



PPL companies

LG&E AND KU SERVICES COMPANY

**Request for Proposal
3682**

Energy Efficiency Potential Study for Industrial Electric and Natural Gas Metered Customers

CONFIDENTIAL INFORMATION

This document, including any exhibits or attachments, is solely for use by employees of LG&E and KU Services Company and affiliates and those employees or agents of suppliers invited to submit Proposals with a need to know. Not to be disclosed to or used by any other person without the express written consent of LG&E and KU Services Company

Issued By:

**LG&E and KU Services Company
820 West Broadway
Louisville, Kentucky 40202**

Issue Date:

November 21, 2014

Proposal Due Date:

December 12, 2014

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1 INTRODUCTION

1.1 Corporate Overview

Louisville Gas and Electric Company and Kentucky Utilities Company, part of the PPL Corporation (NYSE: PPL) family of companies, are regulated utilities that serve a total of 1.2 million customers and have consistently ranked among the best companies for customer service in the United States. LG&E serves 321,000 natural gas and 397,000 electric customers in Louisville and 16 surrounding counties. KU serves 543,000 customers in 77 Kentucky counties and five counties in Virginia. More information is available at www.lge-ku.com and www.pplweb.com.

1.2 RFP Goals and Project Overview

Louisville Gas and Electric Company (“LG&E”) and Kentucky Utilities Company (“KU”) (collectively “Company”) are seeking proposals from a third-party contractor for technical and analytical consulting services to provide an **Energy Efficiency Potential Study** to Company.

The goal of this Request for Proposal (RFP) is to offer a contract to a bidder(s) that can best meet or exceed the requirements of the scope of work at the highest quality standards and at the most competitive price.

The study objective is to develop a comprehensive quantitative assessment of energy efficiency potential in Company’s service territory. The study should consider and discuss the technical, economic, achievable, and naturally occurring energy efficiency potential for 2016-2035 and focus on all industrial electric and natural gas metered customers. The study should provide details for LG&E and KU energy efficiency potential separately and collectively.

For the purposes of this RFP and any eventual contract, Industrial electric and natural gas metered customers are defined as follows:

- **LG&E Electric Tariff Sheet No. 86, Availability of Service** – “.....non-residential customers will be considered “industrial” if they are primarily engaged in a process or processes that create or change raw or unfinished materials into another form or product, and/or in accordance with the North American Industry Classification System, Sections 21, 22, 31, 32, and 33. All other nonresidential customers will be defined as “commercial.”
- **KU Electric Tariff Sheet No. 86, Availability of Service** – “.....non-residential customers will be considered “industrial” if they are primarily engaged in a process or processes that create or change raw or unfinished materials into another form or product, and/or in accordance with the North American Industry Classification System, Sections 21, 22, 31, 32, and 33. All other nonresidential customers will be defined as “commercial.”
- **LG&E Gas Tariff Sheet No. 15, Availability of Service** – “.....The term “industrial” customers shall include customers involved in activities using gas primarily in a process or processes which either involve the extraction of raw materials from the earth, or a change of raw or unfinished materials into another form or product through the application of heat or heat treating, steam agitation, evaporation, baking, extraction, drying, distilling, asphalt production, and for other similar uses. Applications related to the use of gas in standby or other electric generation in industrial applications shall not be served under this rate schedule unless (1) such facilities were installed and operating under this Standard Rate IGS before ninety (90) days after August 1,

2010, or (2) such facilities have a total connected load of less than 2,000 cubic feet per hour and are not for the generation of electricity for further distribution, for sale in the open market, or for any purpose other than to provide Customer with standby electric supplies during emergency situations

- **Kentucky Statute KRS 278.285 Section (3)** – “.....The Commission shall allow individual industrial customer with energy intensive processes.....”

1.3 Timetable

The following scheduled events are tentative for this bid. Company reserves the right to change the schedule at any time without notice.

November 21, 2014	RFP Issued
December 3, 2014	All questions due via email by 5:00 pm EST
December 12, 2014	Proposal returned by 5:00 pm EST

The successful bidder(s) shall be required to provide all services described in Section 2.

1.4 Confidentiality

This RFP is confidential and for the sole use of each bidder's preparation of a Proposal. By bidder's acceptance hereof, supplier agrees:

- Not to disclose, copy or distribute this RFP in whole or in part to persons other than bidder's employees and agents who are authorized by nature of their duties to receive such information
- To return any Company confidential or proprietary materials upon Company's request.
- Not to use any information in this RFP or any other materials related to the business affairs or procedures of Company and of its affiliates for bidder's advantage, other than in performance of this RFP.
- Bidders who intend to use subcontractors will be required to have such subcontractors execute non-disclosure agreements prior to work being done by subcontractor.
- Bidders who seek to negotiate possible sub-contract arrangements with Company's existing subcontractors will be held accountable for any breach of the non-disclosure agreements that they have signed with Company.

1.5 Disclaimer

This RFP is not an offer to enter into a contract but is merely a request for the bidder to submit information. Expenses incurred in responding to this request are the responsibility of the bidder. All materials submitted become the property of Company. Company reserves the right to modify, reject or use without limitation any or all of the ideas from submitted information. Company reserves the right to discontinue the RFP process at any time for any reason whatsoever. The bidder's response to this RFP may become part of the final purchase order if awarded. Wherever there is a conflict between bidder's responses to this RFP and the terms and conditions contained in any purchase order subsequently entered into by the parties, the terms and conditions of the purchase order shall prevail. Company has no obligation to disclose the results of the RFP process or to disclose why particular bidder(s) were selected to participate in the contract process.

1.6 Duration of Offer

Proposals must be valid for a minimum of 90 days following the submission of this RFP.

1.7 Response Instructions

All Proposals must contain a table of contents delineating responses to each section. Proposals must be organized to include all responses including attachments as outlined in Section 3. Each section of your response must contain all items in the sequence identified. An authorized official must sign Proposals. The Proposal must also provide the names, titles, phone numbers, and email addresses of those individuals with authority to negotiate and contractually bind the company. Company may use this information to obtain clarification of information provided. Either notify or provide:

1. Notify Tony Moir via phone or email immediately if RFP contents are incomplete:

Tony Moir
Sourcing Leader
LG&E and KU Services Company
820 West Broadway
Louisville, Kentucky 40202
502-627-3428

2. All responses to this RFP must correspond with the sequence outlined in section 3, which includes attachments.
3. Responses should be in MS Office (Word/Excel/PowerPoint applications) in the sequence outlined shall be submitted. With the exception of insurance certificates, PDF files are not acceptable. Please keep the number of files on the electronic copy to a minimum.
4. You may submit additional information in a separate document, which you feel, may help Company evaluate your Proposal; however, it is understood that such information is not a replacement for any component of this RFP.
5. Fax responses will not be accepted.
6. No advance notification of Award will be given.

Responses to the RFP must be received no later than December 12, 2014 by 5:00 PM EST to be considered.

The RFP responses should be emailed to:

BIDS@lge-ku.com

Responses directed to any other email address will not be accepted.

Any prospective supplier, who receives this RFP and either; chooses not to respond or; submits an incomplete Proposal, will be disqualified from consideration.

1.8 Disqualification

Under no circumstances (except those noted above) are respondents to contact any Company employee with regards to this RFP or any of the information contained herein. Respondents are strictly forbidden from visiting Company locations for any information specific to the account. Violations of this provision will subject the respondent to immediate disqualification.

An evaluation committee will perform the evaluation of Proposals. During this time, Company may initiate discussions with bidder for the purpose of clarifying aspects of the Proposals; however, Proposals may be evaluated without such discussions. Bidder shall not initiate discussions.

1.9 Inquiries

Please direct all RFP, technical, business, and contract questions to Tony Moir at tony.moir@lge-ku.com by 5:00 p.m. EST on December 3, 2014. Specific details on Company’s strategies will not be disclosed. Clarifications, changes to this RFP along with answers to questions in reference to this RFP submitted by the deadline noted above will be published and distributed to all bidders invited to participate on or about December 3, 2014.

2 Business Objective

Company desires to obtain services of a private bidder(s) (hereinafter referred to as “Contractor”) to provide the services (hereinafter referred to as the “Work”) outlined in this RFP. It should be noted that the information contained in this section, “Business Objective and Scope of Work/Safety Requirements,” along with any attachments or exhibits and the bidders response to this RFP will serve as the basis for Company’s expectations regarding the Work and the subsequent contract between Company and the successful bidder. Items listed below are not inclusive, but may be modified or provisions added at Company’s discretion. Contractor will be notified of any procedural changes and will be allowed sufficient time for implementation. However, all items listed in this section will be required and in place upon contract execution.

2.1 Scope of Work

Company is seeking technical and analytical consulting services to develop a comprehensive and quantitative assessment of the technical, economic, achievable, and naturally occurring energy efficiency potential in Company’s service territory. The study should focus on all electric and natural gas metered customers for the industrial classes. The study should provide details for LG&E and KU energy efficiency potential separately and collectively. Please price the electric and natural gas studies separately. Your proposal should specifically address how the following tasks would be performed if awarded a contract:

- 2.1.1 Contractor should describe how they will collect market data in Company’s service territory. Contractor should also describe all data anticipated to be collected.
- 2.1.2 Contractor will be required to understand customer trends and decision-making in Company’s service territory. Discuss the customer data collection process and identify methods that will be used to obtain data.
- 2.1.3 Contractor will be required to develop a 20-year baseline (business as usual) forecast.
 - a. Identify anything that may influence the baseline estimate.
 - b. Provide data and assumptions used to develop baseline forecast.
- 2.1.4 Contractor should identify expectations of data required from Company customer databases, forecasts, or any other data source.
- 2.1.5 Contractor should identify any software or data system that will be used to perform the study.
 - a. Provide an overview and describe capabilities.
 - b. Provide where software or data systems have been accepted in a regulatory environment.

- 2.1.6 Contractor should describe how energy efficiency potential is measured, assessed, and communicated for the following: technical, economic, achievable, and naturally occurring energy efficiency potential.
- a. Define technical, economic, achievable, programmatic, and naturally occurring energy efficiency potential.
 - b. Describe your research methodology for each of the items described in 2.1.6a.
 - c. How do you estimate costs, savings, and program useful life?
 - d. What data sources are utilized?
- 2.1.7 Please describe how your company will model the statutory opt-out requirement in your calculation of achievable potential.
- 2.1.8 Contractor should define “wasted energy”. Describe how it will be measured and incorporated into the study.
- 2.1.9 Contractor will be required to emphasize the remaining expected potential of Company’s existing energy efficiency programs and identify any opportunities for improvement.
- 2.1.10 Contractor will be required to develop energy efficiency potential supply curves by program that clearly display the incremental cost of increasing energy efficiency efforts for each year of the study for industrial customers. Curves should also be provided in aggregate for all customers.
- 2.1.11 Contractor will be required to provide a detailed plan identifying recommended energy savings measures and programs.
- a. Identify market size and penetration levels necessary to achieve recommended energy savings.
 - b. Identify any market barriers for recommended measures and programs.
 - c. Identify best practices for recommended measures and programs.
 - d. Provide details for estimated costs to market and offer programs to customers.
 - e. Define resource requirements of Company to implement programs.
 - f. Provide detailed budgets for each program and expenditures.
 - g. Provide technical data to support savings attributed to programs.
 - h. Provide cost-effectiveness evaluations for each recommended program.
- 2.1.12 Contractor will be required to provide a hard copy draft, and final copy, of the detailed plan noted in 2.1.10. The final copy of the detailed plan should clearly communicate the study results.
- a. A draft report(s) will be provided to Company for review and comments prior to issuing final report.
 - b. Describe your approach to clearly communicate the results.
 - b. Provide an outline or table of contents for the proposed final report for study.
- 2.1.13 On mutually agreeable dates, Contractor will be required to do up to five on-site presentations of the detailed plan in Kentucky. Selected sites are at Company’s discretion. Three weeks prior to the presentation, Company will be provided the draft copy of the presentation materials for review and comments.
- 2.1.14 Contractor should identify the format for delivering data to Company when the study is complete.
- 2.1.15 Contractor should provide a detailed timeline for completion of the study. The timeline should contain milestones and duration between each milestone.

