

February 2, 2009

VIA E-FILING

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 52-77
Washington, DC 20426

RE: *Southern Company Services, Inc.*
Docket No. ER09-88-____
Compliance Filing

Dear Secretary Bose:

On January 21, 2009, Southern Company Services, Inc. (“SCS”), acting as agent for Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company and Southern Power Company (collectively, “Southern Companies”), submitted a filing in compliance with the Commission’s Order issued December 18, 2008, in the above-referenced proceeding (“December 18 Order”).¹ This filing included, among other things, a proposed agreement between SCS and the proposed Independent Auction Monitor – The Brattle Group, Inc. (“Brattle”).

The December 18 Order stated that Southern Companies will have 30 days from the date of an order on that compliance filing to initiate operation of their bid-based energy auction in the Southern Balancing Authority Area (the “Auction”).² In order to move forward in preparation for initiation of the Auction, on January 23, 2009, SCS (for itself and as agent for Southern Companies) and Brattle executed an Agreement for Independent Auction Monitoring Services, submitted herewith as Attachment A, so that Brattle may begin to prepare for “day one” of the Auction. While Southern Companies recognize that the Commission must approve the selection of the Independent Market Monitor, it was necessary to execute the agreement with Brattle so the proposed monitor could begin preparation for the start of the Auction. In fact, SCS and Brattle just concluded three days of meetings in order to familiarize Brattle with Southern Companies’ system and operations.

¹ *Southern Co. Svcs., Inc.*, 125 FERC ¶ 61,316 (2008) (“December 18 Order”).

² *Id.* at P 53.

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Brattle is highly respected as one of the leading consulting firms in the field of electric markets and has represented or advised utilities, independent power producers, Regional Transmission Organizations and State commissions. Brattle's consultants regularly assist clients by serving as auction valuation and bidding advisors, auction managers, and as experts in auction theory. Brattle's market power and market structure practice includes market design, market monitoring and investigation of market behaviors, and analyses in support of market-based rate authority and mergers and acquisitions. Within the market design practice, Brattle consultants have advised market participants regarding regulatory reform in electricity and natural gas markets in the United States, Australia, Canada, Denmark, Greece, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Spain, Portugal, Singapore, Turkey, and the United Kingdom. Brattle has also provided consulting services and expert testimony in numerous market investigation matters in the electricity, natural gas, and oil pipeline industries. The résumés of the individuals that will lead Brattle's Independent Auction Monitor team – Dr. Peter Fox-Penner, Dr. Romkaew Broehm, Dr. James Reitzes, Igor Cajkusic, and Attila Hajos – are enclosed as Attachment B.

The executed contract between SCS and Brattle is identical in all respects to the proposed contract submitted on December 21, 2009, with two minor exceptions due to typographical errors in the proposed contract. First, the executed contract corrects the reference in Section 3.2.1.1 to “thirty (90) days” was corrected to read “ninety (90) days.” Second, Section 4.1.1.2 was changed from stating “before the close of the Bid Period” to stating “before the Lock-Down Period.”³ This change was needed to make the SCS-Brattle contract consistent with the Auction Rules accepted by the Commission in the December 18 Order, which provide that Southern Companies may not make any changes to their Available Capacity after the beginning of the Lock-Down Period.⁴ To the extent necessary, SCS respectfully requests that this filing be considered an errata to its January 21, 2009 filing.

³ Section 4.1.1.2 of the SCS-Brattle contract now states, in its entirety, “Verify that any changes made by Southern Companies to their determination of Available Capacity after the opening of the Bid Period but before the Lock-Down Period were made for appropriate reasons.”

⁴ See Auction Rules §§ 5.2.1.2, 6.2.3.

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Thank you for your attention to this matter. Please direct any questions concerning this submission to the undersigned.

Sincerely,

/s/

Kevin C. Fitzgerald
Clifford S. Sikora
Jeffrey M. Jakubiak
David B. Rubin

Counsel for Southern Companies

Attachment

cc: All Parties

Attachment A

**AGREEMENT FOR
INDEPENDENT AUCTION MONITORING SERVICES**

This Agreement for Independent Auction Monitoring Services (“Agreement”) is entered into this 23rd day of January, 2009, between Southern Company Services, Inc. (“SCS”), for itself and acting as agent for Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, and Southern Power Company, and The Brattle Group, Inc. (“Auction Monitor”). SCS and Auction Monitor are hereinafter sometimes referred to as the “Parties” or individually as a “Party.”

WITNESSETH:

WHEREAS, SCS, acting as agent for Southern Companies (as hereinafter defined) filed with FERC (as hereinafter defined) on October 17, 2008, in Docket No. ER09-88-000, revised and new sheets to a market-based rate tariff that, if accepted, would condition their ability to make certain sales under such tariff, in part, on the establishment of day-ahead and hour-ahead, bid-based energy auctions subject to the oversight of an independent auction monitor;

WHEREAS, on December 18, 2008, FERC issued an order accepting such revised and new sheets subject to certain conditions, such order identified as *Southern Company Services, Inc.*, 125 FERC ¶ 61,316 (2008) (the “Acceptance Order”);

WHEREAS, one of the conditions so established by FERC was that Southern Companies submit to FERC the “contract governing the relationship between them and the Independent Auction Monitor, including the conditions under which Southern Companies may dismiss the Independent Auction Monitor”; and

WHEREAS, Auction Monitor has agreed to serve as such Auction Monitor in accordance with the terms of the Acceptance Order, as may be amended, and this Agreement.

NOW THEREFORE, in consideration of the mutual promises contained herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the Parties hereby agree as follows:

**Article 1
Purpose of Agreement**

The purpose of this Agreement is to establish the terms pursuant to which: (a) Auction Monitor will provide Auction Monitoring Services with regard to the Energy Auctions; (b) the Auction Monitor will be paid for the provision of such Auction Monitoring Services; and (c) SCS and Southern Companies will provide to Auction Monitor such information and assistance as Auction Monitor deems reasonably necessary to fulfill its obligations under this Agreement.

Article 2

Definitions and Interpretation

2.1 Definitions

Unless the context otherwise specifies or requires, capitalized terms used herein shall have the respective meanings provided herein for all purposes of this Agreement. Any capitalized term not defined in this Article 2 shall be interpreted based on the definition of such term in the Energy Auction Rules (as herein defined) or, if not defined in the Energy Auction Rules, in a manner consistent with common usage in the electric utility industry.

- 2.1.1 Acceptance Order has the meaning set forth in the Recitals, above.
- 2.1.2 Agreement means this Agreement for Independent Auction Monitoring Services.
- 2.1.3 Applicable Laws means all applicable statutes, laws, rules, codes, ordinances, regulations, decisions, orders, decrees, policies, guidance, directives or common law of any federal, state, local, administrative or other governmental body, authority or entity with jurisdiction over a Party, the Parties and/or performance under this Agreement, whether now in effect or imposed or revised during the term of this Agreement (including any judicial or administrative interpretation) that, in any manner, affect this Agreement, one or both of the Parties, or performance under this Agreement.
- 2.1.4 Auction Monitoring Costs has the meaning set forth in Section 7.2.1.
- 2.1.5 Auction Monitoring Services means those services provided by Auction Monitor in accordance with and consistent with this Agreement.
- 2.1.6 Auction Monitor Representatives means (i) Auction Monitor, its affiliates (if any) and its subcontractors (if any), (ii) the officers, directors, employees (full time, part time, temporary or leased), representatives and agents of each of them, and (iii) all other persons or entities for whose conduct Auction Monitor, any affiliates, and any subcontractors are responsible in their performance under this Agreement.
- 2.1.7 Bidder Confidential Information means information, documents, or other materials (i) provided by a Bidder to Auction Administrator, including but not limited to Bid Information, or (ii) otherwise designated as confidential by a Bidder on grounds that such information is customarily treated by such Bidder as sensitive or proprietary, and which is not available to the public, and which, if disclosed, would subject such Bidder or its customers to risk of competitive disadvantage or other business injury; provided, however, that Bidder Confidential Information shall not include: (a) any information or document

contained in the files of a federal or state agency, or any federal or state court, unless the information or document has been determined to be protected by such agency or court, or (b) information that is public knowledge, or which becomes public knowledge, other than through disclosure in violation of this Agreement.

- 2.1.8 Breach means the failure of a Party to perform or observe any material term or condition of this Agreement.
- 2.1.9 Confidential Information means, collectively, Southern Confidential Information and Bidder Confidential Information.
- 2.1.10 Effective Date shall have the meaning set forth in Section 3.1.2.
- 2.1.11 Energy Auction Rules means the “Rules of the Bid-Based Energy Auction” set forth in the “Market Based Rate Power Sales Tariff of Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, and Southern Power Company,” such tariff identified as Southern Company Services, Inc., FERC Electric Tariff, Second Revised Volume No. 4, as such tariff and/or Energy Auction Rule may be revised from time to time.
- 2.1.12 Event of Default means a Party’s failure to remedy a declared Breach of this Agreement within thirty (30) days of written declaration of such Breach by the non-breaching Party to the breaching Party.
- 2.1.13 FERC means the Federal Energy Regulatory Commission, or any successor thereto.
- 2.1.14 Indemnifying Party has the meaning set forth in Article 8.
- 2.1.15 Interested Bidder means, in the context of Bidder Confidential Information, the Bidder that provided such information, documents, or other materials to Auction Administrator or otherwise designated as confidential.
- 2.1.16 SCS Indemnitees means SCS, Southern Companies, The Southern Company, its wholly and partially owned subsidiaries, the respective directors, officers, employees, representatives, agents, successors and assigns of each of them and all persons or entities claiming through them.
- 2.1.17 Southern CEII means information, documents, or other materials that: (i) qualify as Confidential Energy Infrastructure Information, as that term is defined by FERC, and (ii) are provided by SCS or Southern Companies to Auction Administrator, Auction Monitor, or otherwise designated as Southern CEII by SCS or Southern Companies.

- 2.1.18 Southern Companies means Alabama Power Company, Georgia Power Company, Gulf Power Company, Mississippi Power Company, and Southern Power Company.
- 2.1.19 Southern Confidential Information means information, documents, or other materials (i) provided by SCS or Southern Companies to Auction Administrator or Auction Monitor, including but not limited to Available Capacity amount, Commitment Cost amounts, and Seller Offer Price amounts, or (ii) otherwise designated as confidential by SCS or Southern Companies on grounds that such information is customarily treated by SCS and/or Southern Companies as sensitive or proprietary, and which is not available to the public, and which, if disclosed, would subject SCS and/or Southern Companies and/or any of their customers to risk of competitive disadvantage or other business injury; provided, however, that Southern Confidential Information shall not include: (a) any information or document contained in the files of a federal or state agency, or any federal or state court, unless the information or document has been determined to be protected by such agency or court, or (b) information that is public knowledge, or which becomes public knowledge, other than through disclosure in violation of this Agreement.
- 2.1.20 Term shall have the meaning set forth in Section 3.1.1.
- 2.1.21 Transfer shall have the meaning set forth in Article 12.
- 2.1.22 Workplace Standards has the meaning set forth in Section 16.9.1.

2.2 Interpretation

- 2.2.1 the singular includes the plural and vice versa;
- 2.2.2 reference to any Party includes such Party's legal and/or permitted successors and assignees, and reference to a Party in a particular capacity excludes such Party in any other capacity or individually;
- 2.2.3 reference to any person or entity shall include that person's or entity's successors and permitted assigns and, in the case of a government authority, any entity succeeding to its functions and capacities;
- 2.2.4 reference to any agreement (including this Agreement), document or instrument means such agreement, document or instrument as amended or otherwise modified and in effect from time to time in accordance with the terms thereof and, if applicable, the terms hereof;
- 2.2.5 unless the context indicates otherwise, a reference to any Section or Schedule means such Section of this Agreement or such Schedule to this Agreement, as

the case may be, and references in any Section or definition to any clause or paragraph means such clause or paragraph of such Section or definition;

- 2.2.6 “hereunder”, “hereof”, “hereto” and words of similar import shall be deemed references to this Agreement as a whole and not to any particular Section or other provision hereof;
- 2.2.7 “including” (and with correlative meaning “include”) means including but not limited to;
- 2.2.8 relative to the determination of any period of time, “from” means “from and including”; “to” means “to but excluding” and “through” means “through and including”; and
- 2.2.9 reference to any law, regulation, rule, or protocol means such law, regulation, rule, or protocol as amended, modified, codified or reenacted, in whole or in part and in effect from time to time, including rules and regulations promulgated thereunder.

2.3 No Interpretation Based on Other Agreements

All terms defined and/or used in this Agreement shall be interpreted without regard for how such terms may be defined and/or used in other agreements between the Parties and/or their affiliates.

2.4 Titles and Headings

Section and Schedule titles and headings in this Agreement are inserted for convenience and ease of reference only and are not intended to affect the meaning or interpretation of this Agreement.

Article 3 Term and Termination

3.1 Term

- 3.1.1 This Agreement shall become effective on the Effective Date and shall continue in effect for the initial three-year term of the Energy Auctions, unless terminated earlier in accordance with the terms hereof (the “Term”).
- 3.1.2 The effective date (“Effective Date”) shall be the date this Agreement is executed by both Parties (or, if executed on different dates, the latter of such two dates) subject to a determination by FERC that this Agreement satisfies the condition set forth in the Acceptance Order that Southern Companies submit to FERC the “contract governing the relationship between them and the Independent Auction Monitor, including the conditions under which Southern

Companies may dismiss the Independent Auction Monitor” (Acceptance Order at ¶ 50).

