June 6, 2025

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Re: RFP 25-05, Docket No. TBD, 1803 Electric Cooperative, Inc. ex parte. In re: Notice of Intent to conduct a Request for Proposals

Dear Ms. O'Brian and Ms. Bowman:

Please find attached London Economics International's ("LEI") proposal to act as an outside consultant and assist the Louisiana Public Service Commission ("LPSC" or "the Commission") Staff in its review of 1803 Electric Cooperative, Inc.'s ("1803") upcoming Request for Proposals ("RFP") for long-term power purchase contracts, generating capacity, and/or generating resources, and any subsequent certification proceedings.

LEI offers a total indicative budget of $137,238, which includes professional fees and estimated travel and other direct costs, detailed further in Section 4. LEI is uniquely qualified for this role, given our extensive experience in competitive procurement processes, having designed, optimized, and managed procurement processes for regulators, governments, industrial firms, and utilities around the world. We are acutely aware of the importance of this engagement, particularly given that 1803's most recent RFP in LPSC Docket No. X-36925 resulted in no economical bids to meet 1803's stated needs.

There are no actual or potential conflicts of interest for LEI in performing the contractual obligations contemplated in this RFP. LEI is not currently working for a utility and/or investor in utilities operating in Louisiana or any of their subsidiaries. To our knowledge, we are not advising, nor have a financial interest in, any potential bidders in 1803 Electric Cooperative's upcoming RFP.

We are confident that LEI can provide the LPSC Staff with the expert, independent, and objective advice needed to navigate this critical procurement and ensure it aligns with Commission Orders and the public interest. We look forward to the opportunity to discuss our proposal with you further.

Sincerely,

Barbara Porto
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Proposal to serve as the outside consultant to Louisiana Public Service Commission's review of 1803's Notice of Intent to Conduct a Request for Proposals

prepared for the Louisiana Public Service Commission by London Economics International LLC

June 6, 2025

London Economics International LLC ("LEI") is pleased to submit this proposal to the Louisiana Public Service Commission ("LPSC") to assist with providing professional, technical consulting services to help LSPC with the review of 1803's Request for Proposals ("RFP") for long-term power purchase contract, generating capacity, and/or generating resources, participation in each stage of the RFP, and any subsequent certification proceeding of any resources selected out of the RFP filed by 1803.

LEI is a leading energy consulting firm that has advised regulators and utilities on system planning issues, including evaluation of supply options, renewable integration, and long-term analysis of the sector development and evolution. The firm possesses over 20 years of experience advising regulators, electric and natural gas utilities, private firms, and specific customer classes across Canada and the United States as well as among international jurisdictions. LEI is exceptionally well-qualified to serve the LPSC because of four distinct and valuable areas of expertise: (i) LEI has direct experience serving as a technical consultant/independent evaluator in other jurisdictions, (ii) LEI understands the regional power market and challenges for MISO participants, (iii) LEI has extensive in-depth modeling and analytical capabilities, and (iv), LEI understands the unique perspective and objectives of state regulators. LEI has worked with other regulators and has experience testifying on a variety of issues related to procurement, competitive markets, long term planning issues, and cost-benefit considerations.

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1 Bidder Information

London Economics International LLC ("LEI") is a US-owned and operated economic, financial, and strategic advisory professional services firm specializing in energy, water, and infrastructure. The firm combines detailed understanding of specific network and commodity industries, such as electricity generation, transmission and distribution, and retail markets with sophisticated analysis and a suite of proprietary quantitative models that together produce reliable and comprehensible results. LEI's array of clients extends from the private sector to market and government institutions.

Figure 1. Selected LEI clients throughout the world

The following attributes make LEI unique:

- ***clear, readable deliverables that are*** grounded in substantial topical and quantitative evidence;
- ***internally developed proprietary models*** for electricity price forecasting (energy, capacity, RECs, GHGs credits, etc.) that incorporate a detailed assessment of fundamentals, game theory, real options valuation, Monte Carlo simulation, and sophisticated statistical techniques;

- ***a balance of private and public sector clients*** enables LEI to effectively advise both regarding the impact of regulatory initiatives on private investment and the extent of possible regulatory responses to individual firm actions; and

- ***worldwide experience*** backed by a multilingual and multicultural staff.

1.1 Background and staffing

LEI is extremely well-qualified to serve as a technical consultant to the LSPC. LEI has direct experience serving as a technical consultant/independent evaluator ("IE") in other jurisdictions; LEI understands the regional power market in MISO; LEI has extensive in-depth modeling and analytical capabilities; and LEI understands the unique perspective and objectives of state regulators, having worked with many regulators. LEI has experience testifying on a variety of issues related to procurement, competitive markets, long term planning issues, and cost-benefit considerations.

- **Extensive experience as a technical consultant or independent evaluator/monitor in a competitive procurement, utility RFP process, or resource acquisition activity in deregulated power markets**. LEI has worked on energy procurement issues for wholesale market participants and regulators, and has a comprehensive mastery of the entire procurement process, from the initial phases of design and stakeholder consultation, through qualification, implementation, and bid evaluation. The firm's work in procurement process design and analysis spans the spectrum of wholesale and retail products and includes engagements on unit-contingent contracts, energy-only block products, renewable energy certificates, full requirements service, stand-alone capacity products, energy-related instruments, and new-build generation assets.

- **Expertise and experience in the MISO regional wholesale power market.** LEI has an in-depth knowledge of the supply-demand dynamics of the region's electricity markets and has access to a comprehensive set of power markets data that the firm routinely incorporates in its analyses, e.g., an assortment of third-party commercial databases, EPA CEMS data, FRC EQRs, and bilateral pricing market data. LEI is aware of the challenges and issues that are prevalent in Louisiana and MISO as the firm has been involved in several engagements in the region.

- **Experience deploying our proprietary production cost-based simulation model to forecast electricity prices.** LEI has over two decades of experience conducting independent forecasts of energy prices and system dispatch using simulation modeling techniques and other analytics for power market analysis, cost-benefit studies, the examination of local macroeconomic impacts from investment spending in-state, integrated resource planning, and resource adequacy. The firm also has an in-depth knowledge of utility self-build options and approaches for analyzing them impartially and comparing them to third-party options.

- **Experience in supporting regulators in important wholesale power market strategies and/or utility resource RFP processes, including the provision of written and oral expert witness testimony**. LEI has extensive experience in advising on RFP design, and power

purchase and financial agreements. The firm has also provided expert testimony in cases relating to the procurement of resources and other matters. LEI's experience allows it to understand both the supply as well as the procurement-side, which enables the firm to easily anticipate and prevent problems in the procurement process.

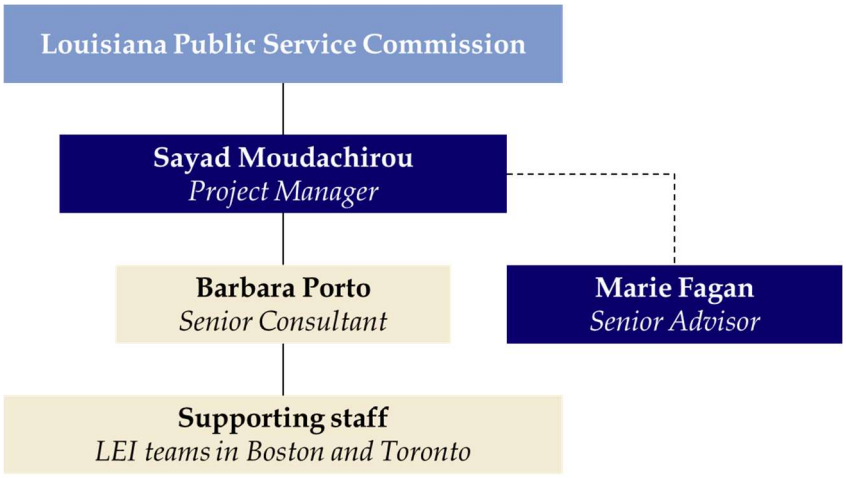
Based on the requirements of the engagement, LEI has gathered a select team of talented and dedicated professionals with the required qualifications to assist LSPC in the review of 1803's Request for Proposals for Long-Term Power Purchases Contracts and/or Generating Capacity and any subsequent certification proceeding of any resources selected out of the RFP filed by 1803. The team possesses considerable independent assessment expertise, analytical and technical capabilities, and a strong understanding of power markets, including in MISO.

There will be three key personnel assigned to this project. Additional staff members and resources will be available for this project on an as-needed basis. Key staff members assigned are as follows:

- ***Sayad Moudachirou***, *Director*
- ***Marie Fagan***, *Chief Economist*
- ***Barbara Porto***, *Senior Consultant*

Sayad Moudachirou is charged with the overall responsibility for this project and will act as Project Manager should LEI be selected as the technical consultant for LSPC. ***Marie Fagan*** will serve as a senior advisor, and ***Barbara Porto*** will serve as a core team member. In addition, LEI staff in Boston and Toronto will provide additional support as needed.

Figure 2. Proposed LEI team organization chart



1.2 Brief bios of key staff assigned to the project

Sayad Moudachirou, Director at LEI, has significant experience managing large, complex and long-lasting projects. Sayad has been involved in many of the firm's high profile regulatory cases spanning such diverse issues as market design (at both RTO and state levels), competitive procurement, cost-benefit analysis, performance-based ratemaking (for a dozen jurisdictions),

market power mitigation, utility governance, and auction design (including competitive solicitations for procurement). Mr. Moudachirou leverages his expertise in energy regulatory economics to educate market participants on market fundamentals and provide technical assistance and thoughtful insights into their operations, strategy, and decision-making process. His expertise in the power sector includes regulatory framework gap analysis, policy design and impact analysis, due diligence on commercial transactions, strategic planning, renewable asset management, as well as value stacking and assets valuation. Sayad has extensive experience establishing regulatory frameworks for the deployment and operation of both conventional and renewable technologies.

More recently regarding procurement engagement, Sayad supported the LEI team who served as IE for Idaho Power Company ("IPC") 2026 all-source energy and capacity resources RFP ("2026 RFP") and led the subsequent IPC 2028 RFP. Specifically, Sayad led a series of activities including: a review of the RFP; the facilitation and monitoring of communications between the utility (IPC) and bidders; the performance of independent initial shortlist evaluation (ranking bids based on price, and on non-price characteristics such as bidder credit-worthiness, ability to meet the commercial online date, evidence of interconnection, and evidence of site control); the scoring of bids (which involved use and vetting of the offeror's cost-benefit models and screening models, including scenario analysis and stochastic risk analysis). He also led the independent evaluation of the offeror's final shortlist, the preparation of status reports and the final draft of the IE closing report.

For this engagement, Mr. Moudachirou will act as Project Manager. He will coordinate the different workstreams, engage with LPSC and manage participation in each stage of the RFP, including technical and bidders' conferences, review of and comment on draft documents, informal meetings, preparation of a report upon completion of the RFP process, and any other steps necessary to ensure a fair and reasonable RFP process.

Marie N. Fagan, PhD, is Chief Economist at LEI. Marie has 30 years of experience in research and consulting for the energy sector and has experience directing and managing LEI's work in complex and long-running regulatory cases. Marie led LEI's Independent Evaluator engagement for PacifiCorp's 2017 Solar RFP and served as an advisor for the IPC 2026 and 2028 RFPs. Marie also directed and managed LEI's work for the Maine Public Utilities Commission's investigation into contracting for firm capacity on natural gas pipelines (Docket 2014-00071). Marie directed and coordinated complex natural gas and power modeling efforts, reviewed pipeline precedent agreements and related bid documents, led meetings with bidding companies and Commission staff, authored LEI's independent reports to the Commission, prepared discovery questions, responded to interrogatories from parties, authored rebuttals, provided cross-examination of expert witnesses, and provided oral testimony. Additionally, Maire was the project manager for many of LEI's engagements with the LPSC, including the recently conducted Cleco FAC (Docket No. X-36644), ELL FAC (Docket No. X-36643), and ELL FEAC (Docket No. X-36719) audits.

Marie will leverage her procurement expertise to support and guide the team throughout the project. Marie will also exercise additional quality control on the work carried out.

Barbara Porto is a Senior Consultant at LEI, where she supports the firm's technical engagements with regulators, utilities, and private equity firms on issues regarding market design, project

evaluations, wholesale price analysis, and utility management/performance auditing. Barbara has been deeply involved in several of LEI's audit engagements, where she has led numerous assignments with distinction, including tasks requiring coordinating with stakeholders and utilities. Barbara was LEI's lead analyst for its engagement as IE for PacifiCorp's 2017 Solar RFP as well as IPC 2026 and 2028 RFPS. Barbara managed the information gathering and summarizing process of the projects; this involved the review of over 100 bids, and associated documents from bidders – which was instrumental to independent scoring and evaluation. Barbara also coauthored all the status reports and contributed to the draft of the IE closing report. Additionally, Barbara was a lead analyst on many of LEI's engagements with the LPSC, including the recently conducted Cleco FAC (Docket No. X-36644), ELL FAC (Docket No. X-36643), and ELL FEAC (Docket No. X-36719) audits.

Barbara will be the leading analysist on the project; she will be supported by additional LEI resources.

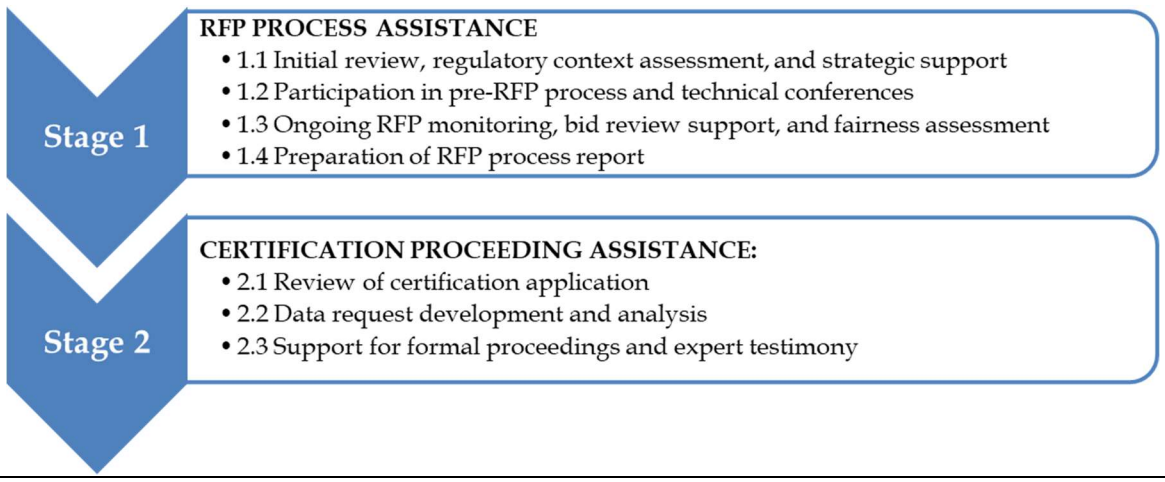
Full CVs of the key team members are available in Section 6.

2 Proposed plan of action

LEI proposes a comprehensive two-phase plan of action to assist the LPSC Staff in its review of 1803 Electric Cooperative's RFP for long-term power resources and any subsequent certification proceedings, as outlined in RFP-25-05. Our approach is designed to be flexible and collaborative, ensuring LPSC Staff receive timely, expert support at each stage. The Commission and its Staff will ultimately determine how tasks are carried out, including setting internal deadlines.

The plan of action is summarized in Figure 3 below. In alignment with what LPSC noted in the RFP for this engagement, LEI understands that the LPSC and its staff will have the right to determine how these tasks will be carried out.

Figure 3. LEI's proposed plan of action



LEI's key findings will be summarized in the form of reports to the LPSC. Moreover, in the course of this engagement, LEI senior staff will confer with the LPSC staff in the form of periodic calls and by e-mail and will be available to attend meetings related to any certification proceeding arising from the RFP. LEI senior staff will also meet with the LPSC in Baton Rouge, Louisiana as needed throughout the process.

2.1 Phase 1: RFP Process Assistance (Estimated 10 months)

- ***Task 1.1: Initial review, regulatory context assessment, and strategic support***
    - Thoroughly review 1803's draft RFP documents, its 2022 Integrated Resource Plan ("IRP"), and the circumstances surrounding the prior RFP in Docket No. X-36925 that did not result in economical bids.
    - Analyze the draft RFP for compliance with the LPSC's Market-Based Mechanisms ("MBM") Order, particularly the October 14, 2024, amendments (General Order No. 10-14-2024 (R-34247)), ensuring the RFP is constructed broadly to solicit all available market options.

- Assess consistency with other relevant LPSC orders, including the 1983 General Order on certification, the IRP General Order (R-30021), and the new Resource Adequacy General Order (R-36263).
- Provide LPSC Staff with an initial assessment report, highlighting potential areas of concern, opportunities for strengthening the RFP, and strategies to attract economical and viable bids.

- ***Task 1.2: Participation in Pre-RFP process and technical conferences***
  - Actively participate in technical conferences related to 1803's informational filing and draft RFP.
  - Assist LPSC Staff in reviewing 1803's informational filing and draft RFP documents submitted under the new Pre-RFP docket process outlined in the 2024 MBM Order.
  - Support Staff in evaluating any objections filed concerning the type, location, or size of resources solicited, as per Rule 14 of the 2024 MBM Order.
  - Provide expert advice to Staff on the adequacy of 1803's responses to stakeholder input and objections.

- ***Task 1.3: Ongoing RFP monitoring, bid review support, and fairness assessment***
  - Review the final RFP documents issued by 1803.
  - Participate in bidders' conferences as required by LPSC Staff.
  - Assist Staff in reviewing submitted bids for compliance with RFP requirements and for overall economic and technical viability. This will include assessing whether proposed resources can meet 1803's stated needs, particularly for winter capacity, and align with MISO requirements for resource adequacy.
  - Provide support to Staff in ensuring the RFP process is conducted in a fair and reasonable manner, consistent with LPSC orders. This includes reviewing evaluation methodologies and their application.

- ***Task 1.4: Preparation of RFP Process Report***
  - Upon completion of the RFP process, prepare a comprehensive report for LPSC Staff, summarizing the process, LEI's participation, key findings, and an assessment of the fairness and reasonableness of the RFP process.

2.2 Phase 2: Certification Proceeding(s) Assistance (Estimated 12 months)

This phase is contingent upon 1803 selecting resource(s) from its RFP and filing for certification with the LPSC.

- ***Task 2.1: Review of certification application(s)***

- Thoroughly review certification application(s) filed by 1803, including all accompanying testimony, exhibits, and supporting documentation.
- Assess the application's compliance with the 1983 General Order, the MBM Order, the Resource Adequacy Order, and other applicable LPSC rules and public interest criteria.

- ***Task 2.2: Data request development and analysis***
  - Assist LPSC Staff in drafting comprehensive data requests to 1803 and other parties as necessary.
  - Analyze responses to data requests to ensure completeness and to identify key issues for further investigation or testimony.

- ***Task 2.3: Support for formal proceedings and expert testimony***
  - Participate in formal status conferences, pre-trial conferences, depositions, and hearings (contested or uncontested) as required by LPSC Staff.
  - Provide expert analysis and advice to Staff throughout the proceeding.
  - If required, LEI is prepared to draft and render expert testimony on issues relevant to the RFP process, bid evaluation, resource economics, and compliance with LPSC orders, and be cross-examined on such testimony**.**

3 Qualifications and experience

This section outlines LEI's understanding of the requested study, a general summary of LEI's skills, and selected relevant experience involving the independent evaluation of competitive procurement processes, and key engagements within the MISO region.

3.1 Understanding of the engagement

LEI understands that the LPSC Staff requires expert outside consultant services to assist in the review of 1803 Electric Cooperative's forthcoming RFP for long-term power purchase contracts, generating capacity, and/or generating resources, as well as to provide support in any subsequent certification proceedings that may arise. This engagement is critical, as 1803 Electric Cooperative intends to issue this RFP to secure winter capacity resources to meet its needs for the 2025-2030 period, following a previous RFP (LPSC Docket No. X-36925) that did not result in economical bids.

LEI recognizes the complexities involved in this undertaking, which will be governed by several key LPSC Orders and market realities:

- **LPSC MBM Order:** The process will be primarily guided by the LPSC's MBM Order, significantly amended by General Order No. 10-14-2024 (R-34247) dated October 14, 2024. We understand these amendments introduce critical changes, including requirements for RFPs to be "constructed as broadly as possible" to solicit "all available market options" (conventional, intermittent, hybrid, storage), a formalized pre-RFP docket with an objection process for resource type, location, or size, and specific triggers for an Independent Monitor ("IM"). LEI is prepared to assist Staff in ensuring 1803's RFP fully complies with these enhanced requirements.

- **1803 Electric Cooperative's Context:** We are aware that 1803 Electric Cooperative was formed in 2019, with its initial power supply portfolio approved by the LPSC in January 2022. The Cooperative's 2022 IRP, acknowledged by the LPSC in June 2024 (LPSC Docket I-36503), forms the basis for its resource needs identified of approximately 434 MW of additional resources. We note LPSC Staff's previously expressed concerns regarding 1803's IRP, including load forecast methodology, winter solar ELCC, reliance on market purchases, and preferred portfolio identification. These concerns may inform Staff's review of the new RFP. The failure of the X-36925 RFP, which sought the 434 MW of winter capacity identified in the IRP, underscores the need for a carefully structured and evaluated new RFP.

- **LPSC Resource Adequacy General Order (R-36263):** The recently issued General Order dated July 16, 2024 (R-36263) establishes formal Resource Adequacy Obligations for Louisiana Electric Utilities in MISO, requiring annual demonstrations and targeting 90% of the MISO Planning Reserve Margin Requirement ("PRMR") by 2029. This order will directly influence the quantity and types of qualified capacity resources 1803 must procure.

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- **Other Key LPSC Orders:** Our assistance will also be informed by the LPSC's 1983 General Order concerning the certification of public convenience and necessity, the IRP General Order (R-30021), the LPSC General Order on Consultant Selection (R-33197), and principles of fuel cost recovery (U-21497).