- 2.1.16 Contractor and Company will have regularly scheduled status update meeting at a frequency to be determined. In addition to overall study progress, status meeting should include sharing and review of data and report when applicable.
- 2.1.17 If requested by Company, Contractor shall provide expert witness testimony to the Kentucky Public Service Commission. Testimony may be written or in-person depending on the situation. Describe your experience in working with state commissions and various other stakeholders. Price this option separately including all necessary travel expenses.

2.2 Customer Satisfaction

The Company has a strategy to increase LG&E and KU customer satisfaction by enhancing the customer experience through respectful relationships, timely solutions, and exceptional service. As such the Company will require its vendors to assist in the continued commitment to workforce and public safety, and the expansion of relationships with customers by delivering positive customer experiences that create value and build trust.

2.3 Contractor Certification and Contract Terms and Conditions

The successful Contractor(s) may be required to complete the Company's Contractor Certification process prior to the Contract being awarded. The process requires the completion and submittal of the following documents:

- Contractor Information Sheet
- W-9
- Company Administrative Service Agreement
- Company Contractor/Subcontractor Safety Policy

Submittal of these forms with your response is NOT a RFP requirement.

However, failure to complete and submit the forms during the Contractor Certification process will result in the successful bidder not being awarded the contract.

The **Company Administrative Services Agreement and Contractor Code of Business Conduct** are attached hereto as **Exhibit No. 4** and incorporated herein by reference.

Any exceptions to the Scope of Work, Administrative Services Agreement, Contractor Code of Business Conduct, or any other part of this RFP or document referenced herein must be noted in a separate attachment entitled "**Bid Clarifications and/or Exceptions**". See Section 3.7 below. If no exceptions are specifically stated, none will be considered at time of award.

The successful Bidder will be required to adhere to all Company procedures related to security and admittance to Company facilities.

3 Proposal Requirements

Respondents to this RFP should include the following information in their proposal.

3.1 Project Team

Identify all key personnel who will be involved with this project. Provide specific individuals' names, their title, a resume describing their background and experience, and their area and levels of responsibility.

3.2 Proposed Solution

Provide a detailed description of services for the proposed solution to meet Company's business objective as described in Section 2.

3.3 Conditions of Bid

In submitting a response to this RFP, respondent acknowledges and accepts the following conditions by initialing each sub-paragraph in Attachment A.

3.4 Bidder Contact Information

In Attachment B, please provide contact information of the authorized person making this Proposal and any alternate person with like such authority whom Company should contact in the event of questions or clarifications.

3.5 Company Profile

Briefly complete your company profile information as listed in Attachment C and include a copy of your current insurance certificate. Also provide a separate Attachment C and insurance certificate for each subcontractor included in your Proposal.

3.6 Support for Minority and Women-Owned Businesses

It is Company policy to promote and increase participation of MBE and WBE's in its purchasing and contractual business. Maximum practicable opportunity shall be given to MBE and WBE's to participate as Company contractors, but in order to achieve this goal Company encourages additional opportunities for MBE and WBE's by requiring participation plans from bidders who are not MBE or WBE firms. In Attachment D, please indicate which business classification your company falls into. A description of each business classification is provided. If your firm intends to use minority sub-contractors or bidders in the performance of this work, please indicate so in the space provided labeled Tier 2 MBE or WBE. Please indicate a value or percentage of your Proposal price that your firm would spend with each Tier 2 MBE or WBE firm listed.

3.7 Bid Clarifications and/or Exceptions

Your Proposal shall conform to in all respects with the applicable specifications, terms and conditions referred to in this RFP. Submission of a Proposal constitutes your company's commitment that it can provide the products and/or services in this RFP. Any deviations from or exceptions to this RFP and the attached terms and conditions shall be clearly stated in your Proposal using the form titled "BID CLARIFICATIONS AND/OR EXCEPTIONS" in Attachment E. If there are not such exceptions, please state so. An award will not take place until there are executed terms and conditions between the parties. Any exceptions taken after announcing the award will not be considered.

Exceptions taken to the Administrative Services Agreement will impact the evaluation of your bid response.

3.8 Pricing

Prospective contractors shall submit pricing as described in Section 2.0 above. **Summarize your pricing proposal in Attachment F, “PRICING SUMMARIES”**. The bid price shall be firm for the duration of this contract. The bid price(s) shall include all cost to bidder, including taxes (if applicable) and profit. The winning bidder(s) will be required to meet Company contractor certification requirements.

Prospective contractors are invited to submit other pricing options for consideration by the Evaluation Committee. Alternative pricing should be noted as such. All final pricing agreed to in the contract will be based on an understanding of how all costs are derived.

Company reserves the right to accept other than the lowest quotation and to accept or reject any quotation in whole or in part, or to reject all quotations with or without notice or reasons, and if no quotation is accepted, to abandon the work or to have the work performed in such other manner as Company may elect. Company makes no guarantee or promise as to the amount of work to be performed under the proposed Contract, nor does it convey an exclusive right to the Contractor to perform work of the type or nature set forth in the proposed Contract.

4 References

Please list at least three (3) references (utility) that currently use your services and/or products in the same or similar basis as is proposed to Company and three (3) past references of existing firms that previously have used your services and /or products in the same or similar basis as is proposed by Company. Contact names and phone numbers must be included. Also, please indicate the length of the relationship, date of service commencement, and what services or products are supplied to the customer.

5 Other Services

5.1 Alternative Processes and Methods

Please provide any relevant information regarding recommendations to deliver services/products as detailed herein in a different manner than is specified. Clearly demonstrate the quantity of the benefit derived and limitations from alternate solutions as proposed either in functionality, service level, or cost savings.

5.2 Additional Services

Please provide detail on any additional or unique services provided by your organization. Generic information without detail will be excluded from the analysis. Any fees associated with any extraordinary services should be clearly listed separately as an appendix to your proposal.

Summary of required bid package submission to Company:

All proposals must include the following to be considered complete:

- A. The scope of services bidder will provide to meet Company Business Objective in Section 2.

- B. A timeline and schedule of tasks needed to complete the normal course of Work.
- C. Participation, or any requirements, of Company
- D. All items in Section 3 including all pricing options, fees, and expenses you wish Company to consider.
- E. References as requested in Section 4.0 above.

**Attachment A
CONDITIONS OF BID**

In submitting a response to this RFP, respondent acknowledges and accepts the following conditions, and makes the following representations. **Please initial (blue ink) each sub-paragraph in each box below in your response.**

- A-1 **Ownership of Proposals** – All Proposals in response to this RFP are to be the sole property of Company, Louisville, Kentucky.
- A-2 **Oral Contracts** – Any alleged oral Contracts or arrangements made by a respondent with any employee of Company will be superseded by the written Contract.
- A-3 **Amending or Canceling Request**- Company reserves the right to amend or cancel this RFP, at any time, if it is in the best interest of Company
- A-4 **Rejection for Default or Misrepresentation** – Company reserves the right to reject the Proposal of any bidder that is in default of any prior contract or for misrepresentation.
- A-5 **Clerical Errors in Awards** – Company reserves the right to correct inaccurate awards resulting from its clerical errors.
- A-6 **Rejection of Qualified Proposals** – Proposals are subject to rejection in whole or in part if they limit or modify any of the terms and/or specifications of the RFP.
- A-7 **Presentation of Supporting Evidence** – If requested, respondent(s) shall present evidence of experience, ability and financial standing necessary to satisfactorily meet the requirements set forth in the RFP or those implied in the Proposal.
- A-8 **Consistency in Submissions** – The hardcopy submission of the Proposal will prevail in the case of a discrepancy between the electronic and hardcopy version of the documents.
- A-9 **Changes to Proposals** – No additions or other changes to the original Proposal will be allowed after submittal. While changes are not permitted, clarification at the request of Company may be required at the sole expense of the respondent.
- A-10 **Collusion** – In submitting a Proposal, the respondent implicitly states that the Proposal is not made in connection with any competing respondent submitting a separate response to the RFP, and is in all respects fair and without collusion or fraud.
- A-11 **Costs** – Company shall not be liable for any cost incurred by the respondent in the preparation of this RFP.
- A-12 **Subcontractors** – The use of subcontractors must be clearly identified and explained in the Proposal. The prime contractor shall be wholly responsible for the performance of the contract in its entirety whether or not subcontractors are used. Subcontractors shall be bound by the terms and conditions of any Contract with the respondent. The prime contractor shall indemnify and hold Company harmless from any and all activities related to the services provided by the subcontractor(s) under this contract.
- A-13 **Legal Compliance** – In submitting a Proposal, the respondent warrants that it is legally authorized to do business in the state of Kentucky, is in compliance with all applicable laws and regulations, is not prohibited from doing business with Company by law, order, regulation, or otherwise, and the person submitting the Proposal on behalf of the bidder is authorized by the bidder to bind it to the terms of the Proposal.

Attachment B
BIDDER INFORMATION

- A. BIDDER'S COMPANY NAME _____
- B. BIDDER'S MAILING ADDRESS _____

- C. BIDDER'S PHYSICAL ADDRESS(if different from above)_____
- D. PRIMARY CONTACT NAME _____
- E. TELEPHONE NUMBER _____
- F. ALTERNATE PHONE NUMBER _____
- G. FAX NUMBER _____
- H. EMAIL ADDRESS _____
- I. RFP # 3682

Attachment C COMPANY PROFILE

In five (5) pages or less, provide the following general information about your company.

- C-1 Name of company
- C-2 Address of company (primary place of business)
- C-3 Telephone number
- C-4 Dun & Bradstreet number
- C-5 Tax identification number
- C-6 Age of company
- C-7 Size of company, including the number of employees
- C-8 Year and state of incorporation, if relevant
- C-9 Provide a current Certificate of Insurance
- C-10 Recent or pending mergers, acquisitions or IPO's
- C-11 Number of specifically relevant comparable accounts in which directly comparable services are provided, with a summary of the term of the account, the services provided, and the size of the account
- C-12 Concise description of any business partners that may be providing support services as part of this RFP. This information should include the same information requested in Attachment B. Please clearly define the nature of the relationship (i.e. reseller, subcontractor, subsidiary, parent, unrelated joint bidder, etc.).

Note: An Attachment C must also be provided for each subcontractor included in your Proposal.

