

Response to Request for Proposals
for
Review of Atmos Energy Corporation's Petition Requesting the
Renewal of Asset Management Plan for the period April 1, 2019
through March 31, 2024 (Docket No. S-34879)

Prepared for the Louisiana Public Service Commission

by
London Economics International LLC

July 23rd, 2018



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London Economics International LLC (“LEI”) is a US-owned and operated firm specializing in economic and financial advisory services for energy and infrastructure industries around the world. LEI has a wealth of knowledge and solid experience in utility management auditing, procurement and fuel costs analysis, as well as large-scale and long-term engagements. LEI is well-positioned to assist the Public Service Commission of the State of Louisiana in conducting the review of Atmos Energy Corporation’s petition requesting the renewal of its asset management plan.

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July 24th, 2018

Attention: Kim Trosclair

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Re: Review of Atmos Energy Corporation's Petition Requesting the Renewal of Asset Management Plan for the period April 1, 2019 through March 31, 2024 (Docket No. S-34879)

Dear Ms. Trosclair,

London Economics International ("LEI") is pleased to submit a proposal to assist the Commission to review the renewal of Atmos Energy Corporation's ("Atmos") Asset Management Plan ("AMP") for the period April 1, 2019 through March 31, 2024.

LEI is a US-owned and operated firm specializing in economic and financial advisory services for energy and infrastructure industries around the world. The firm has a wealth of knowledge and solid experience in independent evaluation, management and audit reviews, and regulatory economics. The assembled team is uniquely qualified to provide the services outlined in this request for proposal ("RFP").

Sincerely,



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1 Executive Summary

London Economics International LLC (“LEI”) is pleased to respond to the Request for Proposal (“RFP”) **“Review of Atmos Energy Corporation’s Petition Requesting the Renewal of Asset Management Plan for the period April 1, 2019 through March 31, 2024 (Docket No. S-34879).”**

LEI is a US-owned and operated firm specializing in economic and financial advisory services for energy and infrastructure industries around the world. LEI has a wealth of knowledge and solid experience in independent review and compliance audits, regulatory economics and deregulation, as well as large-scale and long-term engagements. The LEI team has worked with regulators, utilities, and consumer groups in jurisdictions around the world. LEI has a strong track record of analysis and support for clients in Midcontinent Independent System Operator (“MISO”) markets and has testified and provided expert opinions in front of state public utilities commissions.

LEI’s key qualifications

Experience in management and performance review auditing

- Experience in evaluation and monitoring of utility asset management, rate making, and regulatory compliance
- Worked with regulators, utilities, and consumers around the globe
- Familiar with MISO administrated wholesale markets
- Extensive experience in management of large scale and long-term engagements

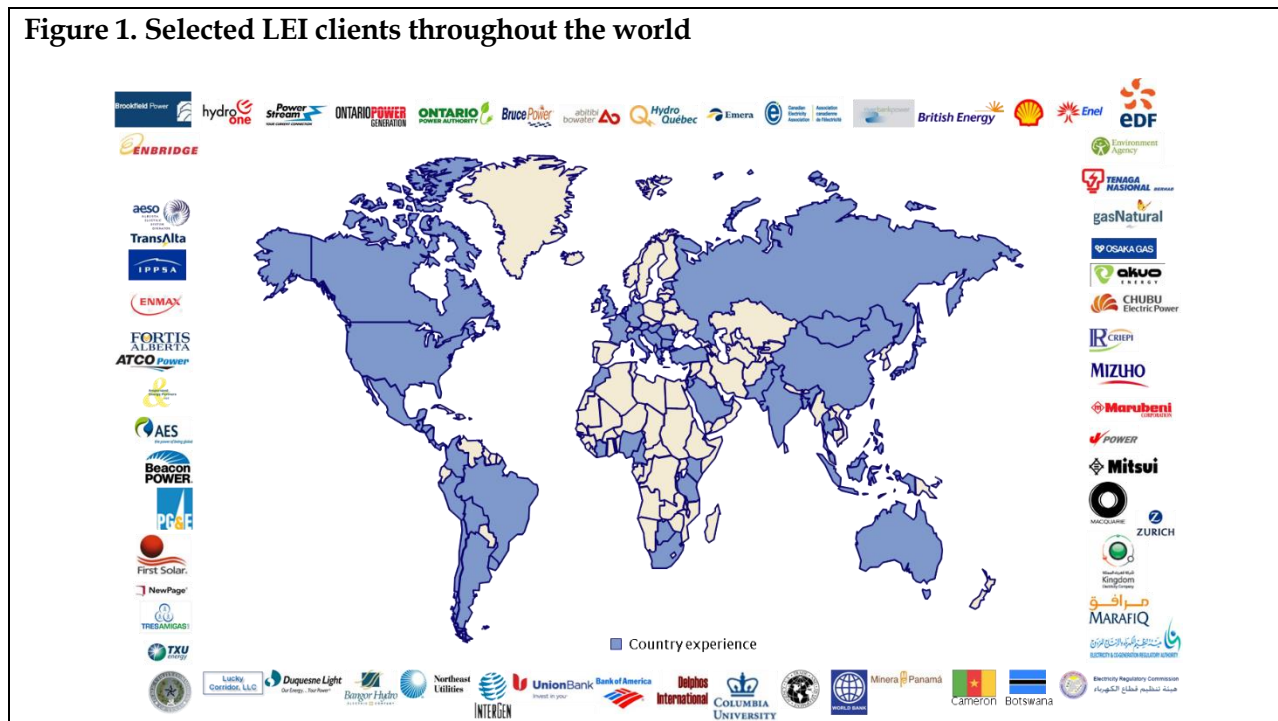
LEI has recently been retained by the Public Utilities Commission of Ohio (“PUCO”) to perform the management audit of Ohio Power’s Alternative Energy Rider. In recent years, LEI has been engaged by the Mississippi Public Service Commission to perform an audit and management review of Entergy Mississippi, Inc. LEI has performed management review and auditing services for utilities such as Pacific Gas & Electric Company, Ontario Power Generation, Profin Bolivia SA (a Bolivian distribution company), Tohoku Electric, Tata Power, and others. LEI has aided regulatory commissions in the review of procurement process and contracts, including Hong Kong Special Administrative Region government, Delaware Public Services Commission (“PSC”), Ontario Power Authority, and the Maine Public Utilities Commission.

1.1 Introduction to London Economics International LLC

LEI is a global economic, financial, and strategic advisory professional services firm specializing in energy and infrastructure. The firm combines a detailed understanding of specific network and commodity industries, such as electricity generation and distribution, with sophisticated analysis and a suite of proprietary quantitative models to produce reliable and comprehensible results. The firm had its start the initial round of privatization of electricity, gas, and water companies in the United Kingdom. Since then, LEI has advised private sector clients, market institutions,

regulators, and governments on policy initiatives, market and tariff design, asset valuation, market power, policy, and strategy in virtually all deregulated markets worldwide (see Figure 1).

Figure 1. Selected LEI clients throughout the world

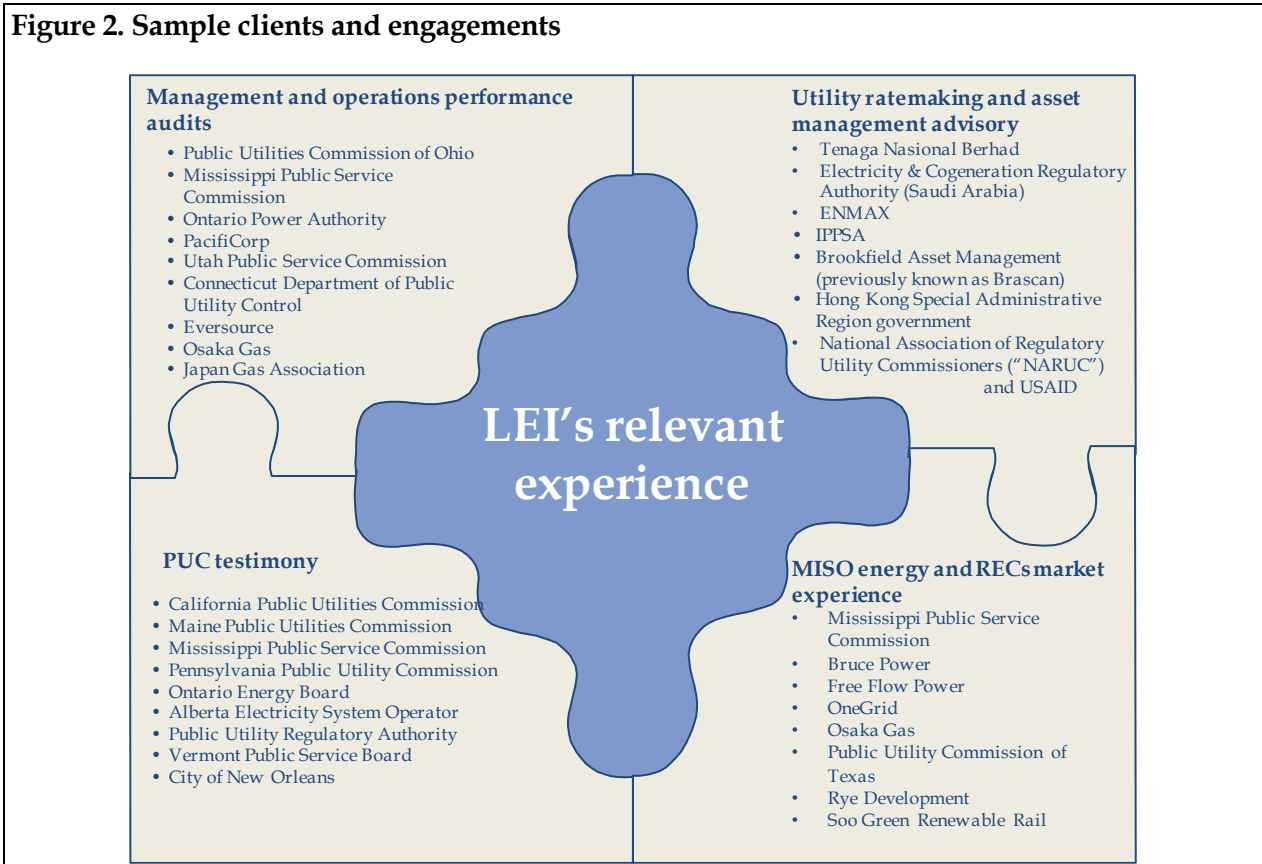


The following attributes make LEI unique:

- *clear, readable deliverables* grounded in substantial topical and quantitative evidence;
- *extensive experience with management auditing and evaluation of utility procurement* enables LEI to provide benchmarking and comparison to industry best practices;
- *wealth of knowledge of energy and infrastructure regulation* worldwide enables LEI to provide expert testimony services on regulatory best practices and innovation;
- *balance of private sector and governmental clients* enables LEI to advise both regarding the impact of regulatory initiatives on private investment and the extent of possible regulatory responses to individual firm actions;
- *US-wide and worldwide experience* backed by multilingual and multicultural staff.

Previously, LEI has performed management review and auditing services for the Mississippi Public Service Commission; LEI has served as an independent evaluator of solicitations for renewable energy (for PacifiCorp) and other resources (for the State of Connecticut). LEI has also

aided regulatory commissions in the review of other procurement process and contracts, including Hong Kong Special Administrative Region government, Delaware Public Services Commission, Ontario Power Authority, and the Maine Public Utilities Commission. Figure 2 illustrates LEI’s extensive relevant client portfolio and engagements.



