment requirements, and gypsum or sludge production; and a tool for "assessing the health" of the FGD operations. These functions would be provided through simplified upgrades of the existing FGDPRIISM code, offering them in stages as progressive upgrades. The tool for assessing FGD "health" likely would be an FGD expert. For more information, contact Chuck Dene (cdene@epri.com, 650-855-2425).

Potentially High-Activity Carbon Prepared.

New findings might lead to other applications.

A novel method of preparing a high-surface-area carbon structure has been developed by EPRI, in conjunction with the University of Illinois. The approach produces a highly expanded carbon with a large number of micropores. The size and total micropore area can be adjusted through variations in the treatment temperature and starting precursor. The original objective was to produce an activated carbon for mercury adsorption that is not prepared from coal and has minimal treatment time or by-product pollutant production (activated carbon produced from coal generates mercury and CO emissions). But because the team found it could control the surface area and micropore size, it now is also investigating other applications, such as other trace metal capture from gas or liquids. Various low-cost precursors are also being studied to seek reductions in production costs. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

Project to Test Mercury Capture by Fixed Structures.

Several different structures will be tested.

Several fixed structures – systems which do not contaminate the fly ash, generate very little waste products, and can act as the final "filter" for mercury – that show promise have been identified and will be tested at two sites. EPRI has initiated a project to evaluate various mercury sorbent structures downstream of primary particulate collectors such as ESPs, fabric filters, or scrubbers. The structures can be plates, honeycombs, and sorbent pellets. Two 2-MWe pilot units from prior DOE sponsored projects will be used for the tests, to be conducted at Great River Energy's Stanton Station (PRB, ESP or spray dryer fabric filter) and Southern Company's Plant Yates (low-sulfur E. bituminous, wet FGD).

The program will receive partial support from DOE-NETL, and EPRI also is seeking Tailored Collaboration partners. The field work (to start 3Q08) will consist of short-duration parametric tests followed by two-to-three-week, longer-term tests. The parametric tests will evaluate mercury capture and oxidation potential, various fixed structure configurations and optimal operational conditions, while the extended tests will assess longer-term performance. Various suppliers (Corning, Westvaco, J-Power, Norit, Calgon, and others) have agreed to provide the materials if the initial laboratory screening tests (ongoing) show promise. For more information, contact Ramsay Chang (rchang@epri.com, 650-855-2535).

Tech Watch Finds Increased Announcements of Integrated Environmental Controls (IECs).

Recent trade press articles indicate greater activity in IEC developments.

The announcements cover some new players as well as older ones with enhanced products. Examples of new information on previously evaluated technologies include a new electron beam application at Sviloza Power in Poland and five new installations of BOC Gas' LoTOx process (NO and Hg oxidation via ozone addition to cooled flue gas) in refineries with a different scrubber on the back end. Newer concepts include a DynaWave scrubber (new contactor design) and a catalyst designed to produce soot free combustion – a Korean product marketed as reducing furnace ash buildup and simultaneously providing 30-50% SO₂, NO_x, CO₂, and particulate reductions.

Together with Program 165, this project is tracking Skyonics' SkyMine™ process. While driven largely by a desire to produce a land-disposal solid product from the capture of CO₂ (to avoid the regulatory and public acceptance uncertainties with CO₂ storage via underground injection, and to provide an option where no acceptable underground formations exist), the process developers also cite lab tests showing virtual 100% SO₂, 99% NO₂, and 97% oxidized Hg reduction. EPRI still is gathering information on the economics of this process. For more information, contact Chuck Dene (cdene@epri.com, 650-855-2425).

Particulate & Opacity Control (Program 76)

Update of EPRI's Electrostatic Precipitator Performance Model Released.

ESPM Version 4.0 adds improved estimates of the impact of elevated carbon-in-ash levels on particulate emissions.

ESPM has been upgraded to include an option for calculating the collection of ash/carbon mixtures. This new tool allows realistic estimates of the impact of carbon on the ESP emissions, an issue of growing importance since any unit modification that produces an increase in particulate emissions can trigger NSR for the unit. The program contains default values for both the unburned carbon that results from incomplete combustion and for activated carbon added for mercury control.