**Attachment D
BUSINESS CLASSIFICATION**

Identify which category(s) your company falls into (see below for classification definitions). Attach any certificates verifying your company as a Small Business, Small Disadvantaged Business, Minority Business Enterprise (MBE), Woman-Owned Business Enterprise (WBE), Disabled-Owned Business, or Veteran-Owned Business.

- _____ Large Business – Over 500 people or dominant in field
- _____ Small Business – Less than 500 people and not dominant in field
- _____ Small Disadvantaged Business – Less than 500 people, not dominant in field and meeting criteria below
- _____ Minority Business Enterprise
- _____ Woman-Owned Business Enterprise
- _____ Disabled Owned Business
- _____ Veteran Owned Business

Tier 2 (Suppliers and Subcontractor) Use of MBE or MBE Firms

Company Name	Percentage or Value of Proposal
_____	_____
_____	_____

BUSINESS CLASSIFICATION DESCRIPTIONS

- A) Small Business – Defined as a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on government contracts, and qualified as a small business under the criteria and size standards in 13 CFR Part 121 (see 19.102). Such a concern is "not dominant in its field of operation" when it does not exercise a controlling or major influence on a national basis in a kind of business activity in which a number of business concerns are primarily engaged. In determining whether dominance exists, consideration shall be given to all appropriate factors, including volume of business, number of employees, financial resources, competitive status or position, ownership or control of materials, processes, patents, license agreements, facilities, sales territory, and nature of business activity.

- B) Small Disadvantaged Business – Defined as a small business concern that is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business that has at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals and that has its management and daily business controlled by one or more such individuals, This term also means small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned by one of these entities, that has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and that meets the requirements of 13 CFR 124.

- C) Minority Business Enterprise – Defined as a for profit enterprise, regardless of size, physically located in the United States or its trust territories, which is owned, operated and controlled by minority group members. "Minority group members:" are U.S. citizens who are African-American, Hispanic American, Native American, Asian-Pacific American, and Asian-Indian American. "Ownership" by minority individuals means business is at least 51% owned by such individuals or, in the case of a publicly owned business, at least 51% of the stock is owned by one or more such individuals. Further, the management and daily business operations are controlled by those minority group members.
- D) Woman-Owned Business – Defined as a business that is at least 51% owned by a woman or women who also control and operate it. "Control" in this context means being actively involved in the day-to-day management.
- E) Large Business – Defined as more than 500 employees

Attachment E
BID CLARIFICATIONS AND/OR EXCEPTIONS

1. Bidder offers the following clarifications and/or exceptions taken to any requirement or provision of this RFP and any proposed modifications or replacement language for each clarification or exception (If none, so state.):

Bidder understands that unless itemized above, no other clarifications or exceptions to this Request for Proposal are taken by the Bidder.

Attachment F
PRICING SUMMARIES

Please provide a summary of your pricing proposal for all services related to the delivery of your solution.

Pricing should include all costs to Company. Provide a breakdown of all costs, and the total cost.

For each resource to be used in performing the work (i.e. Project Manager, Analyst, etc.), provide the job title, unit rate for that skill set, estimated number of hours of work and a subtotal per skill set.

Provide an estimate of travel and per diem expenses

**SAMPLE
CONTRACT**

This Contract (hereinafter referred to as this “Contract”) is entered into, effective as of , 2012, between LG&E and KU Services Company (hereinafter referred to as "Company."), whose principal place of business is 220 West Main Street, Louisville, Kentucky 40202, and Contractor

The parties hereto agree as follows:

1.0 GENERAL

Contractor shall perform an Energy Efficiency Potential Study for Company and Affiliates, as more specifically described in Articles 2.0 and 3.0 hereof (hereinafter referred to as the "Work") and Company shall compensate the Contractor for the Work, under all the terms and conditions hereof.

Contractor shall provide Company technical and analytical consulting services to meet the study objective of developing a comprehensive quantitative assessment of energy efficiency potential in Company’s service territory. The study, which will result in a report to the Company, should consider the technical, economic, achievable, programmatic, and naturally occurring energy efficiency potential for 2016-2035 and focus on all industrial electric and natural gas metered customers. The study should provide details for LG&E and KU energy efficiency potential separately and collectively.

2.0 DESCRIPTION OF WORK

2.1 Except as otherwise expressly provided herein, Contractor shall supply all labor, supervision, materials, equipment and tools, and warehousing, and shall pay all expenses, necessary or appropriate in the performance of the Work.

2.2 The Work shall include but not be limited to the following:

2.2.1 Contractor shall collect market data in Company’s service territory so that Contractor can understand customer trends and decision-making in Company’s service territory.

2.2.2 Contractor will be required to develop a 20-year baseline (business as usual) forecast and will:

- a. Identify anything that may influence the baseline estimate.
- b. Provide data and assumptions used to develop baseline forecast.
- c. Reconcile to Company’s load forecast end-use energy efficiency improvement assumptions.

- 2.2.3 Contractor will identify what data is required from Company customer databases, forecasts, or any other data source.
- 2.2.4 Contractor will be required to develop energy efficiency potential supply curves by program that clearly display the incremental cost of increasing energy efficiency efforts for each year of the study for industrial customers. Curves should also be provided in aggregate for all customers.
- 2.2.5 If requested by Company, Contractor shall provide expert witness testimony to the Kentucky Public Service Commission. Testimony may be written or in-person depending on the situation.

3.0 REPORTING REQUIREMENTS

- 3.1 Contractor shall participate in regularly scheduled meetings and provide status reports to Company. In addition to overall study progress and timeline review, status meeting should include sharing and review of data and report when applicable.
- 3.2 Contractor should provide a detailed timeline for completion of the study. The timeline should contain milestones and duration between each milestone.
- 3.3 Contractor will be required to provide a hard copy draft, and final copy, of the detailed plan noted in _____. The final copy of the detailed plan should clearly communicate the study results.
 - a. The draft(s) copy shall be provided to Company for their review and comments prior to a final report being provided or presented by Contractor.
- 3.4 On mutually agreeable dates, Contractor shall be required to do up to five (5) on-site presentations of the detailed plan in Kentucky. Selected sites are at the Company's discretion. Three weeks prior to the presentation Company will be provided the draft copy of the presentation materials for review and comments.
- 3.5 Contractor shall deliver data to Company in a format agreeable to both parties.

4.0 EXHIBITS AND ATTACHMENTS

All Work shall be performed in strict accordance with the following specifications, exhibits and drawings which are incorporated herein by reference.

- | | | |
|-----|--------------------|--------------|
| 4.1 | Exhibit No. | Title |
|-----|--------------------|--------------|

Exhibit No. 1

Timeline

5.0 TERM

This Contract shall become effective, 2015 and continue until , 2015, unless terminated earlier pursuant to the Article titled "Term and Termination" set forth in the Administrative Services Agreement. Unless otherwise specified, Company makes no promise or guarantee as to the amount of Work to be performed under this Contract, nor does it convey an exclusive right to the Contractor to perform Work of the type or nature set forth in this Contract.

6.0 PERFORMANCE SCHEDULE

- 6.1 Contractor shall commence performance of the Work on , 2015 and shall complete Work not later than , 2015.
- 6.2 Contractor shall not assign or subcontract out any material portion of the work except under extenuating circumstances, which requires advanced written approval by Company. Contractor shall notify Company of its intent to use subcontractors in performance of Work at least forty-eight (48) hours prior to start of Work. See the Article titled "Assignment of Agreement; Subcontracting" in the Administrative Services Agreement.
- 6.3 The performance under this Agreement shall be subject to periodic review by Company or another firm designated by Company for Contractor compliance.

7.0 ADMINISTRATIVE SERVICES AGREEMENT

- 7.1 The terms and conditions set forth in the Administrative Services Agreement and Contractor Code of Business Conduct that are attached hereto, (herein referred to as the "Administrative Services Agreement") are hereby incorporated by reference as fully set forth herein. In the event of a conflict between the terms and conditions of the Administrative Services Agreement and those of this Contract, the terms and conditions of the Administrative Services Agreement shall prevail.
- 7.2 Company will maintain ownership of all data. Customer data is considered confidential and cannot be shared without prior Company authorization.
- 7.3 Customer Satisfaction

The Company has a strategy to increase LG&E and KU customer satisfaction by enhancing the customer experience through respectful relationships, timely solutions, and exceptional service. As such the Company will require its vendors to assist in the continued commitment to workforce and public safety, and the expansion of relationships with customers by delivering positive customer experiences that create value and build trust.

8.0 COMPENSATION

8.1 Full compensation to Contractor for full and complete performance by Contractor of the Work, compliance with all terms and conditions of this Contract and for Contractor's payment of all obligations incurred in, or applicable to, performance of the Work (hereinafter referred to as the "Contract Price") shall be the following:

TBD

8.2 PRICING FOR CHANGES IN SCOPE OF WORK

By mutual agreement between Company and Contractor, adjustments to the Contract Price for changes in the Scope or Description of Work shall be on a unit price basis.

8.3 SPECIAL INVOICING INSTRUCTIONS

8.3.1 See the Article titled "Invoices and Effect of Payment" in the Administrative Services Agreement

8.3.2 All invoices shall include a Contract Number. Invoices for Work shall include Contract/Purchase Order Number and a separate invoice provided for each utility. All invoices shall be prepared in one original and distributed as follows:

Original: LG&E and KU Services Company
Attention: Program Manager
P.O. Box 32020
Louisville, Kentucky 40232

9.0 CONTRACTUAL NOTICES

See the Article titled "Miscellaneous" in the Administrative Services Agreement for provisions governing contractual notices.

9.1 Company's address: LG&E and KU Services Company.
Attention: Manager, Corporate Purchasing
820 West Broadway
Louisville, Kentucky 40202
502-627-3646 (FAX)

Copy to: LG&E and KU Services Company
Attention: Manager, Energy Efficiency
P.O. Box 32020
Louisville, Kentucky 40232

9.2 Contractor's
Address:

10.0 ENTIRE AGREEMENT

This Contract, including all specifications, exhibits and drawings listed in this Contract and the Administrative Services Agreement, constitutes the entire agreement between the parties relating to the Work and supersedes all prior or contemporaneous oral or written agreements, negotiations, understandings and statements pertaining to the Work or this Contract.

The parties hereto have executed this Contract on the dates written below, but it is effective as of the date first written above.

LG&E and KU SERVICES COMPANY

BY: _____

TITLE: _____

DATE: _____

CONTRACTOR

BY: _____

TITLE: _____

DATE: _____

ADMINISTRATIVE SERVICES AGREEMENT
LG&E AND KU SERVICES COMPANY AND/OR AFFILIATES

This Administrative Services Agreement (this "Agreement") is made this _____ day of _____, 20 (the "Effective Date") by and between LG&E and KU Services Company, a Kentucky corporation ("Company") and/or its "Affiliates" (as defined below) and _____ ("Contractor"), a _____ company.