1.2 Understanding of the assignment

The Louisiana Public Service Commission ("Commission" or "LPSC") is seeking an independent technical consultant to assist Commission Staff in the review and analysis of Atmos Energy Corporation's ("Atmos" or "Company") request for renewal of its Asset Management Plan ("AMP") for the period April 1, 2019 through March 31, 2024, including a review of all transactions under the currently-authorized AMP.

The independent consultant retained by the Commission shall assist the Commission's Legal, Audit, and Utilities Divisions in their review of the pending application for renewal of the AMP. As ordered by the Commission in Order No. U-34324, all transactions under the current AMP are to be reviewed prior to any renewal beyond April 1, 2019. Such review can be used in the

evaluation of whether the AMP should be renewed and under what terms and conditions. In performing this duty, the consultant shall review all transactions under the current AMP; review the proposed renewal of the AMP; draft data requests and review responses, accompanying work papers and the company's financial data potentially participate in formal status conferences, pretrial conferences, depositions, and hearings; and prepare for filing recommendation memoranda.

Based on its expertise and experience, LEI is hereby submitting a proposal for reviewing the pending application for renewing Atmos AMP.

LEI will work closely with the Commission's Legal, Audit and Utilities Divisions in its review of the pending application for renewal of Atmos's AMP and provide advice regarding whether the AMP should be renewed and under what terms and conditions. LEI envisions that the engagement can be broken down into six basic components, supplemented with discussion and analysis of other key issues that LEI may identify during the audit:

- Collect information through data request;
- Review all transactions under the current AMP;
- Review the proposed renewal of AMP;
- Deliver the Final Audit Report
- Provide recommendations and testimony support;
- Participate in relevant conferences and assist Commission staff in drafting filings.

LEI understands the Commission expects this docket to last approximately 6-12 months, depending upon whether the matter is contested, and as such LEI proposes only a preliminary schedule for the review to be finished in 8 months. LEI is open to discuss and modify the scope of work and workplan to accommodate additional topics and tasks.

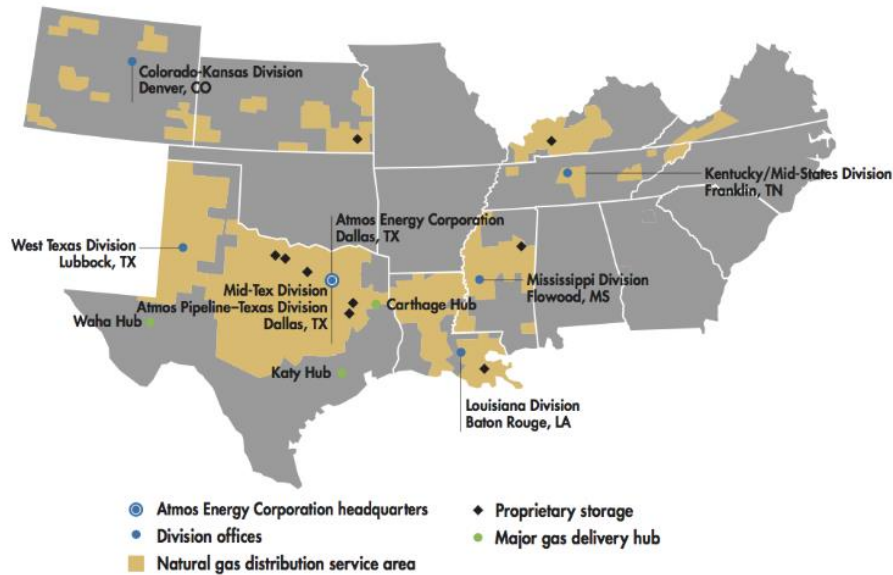
1.3 Understanding of Atmos

LEI believes that a solid understanding of the Atmos portfolio serves as a basis of the management review.

Atmos Energy Corporation is headquartered in Dallas and is primarily engaged in the regulated natural gas distribution and gas transportation pipeline business. Atmos delivers natural gas through regulated sales and transportation agreements to over three million customers, and also manages company-owned natural gas pipeline and storage assets.

Atmos's service territory covers eight states, including Louisiana, where Atmos serves as the largest natural gas provider, delivering gas to approximately 359,000 customers. Atmos has two Louisiana rate divisions: Trans Louisiana Gas ("TransLA") and Louisiana Gas Service ("LGS"), which together file a consolidated purchased gas adjustment ("PGA") rate.

Figure 3. Atmos’s natural gas territories and storage fields



Source: Atmos Energy <https://www.atmosenergy.com/company/utility-operations>

1.4 The AMP

Generally, asset management plans are contractual relationships where a party agrees to manage gas supply and delivery arrangements, including transportation and storage capacity, for another entity. Such agreements allow local distribution companies to increase utilization of their facilities. For Atmos, revenues from these agreements flow through as credits to the PGA rate and subsequently audited by Commission Staff. The Atmos AMP has been in place continuously from 1999 to the present.¹

Atmos’s AMP is provided by its affiliate Trans Louisiana Gas Pipeline (“TLGP”). In 2013, the Commission renewed an approval of the AMP through April 1, 2019. The AMP provides for guaranteed payments to be made by TLGP to Atmos in the amount of \$675,000. TLGP then additionally agrees to share with the Company all profits from the implementation of the AMP that are in excess of \$1,500,000. The profits are generated from the activities directed by TLGP related to sales of excess supply of gas, engaging in hedged storage transactions, release of excess

¹ LPSC. “In re: Petition Requesting the Renewal of the Asset Mgt. Plan for the period of April 1, 2014 through March 31, 2019 for Atmos Energy Corporations' Regulatory Divisions, Louisiana Gas Service and Trans Louisiana Gas.” October 2013. DOCKET NO. S-32919.

capacity, savings in demand charges from the reduction and/or avoidance of annual demand dollars through replacements/amendments to initial transportation and storage contracts.

Pursuant to the most recent Purchase Gas Adjustment audit of Atmos (LPSC Docket No. U-34324), the Commission ordered that all transactions under the current AMP be reviewed prior to any Commission approval for renewal beyond April 1, 2019.

2 LEI's experience and qualifications

The combination of the LEI team's management auditing expertise, experience in procurement and fuel adjustment, as well as familiarity with the MISO context means that LEI is uniquely qualified to provide the services in this RFP.

2.1 Management audit/ review experience

LEI has performed management review and auditing services around the world, including assessment of utilities' practices, review of fuel cost adjustment mechanisms, assessment of compliance with regulations, and investigation of generating assets.

- **Mississippi fuel and energy management audit:** LEI was engaged by the Mississippi Public Service Commission to audit the management activities of a major vertically-integrated utility (Entergy Mississippi, Inc.) 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 prudence of coal and nuclear inventory levels and inventory control procedures.
- **Independent evaluator:** LEI served as an independent evaluator ("IE") for Pacific Gas & Electric Company ("PG&E") for PG&E Electric Fuels Department's Natural Gas Storage Services Request for Offer ("RFO"). LEI worked with PG&E to ensure that offers were evaluated consistently and appropriately in accordance with the solicitation protocol and in accordance with applicable rules and processes of the California Public Utilities Commission ("CPUC").
- **Management performance and financial audit:** LEI was selected by the Public Utilities Commission of Ohio ("PUCO") to perform a management performance audit of the Alternative Energy Rider ("AER") of Ohio Power Company ("AEP Ohio"). The engagement included a management/performance audit and a financial audit of AEP Ohio's AER for the recovery of renewable energy credit expenses.
- **Assessment of fuel cost pass-through mechanisms:** LEI was retained by the Hong Kong Special Administrative Region government to assess certain aspects of the Hong Kong regulatory regime for electricity, such as cost of capital, rate base calculations, efficiency incentives, and fuel cost pass through mechanisms, to help prepare the Government for negotiations with the utilities to change the regime after current contracts expired.
- **Management review of a major Japanese power utility:** LEI was retained by a major Japanese power utility to provide an assessment of issues related to establishing a risk management function, specifically from an organizational development perspective. As

part of the work, LEI reviewed the key concepts behind an organization's risk management function, and covered issues related to coordination, management, and staffing.

- **Management review of generating assets:** On behalf of a leading Indian independent power company, LEI analyzed a portfolio of generating assets in Philippines and Mexico. Work included a review of the regulatory environment; modeling of wholesale price outcomes; review of underlying fuel, power sales, and other relevant contracts; assessment of country risk; and analysis of potential opportunities for expansion.
- **Independent benchmarking assessment of costs:** LEI performed an independent benchmarking assessment of Ontario Power Generation's ("OPG") corporate support costs. In addition to independent benchmarking analysis, LEI supported OPG through the rate application process by the preparing evidence, and providing expert testimony related to the reasonableness of OPG's costs for the provision of corporate support services.
- **Assessment of electric distribution service costs for Ontario utility:** LEI, in consortium with an engineering firm, analyzed customer density and distribution service costs for Ontario's largest utility in 2011. This engagement had three specific objectives: (i) evaluate the relationship between customer density and distribution service costs; (ii) assess whether utility's existing density-based rate classes and density weighting factors appropriately reflect this relationship; and (iii) consider, qualitatively, the appropriateness and feasibility of establishing alternative customer class definitions.

2.2 Utility asset management, ratemaking, and due diligence analysis

LEI has worked intensively with utility and Public Service Commissions or Public Utility Commissions in asset evaluation, due diligence analysis, rate making, and regulatory compliance.

- **Financial review and ratemaking analysis for an Ontario gas distribution utility:** LEI conducted a review and analysis of ratemaking approaches applied to a gas distribution utility's capital expenditure profile, including a demonstration of the negative potential impact of "I-X" ratemaking approaches on a utility's ability to earn a fair return.
- **Performance-based rate strategy for a Canadian utility:** For Canada's largest independent electricity transmission company, LEI designed a regulatory strategy for its interaction with the relevant provincial utilities board regarding performance-based rate ("PBR") methods. LEI utilized the capital asset pricing model ("CAPM") to independently develop a range of ROEs, and suggested an "earnings sharing" (shared savings) approach to rate design based on the need to demonstrate a transition to incentive rates while maintaining simplicity and predictability in rate design.