- **MISO Market Context:** 1803 operates within MISO and its RFP will seek MISO-deliverable resources, including Zonal Resource Credits ("ZRCs"). LEI understands MISO's resource adequacy construct, including its seasonal approach, the Planning Resource Auction ("PRA"), Seasonal Accredited Capacity ("SAC"), and the requirements for converting SAC to ZRCs, including deliverability (Network Resource Interconnection Service - "NRIS"/Energy Resource Interconnection Service – "ERIS").

LEI is prepared to assist LPSC Staff in navigating these regulatory requirements and market complexities to ensure 1803's RFP process is fair, transparent, robust, and ultimately successful in securing reliable, cost-effective resources for Louisiana ratepayers, in compliance with all applicable Commission Orders.

3.2 Summary of LEI experience

LEI has its roots in advising on the initial round of privatization of electricity, gas, and water companies in the United Kingdom. Since then, the firm has supported private sector clients, market institutions, and governments on privatization, asset valuation, deregulation, tariff design, market power, and strategy in virtually all deregulating markets worldwide.

LEI has extensive and deep expertise in procurement, including natural gas resources. Team members have served as independent monitors of energy supply auctions and have advised on the competitive procurement of energy for governmental entities, industrial actors, as well as electric utilities. In many of these projects, quantitative analysis of the bids and selection of the winning bids were part of LEI's mandate. Additional tasks included marketing solicitation, contract negotiation, qualification of bidders, dissemination of information ahead of bidding, assessment of competitiveness of the process, and preparation of backstop or contingency plans in case of a failed RFP process.

LEI has helped to design competitive procurement processes for numerous regional regulatory bodies, emphasizing transparency and economic efficiency as the underlying principles of the process. Team members have also advised on the advantages and disadvantages of various auction formats for the sale of electricity contracts and other derivative instruments, as well as the sale of physical assets.

LEI also has extensive experience reviewing client contracts, providing situation-specific comments and edits to ensure that our client's rights and priorities have been addressed. The firm has experience drafting standardized contracts from scratch, drawing on best practices used in other jurisdictions and tailoring these to the client's specific circumstances. LEI is familiar with the Edison Electric Institute's Master Power and Sales Agreement template and has adapted it for clients' use on several occasions. LEI's contracting experience also extends to advisory support on credit terms,

upon which the firm has opined in a variety of different settings ranging from developers obtaining financing to regulators trying to determine the appropriate credit requirements to use for an RFP.

LEI develops custom modeling approaches to capture the nuances of individual power markets, based on production cost modeling using LEI's proprietary POOLMod software. This modeling allows LEI to conduct rigorous evaluation of cost and risks for capacity development projects. LEI has also used game theoretic modeling using CUSTOMBid, which is also proprietary; real options modeling using a modified Black-Scholes approach; and Monte Carlo simulation. LEI also models related markets such as those for capacity, ancillary services, or emissions credits. In addition to the firm's modeling capability, LEI has access to market data, which allows the firm to perform high-quality simulations. The firm also has worked with several brokers and trading institutions that allow it to tap the markets and get up-to-the-minute bid/ask spreads for forwards and options in the MISO energy market.

3.3 Selected Relevant Experience

3.3.1 Independent Evaluator/Monitor

The team has served as Independent Evaluator/Monitor on numerous projects. For these assignments, LEI applies current industry standards associated with the evaluation of criteria applied in competitive solicitations, examines the quantitative methodologies used by utilities to evaluate bids, and assesses contract terms. Through these assignments, the LEI team has reviewed and evaluated hundreds of power supply and demand-side management ("DSM") proposals encompassing a range of technologies, fuel types, and contractual structures. LEI evaluated gas-fired combined cycle and gas turbine projects, coal gasification options, pulverized coal, and fluidized bed projects. Renewable technologies evaluated have included wind, biomass, geothermal, landfill gas, solar, battery, and hydroelectric projects. Below are a sample of LEI's engagements.

- ***IPC 2026 and 2028 RFPs:*** LEI was hired by Idaho Power Company to serve as an Independent Evaluator for its 2026 all-source energy (including storage) and capacity resources RFP ("2026 AS RFP"). The 2026 AS RFP was being issued to facilitate the sourcing of competitively priced resources capable of being commercially operational no later than June 1, 2026. The resources were needed to ensure IPC could address the needs identified in its latest Integrated Resource Plan (filed on December 30, 2021). The role of LEI as the IE was to oversee the competitive bidding to ensure that it was conducted fairly, transparently, and properly in congruence with the Oregon competitive bidding rules. LEI was to ensure there was no bias in the procurement process, in particular a "self-build" bias that unjustly favors utility-owned resources. Moreover, in addition to serving as an overseer of the procurement process, LEI was tasked to carry out a thorough independent review, evaluation and scoring of all submitted bids (consistent with Oregon's competitive procurement guidelines), and compare findings to IPCs. LEI was subsequently hired by Idaho Power Company to serve as an Independent Evaluator for its 2028 AS RFP.
- ***Independent monitor on behalf of a public service commission***: LEI was part of a consortium serving as the independent monitor for a PacifiCorp renewable solicitation process. This process included: review of the solicitation process, documents, and

modeling methodologies; monitoring, auditing, and validation of bid evaluation process; bid evaluation; and contract negotiation. Final report and testimony were filed with the Public Utility Commission of Oregon [Docket No. UM1368].

- ***Independent evaluator for large-scale renewable power RFP:*** LEI was engaged by a state agency to act as IE for large-scale renewable RFPs and provide the following expertise: energy system and market planning/analysis; renewable energy generation; solicitations; project economics and financing.
- ***Independent evaluator for PacifiCorp 2017S RFP:*** LEI was engaged by PacifiCorp to serve as IE for its system-wide 2017 Solar RFP to ensure that the procurement process was competitive, fair, and managed according to procurement best practices such that the resulting acquisition of solar resources is price competitive. The project involved a review PacifiCorp's draft RFP, including the rationale underlying PacifiCorp's approach, pertinent regulatory rules, statutory objectives, past local practice, industry practice, and assessing the reasonableness of the proposed approach. LEI also reviewed the sample contract to ensure its commercial reasonableness, i.e., whether it provided for an efficient allocation of risks between the utility, its customers, and the project sponsors (e.g., reasonable force majeure terms, warranties, and liquidation damages). LEI ensured that PacifiCorp's evaluation process was conducted in a fair and unbiased manner and that the bids included in the initial shortlist ("ISL") and final shortlist ("FSL") represented the best value considering both price and non-price factors, from all the bids received during the RFP process.
- ***Independent evaluator to Pacific Gas and Electric ("PG&E")***: LEI was part of a pool of consultants to monitor long-term resource solicitations that may involve affiliate, utility-owned or utility-turnkey bids and for all competitive tenders seeking products greater than two years in length. LEI worked with PG&E to ensure that offers were evaluated consistently and appropriately per the solicitation protocol and in accordance with applicable rules and processes of the California Public Utilities Commission ("CPUC"). The following activities were performed by LEI team:
    - Reviewed and commented on the fairness and appropriateness of PG&E's evaluation methodology.
    - Reviewed and reported on whether PG&E fairly administered and implemented its evaluation methodology.
    - Reviewed and reported on whether the outreach that PG&E conducted to potential natural gas storage industry participants was adequate.
    - Identified whether any participant received undue information or failed to receive due information that advantaged or disadvantaged a participant unfairly.
    - Presented the findings PG&E's Procurement Review Group ("PRG") and the Energy Division of the CPUC.
    - Participated as needed in PRG and/or supplier meetings or teleconferences concerning the solicitation.
    - Prepared the IE report for inclusion in Advice Letter filings.
    - Prepared to testify as an expert witness in any CPUC proceeding regarding review of potential natural gas supply transactions including preparing direct and

rebuttal testimony, responding to data requests and performing other activities required to testify as an expert witness.

- ***Acted as the fairness monitor for Ontario Power Authority's ("OPA") evaluation of launch period feed-in tariff ("FIT") applications***: The LEI team aided in the design of the evaluation framework and provided ongoing support during the evaluation process. LEI prepared a final report that outlined LEI's opinion as to the fairness of the overall process.
- ***Evaluated applications to the Aboriginal Renewable Energy Fund:*** LEI was responsible for independently evaluating applications and prepared a stand-alone due diligence report for each application. In addition to a general description of the project, LEI's reports provided a review of:
    - the eligibility of the project under the program;
    - grid connection opportunities and issues;
    - property and resource control;
    - management capabilities and experience;
    - resource availability (e.g., wind speed, solar irradiance, fuel, etc.);
    - technology and equipment considerations; and
    - financial and economic considerations.

  As part of the financial and economic considerations, LEI developed a financial model to assess a range of possible equity returns available to the project under varying assumptions.
- ***Served as an independent monitor for Entergy New Orleans***: LEI was engaged to act as the independent monitor for Entergy New Orleans' solicitation of a Third-Party Administrator to implement and deliver conservation and demand management programs on behalf of the utility. LEI oversaw the bid receipts, as well as the review and selection process. LEI provided a final report outlining the fairness of the overall process.
- ***Served as auction monitor for Connecticut Department of Public Utility Control ("DPUC") Transitional Standard Offer:*** LEI was hired by DPUC to oversee the Transitional Standard Offer ("TSO") auction by Connecticut Light and Power ("CL&P") for its load (more than 5,000 MW peak demand). The scope of the project included approving the RFP and communication protocol, participating in all bidder calls and negotiations, analyzing the New England market and developing scenarios for likely bids, and verifying CL&P's decision-making process for selecting winning bids. LEI also provided testimony to the DPUC based on LEI's assessment of the auction process and its accordance with DPUC principles of competition.

3.3.2 Other relevant experience in competitive procurement processes

Outside of the IE role, LEI team members have advised on the competitive procurement of energy for governmental entities, industrial actors, electric utilities, independent power producers and energy merchant firms. Under many cases, LEI's advisory role began at the initial stages of RFP design and contract drafting. In many of these projects, quantitative analysis of the bids and selection of the winning bids were part of our mandate.

- ***Reviewed procurement process for Delaware Public Service Commission ("PSC"):*** In 2015, LEI performed a review of the procurement process for the provision of Delmarva Power & Light Company ("Delmarva Power")'s Standard Offer Service, and provided information and analysis regarding alternative long-term electricity procurement options for Delmarva Power to meet its Standard Offer Service residential and small commercial retail load.
- ***Designed procurement process for CT DPUC to reduce costs of congestion for CT ratepayers:*** LEI assisted the DPUC in the evaluation of measures to reduce Federally Mandated Congestion Charges ("FMCC") in the State of Connecticut. As part of this effort, LEI performed an economic evaluation of the New England and Connecticut energy markets using its proprietary production cost model, POOLMod. LEI also designed and drafted the RFP process, RFP documentation, and contract template in order to best meet the needs of the DPUC and Connecticut ratepayers, using an innovative approach incorporating a hybrid physical and financial contract. LEI managed the procurement process and evaluated project bids.
- ***Supported Ontario Power Authority in improving procurement processes:*** LEI acted as an outside consultant to the Ontario Power Authority during a stakeholder process designed to enhance future competitive procurement processes for generating capacity in Ontario. LEI advised the OPA on the development of questionnaires to stakeholders; and participated as an observer in a series of public and private consultations with stakeholders, including developers, major power users, system operators, and local distribution companies. LEI prepared a final report that synthesized the comments made by the various stakeholders into a consistent format and made recommendations to the OPA about ways to improve future procurement processes.
- ***Supported a Canadian ISO to develop an effective competitive procurement process for the sale of dispatch rights associated with key generation assets:*** LEI provided advice on the selection of the type of sale process for strip contracts associated with key generation assets; the choices considered included a sealed-bid option (i.e., a bank mediated private sale) and open auction processes based on both theoretical (economic) and practical (implementation) considerations.
- ***Experience analyzing and assisting in the negotiation of supply options for a large industrial customer in the Southeastern US: LEI*** was engaged by a large industrial customer to help review three-year power purchasing options at one of its Southeastern facilities. LEI assessed the probability of a supply interruption over the next three years due to the state of the transmission system in the region. LEI also assessed the facility's options for purchasing power for this load in the wholesale market.
- ***Assessed auction formats and outcomes: LEI*** researched and monitored auctions of supply obligations (for example, NJ's BGS) and sales of virtual capacity (such Alberta's MAP II auction of dispatchable rights and EdF's sale of capacity) on behalf of US investors looking at investment opportunities for similar transactions internationally. LEI provided a detailed qualitative and quantitative analysis of auction outcomes compared to market dynamics.

- ***Support to the California Energy Commission ("CEC") information disclosure in context of procurement:*** LEI prepared a series of reports, filings, and testimonies to support the CEC's petition to the CPUC to force additional disclosures about future expected demand conditions by the state's investor-owned utilities. Part of this analysis entailed a detailed assessment of RFP processes in California for retail load and considered the benefits of certain information in creating investment signals and lowering effective costs of supply. LEI staff provided direct written and oral testimony and rebuttal testimony.
- ***Design and negotiation of power purchase agreements ("PPAs") for hydro-electric resources:*** LEI assisted with the design and negotiation of PPAs for hydro-electric generation resources. LEI's primary role was to develop incentive mechanisms to promote shifting of output into on-peak periods and efficient cost management under the quasi-regulatory contract structure.
- ***Designing large scale renewable energy procurement program:*** LEI was engaged by the government of a Middle Eastern country to develop a recommended design for renewable energy competitive procurements, a feed-in tariff program, and a sustainable energy procurement company. LEI led a multi-faceted on-the-ground team consisting of industry experts, economics, financial analysts, engineers, and legal advisors. The project included extensive analysis of solar and wind.

3.3.3 Engagements within the MISO region

LEI closely monitors the MISO market for ongoing client work. LEI also produces a semi-annual regional market update and wholesale price forecast for eleven North American power markets, including MISO. LEI's deep understanding of the MISO market serves as a solid foundation in this engagement.

- ***Management audit of a major utility in MISO:*** LEI was engaged by the Mississippi Public Service Commission ("MPSC") to perform a two-year audit of the management activities of a major vertically integrated utility. As part of the management audit, LEI prepared a fuel inventory audit, where LEI assessed the utility's practices for economic purchase and use of fuel and electric energy, evaluated fuel and energy contract terms, investigated the operations of the utility's coal and nuclear generation units, and reviewed the prudency of coal inventory levels and inventory control procedures. Following the two-year audit, the MPSC engaged LEI for another two years to audit the other major vertically integrated utility in the state.
- ***Due diligence for a potential asset acquisition in MISO:*** LEI was engaged to assist in due diligence of a potential asset acquisition in MISO, involving gas-fired generation assets. LEI reviewed the contracts and performed financial analysis, with a specific focus on the assumed market value of capacity in the long term, and locational marginal prices for energy. Work involved reviewing documents in a virtual data room, and analysis related to drivers of gross margin for the asset: macroeconomics, weather fluctuations, fuel and electricity cost projections, and an overview of gas and electricity market in the region.
- ***Renewables implementation:*** LEI was retained by Kentucky's power utility regulator to review regulatory policies and tariff structures with a view to determining how they can be altered to elicit demand reductions and renewables implementation. The engagement

included stakeholder interviews to solicit feedback from all relevant stakeholder groups on the necessary updates to the planning and approval process. The review process consisted of analyzing the current processes for renewable and distributed generation and demand-side management programs and propose recommendations to improve the efficacy of these programs.

- ***Revenue opportunity for gas-fired cogeneration units in MISO:*** LEI was engaged to inform the client of potential risks associated with the units upon the termination of power purchase agreements. Under this engagement, LEI simulated MISO's energy and capacity markets and derived forecast of wholesale energy prices and capacity prices relevant to the units' geographic location.
- ***Economic analysis for a proposed transmission project in MISO:*** LEI conducted a modeling exercise to determine the potential revenues for a proposed transmission project wheeling power from western MISO to eastern MISO (and eventually PJM). LEI evaluated both the revenue opportunities to the investors as well as social benefits to the MISO system and evaluated the incremental value of the business strategy of selling the energy (and capacity) out of East MISO to third parties in PJM.
- ***Costs/benefit analysis of Entergy joining an RTO:*** LEI was hired by the Public Utility Commission of Texas ("PUCT") to provide a cost-benefit analysis of the decision by Entergy to join MISO. LEI provided quantitative and qualitative analyses of specific costs/benefits attributable to Entergy Texas, Inc. ("ETI") and its customers following membership in MISO or SPP.
- ***Review of ETI's impact analysis of termination of PPA on consumers:*** LEI was hired by the PUCT to conduct a due diligence review of the analyses performed by ETI on the impact of the termination of specific PPAs while a member of MISO. LEI's scope of work included a review of ETI's inputs, results, methodology, and interpretation of MISO market rules.
- ***Estimating coal plants' energy and capacity revenues in MISO:*** For a large foreign utility, LEI performed the valuation of two power plants located in the Midwest region of the US to determine their potential value upon expiration of an ongoing PPA. The plants revenues were calculated based on the 25-year forecasts of electricity prices in their respective zones. Given the long-term horizon of the modeling exercise, LEI also simulated an organized capacity market based on the Resource Adequacy requirements of MISO to estimate potential capacity revenues for the plants.

3.3.4 Expert witness experience before state agencies, FERC

LEI has performed dozens of engagements involving serving as an expert witness. The work listed below is a small sample.

- ***Expert review of procurement process:*** LEI was retained by Delaware Public Services Commission ("PSC") to assist with review of the procurement process for the provision of Delmarva Power & Light Company ("Delmarva Power")'s standard offer services, and to provide information and analysis regarding alternative long-term electricity procurement options for Delmarva Power to meet its Standard Offer Service residential and small

commercial retail load. [Docket 14-0283]. https://delafile.delaware.gov/AdvancedSearch/AdvancedSearchDocket.aspx

- ***Testimony in support of transmission operating rules and curtailment protocols for interties into Alberta.*** Rules were promoted by Alberta Electricity System Operator ("AESO") in order to support a fair, efficient and openly competitive power market. The LEI testimony was made in front of the Alberta Utilities Commission ("AUC"), on behalf of Morgan Stanley Capital Group ("MSCG"), a customer of the Montana-Alberta Transmission Line. LEI's analysis considered commercial as well as operating protocols in deregulated power markets and considers how market rules incentivize new entry and produce dynamic efficiency gains related to more intense competition The AUC issued a favorable decision to MSCG in early 2013. AUC Docket Number 1607958. URL: http://www.auc.ab.ca/regulatory_documents/Pages/default.aspx
- ***Detailed cost-benefit analysis and macroeconomic impact analysis in support of the Champlain Hudson Power Express ("CHPE") application for siting approval at the New York Department of Public Service ("DPS"):*** LEI's analysis on economic effects was the cornerstone of the settlement agreement reached between TDI and a number of New York agencies. LEI acted as independent expert on behalf of TDI and prepared a study of energy market impacts, capacity market impacts and also macroeconomic benefits stemming from the operation of the CHPE project. LEI's testimony was used in the DPS proceeding in the summer of 2012 and CHPE was successfully granted its Article VII permit. NY PSC Case 10-T-0149. http://www3.dps.ny.gov/W/PSCWeb.nsf/All/FCFC9542CC5BE76085257FE300543D5E?OpenDocument
- ***Independent testifying expert related to Maine Energy Cost Reduction Act:*** LEI was engaged by the State of Maine Public Utilities Commission to assist in evaluating options for expansion of natural gas supply into Maine. LEI authored pre-filing reports; responded to discovery from other parties; prepared discovery questions and cross-examined witnesses; reviewed testimony by other parties and provided assessments of the issues presented; and served as an expert witness in the proceedings. [MPUC Docket No. 2014-071] URL: https://mpuc-cms.maine.gov/CQM.Public.WebUI/Common/CaseMaster.aspx?CaseNumber=2014-00071
- ***Expert testimony before FERC related to Shell Energy's sale of capacity commitments:*** The LEI team provided expert testimony before FERC related to Shell Energy's sale of capacity commitments from facilities in New York to New England in a market manipulation case. LEI team examined market rules, operating procedures, and pricing arrangements in New England and New York at the time of the investigation, and examined the participation of Shell in the capacity markets and compliance offers in the energy markets, commenting on the economic rationale behind the client's must-offer strategies in the energy market for capacity compliance. [EL09-48-000]
- ***Standard Market Design in ERCOT:*** LEI examined issues related to the FERC's Standard Market Design and its implications for ERCOT and TXU. LEI assisted in the preparation of comments for submission to FERC. In the course of producing these comments, LEI evaluated specific proposals and benchmarked them against best practices worldwide. (2002)
- ***ISO-NE tariff design:*** LEI submitted testimony on behalf of ISO New England to the FERC to help defend ISO New England's self-funding tariff. LEI first defined the basic underlying

economic principles for specifying the tariff, and then undertook to show how the tariff should be applied to various system users. The engagement involved an intensive financial modeling effort and frequent interaction with stakeholders. (2000) [ER01-316-000]

- ***Triennial market power analysis (southeast region):*** in support of a client's application to renew market-based rate authorization under the provision of FERC, LEI performed Pivotal Suppliers Analysis and Market Share Analysis for the Entergy balancing authority area. (2011) [ER97-4281 et al.]
- ***Merger-related market power analysis:*** LEI evaluated the PJM market and considered the competitive effects of the proposed merger of FirstEnergy and Allegheny, in light of current and evolving market conditions for PJM West area. LEI's analysis contributed to the negotiated, confidential settlement between certain parties. (2010) [EC10-68-000]
- ***Updated market power analysis:*** prepared for a US utility's triennial review of market-based rate authorizations for certain subsidiaries in the northeast region, LEI analyzed the company's market power in PJM and ISO-NE. (2010) [ER98-4159 et al.]
- ***Section 203 and 205 analysis in support of NRG's acquisition of certain Dynegy assets in CAISO and ISO-NE:*** LEI was engaged to provide testimony in support of a proposed acquisition. LEI performed a Delivered Price Test ("DPT") for CAISO and ISO-NE energy markets as well as a standalone Herfindahl-Hirschman Index ("HHI") analysis for the capacity markets. In addition, LEI discussed the impact of the acquisition of the ancillary services markets. (2010) [EC10-88-000]
- ***Section 203 and 205 analysis in support of an asset acquisition in the Entergy control area:*** LEI was engaged to provide testimony in support of a proposed acquisition in Entergy's control area. LEI conducted a change in HHI analysis as well as an analysis of the acquirer's net load position for a Section 203 filing. LEI also conducted the Section 205 analysis and showed that with the acquisition, the client still passes the pivotal supplier and market share screens. (2010) [EC10-86-000]
- ***Critique of market power allegations in California***: LEI served as advisor to a Canadian-based electricity supplier related to allegations of market power abuse during the California crisis period; LEI examined and critiqued the underlying analysis for the related cases at FERC on remand from the US Court of Appeals, as well as a complaint filed by the California parties. (2010) [EL01-10-000 et al.]
- ***Preparation of analysis for generation market power under FERC's indicative screens for market-based rate authorization:*** in support of the acquisition of a 21 MW photovoltaic solar facility, LEI performed an updated market power analysis for acquirer's affiliates in the California ISO which has been grated market-based rate authorization, and prepared the related Section 203 filing. (2010) [ER10-204-000]

4 Budget

LEI expects to have a kick-off meeting a few weeks after the signing of the contract. LEI will also take advantage of this time to gather data and information needed to conduct subsequent tasks outlined in Section 3.2. LEI expects the two stages of the project to take between 18 and 20 months, depending on ESL's timeline for the RFP process and certification proceedings. LEI anticipates that a tentative schedule and the deadlines will be finalized during the kick-off meeting.