WHEREAS, Contractor desires the opportunity to perform Administrative And/Or Professional Non-Engineering Related Services to Company and/or its Affiliates from time to time, and Company desires the opportunity to engage Contractor to provide such Administrative And/Or Professional Non-Engineering Related Services, evaluations and/or recommendations;

WHEREAS, the Administrative And/Or Professional Non-Engineering Related Services to be rendered by Contractor, as defined in Article 1.01, do not constitute any engineering services, electrical reliability studies, surveys and/or environmentally related services (if engineering services, electrical reliability studies, surveys and/or environmentally professional services should ever be rendered by Contractor to Company, or if Contractor should ever provide any goods and/or render any engineering related and/or construction services to the Company pursuant to any Contract, Statement of Work and/or Purchase Order (or any change orders related thereto), Contractor must then enter into Company's standard "General Services Agreement"; provided, however, that nothing in this Agreement shall preclude Contractor from rendering other types of professional and/or business administrative types of services (i.e., accounting, medical, legal, etc.) which do not constitute engineering services, electrical reliability studies, surveys and/or environmentally related services; and

WHEREAS, the parties intend that this Agreement sets forth the exclusive set of terms and conditions which shall govern the performance of the Work by Contractor for Company should Company engage Contractor to provide Work.

NOW THEREFORE, in consideration of the premises, the mutual covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and incorporating the above stated recitals, the parties do agree as follows:

ARTICLE 1 DEFINITIONS

- 1.01 Administrative And/Or Professional Non-Engineering Related Services:** "Administrative And/Or Professional Non-Engineering Related Services" shall mean any types of professional and/or business administrative types of services (i.e., accounting, medical, legal, etc.) which do not constitute professional engineering services, electrical reliability studies, surveys and/or environmentally related services.
- 1.02 Affiliate:** "Affiliate" shall mean any entity which, from time to time, in whole or in part, and directly or indirectly, controls, is controlled by, or under common control with LG&E and KU Services Company and shall include, without limitation, Louisville Gas and Electric Company and Kentucky Utilities Company, both Kentucky corporations.
- 1.03 Agreement:** "Agreement" shall mean this Administrative Consulting Services Agreement, along with any attachments, specifications, Purchase Orders, engagement letters or Statements of Work sent by Company in accordance with Article 2, and/or other agreed collateral document pursuant to which the Work is to be performed.
- 1.04 Applicable Laws:** "Applicable Laws" shall mean any and all applicable federal, state or local laws, regulations, codes, ordinances, administrative rules, court orders or permits.
- 1.05 Contract:** "Contract" shall mean, in the aggregate, those specialized terms and conditions contained within Statements of Work and/or Purchase Orders, if any, which are issued pursuant to this Agreement with respect to the Administrative And/Or Professional Non-Engineering Related Services.
- 1.06 Contract Price:** "Contract Price" shall mean the aggregate of the particular consideration set forth in one or more Purchase Orders or as otherwise agreed upon. Unless otherwise agreed, the Contract Price includes all applicable taxes, duties, fees and assessments of any nature including, without limitation, all sales and use taxes, due to any governmental authority with respect to the Work.
- 1.07 Contractor:** "Contractor" shall mean the entity designated as the "Contractor" in the opening paragraph of this Agreement.

- 1.08 Company:** “Company” shall mean LG&E and KU Services Company and/or any of its Affiliates as appropriate based on which entity is the party to the Purchase Order, engagement letter, Statement of Work or other binding document. The rights and obligations of LG&E and KU Services Company and each of its Affiliates hereunder shall be limited to the extent of such party’s proportionate utilization of Contractor’s services hereunder.
- 1.09 LG&E and KU Services Company:** “LG&E and KU Services Company” shall mean LG&E and KU Services Company, a Kentucky corporation.
- 1.10 Purchase Order:** Company may, at its discretion, issue its own “Purchase Order Standard Terms and Conditions” and/or “Contractor’s Purchase Agreement” (collectively, the “Purchase Order”), comprising part of the Contract and/or incorporating the Statements of Work, that may supplement, but not contradict this Agreement unless otherwise expressly provided by Company.
- 1.11 Statements of Work:** “Statements of Work”, if any shall comprise, in part, the Contract including specifications, instructions, drawings, schedules, scopes and/or descriptions of Work.
- 1.12 Work:** “Work” shall include those Administrative And/Or Professional Non-Engineering Related Services set forth in any instructions, specifications, schedules, Contract, Statement(s) of Work and/or Purchase Order(s) as mutually executed by the parties.

ARTICLE 2 SCOPE OF AGREEMENT

Unless otherwise agreed in a writing executed by each of the parties (i.e., the Contract) which evidences a clear intention to supersede this Agreement, the parties intend that this Agreement apply to all transactions which may occur between Company and Contractor during the term of this Agreement. Company makes no commitment to Contractor as to the exclusiveness of this relationship or as to the volume and/or quantities (per unit or otherwise), if any, of business Company will perform with Contractor. Such Contract for the provision of Work under this Agreement shall be reflected by (a) each of the parties executing a mutually acceptable schedule to this Agreement or (b) Company providing a Purchase Order and/or engagement letter and/or Statement of Work to Contractor and Contractor accepting such Purchase Order, engagement letter and/or Statement of Work (including by commencing performance pursuant to such Purchase Order). In the event Company provides a Purchase Order, engagement letter and/or Statement of Work to Contractor and Contractor commences performance thereon, Contractor hereby agrees to the formation of a binding agreement as described in the Purchase Order upon Contractor’s commencement of performance, waives any argument that it might otherwise have under Applicable Laws that the Purchase Order and/or Statement of Work should have been executed by each of the parties to be enforceable and further agrees to not contest the enforceability of such Purchase Order, engagement letter and/or Statement of Work on those grounds, and agrees to not contest the admissibility of Company’s records related to such Purchase Order that are kept in the ordinary course by Company. In addition, in no event shall the terms and conditions of any proposal, Purchase Order acknowledgement, invoice, or other document, in each case as unilaterally issued by Contractor, be binding upon Company without Company’s explicit written acceptance thereof. Any Work performed by Contractor without Company’s binding commitment for such Work either via a duly executed schedule to this Agreement or a duly executed Purchase Order and/or Statement of Work shall be at Contractor’s sole risk and expense, and Company shall have no obligation to pay for any such Work.

ARTICLE 3 CONDITIONS AND RISKS OF WORK; WORK HARMONY

Contractor represents that Contractor has carefully examined all conditions relevant to the Work and its surroundings, and Contractor assumes the risk of such conditions and will, regardless of such conditions, the expense, or difficulty of performing the Work, fully complete the Work for the stated Contract Price without further recourse to Company. Information on the site of the Work and local conditions at such site furnished by Company in specifications, drawings, or otherwise is made without representation or warranty of any nature by Company, is not guaranteed by Company, and is furnished solely for the convenience of Contractor. In case of a conflict between instructions, specifications, drawings, schedules, and/or Purchase Order(s), Company shall resolve such conflict; and Company’s resolution shall be binding on Contractor. Contractor agrees that all labor employed by Contractor, its agents, or subcontractors for Work on the premises of Company, if any, shall be in harmony with all other labor being used by Company or other contractors working on Company’s premises. To the extent applicable, Contractor agrees to give Company immediate notice of any threatened or actual labor dispute and will provide assistance as determined necessary by Company to resolve any such dispute. Contractor, its agents, or subcontractors, if any, shall remove from Company’s premises any person objected to by Company in association with the Work.

ARTICLE 4 COMPANY CHANGES IN WORK

The scope of and conditions applicable to the Work shall be subject to changes by Company from time to time. Such changes shall only be enforceable if documented in a writing executed by Company. Except as otherwise specifically set forth in this Agreement, changes in the scope of or conditions applicable to the Work may result in adjustments in the Contract Price and/or the Work schedule in accordance with this Article 4. If Contractor believes that adjustment of the Contract Price or the Work schedule is justified, whether as a result of a change made pursuant to this Article or as a result of any other circumstance, then Contractor shall (a) give Company written notice of its claim within five (5) business days after receipt of notice of such change or the occurrence of such circumstances and (b) shall supply a written statement supporting Contractor's claim within ten (10) business days after receipt of notice of such change or occurrence of such circumstances, which statement shall include Contractor's detailed estimate of the effect on the Contract Price and/or the Work schedule. Contractor agrees to continue performance of the Work during the time any claim hereunder is pending. Company shall not be bound to any adjustments in the Contract Price or the Work schedule unless expressly agreed to by Company in writing. Company will not be liable for, and Contractor waives, any claims of Contractor that Contractor knew or should have known and that were not reported by Contractor in accordance with the provisions of this Article.

ARTICLE 5 FORCE MAJEURE

Neither party shall be liable to the other for any damages for any failure to perform or for any delays or interruptions beyond that party's reasonable control in performing any of its obligations under this Agreement only due to acts of God, fires, floods, earthquakes, riots, civil insurrection, acts of the public enemy, or acts or failures to act of civil or military authority, unless the time to perform is expressly guaranteed. Contractor shall advise Company immediately of any anticipated and actual failure, delay, or interruption and the cause and estimated duration of such event. Any such failure, delay, or interruption, even though existing on the date of this Agreement or on the date of the start of the Work, shall require Contractor to within five (5) days submit a recovery plan detailing the manner in which the failure, delay, or interruption shall be remedied and the revised schedule. Contractor shall diligently proceed with the Work notwithstanding the occurrence thereof. This Article shall apply only to the part of the Work directly affected by the particular failure, delay, or interruption, and shall not apply to the Work as a whole or any other unaffected part thereof.

ARTICLE 6 CONTRACTOR DELAYS

Time is of the essence in the performance of this Agreement by Contractor. Contractor agrees to cooperate with Company in scheduling the Work so that the project will progress with a minimum of delays. Company shall not be responsible for compensating Contractor for any costs of overtime or other premium time work unless Company has provided separate prior written authorization for additional compensation to Contractor.

ARTICLE 7 COMPANY EXTENSIONS

Company shall have the right to extend schedules or suspend the Work, in whole or in part, at any time upon written notice to Contractor (except that in an emergency or in the event that Company identifies any safety concerns, Company may require an immediate suspension upon oral or written notice to Contractor). Contractor shall, upon receipt of such notice, immediately suspend or delay the Work. Contractor shall resume any suspended Work when directed by Company. If Contractor follows the requirements of Article 4, a mutually agreed equitable adjustment to the Contract Price or to the schedules for payments and performance of the remaining Work may be made to reflect Company's extension of schedules or suspension of the Work. Contractor will provide Company with all information requested in connection with determining the amount of such equitable adjustment.

ARTICLE 8 AUDITING

8.01 Rights of Inspection of Records and Auditing. Contractor shall maintain complete records relating to any cost-based (i.e., Work not covered by firm prices) components billed under this Agreement or relating to the quantity of units billed under any unit price provisions of this Agreement (all the foregoing hereinafter referred to collectively as "Records") which shall be open to inspection and subject to audit and reproduction during normal working hours, by Company or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments, time sheets, or claims based on Contractor's actual costs incurred in the performance of Work under this Agreement. For the purpose of evaluating or verifying such actual or claimed costs, Company or its authorized representative shall have access to said Records at any time, including any time after final payment by Company to Contractor pursuant to this Agreement. All non-public information obtained in the course of such audits shall be held in confidence except pursuant to judicial and administrative order. Company or its authorized representatives shall have access, during normal working hours, to all necessary Contractor facilities and shall be

provided adequate and appropriate work space to conduct audits in compliance with the provisions of this Article. Company shall give Contractor reasonable notice of intended audits.