- 3.1.3 If, however, FERC does not issue such a determination in a manner acceptable to SCS, upon written notice by SCS to Auction Monitor: (i) this Agreement shall become null and void *ab initio* and (ii) all obligations under this Agreement shall be null and void, provided, however, that SCS shall be responsible for compensating Auction Monitor for efforts expended in anticipation of its role as Auction Monitor in a manner consistent with Section 7.2.

3.2 Termination

3.2.1 Termination by Either or Both Parties

A Party may terminate this Agreement:

- 3.2.1.1 after an Event of Default by the other Party, as the result of a non-defaulting Party delivering a written termination notice to the defaulting Party, whereupon this Agreement shall terminate on the termination date specified in such notice, subject to any necessary FERC approval, which date shall be no less than ninety (90) days after the date of the termination notice; or
- 3.2.1.2 with the express, written consent of the other Party.

3.2.2 Termination by Auction Monitor

In addition to its rights under Section 3.2.1, Auction Monitor may terminate this Agreement for any reason by delivering a written termination notice to SCS, whereupon this Agreement shall terminate on the termination date specified in such notice, which date shall be the date a replacement Auction Monitor acceptable to SCS and FERC (in the case of SCS, such acceptance not unreasonably withheld) is able to begin performing auction monitoring services in a manner consistent with any FERC order finding such new market monitor acceptable.

3.2.3 Accumulated Amounts Owed

The accrued obligation of a Party to pay monies to the other Party shall survive termination of this Agreement unless and until all such monies have been paid in full.

Article 4 Obligations of Auction Monitor and Southern Companies

4.1 Obligations of Auction Monitor

- 4.1.1 Auction Monitor shall, in accordance with this Agreement:

- 4.1.1.1 Verify that all Available Capacity is offered into the Energy Auctions in a manner consistent with the Auction Rules;
 - 4.1.1.2 Verify that any changes made by Southern Companies to their determination of Available Capacity after the opening of the Bid Period but before the Lock-Down Period were made for appropriate reasons;
 - 4.1.1.3 Verify that the Energy Auction process was conducted properly, including the determination of the Seller Offer Prices and the determination of the winning bidders;
 - 4.1.1.4 Verify that information on Energy Auction results was properly provided to either a reputable index developer or a data hub;
 - 4.1.1.5 Answer questions from third parties with regard to the integrity of the Energy Auction process and results;
 - 4.1.1.6 Report to FERC every twelve (12) months regarding the functioning of the Energy Auctions, such reports to include, at a minimum, the following: (a) the clearing price for each Energy Auction; (b) the amount of Energy offered and sold by each seller (identified by name) in each Energy Auction; and (c) the amount of Energy bid on and purchased by each buyer in each Energy Auction; and (d) any instances where Auction Monitor was unable to verify Southern Companies' Available Capacity calculations and inputs, or where issues arose involving availability or the terms of transmission service needed to accommodate an Energy Auction purchase; and
 - 4.1.1.7 Report to FERC any complaints relating to the Energy Auctions or other serious matters as soon as possible (rather than waiting for the next report).
- 4.1.2 Auction Monitor is authorized to: (a) verify Southern Companies' Available Capacity calculations, including the inputs into those calculations; and (b) confirm that any transmission service necessary to accommodate a purchase under the Energy Auctions is not unreasonably withheld.
 - 4.1.3 Auction Monitor has independent authority to prepare and submit all such reports described herein without any prior review or approval by Southern Companies or any other outside sources.
- 4.2 Obligations of Southern Companies
- 4.2.1 So that Auction Monitor may fulfill its obligations under this Agreement:

- 4.2.1.1 SCS shall cause Auction Administrator to provide to Auction Monitor the following information on an ongoing basis, such frequency to be determined by Auction Monitor but no more than once per day:
 - 4.2.1.1.1 All information provided by Southern Companies to Auction Administrator, including, but not limited to: (a) the number of Firm LD DAE Blocks made available to sell, (b) the number of Recallable DAE Blocks made available to sell, (c) any inter-dependency between DAE Blocks, (d) supply curve representing the amount of HAE Power made available to sell, and (e) Seller Offer Prices for DAE Blocks and for HAE Power supply curve;
 - 4.2.1.1.2 Bid Information;
 - 4.2.1.1.3 DAE Market Clearing Heat Rates, DAE Market Clearing Prices, and HAE Market Clearing Prices; and
 - 4.2.1.1.4 DAE Blocks and HAE Power awarded, identifying counterparties and volumes.
- 4.2.1.2 SCS shall provide Auction Monitor full access to Southern Companies' Open Access Same-Time Information System (OASIS), such level of access equivalent to that of a transmission customer.
- 4.2.1.3 SCS shall provide or cause Southern Companies to provide to Auction Monitor, on an ongoing or incidental basis, any additional information reasonably determined by Auction Monitor to be necessary to fulfill its obligations under this Agreement.
- 4.2.1.4 SCS shall cause Auction Administrator to provide to Auction Monitor, on an ongoing or incidental basis, any additional information reasonably determined by Auction Monitor to be necessary to fulfill its obligations under this Agreement.
- 4.2.2 Neither SCS nor Southern Companies shall interfere or prevent Auction Monitor and Auction Administrator from communicating on a confidential and reciprocal basis. SCS and Southern Companies expressly authorize Auction Administrator, to the extent such authorization is required, to communicate on a confidential basis with Auction Monitor to the extent such communication is reasonably determined by Auction Monitor to be necessary to fulfill its obligations under this Agreement

- 4.2.3 SCS shall designate individuals with the Auction Administrator, Southern Company Generation, and Southern Company Transmission that will serve as points of contact for providing information to Auction Monitor. SCS shall also identify to Auction Monitor, on an ongoing basis, all individuals constituting the Auction Administrator.

Article 5 Confidentiality

5.1 Requirement to Maintain Confidentiality

- 5.1.1 Auction Monitor shall protect and preserve the confidentiality of all Confidential Information obtained in connection with the implementation of this Agreement and/or the Energy Auction Rules.
- 5.1.2 All Southern Confidential Information shall remain the property of SCS. All Bidder Confidential Information shall remain the property of the applicable Interested Bidder.
- 5.1.3 Auction Monitor shall use Confidential Information only for purposes of fulfilling its obligations under this Agreement.
- 5.1.4 Auction Monitor may not disclose Confidential Information to any Auction Monitor Representatives except as necessary for Auction Monitor to fulfill its obligations under this Agreement.
- 5.1.5 Except as may be required by subpoena or other compulsory process, Auction Monitor shall not disclose Southern Confidential Information or Southern CEII to any person or entity, except Auction Monitor Representatives, without the prior written consent of SCS. Upon receipt of a subpoena or other compulsory process for the disclosure of Southern Confidential Information or Southern CEII, Auction Monitor shall promptly notify SCS and shall provide all reasonable assistance requested by SCS to prevent disclosure; provided, however, that Southern Confidential Information and Southern CEII may be provided to FERC without prior notification or consent of SCS, but only if Auction Monitor requests privileged treatment for all such Southern Confidential Information or Southern CEII pursuant to 18 C.F.R § 388.112 (2008) or any successor regulation.
- 5.1.6 Except as may be required by subpoena or other compulsory process, Auction Monitor shall not disclose Bidder Confidential Information to any person or entity, except Auction Monitor Representatives, without the prior written consent of Interested Bidder. Upon receipt of a subpoena or other compulsory process for the disclosure of Bidder Confidential Information, Auction Monitor shall promptly notify Interested Bidder and shall provide all reasonable

assistance requested by Interested Bidder to prevent disclosure; provided, however, that Bidder Confidential Information may be provided to FERC without prior notification or consent of Interested Bidder, but only if Auction Monitor requests privileged treatment for all such Bidder Confidential Information pursuant to 18 C.F.R § 388.112 (2008) or any successor regulation.

5.2 Survival of Confidentiality Provisions

5.2.1 Notwithstanding anything in this Agreement to the contrary, the provisions of Section 5.1 shall survive termination or expiration of this Agreement.

Article 6 Complaints; Reports

6.1 Complaints

6.1.1 Generally

6.1.1.1 Any interested party may submit a complaint to Auction Monitor regarding the Energy Auction at the following:

Southern Companies Energy Auction Monitor
Complaints
c/o Dr. Romkaew P. Broehm
The Brattle Group, Inc.
44 Brattle Street
Cambridge, MA 02138
(t) (617) 864-7900
(e) Romkaew.Broehm@brattle.com

6.1.1.2 Such complaints may be made on a confidential basis. Auction Monitor shall assume complainant does not seek confidentiality unless confidential treatment is clearly requested in the complaint.

6.1.1.3 Auction Monitor may request additional relevant information from the complainant as a condition of undertaking any further investigation.

6.1.1.4 Auction Monitor may decline to take further action or carry out further investigation as deemed appropriate in its sole judgment.

6.1.2 Notification; Process

6.1.2.1 Within three (3) business days of receipt of a complaint, Auction Monitor shall notify Southern Companies of the complaint and, unless confidentiality is requested by the complainant, shall provide

Southern Companies with a complete copy of the complaint, redacting any Bidder Confidential Information.

6.1.2.1.1 In the event complainant seeks confidential treatment for the entirety of the complaint, Auction Monitor shall, instead of providing the complete complaint to Southern Companies, provide a summary of the complaint sufficient to allow Southern Companies to reasonably formulate a response.

6.1.2.2 Southern Companies may submit a written response to the complaint to Auction Monitor within ten (10) business days of provision of the complaint or the summary thereof to Southern Companies, or on such other timeline as agreed to by Auction Monitor.

6.2 Reports

Auction Monitor shall provide SCS with a copy of any report submitted to FERC in accordance with this Agreement, simultaneous with the provision of any such report to FERC.

Article 7 Budget; Invoicing and Payment

7.1 Budget

7.1.1 No later than 15 days before the end of a calendar quarter, Auction Monitor shall notify SCS of its anticipated Auction Monitoring Costs for the following calendar quarter.

7.1.1.1 If, at any time during a calendar quarter, Auction Monitor believes that Auction Monitoring Costs for such quarter will exceed 110 percent of the anticipated Auction Monitoring Costs for such quarter as communicated in accordance with Section 7.1.1, Auction Monitor shall immediately provide SCS a revised estimated of anticipated Auction Monitoring Costs for such quarter.

7.1.2 No later than October 1 each calendar year, Auction Monitor shall notify SCS of its anticipated Auction Monitoring Costs for the following calendar year.

7.1.2.1 If, at any time during a calendar year, Auction Monitor believes that Auction Monitoring Costs for such year will exceed 110 percent of the anticipated Auction Monitoring Costs for such year as communicated in accordance with Section 7.1.2, Auction Monitor shall immediately provide SCS a revised estimated of anticipated Auction Monitoring Costs for such year.

7.2 Invoicing and Payment

- 7.2.1 Auction Monitor shall invoice SCS for all costs and expenses reasonably incurred in fulfilling its obligations under this Agreement (the “Auction Monitoring Costs”), utilizing Auction Monitor’s usual and customary commercial practices and rates for consulting services to electric utility clients (including a reasonable level of detail as to charged hours, hourly rates, expenses, and associated narrative descriptions). Auction Monitor shall at all times use reasonable best efforts to use the most cost-effective manner for performing tasks pursuant to this Agreement, consistent with its usual and customary commercial practices, including the development and use of automated systems when practicable and cost-effective to do so.
- 7.2.2 Auction Monitor shall provide such invoices to SCS within 30 days of the end of a calendar month, setting forth Auction Monitoring Costs for the immediately preceding calendar month. Such invoices shall be submitted to the following:
- D. Wayne Moore
Southern Company Services, Inc.
600 North 18th Street
Bin 15N-8289
Birmingham, AL 35203-2206
dwmoore@southernco.com
- 7.2.3 SCS shall pay all invoices provided in accordance with Section 7.2.2 in full within thirty (30) days of receipt. In the event of any dispute regarding an invoice, SCS shall pay the undisputed amount in full within thirty (30) days of receipt and SCS and Auction Monitor shall work in good faith to resolve the dispute regarding the remaining amount.

Article 8 Indemnification

Each Party (the “Indemnifying Party”) shall indemnify and save the other Party and the directors, officers, employees and agents of such other Party harmless from liability, loss, damage, claim, costs and expenses (including reasonable attorney fees) on account of the negligence, fraud, wantonness, and/or or willful misconduct of the Indemnifying Party and its officers, directors, employees or agents in the performance of this Agreement.

Article 9 Standard of Care; Limitation of Liability

- 9.1 Auction Monitor will perform the services with the standard of care normally exercised by professional consulting firms performing comparable services under similar conditions, judged as of the time the services are rendered. Other than such commitment

to a standard of care, Auction Monitor makes no guarantees or warranties, express or implied, with respect to the services to be provided, or that any particular outcome can result from its services.

- 9.2 Except to the extent caused by or resulting from the fraud, bad faith or intentional misconduct of a Party and other than for injuries to third persons or damage to personal property, the cumulative liability of a Party, its affiliates, and their officers, directors, Principals, employees, agents, assigns and successors in interest, to the other Party, its affiliates, and their officers, directors, Principals, employees, agents, assigns and successors in interest, for all claims related to this Agreement, regardless of whether sounding in contract, tort or otherwise, shall be limited to two (2) times the amount paid by SCS to Auction Monitor for the services provided under this Agreement. UNDER NO CIRCUMSTANCES SHALL PARTY, ITS AFFILIATES, AND THEIR OFFICERS, DIRECTORS, PRINCIPALS, EMPLOYEES, AGENTS, ASSIGNS AND SUCCESSORS IN INTEREST BE LIABLE FOR INDIRECT, CONSEQUENTIAL, SPECIAL OR EXEMPLARY DAMAGES.