- ***Capital structure review of gas assets:*** LEI was engaged by a US gas utility to conduct an independent capital structure review to assess the reasonableness of its current common equity component. The project included completing an assessment of the utility's business and financial risk profile, estimating the cost of equity for groups of comparable risk utilities, examining information on average utility actual and allowed capital structures, comparing cost of equity estimates, and providing recommendations on the appropriate common equity level.
- ***Asset management for biomass plants in California:*** LEI was retained by a US renewable energy investment group to provide asset management services for two biomass power plants in California. LEI was involved in all aspects of the business including financing, fuel contract and PPA negotiations, emissions compliance, and operations among other responsibilities.
- ***Asset management for a hydro facility in Maine:*** LEI was retained by a renewable energy investment group as the asset manager for a hydro facility in Maine. LEI is actively involved in operations, financing and community engagement.
- ***Valuation of generation and distribution assets in the Caribbean and the Philippines:*** LEI was retained by a private client to conduct an analysis of overseas generation and distribution assets and prepare a narrative report discussing: 1) plant by plant summary pro-forma financial models of plant cash flow; 2) where available, public financial statements and projections prepared by the subsidiary; 3) regulatory documents related to the assets or subsidiaries; 4) summary terms and conditions of the major power purchase agreements relating to subsidiary power plants; 5) copies of major power purchase agreements; 6) narrative description of major issues regarding each asset and/or entity.
- ***Review of financial structure and ratemaking schemes of electric transmission projects:*** LEI was retained by a UK investment firm to produce a report on the viability of certain structured finance arrangements associated with the proposed sale-leaseback transaction of electric transmission assets in the Dutch market. LEI investigated the availability of potential counterparties, the rate of return or discount rate these counterparties were likely to apply, what contractual mechanisms would be necessary to provide sufficient assurances to the counterparty; and provided examples of analogous transactions from other industries and countries.
- ***Due diligence analysis for an asset acquisition in MISO-South:*** LEI was engaged in reviewing the contracts and financial analysis, with a specific focus on the assumed market value of capacity in the long term, and locational marginal prices for energy. LEI also reviewed certain contracts and supporting materials and participated in due diligence calls.

2.3 Experience in MISO

LEI closely monitors the MISO market for ongoing client work. LEI also releases 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 would serve as a solid foundation in this management review.

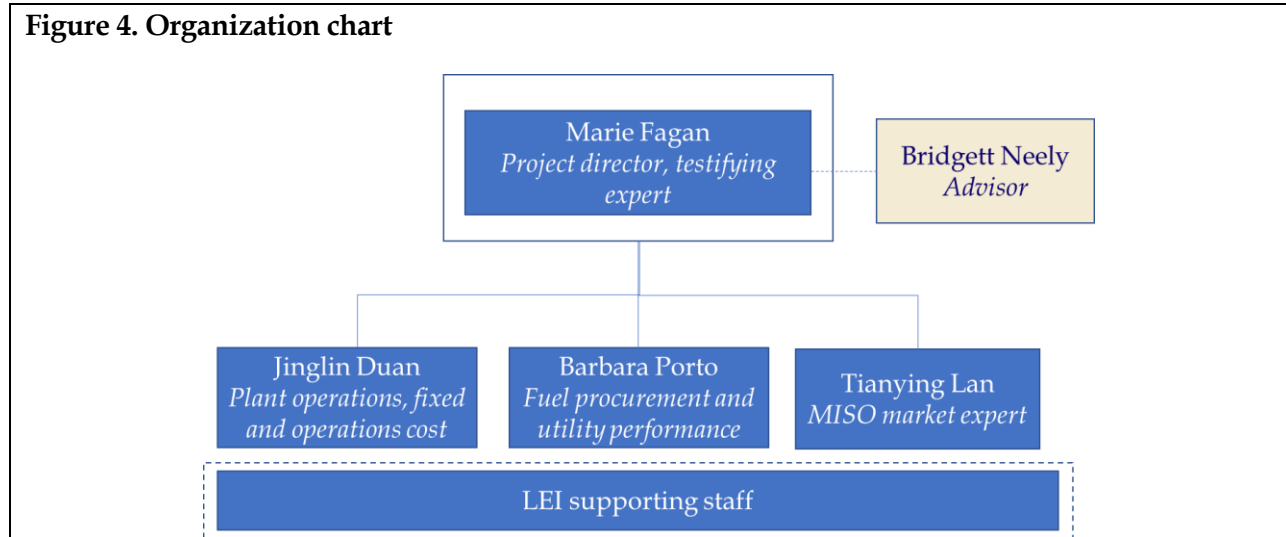
- **Asset evaluation:** LEI was engaged by an investment firm in association with asset valuation, due diligence support, and market analysis. Work involved reviewing documents in a virtual data room, and analysis related to drivers of gross margin for the asset: macroeconomics, weather fluctuations, fuel and electricity cost projections, and overview of gas and electricity market in the MISO region where the asset was located.
- **Renewables implementation:** LEI was retained by Kentucky's 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 to meet a legislative mandate to increase the use of renewable resources and reduce demand. The review process consisted of analyzing the current processes for renewable and distributed generation and demand-side management ("DSM") programs and proposing recommendations to improve the efficacy of these programs.
- **Long-term market outlook for MISO:** LEI was hired by a private utility to perform an independent market analysis for a number of assets located in NYISO, MISO, CAISO, and ERCOT. LEI conducted a 20-year price forecasting horizon and provided forecasts of plants' output, load factor, and realized prices.
- **Congestion analysis for parts of MISO:** LEI was retained by a private client to analyze the congestion within the Chicago area and MISO zones surrounding Lake Michigan.
- **Due diligence analysis:** LEI was engaged by a private client to provide analytical support for their due diligence process. The supporting tasks entailed: providing an updated outlook for energy prices and intelligence on recent developments in selected US power markets (PJM and MISO); conducting a forecast of renewable energy credit ("REC") prices; and reviewing requirements and risk exposure for hydropower facilities in capacity markets.
- **Revenue opportunity for gas-fired cogeneration units in MISO:** LEI was engaged to inform the client of potential risks associated with the plants upon termination of their 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 determined the potential revenues for a proposed transmission project wheeling power from western MISO to eastern MISO (and eventually to 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.
- ***Cost/benefit analysis of Entergy joining MISO or SPP:*** LEI was hired by the Public Utility Commission of Texas ("PUCT") to provide a cost-benefit analysis pertaining to 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.
- ***Due diligence and valuation of a district cooling system in the Midwest:*** LEI was engaged by an investment firm in association with a due diligence of a district cooling system in the Midwest.
- ***Estimating coal plants' energy and capacity revenues in MISO:*** LEI performed a valuation of two power plants located in MISO to determine their potential value upon expiration of the current power purchase agreement ("PPA"). The plants' revenues were calculated based on LEI's 25-year forecasts of electricity prices in their respective zones. LEI also simulated an organized capacity market based on the resource adequacy requirements of MISO to estimate potential capacity revenues for the plants.

3 Team Members' Experience and Qualifications

LEI has gathered a select team of dedicated professionals with the required qualifications to execute the management/performance audit, as shown in Figure 4. The team possesses considerable global energy markets expertise and technical, and evaluation and audit experience.



The team proposed for this project has a broad array of credentials and experience. It possesses relevant experience in MISO, considerable expertise in complex utility asset management and ratemaking issues, as well as experience in management review and regulatory/public policy matters in North America and internationally. LEI Managing Consultant and Lead Economist **Marie Fagan** will act as the Project Director and will be the direct point of contact for the Commission for the duration of the engagement. Below is a short description of each key member's expertise and Section 8 provides the curriculum vitae ("CV") of each member of the team.

Marie N. Fagan, Ph.D., will serve as Project Director and the main point of contact with staff. Marie has 30 years of experience in the energy sector, including leading utility management auditing. The team includes Senior Advisor **Bridgett Neely** who brings a comprehensive understanding of renewable energy and retail markets. LEI may utilize other staff to assist in research and data gathering.

Marie N. Fagan, Ph.D. is Lead Economist and Managing Consultant at LEI. Marie led the fuel and energy management audit of Entergy Mississippi, Inc. for the Mississippi Public Service Commission in 2017. Marie has long-time experience in analysis of upstream, midstream, and downstream natural gas issues. She 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), a two-year case involving a budget of over \$500,000. For the Maine PUC and other public utility commissions, Marie has served as LEI's testifying expert. She has directed and authored independent reports to commissions, prepared discovery questions, responded to interrogatories from parties, authored rebuttals, provided cross-examination of expert witnesses, and provided oral testimony.

Bridgett Neely is the President and founder of Firefly Energy Consulting LLC and a member of the LEI team. She brings more than 15 years of experience in energy sector advising on strategic, economic, demand conservation, energy efficiency, renewable energy, and policy issues. Prior to founding Firefly Energy Consulting LLC, Bridgett served as the Vice President, Energy Efficiency and Renewable Energy for the New York City Economic Development Corporation.

Barbara Porto is a Consultant with LEI, with experience in coordination and execution of utility management and performance auditing. Barbara's experience and subject matter expertise include analysis of utility fuel costs, and analysis of energy markets.

Jinglin Duan is a Consultant with LEI, with experience in coordination and execution of utility management/performance auditing. Jinglin's experience and subject matter expertise include analysis of plant operations, utility's participation in regional ISO/RTOs, and analysis of energy markets. Jinglin has also been engaged in analysis and evaluation of financial performance (including fixed costs and variable costs) of generation and transmission assets.

Tianying Lan is a Consultant at LEI. She performs economic, strategic and financial research, analysis, critical review, and provides regulatory advisory services for electricity, natural gas networks, infrastructure and renewable energy markets. She is the primary modeler of Midcontinent Independent System Operator (MISO) market, where she is responsible for modeling the energy and capacity markets and analyzing changes in market rules and system dynamics.

4 Work Plan and Schedule

4.1 Deliverables and schedule

The team expects that the engagement will start with a **kick-off meeting** that will be held either in-person or over the phone, with the Commission Staff. During this meeting, the team expects that the engagement's timetable, milestones, overall expectations and the format and timing of deliverables will be discussed and finalized. Given the timeline for the RFP outlines, LEI proposes the kick-off meeting to be held soon after consultant selection. The project timeline prepared by LEI assumes a kickoff date not later than August 20, 2018.

LEI will work with the Commission Staff to prepare a **Final Audit Report**. The report will present LEI's and Staff's findings to the Commission, especially regarding any irregularities detected in AMP transactions. The report will include an executive summary which identifies whether the renewal of the AMP is in the best interest of ratepayers, and whether the current AMP provided the savings projected (see Section 4.2 for more details).

LEI will provide **weekly updates** to the Commission Staff, which will summarize progress made on required audit activities and preliminary findings.