ARTICLE 9 COMPLIANCE WITH APPLICABLE LAWS; SAFETY; DRUG AND ALCOHOL TESTING; IMMIGRATION; NERC RELIABILITY STANDARDS COMPLIANCE

9.01 Applicable Laws and Safety: Contractor agrees to protect its own and its subcontractors' employees and be responsible for their Work until Company's acceptance of the entire project and, if Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, to protect Company's facilities, property, employees and third parties from damage or injury. Contractor shall at all times be solely responsible for complying with all Applicable Laws and facility rules, including without limitation those relating to health and safety, in connection with the Work and for obtaining (but only as approved by Company) all permits and approvals necessary to perform the Work. Without limiting the foregoing, and as applicable, Contractor agrees to strictly abide by and observe (i) all standards of the Occupational Safety & Health Administration (OSHA) which are applicable to the Work being performed now or in the future; (ii) Company's Contractor/Subcontractor Safety Policy; and (iii) Company's Contractor's Code of Business Conduct (Contractor hereby acknowledges receipt of copies of all such policies and agrees to be bound by these and any other rules and regulations of the Company, as well as to any amendments and/or modifications that may be issued in the future with respect thereto. If Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, Contractor shall maintain the Work site in a safe and orderly condition at all times. Company shall have the right but not the obligation to review Contractor's and/or its subcontractor's compliance with safety and cleanup measures. In the event Contractor fails to keep the work area clean, if Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, Company shall have the right to perform such cleanup on behalf of, at the risk of and at the expense of Contractor. Contractor further specifically acknowledges, agrees and warrants that Contractor has complied, and shall at all times during the term of this Agreement, comply in all respects with all laws, rules and regulations relating to the employment authorization of employees including, but not limited to, the Immigration Reform and Control Act of 1986, as amended, and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended, whereby Contractor certifies to Company that Contractor has (a) properly maintained, and shall at all times during the term of this Agreement properly maintain all records required by Immigration and Customs Enforcement, such as the completion and maintenance of the Form I-9 for each of Contractor's employees; (b) that Contractor maintains and follows an established policy to verify the employment authorization of its employees; (c) that Contractor has verified the identity and employment eligibility of all employees in compliance with all applicable laws; and (d) that Contractor is without knowledge of any fact that would render any employee or subcontractor of Contractor ineligible to legally work in the United States. Contractor further acknowledges, agrees and warrants that all of its subcontractors will be required to agree to these same terms as a condition to being awarded any subcontract for such Work.

9.02 Hazards and Training: Assuming Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises at any time performing the Work, Contractor shall furnish adequate numbers of trained, qualified, and experienced personnel and appropriate safety and other equipment in first-class condition, suitable for performance of the Work. Such personnel shall be skilled and properly trained to perform the Work and recognize all hazards associated with the Work. Without limiting the foregoing, Contractor shall participate in any safety orientation or other of Company's familiarization initiatives related to safety and shall strictly comply with any monitoring initiatives as determined by Company. Contractor shall accept all equipment, structures, and property of Company as found and acknowledges it has inspected the property, has determined the hazards incident to working thereon or thereabouts, and has adopted suitable precautions and methods for the protection and safety of its employees and the property.

9.03 Drug and Alcohol: Assuming Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises at any time performing the Work, no person will perform any of the Work while under the influence of drugs or alcohol. No alcohol may be consumed within four (4) hours of the start of any person's performance of the Work or anytime during the workday. A person will be deemed under the influence of alcohol if a level of .02 percent blood alcohol or greater is found. In addition to the requirements of the drug testing program, as set forth in Company's rules and regulations, all persons who will perform any of the Work will be subject to drug and alcohol testing under either of the following circumstances: (i) where the person's performance either contributed to an accident or cannot be completely discounted as a contributing factor to an accident which involves off-site medical treatment of any person; and (ii) where Company determines in its sole discretion that there is reasonable cause to believe such person is using drugs or alcohol or may otherwise be unfit for duty. Such persons will not be permitted to perform any Work until the test results are established. Contractor shall be solely responsible for administering and conducting drug and alcohol testing, as set forth herein, at Contractor's sole expense. As applicable

and in addition to any other requirements under this Agreement, Contractor shall develop and strictly comply with any and all drug testing requirements as required by Applicable Laws.

9.04 NERC Reliability Standards. The following additional provisions shall apply if Contractor's Work in any way involves areas or assets which are located within physical security perimeters as defined by NERC's Reliability Standards for the Bulk Electric Systems of North America (collectively, the "**NERC Standards**"), including without limitation any Company data center or control center. Contractor's non-compliance of NERC Standards may result in fines and/or penalties being assessed against the Company that would result in Company seeking indemnification from Contractor as a consequence of Contractor's and/or its subcontractors', agents' and/or representatives' non-compliance of NERC Standards.

A. *Information Protection.* Without compromising the confidentiality provisions in Article 24, Contractor shall at all times comply with the Company's information protection program(s) as defined by CIP-003, R4. Among the information protected by this program are: (i) all operational procedures; (ii) lists of critical cyber assets; (iii) network topology or similar diagrams; (iv) floor plans of computing centers that contain critical cyber assets; (v) equipment layouts of critical cyber assets; (vi) disaster recovery plans; (vii) incident response plans; and (viii) security configuration information. Contractor shall protect this protected information from disclosure consistent with the program.

B. *Access Revocation.* Contractor shall **immediately advise appropriate Company's management if any of Contractor's personnel who have key card access to a restricted area or electronic access to a protected system no longer require such access.**

C. *Training.* If any Contractor personnel require key card access to a restricted area or electronic access to a protected system, Contractor shall ensure that such personnel complete, and retake as requested, all necessary NERC training as requested by Company.

D. *Personnel Risk Assessment.* If any Contractor personnel require key card access to a restricted area or electronic access to a protected system, Contractor shall ensure that Company receives necessary waivers and information from Contractor's personnel to complete, and repeat as necessary, such background checks as requested by Company.

Continuing Obligations. Contractor further acknowledges that its compliance with the NERC Standards is a continuing obligation during and after the Term. Upon written notice to Contractor, Company shall have the absolute right to audit and inspect any and all information regarding Contractor's compliance with this Section 9.04, and/or to require confirmation of the destruction of any documentation received from or regarding Company. Contractor is encouraged to contact Company's Compliance Department pursuant to Section 9.05 to ensure Contractor understands and complies with this Section 9.04.

9.05 Office of Compliance: The Company has an Office of Compliance. Should Contractor have actual knowledge of violations of any of the herein stated policies of conduct in this Article 9, or have a reasonable basis to believe that such violations will occur in the future, whether by its own employees, agents, representatives or subcontractors, or by another vendor and/or supplier of the Company and its employees, agents, representatives or subcontractors, or by any employee, agent and/or representative of Company, Contractor has an affirmative obligation to immediately report any such known, perceived and/or anticipated violations to the Company's Office of Compliance in care of Director, Compliance and Ethics, LG&E and KU Services Company, 220 West Main Street, Louisville, Kentucky 40202.

ARTICLE 10 STATUS OF CONTRACTOR

Company does not reserve any right to control the methods or manner of performance of the Work by Contractor. Contractor, in performing the Work, shall not act as an agent or employee of Company, but shall be and act as an independent contractor and shall be free to perform the Work by such methods and in such manner as Contractor may choose, doing everything necessary to perform such Work properly and safely and having supervision over and responsibility for the safety and actions of its employees. Contractor's employees and subcontractors shall not be deemed to be employees of Company. Contractor agrees that if any portion of Contractor's Work is subcontracted, all such subcontractors shall be bound by and observe the conditions of this Agreement to the same extent as required of Contractor. In such event, Company strongly encourages the use of Minority Business Enterprises, Women Business Enterprises, and Disadvantaged Business Enterprises, as defined under federal law and as certified by a certifying agency that Company recognizes as proper.

ARTICLE 11 EQUAL EMPLOYMENT OPPORTUNITY

Contractor and its subcontractors shall abide by the requirements of 41 CFR 60-741.5(a). That regulation prohibits discrimination against qualified individuals on the basis of disability, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities. Contractor and its subcontractors shall abide by the requirements of 41 CFR 60-300.5(a). That regulation prohibits

discrimination against qualified protected veterans, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans. To the extent applicable, Contractor and its subcontractors shall comply with all of the following provisions, which are incorporated herein by reference: (i) Equal Opportunity regulations set forth in 41 CFR § 60-1.4(a) and (c), prohibiting employment discrimination against any employee or applicant because of race, color, religion, sex, or national origin; (ii) Vietnam Era Veterans Readjustment Assistance Act regulations set forth in 41 CFR § 60-250.4 relating to the employment and advancement of disabled veterans and Vietnam era veterans; (iii) Rehabilitation Act regulations set forth in 41 CFR § 60-741.4 relating to the employment and advancement of qualified disabled employees and applicants for employment; (iv) the clause known as “Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals” set forth in 15 USC § 637(d)(3); and (v) the subcontracting plan requirement set forth in 15 USC § 637(d).

ARTICLE 12 INDEMNITY BY CONTRACTOR

Contractor shall indemnify, defend, and hold harmless Company, its directors, members, managers, officers, employees, and agents, from any and all damage, loss, claim, demand, suit, liability, penalty and/or fine (pursuant to Section 9.04 or otherwise), or forfeiture of every kind and nature, including but not limited to costs and expenses of defending against the same and payment of any settlement or judgment therefore, by reason of (a) bodily and other personal injuries to or deaths of persons, (b) damages to property, (c) the release or threatened release of a hazardous substance or any pollution or contamination of or other adverse effects on the environment, (d) violations of any Applicable Laws, or (e) infringement of patent, copyright, trademark, trade secret, or other property right, whether suffered directly by Company or indirectly by reason of third party claims, demands, or suits, resulting or alleged to have resulted from acts or omissions of Contractor, its employees, agents, subcontractors, or other representatives or otherwise from performance of this Agreement. This obligation to indemnify, defend, and hold harmless shall survive termination or expiration of this Agreement.

ARTICLE 13 INSURANCE

13.01 Contractor’s Insurance Obligation: During the entire duration of the scope of Work on a per occurrence basis with respect to any Purchase Order issued under this Agreement, Contractor shall provide and maintain, and shall require any subcontractor to provide and maintain the following insurance (and, except with regard to Workers’ Compensation, naming Company as additional insured and waiving rights of subrogation against Company and Company’s insurance carrier(s)), and shall submit evidence of such coverage to Company prior to the start of the Work and, furthermore, Contractor shall notify Company, prior to the commencement of any Work pursuant to any Statement of Work and/or Purchase Order, of any threatened, pending and/or paid off claims to third parties, individually or in the aggregate, which otherwise affects the availability of the limits of coverage inuring to the benefit of Company as hereinafter specified:

- (a) Workers’ Compensation and Employer’s Liability Policy, which shall include:
 - 1) Workers’ Compensation (Coverage A), with statutory limits, and in accordance with the laws of the state where the Work is performed;
 - 2) Employer’s Liability (Coverage B) with minimum limits of One Million Dollars (\$1,000,000) Bodily Injury by Accident, each Accident, \$1,000,000 Bodily Injury by Disease, each Employee;
 - 3) Thirty (30) Day Cancellation Clause; and
 - 4) Broad Form All States Endorsement.
- (b) Commercial General Liability Policy, which shall have minimum limits of One Million Dollars (\$1,000,000) each occurrence; One Million Dollars (\$1,000,000) Products/Completed Operations Aggregate each occurrence; One Million Dollars (\$1,000,000) Personal and Advertising Injury each occurrence, in all cases subject to Two Million Dollars (\$2,000,000) in the General Aggregate for all such claims, and including:
 - 1) Thirty (30) Day Cancellation Clause;
 - 2) Blanket Written Contractual Liability to the extent covered by the policy against liability assumed by Contractor under this Agreement; and
 - 3) Broad Form Property Damage.
- (c) Commercial Automobile Liability Insurance covering the use of all owned, non-owned, and hired automobiles, with a bodily injury, including death, and property damage combined single minimum limit of One Million Dollars (\$1,000,000) each occurrence with respect to Contractor’s vehicles assigned to or used in performance of Work under this Agreement.
- (d) Umbrella/Excess Liability Insurance with minimum limits of Two Million Dollars (\$2,000,000) per occurrence; Two Million Dollars (\$2,000,000) aggregate, to apply to employer’s liability, commercial general liability, and automobile liability.