This latest version retains the overall "look and feel" of the earlier versions and also is downward compatible – files created for earlier versions are automatically imported into version 4.0 when it is installed on a computer running an older version. ESPM 4.0 supports Windows 2000 and Windows XP, but not Windows Vista. Version 4.5, which will be released later this year, will include the addition of an option for calculating the collection of an ash/alkali sorbent mixture (sorbent added for SO₃ or SO₂ control) and will be Vista compliant. For more information, contact Ralph Altman (raltman@epri.com, 423-899-0072).

Initial Hot-Side ESP Indigo Agglomerator Evaluation Produces Mixed Results.

Agglomerator produces particle agglomeration but stack opacity was not reduced significantly.

The first Indigo Technologies bi-polar electrostatic agglomerator to be installed ahead of a hot-side ESP has been in service for more than a year. After installation, the agglomerator did not produce significant short-term improvements in ESP performance. Power levels in both the agglomerator ESP declined very quickly after startup in a clean condition, and stack opacity increased at roughly the same rate as before agglomerator installation. The test team and plant personnel hypothesized that excessive fouling of the internal agglomerator components was the likely cause of the poor performance. Installation of a shock system provided by Pratt & Whitney for online cleaning improved discharge electrode/emitter cleanliness. During the course of the evaluation, the run time between cleanings has increased, partly due to the diligent efforts of plant personnel to keep the ESP in top mechanical condition. Particle size measurements made when the agglomerator was functioning indicated that there was measurable agglomeration; however, this effect did not translate into a significant decrease in stack opacity as it has at the cold side applications. For more information, contact Ralph Altman (raltman@epri.com, 423-899-0072).

Explanation for Poor Sieving ESP (SESP) Pilot Performance Identified.

Project is looking at new ways to direct gas flows.

The sieving electrostatic precipitator is an innovative particulate collector that forces a high negative charge on fly ash particles in flue gas, then passes the gas through the small openings in “window screens.” As the gas passes through the screens, some of the particles impact the wires and attach themselves. Additional particles impact the ones already on the wires and this process continues until the screens are rapped to dislodge the mass of collected particles, which fall into a collection hopper below the screens. All of the screens are held at a high negative potential, which generates an electric field around the wire that tends to produce a very porous dust cake. This combination of particles with a high negative charge and negatively charged screens produced very high collection efficiencies and very low pressure drops in laboratory pilot tests conducted at Ohio University. The results of the test were so encouraging that the pilot test sponsors, including EPRI, AEP, OCDO and Ohio University, decided to take the technology to the next stage of development – large-scale pilot testing on flue gas at a power plant.

However, the pilot, located at AEP’s Conesville Plant, produced disappointing results. The pressure drop was low, typically around an inch water gage, but the collection efficiencies were low – only in the high 60% range, as opposed to the high 90’s achieved in the laboratory tests. Subsequent tests demonstrated that less than half the gas was actually flowing through the screens after a reasonable amount of dust had collected on them, due to the clearances used to isolate the high-voltage screens from the surrounding grounded metal surfaces. If a satisfactory solution to this problem can be found, the pilot will be modified accordingly, and the collection performance tests will be repeated. For more information, contact Ralph Altman (raltman@epri.com, 423-899-0072).

Continuous Emissions Monitors (Program 77)

Latest Continuous Mercury Monitor Calibration Issue Resolved.

Solution found in maintaining oxygen levels.

Problems encountered in some systems with purity of the nitrogen used for the calibrator and sample dilution was resolved by changing the molecular sieve dryers to eliminate fluctuating oxygen concentrations entering the nitrogen generator. The first “fix” was installed and performed as expected. A revised protocol for both Thermo-Fisher and Tekran systems was circulated and training on these protocols is scheduled. For more information, contact Chuck Dene (cdene@epri.com, 650-855-2425).

Success and Issues Obtained from Early Field Tests of Mercury CEM Calibration Systems.

Results from the first few units found that the calibrators were stable; gas cylinders experienced creep.