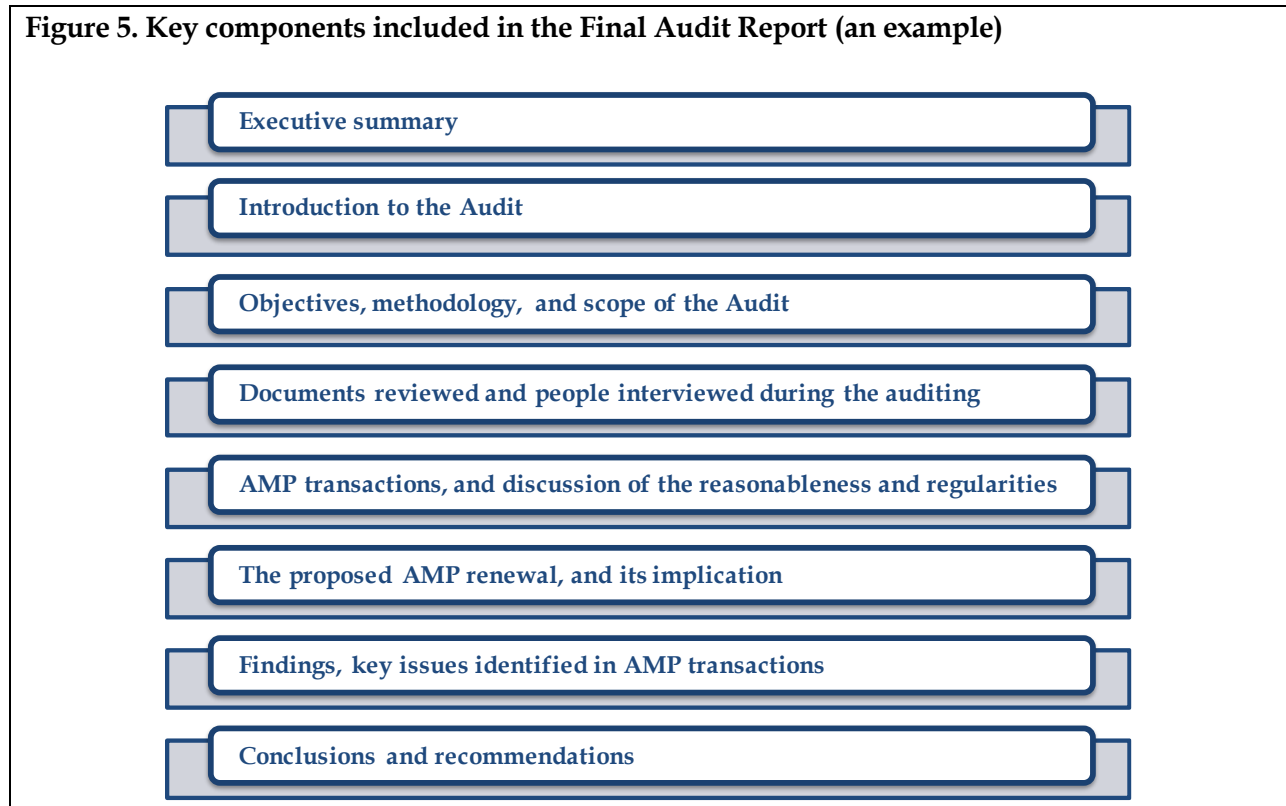
LEI expects frequent contact with the Commission Staff in the initial stages of the project when main activities will include gathering data from Atmos and setting up meetings and calls with Atmos personnel. In addition, LEI be available to participate in **informal conference calls, meetings and conferences** with the Commission and its Staff, as well as attending any **Business and Executive Sessions** that the Staff deems necessary.

LEI proposes a schedule for LEI's work to be completed over an **eight-month** period. LEI is open to extending the timetable and workplan to accommodate additional topics and tasks.

4.2 The Final Audit Report

LEI's **Final Audit Report** will include a summary of how the audit process was conducted, what the findings were, and what the conclusions and recommendations are. It will integrate the findings and conclusions from the interview summaries, comparison research, and independent analytical efforts. The report will include supporting evidence and references. The report would include key components as illustrated in Figure 5 below.

Figure 5. Key components included in the Final Audit Report (an example)



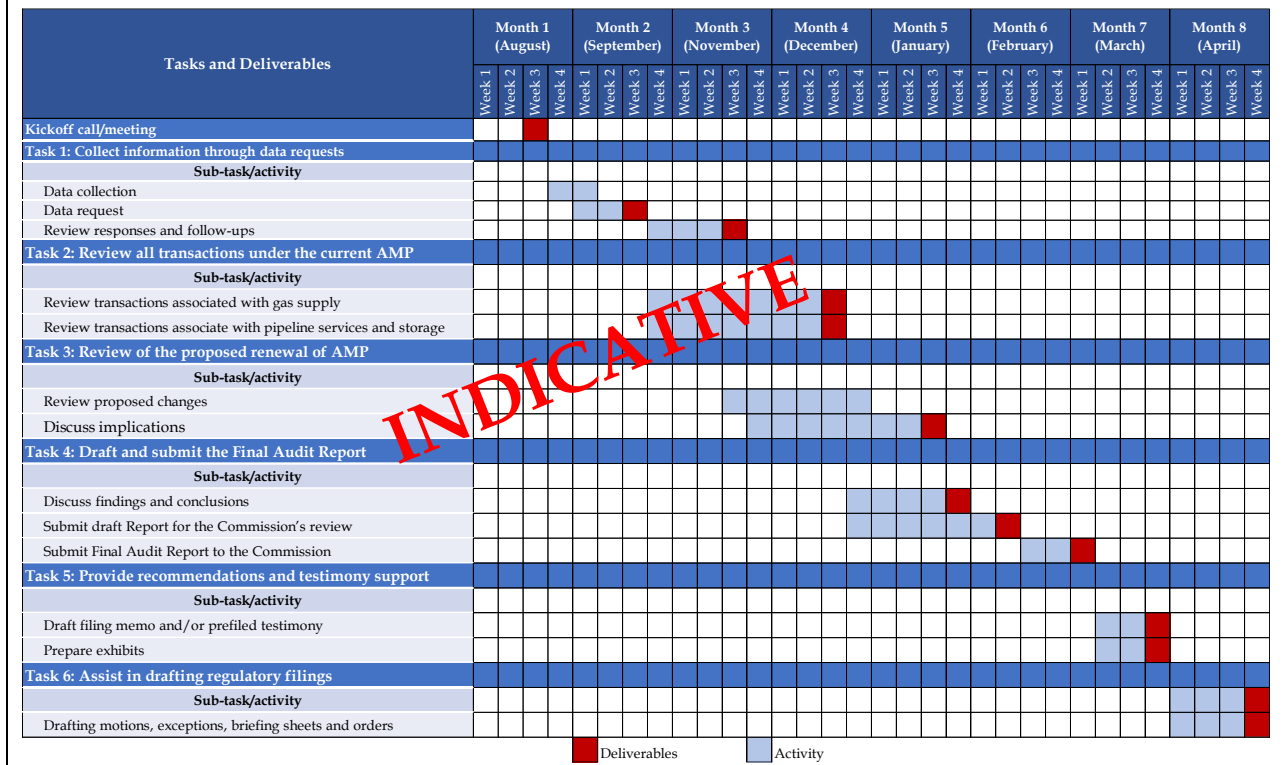
The first draft of the audit report will be provided to the Commission Staff for feedback, comments, and consideration of the proposed procedures or further review of key issues. LEI expects that there will be a conference call to discuss the draft report. In addition, LEI will highlight and discuss with the Commission Staff areas of the audit report as needed, such as any identified irregularities of Atmos AMP’s transactions. LEI will work with the Commission Staff to finalize and present the findings and recommendations.

4.3 Breakdown of main tasks and indicative schedule

In reviewing the scope of work, LEI believes there four main tasks as presented in Figure 6 below. LEI has broken these tasks into sub-tasks which address all of the items enumerated in the scope of work.

LEI understands that the time period estimated to complete this docket ranges from **6 to 12 months**, depending upon whether the matter is contested. As such, the workplan is based on a preliminary schedule. LEI is open to extend or adjust the timetable and workplan to accommodate changes in the proceeding or to add more topics and tasks.

Figure 6. Major tasks, subtasks, and deliverables



4.4 Budget

4.4.1 LEI professional fees

LEI estimates that the total professional fees associated with providing the services outlined in this proposal will be an estimated **\$89,740**, for Tasks 1-6 including the Final Audit Report (see Figure 7). These totals by task are based on the hourly rates shown in Figure 8. As mentioned above, if the Commission Staff wishes to add topics and tasks or adjust the timetable, LEI would work with Staff to establish a new timetable and budget for the work.

LEI’s Lead Economist and Managing Consultant, Marie Fagan, would present expert testimony at any hearing at which the audit report is considered. LEI will bill only for the actual costs associated with serving as an expert witness before the Commission during the applicable hearing. Professional fees for testimony will be charged at the hourly rates shown in Figure 8, and the related travel expenses will be billed based on actual costs incurred (as discussed in Section 4.4.2)

Figure 7. LEI professional fee budget, Tasks 1 through 6

Task	Professional fee budget
Kick-off meeting	\$ 2,960
Task 1: Collect information through data requests	\$ 18,150
Task 2: Review all transactions under the current AMP	\$ 13,610
Task 3: Review of the proposed renewal of AMP	\$ 6,510
Task 4: Draft and submit the Final Audit Report	\$ 29,700
Task 5: Provide recommendations	\$ 6,930
Task 6: Assist in drafting regulatory filings	\$ 7,920
Total, Tasks 1-6	\$ 85,780

Figure 8. LEI hourly rates

Position	Hourly Rate
President/ Managing Director	\$695
Director	\$575
Lead Economist/Managing Consultant	\$495
Senior Consultant	\$375
Consultant	\$295
Research Associate	\$195
Admin	\$100

4.4.2 LEI reimbursable expenses

Reimbursable expenses are additional to the professional fee budget. Reasonable and customary reimbursable expenses could be (but are not limited to) printing, courier, data acquisition fees and travel expenses, if any. Data fees usually amount to about \$0.02 per dollar of professional fees. LEI will get approval from the Commission Staff for any single expense greater than \$3,000.

Reimbursable expenses include travel expenses to meet with the Commission Staff, to conduct field interviews, or present at hearings, if needed (see Figure 9). LEI would only bill for expenses LEI actually incurred.

Figure 9. LEI indicative travel budget

	People	Days	Trips	Air travel	Lodging per person per day	Other, per person per day (meals, ground transportation)	Total cost
Site visits	3	2	2	\$ 550	\$ 180	\$ 100	\$ 4,980
Testimony	1	2	1	\$ 550	\$ 180	\$ 100	\$ 1,110
Total travel expense							\$ 6,090

5 Approach and Methodology

5.1 Overview of management audit

LEI's approach to the audit will be to rely on information LEI requests from Atmos primarily through formal data requests. LEI will also refer to publicly-available data from company annual reports, and other sources. LEI will conduct phone or video interviews, as well as site visits when necessary.

LEI will work as an independent contractor. As needed, LEI will interact with the Commission to collect data and information needed for the audit, as well as to substantiate, confirm, and clarify findings in the different areas covered by the audit. Inconsistent or unclear information will be brought to the attention of Atmos, and if necessary, the Commission Staff. LEI will work closely with the Commission Staff overseeing the project. LEI will identify deficiencies or potential problem areas and will keep the Commission abreast of progress throughout the course of the engagement.

5.2 LEI's approach to the audit

LEI's audit approach will make use of the following:

- **Comparative analysis**, which is performed using indicators for specific elements of the asset management process against a representative group of similar operations or entities. It is important to note that any such comparisons serve only as general performance indicators.
- **Quantitative assessments**, which focus on the utility's performance and cost trends and management's ability to control them.
- **Qualitative assessments**, which are based on the information gathered during the data requests, interviews, and field observation processes, as well as the professional experience of our consulting team and the pragmatic implications of the methods utilized to date.

Specifically, for reviewing Atmos's transactions under the AMP and evaluating the reasonableness of the proposed AMP renewal, LEI's will:

1. **Define the criteria** upon which the transactions and the proposed AMP renewal will be evaluated;
2. **Describe Atmos's process**, both qualitatively and quantitatively, based on the results of data requests and interviews;
3. **Examine and evaluate Atmos's process and proposal** both qualitatively and quantitatively; and
4. **Identify key issues and provide recommendations** as to the reasonableness and prudence of the transactions and the proposed AMP renewal

5.2.1 Define the criteria

LEI will develop criteria which will frame LEI's evaluation of Atmos's operations and transactions under the current AMP. The criteria will be designed based on LEI's experience with of asset management, Louisiana's regulatory framework, as well as market prices, best practices, and comparable examples, which will be used as benchmarks. The following is a sample of audit criteria; not every criterion will apply to every audit area:

- Have actual transactions under the current AMP fulfilled the contracts?
- Are transaction expenses incurred in a prudent and efficient manner?
- Are affiliate transactions handled in an arm's length manner?
- Is the recovery mechanism transparent, prudent, and aligned with the approved procedures by the Commissions, such as the PGA Order?