- (f) Professional Liability Insurance, only to the extent applicable, and/or Errors and Admission coverage relating to professional administrative/consulting types of services will be separately provided by Contractor as specified in the Work, with limits, in each respect, of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) in the aggregate, which insurance shall be either on an occurrence basis or on a claims made basis (with a retroactive date satisfactory to Company).

13.02 Quality of Insurance Coverage: The above policies to be provided by Contractor shall be written by insurance companies which are both licensed to do business in the state where the Work will be performed and either satisfactory to Company or having a Best Rating of not less than A-. These policies shall not be materially changed or canceled except with thirty (30) days written notice to Company from Contractor and the insurance carrier. Evidence of coverage, notification of cancellation or other changes shall be mailed to: Attn: Manager, Supply Chain, LG&E and KU Services Company, P.O. Box 32020, Louisville, Kentucky 40232.

13.03 Implication of Insurance: Company reserves the right to request and receive a summary of coverage of any of the above policies or endorsements; however, Company shall not be obligated to review any of Contractor's certificates of insurance, insurance policies, or endorsements, or to advise Contractor of any deficiencies in such documents. Any receipt of such documents or their review by Company shall not relieve Contractor from or be deemed a waiver of Company's rights to insist on strict fulfillment of Contractor's obligations under this Agreement.

13.04 Other Notices: Contractor shall provide notice of any accidents or claims relating to the Work to Company's Manager, Risk Management at LG&E and KU Services Company, P.O. Box 32030, Louisville, Kentucky 40232 and Company's site authorized representative.

ARTICLE 14 WARRANTIES

Contractor hereby represents and warrants to Company that all services provided by Contractor in its performance of its obligations under this Agreement shall be provided by personnel who are careful, skilled, experienced, qualified and competent. Contractor represents and warrants that all services, findings, recommendations and advice provided by or on behalf of Contractor under this Agreement shall be rendered in a highly competent and/or professional manner.

ARTICLE 15 OWNERSHIP OF INTELLECTUAL PROPERTY; PATENTS

All inventions, discoveries, processes, methods, designs, drawings, blueprints, information, software, works of authorship and know-how, or the like, whether or not patentable or copyrightable (collectively, "Intellectual Property"), which Contractor conceives, develops, or begins to develop, either alone or in conjunction with Company or others, in connection with the Work, shall be "work made for hire" and the sole and exclusive property of Company. Upon request, Contractor shall promptly execute all applications, assignments, and other documents that Company shall deem necessary to apply for and obtain letters patent of the United States and/or copyright registration for the Intellectual Property and in order to evidence Company's sole ownership thereof.

ARTICLE 16 ASSIGNMENT OF AGREEMENT; SUBCONTRACTING

Upon prior written notice given to Company, Contractor shall not, by operation of law or otherwise, assign and/or subcontract any part of the Work or this Agreement without Company's prior written approval. Such approval, if given by Company, shall not relieve Contractor from full responsibility for the fulfillment of any and all obligations under this Agreement. Under any and all circumstances, any permitted assignee of Contractor, whether or not such assignee shall be a division, subsidiary and/or affiliate entity of Contractor, shall also be fully bound by the terms of this Agreement and, furthermore, upon request by Company, each of Contractor and its permitted assignee shall provide sufficient financial information, as determined by Company in its sole discretion, necessary to validate such assignee's credit worthiness and ability to perform under this Agreement.

ARTICLE 17 INVOICES AND EFFECT OF PAYMENTS; RELEASE OF LIENS

17.01 Invoices: Within a reasonable period of time following the end of each calendar month or other agreed period, Contractor shall submit an invoice to Company that complies with this Article. Payments shall be made within forty-five (45) days of Company's receipt of Contractor's proper invoice, and, in the event that Company's payment is overdue, Contractor shall promptly provide Company with a notice that such payment is overdue. Contractor's invoices shall designate the extent to which LG&E and KU Services Company or any of its Affiliates is the responsible party. To the extent applicable, such invoices shall reference the contract number and shall also show labor, material and taxes paid regarding the services rendered (including without limitation sales and use taxes, to the extent applicable); retainers to the extent as may be specified in the Purchase Order, Statement of Work and/or other contractual documentation. All invoices shall be submitted with supporting documentation and in acceptable form and

quality to Company's authorized representative. Should Company dispute any invoice for any reason, payment on such invoice shall be made within thirty (30) days of the dispute resolution. Payment of the invoice shall not release Contractor from any of its obligations hereunder, including but not limited to its warranty and indemnity obligations.

17.02 Taxes: If Company provides Contractor with an exemption certificate demonstrating an exemption from sales or use taxes in Kentucky, then Contractor shall not withhold or pay Kentucky sales or use taxes to the extent such exemption certificate applies to the Work. In no event shall Contractor rely upon Company's direct pay authorization in not withholding or paying Kentucky sales or use taxes. Otherwise, Contractor shall be solely responsible for paying all appropriate sales, use, and other taxes and duties (including without limitation sales or use tax with respect to materials purchased and consumed in connection with the Work) to, as well as filing appropriate returns with, the appropriate authorities. To the extent specifically included in the Contract Price, Contractor shall bill Company for and Company shall pay Contractor all such taxes and duties, but Company shall in no event be obligated for taxes and duties not specifically included in the Contract Price or for interest or penalties arising out of Contractor's failure to comply with its obligations under this Section 17.

17.03 Billing of Additional Work: All claims for payments of additions to the Contract Price shall be shown on separate Contractor's invoices and must refer to the specific change order or written authorization issued by Company as a condition to being considered for payment.

17.04 Effect of Payments/Offset: No payments shall be considered as evidence of the performance of or acceptance of the Work, either in whole or in part, and all payments are subject to deduction for loss, damage, costs, or expenses for which Contractor may be liable under any Purchase Order or set-off hereunder. In addition to Company's right of off-set for threatened and/or filed liens and/or encumbrances, and/or with respect to payment disputes pursuant to Section 17.05, Company, without waiver or limitation of any rights or remedies of Company, shall be entitled from time to time to deduct from any and all amounts owing by Company to Contractor in connection with this Agreement or any other contract with Company any and all amounts owed by Contractor to Company in connection with this Agreement or any other contract with Company.

17.05 Release and Indemnity Regarding Liens: Contractor hereby releases and/or waives for itself and its successors in interest, and for all subcontractors and their successors in interest, any and all claim or right of mechanics or any other type of lien to assert and/or file upon Company's or any other party's property, the Work, or any part thereof as a result of performing the Work. Contractor shall execute and deliver to Company such documents as may be required by Applicable Laws (i.e., partial and/or final waivers of liens and/or affidavits of indemnification) to make this release effective and shall give all required notices to subcontractors with respect to ensuring the effectiveness of the foregoing releases against those parties. Contractor shall secure the removal of any lien that Contractor has agreed to release in this Article within five (5) working days of receipt of written notice from Company to remove such lien. If not timely removed, Company may remove the lien and charge all costs and expenses including legal fees to Contractor including, without limitation, the costs of bonding off such lien. Company, in its sole discretion, expressly reserves the right to off-set and/or retain any reasonable amount due to Contractor from payment of any one or more of Contractor's invoices upon Company having actual knowledge of any threatened and/or filed liens and/or encumbrances that may be asserted and/or filed by any subcontractor, materialman, independent contractor and/or third party with respect to the Work, with final payment being made by Company only upon verification that such threatened and/or filed liens and/or encumbrances have been irrevocably satisfied, settled, resolved and/or released (as applicable), and/or that any known payment disputes concerning the Work involving Contractor and any of its subcontractors, agents and/or representatives have been resolved so that no actions, liens and/or encumbrances will be filed against Company and/or Company's property.

ARTICLE 18 TERM AND TERMINATION

18.01 Term: This Agreement shall commence on the date set forth above and shall survive in full force and effect until terminated as set forth below and/or otherwise, solely with respect to any Statement of Work and/or Purchase Order, terminate consistent with the specified expiration date as may be stated in any Statement of Work and/or Purchase Order by and between Contractor and Company notwithstanding any terms and conditions to the contrary in this Agreement. A termination under this Article 18 based on certain Work shall only apply to the Statement of Work and/or Purchase Order that covers such Work. Any Statements of Work and/or Purchase Orders that do not relate to such Work shall not be affected by such a termination.

18.02 Termination for Contractor's Breach: If the Work to be done under this Agreement shall be abandoned by Contractor, if this Agreement or any portion thereof shall be assigned by operation of law or otherwise, if Contractor is placed in bankruptcy, or if a receiver be appointed for its properties, if Contractor shall make an assignment for the benefit of creditors, if at any time the necessary progress of Work is not being maintained, if at any time Contractor's professional license (or any professional licenses of any of its employees and/or subcontractors) is revoked or rescinded, or if Contractor is violating any of the conditions or agreements of this Agreement, or has executed this

Agreement in bad faith, Company may, without prejudice to any other rights or remedies it may have at law or equity as a result thereof, notify Contractor to discontinue any or all of the Work and terminate this Agreement in whole or part. In the event that Section 365(a) of the Bankruptcy Code or some successor law gives Contractor as debtor-in-possession the right to either accept or reject this Agreement, then Contractor agrees to file an appropriate motion with the Bankruptcy Court to either accept or reject this Agreement within twenty (20) days of the entry of the Order for Relief in the bankruptcy proceeding. Contractor and Company acknowledge and agree that said twenty (20) day period is reasonable under the circumstances. Contractor and Company also agree that if Company has not received notice that Contractor has filed a motion with the Bankruptcy Court to accept or reject this Agreement within said twenty (20) day period, then Company may file a motion with the Bankruptcy Court asking that this Agreement be accepted or rejected, and Contractor shall not oppose such motion.

18.03 Effect of Termination for Contractor's Breach: The expenses of completing the Work in excess of the unpaid portion of the Contract Price, together with any damages suffered by Company, shall be paid by Contractor, and Company shall have the right to set off such amounts from amounts due to Contractor. Company shall not be required to obtain the lowest figures for completing the Work but may make such expenditures as in its sole judgment shall best accomplish such completion.

18.04 Termination for Company's Convenience: Company may terminate this Agreement in whole or in part for its own convenience by fifteen (15) days' written notice at any time, with or without cause. In such event, Company shall pay Contractor all actual direct labor costs incurred on the Work prior to such notice, plus any reasonable unavoidable cancellation costs which Contractor may incur as a result of such termination.