EPRI now has visited four of the 12 companies that agreed to participate in the evaluation of the two methods being considered for routine calibrations – gas generators and cylinders. Two more trips are scheduled, but the remaining six companies still are experiencing difficulties either in the installation or startup of their mercury monitors. For the systems that have undergone the bracketing experiments with the calibrators, the results have been very stable. Two of the companies now have completed bracketing experiments with the cylinder gas. Results are encouraging, but there still seems to be “creep” as the cylinder is used; that is, the resulting value “creeps” up with each successive test. The suspected cause is the regulators, which are specially coated but have never been exposed to mercury-laden gas. EPRI has suspended further tests pending additional experiments and discussions with NIST and the cylinder vendors. For more information, contact Chuck Dene (cdene@epri.com, 650-855-2425).

Coal Combustion Product (CCP) Use (Program 78)

Substantial Activity Continues on FGD Gypsum Use in Agriculture.

Comprehensive program will develop a database for total composition; FGD gypsum applied to four crop planting test sites.

On April 1, EPRI met with EPA, USDA, and Ohio State University (OSU – the EPRI/DOE contractor for the national network of trials using FGD gypsum in agriculture). The group decided to move forward with a broad sampling and analysis of FGD gypsums to develop a robust database for total composition. EPA was

extremely concerned with QA/QC. EPRI will handle the sampling to ensure uniform methods, and analytical work will be subcontracted either to OSU or USDA. EPRI is preparing a sampling and analysis plan and expected to begin collecting field samples by the end of May.

Members of the national network on gypsum use in agriculture have been active at many sites, including:

North Dakota – Canola planting was scheduled for the first week of May; weather conditions prevented earlier spreading and planting.

New Mexico – Gypsum was applied April 16. Alfalfa was planted in early May and then lysimeters were installed. All gypsum samples have been analyzed. Preliminary soil samples have been received by OSU for analysis.

Indiana – Gypsum was spread in early May, followed by planting of corn. All preliminary soil and gypsum samples have been analyzed except for the commercial (pelletized gypsum).

Arkansas – Gypsum has been applied. Cotton was planted in May. Heavy rains have impeded field work. All preliminary soil and gypsum samples have been analyzed.

Alabama – FGD gypsum samples (with and without fly ash) have been analyzed. Preliminary soil samples were collected in mid-May. Scientists sent commercial gypsum samples along with the soil samples. The field site is Bermuda grass pastureland.

Ohio – The Mill Creek MetroParks farm (former Mahoning County Experimental Farm) at Canfield was visited as a possible research site. This farm has several soil series with strongly acid subsoils that may be ameliorated by gypsum applications. Initiation of field work is pending approval by the parks district administration that runs the farm. A pasture study is planned for 2008 with addition of a corn yield study in 2009.

For more information, contact Ken Ladwig (keladwig@epri.com, 262-754-2744).

Literature Substantiates Concerns that Acetate/Formate De-Icers can Exacerbate Concrete Cracking.

Mechanisms are not well understood; four areas of R&D are proposed.

A draft report, "The Effects of Potassium Acetate De-icing Chemicals on the Performance of Concrete Containing Fly Ash: A Literature Review," currently is under internal review. It documents concerns in recent years about the impact of potassium acetate and other acetate/formate solutions used as anti-icers or de-icers on alkali-silica reaction (ASR)-induced expansion and cracking of the concrete. However, the mechanisms are poorly understood, and testing methodologies are not well developed. Expansion sometimes occurs in mortar and concrete samples that do not contain reactive aggregates. The role of fly ash is of particular importance; research by the authors of the literature review has shown that fly ash can increase expansion of mortar exposed to potassium acetate solution, and further that the composition/mineralogy of the fly ash appears to be critical.

Preliminary work suggests concrete manufactured using partial cement replacement by high-CaO ashes is more vulnerable to ASR-induced cracking than concrete made using low-CaO ashes when exposed to potassium acetate solution. To address these concerns, the authors indicated research is needed in four broad areas: (1) detailed studies of the mechanism of acetate attack; (2) evaluation of the role of aggregate reactivity; (3) development of suitable test methods for concretes with fly ash and other supplemental cementitious materials; and (4) development of guidelines for prevention of deterioration in the presence of potassium acetate de-icers. For more information, contact Ken Ladwig (keladwig@epri.com, 650-855-2425).