It is LEI's experience that procurement for CCCT's resources tends to have only a handful of experienced companies/bidders with track records of developing and building complex energy projects, and therefore, LEI does not anticipate this RFP to receive several bids. LEI proposes a total professional fee budget of **$135,060** (see Figure 4).

Figure 4. Indicative budget and breakdown of time budget by assigned staff

INDICATIVE STAFFING & BUDGET	Sayad	Marie	Barbara	Support	Total person-hours	Total fee ($)
Kick-off call	**1**	**1**	**1**	**1**	**4**	**$ 1,492**
Stage 1	**40**	**16**	**90**	**100**	**246**	**$ 77,056**
1.1 Initial review, regulatory context assessment, and strategic support	10	4	20	10	44	$ 15,664
1.2 Participation in Pre-RFP process and technical conferences	10	4	10	10	34	$ 12,064
1.3 Ongoing RFP monitoring, bid review support, and fairness assessment	10	4	20	40	74	$ 21,064
1.4 Preparation of RFP Process Report	10	4	40	40	94	$ 28,264
Stage 2	**50**	**12**	**50**	**50**	**162**	**$ 56,512**
2.1 Review of certification application(s)	20	4	20	20	64	$ 22,224
2.2 Data request development and analysis	10	4	10	10	34	$ 12,064
2.3 Support for formal proceedings and expert testimony	20	4	20	20	64	$ 22,224
Total	**91**	**29**	**141**	**151**	**412**	**$ 135,060**

The proposed budget is based on LEI's professional fee rates (see Figure 5).

Figure 5. LEI's professional fee rates

Assigned Staff	Position	Hourly Rate	Daily Rate
Sayad Moudachirou	Director	$476	$3,808
Marie Fagan	Lead Economist	$476	$3,808
Barbara Porto	Senior Consultant	$360	$2,880
Supporting Staff	Consultant	$260	$2,080
	Research Associate	$180	$1,440
	Admin	$125	$1,000

4.1 Expense budget

LEI estimates that the additional cost for reasonable and customary reimbursable expenses, such as (but not limited to) printing, courier, and data acquisition fees, if any, will not exceed ($600). In addition, travel costs are estimated in Figure 6 below. LEI will comply with all expense caps as outlined in the State of Louisiana Division of Administration Travel Policies and Procedures Memorandum. Accordingly, total professional fees including the expense budget will be approximately **$137,238**.

Figure 6. Travel costs

Travel	# trips	# people	# nights	Total cost
Meetings with LPSC	1	2	1	$1,052
Stakeholder or bidder meetings	1	1	1	$526
Total estimated costs				**$1,578**

Indicative

contact:
Barbara Porto
617-933-7228
barbara@londoneconomics.com

5 Conflict of Interest

LEI currently has no interest, direct or indirect, which would conflict with the performance of services under this contract and shall not employ, in the performance of this contract, any person having a conflict.

6 Resumes of key staff assigned to the project

Sayad Moudachirou

Managing Consultant, London Economics International LLC

KEY QUALIFICATIONS:

Sayad is a senior advisor in the energy and infrastructure industry at London Economics International, with 15 years of experience working on matters related to energy policy, market transformation, planning and sustainable operations, strategic investment and project economics in North America and around the globe. Mr. Moudachirou leverages his expertise in energy regulatory economics to educate market participants on market fundamentals and provide technical assistance and thoughtful insights into their operations, strategy, and decision-making process. His expertise in the power sector includes regulatory framework gap analysis, policy design and impact analysis, due diligence on commercial transactions, strategic planning, renewable asset management, as well as value stacking and assets valuation. Sayad has extensive experience establishing regulatory frameworks for the deployment and operation of both conventional and renewable technologies.

Throughout his career, Mr. Moudachirou served regulators, utilities, market investors and project developers on a range of issues including jurisdictional research and evaluation, power contracts negotiation, infrastructure planning, wholesale power market simulation and cost-benefit analyses. As part of his involvement in issues related to energy transition, technology adoption, and power market performance, Sayad has worked extensively with technologies increasingly relied upon to capture new market opportunities and address ever-evolving system needs. This includes among others, distributed energy resources ("DERs") and Battery Energy Storage Systems for which Sayad studied performance and contribution to system reliability (market level), deployment economics, and projects' revenue capture. Furthermore, his specific experience with renewables, has included regulatory compliance and optimization of physical assets, contracting and management of power plant re-commissioning.

Sayad also brings to the table a wealth of international experience. In Sub-Saharan Africa, he was involved in the development of a long-term strategic plan for a geothermal company in Kenya; the review of regulatory frameworks and development of strategies encouraging private sector participation in the power infrastructure sector (Cameroon, Ghana, Namibia and Kenya); as well as the impact analysis of construction of infrastructure (transmission and generation power assets) on local economies (Cameroon and Ghana). In Central and South America, Sayad has provided technical support to developers and prospective investors on their market strategy and project development. This includes projects in Colombia, Chile, Mexico, Panama and Peru.

Driven by his passion for art in general and performing arts in particular, Sayad volunteers on the Board of Portland Ovations, a 90-year-old non-profit organization with the mission to propel the artistic, social, educational and economic wellbeing of Southern Maine communities through the power of the performing arts.

EDUCATION:

Brandeis University, International Business School, Waltham, Massachusetts, USA, Master of Arts in International Economics and Finance, 2007.

University of Paris Dauphine, Paris, France, Master's in Finance and Banking, 2006.

University of Paris I – La Sorbonne, Paris, France, Bachelor of Arts, Economics, 2003.

EMPLOYMENT RECORD:

From: 2017	**To:** present
From: 2007	**To:** 2016
Employer:	*London Economics International LLC, Boston, MA* Managing Consultant, (January 2015 to July 2016), Senior Consultant (March 2012 to December 2014), Consultant (June 2008 to March 2012), Research Associate (September 2007 to June 2008)
From: 2017	**To:** present
Employer:	*Ampersand Hydro LLC, New York and New England* Asset Management & Regulatory Affairs
From: 2016	**To:** 2017
Employer:	*Wheelabrator Technologies, Portsmouth, NH* Finance Manager (Corporate and UK based assets)
From: 2007	**To:** 2007
Employer:	*Dresdner Kleinwort Investment Bank, New York City, NY* Intern Market Analyst
From: 2005	**To:** 2005
Employer:	*NATEXIS Arbitrage, Paris, France* Intern Analyst-Risk Controller

PROJECT EXPERIENCE:

The projects briefly described below are typical of the work Sayad has performed throughout his career at London Economics International. Projects have been selected based on their relevance to the present engagement.

<u>Due diligence on commercial transactions / assets valuation</u>

- ***Asset valuation and due diligence on a portfolio of renewable assets:*** London Economics International LLC ("LEI") was retained to provide assistance to the buy-side on the due diligence process in relation to the potential acquisition of a portfolio of hydropower plants in the state of Maine. As part of this process, as a project manager, Sayad led the LEI team

that carried out a (i) detailed review of technical and operational documents (provided for each of the target asset) to evaluate the assets' operating performance; (ii) developed a 20-year projection of energy, capacity, and Renewable Energy Credit prices, supplemented by an estimation of the revenue profile outlook for each of the target assets. Finally (iii) LEI carried out a valuation of the portfolio looking at 3 different methodologies ((Discounted Cash Flow, Depreciated Replacement Cost, and Comparable Transactions). The results of LEI's analysis were summarized in a technical report to which LEI attached a reliance letter to support the buyer in its decision making process.

- ***provided an understanding of the dynamics underpinning hydro-dominated power markets as opposed to thermal systems:*** LEI was hired by a private client to provide an understanding of the dynamics underpinning hydro-dominated power markets as opposed to thermal systems. As part of this project, LEI reviewed in detail the dynamics and key drivers of energy markets in a sample of Latin America countries including Colombia, Panama, Brazil and Chile. Colombia was the point of focus of the report, in this respect LEI compared and contrast several aspects of the Colombian markets to other jurisdictions and created a scoring card to evaluate Colombia against similar jurisdictions. In addition, we provided a detail description of market operations (both energy "Bolsa" and firm energy market "Mercado de Energia Firma") and discussed associated ongoing challenges and potential regulatory changes.
- ***valuated a portfolio of generating assets in Colombia***: LEI was hired by a large Canadian infrastructure company for the purposes of valuing a portfolio of generating assets in Colombia. LEI's scope of work consists of a comprehensive review of the Colombia energy market (including fuel and power market drivers), describe in detail the functioning of both wholesale power market (Bolsa) and firm energy market (Mercado de Energia Firma), develop forecasts of spot prices in order to derive expected revenues for the portfolio. Colombia being a hydro dominated system, as part of its modeling exercise, LEI ran a Monte Carlo simulation to develop a series of probabilities associated with generation profiles of Colombia's hydro resources to reflect the impact of weather conditions and water inflows on hydropower plants' output. LEI summarized its research and modeling results in a final report that was presented to lenders and other interested parties.
- ***provided due diligence analysis and support on the acquisition of a portfolio of small hydropower plants in the Pennsylvania-New Jersey-Maryland ("PJM") region:*** LEI was hired by a large infrastructures investment vehicle to provide due diligence analysis and support on the acquisition of a portfolio of small hydropower plants in the PJM region. The portfolio consisted of a mix of mini and small run-of river hydropower plants. LEI's scope of work was threefold. Firstly, LEI provided an overview of PJM RTO market, describing market fundamentals, key players, supply mix, retirements and new built, as well as discussing historical market trends. Then, we used our proprietary dispatch and simulation cost production model POOLMod to simulate power market dynamics and develop forecasts of energy prices in the assets' location over a 20-year horizon. As part of this modeling exercise, LEI used its in-house capacity market to develop capacity prices forecasts over a similar horizon. Finally given the conventional storage capability of one of the unit, the client requested LEI to provide a description of the frequency regulation market in PJM and to determine potential revenue opportunities for the plant. LEI provided results of its modeling

exercise in Excel format and prepared a slide deck summarizing key messages, key findings and recommendations to the clients. Sayad was the project manager.

- ***analyzed revenue / gross margin modules for a district cooling asset being considered for acquisition in Ohio:*** LEI was retained to analyze revenue/gross margin modules for a district cooling asset being considered for acquisition in Ohio. Under this engagement, LEI performed a due diligence review of the information received from the seller (including documentation from the data room) and designed a series of models aiming at quantifying the asset's potential revenues. Part of LEI's scope work also consisted of identifying and assessing the opportunities to enhance and extend the customers base within the Cincinnati existing and future market conditions. As part of its analysis, LEI created an Excel- based model integrating technical (for district cooling technology), financial and market assumptions to derive the asset's gross-profit margin under various assumptions – Flexible features were built in the model to facilitate the consideration of sensitivity analyses. LEI supplemented the financial model by creating a second model evaluating the impact of competitive solutions on the asset's forecast profit margins. More specifically, the latter evaluated the risks associated with prospective/existing customers forgoing the asset's services in exchange of self- supplying their cooling needs.
- ***analyzed revenue / gross margin modules for various district energy assets being considered for acquisition:*** LEI was retained to analyze revenue/gross margin modules for various district energy assets being considered for acquisition. LEI reviewed information received from the client, including detailed documents in the data room, and presented analysis in a slide deck relating to contract revenues (prices and volumes) and fuel costs (electricity) along with revenue and cost drivers. LEI also presented sensitivity analysis for high/low sales volumes, new customers, expiry dates of existing contracts, fuel costs etc. Sayad led the cost-side analysis and performed a due diligence review of second tier contracts for the assets.
- ***assisted in assessing the economics of a proposed transmission project to interconnect Peru's power market with the Sistema Interconectado del Norte Grande market in Chile:*** LEI was retained to assist a Private Equity Fund in assessing the economics of a proposed transmission project to interconnect Peru's power market with the Sistema Interconectado del Norte Grande ("SING") market in Chile. LEI provided an overview of the electric power markets of Peru and Chile, a 10-year market outlook for Peru and Chile spot electricity prices and a basic analysis of the project's economic impact on the two relevant markets.
- ***provided valuation services for a waste coal facility located in the PJM regional market:*** Specific tasks consist of i) due diligence review of documents such as past financial statements, operational statistics report, fuel agreements and PPAs; ii) forecasts energy and capacity prices in the PJM regional market; iii) create a pro forma financial model to evaluate the market value of the plant as of expiration of its PPA; iv) writing a final report documenting assumptions, methodologies used and modeling results.
- ***assisted a large foreign utility in its bid strategy for acquisition of generating assets in international jurisdictions:*** Sayad led the market analysis for assets located in Mexico. Under this assignment, Sayad analyzed macroeconomic risks likely to impact operations of the assets in the long run (political, economic, financial and regulatory risks), and modeled the Mexican electricity market in order to determine future profitability of the assets.

Testimony / market monitoring / miscellaneous

- ***Expert witness and technical support on the review of a contentious formula rate tariff*** London Economics International was hired to provide technical support on a dispute between a cooperative organization and a departing co-op member over the formula rate design proposed by the cooperative organization. LEI represented the interest of the departing cooperative member and as such carried out a detailed analysis of the impact of the proposed formula rate and review its applicability against the principles of cost causation and other rate design best practices. LEI provided support throughout the litigation case including review of testimonies, developing testimonies and rebuttal testimonies, drafting and reviewing discovery requests.
- ***Technical assistance and expert witness on membership dispute:*** LEI was retained by Tipmont REMC ("Tipmont") to calculate the potential stranded cost for Wabash Valley Power ("WVAP") as a result of the departure of Tipmont's load. Stranded costs represent costs which a utility (in this case, WVAP) would have recovered through regulated rates, but the recovery of which may now be impeded because of regulatory changes or other circumstances. In recent years, termination of long term arrangements between the two parties had created stranded cost issues. Tipmont was seeking to terminate its arrangement with WVAP and explored wholesale power supply alternatives. LEI performed an independent stranded cost analysis based on the methodology adopted by FERC in Order 888 and further refined in subsequent dockets. LEI further assisted Tipmont throughout the litigation proceeding with a series of tasks including drafting testimonies and rebuttals, reviewing and drafting discovery requests and providing analytical support on legal briefs.
- ***Technical assistance on a litigation process regarding the expansion of ISO territory***: LEI was hired by the PUCT to provide evaluation services pertaining to the announced decision by Entergy to join the Midwest Independent Transmission System Operator ("MISO") Regional Transmission Organization ("RTO"). LEI evaluated several existing cost/benefit studies related to Entergy's decision to join MISO over the Southwest Power Pool ("SPP") and will be providing quantitative and qualitative analysis of specific costs/benefits attributable to ETI and its customers following membership in either MISO or SPP, including but not limited to net trade benefits, transmission cost allocation, governance issues, and continued participation in the Entergy Service Agreement following RTO membership.
- ***supported in preparing testimony for Maryland PSC:*** **s**upported LEI's principals in preparing testimony on behalf of the Staff of the Maryland Public Service Commission ("MPSC"); the testimony involved a cost-benefit analysis in relation to the proposed transaction between Constellation Energy and Électricité de France ("EDF") whereby EDF would purchase from CEG a 49.99% interest in Constellation Energy Nuclear Group. Sayad specifically performed a cost-benefit analysis to evaluate the impact of the construction of a new nuclear power plant, Calvert Cliffs 3, concurrently to the success of the transaction, on customers of Baltimore Gas & Electric (a subsidiary of Constellation Energy).
- ***evaluated outlook of competition and potential for market power:*** LEI was hired to evaluate outlook of competition and potential for market power stemming from the FirstEnergy and Allegheny Power merger. Sayad's work involved measuring market concentration under a

series of simulated states of the markets and analyzing impact on energy prices. The power market study was conducted by running Herfindahl-Hirschman Index ("HHI") analysis.

- ***assisted in producing a comprehensive report on revenues decoupling in the US:*** LEI was hired by a major foreign company to produce a comprehensive report on revenues decoupling in the US. As a co-writer of the report, Sayad conducted extensive research on history of decoupling in US electricity and natural gas markets, identified advantages and weaknesses of decoupling and provide thoughtful insight on challenges featuring decoupling implementation to the client.

Strategy advisory and planning

- ***Strategic planning for a coop's market transition in the Midcontinent wholesale market:*** LEI was hired by a Midwest cooperative to provide technical assistance throughout the client's decision-making process to design, prepare, and execute its plan to become a full market participant in the Midcontinent ISO ("MISO"). The decision of becoming an MP would unlock new opportunities for the coop to take ownership of its market strategy with regards to full participation in energy markets, energy management and maximizing revenue opportunities in the short, the mid, and the long term. LEI was retained to assess the benefits and costs associated with the change under a host of scenarios, provide step-by-step guidance on an implementation plan, and provide some thoughts on the timing of key milestones. As part of this process, LEI also supported the coop throughout its settlement process with the existing intermediary in MISO; this consisted of reviewing the proposed settlement agreement, modeling final settlement terms and ensuring consistency with the original settlement agreement, and engaging with MISO and other parties relevant to the transition process.
- ***Idaho Power - IE for 2028 AS RFP:*** LEI was hired by Idaho Power Company to serve as an Independent Evaluator for its 2028 all-source energy (including storage) and capacity resources RFP ("2028 AS RFP"). The 2028 AS RFP was being issued to facilitate the sourcing of competitively priced resources capable of being commercially operational no later than June 1, 2028. The resources were needed to ensure IPC could address the needs identified in its latest Integrated Resource Plan (2023 IRP). The role of LEI as the IE was to oversee the competitive bidding to ensure that it was conducted fairly, transparently, and properly in congruence with the Oregon bidding rules. LEI was to ensure there was no bias in the procurement process, in particular a "self-build" bias that unjustly favors utility-owned resources. Moreover, LEI was tasked to develop a thorough evaluation process reflecting the procurement guidelines and apply it consistently to all resource bids received. Finally, LEI was requested to assist with OPUC with the monitoring of contract negotiations (all contracts associated with the winning bids). LEI's role consisted of documenting progress on key contract terms, reporting on unexpected challenges and issues, and providing a detailed review of the process leading to contract agreement (or the termination of negotiations). Sayad was the Project Manager leading the LEI team on this assignment.
- ***Idaho Power Company 2026 All-source RFP***: LEI was hired by Idaho Power Company to serve as an Independent Evaluator for its 2026 all-source energy (including storage) and capacity resources RFP ("2026 AS RFP"). The 2026 AS RFP was being issued to facilitate the sourcing of competitively priced resources capable of being commercially operational no later

than June 1, 2026. The resources were needed to ensure IPC could address the needs identified in its latest Integrated Resource Plan (filed on December 30, 2021). The role of LEI as the IE was to oversee the competitive bidding to ensure that it was conducted fairly, transparently, and properly in congruence with the Oregon competitive bidding rules. LEI was to ensure there was no bias in the procurement process, in particular a "self-build" bias that unjustly favors utility-owned resources. Moreover, in addition to serving as an overseer of the procurement process, LEI was tasked to carry out a thorough independent review, evaluation and scoring of all submitted bids (consistent with Oregon's competitive procurement guidelines) and compare findings to IPC's. Finally, LEI was required by the commission to oversee and report on the contract negotiation process. Sayad was a senior advisor on the team supporting the review and evaluation of the bids.

- ***REC Tier 1 procurement process and contract negotiation in NY***: LEI was hired by a owner and operator of a hydropower plant located in upstate NY to assist with securing a REC tier 1 contract with the New York State Energy Research and Development Authority (NYSERDA). Each year, NYSERDA purchases in competitive solicitation processes, Tier 1 Renewable Energy Certificates associated with electricity generated from eligible facilities (including new development and recommissioning). LEI's task consisted of preparing and submitting a wining bid in the 2022 Tier 1 procurement process, providing support on the 20-year term contract negotiations with NYSERDA, while managing the re-commissioning process of the targeted asset. Sayad was the process manager for LEI.
- ***Successful federal grant applications:*** LEI was retained by the owner and operator of a portfolio of renewable resources, to file grant applications for the Hydroelectric Efficiency Improvement Incentives Program (Section 243) and the Maintaining and Enhancing Hydroelectricity Incentives program (Section 247) (both programs made available under the Bipartisan Infrastructure Law). LEI's work consisted of preparing the grant applications and contacts negotiations with the DOE. Sayad was the process manager for LEI.