ARTICLE 19 PUBLICITY

Contractor shall not issue news releases, publicize or issue advertising pertaining to the Work or this Agreement without first obtaining the written approval of Company.

ARTICLE 20 CONFIDENTIAL INFORMATION

All information relating to the Work or the business of Company, including, but not limited to, drawings and specifications relating to the Work, shall be held in confidence by Contractor and shall not be used by Contractor for any purpose other than for the performance of the Work or as authorized in writing by Company. All drawings, specifications, or documents furnished by Company to Contractor or developed in connection with the Work shall either be destroyed or returned to Company (including any copies thereof) upon request at any time.

ARTICLE 21 INCIDENTAL/CONSEQUENTIAL DAMAGES

Other than with respect to a force majeure as provided in Article 5 and Contractor's compliance therewith, Company expressly reserves its right to seek all incidental and/or consequential damages that may arise from the scope of Work of Contractor's performance and/or non-performance herein or regarding any of Contractor's employees, sub-contractors, agents and/or representatives; provided, however, that in no event shall Contractor have the right to assert any claims of incidental and/or consequential damages against Company.

ARTICLE 22 MISCELLANEOUS.

22.01 Waiver: No waiver by Company of any provision herein or of a breach of any provision shall constitute a waiver of any other breach or of any other provision.

22.02 Headings: The headings of Articles, Sections, Paragraphs, and other parts of this Agreement are for convenience only and do not define, limit, or construe the contents thereof.

22.03 Severability: If any provision of this Agreement shall be held invalid under law, such invalidity shall not affect any other provision or provisions hereof which are otherwise valid.

22.04 State Law Governing Agreement; Consent to Jurisdiction: This Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Kentucky, without regard to its principles of conflicts of laws. The site of any legal actions between the parties shall be held in state and/or federal court in Louisville, Kentucky.

22.05 Enforcement of Rights: Company shall have the right to recover from Contractor all expenses, including but not limited to fees for inside or outside counsel hired by Company, arising out of Contractor's breach of this Agreement or any other action by Company to enforce or defend Company's rights hereunder.

22.06 No Third Party Beneficiaries: Except for Contractor and Company, there are no intended third party beneficiaries of this Agreement and none may rely on this Agreement in making a claim against Company.

22.07 Notices: All notices and communications respecting this Agreement shall be in writing, shall be identified by the contract number, shall be designated for LG&E and KU Services Company, or the appropriate Affiliate, and

shall be addressed as follows (which address either party may change upon five (5) days prior notice to the other party):

To Company:

To Contractor:

LG&E and KU Services Company
Attn: Manager, Supply Chain
P.O. Box 32020
Louisville, Kentucky 40232

Fax No. _____

ARTICLE 23 LIABILITY OF AFFILIATES

Any and all liabilities of LG&E and KU Services Company and/or its Affiliates under this Agreement shall be several but not joint.

IN WITNESS WHEREOF, the parties have entered into this Agreement as of the Effective Date.

LG&E AND KU SERVICES COMPANY

Signature

Signature

Name (Please Print)

Name (Please Print)

Manager Supply Chain

Title

Title

Date

Date

Contractor Code of Business Conduct

This LG&E and KU Services Company (a Kentucky corporation) Contractor Code of Business Conduct (“Code”) is incorporated by reference into the General Service Agreement or other agreement between you as the contractor (“Contractor”) and LG&E and KU Services Company

and/or one of its affiliates Kentucky Utilities Company, and Louisville Gas and Electric Company (collectively the “Company”). This Code sets minimum standards for Contractor’s conduct in the areas addressed. Contracts between Company and Contractor may provide for standards exceeding the standards of this code.

Observance of Laws

Contractor shall fully comply with the provisions of all federal, state and local laws, regulations and ordinances applicable to its activities performed for the Company or any goods or services provided to or on behalf of the Company, including without limitation, all applicable laws, regulations and ordinances pertaining to occupational health and safety and environmental protection.

Bribes and Kickbacks

Contractor may not under any circumstances accept or pay bribes, kickbacks or other similar compensation or consideration in any way relating to the Company or any activity for or on behalf of the Company.

Dishonest and Fraudulent Activity

Contractor shall not engage in or allow its employees to engage in dishonest acts or fraudulent activity in connection with or in association with the Company’s business. For purposes of this policy, the definition of a dishonest act or fraudulent activity includes but is not limited to:

1. An intentional or deliberate act to deprive the Company or any person of something of value, or to gain an unfair benefit using deception, false suggestions, suppression of truth, or other unfair means which are believed and relied upon.
2. A dishonest act or fraudulent activity may be, but is not limited to, an intentional act or activity that is unethical, improper, or illegal such as:
 - a. Embezzlement;
 - b. Misappropriation, misapplication, destruction, removal, or concealment of property;
 - c. Alteration or falsification of paper or electronic documents, including the inappropriate destruction of paper or electronic documents;
 - d. False claims and/or misrepresentation of facts;
 - e. Theft of an asset, including, but not limited to, money, tangible property, trade secrets or intellectual property;

Harassment

Contractor shall not permit sexual advances, actions, comments, or any other conduct that creates an intimidating or otherwise offensive work environment on Company property or any site where Contractor is performing activity for or on behalf of Company. Further, Contractor shall not permit the use of racial and religious slurs, or any other conduct that breeds an offensive work environment, on Company property or any site where Contractor is performing activity for or on behalf of Company.

Drugs and Alcohol

Contractor shall not allow any employee to perform services for or on behalf of Company while under the influence of drugs or alcohol. Contractor shall maintain a drug and alcohol testing program meeting all applicable federal, state and local laws, regulations and ordinances and

meeting or exceeding any and all standards stated in any contract with Company or any document incorporated in such a contract.

Misuse of Company Assets

No funds or assets of the Company may be used or paid for any unlawful or improper purpose. A Contractor's employees shall not have access to any Company computers unless the contract between such Contractor and the Company expressly provides for such access in writing.

Reporting of Violations

In the event Contractor learns of any violation of this Code, Contractor shall immediately report such violation to Company's Director, Compliance and Ethics at (502) 627-2648.

LG&E AND KU SERVICES COMPANY
Request for Proposal # 3682
Amendment #1
12.05.2014

Questions:

1. Do the Companies have commencement, milestone or completion date requirements for this project?

No.

2. Do the Companies have a maximum budget that they wish to direct to the Contractor?

No we do not.

3. Would the Companies like the electric and natural gas studies to be priced as *standalone* studies? Or would the Companies like to know *their portion* of the overall combined electric and gas study?

The latter.

4. Will the load forecast for each utility be provided to the contractor?

We would ask the contractor to create their own base line forecast, but the utility will provide ours as a benchmark.

5. Can the Company provide a list of the market research that has been completed to date? i.e. existing market penetration of EE technologies in the industrial sector.

Only market research is associated with survey activity. This will be provided to winning bidder.

6. Can the Company provide an example of the customer information that will be made available to the contractor?

The Company will provide customer premise, contact, and historic consumption level details. If additional information is needed the bidder should request. The Company will work with the winning bidder to ensure the appropriate information is provided.

7. Will the Companies provide avoided costs to be used in cost-effectiveness testing?

Yes

8. Can the Company provide a list the roles of the internal project team members that will be assigned to this project and an estimate of their time commitment over the course of the project?

There will be a dedicated project lead reporting directly the Energy Efficiency Management Team. This lead will coordinate all other interactions with company personnel.

9. Will the Company staff recruit industrial facilities to participate in onsite data collection activities?

Yes, the company will assist with this effort.

10. When modeling statutory opt-out, are there specific scenarios that the Companies would like considered?

Not at this time. We look to the bidders to provide their approach to this topic.

11. What are the limits that define if an Industrial customer has the option of opting out? i.e. demand limit, energy consumption limit, rate class, transmission vs distribution distinction, etc.

These have not been clearly defined within the Commonwealth of Kentucky. The definitions provided in the RFP describe the Company's current perspective. All customers meeting these definitions would be considered "industrial" regardless of size, energy, demand, etc.

12. Do the Companies consider "wasted energy" to cover only specific types of waste, such as waste heat losses, or is this term meant to broadly capture inefficient operations, including items like equipment that is left running while not required?

The latter

13. What is the driver or goal for separating "wasted energy" from other energy efficiency opportunities?

Ties to program capabilities and what is achievable.

14. Would it be acceptable for a contractor's proposed solution to avoid separating "wasted energy" from the sub-set of energy efficiency opportunities?

Yes

15. For the scope of work section 2.1.10, where the contractor is requested to develop EE potential supply curves for each year of the study, would the Companies be open to proposals where the frequency for which these curves are developed is different, according to standard practices used by the contractor in past projects and how the contractor felt they could provide best value?

Yes, as long as there is clear explanations and documentation for the differences.

16. For the scope of work section 2.1.10 referencing supply curves for all customers. Is this the EE supply curves for industrial customers participating in the proposed industrial programs used in the modeling of programmatic potential?

Yes, these would be.

17. For this energy efficiency potential study covering the span of 2016-2035 would it be acceptable to present the efficiency potential results based on milestone years instead of annually (ie. 2016, 2020, 2025, 2030, 2035)?

Yes.

18. Section 2.1.11 outlines requirements of a detailed plan identifying recommended energy savings measures and programs

- a. Does a company wish to elaborate in any more detail, their requirements for the level of detail in the plan items a-h?

The Companies primary emphasis is a-c. The bidders should provide thorough details to describe measures/methodologies supporting their potential analysis. Sections d-h is secondary and details should be provided to assist the Company in thinking about programmatic opportunities.

- b. What are the Companies' avoided cost?

To be provided upon successful contract with confidentiality.

- c. Does the Company, in Item b, want a plan for how the market barriers will be identified? Or does the Company want the Contractor to detail out what the market barriers are.

Detail description of what the market barriers are.

19. Can the Companies specify the quantity of Industry types, and what portion of load the industry types represent?

The industrial sector represents ~40% of the Company's system load. Details surrounding the industry types will be provided up on contract. Our system is heavily manufacture based. Stainless steel, automotive, chemical, etc.

20. Section 3.8 of the RFP requests that bidders summarize their pricing proposal in Attachment F, "PRICING SUMMARIES." Do you have a pricing template that bidders should provide pricing in?

There is no pricing Attachment. LKS would like to get pricing back as: hourly rates by skill set(s), estimated hours per skill set/rate and a total estimated cost.



**Energy Efficiency Potential
Study for Industrial Electric and
Natural Gas Metered Customers
Request for Proposal #3682**

December 12, 2014

**LG&E and KU Services Company
820 West Broadway
Louisville, KY 40202**

The Cadmus Group, Inc.