5.2.2 Describe Atmos's processes

LEI will expect Atmos to provide concrete data and information for each relevant process. This information may come from interviews, conference calls, and data requests.

5.2.3 Examine and evaluate Atmos's process and proposal

LEI will assess Atmos's transactions and process and compare with specific benchmarks defined for each type, to evaluate the prudence of costs incurred and the process for cost recovery. LEI will also examine relevant regulatory rules and filings to evaluate regulatory compliance of Atmos's transactions. Based on a deep understanding of the AMP and Atmos's transactions, LEI will evaluate the reasonableness and necessity of the proposed renewal of the AMP.

5.2.4 Provide LEI's recommendations

Based on a thorough review, LEI will identify areas of good performance as well as key issues with regards to Atom's transactions under the current AMP. LEI will also discuss the reasonableness of the proposed renewal, as well as its implications to the company and to Louisiana ratepayers.

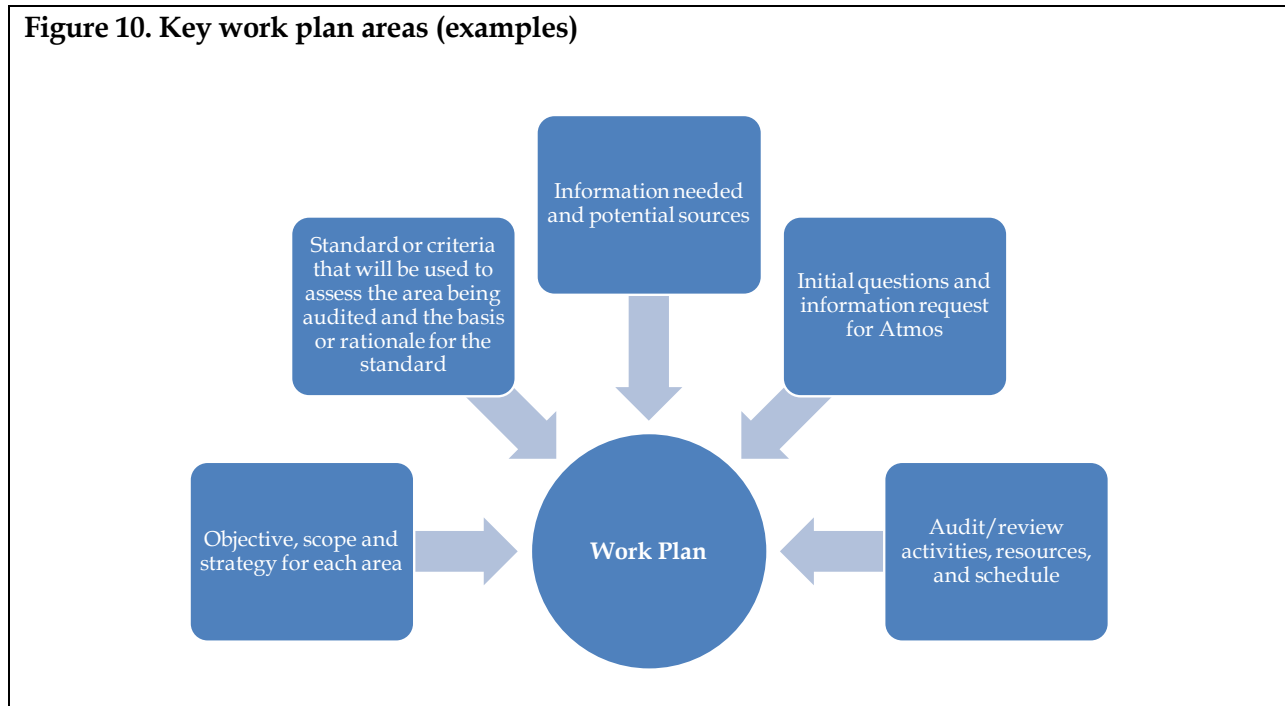
5.3 Main tasks and activities

LEI will start off the audit with a comprehensive work plan, which will serve as a roadmap for the team during the audit process. The work plan will consist of the following, as illustrated in Figure 10):

- Objective, scope, and strategy for each area
- Standard or criteria that will be used to assess the area being audited and the basis or rationale for the standard

- Information needed and potential sources
- An initial list of questions and information request for Atmos
- Audit/review activities, resources, and schedule

Figure 10. Key work plan areas (examples)



The audit engagement will cover the following main tasks, as enumerated in the RFP:

- Task 1. Collect information through data request;
- Task 2. Review all transactions under the current AMP;
- Task 3. Review of the proposed renewal of AMP;
- Task 4. Draft and submit the Final Audit Report
- Task 5. Provide recommendations and testimony support;
- Task 6. Assist the Commission in drafting regulatory filings

LEI expects that Task 1 to Task 3 can be conducted simultaneously, while Task 4 to Task 6 will be performed sequentially. In addition, the LEI team will be available to participate in any formal status conferences, pretrial conferences, depositions, and hearings relevant to the engagement as requested by Commissions.

5.3.1 Task 1: Collect information through data request

The data request process is dynamic and tends to evolve as the review progresses.

- **Data collection:** LEI will start off the data collection and review process with public or commercial data sources, along with information provided by the Commission Staff. Examples of such information include: previous audit reports, relevant petition filings, and previous Commission orders.
- **Data request:** LEI will identify data needed from Atmos and issue formal requests. Such information may include Atmos's organizational details, information describing natural gas supply and distribution assets, the corporate structure of Atmos and the governance and management of its asset management subsidiary, transaction details, financial data from the company and related entities, and supporting documents for the proposed renewal of AMP.
- **Review responses and follow-ups:** LEI will thoroughly review responses and the accompanying workpapers and financial data. Based on the review, LEI may issue follow-up data request and hold in-person meetings or conference calls to collect more detail or to substantiate, confirm, and clarify findings. Inconsistent or unclear information will be brought to the attention of the Commission.

5.3.2 Task 2: Review all transactions under the current AMP

As part of Task 1, LEI will review information regarding transactions between the regulated utilities, the asset management affiliate, and other entities, if applicable, which are associated with the current AMP. LEI will assess the reasonableness and prudence of incurred and allocated cost and benefits. LEI will also evaluate whether such transactions comply with the 1999 General Order and other relevant regulatory rules.

- **Review transactions associated with gas supply:** LEI will review contracts and financials of the company's transactions with its gas suppliers. Market prices of natural gas at nearby market hubs will be one of the benchmarks to assess the reasonableness of gas cost incurred in the transactions.
- **Review transactions associated with pipeline services and storage:** LEI will review contracts and financials of transactions regarding capacity reservation and storage charges that are under the current AMP. The pipeline capacity service and storage charges from nearby or similar facilities and utilities will be used as benchmarks.

5.3.3 Task 3: Review of the proposed renewal of AMP

- **Review proposed changes:** LEI will review any Atmos's proposed changes in the new AMP, and evaluate the reasonableness and prudence of such changes

- **Discuss implications:** LEI will perform quantitative and qualitative analysis to evaluate the implications of the proposed changes to Atmos and its customers

5.3.4 Task 4: Draft and submit the Final Audit Report

- **Discuss findings and conclusions:** LEI will discuss key findings, conclusions, and recommendations with the Commission Staff before finalizing the Report
- **Submit draft Report for the Commission's review:** The first draft of the report will be submitted to the Commission for review at least two weeks before the agreed-upon date for final Report submission. LEI will also send a copy to Atmos to verify findings and the supporting evidence.
- **Submit the Final Audit Report to the Commission:** LEI will collect and address comments from the Commission and from Atmos to finalize the Final Audit Report. The final version of the Report will be sent to the Commission on the agreed-upon submission date.

5.3.5 Task 5: Provide recommendations and testimony support

- **Draft filing memo or testimony:** LEI will coordinate with the Commission Staff to prepare for filing recommendation memoranda and/or pre-filed testimony in support of Staff's ultimate recommendations,
- **Prepare exhibits:** LEI will also work with the Commission Staff with providing supporting the memoranda and/or pre-filed testimony;

5.3.6 Task 6: Assist the Commission in drafting filings

- LEI will assist the Commission Staff in the drafting of applicable motions, exceptions, briefing sheets and orders of the Commission.

6 References

Name of the organization	Length of the contract	Contact	Summary of the work
Mississippi Public Service Commission	2 years	Laura Dixon Senior Attorney (601)961-5498 laura.dixon@psc.state.ms.us	Management audit of the fuel (gas, coal, and nuclear) and energy procurement activities of a major vertically-integrated utility in MISO. LEI assessed fuel and energy contract terms and reviewed the prudence of coal and nuclear fuel procurement and inventory practices. LEI 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.
Connecticut Department of Public Utility Control	3 months	Robert Palermo, (860) 827-2760	The Department of Public Utility Control retained the services of LEI to assist the DPUC in monitoring the power procurement processes for Connecticut Light & Power's (CL&P) Transitional Standard Offer auction in November 2004 for services in 2005 and 2006, and once again selected LEI in September 2005 to monitor the November 2005 auction for services in 2006.
Maine Public Utilities Commission (MPUC)	6 months	Faith Huntington, Director of Electricity and Natural Gas, (207) 287-1373	LEI team assisted the Commission on the RFP related to the procurement of electricity in response to statutory mandates and state policy preferences. LEI provided economic analyses of bid proposals by estimating the benefits and costs to the ratepayers and supported Commission Staff in negotiations with short-listed bidders. LEI has also worked with the Commission on a project involving the state's RPS and transmission costs allocation.

7 Disclosure of Previous Work for the Louisiana Public Service Commission and Conflict of interest

LEI has no known or potential conflicts of interest associated with this engagement and with the proposed scope of work that would prevent the team from meeting the responsibilities outlined in the RFP to conduct the audit/review of the renewal of Atmos's AMP.

8 Appendix A: Core Team Curriculum Vitae (CVs)

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Marie N. Fagan, PhD

Lead Economist and Managing Consultant



Marie Fagan is Lead Economist and Managing Consultant at London Economics International, LLC, based in Boston, Massachusetts. With 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, and North American power markets. She has advised C-suite industry clients, buy-side and sell-side financial clients, as well as legislators and regulators; she serves as an expert witness. At LEI, Marie's expertise across electricity markets and fuels provides integrated perspectives and supports sound strategic advice for clients.

Marie is experienced in the use of scenario analysis, an approach which helps clients identify potential turning points and arrive at decisions that are robust given the uncertainties inherent in any future set of market conditions. Recent projects for LEI have included leading the fuel and energy audit of Entergy Mississippi for the MPSC, a project evaluating behind-the-meter (distributed solar generation) and serving as an 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.

Marie is the author of original research with publications in academic and industry journals. She holds a Ph.D. in Economics from the American University in Washington, DC.