Industry analysis / market opportunities and new technologies

- *Economic impact analysis for an outage resulting from the impairment of critical transmission infrastructure:* LEI was hired by a New England utility to carry out an independent expert analysis regarding the potential economic losses (and other associated costs) to electricity consumers affected by a highly critical transmission system component forced out of service. LEI relied on the concept of Value of Lost Load ("VoLL") and understanding of the scope of impact to estimate the economic impact of the outage. The purpose of this analysis was to determine whether the investment in infrastructure (ballistic physical barrier) proposed by the utility to limit the probability of occurrence (or the intensity) of a high-impact outage could be economically justified at the proposed cost.
- ***Direct Connect – SOO Green 2019-2020 Open solicitation***

  LEI was selected by a transmission developer to serve as Independent Examiner for a proposed merchant transmission project open solicitation process in the Midwest US connecting two large RTOs. LEI designed a novel process to not only solicit transmission

customers, but match suppliers, buyers, and marketers so to help reduce the market risk of shippers signing up for long term transmission agreements. LEI's scope of work included designing the solicitation process, meeting with FERC staff in advance of the project's application for negotiated rate authority, preparing all solicitation documents, coordinating the marketing campaign with an outside firm, conducting information sessions, matching suppliers/buyers/marketers, allocating transmission capacity, and submitting a report to FERC demonstrating the results of the process as part of the developers' Section 205 filing.

- ***collaborated with SratOrg on the development of strategic recommendations for the market penetration in the US transmission and distribution markets:*** LEI collaborated with SratOrg, a French consultancy on the development of strategic recommendations for market penetration in the US transmission and distribution markets. As part of this work, LEI and StratOrg performed a detailed analysis of the US market structure, identifying key market players and recent development, as well as barriers of entry and market opportunities for a prospective European investor. LEI travelled to Paris for an internal workshop session with Stratorg and actively participated in the final presentation of the team findings before the client's top managers. Sayad was the principal market researcher and project manager on LEI's side.
- ***provided market analysis to support the due diligence process for an investment in a new 250 MW wind generation project in northern Mexico:*** LEI was engaged by a large private equity company to provide market analysis to support the client's due diligence process for an investment in a new 250 MW wind generation project in northern Mexico. The Project was expected to sign power purchase agreements ("PPAs") with industrial facilities and sell its output under a self-supply ("Autoabastecimiento") arrangement. LEI's scope of work included providing a report detail overview of the Mexican power sector and the self-supply program (Phase I). In addition, LEI under Phase II of the engagement, LEI performed a 20-year forecast for a series of a mix of low voltage, medium voltage and high voltage tariffs identified by the client. Sayad was in charge of developing a 20-year forecast of the tariffs of interest. Deliverables under this project included the (Excel based) tariff model and a Final Report documenting the methodology and the assumptions used in the model.
- ***led the development of an excel-based model to capture and quantify potential revenues of the battery and a value proposition of the storage device along with the marketing strategy:*** LEI was hired to evaluate new revenues opportunities for an alternative storage technology in a sample of US and European energy market jurisdictions. The overarching objective of the client was to identify markets and services maximizing the battery market value, and develop a business plan accordingly. As the project Manager, Sayad led the development of an excel-based model to capture and quantify potential revenues of the battery in both electricity and ancillary services markets. In addition, Sayad played a critical role on crafting the value proposition of the storage device along with the appropriate marketing strategy to pursue the targeted market opportunities.
- ***helped prepare a report providing an overview of past and current initiatives pertaining to pollutants emissions regulation for future carbon regulation in the US:*** LEI was hired by a large Canadian IPP to prepare a report providing an overview of past and current initiatives pertaining to pollutants emissions regulation with the purpose to inform the potential paths forward for future carbon regulation in the US. The engagement was initiated following the

Executive Office of the President released the President's Climate Action Plan ("CAP") to reduce greenhouse gas ("GHG") emissions, and to prepare for the impacts of climate change. Under this engagement, Sayad performed a detail literature review of the President's directive, past Environment Protection Agency ("EPA") regulations, as well as exiting regional carbon reduction programs. The overarching purpose of this exercise was to estimate the potential shape of a future carbon rule in the US (with associate features such as timing, mechanisms, and regulatory framework) based on EPA's legal authority scope, procedures and lessons learned from failed or successful rules implementation. LEI identified various market-based and non-market-based regulatory frameworks/scenarios and ranked them on their relative likelihood based on a set of established criteria including affordability of the regulatory scenario, impact on generation retirement and system reliability, alignment with EPA's precedents, congruency with Presidential directives, consistency with EPA's jurisdiction, and political palatability.

Regulatory and policy analysis

- ***Workshop on ERCOT energy markets (Texas)***

  LEI was hired to develop a technical workshop on the operations and performance of ERCOT's energy market. The purpose of the workshop was to educate and provide support to a prospective investor in its market screening process. A sample of topics of discussion included the dynamics of ERCOT's market fundamentals, pricing mechanisms and price formation in ERCOT. The workshop also covered in detail the expected impact of proposed regulatory and legislature changes on the evolution of pricing in ERCOT.

- ***Study of retail market evolution in Texas and New York***

  LEI was retained to carry out a review of the evolution and the competitive nature of the electric retail markets in New York and Texas. The goal of the exercise was to draw lessons learned from the case studies, identify innovative regulatory features and market practices, and explore its relevance for potential adoption in the UK market.

- ***developed a strategy and implementation plan to support Uganda with its transition toward more renewables:*** LEI was hired by the US energy Association to assist the Uganda Electricity Generation Company in developing a strategy and implementation plan that will support UEGCL's goals to achieve energy mix diversification, while relying on the exploitation of native non-hydro renewable resources (wind, solar (with storage) and geothermal) consistent with the country's overall economic development plan. Under this mandate, LEI was also required by USEA and USAID to explore the gaps in policy, regulatory shortcomings, and institutional design inefficiencies that may inhibit energy diversification; identify challenges of integrating renewables into the grid system of Uganda. Findings from the analysis were presented to the UEGCL top management and discussed in a workshop involving other key stakeholder such as the ministry of energy, the regulatory authority (ERA), the transmission utility (UETCL).

- ***performed a short-term technical assistance to the Haitian Energy Agency ("ANARSE"):*** LEI was hired by the US Energy Association to perform a short-term technical assistance to the ANARSE. The overarching goal of the project was to empower the newly created regulatory

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authority (along with other stakeholders) with theoretical knowledge (backed by practical case studies), and best practices, to support its efforts toward market liberalization and successfully achieve the goals set in its mandate. The work consisted of developing training materials and leading a 3-week workshops on three key topics including i) licensing, ii) tariff design and ratemaking methodology, and iii) institutional design and staffing best practices. The workshops were supplemented by a series of gap analyses on the existing market structure and regulatory framework. All workshop sessions were delivered in French while the supporting materials were delivered in both French and English.

- ***analyzed policy options for Alberta carbon reduction targets:*** For a large market participant in Alberta, analyzed all possible policies to reduce carbon and other greenhouse gas emissions. Conducted case studies of California's efforts to increase solar distributed generation and energy efficiency, Feed In Tariffs in Germany, California's cap and trade program, UK carbon levy, and Renewable Portfolio Standards in Texas, Montana, and Massachusetts. Recommendations were calibrated by extensive economic modeling of the Alberta electricity sector. The modeling exercise consisted of evaluating the impact of changes to Alberta's climate change and carbon emission regulations on the portfolio of the power sector as a whole, and electricity consumers. The analysis entailed modeling various scenarios relating to different specific regulations and assumptions to determine the financial impact on selected plants as well as the prevailing impact on prices.
- ***assisted Energy Regulatory Authority ("ERA") of Uganda in developing a streamline process to review eligible technology types and training ERA staff on-site:*** LEI was hired by the kfW as part of a consortium with the Frankfort School of Finance to assist ERA in developing a streamline process to review eligible technology types under RE-FIT program as well as training ERA staff on-site in best practice financial models, methodology and tools for this process. LEI's scope of worked included designing and standardizing generic financial models to evaluate bids for large hydropower plants. Sayad and the LEI team organized and animated a four-day workshop training on financial modeling best practices and IPP's financial models review. The workshop training was attended by ERA staff and representatives of the ministry of energy and the utilities.
- ***provided due diligence assistance in designing and developing a framework to promote and develop renewable energy in Saudi Arabia:*** LEI was hired by a Special Purpose Vehicle steering committee to provide due diligence assistance in designing and developing a framework to promote and develop renewable energy in Saudi Arabia. LEI's mandate was extensive and consisted of defining eligible renewable technologies, determining and implementing the adequate development strategy based on international best practices and lessons learned, providing guidance to the Steering Committee via series of workshops and stakeholders leadership meeting. The first portion of the work consisted of delivering series of case studies for selected jurisdictions. Sayad was responsible for researching and reporting on feed-in-tariffs and competitive procurement strategy in South Africa and a Special Energy Procurement Strategy in Morocco. The second delivery of Sayad consisted of evaluating the potential for the development of a waste-to-energy industry in Saudi Arabia and determined its eligibility under Saudi Arabia's renewable program.
- ***provided evaluation services pertaining to the announced decision by Entergy:*** LEI was hired by the Public Utilities Commission of Texas to provide evaluation services pertaining to the

announced decision by Entergy to join the Midwest Independent Transmission System Operator ("MISO") Regional Transmission Organization ("RTO"). LEI evaluated several existing cost/benefit studies related to Entergy's decision to join MISO over the Southwest Power Pool ("SPP") and provided quantitative and qualitative analysis of specific costs/benefits attributable to ETI and its customers following membership in either MISO or SPP, including but not limited to net trade benefits, transmission cost allocation, governance issues, and continued participation in the Entergy Service Agreement following RTO membership.

- ***acted as an independent monitor providing guidance for Entergy New Orleans:*** Sayad was part of the LEI team acting as an independent monitor providing guidance to the City Council of New Orleans and Entergy New Orleans in their solicitation, review and selection process of a Third Party Administrator to implement and deliver conservation and demand management programs on behalf of the utility. Sayad's responsibilities include reviewing Entergy's sample contract and RFP to ensure of its fairness and comparing against best practices.
- ***performed a feasibility study for the development of a 5 MW solar photovoltaic pilot project in Essaouira:*** As a member of a consortium, LEI was hired by the USTDA to perform a feasibility study for the development of a 5 MW solar photovoltaic pilot project in Essaouira (Morocco). The project is a key milestone in the development strategy of the Moroccan Agency for Renewable Energy ("ADEREE"). LEI assisted Power Engineers the consortium-leader, providing regulatory review of the Moroccan regulatory framework and performing an economical and financial analysis of the project. Other relevant task included the development of an RFP for build and design.
- ***assisted in establishing an effective regulatory pricing regime for electricity, water and sewerage industries within The Gambia***: LEI was retained by the Gambia Promotion of Investment & Free Zones Agency ("GIPFZA") to establish an effective regulatory pricing regime for electricity, water and sewerage industries within The Gambia. The key elements to be addressed in attaining this objective were: (i) development, and incorporation within a computer model, of traditional cost of service mechanics; (ii) establishment of an incentive structure; (iii) customer financing of system extension; and (iv) retail tariff design. Sayad was primarily involved in the tariff modeling and best practices analysis. In addition, he helped design a financing mechanism that aims at incenting local communities to invest in transmission and/or distribution lines extension. Sayad also developed a detailed template of rate case filings to be used by electricity and water utilities of the Republic of Gambia when filing to the Public Utilities Regulatory Agency.
- ***analyzed the process of electricity market deregulations in Texas, New York and Pennsylvania:*** For a European utility, Sayad studied the process of electricity market deregulation in Texas, New York and Pennsylvania. For each state, Sayad analyzed specifically how regulation features affected incumbents' corporate structure and the response of incumbents to comply with the law requirements.
- ***conduced a detailed analysis of the electricity market, institutional design and regulatory framework in France and Germany:*** For a Canadian company, Sayad conducted a detailed analysis of the electricity market, institutional design and regulatory framework in France and

Germany. The purpose of the analysis was to identify investment opportunities in renewable sources such as wind and hydropower taking into account electricity market structure and regulation framework.

Zero emissions fuels, BESS, and Distributed energy resources

- ***BESS project development in ERCOT (Texas):*** LEI was hired to provide market assessment and technical assistance on the design and optimization of a Battery Energy Storage System (BESS) planned to be co-located with a solar plant in ERCOT. As the project manager, Sayad led the LEI team that used a modeling suite combining a production cost model POOLMod with an Energy Storage Optimizer to simulate an optimization of the revenues capture across several market products, over a 20 year horizon. In addition, LEI worked with Waldron, a partner engineering firm to produce cost estimates for the BESS facility based on the target commercial operation date, the project size and configuration from the BESS conceptual design. Finally, LEI provided qualitative views on permitting and regulatory impactions for the BESS and potential future requirements of firming for solar in the ERCOT market.
- ***Due diligence review of BESS operational and financial performance in Alberta (Canada):*** LEI was engaged by a lender to assess the technical adequacy, operational performance, and suitability of a battery energy storage project (in development) and provide technical support in the drafting of financing documents required to reach financial close. As the project manager, Sayad led the LEI team that performed (i) an operating performance review of an existing asset; (ii) forecasts for energy prices, ancillary service prices, and energy storage modeling over a 25-year timeframe, as well as the development of a revenue profile for the target portfolio; and (iii) provided a detailed market report of the Alberta market.
- ***UN ESCAP: Evaluating the role of low emission fuels and hydrogen in energy transition for Pacific Island nations:*** LEI led a consortium retained by the United Nations Economic and Social Commission for Asia and the Pacific ("UNESCAP") to develop a toolkit aiming at increasing the capacity of Pacific Island Countries and Territories (PICT) policy makers to use energy connectivity principles (collaboration, coordination, and harmonisation) to support sub-regional and national efforts to meet the UN Sustainable Development Goals (SDGs), in particular SDG 7, (ensure access to affordable, reliable, sustainable and modern energy for all), and to develop more integrated energy markets in the Pacific Sub-Region. LEI designed a Toolkit to i) provide a solid understanding of the economics of Power-to-X products (including hydrogen) in the context of decarbonization, ii) educate policymakers on best practices for designing hydrogen-based strategies (and associated roadmap) drawings from international case studies, and iii) discuss potential avenues to facilitate the involvement of PICTS members in a regional hydrogen market.
- ***Assessed the market for solar thermal technologies as part of the European Union Horizon's 2020 research and innovation program:*** LEI was retained as part of a consortium under the European Union Horizon's 2020 research and innovation program to provide technical assistance on assessing the market for solar thermal technologies. LEI's conducted an

economic assessment of solar thermal technology, by evaluating the value contribution of the different components of the value chain leading to a molten thermal solar plant, as well as by providing support to developing business strategies for this market. LEI's analyzed 3 high priority markets - Saudi Arabia, Morocco, and Chile, conducting interviews with key market participants in each country, assessing the economics for solar thermal there, and rules governing market access. Sayad led the case study on Morocco and represented the team at the consortium meeting in Zurich.

- ***conducted a non-transmission alternative ("NTA") study for East Cambridge:*** Eversource hired LEI to perform an analysis on the ability Distributed Energy Resources ("DERs") (including BESS) to address potential reliability issues identified in the East Cambridge area. Under its planning strategy, Eversource is required to evaluate the feasibility and fit of alternate solutions to the substation construction, hence the need for LEI's study. LEI's determination of maximum DERs was done under two scenarios: a low-end scenario, in which the maximum amount of DERs was determined while taking under consideration all physical, operational and financial identified constraints, and a high-end scenario in which the amount of DERs was primarily determined by the maximum amount of distributed generation that can be interconnected at East Cambridge and Putnam substations.
- ***assisted in development of a strategy to enter the US market:*** LEI teamed up with Ylios Consulting (a European consultancy) to assist a large European energy company crafting its strategy to enter the US market and become a key participant in the integration of distributed energy resources ("DERs"), and in the energy management space. The purpose of the work was to develop a strategy and create the adequate positioning to accommodate the company's goals. The team developed a set of case studies on "mature" markets (maturity defined by the level of decentralization, deployment of DERs and associated projects). Markets considered included Australia and the US. LEI was asked to conduct series of case studies on existing programs (and pilot projects) across the US to identify potential opportunities originating from energy management in these decentralized markets.

Project development in emerging countries

- ***provided due diligence and evaluated the Long Term Strategic Plan and 10 years Development Plan of the Geothermal Development Company ("GDC"):*** LEI was hired in a consortium to provide due diligence and evaluate the Long Term Strategic Plan and 10 years Development Plan of the GDC of Kenya. The GDC is a government-owned special purpose vehicle established to initiate, promote, develop and exploit Kenya's geothermal resources. The GDC targeted to develop 5 GW of geothermal capacity by 2030. Sayad's role in the project consisted of reviewing and updating GDC's financial plan, conducting a detailed review of the regulatory framework of Kenya and its neighboring countries to identify potential threat and opportunities for GDC's activities and plan. The review was conducted to benchmark Kenya's framework against best practices to attract private sector investments and facilitated implementation of IPPs. In addition, as part of a hard skillset transfer scheme, LEI was required to hold a week-long training workshop on institutional design best practices and financial modeling in the context of planning.

- ***provided financial and technical advisory assistance to the Government of Cameroon regarding the development of a 75 MW hydroelectric power plant:*** Under a USTDA contract, Sayad is involved as a junior power market analyst in the LEI portion of the work for a consortium to provide financial and technical advisory assistance to the Ministry of Energy and Water Resources of the Government of Cameroon with respect to the development of a 75 MW hydroelectric power plant at Bini à Warak. Specific tasks include review of Cameroon's existing regulatory system, regional market demand analysis and assessment of developmental impact of the project. The purpose of this task was to provide recommendations on improvements needed to attract IPPs in Cameroon. Sayad was also required to evaluate and quantify the direct and indirect impact of the project on the local and national economy in terms of job creation and value added.
- ***conducted a feasibility study for the Ghana Grid Company in relation to the "Eastern Transmission Line":*** LEI was part of a consortium with Siemens, Delphos International, and Eurasia Environmental Associates, conducting a feasibility study for the Ghana Grid Company in relation to the "Eastern Transmission Line". The study will make recommendations on the economic and technical feasibility of expanding and strengthening Ghana's northern and eastern transmission network with several hundred miles of new or updated transmission lines, as well as other associated infrastructure. LEI's scope for the project included providing a cost-benefit economic analysis of the project, carrying out a regulatory review to determine shortcomings and potential barriers to project development and private capital investments in Ghana. Sayad was the main market analyst conducting the regulatory. The project findings were presented to GridCo top management in a workshop session held in Accra.

Non transmission alternatives economic analysis

- ***Non-Transmission Alternative ("NTA") testimony for Merrimack Valley Reliability Project ("MVRP") before the MA Energy Facilities Siting Board ("EFSB"):*** ESFB. DPU 15-44/45- London Economics International LLC ("LEI") was engaged by Eversource and National Grid (collectively referred to as the "Utilities") to conduct a NTA analysis for the MVRP project. The MVRP project is one of the three components of the larger transmission solution known as the "AC Solution." These transmission projects were proposed by the Utilities in response to an identified reliability need in the Boston metropolitan area and surrounding suburbs. LEI conducted its analysis based on the information on injection amounts, injection locations, critical load level ("CLL") and load at each substation that was provided by the Utilities to estimate the least cost technically feasible NTA solution. LEI also worked with the Utilities to provide testimony about its analysis to the ***ESFB. DPU 15-44/45***

  Similar NTA analysis was carried independently for the other two proejct of the AC portfolio Solution:

  - ***Mystic - Woburn Project ("MWP")*** *before the MA Energy Facilities Siting Board ("EFSB"):*EFSB 15-03/ D.P.U. 15-64/65
  - ***Wakefield Woburn Reliability Project ("WWP")*** *before the MA Energy Facilities* EFSB 15-04/D.P.U. 15-140/141

- ***Non - Transmission Alternatives ("NTA") Analysis for the Acushnet to Fall River Transmission Project*** Eversource hired LEI to assess the technical feasibility, cost, and practicality of various utility-scale NTAs to rectify the thermal loads expected to occur in the High Hill area. An NTA solution was analyzed as an alternative to the potential Acushnet to Fall River Transmission Project. LEI carried out a detailed technical analysis to determine the NTA solution that would be capable of solving thermal overloads and other voltage issues under three load scenarios.
- ***Conducted non–transmission alternative study for presentation to the Connecticut Siting Council:*** LEI was hired to conduct a Non- Transmission Alternatives ("NTA") analysis for the two transmission projects, which are a component of larger transmission solution being proposed by Eversource and the Greater Hartford and Central Connecticut ("GHCC") area. The objective of the NTA analysis was to determine the feasibility and viability of other non-transmission resources- such as new generation and new demand-side resources- to be developed in lieu of these two specific transmission projects to relieve transmission reliability concerns. The NTA analysis [was] filed as part of Eversource's application with the Connecticut Siting Council ("CSC") for each of these transmission projects. [CSC Docket No. 474]
- ***NTA study to assess supply-side and demand-side resources:*** LEI was hired by Eversource to perform a non-transmission alternative study to the Frost Bridge – Naugatuck Valley & Housatonic Valley – Norwalk/Plumtree solution. LEI was asked to evaluate the potential and viability of replacing the solution with supply-side and demand-side resources. Eversource planners have identified two substations within the subarea of study that would be suitable to accommodate an NTA. Under this engagement, LEI reviewed the technical attributes and operational profiles of a range of technologies to evaluate their suitability for resolving overloads and thermal voltage identified by ISO-NE in the SWCT Needs. LEI's independent expert analysis was presented for siting approval at the Connecticut Siting Council ("CSC"). [CSC Docket No. 468]
- ***Connecticut Siting Council, application for permitting of the Greater Springfield Reliability Project:*** LEI simulated the New England wholesale electricity markets in order to compare the economic benefits between Greater Springfield Reliability Project ("GSRP") and responses to the Connecticut Energy Advisory Boards' ("CEAB") RFP for a non-transmission alternative ("NTA") to GSRP. The NTA consisted of modeling a new CCGT plant to be placed in Southwestern Connecticut. In order to ensure that economic benefits were not subject to the forced outage and availability schedule of the simulated energy markets, LEI simulated the energy market with 30 different random forced outage and availability schedules. In effect, these 30 different simulations added further robustness to LEI's results because it captured the flexibility of the New England energy market under several different normal operating conditions. Furthermore, the simulations created a distribution of results which was used to calculate confidence intervals and hypothesis tests, hence further increasing the robustness of our findings. The study results were used to produce written testimony to the CSC, oral testimony was provided in late August and early September 2009. (2008-2009) [CSC, Docket 370]

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Marie N. Fagan, PhD

Lead Economist

KEY QUALIFICATIONS:

Marie Fagan is the Chief Economist at London Economics International, LLC, based in Boston, Massachusetts. With over 30 years of experience in research and consulting for the energy sector, Marie's career has spanned international upstream and downstream oil and gas, global coal, North American gas markets, North American power markets, and regulated electric and gas utilities. She has advised industry clients, financial clients, regulators, and public interest organizations. She serves as an expert witness in oil, gas, and electric power litigation and regulatory matters.