Article 10 Force Majeure

Neither Party shall be considered to be in default with respect to any obligation hereunder, other than the obligation to pay money when due, if prevented from fulfilling such obligation by Force Majeure. A Party unable to fulfill any obligation hereunder (other than an obligation to pay money when due) by reason of Force Majeure shall give notice and the full particulars of such Force Majeure to the other Party in writing or by telephone as soon as reasonably possible after the occurrence of the cause relied upon. Telephone notices given pursuant to this Article 10 shall be confirmed in writing as soon as reasonably possible and shall specifically state full particulars of the Force Majeure, the time and date when the Force Majeure occurred and when the Force Majeure is reasonably expected to cease. The Party affected shall exercise due diligence to remove such disability with reasonable dispatch, but shall not be required to accede or agree to any provision not satisfactory to it in order to settle and terminate a strike or other labor disturbance.

Article 11 Severability

In the event that any term, covenant or condition of this Agreement, or the application of such term, covenant or condition, shall be held invalid as to any person or circumstance by any governmental authority having jurisdiction, all other terms, covenants or conditions of this Agreement and their application shall not be affected thereby, but shall remain in force and effect unless a governmental authority holds that the provisions are not severable from all other provisions of this Agreement.

Article 12
Assignment

Auction Monitor shall not transfer or assign or otherwise dispose of all or any part of its rights or interests under this Agreement without the prior written approval of SCS which shall not be unreasonably withheld. Sale of all or any part of the stock, partnership, membership or other ownership interest of Auction Monitor shall not be deemed a transfer by Auction Monitor for purposes of this Article 12.

Article 13
Amendments; Interpretation

- 13.1 This Agreement may only be amended by an instrument in writing executed by the Parties.
- 13.2 The interpretation and performance of this Agreement shall be in accordance with the laws of the State of Georgia, without regard to choice of law or conflict of laws principles that would require the application of the laws of a different jurisdiction.
- 13.3 This Agreement shall be considered for all purposes as prepared through the joint efforts of the Parties and shall not be construed against one Party or the other as a result of the preparation, substitution, submission or other event of negotiation, drafting or execution hereof.

Article 14
Entire Agreement

- 14.1 This Agreement constitutes the entire agreement between the Parties regarding the subject matter set forth herein and shall supersede all prior proposals, representations, negotiations, or letters, whether written or oral. The Parties shall not be bound by or be liable for any statement, representation, promise, inducement, or understanding of any kind relating to the subject matter hereof not set forth in this Agreement or any amendment hereto executed by the Parties.

Article 15
Execution and Delivery

- 15.1 This Agreement may be executed in any number of counterparts and, upon execution and delivery by each Party, the executed counterparts together shall have the same force and effect as an original instrument as if all Parties had signed the same instrument. Any signature page of this Agreement may be detached from any counterpart of this Agreement without impairing the legal effect of any signatures thereon, and may be attached to another counterpart of this Agreement identical in form thereto, but having attached to it one or more signature pages. A Party may execute and deliver this Agreement by facsimile transmission of an executed signature page to the other Party.

Article 16

Miscellaneous

16.1 No Relationship

Nothing in this Agreement shall be construed as creating any relationship between the Parties, including any partnership or joint venture, other than that of independent contractors. Nothing in this Agreement nor any action taken hereunder shall be construed to create any duty, liability, or standard of care to any person not a Party to this Agreement. Neither Party shall be empowered, except as expressly stated herein, to act as the other Party's agent or to represent to any third party that such Party has the ability to bind the other Party, without the express permission of the Party to be bound.

16.2 No Waiver by Failure to Enforce

The failure of either Party to enforce at any time any provision of this Agreement shall not be construed as a waiver of such provision. Nor shall such Party's failure to enforce a provision affect in any way the validity of this Agreement or any portion thereof or the right of a Party thereafter to enforce each and every provision of this Agreement. To be effective, a waiver under this Agreement must be in writing and specifically state that it is a waiver. No waiver of any breach of this Agreement shall be held to constitute a waiver of any other or subsequent breach.

16.3 No Third-Party Rights

Nothing in this Agreement, whether express or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any persons other than the Parties and their respective permitted successors and assigns.

16.4 Notices

Unless otherwise provided in this Agreement, any notice, consent, or other communication required to be made under this Agreement shall be in writing and shall be delivered (a) in person; (b) by certified mail (postage prepaid, return receipt requested); (c) by nationally recognized overnight courier (charges prepaid), in each case properly addressed to such Party as shown below; or (d) by electronic mail to the addresses indicated below. Any Party may from time to time change its address for the purposes of notices, consents, or other communications to that Party by a similar notice specifying a new address, but no such change shall become effective until it is actually received by the Party sought to be charged with its contents. All notices, consents, or other communications required or permitted under this Agreement that are addressed as provided in this Section 16.4 shall be deemed to have been given upon delivery.

For SCS:

D. Wayne Moore
Southern Company Services, Inc.
Bin 15N-8289
600 North 18th Street
Birmingham, AL 35203-2206
(t) (205) 257-6208
(e) dwmoore@southernco.com

with a copy to:

G. Edison Holland, Jr., Esq.
Executive Vice President & General Counsel
Bin SC1502
30 Ivan Allen Jr. Blvd. NW
Atlanta, GA 30308
(t) (404) 506-5000
(e) gehollan@southernco.com

For Auction Monitor:

Dr. Romkaew P. Broehm
The Brattle Group, Inc.
44 Brattle Street
Cambridge, MA 02138
(t) (617) 864-7900
(e) Romkaew.Broehm@brattle.com

with a copy to:

Barbara Levine, Esq.
The Brattle Group, Inc.
44 Brattle Street
Cambridge, MA 02138
(t) (617) 864-7900
(e) Barbara.Levine@brattle.com

16.5 Successors and Assigns

Reference to either Party shall be deemed a reference to such Party together with its successors and assigns from time to time.

16.6 Agreement Subject to Applicable Laws

This Agreement is made subject to all existing and future Applicable Laws and to all existing and future duly promulgated orders or other duly authorized actions of governmental authorities having jurisdiction over the matters set forth in this Agreement.

16.7 No Toleration of Unacceptable Behavior (Ethics)

- 16.7.1 Auction Monitor Representatives will, at all times, conduct their business activities pursuant to this Agreement in a highly ethical manner and in compliance with all Applicable Laws. Auction Monitor Representatives must not, at any time, exhibit any of the following behaviors:
- 16.7.1.1 Harassment or discrimination of any kind or character, including but not limited to conduct or language derogatory to any individual, race, gender, color, religion, age, national origin, disability, or veteran status that creates an intimidating, hostile, or offensive working environment. Specific examples include, but are not limited to jokes, pranks, epithets, written or graphic material, or hostility or aversion toward any individual or group.
 - 16.7.1.2 Any conduct or acts such as threats or violence that creates a hostile, abusive, or intimidating work environment. Examples of such inappropriate behaviors include, but are not limited to fighting, abusive language, inappropriate signage, use or possession of firearms on a work site, and destruction of SCS' or SCS employee property or the threat of any of the foregoing.
 - 16.7.1.3 Work practices that are unsafe or harmful to the natural environment.
 - 16.7.1.4 Use of SCS' computers, e-mail, telephone or voice-mail system that in any way involves material that is obscene, pornographic, sexually oriented, threatening, or otherwise derogatory or offensive to any individual, race, color, religion, national origin, sex, age, disability, or veteran status.
 - 16.7.1.5 The use of, being under the influence of, or possession of alcoholic beverages or unlawful drugs on a work site.
 - 16.7.1.6 Engagement in any activity that creates a conflict of interest or appearance of the same, or that jeopardizes the integrity of SCS or Auction Monitor (including but not limited to providing gifts and gratuities to SCS employees).
- 16.7.2 Auction Monitor agrees to communicate these required behavior standards to all Auction Monitor Representatives that assist Auction Monitor in its performance

under this Agreement. Auction Monitor will, at a minimum, comply with these behavior standards and will require and ensure that all Auction Monitor Representatives comply with the same behavior standards in connection with Auction Monitor's performance under this Agreement. Auction Monitor will indemnify and hold harmless SCS Indemnitees from and against any and all claims, demands, suits, or actions of every kind and nature presented or brought for any claim or liability and for all damages and costs incurred by SCS Indemnitees, including attorney fees and costs, arising from or related to Auction Monitor's failure, or the failure of Auction Monitor Representatives, to comply with any of the behavior standards.

16.7.3 Violation by Market Monitor of this Section 16.7 shall constitute an Event of Default by Market Monitor.

16.7.4 If an Auction Monitor Representative observes a SCS employee doing or is ever asked by a SCS employee to do something the Auction Monitor Representative considers to be unethical, illegal, or in violation of these behavior standards, SCS expects Auction Monitor to notify SCS management immediately or call SCS Workplace Ethics (at 1-800-754-9452).

16.8 Compliance with Site and Security Rules

Auction Monitor acknowledges that SCS has site rules at its various premises and facilities with which Auction Monitor Representatives must comply. Auction Monitor also acknowledges that all Auction Monitor Representatives performing services on a work site or accessing SCS' electronic communication systems must comply with SCS' electronic communications policies. Auction Monitor agrees that it will ensure that Auction Monitor Representatives, while on any work site, comply with all site, safety, health and security rules and, at all times when using SCS' electronic communication systems, comply with SCS' electronic communications policies. If, at any time, SCS concludes that Auction Monitor is not in compliance with the site, safety, health and security rules or electronic communications policies, SCS will have the right, in its sole discretion, to refuse work site entry to (or to have removed from any work site) Auction Monitor and any Auction Monitor Representatives, and to terminate Auction Monitor's or Auction Monitor Representatives' access to SCS' electronic communication systems.

16.9 Drug- and Alcohol-Free Workplace and Behavioral Standards

16.9.1 Auction Monitor understands and acknowledges that SCS is committed to maintaining a drug- and alcohol-free workplace and requires that anyone working on SCS premises or performing services that directly impact SCS facilities, equipment, processes, operations or personnel: (a) is free from the effects of alcohol or drugs that may impair work performance; and (b) meets certain trustworthiness and behavioral standards. Auction Monitor agrees that it will, at all times during the term of this Agreement, maintain a safe, secure, and

drug- and alcohol-free workplace. All Auction Monitor Representatives should avoid involvement with drugs or alcohol use that could compromise their fitness for duty or the ability to work safely. All Auction Monitor Representatives performing services in connection with this Agreement must also be trustworthy, exhibit good behavioral standards, and be authorized to work in the United States of America. The foregoing provisions are referred to collectively as the “Workplace Standards”.

- 16.9.2 Auction Monitor agrees that, upon request by SCS, it will provide SCS with a list of individuals and other identifying information deemed necessary by SCS whom Auction Monitor is either using or plans to use to perform services in connection with this Agreement. Solely for purposes of ensuring compliance with this provision of the Agreement, SCS may request drug and/or alcohol testing of any Auction Monitor Representative that SCS believes to be in violation of the Workplace Standards. Failure of any Auction Monitor Representative to submit to a background investigation or a drug and alcohol test requested in accordance with the foregoing may result in a restriction of such individual’s access to premises of SCS, Southern Companies, and their affiliates or in a request by SCS that the individual not perform services under this Agreement. If, at any time during the term of this Agreement, SCS learns any Auction Monitor Representative did not comply with, or fails to meet the requirements of, the Workplace Standards, SCS may, in its sole discretion, exercise any and all of its legal and equitable remedies, including the rights (i) to prohibit non-compliant Auction Monitor Representatives from entering SCS premises, (ii) to remove non-compliant Auction Monitor Representatives from SCS premises, and/or (iii) to request that the non-compliant Auction Monitor Representatives not perform services under this Agreement. Auction Monitor must promptly notify SCS of any incident of known or suspected unlawful involvement with drugs; possession of alcoholic beverages on SCS premises or consumption of alcoholic beverages during work hours or on SCS premises; any felony conviction, or other serious behavioral incident involving Auction Monitor Representatives; and any potentially serious hazard to Auction Monitor Representatives while on SCS premises. In addition to the general indemnification provisions set forth herein, Auction Monitor will indemnify and hold harmless SCS Indemnitees from and against any liability arising out of or in connection with any incident caused by, arising out of or associated with compliance or non-compliance with the provisions of this Section 16.9 or any SCS action or inaction with regard to any aspect of the Workplace Standards.
- 16.9.3 SCS reserves the right to conduct audits at any time during the term of the Agreement to determine Auction Monitor’s compliance with this provision of this Agreement. This reservation of rights and SCS’ discretion to exercise those rights will not relieve Auction Monitor of any obligation to comply with the provisions of this Section 16.9 nor will it constitute the exercise of control over

the manner and means by which Auction Monitor implements this provision of this Agreement.

- 16.9.4 Unless otherwise expressly waived as provided in the foregoing sentence, no act or omission by SCS will operate as a waiver of SCS' rights to enforce the provisions of this Section 16.9 or Auction Monitor's duty to comply with these provisions.

16.10 Right to Remove Auction Monitor Representatives

Auction Monitor agrees that if SCS, in its sole discretion and after reasonable consultation with Auction Monitor, determines that any Auction Monitor Representative has violated any provision of Section 16.7, 16.8, or 16.9, then SCS may request that Auction Monitor remove such Auction Monitor Representative from the performance of services under this Agreement, and Auction Monitor will replace such Auction Monitor Representative with a suitable Auction Monitor Representative at no additional cost to SCS.