EDUCATION:

Institution	American University, Washington DC
Date:	1995
Degree(s) or Diploma(s) obtained:	Ph.D. 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:	<p>Senior director, Upstream Strategy Advisory service (2012-2014).</p> <ul style="list-style-type: none"> 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 <p>Senior director, North American Gas, Power, and Renewables group (2007-2011).</p> <ul style="list-style-type: none"> 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 <p>Director/Senior director, CERAVIEW Institutional Investor Service (2004-2007)</p> <ul style="list-style-type: none"> 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, <i>Investors’ Energy Monthly</i>, and served as publication’s executive editor. In this role, won the IHS Circle of Excellence Award in 2005 <p>Director, North American Gas Advisory service (2003-2004)</p> <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> 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) <ul style="list-style-type: none"> Authored original research reports, responsible for client presentations and the management, execution, and delivery of consulting projects. Associate, Global Oil advisory service (1996-1998) <ul style="list-style-type: none"> 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 <ul style="list-style-type: none"> Conducted financial analysis of upstream and integrated oil and gas companies; evaluated and implemented conceptual approaches to the 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 <ul style="list-style-type: none"> 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 a financial analysis of energy companies.

Date:	1988
Location:	Washington DC
Company:	US Department of Energy, Office of Policy, Planning, and Analysis
Position:	Intern <ul style="list-style-type: none"> Researched waste-to-energy potential in the United States; constructed a database, developed econometric models, analyzed results and produced written reports.

SELECTED PROJECT EXPERIENCE:

Date:	November 2017 - February 2018
Location:	WECC
Company:	PacifiCorp
Description:	LEI was retained as an independent evaluator ("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 a review of the initial shortlist evaluation and scoring, and the filing of status reports and the final IE closing report.

Date:	July 2017-November 2017
Location:	MISO, Minnesota
Company:	Minnesota Department of Commerce
Description:	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. It involved examination of issues around electric vehicle adoption. Her analysis also required detailed examination of the assumptions and methodology of an oil pipeline linear programming-based model, 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 2017
Location:	MISO, Mississippi
Company:	Mississippi Public Service Commission

Description:	Marie led a management audit of the fuel (gas, coal, and nuclear) and energy procurement activities of a major vertically-integrated utility in MISO. Marie's team assessed fuel and energy contract terms and reviewed the prudence 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.
Date:	September 2016
Location:	Northeast United States
Company:	Private client
Description:	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 LEI developed key questions the client should ask as part of its evaluation of potential transactions in the behind-the-meter solar sector.
Date:	August 2016-October 2016
Location:	Maine
Company:	Maine Public Utilities Commission
Description:	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:	April 2016-May 2016
Location:	ERCOT/Texas
Company:	Renewable power investor
Description:	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 an assessment of and the 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).
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Date:	June 2014-April 2016
Location:	Maine
Company:	Maine Public Utilities Commission
Description:	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 #2015-00071). 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:	October-November 2015
Location:	ERCOT/ Texas
Company:	Private equity company
Description:	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:	August 2014 - January 2015
Location:	North America
Company:	Private client

Description:	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.
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Bridgett Neely

Senior Advisor



Bridgett Neely has more than 15 years of experience in the energy sector advising on strategic, economic, and policy issues in the electric power sector, with a focus on the clean energy sector. Bridgett serves as a Senior Advisor to London Economics International LLC, and is also President of Firefly Energy Consulting LLC, a consulting firm that provides clean energy sector advisory services.

Bridgett advises both public and private sector clients about how to best achieve their objectives vis-a-vis the clean energy sector, including energy efficiency, renewable energy, smart grid deployment, and greenhouse gas emissions reductions. Bridgett has worked on these issues as a strategy and economic consultant, as a senior policymaker in NYC government, and as a part of a strategy team at Green Mountain Energy focused on clean energy solutions, giving her a holistic and comprehensive understanding of the clean energy space. Bridgett has also worked at a national energy retailer, giving her particular insight into retail market issues (regulation, pricing, market assessment, product development, and consumer engagement).

In recent years, Bridgett has helped various state and local governments expand and deepen their clean energy and carbon abatement policies and programs. She has incubated and launched several key energy efficiencies and smart grid programs, such as BuildSmartNY, New York Energy Manager, and Dallas 2030. Bridgett also advises private sector companies about how to grow or alter their activities in light of ongoing changing dynamics in the clean energy sector. Bridgett has helped companies expand into new regions and into new products and services to take advantage of growing consumer interest in clean energy solutions as well as to leverage available incentive funding. She also regularly provides advice to private sector companies about legislative and regulatory developments affecting the sector at a national, state, and local level.

EDUCATION:

Institution	Columbia University
Degree(s) or Diploma(s) obtained:	MA, Finance and Economic Development
Institution	Tufts University
Degree(s) or Diploma(s) obtained:	BA, International Relations

EMPLOYMENT RECORD:

Date:	August 2015 - Present
Location:	Dallas, TX

Company:	London Economics International LLC
Position:	Senior Advisor

Date:	July 2011-Present
Location:	Dallas, TX
Company:	Firefly Energy Consulting LLC
Position:	Owner and President

Date:	August 2009-June 2011
Location:	Austin, TX
Company:	Green Mountain Energy Company
Position:	Senior Advisor, Strategic Planning

Date:	March 2008-July 2009
Location:	New York City, NY
Company:	New York City Economic Development Corporation (NYC EDC)
Position:	Vice President, Energy Efficiency and Renewable Energy

Date:	March 2003 - December 2007
Location:	Boston, MA/New York City, NY
Company:	London Economics International LLC
Position:	Managing Consultant/Senior Consultant

Date:	August 2000 - March 2003
Location:	Paris, France
Company:	Roland Berger Strategy Consultants
Position:	Senior Consultant

Date:	October 1996 - August 1998
Location:	Cambridge, MA
Company:	Cambridge Energy Research Associates (CERA)
Position:	Coordinator, Special Projects

SELECTED PROJECT EXPERIENCE:

Date:	August 2014-January 2015
Location:	US - National
Company:	International utility

Description:	Monitored regulatory and legislative developments affecting the renewable energy credit (REC) and carbon markets across the US: For an international power producer, monitored ongoing regulatory and legislative activities across the US, with a focus on implications for the company's proprietary trading and the profitability of its own power plants in the US. As part of this process, helped the client understand the business implications impending or potential regulatory changes and legislation.
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Date:	June 2014 - February 2015
Location:	New York
Company:	Government organization
Description:	Developed cash flow and social benefits model for new ratepayer surcharge structure in New York: Developed a model to transition from a system of multiple different benefit surcharges (RPS, EEPS, SBC) to one all-inclusive ratepayer surcharge (Clean Energy Fund), based on NY Public Service Commission (NYPSC) guidance, pre-existing commitments, and Governor's Office policy objectives; analyzed benefit contributions (energy reductions, emissions reductions, bill savings, etc.) from different potential program allocations and made recommendations about how to optimize; helped draft filing to the NYPSC for a 10 year \$5 billion program.

Date:	January 2012 - January 2013
Location:	New York
Company:	NY Governor's office/ New York Power Authority
Description:	Designed and helped to launch BUILD SMART NY, a key NY Governor's Office initiative to reduce energy consumption in New York State's 17,000 buildings by 20% within 7 years. Served as the project manager for this initiative for its first year: Assessed the status of energy efficiency efforts in state buildings, obstacles to further penetration, and the resources and organization needed to achieve the Governor's target; helped draft the Executive Order that mandates the 20% reduction; developed and launched an implementation plan to achieve the target; oversaw first round of benchmarking of New York's 200 M square feet of real estate and identified key findings from benchmarking results; developed recommendations for staffing and budget to manage the initiative; recruited and helped interview for full-time Director of BuildSmartNY office.

Date:	February - May 2012
Location:	National
Company:	Energy services company
Description:	Assessed the market for on-bill energy efficiency financing: Analyzed the status of on-bill financing across the country, identified the most successful programs and their key success factors, recommended potential partners and M&A targets for an energy company interested in expanding its activities to energy efficiency financing, and identified potential challenges and risks in this market.

Date:	September - November 2012
Location:	National
Company:	Energy services company
Description:	Valuation of Demand Response companies: For a large national energy company, assessed the demand response market, analyzed its business model and profit potential, and identified potential acquisition targets. For one specific target, researched possible reasonable metrics for valuing that firm based on publicly available information. The firm was eventually acquired.

Date:	August 2009-July 2011
Location:	National
Company:	Green Mountain Energy Company
Description:	Analyzed new markets for expansion: For this national retailer, Bridgett analyzed new geographic markets for expansion: assessed possible profit contribution, competitive landscape, and likely operational constraints; made recommendations to CEO and management team; when relevant, created action list for market launch

Date:	2008-2009
Location:	New York, NY
Company:	NYC Economic Development Corporation
Description:	Served as a senior policymaker for NYC government under Mayor Bloomberg: As part of the senior policy team on energy issues in New York City, Bridgett identified and implemented policies to increase energy efficiency and renewables in NYC, such as innovative financing mechanisms, legislation to mandate building efficiency, marketing & outreach strategies. These strategies were driven by Mayor Bloomberg's ambitious efforts highlighted in PlaNYC.

Date:	2008-2009
Location:	New York, NY
Company:	NYC Economic Development Corporation
Description:	Served as a senior policymaker for NYC government under Mayor Bloomberg: As part of the senior policy team on energy issues in New York City, Bridgett identified and implemented policies to increase energy efficiency and renewables in NYC, such as innovative financing mechanisms, legislation to mandate building efficiency, marketing & outreach strategies. These strategies were driven by Mayor Bloomberg's ambitious efforts highlighted in PlaNYC.

Date:	2008-2009
Location:	New York, NY
Company:	NYC Economic Development Corporation
Description:	Advocated on behalf of NYC before NYPSC: As part of the senior policy team on energy issues in New York City, Bridgett advocated for NYC before the NY Public Service Commission regarding state-funded energy efficiency and

	renewable programs; collaborated with program administrators to optimize program design for NYC specific needs
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Date:	2006-2007
Location:	United States
Company:	CT DPUC
Description:	Served as procurement manager for large all source procurement process in CT: LEI supported the State of Connecticut's Department of Public Utility Control (DPUC) in determining the range of investment needs that could be required in Connecticut over the next 15 years due to localized ISO-NE markets for capacity and forward reserves. LEI then designed a procurement process, including the RFP and associated contracts, solicit for that capacity from both the supply side and demand side resources. LEI served as the RFP manager for the process, being the main contact point for bidders, evaluating the bids, and recommending the winning portfolio. LEI also served as the DPUC's expert witness in the hearings approving the winning portfolio.

Date:	2005-2006
Location:	United States
Company:	Dept. Of Public Utility Control-Connecticut
Description:	Served as market monitor for large-scale Connecticut procurement: The Department of Public Utility Control of Connecticut retained the services of LEI to assist the DPUC in monitoring the power procurement processes for Connecticut Light & Power's (CL&P) Transitional Standard Offer auction in November 2004 for services in 2005 and 2006, and once again selected LEI in September 2005 to monitor the November 2005 auction for services in 2006. Bridgett worked as part of LEI's team in providing advisory services to the DPUC, including guidance on communications protocols, the design of sales contract agreement (between CL&P and winning bidders), and also the valuation of final bids vis-à-vis the forward market alternatives available to the utility. In November 2004 and 2005, the LEI team filed an affidavit after completion of the procurement process which the Commissioners used to approve the process and the contracts between CL&P and the winning bidder

Barbara Porto

Consultant



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, and wholesale price analysis. Barbara is LEI’s lead expert and modeler for the Mexico and Latin America markets and provides advisory services on a variety of topics touching upon all aspects of the power sector value chain. She serves as a key modeler for LEI’s gas pricing model. Barbara is experienced in managing utility audit processes.