Marie leads LEI's engagements related to oil and natural gas market analysis. She led an engagement for the New Jersey Board of Public Utilities examining non-pipeline alternatives for meeting design day gas demand. Other projects have included serving as independent market expert for the Maine Public Utilities Commission, in the evaluation of the costs and benefits of new natural gas pipelines into New England, and independent market expert for the Minnesota Department of Commerce in the matter of the CN application of Enbridge Energy for the Enbridge Line 3 oil pipeline expansion.

Marie leads and participates in engagements requiring deep expertise in the electric power sector. Projects have included analysis of hourly real time and day-ahead energy prices in Electric Reliability Council of Texas ("ERCOT") during Winter Storm Uri in 2021 in support of litigation and regulatory matters. Marie leads LEI's utility management performance audit engagements and has been involved in performance-based and cost-of-service ratemaking cases. She has provided expert advice related to analysis of total factor productivity ("TFP") studies and led a detailed econometric benchmarking study of TFP in support of a performance-based rate filing.

From 1996-2014, she was with Cambridge Energy Research Associates ("CERA," now part of IHS Markit/S&P Global). She served as an Associate, then Associate Director for CERA's Global Oil research practice, and as a Director for the North American Gas research practice; she founded the CERAView Institutional Investor Service and co-founded CERA's Global Steam Coal service; she served as Senior Director for CERA's North American Electric Power service and of IHS CERA's Upstream Strategy service. Before joining CERA, Marie served as an economist with the United States Energy Information Administration ("EIA"), conducting analysis and modeling supporting the Annual Energy Outlook ("AEO"), and conducting analysis of energy company financial performance.

Marie is the author of original research with publications in academic and industry journals. She holds a PhD in Economics from the American University in Washington, DC. She is a member of the Energy Bar Association, the American Economic Association, International Association for

Energy Economics, and the Boston Economic Club. She is former Vice President of Business for the US Association for Energy Economics ("USAEE") and is a former member of the USAEE Strategic Planning Committee. She serves as a referee for the *Energy Journal,* the flagship academic publication of the International Association for Energy Economics

EDUCATION:

Institution	American University, Washington DC
Date:	1995
Degree(s) or Diploma(s) obtained:	PhD in Economics. Dissertation: "Measuring Cost and Efficiency in US Crude Oil Resource Development, 1977-1990: A Frontier Translog Cost Function Approach"

Institution	University of Connecticut
Date:	1984
Degree(s) or Diploma(s) obtained:	Bachelor of Science, Business Administration (Finance)

EMPLOYMENT RECORD:

Date:	2014-present
Location:	Boston, MA
Company:	**London Economics International LLC ("LEI")**
Position:	Managing Consultant and Lead Economist

Date:	2003-2014
Location:	Cambridge, MA
Company:	**IHS (formerly Cambridge Energy Research Associates ("CERA"))**

Position:	Senior director, Upstream Strategy Advisory service (2012-2014). • Responsible for the re-vamp of research services and development of new research services focused on the needs of oil and gas exploration and production companies. Defined product architecture, defined deliverables, and generated research, as well as managed the delivery of research. Responsible for marketing plans and focus, conducting presentations to Board of Directors meetings and other C-suite client groups. Keynote speaker at IHS CERA events such as CERAWeek and other industry events and conferences Senior director, North American Gas, Power, and Renewables group (2007-2011). • Responsible for thought leadership, development, and delivery of research for IHS CERA's North American Electric Power Advisory Service and North American Gas and Power Scenarios Service. Led client engagements, as well as wrote and published research. Provided oversight and direction of the launch of a new research service, the IHS CERA Global Steam Coal Advisory Service Director/Senior director, CERAView Institutional Investor Service (2004-2007) • Created, launched and directed IHS CERA's first research service encompassing the oil, gas, and power sectors to serve a targeted client community. Developed a new IHS CERA research publication, *Investors' Energy Monthly*, and served as publication's executive editor. In this role, won the IHS Circle of Excellence Award in 2005 Director, North American Gas Advisory service (2003-2004) • Responsible for rapid re-construction and turnaround of one of CERA's largest research advisory services. Contributed to and helped define the research agenda, and was responsible for the editorial content and publication of major research and analytical reports related to gas infrastructure and markets in North America. Advised senior executive clients, including leading discussions of sensitive client-related issues.

Date:	2001-2002
Location:	Boston, MA
Company:	**International Human Resources Development Corporation ("IHRDC")**
Position:	Director, International Gas Program • Developed and implemented management training programs for middle and senior energy company managers, designed interactive presentations and teaching materials, and served as instructor. Taught principles of project development and financial analysis of energy company operations.

Date:	1996-2001
Location:	Cambridge, MA
Company:	**CERA**
Position:	Associate director, Global Oil advisory service (1999-2001) • Authored original research reports, responsible for client presentations and the management, execution, and delivery of consulting projects. Associate, Global Oil advisory service (1996-1998) • Developed and maintained IHS CERA's expertise in exploration and production costs, technology, and financial factors affecting the upstream oil and gas industry.

Date:	1994-1996
Location:	Washington, DC
Company:	**US Department of Energy, Energy Information Administration**
Position:	Economist • Conducted financial analysis of upstream and integrated oil and gas companies; evaluated and implemented conceptual approaches to analysis of energy markets and market incentives, and wrote and published original research reports.

Date:	1989-1994
Location:	Vienna, Virginia
Company:	Decision Analysis Corporation of Virginia (DAC)
Position:	Research associate/Associate • Performed economic and econometric analysis, modeling, and forecasting to support the Energy Information Administration energy end-use models. Designed the National Energy Modeling System's Commercial Energy Demand Model; conducted financial analysis of energy companies.

Date:	1988
Location:	Washington DC
Company:	US Department of Energy, Office of Policy, Planning and Analysis
Position:	Intern • Researched waste-to-energy potential in the United States; constructed a database, developed econometric models, analyzed results and produced written reports.

Recent project experience: **PROJECT EXPERIENCE:**

Date:	June 2024 – present
Location:	New Jersey
Organization:	New Jersey Board of Public Utilities
Description:	**Future of natural gas utilities proceeding** LEI supported the New Jersey Board of Public Utilities in their Future of Natural Gas Utilities proceeding, including researching ways to achieve New Jersey's statutory requirement to reduce greenhouse gas ("GHG") emissions under Executive Order 317. LEI created an integrated framework for analysis of the cost and impact of options to reduce GHG emissions from the natural gas value chain (upstream, midstream, and end-use), and developed and tested the costs and impacts of policy and regulatory options using the framework. LEI examined best practices in other jurisdictions and gathered data and information to ensure informed stakeholder discussions and to populate the analytical framework. LEI provided a report with recommendations and guidance for future utility plans. LEI participated in a multi-stage stakeholder process across State agencies and the Governor's Office of Climate Action and the Green Economy. Other specific tasks included i) forecasting natural gas utility demand, ii) evaluating the consequences of alternative gas infrastructure investments, and iii) evaluating impacts on customer rates. Marie led the project.

Date:	June 2024 – present
Location:	Maine
Organization:	Maine Office of the Public Advocate
Description:	**Future of natural use in Maine** LEI assisted the Office of the Public Advocate ("OPA") in addressing the future use of natural gas in Maine, including researching ways in which the regulatory system can help achieve Maine's statutory requirement to reduce greenhouse gas ("GHG") emissions. Tasks included i) evaluating strategies for reducing GHS emissions and reaching GHG reduction goals, ii) forecasting natural gas utility demand, iii) evaluating the consequences of alternative gas infrastructure investments, impacts on customers and rates, and environmental and health effects, iv) recommending how best to evaluate and apply State emissions goals to natural gas utilities, v) developing best practices or a common methodology to evaluate the GHG impact of commitments in new or expanded natural gas contracts/agreements, vi) preparing testimony in proceedings before the commission in proceedings involving the gas distribution utilities, and vii) preparing and presenting a summary report. Marie led the project.

Date:	September 2023 – April 2024
Location:	Maine
Organization:	Maine Office of the Public Advocate
Description:	**Examination of the costs and benefits of net energy billing** LEI was engaged by the Maine Office of the Public Advocate ("OPA") to assist in examining the costs and benefits of Maine's Net Energy Billing ("NEB") programs. LEI's methodology identified and quantified direct additional ratepayer costs, indirect ratepayer costs, and cross-subsidies. LEI's final report, "Reducing the Cost of Solar Energy

	in Maine," included an analysis of the impact of the NEB Kilowatt hour program on the cost of standard offer service, and an estimate of the opportunity cost of the NEB programs. Marie led the project.

Date:	August 2023 – March 2024
Location:	Maine
Organization:	Maine Public Utilities Commission
Description:	**Utility renewable resource portfolio analysis** LEI was engaged by the Maine Public Utilities Commission to 1) identify options for selling the output from the portfolio of renewable energy resources procured by and under contract with two transmission and distribution ("T&D"); and 2) provide analysis of those options, including modeling of the various options for selling the output, to identify which options were most likely to maximize the value for Maine ratepayers. Marie led the project.

Date:	July 2023 - January 2024
Location:	United States, PJM
Company:	Public Utilities Commission of Ohio
Description:	**Management performance and financial audit of large utility** LEI was engaged to perform a management performance and financial audit of AEP Ohio's Alternative Energy Rider ("AER") for the period 2018 - 2022. Marie led the project which required examining the terms of power purchase agreements ("PPAs") for wind and solar power, the cost of renewable energy credits ("RECs"); energy and capacity market prices; inventory strategies, and the accuracy of AEP Ohio's load forecasts. Marie recruited an accounting firm to perform the financial portion of the audit. [Case No. 23-0251-EL-RDR]

Date:	April 2023 – June 2023
Location:	Alberta
Organization:	ENMAX Energy
Description:	**Assistance in performance-based ratemaking ("PBR") filing** LEI assisted a large Alberta utility with its third generation PBR filing, including advising on incentives, effectiveness of inflation factors, potential for special capital expenditure provisions responsive to government electrification policies, productivity factors, length of regulatory period, and other matters associated with PBR. Marie provided expert advice related to analysis of total factor productivity ("TFP") and cross-sectional benchmarking of the performance of electric and gas distribution utilities.

Date:	April 2023
Location:	Puerto Rico
Organization:	Paul Hastings LLC
Description:	**PREPA bankruptcy advisory** LEI was engaged to provide expert services in connection with the motion of the Financial Management and Oversight Board of Puerto Rico, as representative of the Puerto Rico Electric Power Authority ("PREPA"), and the Puerto Rico Fiscal Agency and Financial Advisory Authority for approval of a settlement with PREPA's bondholders in PREPA's

	PROMESA Title III case. LEI's expert services included performing economic analyses, preparing an opening expert report, preparing a rebuttal expert report, sitting for a deposition, and testifying at the hearing on the motion. Marie provided expert analysis of the shortcomings of an opposing witness's estimate of long-term electricity price elasticity.

Date:	March 2023 – April 2024
Location:	Idaho/Oregon
Organization:	Idaho Power Company/Oregon Public Utilities Commission
Description:	**Independent evaluator for all-source RFP** LEI was engaged by the Oregon Public Utilities Commission as the Independent Evaluator ("IE") for the Idaho Power Company ("IPC") 2023 All-Source RFP. The project included a review and critique of IPC's RFP, performing independent initial shortlist evaluation and scoring, examination of IPC's models and approach to price and non-price scoring of bids (including IPC's proposed inclusion of imputed debt as an adder to PPA bids), examination and assessment of risks related to IPC's own benchmark bids, evaluation of modeling assumptions used by IPC in its market modeling for development of the optimal portfolio and final short list, and the filing of status reports and the final IE closing report. Marie served as Senior Advisor and expert witness. [Docket No. UM-2255].

Date:	October 2022 – May 2023
Location:	North Dakota
Organization:	North Dakota Public Service Commission
Description:	**Montana-Dakota Utilities ("MDU") rate case** LEI was engaged by the North Dakota Public Service Commission as the outside independent technical consultant supporting the Commission's ratepayer advocacy staff in a cost-of-service rate case involving MDU. LEI examined key components of the rate case, which included the depreciation study, tax rates, environmental upgrades, transmission investment, the ROE/common equity ratio, cost allocation, and amortization of early retirement of coal plants. LEI prepared data requests and provided written reports and oral testimony. Marie served as project manager and expert witness. [Case No. PU-22-194].

Date:	July 2022 – December 2022
Location:	Maine
Organization:	Maine Public Utilities Commission
Description:	**Investment incentives for electric distribution utility** Marie served as independent expert for the Maine PUC in its investigation of Central Maine Power Company ("CMP") management issues and related ratemaking and performance incentive mechanisms. Ultimately, the Commission's goal was to determine whether the rate plan to be proposed by CMP in a concurrent docket would be more suitable than the current cost-of-service rate plan under which CMP operates, given the parent company's incentives to invest in CMP. Marie led the project, which included a literature review of utility investment incentives and of multi-national entities' ("MNE") incentives to invest in subsidiaries. The project also included detailed case studies of performance-based ratemaking regimes in other US jurisdictions, and the role and

	effectiveness of performance incentives in the regimes. [Docket No. 2022-00038, and Docket No. 2022-00152].

Date:	May 2022 – October 2022
Location:	ERCOT
Organization:	Private client (law firm)
Description:	**Analysis of fair market prices for natural gas** LEI provided economic analysis and independent expert advice related to natural gas market activities in Texas during and around February 2021 in conjunction with Brazos Electric Power Cooperative, Inc. bankruptcy case in Texas. LEI provided an expert testimony report [Cause No. 21-03863]. Marie served as the project manager, natural gas expert, and a key witness.

Date:	April 2022
Location:	ERCOT/PJM/SPP
Organization:	Confidential client
Description:	**Regulatory and commercialization pathways for a renewable developer platform** LEI was engaged by a multinational energy company to support its due diligence of an acquisition of a 3000 MW+ portfolio of solar and wind development assets across PJM, ERCOT, and SPP. LEI performed a review of the state regulations and RTO markets for each asset, to evaluate the opportunities and risks around the commercialization paths for each asset. Marie led the analysis related to the ERCOT and SPP regions.

Date:	February 2022 – December 2023
Location:	Louisiana
Organization:	Louisiana Public Service Commission
Description:	**Review of integrated resource planning ("IRP") process for three Louisiana utilities** LEI was engaged by Louisiana Public Service Commission, Docket No. I-36175 (Cleco Power), Docket No. I-36181 (Entergy Louisiana), and Docket No. I-36242 (SWEPCO), to assist to serve as the outside technical independent consultant in the process related to the IRP process for the three utilities. LEI reviewed and examined filings and pre-filed testimony; drafted, reviewed, and responded to discovery, and prepared direct and cross-answering testimony. LEI appeared at technical conferences. Marie directed the three engagements and served as an independent expert witness.

Date:	March 2022
Location:	Texas/ERCOT
Organization:	UT Austin Bureau of Economic Geology
Description:	**Expert contributor to study of gas distribution industry for Texas Railroad Commission** Following Storm Uri of February 2021, the Texas Railroad Commission was asked by the State of Texas to deliver an investigation of the value of underground storage for local gas distribution companies ("LDCs"), especially for coping with extreme weather conditions. The Bureau of Economic Geology at the University of Texas at Austin led the project. Marie provided insight into essential elements of the LDC gas supply procurement process, as well as best practices for winter supply security.

Date:	March 2022
Location:	Maine
Organization:	New England Aqua Ventus/Pine Tree Offshore Wind
Description:	**Economic impact of development of offshore wind in Maine** LEI was engaged by New England Aqua Ventus/Pine Tree Offshore Wind to evaluate the potential economic benefits to Maine of two scenarios for offshore wind project construction and operations based on floating offshore structures: NEAV's 144-MW Research Array, and a commercial-scale buildout of 5,000 MW over a number of years. LEI utilized the IMPLAN economic model to estimate the economic impacts. Marie directed and led the project.

Date:	September 2021 – March 2022
Location:	ERCOT
Organization:	Private client
Description:	**February 2021 winter storm impacts on ERCOT natural gas production and prices** LEI developed and examined data for natural gas production at the basin level in Texas, flows on intra-state and inter-state pipelines, prices at supply and market hubs, and use of gas by electric power plants and other customers in the state. Marie served as senior advisor to the project team.

Date:	July 2021 – July 2023
Location:	Louisiana
Organization:	Louisiana Public Service Commission
Description:	**Audit of fuel costs of Cleco Power associated with the February 2021 Winter Storm Event** LEI was engaged by Louisiana Public Service Commission, Docket No. X-35990, to perform an audit of the Fuel Adjustment Clause ("FAC") filings of Cleco Power related to costs incurred during the February 2021 Winter Storm Event. Marie supervised and directed the audit. In addition to the scope of services typically provided in an FAC audit, LEI also examined actions and decisions of Cleco Power leading up to and during the Winter Storm Event.

Date:	May 2021 – March 2022
Location:	Louisiana
Organization:	Louisiana Public Service Commission
Description:	**Evaluation of utility green pricing option** LEI was engaged by Louisiana Public Service Commission, Docket No. U-35916, to serve as the technical consultant evaluating Entergy Louisiana LLC's application for authorization to implement a green pricing option, to be paid for by a Green Pricing Option ("GPO") or Large Volume Green Pricing Option ("LVGPO") rider, and related rate relief. LEI reviewed and examined filings and pre-filed testimony, assisted in drafting, reviewing, and responding to discovery, prepared testimony, and conducted other activities related to the matter.

Date:	April 2021 – June 2021

Location:	ERCOT
Organization:	Private client
Description:	**February 2021 winter storm impacts on ERCOT energy prices** For a law firm representing an ERCOT market participant, LEI conducted an analysis of the impact on hourly real time energy prices in ERCOT for the week of February 14, 2021. Marie served as co-author of report, filed in PUCT Project 51812, Item No. 207. https://interchange.puc.texas.gov/search/documents/?controlNumber=51812&itemNumber=207

Date:	July 2021 – December 2021
Location:	Ohio
Organization:	Public Utilities Commission of Ohio
Description:	**Audit of Legacy Generation Resource ("LGR") Riders of Duke Energy, AEP Ohio, and AES Ohio** LEI was engaged by the Public Utility Commission of Ohio, to perform audits of the LGR Riders for three major Ohio electric distribution utilities. The LGR Riders are the mechanisms for passing to customers the costs of a power purchase contract with the Ohio Valley Electric Corporation ("OVEC"). Aspects of the audit included assessing the reasonableness and prudency of the disposition of energy and capacity in the PJM market of the energy provide by two coal plants owned by OVEC, as well as plant performance, compliance with environmental requirements, and the prudency of fuel purchases. LEI also audited charges and true ups related to the companies' filings. Marie supervised and directed the audits. [Docket No. 21-477-EL-RDR]

Date:	February 2021 - February 2022
Location:	New Jersey
Organization:	New Jersey Board of Public Utilities
Description:	**Natural gas capacity and non-pipeline alternatives** LEI was engaged by the New Jersey Board of Public Utilities to examine current and future natural gas transmission capacity to serve demand from New Jersey's local gas distribution utilities (Docket No. GO19070846). The purpose of the engagement was to determine if capacity on pipelines and from non-pipeline sources would be sufficient to meet demand from firm customers through 2030. LEI examined the capacity and contracting status of pipelines serving New Jersey. LEI examined design day demand projections from the LDCs and estimated impacts of New Jersey's energy efficiency targets in the context of its Energy Master Plan and de-carbonization goals. LEI also looked at the role of third-party suppliers. LEI provided recommendations for addressing capacity issues. LEI also developed a playbook for identifying possible alternatives, including non-pipeline alternatives and new tariff mechanisms, for avoiding and/or responding to potential disruptions. Marie led the project.

Date:	August 2020 – August 2021
Location:	Louisiana
Organization:	Louisiana Public Service Commission

Description:	**Audit of fuel adjustment clause of Entergy Louisiana** LEI was engaged by Louisiana Public Service Commission, Docket No. X-35523, to perform an audit of the Fuel Adjustment Clause filings of Entergy Louisiana. Marie supervised and directed the audit. The audit involved detailed examination of monthly true-ups of incurred costs with billed costs; the appropriateness of interest rates applied to over-recovered or under-recovered costs; examination of the impact of deferred costs; reconciliation of expenses recorded in FERC Form 1 account categories ("as booked") with expenses included in monthly fuel adjustment clause filings; the prudency and reasonableness of costs incurred for oil, gas, coal, and nuclear fuel and transportation, and an assessment operating performance of utility generating assets.

Date:	July 2020 – August 2021
Location:	Louisiana
Organization:	Louisiana Public Service Commission
Description:	**Audit of fuel adjustment clause of Cleco Power** LEI was engaged by Louisiana Public Service Commission, Docket No. X-35522, to perform an audit of the Fuel Adjustment Clause filings of Cleco Power. Marie supervised and directed the audit. The audit involved detailed examination of monthly true-ups of incurred costs with billed costs; the appropriateness of interest rates applied to over-recovered or under-recovered costs; examination of the impact of deferred costs; reconciliation of expenses recorded in FERC Form 1 account categories ("as booked") with expenses included in monthly fuel adjustment clause filings; the prudency and reasonableness of costs incurred for oil, gas, coal, and lignite; and transportation; and an assessment operating performance of utility generating assets.