16.11 Communication with Auction Monitor Representatives

Auction Monitor represents and warrants that it has communicated and translated to all Auction Monitor Representatives all applicable safety, health, and legal requirements and job-related duties and hazards (including, without limitation, (i) Applicable Laws and Occupational Safety and Health Administration (OSHA) requirements; (ii) Auction Monitor's safety program; (iii) any project-specific safety plan; (iv) any information specific to the services performed under this Agreement; (v) any work site hazard; and (vi) obligations under this Agreement). To ensure ready communication of information at all times at any work site, if any Auction Monitor is non-English-speaking, Auction Monitor agrees that it will ensure the availability of an English-speaking Auction Monitor Representative who is able to communicate with, and translate for, the non-English speaking Auction Monitor Representatives. If non-English speaking Auction Monitor Representatives are divided into separate work groups, Auction Monitor must make an English-speaking Auction Monitor Representative available for each such group. Auction Monitor agrees to continue this communication and translation program for all new Auction Monitor Representatives and on each project and to provide necessary informational updates for each project throughout the term of this Agreement.

16.12 Compliance with Applicable Laws

- 16.12.1 Auction Monitor will comply and will require all Auction Monitor Representatives to comply, at all times, with all Applicable Laws. Without limiting the generality of the foregoing obligation, Auction Monitor agrees that it will adhere to (a) all labor laws and regulations including the use of U.S. citizens or properly documented alien workers under the Immigration Act of 1990 and the Immigration and Nationality Act of 1952, as amended, and (b) all safety and health standards promulgated under the Occupational Safety and Health Act of 1970 and by any state or local health or safety authority with

jurisdiction over the work or services performed or to be performed under this Agreement. Auction Monitor expressly agrees to indemnify, defend and hold harmless SCS Indemnitees from and against all claims, demands, suits, actions, penalties or fines of every kind and nature presented or brought for any claim or liability arising from or based on the violation of any Applicable Laws on the part of Auction Monitor Representatives, regardless of how the same may be caused, and whether or not the same may be caused by or may arise out of the joint, concurrent or contributory negligence of any SCS Indemnitee.

16.12.2 Auction Monitor will not make or authorize any direct or indirect contribution whatsoever to any federal, state, or local political candidate, public official, office holder, political party, committee or agency thereof on behalf of SCS. Auction Monitor will further make no direct or indirect contribution of any kind or nature to any person who may be considered a candidate for a state public service commission office, or to any member of the state public service commission, or to any state public service commission employee, on behalf of any officer or employee of SCS.

16.12.3 Auction Monitor hereby represents and warrants as follows at all times during the term of this Agreement: (1) neither it, nor any of its beneficial owners, is a Specially Designated National (SDN) as defined by U.S. Department of the Treasury Office of Foreign Asset Control (OFAC); (2) neither it, nor any of its beneficial owners, is a citizen of a country subject to an OFAC Country Sanction; (3) it, and all of its beneficial owners, are in material compliance with any and all laws and regulations relating to the prevention of money laundering and the financing of terrorism to which they are expressly subject.

16.13 GSA Flowdown Provisions

16.13.1 Certain of SCS' affiliates are government contractors under an Areawide Public Utilities Contract with the General Services Administration of the United States Government. Auction Monitor agrees that each of the clauses contained in the Federal Acquisition Regulations referred to below will be incorporated into and form a part of this Agreement as if set forth herein in full text, and Auction Monitor will comply therewith, if the amount of this Agreement and the circumstances surrounding its performance require SCS to include such clause in contracts between SCS and others:

- (1) 52.203-6 Restrictions on Subcontractor Sales to the Government (Sep. 2006);
- (2) 52.203-7 Anti-Kickback Procedures (July 1995);
- (3) 52.219-8 Utilization of Small Business Concerns (May 2004);
- (4) 52.219-9 Small Business Subcontracting Plan (Sept. 2006);
- (5) 52.222-21 Prohibition of Segregated Facilities (Feb. 1999);
- (6) 52.222-26 Equal Opportunity (Apr. 2002);
- (7) 52.203-3 Gratuities (Apr. 1984); and

(8) 52.223-14 Toxic Chemical Release Reporting (Aug. 2003).

16.13.2 Upon written request, SCS will provide the full text of any of the above clauses incorporated herein by reference.

16.13.3 Auction Monitor warrants and represents that neither it nor any of the Auction Monitor Representatives is debarred, suspended or proposed for debarment as a contractor or subcontractor to any department, agency or other division of the United States Government. In the event that Auction Monitor becomes debarred, suspended or proposed for debarment during the term of this Agreement, Auction Monitor will immediately notify SCS.

16.13.4 If Auction Monitor is subject to the requirements set forth in Federal Acquisition Regulations 52.219-8 and 52.219-9, Auction Monitor will, upon request from SCS, provide a written report(s) to SCS that sets forth the total dollar amount paid to any subcontractor under this Agreement that is a small business concern, veteran-owned small business concern, service-disabled veteran-owned small business concern, HUBZone small business concern, small disadvantaged business concern, or women-owned small business concern.

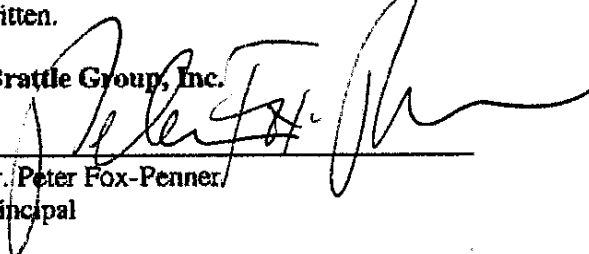
IN WITNESS WHEREOF, the Parties have caused this Agreement to be executed by their duly authorized officers, all as of the day and year first herein written.

Southern Company Services, Inc.

By: 
Charles D. Long, IV
Vice President, Fleet Operations and Trading

Date: January 23, 2009

The Brattle Group, Inc.

By: 
Dr. Peter Fox-Penner
Principal

Date: January 23, 2009

Attachment B

Peter Fox-Penner is an economist with an engineering education and more than 30 years of experience in regulated industries, energy policy, and environmental issues. In a career that has spanned consulting, senior government service, and academia, he has assisted numerous public and private clients in settings that include expert testimony, publications and speeches, and advice to senior management and boards. He is the author of numerous publications and books and a frequent speaker at conferences and meetings.

Dr. Fox-Penner's longest area of specialization has been electricity market policies and regulation. In this area he has advised most major U.S. energy companies and grid operators, and government agencies, as well as a number of international clients, on electric policy issues. He is the author of the *Electric Utility Restructuring: A Guide to The Competitive Era*, a best-selling 1997 work on the subject, and many other publications in electric and energy policy. He served as the lead expert in the prosecution of market manipulation during the California energy crisis of 2000-2001. His work in this subject area has been cited by the Supreme Court and other authorities.

Recently, Dr. Fox-Penner returned to his earlier focus on energy security, oil markets, and climate change. He is co-leading *Brattle's* expanding work in energy security policies. He is also returning to his early work in the area of utility resource planning and energy efficiency programs.

Outside of his duties as a *Brattle* Group principal, Dr. Fox-Penner previously served as board member of the Global Energy Group. He is a Managing Member of *ENpartners*, a small green technology investment firm that is in the process of merging with a solar and lighting focused ESCO. He has served on the board of Environment 2004 and the Environmental Alliance and as an advisor to the Progressive Policy Institute and several Presidential Campaigns.

As co-chairman of the firm, Dr. Fox-Penner directed the firm's external strategy formulation and execution. Since assuming this role in 2001, he has led the firm through six consecutive years of growth and acquisitions.

Dr. Fox-Penner received his B.S. in Electrical Engineering (1976) and his M.S. in Mechanical Engineering (Energy Policy, 1978) from the University of Illinois, and his Ph.D. in Economics from the Graduate School of Business, University of Chicago (1989).

REPRESENTATIVE EXPERIENCE

Regulated Industries and Electric Restructuring

- Electric utility restructuring
- Antitrust, market power, and merger-related issues in regulated industries
- Network and transmission pricing, access rules, and governance
- Economic and policy issues in public interest utility programs

- Load and sales forecasting, pricing, and new product analysis

Energy, Environmental, and Technology Policy

- Global climate change policies
- Energy security policies and transportation energy use
- Technology and Market Evaluations
- Public Policies Towards New Technologies and R& D
- Energy efficiency—economics and policy
- Oil market economic policy questions

EMPLOYMENT HISTORY

- 2008 Principal and Chairman Emeritus, *The Brattle Group*, Washington, DC
- 2007-2008: Principal and Co-Chairman, *The Brattle Group*, Washington, DC
- 2001-2007: Principal and Chairman, *The Brattle Group*, Washington, DC
- 1996-2001 Principal and Director, *The Brattle Group*, Washington, DC
- 1993-1996: Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, United States Department of Energy
- Senior Advisor for Technology Policy, Office of Science and Technology Policy, Executive Office of the President
- Assistant to the Deputy Secretary of Energy
- 1989-1993: Vice President, Charles River Associates, Boston, MA
- 1991-1993: Professorial Lecturer, Center for Energy and Environmental Studies, Boston University
- 1987-1989: Senior Associate, Charles River Associates
- 1980-1983: Research Engineer and Chief Research Engineer, Illinois Governor's Office of Consumer Service, Chicago, IL
- 1977-1980: Research Assistant and Research Engineer, Office of Vice Chancellor for Energy Research, University of Illinois, Urbana, IL

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Electric Utility Restructuring: A Guide to the Competitive Era. Vienna, VA: Public Utility Reports, 1997

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With Diana Moss. *Network Access, Regulation and Antitrust.* Introduction “Economics of Legal Relationships.” Routledge (London), 8th Vol. in series, 2005, pp.1-9.

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“Energy Policy: Today's View from the Federal Government,” in *The Energy Crisis: Unresolved Issues and Enduring Legacies*, David Feldman, ed., Johns Hopkins University Press, 1996.

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With Donna Amado. "Net Energy Effects and Resource Depletion: An All-Oil Economy." Center for Advanced Computation Document 231, April 1977.

"Standardization of Energy Accounting Techniques." Center for Advanced Computation Technical Memo 83, January 1977.

With Jaap Spek. "Stockpile Optimization and Versatility Consideration for Strategic and Critical Materials." Center for Advanced Computation Document 217, May 1976.

"Energy Requirements and Aerosol and Alternative Packaging: A Case Study." Center for

Advanced Computation Document 204, February 1976. 2nd revision, July 1976.

With Bruce Hannon. “The Energy Research Group Resource Energy-Employment Model and Its Uses in Stockpile Policymaking.” Report to the Office of Preparedness, General Services Administration, July 1975.

“The Coal Future: Capital and Fuel Cycle Energy Costs of a 1000 MW Nuclear Reactor.” Appendix B to Michael Rieber’s Center for Advanced Computation Document 163, May 1975.

“Summary of Techniques Used for Calculating the Energy Costs of Constructing a Commercial Nuclear Reactor.” Center for Advanced Computation Technical Memo, April 1975.

“The Dollar, Energy and Labor Impact of 1971 Regular Route Intercity Bus Transportation.” Center for Advanced Computation Technical Memo 31, July 1974.

“Energy Intensity of Motorcycle Travel.” Center for Advanced Computation Technical Memo 30, July 1974.

SELECTED CONFERENCE/WORKSHOP PARTICIPATION

“Smart Grid Observations on the Even of the Obama Administration” (talking points). Presented at the GridWise Alliance Membership Meeting, Houston, TX, December 9, 2008.

“A New Electricity Business Model for a Low Carbon World.” Presented at 2008 Marketing Executives’ Conference Retreat, Coeur d’Alene, Idaho, October 12, 2008.

“Supplying the Navy’s Energy: Trends and Challenges.” By Peter Fox-Penner and Dean Murphy, Presented at NAVFAC, May 28, 2008.

“Transforming America’s Power Industry: The Investment Challenge, Preliminary Findings.” Presented at Edison Foundation Conference, Keeping the Lights On: Our National Challenge, New York City, April 21, 2008.

“Global Climate Change: Exploring the Implications for Travel & Tourism.” Presented at the Travel Industry Association 2008 Policy Council Meeting, Washington, DC, March 13, 2008.

“Developments and Issues in Utility Energy Efficiency – 2008.” Presented to Consumers Affairs Committee of the National Association of Regulatory Utility Commissioners (NARUC), Washington, DC, February 17, 2008

- “Electric Rate ‘Decoupling’ and Energy Efficiency Programs.” EEI’s 2007 Spring Legal Conference, Charleston, SC, April 16, 2007.
- “Overview of Demand-Side Climate-Friendly Technologies.” Presented at The Edison Foundation Climate Change Technologies in the Power Sector Workshop, December 7, 2006.
- “Why Are Electricity Prices Increasing? An Industry Wide Perspective.” Presented at the Foundation for American Communications’ Seminar (FACS), November 2, 2006.
- “Why Are Electricity Prices Increasing?” Presented at Edison Electric Institute’s Annual Conference, June 20, 2006.
- “Renewable Energy and the Oil/Gas Price Shock.” Presented at ACORE’s Renewable Energy in America: Policies for Phase II, Washington, DC, October 17, 2005.
- “The Global Power Industry: Is it Really Back to the Future?” Presented at The Discover Showcase, Toronto, Canada, October 25, 2004.
- “Natural Gas - Electric Issues in New England.” By Peter Fox-Penner and Greg Basheda. Presented at Edison Electric Institute’s New England CEO Dialogue, Manchester, New Hampshire, April 27, 2004.
- “Efficient Grid Expansion and Participant Funding.” By Peter Fox-Penner. Presented at the Harvard Electric Policy Group meeting, December 11, 2003.
- “The Role of an Expert Witness in Testimony and Litigation Support: What We Teach Our Own.” By Peter Fox-Penner and Lynda Borucki. Presented at the Energy Bar Association’s Mid Year Meeting, December 5, 2003.
- “The Role of Alternative Energy in the US Supply.” By Peter Fox-Penner and Adam Schumacher. Presented to the 54th Annual Program on Oil and Gas Law, Houston, Texas, February 20-21, 2003.
- “Market Measurement and The Delivered Price Test Under Standard Market Design.” By Peter Fox-Penner, Gary Taylor, Romkaew Broehm and Metin Celebi. Presented to the Staff of the Federal Energy Regulatory Commission, November 15, 2002.
- “Enron and Electricity Deregulation.” Presented at Le Centre Francais sure les Etats-Unis (CFE), May 15, 2002.
- “At the Crossroads or on the Brink? U.S. Electric Industry Trends in Early 2002.” Presented at Cooperative Finance Corporation’s CEO Conference, April 10, 2002.