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 (a subsidiary of E.ON AG)
Position:	Analyst (July 2010 – August 2013) Intern (July 2008 – June 2010)

SELECTED PROJECT EXPERIENCE:

Date:	January 2018 - ongoing
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.

Date:	November 2017 - March 2018
Location:	WECC
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 the process, which involved information from over 100 bids, and multiple documents from each bidder.

Date:	June 2017 - December 2017
Location:	MISO, Mississippi
Company:	Mississippi Public Service Commission
Description:	LEI was engaged by a The Mississippi 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 prudence of coal inventory levels and inventory control procedures. Barbara managed the process of issuing data requests, keeping files and information organized, and ensuring a smooth and efficient process. Barbara was also responsible for writing the natural gas, coal, and oil sections of the auction report.

Date:	August 2017
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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 with 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 in the 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:	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:	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.

Jinglin Duan

Consultant



Jinglin is a Consultant at London Economics International LLC (“LEI”), where she lends her knowledge and skills to the firm’s technical engagements with regulators, utilities and private equity firms in the US and abroad on issues regarding project evaluation, tariff design, private equity investment consulting, litigation support, as well as power price forecasting and market analysis. Specifically, Jinglin is responsible for modeling regional and national social and economic impacts for electric projects using REMI PI+ and is the primary electricity market modeler for the Southeast US (SERC) and Florida (FRCC) regions. Jinglin has recently led two in-depth macroeconomic analysis of the impacts of construction of transmission infrastructure.

Jinglin obtained her bachelor’s degree in environmental science at Peking University and her master’s degree in public administration at Columbia University, with a special focus on environment & energy. Before joining LEL, Jinglin has worked at J.P. Morgan Chase & Co. as an operational risk management consultant.

EDUCATION:

Institution	Peking University, Beijing, China
Date:	Sep 2009 – May 2013
Degree(s) or Diploma(s) obtained:	BS in Environmental Science

Institution	Columbia University in the City of New York, NY, U.S.
Date:	Sep 2013 – May 2015
Degree(s) or Diploma(s) obtained:	Master in Public Administration – Development Practice

EMPLOYMENT RECORD:

Date:	July 2017 - Now
Location:	Boston, MA, U.S.
Company:	London Economics International, LLC.
Position:	Consultant

Date:	Dec 2015 - Now
Location:	Boston, MA, U.S.
Company:	London Economics International, LLC.
Position:	Research Associate

Date:	Sep 2015 – Dec 2015
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Location:	Brooklyn, New York, US
Company:	JP Morgan Chase & Co.
Position:	Operational Risk Consultant

Date:	Sep 2014 - Nov 2015
Location:	New York, NY, U.S.
Company:	Earth Institute, Columbia University
Position:	Associate and program developer

Date:	Oct. 2014 - May 2015
Location:	New York, NY, U.S.
Company:	United Nation Development Programme
Position:	Intern, Environment and Natural Capital, Private Sector Engagement

SELECTED PROJECT EXPERIENCE:

<i>Date:</i>	Feb. - June. 2018
<i>Location:</i>	USA
<i>Company:</i>	Maine PUC
<i>Description:</i>	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. Jinglin was responsible for analyzing the macroeconomic impacts of the proposed project on the local and regional economies in New England. Jinglin also provided testimony during technical hearings

<i>Date:</i>	Jan. - Feb. 2018
<i>Location:</i>	US
<i>Company:</i>	Columbia University Center for Global Energy Policy
<i>Description:</i>	<i>Econometric study on energy demand and its implication on future demand:</i> London Economics International LLC ("LEI") has been engaged by the Columbia University Center for Global Energy Policy for an econometric study on how the demand for energy

	evolves and reacts to GDP growth, fuel prices, and other factors. LEI examined OECD and non-OECD countries using panel data, and also looked into China and the US separately. LEI adopted asymmetric models in order to capture the difference in response towards increase, decrease, and shocks GDP and fuel prices. Jinglin worked on data gathering and cleaning, model design, and performing STATA analysis.
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<i>Date:</i>	June. 2017 – Jan. 2018
<i>Location:</i>	US
<i>Company:</i>	WIRES
<i>Description:</i>	<i>Identifying and measuring the life-cycle benefits of infrastructure investment:</i> WIRES commissioned London Economics International LLC (“LEI”) to prepare a study demonstrating the benefits of transmission investment. The benefits of transmission are frequently seen as uncertain by many policymakers and regulators; system planners have also found it a challenge to comprehensively measure benefits and identify beneficiaries. This study shows that a variety of benefits can be quantified robustly through forward-looking, simulation-based analysis. Moreover, these benefits are substantial, widespread, and long-lasting – putting dollars in the pockets of households, businesses, and governments. Jinglin was responsible for estimating the socio-economic benefits of two hypothetical transmission projects through designing the project configurations and capital costs and performing macroeconomics modeling. Jinglin also led the editing of the of the paper and preparing for presentations.

<i>Date:</i>	June 2017 – December 2017
<i>Location:</i>	MISO, Mississippi
<i>Company:</i>	Mississippi Public Service Commission
<i>Description:</i>	LEI was engaged by a The Mississippi 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 prudence of coal inventory levels and inventory control procedures. Jinglin was responsible for investigating the utility's participation and operations performance in MISO, and the management and operation of a nuclear station owned by the utility. Jinglin was also engaged in the process of issuing data requests, keeping files and information organized, and ensuring a smooth and efficient process, as well as authoring the final audit report.

<i>Date:</i>	Dec. 2016 – Oct. 2017
<i>Location:</i>	New England
<i>Company:</i>	Eversource Energy
<i>Description:</i>	<i>Macroeconomic impact evaluation for a transmission project in New England:</i> LEI was retained by a major New England electric utility to evaluate the costs and benefits of several transmission solutions that would import power into New England. Jinglin was involved in modeling the socioeconomic impacts, including jobs creation, GDP growth,

	and environmental impacts, of this project in all six states of New England using the REMI PI+ model. Jinglin has also supported LEI's expert testimony work on behalf of Eversource Energy.
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<i>Date:</i>	March - Oct. 2016
<i>Location:</i>	Malaysia
<i>Company:</i>	TNB
<i>Description:</i>	Case study of wheeling rates in South Asia: LEI was engaged by TNB in Malaysia to work as the project manager of its Incentive-Based Regulation ("IBR") submission for the 2nd regulatory term. LEI's role in this project includes two phases. As part of the LEI team, Jinglin helped to prepare the proposal and worked on Phase I of the project. Specifically for Phase I, Jinglin worked on reviewing the distribution and transmission wheeling rates of TNB, and conducted a side-by-side comparison of the regulatory and tariff framework in other jurisdictions including the Philippines, Australia, and the UK. Results of the case studies and comparison were presented to the TNB management, as part of LEI's advisory work on proposing an enhancement for the Malaysian Regulatory Implementation Guidelines.

<i>Date:</i>	2015 - 2017
<i>Location:</i>	New England, United States
<i>Company:</i>	Private Client
<i>Description:</i>	Social & economic benefits analysis for a proposed transmission project: LEI was retained to conduct a comprehensive cost-benefit analysis of a proposed transmission project in New England using simulation-based analysis of the ISO-NE wholesale power markets. LEI's analysis included a detailed examination of the benefits to consumers from lower energy and capacity prices, as well as emissions reductions and local economic impacts (associated with spending during construction and lower retail costs of electricity). As the REMI modeler at LEI, Jinglin worked on analyzing the local economic benefits as part of a team and supported the testimony process by addressing data request questions.

<i>Date:</i>	July 2016
<i>Location:</i>	US
<i>Company:</i>	New England States Committee on Electricity
<i>Description:</i>	Study of the net going forward fixed costs for nuclear and offshore wind in New England: LEI is being retained by the New England States Committee on Electricity ("NESCOE") to study the New England wholesale electricity market dynamics under five scenarios of varying infrastructure investments and retirements. The analysis will be used to inform New England states on electricity policy issues under different scenarios. Jinglin worked as part of the team on refining the model for calculating the Net Going Forward Fixed Costs for nuclear and offshore wind generating units.

	Specifically, Jinglin examined company financial reports and relevant studies on ROE, PI risk, negative price risk, O&M, and CapEx schedule, etc.
<i>Date:</i>	Jan 2016 – Apr 2016
<i>Location:</i>	MISO, U.S.
<i>Company:</i>	Rye Development
<i>Description:</i>	<i>Study of regulatory changes and market development in the Midwest U.S. electricity market:</i> Rye Development hired LEI to provide analytical support on their due diligence process. The supporting tasks entailed: providing an updated outlook on energy prices, as well as intelligence on recent developments in selected US power markets (PJM and MISO), documenting in a memo LEI’s REC price forecasts, and reviewing requirements and risk exposure to hydropower facilities in selected capacity markets. Jinglin wrote the summary for the recent development in the MISO market and the implications.
<i>Date:</i>	March 2016
<i>Location:</i>	Uganda
<i>Company:</i>	Energy Regulatory Authority (“ERA” Uganda) sponsored by KfW
<i>Description:</i>	<i>Evaluation of cross-check financial models for bids review:</i> LEI was hired by the kfW as part of a consortium with the Frankfurt School of Finance to assist ERA in developing a streamlined 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 work included designing and standardizing generic financial models to evaluate bids for large hydropower plants. Jinglin as part of the LEI team helped review and revise the financial model. Jinglin worked on evaluating and refining the Excel-based financial model. Besides, Jinglin also designed the user guide manual and training materials.
<i>Date:</i>	Ongoing
<i>Location:</i>	Southeast US
<i>Company:</i>	LEI
<i>Description:</i>	<i>LEI’s Continuous Modeling Initiative (CMI):</i> As the primary market modeler for the US Southeastern power markets, Jinglin is responsible for tracking and evaluating the impact of on-going structural and regulatory changes in the SERC and FRCC markets, and conduct on-going price forecast and in-depth market analyzes for these markets.

SPEAKING ENGAGEMENTS:

When	Description
May 2, 2018	Jinglin Duan and Julia Frayer, "Estimating Macroeconomic Benefits of Transmission Investment with the REMI PI+ Model" at the REMI Webinar
June 21, 2017	Jinglin Duan and Julia Frayer, "Modeling positive externalities from carbon reduction in the energy sector using the REMI PI+ New England regional model" at the 2017 REMI Conference on "Policy in the Trump Era - Energy, Economy and the Environment"

LANGUAGES:

Language	Reading	Speaking	Writing
Mandarin	Native	Native	Native
English	Fluent	Fluent	Fluent
French	Basic	Basic	Basic

Tianying Lan

Consultant



Tianying is a Consultant at LEI. She performs economic, strategic and financial research, analysis, critical review, and provides regulatory advisory services for electricity, transmission infrastructure and renewable energy markets. She has supported several projects regarding ownership models, regulatory policies, renewable energy, solar business models, and power purchase agreements (PPAs). She is a key analyst in the study to assess options for transforming the ownership and regulatory model used to govern its electricity sector in Hawaii. On behalf of a private equity fund, Tianying was the main analyst to conduct due diligence review and analysis in support of an acquisition of a portfolio of renewable generation assets in the US. The engagement focuses on reviewing a portfolio of solar distributed generation power purchase agreements (“PPA”), including analyzing their business models, decomposing the exposure in different markets, and identify risks associated with each business models.