Date:	June 2020 – October 2020
Location:	Ohio
Organization:	Public Utilities Commission of Ohio
Description:	**Audit of PSR of Duke Energy** LEI was engaged by the Public Utility Commission of Ohio, to perform an audit of the Price Stabilization Rider ("PSR") of Duke Energy Ohio related to Duke's purchase of energy from the Ohio Valley Electric Corporation ("OVEC") (PUCO Case No. 20-167-EL-RDR). Aspects of the audit included assessing the reasonableness and prudency of the disposition of energy and capacity in the PJM market of the energy provide by two coal plants, as well as plant performance, compliance with environmental requirements, and the prudency of fuel purchases. LEI also audited charges and true ups related to the company's quarterly PSR filings. Marie supervised and directed the audit, and served as testifying expert.

Date:	May 2020 – September 2020
Location:	Ohio
Organization:	Public Utilities Commission of Ohio
Description:	**Audit of PPA Rider of AEP Ohio** LEI was engaged by the Public Utility Commission of Ohio, to perform an audit of the PPA Rider of AEP Ohio related to AEP's purchase of energy from the Ohio Valley Electric Corporation ("OVEC") (PUCO Case No. 18-1004-EL-RDR). Aspects of the audit included assessing the reasonableness and prudency of the disposition of energy and capacity in

	the PJM market of the energy provide by two coal plants, as well as plant performance, compliance with environmental requirements, and the prudency of fuel purchases. LEI also audited charges and true ups related to the company's quarterly PPA filings. Marie supervised and directed the audit, and served as testifying expert.

Date:	April 2020 - May 2020
Location:	North Dakota
Organization:	Public interest law firm
Description:	**Impacts of the potential shutdown of the Dakota Access pipeline ("DAPL")** LEI was engaged by a law firm representing the plaintiff tribes to provide a Declaration in the matter of US District Court Case No. 1:16-cv-1534-JEB. Marie directed and led the research and prepared the Declaration as well as an in-depth report. The report covered issues including the long-term and near-term drivers of oil production in North Dakota, the drivers of global oil demand, the costs to transport oil by rail versus pipeline, and analysis of rail transport trends in the United States. She provided independent analysis as well as critiques of Declarations filed by other witnesses. Her declaration is available at: https://earthjustice.org/sites/default/files/files/3154-525_declarations-in-support-of-standing-rock.pdf

Date:	February 2020 – February 2022
Location:	Louisiana
Organization:	Louisiana Public Service Commission
Description:	**Rulemaking to study renewable energy tariff, aka "green tariff" options** Marie's team supported the Louisiana Public Service Commission in Docket No. R-35423. LEI provided framing questions for stakeholder feedback on green tariff options, evaluated stakeholder responses, provided in-depth case studies of green tariffs in other US jurisdictions, and provided other consultatory services for the Commission.

Date:	January 2020 – June 2020
Location:	Massachusetts
Company:	Massachusetts Office of the Attorney General
Description:	**Application for firm transportation on a gas pipeline** The MA Attorney General's Office of Ratepayer Advocacy ("AGO") engaged LEI to examine the application of National Grid d/b/a Boston Gas for approval to execute a contract with Algonquin, for firm transportation ("FT") on the Atlantic Bridge Project (DPU 19-132). Marie led the project which included examining National Grid's projections of gas demand and its assumed resources to meet demand; examining the Assigned Precedent agreement for the FT as well as other documents; and providing a critique of the assumptions driving National Grid's cost-benefit analysis. Marie reviewed briefs, developed interrogatory requests, and evaluated the responses to such requests.

Date:	November 2019
Location:	Japan
Organization:	Private equity investor
Description:	**Long-term outlook for Japan electricity sector**

contact:
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	LEI was engaged to prepare a brief, fact-based report that would help support a view of wholesale electricity prices in Japan after 2040. Marie authored the report, which covered i) the structure of Japanese electric power industry, and ii) the status of de-regulation and environmental policy. Based on this, Marie developed two reasonable scenarios for wholesale prices based on two different paths for energy supply to 2040 and beyond.

Date:	October 2019 – November 2019
Location:	ERCOT
Organization:	European investor-owned utility
Description:	**Investment environment for transmission in ERCOT** LEI was engaged by a European utility to examine the investment environment for transmission in ERCOT. Marie's team provided a detailed report covering agents and institutions, the regulatory and legal framework, remuneration of investment, and transmission planning.

Date:	July 2019 - August 2019
Location:	Alberta, British Columbia
Organization:	Counsel for natural gas producer
Description:	**Analysis of Western Canadian natural gas costs and production** LEI was retained by counsel to provide support in the matter of NOVA Gas Transmission Limited ("NGTL")'s application to the National Energy Board ("NEB"). LEI reviewed evidence and prepared testimony. Marie led analysis of the natural gas and natural gas liquids ("NGLs") market in Alberta and British Columbia, and the impact of a pipeline surcharge on producers of natural gas.

Date:	May 2019 – August 2020
Location:	Massachusetts
Organization:	Investor-owned gas distribution utility
Description:	**Econometric benchmarking analysis of gas utility performance for PBR** LEI worked on behalf of NStar Gas, a regulated distribution subsidiary of Eversource, for their performance-based distribution ratemaking plan. LEI performed a longitudinal total factor productivity ("TFP") study; in addition, Marie led an econometric benchmarking analysis of cross-sectional TFP, and served as a testifying witness. The econometric analysis used a transcendental logarithmic cost function (a tried-and-tested methodology for providing empirical evidence in utility benchmarking cases) to help set expectations for further efficiency improvement and an appropriate stretch factor. The benchmarking report was used by counsel to develop the company's strategy for the rate filing. Marie prepared direct written testimony, delivered oral testimony, developed interrogatory requests, responded to interrogatories by opposing counsel, and prepared rebuttal testimony. DPU Docket No. 19-120.

Date:	June 2019- December 2019
Location:	Ontario
Organization:	Generating company
Description:	**Benchmarking generation utility performance**

	LEI was engaged to support a hydropower generating company in relation to its second-generation hydroelectric payment amounts price-cap application before the regulator. The project involved performing independent TFP benchmarking analysis of OPG's regulated hydroelectric facilities. This project involved selecting an appropriate peer group, selection of appropriate metrics to be benchmarked, and model development. Marie created an econometric model to develop recommendations as to the appropriate stretch factor to apply. LEI also aided the company in public consultations and the regulatory process.

Date:	October 2018 – April 2018
Location:	United States, ISO-NE
Company:	Massachusetts Office of the Attorney General
Description:	**Winter fuel reliability/electric power market design** The MA Attorney General's Office of Ratepayer Advocacy ("AGO") engaged LEI to examine ISO-New England's proposals to address potential winter fuel security issues facing the electric power sector. Marie led the project, including developing an independent definition of the problem to be solved; developing solutions, identifying potential allies in the NEPOOL stakeholder community; analyzing other stakeholders' proposals; and working with the AGO in the stakeholder process. LEI developed an alternative proposal, a forward auction for stored energy reserves based on the financial concept of an American call option with a two-dimensional bid (the option premium and strike price).

Date:	February 2018 – December 2018
Location:	Global
Company:	Columbia University School of International and Public Affairs, Center on Global Energy Policy
Description:	**Econometric analysis of crude oil price and income elasticities of demand** LEI was engaged by the Columbia University, Center for Global Energy Policy ("CGEP") to conduct econometric analysis of global oil demand. Marie directed and managed the project, the foundation of which was a detailed econometric analysis of price and income elasticities of oil demand. Marie employed a variety of specifications of econometric models (including static and dynamic models, and symmetric and asymmetric models) and estimated separate models for crude oil, gasoline, and diesel demand. She used country-level data covering 40 years (1977-2016), aggregated into panel (pooled cross-section and time series) data sets for OECD, non-OECD, and oil-producing countries. Marie examined and reported the results of econometric tests covering time-series properties of the data (tests for integration and cointegration), performance of the log linear model specification as compared to an intrinsically non-linear specification, and the pool-ability of cross-sectional data.

Date:	September 2018-December 2018
Location:	United States, ISO-NE
Company:	Maine Public Utilities Commission
Description:	**Avoided energy supply costs**

	LEI was engaged to perform a critical review of the methodology and assumptions which underpinned other consultants' analysis of avoided energy supply costs ("AESC"). Marie led the gas market forecast, and the critical review of the other consultants' gas price forecast. She also led a careful examination of the economic theory and econometric techniques used by the other consultants to estimate demand-induced price reduction effects ("DRIPE"). Owing to miss-specified models and/or unwarranted assumptions (such as a perfectly inelastic demand curve for natural gas in the long term) the other consultants' DRIPE estimates were generally too high. [Docket No. 2018-00321]

Date:	June 2018-December 2018
Location:	United States, PJM
Company:	Public Utilities Commission of Ohio
Description:	**Management performance and financial audit of large utility** LEI was engaged to perform a management performance and financial audit of AEP Ohio's Alternative Energy Rider ("AER"). Marie led the project which required examining the terms of power purchase agreements ("PPAs") for wind and solar power, the cost of renewable energy credits ("RECs"); energy and capacity market prices; inventory strategies, and the accuracy of AEP Ohio's load forecasts. Marie recruited a local Ohio accounting firm to perform the financial portion of the audit; she provided guidance (as the firm had not previously audited a utility) and oversight of their work as well as the work of the LEI in-house team. [Docket No. 18-80-EL-RDR]

Date:	March 2018 - September 2018
Location:	United States, MISO, Michigan
Company:	NGO
Description:	**The role of Enbridge Line 5 in NGLs and crude oil transport in Michigan** For a non-governmental organization ("NGO") Marie produced three white papers examining the current and future role of Enbridge Line 5 in Michigan related to three issues: propane supply in Michigan, transportation for crude oil producers in Michigan, and supply of crude oil to Michigan-area refineries. Marie's analysis of the propane market included a comparative static econometric analysis of the supply and demand from propane in Michigan, explained in non-technical language. The white papers were used by the client in discussions with the Governor of Michigan and other stakeholders

Date:	July 2017-June 2018
Location:	United States, MISO, Minnesota
Company:	Minnesota Department of Commerce
Description:	**Role of Enbridge Line 3 in heavy and light crude oil supplies** Marie served as independent market expert assisting the Minnesota Department of Commerce in evaluating the application of Enbridge Energy for a Certificate of Need for its Line 3 oil pipeline expansion project (Docket No. PL-9/CN-14-916, OAH Docket No. 65-2500-32764). Marie's analysis covered global and local trends in refined product demand and crude oil supply, refinery utilization rates and utilization of high-conversion refinery capacity in Petroleum Administration for Defense District ("PADD") 2 and in the local Minnesota region. Her analysis required detailed examination of the assumptions

	and methodology of an oil pipeline linear programming-based model, in order to assess another witness's testimony which relied on the model. Marie provided written testimony; responded to interrogatory requests, provided written surrebuttal, and oral testimony.

Date:	June 2017-December 2018
Location:	United States, MISO, Mississippi
Company:	Mississippi Public Service Commission
Description:	**Management audit of large vertically integrated utility** Marie led a management audit of the fuel (gas, coal, and nuclear) and energy procurement activities of Entergy Mississippi. Marie's team assessed fuel and energy contract terms, and reviewed the prudency of coal and nuclear fuel procurement and inventory practices. Marie's team also assessed management, organization, controls, strategies, and outcomes for the company's hourly MISO offers. The team investigated the operations of a nuclear power plant, and the financial implications of the utility's power purchase agreement for nuclear power. Marie appeared before the Commission to present and defend findings.

Date:	November 2018 – February 2019
Location:	WECC
Company:	PacifiCorp
Description:	**Independent evaluator ("IE") for energy procurement** LEI was retained as an IE by PacifiCorp for its system-wide 2017 Solar RFP. Marie led the project, which included a review of PacifiCorp's Solar RFP, the facilitation and monitoring of communications between PacifiCorp and bidders, performing independent initial shortlist evaluation and scoring, and the filing of status reports and the final IE closing report.

Date:	April, May 2017
Location:	United States and Canada
Company:	Private client
Description:	**Review of investable energy sectors** For a private equity client, Marie led an extensive project reviewing a wide range of investable energy sectors in the United States and Canada. The sectors included: electricity generation (natural gas, wind, solar, hydro), AMI, distributed resources, demand response, retail energy, gas LDCs, gas storage, gas pipeline transportation, LNG-related infrastructure, vertically integrated utilities, electric distribution utilities, and water utilities. LEI assessed the investment potential of each sector for the next five years and proposed a methodology to screen and identify investment opportunities and execute on these opportunities.

Date:	March 2017
Location:	Alberta, Canada
Company:	Private client

Description:	**Analysis of competition design for capacity markets** LEI was engaged to provide global perspectives on the detailed mechanisms that make up capacity markets, so that eventual capacity market design in Alberta will be competitive and efficient, with minimal unintended consequences. Marie led research and delivered a detailed report on market power mitigation mechanisms across North American RTOs and their potential impacts on capacity market performance.

Date:	February 2017
Location:	North America
Company:	Provider of services to vehicle fleet industry
Description:	**Outlook for electrification of transportation** Marie developed scenario outlooks for electric vehicle ("EV") market penetration in the United States; examined the role of electric utilities (and their emerging EV-related business models) as potential partners versus competitors to the downstream transportation industry; identified activities and strategic positioning of upstream and downstream industry participants; led discussion of implications of "electrification of transportation" for fleet service companies, convenience stores, and other downstream industry participants. Presented material to company's partner advisory board.

Date:	December 2016
Location:	Alberta, Canada
Company:	Private client
Description:	**Analysis of capacity markets** To support Board-level understanding of the implications of potential capacity market designs in Alberta, Marie prepared a detailed review and comparison of capacity markets across international and North American jurisdictions. Report concluded "the devil is in the details" of capacity market design. Market design details with potentially large impacts on the client were resource eligibility definitions, price setting mechanism, demand curve design, performance requirements, and market power mitigation rules.

Date:	September 2016
Location:	Northeast United States
Company:	Private client
Description:	**Examination of solar business models** For a client performing due diligence related to a potential investment in business-to-business behind-the-meter solar in the Northeast United States, Marie led a project examining US federal and state incentives for solar adoption, and assessing business models used for targeting commercial, institutional, and industrial sectors. For each business model, LEI assessed the competitive environment—who is operating in the sector, what is their go-to-market strategy, and in general how these models have been performing. Marie's team also provided a 10-year outlook for solar renewable energy credits ("SRECs") for certain jurisdictions. Finally, LEI developed key questions the client should ask as part of its evaluation of potential transactions in the behind-the-meter solar sector.

Date:	October 2016-November 2016
Location:	California, Kansas
Company:	Law firm
Description:	**Support for counsel in renewable natural gas matter** Marie prepared an expert report in support of litigation in Case 15CV-04225 in the District Court of Johnson County, Kansas. LEI was retained by counsel to examine the value of the green attributes of landfill gas ("LFG") produced by a project in Kansas City and sold under long-term contract to the Sacramento Municipal Utility District ("SMUD"). Marie's report demonstrated several flaws in the methodology relied upon by the opposing counsel's expert witness. Marie proposed an alternative, more accurate methodology for valuing the green attributes of LFG, based on market fundamentals driven by the California RPS requirements.

Date:	August 2016-October 2016
Location:	Maine
Company:	Maine Public Utilities Commission
Description:	**Macroeconomic impact of biomass generation** Marie led an engagement to estimate the macroeconomic impact of biomass generation within the state of Maine (Maine PUC Docket No. 2016-00084). This included direct, indirect, and induced impacts on: permanent direct jobs, payments to municipalities, payments for fuel harvested in the State, payments for in-state resource access, in-state purchases of goods and services, and construction-related jobs and purchases. Marie used the macroeconomic model known as IMPLAN to capture the economic impacts on industries including logging, sawmills, and other forestry-related industries and well as on state and local taxes.

Date:	May 2016
Location:	ERCOT/Texas
Company:	Private client
Description:	**Examination of ancillary services** Marie conducted a case study assessing the current ancillary services ("CAS") market in ERCOT, outlining the structure of ERCOT's proposed Future Ancillary Services Nodal Protocol Revision Request ("FAS-NPRR"), and examining the implications of ERCOT's experience so far for the Alberta electricity market.

Date:	April 2016-May 2016
Location:	ERCOT/Texas
Company:	Renewable power investor
Description:	**Due diligence in ERCOT** LEI was hired to perform due diligence for an investor interested in wind assets in ERCOT. Marie examined the political, legislative, and economic drivers of ERCOT's Competitive Renewable Energy Zones ("CREZ") and provided an assessment of state-level support for further expansion of CREZ transmission lines. She also provided assessment of and outlook for ERCOT's and the Public Utility Commission of Texas's views of the "system cost" of wind (the potential increased need for ancillary services and firm capacity on the system).

Date:	June 2014-April 2016
Location:	Maine
Company:	Maine Public Utilities Commission
Description:	**Project manager and testifying expert** Marie served as project manager, independent market expert, and expert witness for the Maine Public Utilities Commission, in the evaluation of the costs and benefits of alternatives for expansion of natural gas supply into Maine pursuant to the Maine Energy Cost Reduction Act (MPUC Docket #2014-00071). Marie reviewed and evaluated proposals for firm natural gas transportation service by pipeline developers. These evaluations included LEI's review of commercial terms include in the pipeline Precedent Agreements that underpin capacity expansion projects; review of contract provisions for Firm Transportation Agreements and Negotiated Rate Agreements; and evaluation of the status of the FERC and state-level permitting process for each pipeline proposal. Marie provided expertise in upstream natural gas (exploration and production), midstream natural gas (interstate pipelines) and global energy markets including oil and LNG markets, to provide a solid grounding for LEI's long-term outlook for New England natural gas prices. Marie directed the natural gas network modeling (using GPCM, an industry-standard network model of the North American natural gas system) and power simulation modeling (using LEI's proprietary POOLMod model) to arrive at a quantitative cost-benefit analysis of proposals. She authored reports provided to the Commission; responded to discovery from other parties; prepared discovery questions and cross-examined witnesses; reviewed testimony by other parties and provided assessments of the issues presented; and she served as an expert witness in the proceedings.

Date:	November 2015-December 2015
Location:	US Northeast
Company:	Renewable power developer
Description:	**Due diligence for assets in ISO-NE (Maine)** LEI was hired by a wind developer to provide a quantitative assessment, based on an economic dispatch model, of congestion/curtailment risk for a wind asset in Maine. LEI used its proprietary dispatch model, PoolMod, to provide an outlook from 2016 through 2020 of hourly LMPs, as well as the components of LMP (energy, losses, and congestion). We incorporated information from the interconnection impact study to examine system limits for the plants in question. LEI also provided an assessment of risk of outages based on NERC outage data for NPCC. Marie led the project

Date:	October 2015-November 2015
Location:	ERCOT/ Texas
Company:	Private equity company
Description:	**Due diligence for assets in ERCOT** LEI was hired to forecast the potential energy revenues of two wind farms in Texas, using its proprietary dispatch model, PoolMod. Marie led the project, and also examined the implications of the PPA related to the two wind farms.

Date:	July 2015
Location:	North America/United Kingdom

Company:	UK Department of Energy and Climate Change
Description:	**Examination of design of auctions** Marie participated in a review of auction design for the UK DECC. The UK market regulator was interested in whether US power markets evaluate generation bids based on criteria other than the price bid, specifically, if the length of contract had a role in the auctions. LEI reviewed capacity market rules for PJM, ISO-New England and the New York ISO. Marie examined whether and for how long a "lock-in" option for the first year capacity price is offered to new generation assets bidding into the auctions. She also reviewed international spectrum auctions, North American gas transmission open season rules, and international auctions for toll roads to examine whether and how duration or length of contract is incorporated into bidding.

Date:	May 2015
Location:	Connecticut; Virginia
Company:	Private equity company
Description:	**Review of gas transportation contracts** Marie evaluated contracts for firm gas transportation capacity for gas-fired plants in Virginia and Connecticut.

Date:	April 2015
Location:	Connecticut; New Jersey
Company:	Private equity company
Description:	**Outlook for natural gas prices** LEI was retained to forecast delivered gas prices in New England (Connecticut) and PJM (New Jersey) and locational marginal prices as well as retail electricity prices in Connecticut. Marie led the gas market analysis.

Date:	August 2014 - January 2015
Location:	North America
Company:	Private client
Description:	**Monthly energy market reports** LEI was engaged to support an energy company's Regulatory Group in its administering of the company's compliance program. The purpose of the engagement was to ensure that client's transactional and business groups were made aware of market rules and regulatory risks. This involved creating and delivering a monthly report covering developments by regional market and traded products which included: energy, capacity, long-term transmission service, FTR auctions, ancillary services, diesel oil, PRB coal, natural gas commodity, transmission, and storage, RECs, and CO_2. Marie served as project manager and executive editor of the monthly report and monthly conference call, and provided the research and insight on US gas, oil, and coal markets, and FERC activities.

Date:	October 2014
Location:	New England
Company:	Private equity company

Description:	**Assessment of ancillary service market** To support potential acquisition of hydropower assets, Marie provided analysis of ISO-New England's Locational Forward Reserves Market ("LFRM").

Date:	April-June 2014
Location:	US Midwest
Company:	Private equity company
Description:	**Due diligence for asset in PJM** For due diligence related to a district cooling system in the Midwest, Marie reviewed contracts and developed a model for projecting revenues and gross margins for the asset. Marie provided insight by identifying the potential for lower customer contract prices at renewal (in contrast to the seller's assumptions) and other areas of revenue risk.

Date:	June 2014
Location:	North America
Company:	Law firm
Description:	**Examination of FERC policies and practices related to competition** LEI was engaged by a law firm on behalf of a Canadian energy company to provide market advisory for an investigation related to the timing of outage scheduling under PPAs. Marie provided research and expertise covering FERC practices related to monitoring, enforcement, and definition and prosecution of alleged market manipulation.

Date:	April-May 2014
Location:	Nova Scotia
Company:	Government of Nova Scotia
Description:	**Organization of energy system** Marie provided a detailed overview of the Nova Scotia gas and power sectors, including governing institutions, the legal and regulatory framework, recent developments and challenges, and SWOT analysis.