- “Revenues, Regulations and ITC Business Models,” Presented at the Executive Transmission Forum, January 29, 2002.
- “A ‘Securities’ Versus ‘Antitrust’ of the Competitive Power Industry and its Implication for RTO Market Monitoring.” Remarks before the American Antitrust Institute Conference on Electricity Market Monitoring, December 11, 2001.
- “What Does the California Experience Tell Us About Fixing the Rest of America’s Power Markets?” By Peter Fox-Penner and Joseph B. Wharton. Presented at the National Association Business Economics Regional/Utility Roundtable, April 24, 2001.
- “Taming the Lions in America’s Electric Markets: Five Major Challenge.” Presented at National Governors’ Association Center for Best Practices, Executive Policy Forum on Energy, “*Is Electricity Restructuring in Jeopardy?*” Washington, DC, April 5, 2001.
- “The Challenge to Co-operatives in the Electric Power Industry of the 21st Century.” NRECA’s 30th Annual CEO Leadership Conference. Keystone, CO, August 2, 2000.
- “Price-Responsive Electric Demand: A National Priority.” The Electric Power Research Institute’s International Energy Pricing Conference. Washington, DC, July 26, 2000.
- “Incentives, Regulation and Transmission Companies: One Practioner’s View.” Presented to The Federal Energy Regulatory Commission’s RTO Staff. Washington, DC, July 16, 1999.
- “ISOs, Transcos, Gridcos, and Long-Run Power Industry Efficiency.” Federal Energy Bar Association’s Mid-Year Meeting. Washington, DC, December 4, 1998.
- “Market Power Issues in Restructured Electric Power Markets.” American Bar Association’s Satellite Seminar, “Critical Federal and State Practice Issues in Electricity Deregulation.” Washington, DC, December 3, 1998
- “SAVIOR OR BUREAUCRAT? ISOs, Competition, and Independent Transmission Companies.” Winning with Retail Competition, 2nd Annual PUR Conference, Arlington, VA, June 22, 1998.
- “The Evolution of the Energy Services Industry.” *Have it Your Way: Buying and Saving Energy in the Age of Customer Choice*, Annual Meeting of Energy Management Consortium and the Northeast Energy Efficiency Council, Boston, MA, September 18, 1997.
- “Volatility and Stability in the Deregulated Generation Marketplace.” Restructuring and Convergence, Successful Strategies in the Energy Services Marketplace, Arlington, VA, May 22, 1997.
- “Progress and Promise: The Clinton Administration’s Efforts in Fostering Sustainable

Development.” Global Accords for Sustainable Development: Enabling Technologies and Links to Finance and Legal Institutions Conference, M.I.T., Cambridge, MA, September 5, 1996.

Invited Speaker, Fourth Biennial Conference of the International Society for Ecological Economics, Boston, MA, August 7, 1996.

“Linking Energy, Environment, and Technology to the Economy.” Globalcon Energy and Environment Exposition, April 3, 1996.

21st Annual Illinois Energy Conference, November 1996.

Civil Engineering Research Foundation, Washington meeting, October 12, 1995.

“Technology and Economic Growth: The Government's Role.” M.I.T. Club of Washington, DC, October 10, 1995.

“The Impact of Government Budget Changes and Restructuring on Engineering.” ASME and the Public Lecture Series, Washington, DC, September 21, 1995.

“Energy - Environment - Technology: Two Visions, Two Directions.” *Proceedings of the 1995 International Energy and Environment Congress*. Association of Energy Engineers, Richmond, VA, 1995.

“The Federal Role in Energy Efficiency.” Eighth Biannual DSM Evaluation Conference, Chicago, IL, August 24, 1995.

Invited Speaker, Seventh National DOE/EPRI Demand-Side Management Conference, Dallas, TX, June 28, 1995.

“Utility Restructuring and Regulatory Reform.” Invited Presentation, National Association of Regulatory Utility Commissioners Attorneys' Conference, Tucson, AZ, May 18, 1995.

Invited Speaker, Conservation Committee, Semi-Annual Meetings of the National Association of Regulatory Utility Commissioners, 1994 and 1995.

Invited Panelist, OECD Seminar on Sustainable Production and Consumption, Massachusetts Institute of Technology, December 19, 1994.

“Electric Utilities and the Environment: Restructuring Need Not Mean Retreat.” Invited Presentation, “Brave New World - Managing Externalities in a Competitive Electric Utility Industry.” University of Illinois Center for Regulatory Studies, Chicago, IL, November 17, 1994.

Invited Speaker, International Ground Source Heat Pump Association, Hershey, PA, October 17, 1994.

Invited Speaker, “Washington: Business and Public Policy,” Brookings Institution Seminar, October 18, 1994.

“Federal Climate Change Management Programs and Climate-Wise,” Businesses for Social Responsibility 1994 Environment Conference, Boston, MA, October 13, 1994.

Invited Speaker, National Association of State Energy Officials, Asheville, NC, August 31, 1984.

Invited Speaker, Annual Meeting of the California Institute for Energy Efficiency, Berkeley, CA, July 25, 1994.

“Voluntary Greenhouse Gas Reporting Under the Energy Policy Act of 1992.” Invited Presentation, International Conference on Global Climate Change, Center for Environmental Information, Washington, DC, February 1993.

Panel Moderator, Natural Gas Procurement Strategies, Association of Energy Engineers Annual Conference, Boston, MA, June 1992.

Panel Moderator, Alternative Fuel Vehicles Conference, the Management Exchange, Washington, DC, April 1992.

Invited Presenter, American Water Works Association. Conservation Committee Workshop, Austin, TX, January 1992.

“The Future History of DSM.” Plenary presentation, 5th National Demand-Side Management Conference, Boston, MA, August 1, 1991.

“Visibility of the Buy Strategy — Bulk Power Transfers: Solution or Fatal Attraction?” The Management Exchange “The Buy vs. Build Decision” Conference, Washington, DC, March 22, 1991.

BOARDS AND OTHER PROFESSIONAL ACTIVITIES

Chairman, Environmental Alliance, 2005-2006

Managing Member, ENpartners LLC, 2005-2008

Lecturer in Management, University of Chicago Graduate School of Business, Winter Quarter 2006

Vice Chairman, Environment2004, 2002-2004

Member of the Board, Global Energy Group, 2002 - 2003

Co-Founder and Steering Committee Chair, Patriot's Energy Pledge 2001

Advisor, Progressive Policy Institute, Washington, DC, 2000 - Present

Advisor Center for National Policy, Washington, DC, 1993-present

Advisory Board, Massachusetts Institute of Technology Energy Laboratory, 1993-1996

Nominator, Heniz Foundation Awards, 1995-1996

Member, Illinois Solar Energy Advisory Board, 1980

HONORS AND AWARDS

Who's Who in the East (1991, 1992)

Fellow, Center for the Study of Economy and the State, University of Chicago, 1986

NSF Travel Fellow, Dec. 1981

MIT Institute Fellowship, 1978

Earle C. Anthony Fellowship, 1978

Union Carbide Fellow, 1977-78

Michigan Annual Giving Scholarship, 1976

Illinois State Scholar, 1976

National Merit Scholar, 1976

Sigma Tau Beta

Phi Kappa Phi

Eta Kappa Nu

1/29/2009

Dr. Broehm is an economist whose practice is focused on the electric utility industry. She specializes in the areas of market deregulation and oversight, market power analyses, studies of bulk power markets, evaluation of demand-side management, and utility cost structures. She has led numerous *Brattle Group* studies in competitive impact analyses for M&A, price forecasting, network transmission simulation, strategic bidding behavior, and generation and transmission asset valuations.

Before joining *The Brattle Group*, Dr. Broehm taught economics and statistics at the University of Wisconsin-Milwaukee and Cardinal Stritch College. She holds a Ph.D. in Economics with Industrial Organization major from the University of Wisconsin-Milwaukee.

REPRESENTATIVE CONSULTING EXPERIENCE

Market Power Analyses

- Dr. Broehm has testified in market-based rate (MBR) applications before the Federal Energy Regulatory Commission (FERC). She has assisted electric utility clients in both the eastern and western United States by developing expert testimonies in accordance with the FERC's final MBR rules. Her understanding of transmission networks has allowed her to work closely with the client's transmission team in preparing simultaneous import limits and determining relevant market product definitions.
- She has substantial experience in evaluating competitive impacts of utility mergers on wholesale power and gas markets in various regions, including ISO-NE, NYISO, PJM, SERC, FRCC, SPP, Entergy System, and WSCC. Dr. Broehm led the development of *The Brattle Group's* Delivered Price Test (DPT) model, as well as its strategic behavioral model used for analyzing potential horizontal and vertical (electricity and natural gas) market power. She led a team in examining whether a transaction potentially created any short-term incentive to exercise vertical wholesale market power using a locational-marginal pricing simulation model.
- On behalf of several wind power clients, she has examined market conditions of the Southwest Power Pool (SPP) wholesale power markets, including day-ahead and energy imbalance markets and transmission congestion management in SPP. She testified that the SPP wholesale power markets did not provide Qualifying Facilities (QFs), particularly wind QFs, to have a meaningful opportunity to sell to third parties.

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- She assisted California investor-owned utilities in analyzing the competitiveness of wholesale power markets at major trading hubs in WECC. She examined liquidity of the day-ahead power markets, the CAISO real-time power market, the CAISO ancillary services markets, and the effectiveness of the CAISO market power mitigation measures.
 - Dr. Broehm helped evaluate various filings in response to the FERC Orders to “Show Cause Concerning Gaming and/or Anomalous Market Behavior,” resulting from the California electric power crisis. Her work involved analyses of market prices and bidding data to determine the extent that market participants (i) used numerous trading strategies to game CAISO market rules, and (ii) manipulated prices in the California spot energy and ancillary service markets.
 - Dr. Broehm prepared expert testimonies to evaluate the impacts of the California power crisis on the western forward markets. She developed the methodology to estimate artificial price inflation in forward contracts transacted during the crisis period, based on estimated implied heat rates during outside crisis periods.

Contract Evaluation and Price Forecasting

- Dr. Broehm advised an investment firm in the valuation of the generation assets in the southeastern part of the U.S. This task involved reviewing the work done by third parties as well as the preparation of *Brattle*’s own evaluation of the assets. She unpacked the key drivers of the assets’ value and provided insights into how different variables (such as fuel prices, heat rates, early retirement option, and load growth) affect the underlying valuation. As part of the valuation, she also examined the transmission system surrounding the plants and market rules to determine whether they could diminish the value of these plants.
- Dr. Broehm assessed profitability of power plants in New York City and on Long Island. As part of this valuation, she developed and simulated the New York Independent System Operator (NYISO) wholesale power market conditions in order to obtain forecasting Locational-Based Marginal Prices (LMBPs) using DAYZER, a commercial, state-of-the-art LBMP simulation model.

- She has identified components of short-run avoided costs for qualifying facilities (QFs) and assessed whether day-ahead power prices and “out-of-market” costs were a reasonable measure of the true short-run avoided costs, given QFs’ attributes.
- Dr. Broehm estimated damages resulting from a breach of a land purchase contract on behalf of a plaintiff in a bankruptcy matter. Her work involved assessment of ability to build and finance a power plant, preparing energy price forecasts for the New York City market, and estimating associated capacity prices in accordance with the NYISO downward sloping demand curve requirement.
- Dr. Broehm provided analyses and support to demonstrate a utility’s prudence in procuring forward purchased contracts for both power and gas during the western crisis, even though those contract prices were high relative to actual spot prices. The results of her analyses were presented before the Nevada Public Utility Commission.
- She has advised electric power utilities on corporate strategy and structure issues in the areas of stranded costs, market power, and deregulated markets. Her project work has included development of methodology for market price forecasts, including modeling of scarcity premiums and volatility under alternative restructuring scenarios.
- For a large southeastern utility, Dr. Broehm led a seminar on load management strategies to mid-management executives. Examples were drawn from other utilities’ strategies in other restructuring states. She also evaluated the value of the utility’s existing load-management program, and advised on appropriate strategic responses to retail competition.
- For a utility seeking to demonstrate prudence of its forward contracts, which were used to hedge against spot market price volatility, Dr. Broehm developed a multiple-factor price and load model which could estimate an optimal hedging strategy while recognizing limitations of the liquidity and competitiveness of the market.

Resource Planning and Industry Restructuring

- Dr. Broehm assisted the investor-owned utility in the West to develop a resource and procurement plan. She particularly focused on the development of a set of scenarios on key issues such as potential federal climate legislation, natural gas prices, electricity

demand and demand side management strategies, and the complex interplay between these factors.