New CT/CC Design, Repowering and Risk Mitigation (Program 80)***Report Reviews Single-Crystal Hot Section Materials for Advanced Gas Turbines.***

Review offers insights about reparability.

Some of the highest-efficiency gas turbine models, such as the GE 7/9FB, Alstom GT24/26 and Siemens VX4.3A, rely on single-crystal high-temperature materials for highest temperature airfoils. The recent issue of *EPRI Combustion Turbine Experience and Intelligence Report (CTEIR)* reviews materials processing, degradation mechanisms, field experience, and considerations for repair for single crystal components. The report offers perspectives on concerns about reparability, especially techniques for welding and heat treatment limitations and on recrystallization, the reversion of single-crystal to a multi-grain structure. The *CTEIR* is available for download under the P80 Highlights section of EPRI.com. For more information, contact John Scheibel (jscheibe@epri.com, 650-855-2850).

Report Updates Findings on GE FA Compressor Inlet Blades.

Testing continues on benefits of modifications.

The updated compressor inlet blade (R-O) root cause report (1014277) has been released. The general conclusions of the original root cause have not changed. Additional work related to the possible benefits of modifying the blade root to reduce stress and altering the material to a titanium alloy are included. Ongoing work includes modeling the inlet flow through the inlet guide vanes. Flow stall/flutter conditions during startup and part load operation have been noted as possible vibration excitation sources. Erosion resistant coating testing is progressing. A technical update report (1014277) was also recently issued covering both testing of vendor coating and new nanotechnology TiN based advanced coatings. Laser shock peening has recently been added for evaluation as leading edge surface treatment aimed at improving high cycle fatigue durability. The project scope has broadened to examine other dependability issues in downstream stages as well. For more information, contact John Scheibel (jscheibe@epri.com, 650-855-2850).

New Study Looks at Gas Turbine Rotor Life.

Some manufacturers say rotors might present safety issues.

A new project to address gas turbine rotors with accumulated operating time of 100,000 to 200,000 hours or high starts (5,000) has been launched. Stress analysis and material degradation studies of the CrMoV rotor components are aimed at establishing the critical flaw size and location for inspection and the criteria for extended service operation. The general class of materials are similar to those used for steam rotors. However, the details of construction and temperature distributions are significantly different between the gas and steam rotors. While no recent events of major failure are known, several OEMs have identified such rotors as safety concerns. For more information, contact John Scheibel (jscheibe@epri.com, 650-855-2850).

A “Mini-Boom” in New Combined-Cycle Power Plants Appears to be Forming in the U.S.

The number of combined-cycle plants being permitted and equipment on order has been increasing despite relatively high natural gas prices, increasing capital costs, and lengthened construction and equipment delivery schedules. New combined-cycle plants now cost in excess of \$1,000/kW and lead time for some major equipment exceeds 30 months. Decreased capacity margins and increasing electricity demand are driving the regional need for more capacity for intermediate duty. Utilities that would prefer to build baseload capacity fueled by coal or nuclear energy have turned to gas-fired combined cycles to meet their immediate needs. For more information, contact Dale Grace (dgrace@epri.com, 650-855-2425).

Dispersed Generation and Hydropower (Program 84)

Wave and Tidal Energy Featured in Magazine Article.

Article notes questions remain about how to extract energy from wave, ocean and tidal resources.

EPRI recently submitted a manuscript on U.S. ocean wave and hydrokinetic (tidal, ocean and river) resources to *Hydro Review* magazine. The paper concluded: 1) that available U.S. deepwater wave resources are reasonably well understood; however, the limits for extracting energy from the resource are not known; 2) that the available U.S. hydro-kinetic resource is not well understood, because many potential sites have not been evaluated, and 3) Even for those sites where the available tidal hydro-kinetic resource is understood, the limits for extracting the resource are not known. The article also included recommendations for future research.

Other recent activities include a final report on wave forecasting, "Feasibility of Using Wavewatch III for Days-Ahead Output Forecasting for Grid Connected Wave Energy Projects in Washington and Oregon;" a site characterization report on the Alaska River In Stream Energy Conversion Project to Alaska Energy Authority, Anchorage Municipal and Light and Chugach Electric; a draft final feasibility study report on Idaho

Power River In Stream Energy Conversion Project for Idaho Power; and contracts with PG&E for continuing consulting for its ocean wave and tidal hydrokinetic projects in California. For more information, contact Roger Bedard (rbedard@epri.com, 650-855-2131).