SPEAKING ENGAGEMENTS:

Selected recent webinars and conferences

Energy Bar Association Mid-year Meeting and Conference 2021 (virtual). Session chair: *Securitization of utility costs: Panacea or poison pill?* October 13, 2021.

International Association for Energy Economics ("IAEE") 2021 Conference (virtual). Presentation title: *Liberalization, de-carbonization, and nuclear recovery in Japan: Outlook for long-term energy prices*. June 7, 2021.

Expert participant (virtual) in University of California Davis, Institute of Transportation Studies: *Future Scenarios of Passenger Mobility in the US: Year 2030*, October 2020.

Energy Bar Association Mid-year Meeting and Conference 2020 (virtual). Presentation title: *Performance-based ratemaking for local gas distribution companies: Lessons learned from a recent rate case*. October 13, 2020.

Boston Bar Association, 2020 Virtual Energy Conference. Session title: *Performance-based Ratemaking*. Presentation title: *Performance-based ratemaking: Understanding the basics, and the role of performance incentives.* July 15, 2020. http://energyconference.bbablogs.org/

Morgan Stanley Webcast Series | *Regulatory Outlook for Key Pipeline Projects with Experts Bloomberg and London Economics International*. Presentation title: *Impacts of a potential shutdown of Enbridge Line 5*. July 10, 2020.

US Association for Energy Economics, Webinar. Presentation title: *Taking a look ahead: The long-term impacts of a crisis on oil demand*. June 29, 2020. https://www.usaee.org/webinars/webinar-kleinberg.aspx

US Energy Association, Webinar. Presentation title: *Taking a look ahead: The long-term impacts of a crisis on oil demand*. May 27, 2020. https://usea.org/event/taking-look-ahead-long-term-impacts-oil-demand-after-crisis

USAEE/IAEE 37th Annual North American Conference. Denver, CO. Session chairman/moderator, concurrent session title: *Regulation*. November 6, 2019.

ASSA/IAEE. Atlanta, GA. Session title: *Single and bi-directional economic dependencies in energy systems.* Presentation title: *Business and innovation cycles in the US Upstream: Surviving the ups and downs*. January 2019.

MIT/SPE/YPE. Cambridge, MA. Session chairman/moderator, session title: *Meeting the changing demand for US natural gas: Do markets alone suffice or are regulatory changes necessary?* April 26, 2018.

ERCOT Market Summit. Austin, TX. Session chairman/moderator, session title: *Perspectives on ERCOT Market Reforms*. February 28, 2018.

ASSA/IAEE. Philadelphia, PA. Session title: *Energy Economics, Regime Changes, and Sustainability* Discussant for paper "What's killing nuclear power in US electricity markets?" January 6, 2018.

PUBLICATIONS:

Technical/Academic

Kleinberg, Robert and Fagan, Marie, "Business Cycles and Innovation Cycles in the U.S. Upstream Oil & Gas Industry." (December 1, 2019). USAEE Working Paper No. 19-423. Available at SSRN: https://ssrn.com/abstract=3508466 or http://dx.doi.org/10.2139/ssrn.3508466

"The Disappearing Middle Class: Economies of Scale in Exploration and Development," presented at the International Association for Energy Economics, 26th annual conference, Aberdeen, June 2002.

"The Key Role of Technology in Reducing Offshore Finding and Development Costs," *Fundamentals of the Global Offshore Industry,* The Petroleum Economist Ltd., London, September 2001.

"The US Oil and Gas Supply Situation: How Did We Get Here?" guest lecture, Clark University, Worcester, MA, October 2000.

"The Technology Revolution and Upstream Costs," *The Leading Edge* (Journal of the Society of Exploration Geophysicists), June 2000.

Review of *Exploration, Development, and Production – Texas Oil and Gas 1970-1995,* for the *Journal of Economic Literature,* 1999.

"Resource Depletion and Technical Change: Effects on US Crude Oil Finding Costs from 1977 to 1994," *The Energy Journal,* 1997.

"Inter-jurisdictional Competition, Resource Rents, Tax Exporting, and Oil and Gas Severance Taxes," *The Journal of Energy Finance and Development,* 1997, with Kevin Forbes.

"Fiscal Illusion and Fiscal Sclerosis: The Case of Oil and Gas Severance Taxes," presented at the US Association for Energy Economics/International Association for Energy Economics conference, Boston, MA October 1996.

"Prices, Depletion, and Technical Change 1977-1990: The Declining Cost of Crude Oil," presented at the Allied Social Science Association Annual Meeting, American Economic Association/International Association for Energy Economics session, San Francisco, CA, January 1996.

"Technical Change and Scale Economies in US Onshore Oil and Gas Exploration 1977-1990," presented at the Southern Economic Association meeting, New Orleans, LA, November 1993.

US Department of Energy

State Energy Severance Taxes, DOE/EIA-TR/0599, Washington, DC, 1995.

Oil and Gas Development in the United States in the Early 1990s: An Expanded Role for Independent Producers, DOE/EIA-0600, Washington, DC, 1995, with Jon Rasmussen.

"Trash to Energy: A Burning Issue," *1988 Selected Papers and Presentations by DOE's Policy Integration Staff*, US Department of Energy, Office of Policy, Planning and Analysis, Office of Policy Integration, Washington, DC, December 1988, with Peggy Podolak.

IHS/CERA Publications

Global Prospects for Shale Gas: Assessing Above-ground Risks and Enablers IHS CERA Private Report 2013
The Impact of Technology on US Offshore Finding and Development Costs IHS CERA Private Report 2013
The Next E&P Hotspots: What are the Leading Indicators? IHS CERA Decision Brief 2012
Taking the Shale Gale International: Lessons from North America IHS CERA Decision Brief 2012
Prospects for Shale Gas in Europe: Insights from CERAWeek IHS CERA Insight 2012
Envisioning a Long-term Future for Coal IHS CERA Insight 2011
North American Power Industry Landscape 2011 IHS CERA Decision Brief 2011
Common Ground? CERAWeek Perspectives on US Electric Power Transmission IHS CERA Insight 2010

North American Power Industry Landscape 2010 IHS CERA Decision Brief 2010
Mexico's Road to Renewable Power: The Cost of a Range of Targets and Options IHS CERA Decision Brief 2009
Competitive Bidding: A Key Tool for Capital Formation in the US Power Sector IHS CERA Decision Brief 2009
Financing the Global Power Business: Insights from CERAWeek IHS CERA Insight 2009
Concentrating Solar Power: US Demand Heats Up IHS CERA Decision Brief 2008
US CO2 Policy Quandary: Near-term Reductions Imply a High Carbon Price IHS CERA Private Report 2008
The US Energy Act of 2007: Addressing the Demand Side of Electric Power IHS CERA Insight 2008
Investors' Energy Monthly December 2004 – November 2007
Some Sail, Some Fail: Utility M&A after PUHCA IHS CERA Decision Brief 2006
Another Decade of Rising Upstream Costs? IHS CERA Decision Brief 2006
Merchant Power's Recovery: Four Dimensions of Value IHS CERA Private Report 2006
PUHCA Repeal and Utility M&A: One Big Obstacle Down, Many Remain IHS CERA Decision Brief 2005
North American Gas Monthly Briefing January 2003 - June 2004
Costs are Up for North American Natural Gas IHS CERA Decision Brief 2004
Bottom Line: A New Long-term Floor for North American Gas Prices IHS CERA Private Report 2004
Upstream Gas Costs and North American E&P Strategy: Avoiding the Edge IHS CERA Decision Brief 2004
Can We Drill Our Way Out of the (Natural Gas) Supply Shortage? IHS CERA Decision Brief 2003
Cost-effective Deepwater Development: Seeing the Forest from the "Trees" IHS CERA Private Report 2001
Optimization and the Role of R&D IHS CERA Decision Brief 2001
Upstream Spending Plans: Inflation in the Pipeline IHS CERA Alert 2001
Upstream Technology on the Horizon IHS CERA Decision Brief 2000
Upstream Costs--Why the Gap will widen IHS CERA Decision Brief 1999
The Impact of Falling Oil Prices on Upstream Operations IHS CERA Decision Brief 1998
The Technology Revolution and Upstream Costs IHS CERA Private Report 1998
Managing the Rig Shortage IHS CERA Decision Brief 1997

News Media

"Economists wonder: Did COVID-19 accelerate timeline for peak oil demand?" (excerpts from USEA webinar *Taking a look ahead: The long-term impacts of a crisis on oil demand*, May 27, 2020). S&P Global Market Intelligence. June 8, 2020.
https://platform.mi.spglobal/SNL.Services.Export.Service/v2/Export/Retrieve?filename=Html_2bdf6b05-697e-4a2b-8768-579bf532b596.html.

"Upstream oil costs on the rise" (excerpts from *Another Decade of Rising Upstream Costs?* IHS CERA Decision Brief 2006), *The Wall Street Journal Morning Brief,* June 28, 2006.

"Unnatural Gas Prices," live television interview for CNN-FN, December 23, 2003.

IHS/CERA CERAWeek Roles

Chairman, Coal Plenary *Envisioning a Long-term Role for Coal,* March 10, 2011
Chairman, Strategy Session *Financing the Power Future*, March 10, 2011
Chairman, Expert Dialog *North American Gas and Power Scenarios Wildcards*, March 9, 2011
Chairman, Strategy Session *Financing a North American Power Sector in Transition*, March 12, 2010
Panelist, CERA Insights *Global Power Outlook*, March 12, 2010
Chairman, Strategy Session *US Electric Power Transmission: the Battle of the Jurisdictions*, March 11, 2010
Chairman, Critical Issue Forum, *Financing the Power Sector in a Turbulent Economy*, February 12, 2009

Chairman, Critical Issue Forum *Power Sector Investment: Global Capital, Local Strategies* February 15, 2008
Panelist, Leadership Circle *Global Power Outlook* February 14, 2008
Chairman, Critical Issue Forum *Rising Costs and the Outlook for North American Gas*, February 14, 2007
Host and Commentator, *Reception for Institutional Investors* February 13, 2007
Panelist, Critical Issue Forum *Oil Sector Finance: The Cliff behind the Clouds?* February 13, 2007
Host and Commentator, *Reception for Institutional Investors* February 7, 2006
Chairman, Critical Issue Forum *Financing the Oil Future: A Three-Trillion Dollar Dilemma* February 7, 2006
Host and Commentator, *Reception for Institutional Investors* February 15, 2005
Chairman, Critical Issue Forum *North American Natural Gas: E&P in a Mature Region* February 11, 2004
Chairman, Expert Briefing *North American Gas E&P Strategy: Getting off the Treadmill?* February 12, 2003
Panelist, Expert Briefing *Bracing for a Wild Ride: North American Gas Market Outlook* February 11, 2003

Barbara Porto

Consultant

KEY QUALIFICATIONS:

Barbara is a Consultant at London Economics International LLC ("LEI"), where she supports the firm's technical engagements with regulators, utilities and private equity firms on issues regarding market design, project evaluations, wholesale price analysis, and utility management/performance auditing. Barbara is LEI's lead expert and modeler for the California ISO's energy and capacity markets, responsible for analyzing changes in market rules and system dynamics. Barbara also serves as a key modeler for LEI's gas pricing model.

Prior to LEI, Barbara was an Analyst at ENEVA, the largest private thermal power generation company in Brazil, where she was responsible for market intelligence reports and procurement strategic planning.

EDUCATION:

Institution	Hult International Business School
Date:	August 2014
Degree(s) or Diploma(s) obtained:	MBA - Master of Business Administration

Institution	COPPEAD/UFRJ (Brazil)
Date:	December 2010
Degree(s) or Diploma(s) obtained:	Finance Certificate

Institution	Universidade Estácio de Sá (Brazil)
Date:	June 2010
Degree(s) or Diploma(s) obtained:	Bachelor of International Relations

EMPLOYMENT RECORD:

Date:	January 2015 – Present
Location:	Boston, MA
Company:	London Economics International LLC
Position:	Consultant

Date:	July 2008 – August 2013
Location:	Rio de Janeiro, Brazil
Company:	ENEVA (subsidiary of E.ON AG)

contact:
Barbara Porto
617-933-7228
barbara@londoneconomics.com

Position:	Analyst (July 2010 – August 2013) Intern (July 2008 – June 2010)

RECENT PROJECT EXPERIENCE:

Date:	January 2019 to present
Location:	California
Company:	LEI's Continuous Modeling Initiative (CMI)
Description:	As lead California market modeler, Barbara tracks and evaluates the impact of on-going structural and regulatory changes in the electricity market to produce detailed price forecast and associated analyses on an ongoing semi-annual basis using LEI's in-house price forecast software, POOLMod.

Date:	July 2024 – ongoing
Location:	Oregon
Company:	Idaho Power Company
Description:	**IE for 2028 AS RFP** LEI was hired by Idaho Power Company to serve as an Independent Evaluator for its 2028 all-source energy (including storage) and capacity resources RFP ("2028 AS RFP"). The role of LEI as the IE was to oversee the competitive bidding to ensure that it was conducted fairly, transparently, and properly in congruence with the Oregon competitive bidding rules. LEI was tasked to carry out a thorough independent review, evaluation and scoring of all submitted bids (consistent with Oregon's competitive procurement guidelines), and compare findings to IPC's. Barbara was a key member of the team, where she coauthored all IE reports and managed the information-gathering and summarizing process, which involved information from over 100 bids, and multiple documents from each bidder.

Date:	July 2024 – ongoing
Location:	Mississippi
Company:	Mississippi Public Service Commission
Description:	**2024 Management Audit of Entergy Mississippi** LEI was engaged to conduct the annual fuel procurement and management audit of Entergy Mississippi. The LEI team assessed a complex array of issues including the Company's organization and staffing, risk management and company controls, coal procurement and inventory management, coal transportation, natural gas procurement and trading, plant operations and generation portfolio management, energy procurement and trading, and costs associated with the Grand Gulf nuclear plant. LEI prepared a comprehensive report detailing its analysis, findings, and recommendations, and appeared before the Mississippi Public Service Commission to present its findings and recommendations.

Date:	May 2024 – ongoing
Location:	Ohio
Company:	Public Utility Commission of Ohio

Description:	**Ohio PUC OVEC audits** LEI was engaged in 2024 by the Public Utility Commission of Ohio to perform an audit of the prudency and performance of the Legacy Generation Resource Riders of AEP Ohio, AES Ohio, and Duke Energy Ohio for the output of two coal plants operated by Ohio Valley Energy Company ("OVEC"). LEI examined fuel and variable cost expenditures, and capital expenditures to determined whether they were prudently incurred. LEI compared and benchmarked costs and other operational results against data from public sources. LEI also examined and benchmarked power plant performance.

Date:	May 2024 – ongoing
Location:	Ohio
Company:	Public Utility Commission of Ohio
Description:	**Audit of FirstEnergy Ohio Alternative Energy Rider 2024** LEI was engaged in 2024 by the Public Utility Commission of Ohio to perform a management/performance audit of the Alternative Energy Rider of the Cleveland Electric Illuminating Company, the Ohio Edison Company, and the Toledo Edison Company (collectively, FirstEnergy Ohio) for the six-year period of January 2018-December 2023. LEI examined processes involved in procuring RECs and SRECs. LEI compared and benchmarked FirstEnergy Ohio RECs and SRECs costs and other operational results against data from public sources.

Date:	July 2023 – ongoing
Location:	Louisiana
Company:	Louisiana Public Service Commission
Description:	**Cleco FAC audit** LEI was engaged by Louisiana Public Service Commission, Docket No. X-36644, to perform an audit of the Fuel Adjustment Clause filings of Cleco Power. The audit involved detailed examination of monthly true-ups of incurred costs with billed costs; the appropriate of interest rates as applied to over-recovered or under-recovered costs; examination of the impact of deferred costs; reconciliation of expenses recorded in FERC Form 1 account categories ("as booked") with expenses included in monthly fuel adjustment clause filings; the prudency and reasonableness of costs incurred for oil, gas, coal, and nuclear fuel and transportation, and an assessment operating performance of utility generating assets. Barbara worked on the sections of the audit related to fuel and purchase power costs, developing and analyzing data requests to evaluate if such costs were prudent and in compliance with LPSC orders.

Date:	July 2023 – ongoing
Location:	Louisiana
Company:	Louisiana Public Service Commission
Description:	**ELL FAC audit** LEI was engaged by Louisiana Public Service Commission, Docket No. X-36643, to perform an audit of the Fuel Adjustment Clause filings of Entergy Louisiana. The audit involved detailed examination of monthly true-ups of incurred costs with billed costs; the appropriate of interest rates as applied to over-recovered or under-recovered costs;

	examination of the impact of deferred costs; reconciliation of expenses recorded in FERC Form 1 account categories ("as booked") with expenses included in monthly fuel adjustment clause filings; the prudency and reasonableness of costs incurred for oil, gas, coal, and nuclear fuel and transportation, and an assessment operating performance of utility generating assets. Barbara worked on the sections of the audit related to fuel and purchase power costs, developing and analyzing data requests to evaluate if such costs were prudent and in compliance with LPSC orders.

Date:	July 2023 – ongoing
Location:	Louisiana
Company:	Louisiana Public Service Commission
Description:	**ELL FEAC audit** LEI was engaged by the Louisiana Public Service Commission to perform an audit of the Federal Environmental Adjustment Clause ("FEAC") filings of Entergy Louisiana, LLC ("ELL"). The assignment included identifying any irregularities, including but not limited to, incorrect assessment of calculations and recovery of unauthorized expenses via the FEAC. LEI examined utility purchases and sales of air emission credits needed to comply with the Clean Air Act Amendments ("CAAA") of 1990 as well as the Clean Air Interstate Rule ("CAIR") and its successor, the Cross State Air Pollution Rule ("CSAPR"). LEI made findings and recommendations concerning whether the costs passed through the adjustment clause were or were not reasonable and prudent, and whether the costs were appropriate for recovery in the EAC mechanism and consistent with LPSC Orders and rules. Barbara supervised and directed the audit.

Date:	July 2023 – January 2024
Location:	USA
Company:	Public Utility Commission of Ohio
Description:	**Audit of AEP Ohio Alternative Energy Rider 2023** LEI was engaged in 2023 by the Public Utility Commission of Ohio to perform a management/performance audit of the Alternative Energy Rider of the Ohio Power Company (AEP Ohio) for the five-year period of January 2018- December 2022. LEI examined processes involved in procuring RECs and SRECs. LEI compared and benchmarked AEP Ohio RECs and SRECs costs and other operational results against data from public sources. Barbara performed analysis on RECs benchmarking, inventory, and compliance, as well as the cost of compliance and the approach used by AEP Ohio to calculate the cost of RPS compliance.

Date:	July – December 2023
Location:	Mississippi
Company:	Mississippi Public Service Commission
Description:	**Management audit of Entergy Mississippi 2023** LEI was engaged to conduct the annual fuel procurement and management audit of Entergy Mississippi. The LEI team assessed a complex array of issues including the Company's organization and staffing, risk management and company controls, coal procurement and inventory management, coal transportation, natural gas procurement and trading, plant operations and generation portfolio management, energy

	procurement and trading, and costs associated with the Grand Gulf nuclear plant. LEI prepared a comprehensive report detailing its analysis, findings, and recommendations, and appeared before the Mississippi Public Service Commission to present its findings and recommendations. Barbara worked on the procurement and inventory management sections of the audit related to natural gas and coal.

Date:	January 2023 – ongoing
Location:	Oregon
Company:	Idaho Power Company
Description:	**IE for 2026 AS RFP** LEI was hired by Idaho Power Company to serve as an Independent Evaluator for its 2026 all-source energy (including storage) and capacity resources RFP ("2026 AS RFP"). The role of LEI as the IE was to oversee the competitive bidding to ensure that it was conducted fairly, transparently, and properly in congruence with the Oregon competitive bidding rules. LEI was tasked to carry out a thorough independent review, evaluation and scoring of all submitted bids (consistent with Oregon's competitive procurement guidelines), and compare findings to IPC's. Barbara was a key member of the team, where she coauthored all IE reports and managed the information-gathering and summarizing process, which involved information from over 100 bids, and multiple documents from each bidder.

Date:	March 2023
Location:	California and Brazil
Company:	Confidential client
Description:	**Reliability metrics case studies** LEI was engaged by a law firm to provide market design, regulatory, and economic advice to assist the Firm in rendering legal advice to Luminant (Vistra Corporation) in litigation challenging regulatory action, as well as regulatory advocacy. The engagement consisted of three Phases: 1) analysis and research to support proof-of-concept and initial estimates; 2) preparation of written testimony and litigation support; and 3) advisory on market design options. Barbara assisted in Phase 3 with case studies on reliability metrics and standards in the state of California and Brazil.

Date:	October 2022 – February 2023
Location:	North Dakota
Company:	North Dakota Public Service Commission
Description:	**Montana-Dakota Utilities rate case** LEI was engaged by the North Dakota Public Service Commission as the outside independent technical consultant supporting the Commission's ratepayer advocacy staff in a rate case involving Montana-Dakota Utilities. LEI examined key components of the rate case, which included the depreciation study, tax rates, environmental upgrades, transmission investment, the ROE/common equity ratio, amortization for early retirement of coal plants, and impacts on residential rates versus impacts on other classes of service. LEI prepared data requests, and provided written and oral testimony. Barbara worked on the sections of the audit related to depreciation and environmental upgrades.

Date:	December 2022 – January 2023
Location:	USA
Company:	Confidential client
Description:	**Hydro portfolio due diligence** LEI was hired by a private equity firm to provide technical assistance and due diligence on the acquisition of a portfolio of hydropower projects located in multiple states across the US. The Projects consisted of a mix of run of river hydro and large pumped storage at various level of development. As part of its due diligence, LEI carried out a general review of the hydropower and pumped storage markets to evaluate the relative competitiveness of these technologies especially in markets with high renewables and storage penetration; LEI also developed a 20-year forecast of revenue streams for the relevant assets in the market of interests and reviewed the assets marketability post contract expiration. Finally, LEI reviewed key offtake contract to make recommendations on replicability (or lack thereof) of such contracts especially in highly competitive regions. Barbara assisted with benchmark research to analyze the replicability of the proposed commercial transaction.