- For an EPRI/GRI joint research venture, Dr. Broehm conducted a series of studies on the impact of electric utility restructuring on fuel use. She developed a new market condition that examined impacts of simultaneous changes in market conditions (such as new generation expansion risks and changes in transmission flow patterns) on various types of fuel consumption. These assumptions were then used in a price forecasting model. The results allowed her to examine power plants' viability (particularly nuclear and old power plants) for each of the nine NERC sub-regions, their interaction with each other, and how restructuring was likely to play out in each region.
- In response to utility clients seeking to demonstrate the costs of their potential exposure associated with being the Provider of Last Resort for non-switching customers, Dr. Broehm constructed a model that calculated the option value of offering price-capped services, given uncertainty in the prices and quantities of power needed to cover the obligation. Additionally, a logic model was applied to simulate the impact of customer switching behavior on the option value.
- For an EPRI research project, Dr. Broehm was part of a team that examined the potential for hydroelectric generators to provide a larger share of operating reserve generating capacity in a restructured electricity market. She conducted interviews with several utilities to discuss strategies that the company wanted to pursue, versus what practices they were following.

Pricing and Ratemaking

- She led the Brattle team preparing a marginal cost study for an integrated electric utility in PJM. The study estimated incremental costs of the utility for serving additional demand and customer by time period, sub-region, and customer class. These costs consist of marginal costs of energy, capacity, transmission, distribution, and customer-related costs. Since the utility is operated in PJM and relies on the PJM markets to serve its customers, the study entailed projections of both the utility's costs and wholesale power prices for energy, congestion, losses and generation capacity. The results of the study were used as a basis for their rate designs.

- For a Real-Time Pricing Program, Dr. Broehm assisted in the development of marginal costing procedures for a day-ahead and week-ahead two-part real-time pricing program for various utilities. She applied econometric techniques to analyze the actual and expected load response of large industrial customers with on-site generation, who were on a real-time pricing program.
- She was involved in designing a demand simulation model used to analyze a block rate proposal in support of rate filing. She implemented the Constant Elasticity of Substitution demand model and analyzed changes in net economic benefits due to the change in rate design.
- Dr. Broehm assisted the California Independent System Operator and a working group of stakeholders to revise the structure of transmission access charges in the context of membership negotiations with non-participating transmission owners. The effort involved data collection, cost-benefit analyses of various access charges and membership scenarios, and the presentation of these analyses at monthly stakeholder meetings.
- For a cooperative utility close to bankruptcy, Dr. Broehm was part of team who assisted in re-designing rates of transmission and ancillary services, and drafting of testimony on these issues for the rate case as well as for the restructuring plan.
- On behalf of a utility client, she analyzed the strategic considerations associated with various transco and ISO membership and design alternatives, and evaluated financial and customer rate impacts of those options.
- Dr. Broehm assisted in the preparation of testimony and the development of cost of capital for a Canadian electric utility using standard estimation techniques (DCF, CAPM). The project also assessed more customized models specific to the industries or lines of business in question, *e.g.*, based on the structure and risk characteristics of cash flows, or based on multi-factor models that better characterize regulated industries.

TESTIMONY

Affidavit on behalf of NV Energy, Market Power Update to Assess Changes in Status, Federal Energy Regulatory Commission, Docket Nos. ER01-1527-10, ER01-1529, November 19, 2008.

Affidavit on behalf of Sierra Pacific Power Company and Nevada Power Company, Market Power Update to Assess Changes in Status, Federal Energy Regulatory Commission, Docket Nos. ER01-1527-10, ER01-1529, May 5, 2008 and June 10, 2008.

Affidavit on behalf of National Grid USA, Triennial Market-Based Rate Update Filing, Federal Energy Regulatory Commission, Docket Nos. ER96-2585-006, ER98-6-011, ER99-2387-004, ER02-1470-004, ER02-1573-004, ER05-1439, EC06-125, January 14, 2008.

Affidavit with Philip Hanser on Behalf of Northeast Utilities Service Company and Select Energy, Inc., Triennial Market-Based Rate Update Filing, Federal Energy Regulatory Commission, Docket Nos. ER96-496-015, ER99-14-012, and ER99-3658-003, January 14, 2008.

Affidavit on Behalf of Watson Cogeneration Company, Application of Watson Cogeneration Company for Order Accepting Initial Market-Based Tariff, Waving Regulations, and Granting Blanket Approvals, Federal Energy Regulatory Commission, Docket No. ER08-337, December 14, 2007.

Affidavit with Dr. Fox-Penner on Behalf of American Wind Energy Association, The Wind Coalition, and John Deere Renewables, LLC, Motion to Intervene and Protest Opposing SPP IOU's Request to Terminate PURPA Purchase Obligations, Federal Energy Regulatory Commission, Docket No. QM07-5, November 21, 2007.

Affidavit, Change In Status Filing on Behalf of El Paso Electric Company, Federal Energy Regulatory Commission, Docket Nos. ER99-2416, July 17, 2006.

Affidavit with Dr. Fox-Penner, Market Power Analysis for Market-based Rate Application on Behalf of Vandolah Power Company L.L.C., Front Range Power Company, LLC, and Dartmouth Power Associates Limited Partnership, Federal Energy Regulatory Commission, Docket Nos. ER02-1336, ER96-1149, and ER02-1173, July 14, 2005.

Affidavit with Dr. Fox-Penner, Market Power Analysis for Market-based Rate Application on Behalf of Dartmouth PPA Holdings, LLC and Dartmouth Power Associates, Federal Energy Regulatory Commission, Docket Nos. ER05-598 and ER05-559, February 17, 2005.

PUBLICATIONS AND PRESENTATIONS

“Is Thailand Ready for Nuclear Power?” *Bangkok Post*, April 5, 2007.

Comments on the FERC Notice of Proposed Rulemaking on Market Based Rates for Wholesale Sales of Electric Energy, Capacity and Ancillary Services by Public Utilities (with Peter Fox-Penner), Docket No. RM04-7, August 7, 2006. Presented the comments at the FERC MBR Outreach Meeting, FERC, November 30, 2006.

“The New Art of Plant Acquisition”, *Public Utilities Fortnightly*, June 2006, pp. 68-72.

Deregulated Electricity Pricing In the U.S. – Dramatic New Rules From the FERC (with Peter Fox-Penner), April 25, 2004.

“Competition in Wholesale Electric Power Markets” (with Peter Fox-Penner, Gary Taylor, and James Bohn), *Energy Law Journal*, 2002, Volume 23, No. 2. pp. 281-348.

“Price Responsive Electric Demand: A National Necessity, Not an Option” (with Peter Fox-Penner), *Electricity Pricing in Transition*, Chapter 10, 2002, Kluwer Academic Publishers (Norwell, MA).

Impact of Changing Fuel and Power Market Structures on Price Behavior (with F. Graves, L. Borucki, S. Thumb, and M. Schaal), Technical Report, August 2001, EPRI1001197 GTI GRI-01/0163 (Palo Alto, CA: Electric Power Research Institute).

How Competitive Market Dynamics Affect Coal, Nuclear and Gas Generation and Fuel Use — A 10 Year Look Ahead (with F. Graves, L. Borucki, S. Thumb, and M. Schaal), Final Report, May 1999, TR-111506 (Palo Alto, CA: Electric Power Research Institute, 1999).

Mechanisms for Evaluating the Role of Hydroelectric Generation in Ancillary Service Markets (with F.C. Graves, R.L. Earle, T.J. Jenkin, and D.M. Murphy), Final Report, November 1998, TR-111707 (Palo Alto, CA: Electric Power Research Institute, 1998).

Energy Market Impacts of Electric Industry Restructuring: Understanding Wholesale Power Transmission and Trading (with S.L. Thumb, A.M. Schaal, F. C. Graves, and L.S. Borucki), Final Report, March 1998, EPRI TR-108999, GRI-97/0289 (Palo Alto, CA: Electric Power Research Institute, 1998).

“Retail Pricing of Reactive Power Service” (with Fernando Alvarado, Laurence Kirsch and Allen Panvini), *Proceedings: 1996 EPRI Conference on Innovative Approaches to Electricity Pricing Managing the Transition to Market-Based Pricing*, Electric Power Research Institute, Palo Alto, California, March 1996.

“The Effects of Imports on Domestic Wages by Unions,” with John Heywood revised for *Cambridge Journal of Economics*, March 1996.

Dr. James D. Reitzes received his B.A. in economics and history from Stanford University in 1978, and his Ph.D. in economics from the University of Wisconsin in 1986. He specializes in providing economic analyses and expert testimony pursuant to regulatory proceedings in the energy and transportation sectors and litigation in the areas of antitrust, competition, and intellectual property.

Dr. Reitzes has provided expert analysis in energy-related competition and regulatory matters before the Federal Energy Regulatory Commission, state public utility commissions, and federal antitrust agencies. In the transportation sector, Dr. Reitzes has offered analysis in proceedings involving the U.S. Department of Transportation, the European Court of First Instance, and national antitrust authorities. He has provided economic and financial consulting services to clients in the United States, Canada, the European Union, South America, and Africa.

From 1985 to 1988, Dr. Reitzes served as a staff economist at the Federal Reserve Bank of New York, conducting research on trade policy and financial regulatory issues. He also was responsible for forecasting oil prices and the international trade deficit.

From 1988 to 1993, Dr. Reitzes served in the Divisions of Antitrust and Economic Policy Analysis at the Federal Trade Commission. Dr. Reitzes was involved in merger investigations and other inquiries into alleged anticompetitive conduct. He also provided comments and testimony on behalf of the FTC regarding regulatory issues in the transportation and banking sectors.

Dr. Reitzes joined the Law & Economics Consulting Group in 1993, where he contributed economic analyses for litigation, regulatory proceedings, and administrative hearings. His responsibilities included providing economic analyses of the competitive effects of mergers undergoing the Hart-Scott-Rodino review process (and subsequent challenges by the U.S. Department of Justice) and assessing market conditions in the telecommunications industry pursuant to Federal Communications Commission regulatory proceedings and litigation.

In 1995, Dr. Reitzes joined Ernst & Young LLP, where he continued to provide expert economic analysis, as well as strategic consulting and valuation services. His engagements included the competitive analysis of mergers, the estimation of license fees and royalty rates for the use of intangible assets, and econometric estimation of models of consumer choice.

Dr. Reitzes joined *The Brattle Group* as a Principal in April 1998, where he provides analysis and testimony for regulatory proceedings and litigation involving the energy and transportation sector. He also provides expert services in antitrust litigation. Most recently, Dr. Reitzes has been involved in designing transitional regulation in electric power markets, assessing the competitive implications of mergers and acquisitions in power markets, critiquing RTO market-monitoring policies and

market design features, investigating claims regarding stranded costs, and designing energy procurement strategies to support standard-offer service obligations.

Dr. Reitzes has authored several articles on firm strategies with respect to pricing, quality, R&D investment, and merger behavior, published in leading economics and legal journals. He also is an author of a book that assesses the domestic impact of U.S. international trade policies.

INDUSTRY EXPERTISE

Dr. Reitzes possesses specialized expertise in a variety of industries, particularly *electricity, natural gas, telecommunications, aviation, ocean shipping, defense, and steel*. *Electricity* experience includes analyzing the competitive impact of mergers and acquisitions, assisting in the formulation of auction rules for procuring wholesale electric power supplies, analyzing portfolio-based procurement strategies for meeting standard-offer-service load obligations, examining customer-switching behavior in retail power markets, simulating future wholesale energy prices, formulating protocols for monitoring electric power markets, evaluating existing RTO market-monitoring policies and recommending design changes, and assessing market reorganization plans in proceedings involving state public utility commissions, the Federal Energy Regulatory Commission, and the Department of Justice. *Natural gas* experience involves analyzing the competitive effects of mergers involving electric and natural gas assets from both a horizontal and vertical perspective, and the formation of optimal tariff schemes to permit cost recovery and maximize use of natural gas distribution resources. *Telecommunications* experience includes antitrust review of merger and acquisitions involving providers of wireless telephony, video programming, and cable television distribution; attempted monopolization and price-fixing cases involving providers of telecommunications equipment and services; FCC rulemakings related to price caps and the optimal regulation of telephony; and, litigation and regulatory proceedings related to prime-time access and the must-carry rules. *Aviation* experience includes the economic analysis and drafting of a study assessing the economic impacts of forming an open aviation area between the United States and the European Union; a study assessing the impact of aviation liberalization between the Netherlands and the United States, Kenya, Malaysia, and Brazil; and a study assessing proposed rule changes involving computer reservation systems (CRSs) and their effect on competition in the CRS, airline, and travel agency industries. Other projects include analysis of the competitive impacts of landing-slot and gate-allocation rules, hub dominance, and changes in fees charged to providers of airport-related services. *Ocean shipping* expertise involves expert testimony regarding the extent of market power exercised by liner conferences, expert analysis related to mergers in the ocean shipping industry, and analysis of the competitive impact of particular provisions in conference rate agreements. *Defense* industry expertise involves the economic analysis of mergers subject to HSR review, including the measurement of merger-related

cost efficiencies. *Steel* industry expertise involves analyses of the economic impact of foreign imports on U.S. domestic producers in proceedings before the U.S. International Trade Commission.

PAPERS AND PUBLICATIONS

Journals

“Domestic Versus International Capital Mobility: Some Empirical Evidence,” with Donald J. Rousslang, *Canadian Journal of Economics*, Vol. 21, No. 2 (May 1988): 312-323.

“The Impact of Quotas and Tariffs on Strategic R&D Behavior,” *International Economic Review*, Vol. 32, No. 4 (November 1991): 985-1007.

“Anticompetitive Effects of Mergers in Markets with Localized Competition,” with David T. Levy, *Journal of Law, Economics, and Organization*, Vol. 8, No. 2 (April 1992): 427-440.

“Quality Choice, Trade Policy, and Firm Incentives,” *International Economic Review*, Vol. 33, No. 4 (November 1992): 817-835.

“Basing-Point Pricing and Incomplete Collusion,” with David T. Levy, *Journal of Regional Science*, Vol. 33, No. 1 (February 1993): 27-35.

“Ocean Shipping Economics: Comment,” *Contemporary Policy Issues*, Vol. 11, No. 3 (July 1993): 81-85.