In addition, she is the primary modeler of Midcontinent Independent System Operator (MISO) market, one of the world’s leading Regional Transmission Organizations and the largest geographical organization of its kind. She is responsible for modeling the energy and capacity markets and analyzing changes in market rules and system dynamics.

EDUCATION:

Institution:	Columbia University in the City of New York, United States
Date:	2016
Degree(s) or Diploma(s) obtained:	Masters of International Affairs (Energy and Environment)

Institution	Peking University, China
Date:	2014
Degree(s) or Diploma(s) obtained:	Bachelor of Economics

Institution	Peking University, China
Date:	2014
Degree(s) or Diploma(s) obtained:	Bachelor of Laws in International Politics

EMPLOYMENT HISTORY:

Date:	August 2016 to present
Location:	Chicago, Illinois, United States

Company:	London Economics International LLC
Position:	Consultant (August 2017 - present); Research Associate (August 2016 - July 2017)

Date:	June 2015 - May 2016
Location:	Boston, Massachusetts, United States; New York, New York, United States
Company:	London Economics International LLC
Position:	Summer Associate; Part-time Associate

Date:	February 2014 - July 2014
Location:	Beijing, China
Company:	United Nations Development Programme (UNDP)
Position:	Economic Policy Analyst

Date:	September 2013 - May 2014
Location:	Beijing, China
Company:	China Shenhua Energy Co., Ltd.
Position:	Research Assistant

SAMPLE PROJECT EXPERIENCE:

Date:	2017
Location:	USA
Company:	Private Client
Description:	LEI was engaged to assist in conducting due diligence of a potential asset acquisition in MISO-South. LEI reviewed the contracts and financial analysis, with specific focus on the assumed market value of capacity in the long term, and locational marginal prices for energy. LEI also reviewed certain contracts and supporting materials, and participated in due diligence calls.

Date:	2017
Location:	USA
Company:	WIRES 2017 paper #2

Description:	LEI prepared a research paper for WIRES' consideration in 2017 titled "How does transmission benefit you?" The first purpose of this paper is to provide a laymen's perspective on the value of transmission to the typical household or firm. The laymen explanation was illustrated through demonstration of the quantitative analysis of benefits of an archetypical transmission project, so that the reader can appreciate the various stream of benefits and identify the beneficiaries. The paper also showed policymakers that there are a number of benefits of varying time dimensions stemming from transmission investment, that these benefits can be measured and estimated. Therefore, it is viable for transmission planning to consider these benefits - not only in a reactive context but in a proactive context. LEI did not intend to re-invent the wheel with respect to benefit categories. Rather, LEI used this paper to demonstrate the magnitude of benefits and their timing, and recommend how the assessment of economic benefits analysis can be incorporated within the conventionally engineering-focused planning process.
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Date:	2017
Location:	USA
Company:	WIRES 2017 paper #1
Description:	LEI prepared a research paper for WIRES' consideration in 2017 titled "Planning for Transmission Investment into the Future". The ultimate goal of this paper is to highlight the opportunity to evolve system planning practices so that we have a more resilient transmission system in the longer term, one that promotes efficient electricity production and consumption decisions and efficient infrastructure investment. LEI began this paper by discussing a number of "myths" or "fallacies" surrounding the drivers for the need for transmission investment and difficulties for developing transmission projects. LEI then corrected for the "myths" described earlier and emphasized the need to anticipate changes and future market conditions much farther into the future than we currently do within the breadth of activity in organized "wholesale power markets. Lastly, LEI made recommendations on how this new "playbook" can be developed and aligned with traditional planning processes.

Date:	2017
Location:	USA
Company:	Hawaii Department of Business, Economic Development and Tourism ("DBEDT")

Description:	LEI provided a study to assess options for transforming the ownership and regulatory model used to govern its electricity sector in Hawaii. This is a large, significant initiative to provide the government of Hawaii with independent and objective research and analysis to help it scope out the most appropriate course of action in achieving Hawaii's overarching policy goals. There are four main phases to this work. 1) to determine the long-term operational and financial costs and benefits of electric utility ownership models to serve each county of the State of Hawaii. 2) to determine the long-term operational and financial costs and benefits of electric utility regulatory models to serve each county of the State of Hawaii; 3) to provide additional insight and analysis of ownership and regulatory model changes possible under the models identified and recommended; 4) to provide for the development and delivery of the executive summary, formal presentation and final report in a format approved by the client.
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Date:	2017
Location:	USA
Company:	Independent Power Producers Society of Alberta ("IPPSA")
Description:	LEI presented at an IPPSA-sponsored workshop in Alberta findings on resource adequacy market institutions, specifically focusing on the installed capacity and locational installed capacity markets in the US.

Date:	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.

Date:	2017
Location:	USA
Company:	Private Client
Description:	LEI was retained to do a resource analysis in the Chicago area and to analyze the congestion within the Chicago area and MISO zones surrounding Lake Michigan.

Date:	2016
Location:	USA

Company:	Private Client
Description:	On behalf of a private equity fund, LEI conducted due diligence review and analysis in support of an acquisition of a portfolio of renewable generation assets in the US and South America. The engagement focuses on reviewing a portfolio of solar distributed generation power purchase agreements (“PPA”), including analyzing their business models, decomposing the exposure in different markets, and identify risks associated with each business models.

Date:	2016
Location:	USA
Company:	Private Client
Description:	For a client in Quebec performing diligence on a potential investment in business-to-business behind-the-meter solar in the Northeast United States, LEI examined US federal and state incentives, and provided an overview of the different business models used for targeting commercial, institutional, and industrial sectors. LEI provided a discussion of the competitive landscape under each of these business models; and a 10-year outlook for solar renewable energy credits (“SRECs”) where applicable. There were three major components of the analysis. The first required assessing the incentives available to prospective customers seeking to purchase solar energy, whether that be through an outright investment in a solar system, a long term lease of a solar system, or a power purchase agreement with a solar energy producer. These incentives are created by the regulatory environment in the particular State in which the business operates, and are supplemented by federal tax incentives. The second component entailed understanding and assessing the competitive environment – who is operating in the sector, what are their business models, and in general how are these models performing? The final component entailed helping the client understand which questions it should be asking as it evaluates potential transactions in the solar sector, and what kind of data would be useful to answer these questions.

Date:	2016
Location:	USA
Company:	Private Client
Description:	LEI was retained by a US investment company to provide a report about PPAs in Eastern PJM. The scope of work consisted of research of PPAs in the past three years from offtakers who can reasonably be accessed from the subject plant, including where available, prices and duration; a list of potential offtakers in the same vicinity, including details of current supply arrangements if known; a discussion of PPA drivers in the region; and observations with regards to price trends.

Date:	2016
Location:	USA
Company:	New England States Committee on Electricity

Description:	LEI conducted an empirical analysis of New England wholesale electricity market dynamics, including long term modeling of the New England energy and capacity markets under various future market conditions, and provide tabular summaries of simulated market outcomes and financial data. The client used LEI's modeling results to perform policy analysis and prepare a research report that the client plans to release publicly.
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Date:	2016
Location:	USA
Company:	Maine Public Utilities Commission
Description:	LEI was engaged by a regulator to estimate the macroeconomic impact of biomass generation within the state. 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. LEI 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:	2016
Location:	USA
Company:	Private Client
Description:	LEI was retained by an infrastructure fund to do a 20-year energy and capacity price forecast in support of a potential acquisition of a planned gas-fired plant in Pennsylvania. The results will also be used to update the firm's valuation of its other plant in Ohio.

Date:	2016
Location:	USA
Company:	Private Client
Description:	LEI was hired to provide analytical support on their due diligence process. The supporting tasks entailed: providing updated outlook on energy prices, as well as intelligence on recent developments in selected US power markets (PJM and MISO), documenting in a memo LEI's REC price forecasts, and reviewing requirements and risk exposure to hydropower facilities in selected capacity markets.

Date:	2015
Location:	USA
Company:	Private Client

Description:	LEI was retained to conduct a 30-year price curve for Metropolitan Water District of Southern California ("MET Water") in relation to a potential acquisition of a proposed desalination plant in California. The desalination plant's water rate specified in the draft Term Sheet of the Water Purchase Agreement is based on MET Water's prices plus avoidable charge, subsidy, and a premium. LEI reviewed the regulatory arrangements of MET Water, supply-demand dynamics in Southern California, and water pricing mechanisms used by MET Water. LEI also assessed the different key drivers for each component of the MET Water price. Lastly, LEI created a cost of service model and projected the MET Water prices for the next 30 years.
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Date:	2015
Location:	USA
Company:	Private Client
Description:	LEI provided quarterly forecasts for energy, capacity, and ancillary services of power plants in ISO-New England and PJM. LEI also evaluated contracts for firm gas transportation capacity for a subset of these plants, in Virginia and Connecticut.

Date:	2015
Location:	USA
Company:	Delaware Public Services Commission
Description:	LEI has been retained by Delaware Public Services Commission ("PSC") Staff to perform a review of the procurement process for the provision of Delmarva Power & Light Company ("Delmarva Power")'s Standard Offer Service, 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.

Date:	2015
Location:	USA
Company:	Private Client
Description:	London Economics International LLC ("LEI") was retained to categorize the different plants in PJM into self-supply, merchant or under PPA.

Date:	2015
Location:	USA
Company:	Tenaga Nasional Berhad ("TNB")
Description:	LEI was retained by TNB to conduct a 4-day workshop on Incentive Based Ratemaking ("IBR") and study tour on utilities that have implemented IBR.

Date:	2015
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Location:	USA
Company:	Private Client
Description:	LEI was retained by an asset management company to put together an independent market report on their portfolio of hydro assets in PJM.

Date:	2015
Location:	Malaysia
Company:	Tenaga Nasional Berhad ("TNB")
Description:	LEI held two-day workshop on Generation Reliability Standard Review Seminar for TNB in Kuala Lumpur, Malaysia. The topic included: Malaysia reliability standard policy overview, jurisdiction review on reliability indices and benchmarking Malaysia's reliability standard against other countries, inter-play between government agencies in formulating the reliability standard, lesson learnt from other countries, incorporating renewable energy, interconnection and distributed generation in calculating reliability indices, input parameter to derive the value of reliability indices, and lesson learnt from LOLE studies from other jurisdictions.

Date:	2015
Location:	North America, Multiple
Company:	Private Client
Description:	LEI assisted the client to perform the competitive landscape analysis for projects participating in the Clean Energy RFP. LEI's competitive landscape study employed a three-step approach. At the Step I, LEI identified the potential projects that can qualify for the Clean Energy RFP and production of a matrix of competitors. The comparative analysis then graded each project from Step I, using the type of criteria listed in the evaluation and selection process section of the Clean Energy RFP. In summary, LEI's comparative analysis looked at both the (a) minimum threshold requirements and (b) the characteristics of each project relative to the quantitative and qualitative benefits enumerated in the Clean Energy RFP. Lastly, based on the rankings from the comparative analysis in Step II, LEI concluded with the SWOT analysis for the client's project relative to possible competitors and examine the relative strengths, weaknesses, opportunities, and threats in the Clean Energy RFP.

Date:	2015
Location:	USA
Company:	Private Client
Description:	LEI was hired to put together a presentation about the PJM for the Public Utilities Commission of Ohio.

London Economics International LLC
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