Waterpower Work Makes for a Busy Spring for Bedard.

EPRI's marine and tidal energy expert chairs discussion at global conference.

EPRI's Roger Bedard chaired a panel on Marine Energy Technology status at the Global Marine Energy Conference in New York City on April 17 and 18. Included on the panel were speakers from the UK, Ireland, Denmark and Germany. Rep. Jay Inslee of Washington and Sen. Lisa Murkowski of Alaska spoke and stated their commitments to investigating this technology as a national energy option.

In other waterpower news:

PG&E awarded an \$81,000 agreement to EPRI in early April for wave and tidal energy consulting to support its WaveConnect projects in Mendocino and Humboldt counties and its Golden Gate tidal project. The kickoff meeting for the latter was held in San Francisco on May 6.

On April 9, EPRI gave the final briefing in Boise to Idaho Power on a river in-stream energy conversion study. Idaho Power officials said they will not embark on a river hydrokinetic application on their own but do want to follow the technology as it develops.

EPRI gave an April 3 briefing to Bonneville Power on the 2007 Snohomish PUD tidal study on April 3, 2008 and presented plans for 2008 work. EPRI has committed to completing an Admiralty Inlet feasibility study by the end of June and the feasibility studies for Deception Pass, San Juan Channel and Spieden Pass by the end of September.

For more information, contact Roger Bedard (rbedard@epri.com, 650-855-2131).

Understanding Power & Fuel Markets and Generation Response (Program 67)

Studies Detail Global Energy Developments and U.S. Implications.

New reports focus on rising fuel, construction costs.

EPRI has released several studies of factors affecting power generation worldwide. *Global Gas Market Analysis* (1014921) and *Drivers of New Generation Development — A Global Review* (1014920) are two of three studies on global energy conducted through special arrangements with Program 66 (Advanced CoalFleet) and Program 80 (CTs and CCs). The third part of this group was a report on international coal

issued last December. That report, *International Coal Market Analysis* (1014922), received high marks from Stanford's Program on Energy and Sustainable Development, which incorporated it in its 2008 PESD Coal Conference on April 22-23.

Since December world coal prices have skyrocketed, even after a year of steady increases in commodity and shipping costs. Implications of these lofty prices are addressed in the just-released report *U.S. Coal Supply and Contracting* (1014147). In addition to calculating U.S. and world coal price interrelationships, this report summarizes the fundamental production characteristics in the principal U.S. supply regions and estimates how delivered prices from these regions could shift from today to 2020.

The U.S. gas supply outlook has changed since release in November of the *U.S. Natural Gas Supply Equation and Price Envelope* (1014146) report. These changes are reviewed in an April 21 presentation to the American Association of Petroleum Geologists' Forum on Economics of Natural Gas and Alternative Energy, which was co-chaired by EPRI's Jeremy Platt. For information about these reports or a copy of the presentation, contact Platt (jplatt@epri.com, 650-855-2628).

TECHNOLOGY TRANSFER

Applications Success Stories Database now Available on EPRI.com.

Learn how to apply results of EPRI research on Website.

For the first time, EPRI members have on-line access to examples of successful applications of EPRI R&D. The Success Story database includes member applications since 2004 and are categorized by topic area. Once the area has been selected, the data displays the member name and technology applied. From there, simply click on the technology name to view a PDF of the entire story, which can be saved or printed. The database is accessible at www.epri.com. Once at the home page, select Applying Results from the blue navigation bar.

Another new feature of the site is the "Member-to-Member Knowledge Transfer." With one click, members can view how others are applying Environment Program research results. Other updates to the site include: streamlined information display; updated Technology Transfer Awards current year winners and historical database, and "Ready Now," from which a selection of currently available research applications plans from the 2007/2008 research years can be downloaded. For more information, contact Susan Rodgers (srodgers@epri.com, 704-595-2072).