“Product Differentiation and the Ability to Collude: Where Being Different Can Be an Advantage,” with David T. Levy, *Antitrust Bulletin*, Vol. 38, No. 2 (Summer 1993): 349-368.

“Antidumping Policy,” *International Economic Review*, Vol. 34, No. 4 (November 1993): 745-763 [reprinted in Douglas R. Nelson and Hylke Vandenbussche editors, *The WTO and Anti-Dumping: Volume 1* (Cheltenham, UK: Edward Elgar Publishers, 2005): 392-410].

“The Importance of Localized Competition in the 1992 Merger Guidelines: How Closely Do Merging Firms Compete?” with David T. Levy, *ABA Antitrust Law Journal*, Vol. 62, No. 3 (Spring 1994): 695-716.

“Market-Share Quotas,” with Oliver R. Grawe, *Journal of International Economics*, Vol. 36, No. 3/4 (May 1994): 431-447.

“Price Discrimination and Mergers,” with David T. Levy, *Canadian Journal of Economics*, Vol. 28, No. 2 (May 1995): 427-436.

“In the Matter of Weyerhaeuser Company: The Use of the Hold-Separate Order in a Merger with Horizontal and Vertical Effects,” with Robert P. Rogers and Laurence Schumann, *Journal of Regulatory Economics*, Vol. 11, No. 3 (May 1997): 271-289.

“Market Power and Collusion in the Ocean Shipping Industry: Is a Bigger Cartel a Better Cartel?” with Paul S. Clyde, *Economic Inquiry*, Vol. 36, No. 2 (April 1998): 292-304.

“Is it Efficient to Impose Costs on Small-Volume Equity Traders?” with Paul S. Clyde, *International Journal of the Economics of Business*, Vol. 6, No. 1 (April 1999): 81-92.

“Lessons from the First Year of Competition in the California Electricity Markets,” with Robert Earle, Philip Hanser, and Weldon Johnson, *The Electricity Journal*, Vol. 12, No. 8 (October 1999): 57-76.

“Entry Policy and Entry Subsidies,” with Oliver R. Grawe, *Review of International Economics*, Vol. 7, No. 4 (November 1999): 715-731.

“Deregulation and Monitoring of Electric Power Markets,” with Robert L. Earle and Philip Q Hanser, *The Electricity Journal*, Vol. 13, No. 8 (October 2000): 11-25.

“Strategic Pricing When Electricity Is Storable,” with Alfredo Garcia and Ennio Stachetti, *Journal of Regulatory Economics*, Vol. 20, No. 3 (November 2001): 223-247.

“Rolling Seas in Liner Shipping,” with Kelli L. Sheran, *Review of Industrial Organization*, Vol.20, No. 1 (February 2002): 51-59.

“Regional Interactions in Electricity Prices in the Eastern United States,” with Gregory R. Leonard, Adam C. Schumacher, and James G. Bohn, in Michael A. Crew and Joseph C. Schuh editors, *Markets, Pricing, and Deregulation of Utilities* (Boston: Kluwer Academic Publishers, 2002): 109-142.

“Designing Standard-Offer Service to Facilitate Electric Retail Restructuring, with Lisa V. Wood, J. Arnold Quinn, and Kelli L. Sheran, *The Electricity Journal*, Vol. 15, No. 9 (November 2002): 34-51.

“Can Mergers to Monopoly, Price Fixing, and Market-Division Agreements Raise Welfare?” with Paul S. Clyde, *International Journal of the Economics of Business*, Vol. 11, No. 1 (February 2004): 69-90.

“Forward and Spot Prices in Electricity and Gas Markets: Does ‘Storability’ Matter?” with J. Arnold Quinn and Adam C. Schumacher, in Michael A. Crew and Menahem Spiegel editors, *Obtaining the Best from Regulation and Competition* (Boston: Kluwer Academic Publishers, 2005): 109-135.

“Incentive Contracts for Infrastructure, Litigation and Weak Institutions” with Alfredo Garcia and Juan Benavides, *Journal of Regulatory Economics*, Vol. 27, No. 1 (January 2005): 5-24.

“Dynamic Pricing & Learning in Electricity Markets,” with Alfredo Garcia and Enrique Campos, *Operations Research*, Vol. 53, No. 2 (March-April 2005): 231-241.

“Estimating the Economic ‘Trade’ Value of Increased Transmission Capability,” with Andrew N. Kleit, *The Electricity Journal*, Vol. 19, No. 2 (March 2006): 69-78.

“International Perspectives on Electricity Market Monitoring and Market Power Mitigation,” with Jose A. Garcia, *Review of Network Economics*, Vol. 6, No. 3 (September 2007): 397-424.

“Downstream Price-Cap Regulation and Upstream Market Power,” *Journal of Regulatory Economics*, Vol. 33, No. 2 (April 2008): 179-200.

“Airline Alliances and Systems Competition,” with Diana Moss, *Houston Law Review*, Vol. 45, No. 2 (Summer 2008): 293-332.

“The Effectiveness of FERC’s Transmission Policy: Is Transmission Used Efficiently and When Is It Scarce?” with Andrew N. Kleit, *Journal of Regulatory Economics*, Vol. 34, No. 1 (August 2008): 1-26.

“Competition for Exclusive Customers: Comparing Equilibrium and Welfare under One-Part and Two-Part Pricing,” with Glenn A. Woroch, *Canadian Journal of Economics*, Vol. 41, No. 3 (August 2008): 1046-1086.

Books

The Regional Welfare Effects of U.S. Import Restraints on Apparel, Petroleum, Steel and Textiles, with Randi Boorstein, Michael Metzger, and Morris Morkre, Avebury Press, 1996.

Completed Studies

“Case Studies of the Price Effects of Horizontal Mergers,” *Staff Report of the Federal Trade Commission*, April 1992, with coauthors.

“The Effectiveness of Collusion under Antitrust Immunity—The Case of Liner Shipping Conferences,” *Staff Report of the Federal Trade Commission*, December 1995, with coauthor.

“The Effectiveness of Dutch Airport Transport Policy,” study prepared for the Dutch Ministry of Transport, December 2002, with coauthors.

“The Economic Impact of an EU-US Open Aviation Area,” study prepared for the European Commission - Directorate-General for Energy and Transport, December 2002, with coauthors.

“Study to Assess the Potential Impact of Proposed Amendments to Council Regulation 2299/89 with regard to Computerised Reservation Systems,” study prepared for the European Commission - Directorate-General for Energy and Transport, October 2003, with coauthors.

PRESENTATIONS

“Genco Pricing & Genco Asset Values under Deregulation,” presented to the Center for Business Intelligence Conference, Chicago, IL, September 18, 1998.

“Ancillary Services: New Business Opportunities in Competitive Ancillary Services Markets,” presented at Electric Utility Consultants Workshop on Strategies for Pricing and Selling Ancillary Services, Denver, CO, September 9, 1999.

“Profit-Maximizing Strategies and Gaming: Market Power and Power Markets,” presented to the Center for Business Intelligence Conference on Pricing Power Products and Services, Chicago, IL, October 14, 1999.

“Strategic Behavior and Power Market Prices,” presented to the EPRI Asset & Risk Management Group, Washington, DC, June 23, 2000.

“Regional Interactions in Electricity Prices in the United States,” presented to the CRRI Research Seminar, Newark, NJ, May 3, 2002.

“Standard-Offer Service and Retail Restructuring of Electric Markets,” presented to the CRRI Eastern Conference, Newport, RI, May 23, 2002.

“The Economic Impact of an EU-US Open Aviation Area,” presented to the U.S. Department of State, the European Commission (US office), and the Heritage Foundation, Washington, DC in 2002 and 2003, and the Association of European Airlines, Brussels, Belgium, 2003.

“Transactions Costs Across Electricity Markets: Does Restructuring Matter?” presented to the CRRI Eastern Conference, Skytop, PA, May 22, 2003.

“Identifying the Relationship between Spot and Futures Prices for Electricity and Natural Gas,” presented to the Center for Research in Regulated Industries (CRRI) Research Seminar, Newark, NJ, May 7, 2004, and the CRRI Eastern Conference, Skytop, PA, May 21, 2004.

“Geographic Integration, Transmission Constraints, and Electricity Restructuring,” presented to the Federal Energy Regulatory Commission, Federal Trade Commission, Energy Information Administration, in Washington, DC, in 2004 and 2005, and the 10th Annual POWER Research Conference on Electricity Industry Restructuring of the University of California Energy Institute, Berkeley, CA, March 18, 2005.

TESTIMONY/EXPERT REPORTS

Testimony before the Advisory Commission on Conferences in Ocean Shipping, 1991, relating to an econometric analysis of the determinants of ocean freight rates, and the conclusions of that study with respect to the existence of market power in ocean shipping.

Expert Submission - Appendix J, Volume 1, Prehearing Brief on Behalf of Petitioner, Certain Flat Rolled Carbon Steel Products, June 21, 1993, U.S. International Trade Commission Investigation Nos. 701-TA-319-332, 334, 336-342, 344, and 347-353 (final); 731-TA-573-579, 581-592, 594-597, 599-609, and 612-619 (final). Analysis included a critique of methods used to evaluate domestic injury in trade cases. Also authored part of submission for post-hearing brief.

Expert Report Submitted to the European Court of First Instance on Behalf of the European Commission relating to the Petition of the Transatlantic Agreement to Annul the Commission's Decision of October 19, 1994, including a rebuttal of the expert economic analysis offered by the members of the Transatlantic Agreement in support of their collective restrictions on capacity utilization and their coordinated activity in setting certain types of freight rates.

Testimony in the Matter of Henry H. Godfrey v. Benjamin F. Hofheimer, III, *et. al.*, 1995, on behalf of defendant relating to the appropriate calculation of damages in a breach-of-contract dispute.

Expert Report Submitted to the Environmental Protection Agency, 2000, on behalf of a trade group of aluminum smelters assessing the economic costs of revised land-disposal restriction standards for spent aluminum potliners (K088), 2000.

Two Expert Reports Submitted to the U.S. District Court for the District of Maryland, 2001, in the matter of Charles River Associates Inc. v. Hale Trans, Inc., assessing the quality and cost effectiveness of economic expertise provided in a predatory-pricing matter.

Expert Report Submitted to the U.S. District Court for the District of Columbia in the Matter of DAG Enterprises Inc. v. Exxon Mobil Corporation, 2003, regarding the suitability of a prospective purchaser as an acquirer of Mobil assets under the antitrust standards used by the Federal Trade Commission.

Expert Report Submitted to the Federal Energy Regulatory Commission (Docket No. EC05-43-000) 2005 on behalf of Midwest Generation, regarding the competitive impact of the proposed merger of Exelon Corporation and Public Service Enterprise Group and the mitigation measures offered by the parties.

Expert Reports submitted to the U.S. Department of Transportation (Docket No. OST-2004-19214), 2005, on behalf of American Airlines, regarding the competitive impact of the proposed application for antitrust immunity of an airline alliance consisting of Delta, Northwest, KLM, Air France, Alitalia, and Czech Airlines.

Expert Report and Testimony before the Public Utility Commission of Texas (Docket No. 31056), 2005, on behalf of the Cities served by AEP Texas Central Company, the Texas Industrial Energy Consumers, and the Alliance for Valley Healthcare, regarding the competitiveness of an auction held to sell an ownership share in a nuclear power plant and the commercial reasonableness of the actions taken by the seller.

Expert Reports submitted to the U.S. Department of Transportation (Docket No. OST-2005-22922), 2006, on behalf of American Airlines, regarding the competitive impact of the proposed Star alliance expansion to include LOT and Swiss airlines and expand antitrust immunity between Air Canada and United Airlines.

Expert Report and Testimony before the Public Service Commission of Maryland, (Case No. 9117, Phase 1), 2007 on behalf of Potomac Electric Power Company and Delmarva Power & Light Company, regarding the risks and costs associated with portfolio procurement of electric power supplies as opposed to relying on a full-requirements auction-based procurement method.

Expert Report submitted to the Pennsylvania Public Utility Commission (Docket No. P-0072305), 2008, on behalf of Pennsylvania Power Company, regarding the risks and costs associated with different procurement methods for obtaining electric power supplies to serve default-service customers.

Expert Report and Testimony before the Public Utility Commission of Ohio (Case No. 08-936-EL-SSO), 2008, on behalf of Ohio Edison Company, The Cleveland Electric Illuminating Company, and The Toledo Edison Company, regarding the rationale for using an auction process to procure full-requirements electric power supplies for standard-service-offer customers, as well as a description of the responsibilities undertaken by myself and The Brattle Group as manager of that procurement.

ON THE RECORD COMMENTS

“Fees for Off-Airport Rental Car Companies”—Comments on behalf of the Federal Trade Commission to the U.S. Department of Transportation, 1989.

Comments and statistical analysis of the competitive impact of revenue-based license fees imposed by airport authorities on off-airport car rental companies.

“An Analysis of the Maritime Industry and the Effects of the 1984 Shipping Act”—Comments on behalf of the Federal Trade Commission to Congress, 1989.

Analysis of the regulatory structure of ocean shipping under the 1984 Shipping Act and its impact on competition, pricing, and the diversity of services offered (including a statistical analysis of the determinants of liner freight rates).

“Interdistrict Transportation System Price Structure,”—Comments on behalf of the Federal Trade Commission to the Board of Governors of the Federal Reserve System, 1991.

Comments and presentation to the staff of the Board of Governors of the Federal Reserve System relating to the competitive impact of proposed changes in the pricing of check-processing services, along with recommendations concerning alternative pricing mechanisms.