Date:	August – December 2022
Location:	Mississippi
Company:	Mississippi Public Service Commission
Description:	**Management audit of Entergy Mississippi** LEI was engaged to conduct the annual fuel procurement and management audit of Entergy Mississippi. The LEI team assessed a complex array of issues including the Company's organization and staffing, risk management and company controls, coal procurement and inventory management, coal transportation, natural gas procurement and trading, plant operations and generation portfolio management, energy procurement and trading, and costs associated with the Grand Gulf nuclear plant. LEI prepared a comprehensive report detailing its analysis, findings, and recommendations, and appeared before the Mississippi Public Service Commission to present its findings and recommendations. Barbara worked on the procurement and inventory management sections of the audit related to natural gas and coal.

Date:	June 2022
Location:	California
Company:	Confidential client
Description:	**Ancillary service revenue streams for long-duration storage in California** LEI was engaged by a developer to evaluate potential revenue stream of its battery storage technology that is capable in providing very long-duration storage. Specifically, LEI is helping the client understand the value of regulation, spinning reserve, frequency regulation, voltage support and other revenue streams that its battery can earn in the California market under current market structure and under future potential market designs.

Date:	July 2020 – April 2022
Location:	Louisiana
Company:	Louisiana Public Service Commission

Description:	**Management audit of fuel adjustment clause for Cleco Power** LEI was engaged by Louisiana Public Service Commission ("LPSC"), Docket No. X-35522, to perform an audit of the Fuel Adjustment Clause filings of Cleco Power. Barbara assisted with developing and analyzing data requests to evaluate if fuel costs were prudent and in compliance with LPSC orders.

Date:	July – December 2021
Location:	Ohio
Company:	Public Utility Commission of Ohio
Description:	**Audit of Legacy Generation Resource Rider for Ohio Valley Energy Company** LEI was engaged by the Public Utility Commission of Ohio to perform an audit of the prudency and performance of the generation purchase riders of Duke Energy Ohio, AEP Ohio, and AES Ohio for the output of two coal plants operated by Ohio Valley Energy Company ("OVEC"). Barbara was responsible for examining OVEC's participation in the PJM market and the fuel and variable cost expenditures to determined whether they were prudently incurred.

Date:	July – December 2019; July – December 2020; June – December 2021
Location:	USA
Company:	Mississippi Public Service Commission
Description:	**Management audit of fuel and electricity procurement** LEI was engaged for a two-year term (and then extended for an additional year) to conduct the annual management audits of the oil, gas, coal, nuclear fuel, and energy procurement activities of Mississippi Power Company. The LEI team assessed a complex array of issues including fuel and energy contract terms and the prudency of fuel procurement and inventory practices. LEI appeared before the Commission to present and defend findings. Barbara worked on the procurement and inventory management sections of the audit related to natural gas and coal.

Date:	August 2020 – September 2021
Location:	Louisiana
Company:	Louisiana Public Service Commission
Description:	**Management audit of fuel adjustment clause for Entergy** LEI was engaged by Louisiana Public Service Commission ("LPSC"), Docket No. X-35523, to perform an audit of the Fuel Adjustment Clause filings of Entergy Louisiana, LLC. Barbara assisted with developing and analyzing data requests to evaluate if fuel costs were prudent and in compliance with LPSC orders.

Date:	February – April 2021
Location:	ISO-NE and California
Company:	Confidential client
Description:	**Due diligence on a potential wind portfolio acquisition** LEI was engaged by an infrastructure investment fund to provide consulting and advisory services in support of due diligence efforts on a potential wind portfolio acquisition in ISO-NE and California. The scope of the project included reviewing data room materials, critically reviewing a market report prepared by the sell-side consultant,

	preparing independent long-term 20-year energy and capacity price forecast for the target assets under two different scenarios, one reflecting a base case scenario with nation-wide carbon tax implemented by 2028, and another reflecting decarbonization goal achieved through non-carbon tax policies. Barbara was responsible for the California portion of the project, conducting extensive and detailed review of the materials provided, additional research on various topics, and performing the California modeling activities.

Date:	August – December 2020
Location:	USA
Company:	Confidential client
Description:	**Financial Transmission Rights ("FTRs") and Auction Revenue Rights ("ARRs") Market Review** LEI has been engaged by a Regional Transmission Operator ("RTO") to conduct a holistic assessment of its FTR markets and ARRs to determine whether the current ARR/FTR processes constitute appropriate mechanism to ensure that load receives the optimal value of the transmission system for which it is paying through its transmission access charges. Barbara was responsible for analyzing the FTR/ARR metrics and target allocation process, as well as comparing it to similar mechanisms in other jurisdictions.

Date:	January – March 2020
Location:	Massachusetts
Company:	Massachusetts Office of the Attorney General
Description:	**Application for firm transportation on a gas pipeline** The MA Attorney General's Office of Ratepayer Advocacy ("AGO") engaged LEI to examine the application of National Grid d/b/a Boston Gas for approval to execute a contract with Algonquin, for firm transportation ("FT") on the Atlantic Bridge Project (DPU 19-132). The project included examining National Grid's projections of gas demand and its assumed resources to meet demand; examining the Assigned Precedent agreement for the FT as well as other documents; and providing a critique of the assumptions driving National Grid's cost-benefit analysis. Barbara assisted with reviewing briefs, developing interrogatory requests, and evaluating the responses to such requests.

Date:	January – March 2020
Location:	USA – Midwest
Company:	Distribution cooperative
Description:	LEI was retained by a Midwest cooperative seeking to cease purchasing supply from the incumbent and rather opt for an alternate supply provider. As part of the engagement, LEI prepared a critique of the stranded cost estimate provided by the incumbent provider and calculated its own estimate of the stranded cost payment based on FERC's policy guidelines in Order 888. LEI's calculation of market value for the released energy and capacity from the incumbent t provided was based on its own forecast of energy and capacity prices in the MISO markets. LEI's report was filed with FERC as part of the litigation procedures. Barbara was responsible for the capacity market analysis, reviewing thousands of capacity transactions in the MISO region.

Date:	April – December 2019
Location:	Canada
Company:	Ontario Power Generation ("OPG")
Description:	LEI was engaged to support Ontario Power Generation in relation to its second-generation hydroelectric payment amounts price-cap application before the Ontario Energy Board ("OEB"). The project involved performing an updated TFP study reflecting the OEB's 2017 Decision on the first-generation price-cap index. Other key tasks were the preparation of analysis and written evidence assessing whether the inflation factor and treatment of the Capacity Refurbishment Variance Account remain appropriate. Barbara worked on the inflation factor, physical TFP, coauthored the report and assisted on information-gathering.

Date:	November – December 2019
Location:	USA
Company:	Confidential client
Description:	For a transmission developer in the in Northeast, LEI modeled various portfolios of renewable generation assets (including wind, solar, and hydro resources) together with various quantities and technologies of storage resource to analyze, and optimize, the capacity factor and delivered price for energy on the proposed HVDC transmission line. LEI also modeled customer load at the withdrawal end of the line together with additional storage to analyze the benefits of these storage resources to provide load-following service. Barbara assisted with research on the costs and technical specifications of various storage technologies.

Date:	October – November 2019
Location:	USA
Company:	Range EES
Description:	LEI was engaged by Range EES to analyze the local economic development benefits associated with the construction and operations of a Compressed Air Energy Storage ("CAES") project at the site of the soon-to-be-retired Intermountain Power Project plant in Millard County, Utah (the "Project") using the REMI PI+ model. Barbara assisted the REMI modeller with research, conducting model runs and in the composition of the final report.

Date:	March – April 2015; October 2015; May 2019
Location:	Colombia
Company:	Confidential client
Description:	LEI was hired by an electric operator for the purposes of valuing a portfolio of generating assets in Colombia. LEI's scope of work consists of a comprehensive review of the Colombia energy market (including fuel and power market drivers), describe in detail the functioning of both wholesale power market and firm energy market (capacity market), develop forecasts of spot prices in order to derive expected revenues for the portfolio. Colombia being a hydro dominated system, as part of its modeling exercise, LEI ran a Monte Carlo simulation to develop a series of probabilities associated with generation profiles of Colombia's hydro resources to reflect the impact of weather

	conditions and water inflows on hydropower plants' output. LEI summarized its research and modeling results in a final report that was presented to lenders and other interested parties. In May 2019, LEI was hired to update the market fundamentals and energy prices outlook in order to evaluate the impact of evolving market conditions on a portfolio of assets acquired by the client in 2015. Barbara created the fuels forecast, assisted with research tasks for the modeling activities, and coauthored the report.

Date:	January 2018 – January 2019
Location:	USA
Company:	Public Utility Commission of Ohio
Description:	LEI was engaged in 2018 by the Public Utility Commission of Ohio to perform a management/performance audit of the Alternative Energy Rider of the Ohio Power Company (AEP Ohio). LEI examined processes involved in procuring RECs and SRECs. LEI compared and benchmarked AEP Ohio RECs and SRECs costs and other operational results against data from public sources. LEI created a working model of the true-up process and provided quantitative results comparing the impact of quarterly versus semi-annual true-up periods on the utility and on ratepayers. Barbara performed analysis on RECs benchmarking, inventory, and compliance, as well as the cost of compliance and the approach used by AEP Ohio to calculate the cost of RPS compliance.

Date:	July – December 2018
Location:	New England, USA
Company:	Private Client
Description:	LEI was retained to assist in the review of the avoided energy supply costs as reported in the Avoided Energy Supply Cost ("AESC") 2015 - Update of December 16, 2016 and provide independently developed forecasts of energy supply costs and/or wholesale electricity and natural gas prices in New England. As part of the required services, the LEI undertook a review of the AESC and provided expert analysis of the AESC assumptions, methodology and results. LEI also advised the Commission and its staff with respect to the application of the AESC in the context of evaluating the cost effectiveness of energy efficiency measures. In addition, LEI provided independently developed energy supply costs and/or wholesale electricity and natural gas prices for the region that reflect current market conditions and outlooks. Barbara was responsible for the natural gas and other fuels price outlook review and performing natural gas forecast.

Date:	June – December 2017; July – November 2018
Location:	USA
Company:	Private Client
Description:	LEI was engaged by a public service commission to audit management activities of a major vertically-integrated utility in the MISO region. LEI assessed the utility's practices for economical purchase and use of fuel and electric energy, assessed relevant fuel and energy contract terms, investigated the operations of the utility's coal and nuclear generation units, and reviewed the prudency of coal inventory levels and inventory control procedures. Barbara worked on the procurement and inventory management sections of the audit related to natural gas, oil, and coal.

Date:	July – August 2018
Location:	New York, USA
Company:	Private Client
Description:	For an international client, LEI prepared a memo reviewing the performance of a generation asset in the NYISO wholesale markets. The memo included a review of the plant's competitive advantages and disadvantages from the point of view of its technology, operational characteristics, fuel procurement options, location with respect to transmission constraints. LEI's analysis also included a view on likely short and medium market conditions, together with potential market developments, that could affect the plant's revenues. Barbara was responsible for the fuels and plant performance sections of the report.

Date:	March – August 2018
Location:	USA
Company:	Private Client
Description:	For a non-governmental organization ("NGO") LEI examined the current and future role of Enbridge Line 5 on oil consumers and producers in the State of Michigan. LEI's analysis covered a) the extent to which refineries which serve Michigan consumers require Enbridge Line 5 to provide crude oil; b) the extent to which consumers of propane in Michigan's Upper Peninsula rely on Enbridge Line 5; and c) the extent to which producers of crude oil in Michigan's Lower Peninsula rely on Enbridge Line 5. Barbara assisted with research tasks and coauthored the report.

Date:	May – July 2018
Location:	Maine, USA
Company:	Private Client
Description:	LEI was retained to assess the financial viability of select biomass power plants in the next few years and confirm the plant's assertion that a discount on certain transmission costs was required in order to avoid plant closures. Barbara led the engagement, creating an estimated pro forma income statement to assess whether the select biomass plants are expecting to make positive (or negative) gross profit margin in the next few years, 2018-2021. The financial model presented a range of market revenues that the power plants can earn from the sale of energy, capacity, and RECs in ISO-NE's control area, relative to an estimate of going forward operating costs for two power plants. The model included five scenarios.

Date:	January – July 2018
Location:	USA
Company:	Maine PUC
Description:	LEI was retained by the Maine PUC to review and critique the analysis filed by Central Maine Power ("CMP") regarding the benefits to Maine resulting from the New England Clean Energy Connect ("NECEC"), which is a 1,200 MW HVDC Transmission Line from the Quebec-Maine border to Lewiston. The analysis includes work related to the regional energy markets, including the effect of the NECEC on a) wholesale energy, capacity, and ancillary service costs for Maine ratepayers b) impact on price volatility during natural gas price spike events; and c) greenhouse gas (GHG) reduction benefits.

	In addition, the analysis will also include work related to economic benefits to Maine from the NECEC including a) job creation, both direct and indirect; b) employment impacts from electricity price reductions and associated cost savings; c) economic development benefits and d) municipal tax revenues. Barbara was responsible for the natural gas price outlook review and performing natural gas forecast.

Date:	February – April 2018
Location:	USA
Company:	Columbia University Center for Global Energy Policy
Description:	LEI was engaged by the Columbia University School of International and Public Administration's Center on Global Energy Policy ("CGEP") to conduct econometric analysis of global oil (crude oil and key refined products) demand and its income and price drivers. Barbara conducted a portion of the econometric analysis using STATA and coauthored the report.

Date:	November 2017 – March 2018
Location:	USA
Company:	PacifiCorp
Description:	LEI was retained as an independent evaluator ("IE") by PacifiCorp for its system-wide 2017 Solar RFP. LEI reviewed PacifiCorp's Solar RFP, facilitated and monitored communications between PacifiCorp and bidders, performed a review of the initial shortlist evaluation and scoring, and filed status reports and the IE closing report. Barbara coauthored the status and IE report, and managed the information-gathering and summarizing process, which involved information from over 100 bids, and multiple documents from each bidder.

Date:	August 2017
Location:	Canada
Company:	Private Client
Description:	For a large utility, LEI performed a detailed bottom-up analysis of the range of costs for building a utility-scale solar farm in a Canadian province. LEI researched potential costs for multiple solar module technologies, interconnection options, and land types. The cost analysis customized the hardware, labor, and other costs into the province's business landscape so as to create an accurate representation of the costs for building a solar generation resource. Barbara assisted on the research, composition of the cost model and final report.

Date:	May 2017 – August 2017
Location:	USA
Company:	Private Client
Description:	LEI was retained to provide a research paper highlighting the opportunity to evolve system planning practices to a more resilient transmission system in the longer term, one that promotes efficient electricity production and consumption decisions and efficient infrastructure investment. Barbara assisted on the research tasks.

Date:	May 2017

Location:	USA
Company:	Private Client
Description:	For a private equity client, LEI reviewed all investable energy sectors in the US and Canada (except oil and gas exploration and production). The sectors included: electricity generation (natural gas, wind, solar, hydro), AMI, distributed Resources, demand response, retail and gentailers, gas LDCs, gas storage, gas pipeline transportation, LNG-related infrastructure, vertically-integrated utilities, electric distribution, and water utilities. LEI assessed the investment potential of each sector for the next five years and proposed a methodology to screen and identify investment opportunities and execute on these opportunities. Barbara was responsible for the electric generation sector and the Alaska regional study.

Date:	April 2017
Location:	USA
Company:	Private Client
Description:	For a private developer, LEI reviewed the eligibility of small (less than 25 MW) run-of-river hydroelectric electric generation facilities to provide ancillary services in the ISO-NE, MISO, NYISO, and PJM jurisdictions. Barbara assisted with research tasks.

Date:	December 2015 – April 2017
Location:	Canada
Company:	Ontario Power Generation ("OPG")
Description:	LEI prepared a report for OPG entitled "Empirical Analysis of Total Factor Productivity Trends in the North American Hydroelectric Generation Industry." The purpose of this report was to share findings from LEI's total factor productivity ("TFP") study, which estimated TFP trends for a select group of peers from the North American hydroelectric generation industry. Data for this study covered an eleven-year period from 2002-2012. This study was further updated for newly available data (encompassing operating costs and other statistics for calendar years 2013 and 2014). LEI also supported OPG through 2017 in recommending an appropriate X factor and I factor to use in a I-X regime for hydroelectric generation. Barbara coauthored the report and assisted on information-gathering.

Date:	December 2016
Location:	USA
Company:	Private Client
Description:	In 2014, LEI assessed the impact of the construction of the 1000 MW Pacifico HVDC transmission interline between Southern Peru and Northern Chile. LEI also provided due diligence support and market analysis for the Peruvian and Chilean electricity markets to the team of investors backing the project. In 2016, the model was updated to the current market condition. Barbara assisted with research tasks.

Date:	July – December 2016
Location:	USA
Company:	Private Client

Description:	LEI was retained by a transmission developer to serve as Independent Examiner for a proposed merchant transmission project open solicitation process. The project entailed designing the solicitation process, meeting with potential shippers on the line to garner early interest, drafting announcements and press releases, conducting information sessions, updating the solicitation website, evaluating and ranking bids, assisting both bilateral negotiations with shippers, and submitting a report to FERC as part of the developers' Section 205 filing. Barbara coauthored the IE report and managed the information-gathering.

Date:	June 2016
Location:	USA
Company:	Private Client
Description:	LEI was retained by a transmission utility to provide an overview of resources in the Chicago area and the Commonwealth Edison ("ComEd") zone and analyze the congestion of several nodes within the Chicago area and shorelines sites of Lake Michigan. Barbara assisted with research tasks.

Date:	June 2016
Location:	Brazil
Company:	Private Client
Description:	For a Canadian electricity transmission company, Barbara conducted theoretical and empirical analysis of the Brazilian Electricity Market Credit Crisis highlighting interesting lessons for the Alberta market. Topics explored include: credit/financing issues, system reliability, government interventions, power market risks, resources diversity.

Date:	April – May 2016
Location:	Multiple
Company:	TransAlta
Description:	LEI was retained to provide ongoing research, analytical and advisory support to TransAlta as the Alberta government implements its climate change policy, which will shut down coal plants early, ramp up renewable generation, and put in place a province wide carbon tax. Part of the engagement was to perform a case study-oriented comparative review of ancillary services in North America and abroad. Barbara was responsible for the Ireland case study.

Date:	March 2016
Location:	Canada
Company:	Alberta Balancing Pool
Description:	LEI was retained by the Alberta Balancing Pool to provide wholesale energy price forecasts and market revenue projections over the period 2017-2020 for various generating facilities operating in the Alberta. LEI ran multiple sensitivities accounting for changes in ownership and dispatch rights, facility decommission and carbon policy changes. LEI relied on its proprietary dispatch simulation model, POOLMod applying Conjecture theoretical approach. Barbara assisted with research tasks.

Date:	October – November 2015
Location:	Multiple
Company:	Private Client
Description:	LEI was retained as part of a consortium to support an energy product manufacturing firm assess the market for solar thermal technologies, with a focus on an economic assessment of solar thermal technology, assessing the value contribution of the different components of the value chain creating a molten thermal solar plant. In addition, the client asked LEI to provide support to developing business strategies for this market. LEI's conducted the analysis in 3 out of 5 high priority markets - Saudi Arabia, Morocco, and Chile. More specifically we assessed the economics for solar thermal in each market, commented on the general perception of the technology and provided a comprehensive brief on the rules governing the market access. Barbara was responsible for the Chilean market.

Date:	June – October 2015
Location:	USA
Company:	Private Client
Description:	LEI was retained by the largest electric utility company in Malaysia, to conduct a capacity building workshop on performance-based regulation ("PBR") and technical visits to utilities and regulators worldwide that are operating under PBR-like regimes. Barbara presented to TNB's traveling contingent on PBR Requirements standards across different jurisdictions and on fundamental of Tariff Design.

Date:	June 2015
Location:	USA
Company:	Private Client
Description:	LEI was retained to categorize the different plants in PJM into self-supply, merchant or under PPA. Barbara assisted with research tasks.

Date:	May – June 2015
Location:	USA
Company:	Private Client
Description:	LEI was engaged by a private equity company to provide a briefing paper that compares "The Opportunities of the Buy versus Build Investment Decision." The paper contains quantitative and qualitative research and analysis, based on market data on purchase prices from recent transactions (focused on New York, New England, and PJM), versus the cost of new build assets. Barbara assisted with research tasks.

Date:	April 2015
Location:	Colombia
Company:	Private Client
Description:	LEI was hired by a financial investor to provide an understanding of the dynamics underpinning hydro-dominated power markets as opposed to thermal systems. As part of this project, LEI reviewed in detail the dynamics and key drivers of energy markets

	in a sample of Latin America countries including Colombia, Panama, Brazil and Chile. Colombia was the point of focus of the report, in this respect LEI compared and contrast several aspects of the Colombian markets to other jurisdictions and created a scoring card to evaluate Colombia against similar jurisdictions. Barbara assisted with research tasks and coauthored the report.

Date:	March – April 2015
Location:	Colombia
Company:	Private Client
Description:	LEI was hired by an electric operator for the purposes of valuing a portfolio of generating assets in Colombia. LEI's scope of work consists of a comprehensive review of the Colombia energy market (including fuel and power market drivers), describe in detail the functioning of both wholesale power market and firm energy market (capacity market), develop forecasts of spot prices in order to derive expected revenues for the portfolio. Colombia being a hydro dominated system, as part of its modeling exercise, LEI ran a Monte Carlo simulation to develop a series of probabilities associated with generation profiles of Colombia's hydro resources to reflect the impact of weather conditions and water inflows on hydropower plants' output. LEI summarized its research and modeling results in a final report that was presented to lenders and other interested parties. Barbara created the fuels forecast, assisted with research tasks for the modeling activities, and coauthored the report.

Date:	January – February 2015
Location:	USA, Canada and Mexico
Company:	Private Client
Description:	LEI was retained by a private client to conduct a mini-workshop to discuss the market opportunities and risks on five proposed transmission projects in the US and Mexico. Barbara was involved in the analysis of the Mexican projects.