EPRI Technology Transfer Award Nominations Are Open.

EPRI members are invited to nominate individuals from their companies for an EPRI Generation Technology Transfer Award to be presented at the 2009 Winter Advisory meetings. Nominations will be considered for applications of EPRI technology completed between 2007 and 2008. The criteria that will be used for selecting recipients includes:

- Specific EPRI research results applied and the significance of the problem solved
- Impact and benefits applying the EPRI-developed technology
- Effective championing of EPRI results to both internal and external audiences
- Leadership and/or innovation demonstrated in effectively adapting EPRI technology

Nominations Forms are available under [Applying Results](#) at epri.com. Nominations will be accepted up until a final deadline in October, 2008. For more information, contact Susan Rodgers (srodgers@epri.com, 704-595-2072).

EPRI CEO Leads Panel on CCS at Edison Foundation Conference.

Steve Specker was a moderator and speaker on the opening panel at the Edison Foundation conference on Carbon Capture and Storage in March.

The panel on “*Opportunities and Challenges of Carbon Capture and Storage*” addressed the global importance of CCS, including technical and non-technical challenges, and timeline and financing. The other two panelists were Don Langley of Babcock & Wilcox and David Victor of Stanford University. Specker presented information from the EPRI analysis of generation options in a carbon-constrained future, from EPRI’s *CoalFleet for Tomorrow*[®] program (P66), and from EPRI Program 165, CO₂ Capture and Storage.

The three panelists also participated in a briefing on CO₂ capture and storage for House Congressional staff. The briefing was set up by the Edison Electric Institute and took place in the committee room of the House Committee on Science and Technology. More than 50 Congressional staff members attended. For more information, contact John Novak (jnovak@epri.com, 202-293-6180).

EPRI Co-Sponsors Washington International Renewable Energy Conference.

EPRI research was featured in a session on energy storage.

At least 75 events and presentations were included in the Washington International Renewable Energy Conference (WIREC) in March at the new Washington, DC convention center, and EPRI was both a sponsor and a part of several of the activities. Technical and ministerial conferences over the four days included an energy storage session, which featured EPRI’s compressed air energy storage (CAES) work and an update/comparison with pumped hydro. EPRI staff also chaired a hydropower technology session that included both conventional and ocean technologies. For more information, contact John Novak (jnovak@epri.com, 202-293-6180).

Senior Administration Officials Briefed by EPRI.

EPRI’s PRISM and MERGE analyses were at the center of a meeting with government leaders.

On March 19, EPRI held a briefing on EPRI climate change technology activities for James Connaughton, Chairman of the Council on Environmental Quality; Andrew Karsner, Department of Energy (DOE) Assistant Secretary, Office of Energy Efficiency and Renewable Energy (EERE), and Michael Bruce of the EERE, at the EPRI offices in Palo Alto. EPRI participants included Bryan Hannegan, Chris Larsen, Stu Dalton, Norris Hirota, Omar Siddiqui, Michael Miller, Mark Duvall, Tom Mulford, Kurt Edsinger, David Steinger, and John Novak. During the 2^{1/2}-hour briefing, both Connaughton and Karsner praised EPRI research. Connaughton recommended that EPRI step up communications of Prisms/MERGE and pathways to a full portfolio to high-level officials in the U.S. and overseas. Karsner requested follow up meetings with EPRI to discuss possible collaboration with DOE on compressed air energy storage, ocean/wave energy, and in other areas. For more information, contact John Novak (jnovak@epri.com, 202-293-6180).

Department of Energy Leaders Meet with EPRI, Others on Hydropower.

DOE’s new wind/hydro manager is briefed on research.

Both the current and previous managers of DOE’s Wind/Hydro Program – Alejandro Moreno and Mike Reed, respectively – met March 25 with EPRI’s Doug Dixon and John Novak, EPRI contractors and representatives from the National Hydropower Association to talk about EPRI’s hydropower research. DOE was appropriated \$10 million for fiscal year 2008 for the program, and future DOE support will come from open-competitive solicitation for energy development projects. DOE officials have said they are particularly interested in programs based on industry matching of DOE support. For more information, contact John Novak (jnovak@epri.com, 202-293-6180).

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