PROFESSIONAL ACTIVITIES

Consultant to the *World Bank* on the formation of regional trading blocs, the *European Community* (DG IV) on antitrust and transportation issues, and the *Government of Canada* (Competition Bureau) on antitrust and transportation issues.

Advisory Board Member of the Center for Research in Regulated Industries

Member of the Atlantic Energy Group

Referee for the following journals: *American Economic Review*, *Canadian Journal of Economics*, *Contemporary Policy Issues*, *European Economic Review*, *International Economic Review*, *International Journal of the Economics of Business*, *Journal of Economics*, *Journal of Economics and Business*, *Journal of Economic Integration*, *Journal of Industrial Economics*, *Journal of International Economics*, *Journal of Regulatory Economics*, *Oxford Economic Papers*, and *Review of International Economics*.

Teaching Experience: Introductory Macroeconomics; Introductory Microeconomics

Igor Cajkusic is an economic and management consultant to the electric power and natural gas industry with a principal focus on asset valuation, finance, and risk management. Mr. Cajkusic utilizes option pricing techniques to calculate the value and risk associated with physical assets, wholesale and retail contractual commitments, and energy derivatives. His project work draws upon both his experience and technical training in decision analysis, statistical mathematics, stochastic modeling, optimization and finance.

Mr. Cajkusic received his M.S. in Electrical Engineering from Stanford University and B.S. in Electrical Engineering from Arizona State University.

CONSULTING EXPERIENCE

- Worked with an electric utility to analyze the risk of its supply portfolio. Evaluated risk contribution to the portfolio from different types of assets, contracts, and hedging strategies.
- Worked on publicly available employee stock option grant data to assess the likelihood that option grant dates were selected without prior knowledge of subsequent stock price movements.
- Assessed value and risk exposure associated with main alternatives to declaring a default on a counterparty that received a below-investment credit downgrade. Calculated market value of a portfolio of long-term power purchase contracts before and after the downgrade. Analyzed and measured the impact of credit risk on the collateral payment.
- Analyzed and calculated the credit risk premium involved in pricing of power and gas contracts for a below-investment grade credit rating utility.
- Determined the market based credit-risk premium that a financial intermediary (without any generation assets) would expect to incur during a competitive procurement supply process.
- Analyzed and benchmarked inputs and methodologies related to valuation techniques and risk management procedures of a Western power/gas portfolio belonging to a major energy company.
- In a dispute whether the natural gas and crude oil futures settlement prices reported by NYMEX are the subject of discretion or are merely derivations of observable facts, examined documents and electronic files used by the opposing party's expert and discovered

serious conceptual and computational errors in his NYMEX settlement price and price spread replication methodology.

- Developed market price forecasts of wholesale electric prices and associated uncertainty bands based on historical data, the prices of traded power contracts, and analysis of large-scale market models. In related work, also developed market price forecasts of natural gas prices and associated uncertainty bands based on the prices of traded gas contracts.
- Assessed major financial risks of energy company portfolios consisting of production facilities, purchase/sale contracts, and retail customers. Determined market price risks, volumetric sales risks, and operational risks. Quantified underlying risk exposures and used that information to evaluate potential hedging programs to reduce the overall risk.
- Analyzed energy derivative transactions contained in a large risk management database. Validated commodity transactions in numerous trading books and analyzed their value/risk contribution to energy company's portfolios across the U.S. Examined hedging assignments of transactions related to FAS 133 accounting rule and quantified their financial/accounting implications.
- Used option-based techniques to value a terminated long-term tolling contract based on a power generation asset located in the Eastern U.S. Analyzed asset's efficiency/operational flexibilities, power and gas forward markets, and other market conditions around the time when contract was signed and terminated. Assessed the value of similar tolling arrangements in the region and compared it to the terminated tolling agreement.
- Helped an electric utility with surplus generating capacity evaluate risks associated with opening its service area to competition. Identified and measured the value of flexibility, especially with respect to future capital rationing and customers' ability to switching to another provider. Utilized option-based valuation techniques and economics of investing under uncertainty for analyzing data and calculating value and risk exposure.
- Helped an electric utility visualize framework for calculating option value associated with life-extension of a nuclear plant. Determined the value of flexibility forgone by nuclear plant sale, and compared it with likely future cost associated with the sale. Analyzed strategies related to future power purchase agreements and assessed relative attractiveness of comparable nuclear plant sale.

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- Worked and benchmarked a scenario-based risk assessment software tool used by a major west coast utility in its power procurement decision-making and in its risk reporting process.
 - Analyzed series of jet fuel contracts and helped client understand/value contract specific flexibilities related to delivery timing/quantity. Used option-based techniques to develop a complex Excel based valuation model for analyzing series of hypothetical fuel contracts based on publicly available futures and options data for heating oil and unleaded gasoline.
 - Estimated incurred costs of procuring and supplying peak and off-peak power required by the power supply agreement. Analyzed net positions, daily trades, and hedge contracts found in power trading books and developed a cost estimation model.
 - In a regulatory proceeding case, analyzed client's ability to incorporate adequate risk management models/tools, follow pre-determined policies and procedures, and engage in prudent power procurement.
 - Worked with a hedge fund interested in power plant valuation, relationships between regulated electric utilities and IPPs (especially in the retail market competition), and impacts from "bottlenecks" on electric transmission grids to major metropolitan areas. Developed a cash flow model to include earnings estimates with flexibility to analyze earnings sensitivities to spark-spread and leverage uncertainty.
 - Conducted a quantitative risk analysis for a "provider of last resort" (POLR) electric utility. Assessed primary and secondary risk associated with third-party suppliers, regulatory issues, current market conditions, and retail customers' behavior.
 - For Electric Power Research Institute (EPRI), worked on development of software tool for managing nuclear generation assets. Used real option pricing methods to find market value and incorporated early retirement and license renewal as embedded options that affect the value. Unit-related project evaluation was incorporated to support optimal capital budget planning.
 - For Electric Power Research Institute (EPRI), worked on development of software tool for managing fossil generation assets. Used complex financial modeling concepts to calculate market value and risk exposure of power units. Developed, implemented, and benchmarked analytical algorithms that were used to model operational constraints, dynamic unit deployment and capital budget planning.

- For an electric utility, evaluated generating assets and tolling agreements, quantified risk exposures and calculated optimal unit operating policy using advanced financial modeling techniques. Analysis incorporated managerial flexibility to alter unit deployment in response to electricity and fuel market uncertainty.
- Analyzed several electric utility mergers in the U.S. Managed development and implementation of large-scale production cost linear programming tool. Assignment involved incorporation necessary data and building optimization tools to simulate market behavior across the U.S. power market regions.
- Designed and implemented Monte Carlo simulation utilizing Dollar Cost Averaging principle to obtain prudent cost and risk minimizing model for acquiring wholesale market power. Risk management evaluation analysis incorporated minimum-variance hedging targets, forward and spot price volatility, illiquidity of forward contracts and load uncertainty.
- As a part of the bidding strategy design for several power plants, implemented Monte Carlo model used for market price analysis and generation asset valuation. Model incorporated fuel switching capability and optimal unit dispatch algorithm.

PRESENTATIONS AND PUBLICATIONS

“Nuclear Asset and Project Evaluation Using Options Theory.”

EPRI Workshop

Presented option pricing theory and demonstrated concepts implemented in the *EPRI Nuclear Asset & Project Evaluator* software tool for valuing nuclear assets under uncertainty. Software model included an option to retire early and quantified its impact on asset’s value. Course presented at the ‘*EPRI 2001 Nuclear Asset Management Workshop & Training,*’ Hilton Head, South Carolina, August 13-17, 2001.

“Valuing Generation Assets – Identifying and Exploiting the Value of Real Options”

EPRI Workshop

Co-developed materials and taught at the professional training course on the application of *derivatives* methods for understanding the value and risk of commodity contracts and physical assets.

This EPRI workshop provides an introduction to the operational complexities and economics of power generating *assets*. It explains how concepts and methods of option pricing can be applied to calculate generation asset values and identify more effective management policies within various degrees of operational flexibility and price uncertainty. It teaches and explores what generation assets are worth and how they create value through effective logistical (e.g., plant maintenance), tactical (e.g., re-powering), or strategic (e.g., purchase or sale) decision-making in competitive power markets.

Topics *covered* include:

- Understanding how generating units create value
- The roles of uncertainty and flexibility in value creation
- Using energy market price and volatility data
- Identifying and exploiting real options
- Calculating the value of real options
- Evaluating investment projects

“*Value and Risk in Energy Markets*”
EPRI Workshop

Co-developed materials and taught at the professional training course on the application of derivatives methods for understanding the value and risk of commodity contracts and physical assets.

This course introduces principles and methods of market-based valuation and risk management, essential to all of the major resources and commitments in the electric power industry, including fuel and power purchase contracts, generation resources, retail service agreements, and regulatory policies (e.g., Provider of Last Resort obligations).

This course explains methods for valuing forward contracts and options, both simple and complex; modeling uncertainty in market prices; and estimating volatility. Moreover, it teaches basic risk management strategies, as well as how to calculate risk exposures and measure portfolio risk.

Topics include:

- Basic forward and option contracts
- Relationship of complex contracts and physical assets to basic contracts

- Valuing forward contracts and estimating forward prices
- Valuing simple option contracts
- Modeling price uncertainty and estimating volatility
- Methods for valuing complex options
- Basic risk management strategies

Attila Hajos joined *The Brattle Group* in October 2005. He received his B.A. in Business Administration from Comenius University in Bratislava, Slovakia, and his M.A. in Economics from Central European University in Budapest, Hungary. Mr. Hajos also holds an M.A. in Economics from Rutgers University, and is currently completing his Ph.D. in Economics. His fields of specialization are Industrial Organization and Econometrics.

PROFESSIONAL EXPERIENCE

Market Power Analysis

- *Horizontal Market Power* – On behalf of two major gas and electricity distribution companies, Mr. Hajos has been working on horizontal market power analyses involving the electricity and natural gas markets, as part of a merger proceeding before the FERC.
- *Vertical Market Power*. Before the NYPSC, examined whether a vertical merger between two utilities created any short-term incentive to exercise vertical market power. Employed a simulation-based approach using the Dayzer model of the NYISO wholesale power marketplace, and examined whether transmission outages significantly affected the downstream generators' profits.

RTO Market Design

- *Capacity Market Design* – On Behalf of PJM Interconnection L.L.C., analyzed the first five auctions of the Reliability Pricing Model (RPM), assessed whether the current market design was achieving its stated intentions and developed recommendations for possible modifications to the RPM.
- *Residual Unit Commitment* – For a Texas utility, reviewed procedures governing the commitment of additional generation resources for reliability in various RTOs across the United States. Analyzed the method of determining the required amount of residual unit commitment, instruments available to ISOs for procuring additional capacity, and the method of allocating associated costs to market participants.

Analysis of Electricity Contracts

- *Contract Damages* – For a group of bondholders and a hedge fund, provided consulting support during settlement talks in a bankruptcy proceeding involving a large U.S. merchant generating company and its Canadian subsidiary. Analyzed and valued tolling contracts for the output of power plants located in Alberta and British Columbia.

Market Simulations and Modeling

- Mr. Hajos has an extensive experience in modeling electricity markets, using the state-of-the-art simulation model, Dayzer, provided by Cambridge Energy Solutions. Worked on calibrating the model to actual market prices observed in the PJM, NYISO, WECC, and ERCOT wholesale power markets, evaluated congestion patterns, the impact of demand response, and generation and transmission investments on wholesale electricity prices.
- For a large utility in PJM, we analyzed the causes of transmission congestion using the Dayzer simulation model. A small investor-owned utility in Pennsylvania accused our client of causing the congestion by derating one of its transmission facilities. Using detailed market data, we calibrated the Dayzer model to actual market prices LMPs during a historic period, isolated the factors that were primary causes of local congestion, and concluded that multiple factors, some of them outside our client's control, contributed to the observed congestion. We provided a rebuttal testimony of our findings before the Pennsylvania Public Utilities Commission.

Demand Response Work

- In concert with the Midwest ISO, researched wholesale demand response programs in other RTOs, investigated the state of demand response in the Midwest ISO markets, and helped develop strategies to further enhance demand response participation within the Midwest ISO footprint by exploring ways to foster the development of additional cost-effective economic demand response.
- For a Mid-Atlantic utility, estimated the economic benefits of proposed demand response and energy efficiency programs enabled by a new advanced metering infrastructure. Quantified customer benefits
- For a California investor-owned utility, reviewed demand response participation in RTO markets, surveyed best practices in accommodating demand response resources, and proposed a demand response strategy.
- For PJM and the Mid-Atlantic Distributed Resources Initiative (MADRI), assisted in quantifying the market benefits of three percent reduction of peak loads during the top 20 five-hour blocks in the service areas of BGE, Delmarva, PECO, PEPCO, and PSEG would have had in 2005 and under a variety of alternative market conditions. Analysis of market benefits was performed using the Dayzer simulation model.

PUBLICATIONS AND WORKING PAPERS

- “Fostering Economic Demand Response in the Midwest ISO”, prepared for the Midwest ISO, December, 2008
- “Review of PJM’s Reliability Pricing Model”, prepared for PJM Interconnection L.L.C., June 2008
- “The Hydrogen Economy: Its Impact on the Future of Electricity” (with Frank Felder) Submission to the Special Issue of the Proceedings of the IEEE, 2006
- “Monopoly Pricing of a Durable Network Good with Entry of New Consumers”, 2005, Working Paper
- “An Application of Supermodular Game Theory to the Analysis of Strategic Behavior in Electricity Markets”, 2004, Working Paper
- “Foreign Direct Investment and International Trade: An Empirical Investigation ”, August 2000, Working Paper
- “Nested Logit Estimation of Internal Migration in the United States”, December 2000, Working Paper