An Employee-Owned Company • www.cadmusgroup.com

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Prepared by:
Travis Walker
Hossein Haeri, PhD

December 12, 2014



Hossein Haeri
Senior Vice President
Cadmus Energy Services Division

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Attachment F. Pricing Summaries

Attachment G. Cadmus Resumes

Introduction

Louisville Gas and Electric Company and Kentucky Utilities Company (the Company) require a qualified energy services firm to perform an independent assessment of demand side management (DSM) potential in the industrial sector. The study will satisfy the Kentucky Public Service Commission's order for case 2014-00003 requiring the Company to commission industrial energy efficiency potential or market-characterization study within three months.¹

Cadmus' team of industry-leading professionals will use transparent and robust analytics to produce a rigorous assessment of the Company's industrial DSM potential. Assessments of industrial energy efficiency potential often rely exclusively on national data sources such as various Industrial Assessment Center (IAC) databases and the U.S. Energy Information Agency's Manufacturing Energy Consumption Survey. Although these sources are invaluable, they must be combined with Company-specific primary data collection to understand the following:

- **Industrial Standard Practice.** Large industrial customers invest in energy efficiency because it yields cost savings—industrial measures often have a short payback and are therefore naturally adopted by facility managers. Cadmus will conduct focus groups and surveys to identify which energy efficiency measures are standard practice. For measures that are not standard practice, we will assess the barriers to adoption.
- **The willingness of large customers to opt in to industrial programs.** Kentucky DSM rules (KRS 278.285 [3]) permits industrial customers to opt out of utility-sponsored DSM programs.² To provide realistic estimates of programmatic DSM potential, Cadmus will assess customers' willingness to opt in to DSM programs and explore the conditions under which they are likely to do so and their expectations from the Company, including information, technical assistance and financial incentive, and the likely rate impacts of such programs.
- **Energy efficiency measure savings, costs, and applicability.** Robust estimates of energy efficiency potential depend on up-to-date research on the savings, costs, and applicability of measures. These estimates vary from one industry to another and thus must account for the Company's unique mixture of industries.

¹ Public Service Commission, Commonwealth of Kentucky. Case No. 2014-00003. "Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for review, modification, and continuation of existing, and addition of new, demand-side management and energy-efficiency programs." January 17, 2014. Available online: http://psc.ky.gov/pscscf/2014%20Cases/2014-00003//20141114_PSC_ORDER.pdf.

² Commonwealth of Kentucky. "Statute KRS 278.285 (3) Demand-side management plans." Available online: <http://www.lrc.ky.gov/Statutes/statute.aspx?id=14100>.

Cadmus' analysis will rely on industrial customer survey data previously collected by the Company. We will supplement this data with phone surveys and focus groups to understand what efficiency measures are already standard practice.

Cadmus will use its transparent Microsoft Excel-based energy efficiency potential model to assess the Company's energy efficiency potential that is technically feasible, cost-effective from a total resource cost perspective, realistically achievable, and can be readily acquired through programs. Our analysis will account for naturally occurring savings due to state codes, federal equipment standards, and industry standard practice. The methods used in this analysis will be consistent with those used in assessing the Company's residential and commercial energy efficiency potential, which has been vetted by the Company and the stakeholders.

If the Company expresses interest, Cadmus will complete an optional demand response potential task. This task will consider peak savings potential for industrial curtailment and pricing programs. It will involve a thorough review of similar programs offered by other utilities and rigorous analysis of potential peak savings.

The Cadmus Team

Cadmus is a nationally recognized energy and environmental consulting firm with a staff of approximately 400 professional consultants in five major offices across the United States. Cadmus' Energy Services Division, which is submitting this proposal, provides services to utilities, government agencies, and various stakeholders in these areas:

- Energy policy, planning, and forecasting
- Energy efficiency, demand response, renewable energy, and distributed generation policy and planning
- Market assessment
- Program design and evaluation
- Utility integrated resource planning
- Support and expert witness testimony to regulatory entities

Cadmus is partnering with Thoroughbred Research Group, an industry leader in market research, phone surveys, and focus groups. For over 30 years, Thoroughbred Research Group has collaborated with utility and power clients to help them grow their brands and market share. Through a myriad of thorough research services, it provides utilities with the clarity and objectivity necessary to fully assess their market position and opportunities. Thoroughbred achieves this through a strict adherence to its fundamental philosophy—actionable data begins with a consultative design approach.

Whether it is customer satisfaction, power preferences, or market evaluation, Thoroughbred delivers the insight utilities need for reporting, evaluating, and decision-making. It delivers only the research

needed because it tailors the data collection and developmental research services to the client’s specific initiative.

Cadmus’ DSM Potential Study Experience

Cadmus has performed more than 25 DSM potential studies for investor-owned and public utilities during the past five years, many of which were of similar size and scope to the study required by the Companies. Nearly all of these studies involved a rigorous analysis of DSM potential in the industrial sector. Some of these studies included analysis on the demand response potential for commercial and industrial (C&I) curtailment and pricing programs. Table 1 lists recent DSM potential studies completed by Cadmus.

Table 1. Recent Cadmus DSM Potential Studies

Client	Year(s) of Study	Fuel	Demand Response
National Grid	2014	Electricity	
OGE Energy and the Public Service of Oklahoma	2014	Electricity	✓
Missouri River Energy Services	2014	Electricity	✓
Puget Sound Energy	2014, 2012, 2010, 2008, 2006	Combination	✓
Georgia Power	2014, 2012	Electricity	
Los Angeles Department of Water and Power	2013–2014	Electricity	
Central Iowa Power Cooperative	2013	Electricity	
Louisville Gas and Electric and Kentucky Utilities	2013	Combination	
Iowa Utility Association	2012, 2007	Combination	✓
Dayton Power & Light	2012, 2009	Electricity	
PacifiCorp	2012, 2010, 2006	Electricity	✓
Tacoma Power	2013, 2011, 2009	Electricity	
Efficiency Maine Trust	2012	Electricity	
Vermont Department of Public Service	2010	Electricity	
DTE Energy	2010	Combination	
Ameren Illinois Utilities	2009	Combination	
Commonwealth Edison	2009	Electricity	
NorthWestern Energy	2009	Electricity	

Cadmus’ DSM Potential Models

The estimation of energy-efficiency potential is computationally complex and requires large amounts of data. Cadmus possesses the expertise and understands the importance of providing transparent, flexible products that demonstrate the methods used in the analysis and facilitate scenario and sensitivity analysis. We use a tool we developed, Excel Potential Model, to assess technical and economic

potential. Based on Microsoft Excel, this tool enables users to trace all calculations—from base-case forecast to measure characterization—when estimating potential.

Cadmus understands both the importance of the estimated potential to utility planning and target-setting **and** the complexities involved in estimating energy-efficiency potential. Our tools have the flexibility to model energy efficiency potential by fuel. We can also create separate models for the Company to reflect alternative scenarios regarding market acceptance and avoided costs. (More detailed descriptions of these are provided in Section 3.) Additionally, we have tools for analyzing various aspects of energy efficiency planning and assessment, including program planning and budgeting, portfolio design, and resource assessment.

Organization of this Proposal

The remainder of this document is organized as follows:

- ***Project Team*** presents our project team and details of their experience relevant to this project
- ***Scope of Work*** presents a detailed description of our proposed approach for estimating potentials (our technical approach)
- ***Schedule of Deliverables*** presents our timeline and schedule of deliverables
- ***References*** provides references for current and completed projects
- Attachment A. Conditions of Bid
- Attachment B. Bidder Information
- Attachment C. Company Profile
- Attachment D. Business Classification
- Attachment E. Bid Clarification and/or Exceptions
- Attachment F. Pricing Summaries
- Attachment G. Cadmus Resumes

Project Team

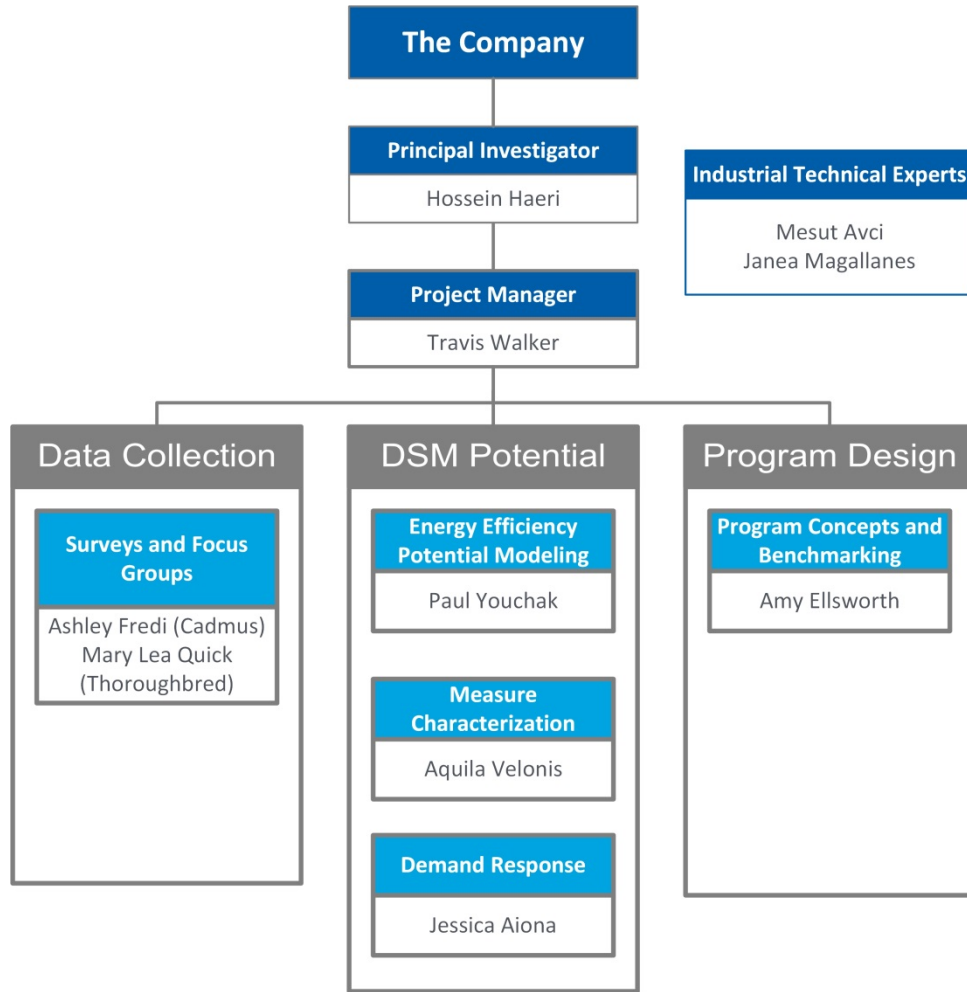
Successful completion this project requires professionals who are both expert in the various fields of analysis **and** familiar with the unique characteristics and regulatory environment of the client. Cadmus' project team is well qualified to meet both of these criteria.

Project Leadership

Figure 1 presents the general project management structure we propose to meet the requirements of this study. To provide continuity and maximize efficiency, this Cadmus team will be managed primarily by the same members of the Cadmus staff who oversaw the Company's residential and commercial potential studies. This team will be supported by our experienced staff of industrial engineers, data analysts, and industry experts as needed. Key members of our proposed team include the following individuals:

- ***Dr. Hossein Haeri*** will be the principal investigator on this project, combining his experience in potential assessments, program planning, evaluation, and the regulatory environment to oversee the quality assurance, analytic rigor, and transparency of the project deliverables.
- ***Travis Walker*** will serve as the day-to-day project manager and will oversee tasks related to estimating technical and economic energy efficiency potential. He has managed potential assessments of similar size and scope for a number of utilities.
- ***Ashley Fredi*** will work with ***Mary Lea Quick*** of ***Thoroughbred Research***, both located in Kentucky, to manage phone surveys and focus groups

Figure 1. Project Management



Brief biographies of key staff are provided below, and resumes are contained in Appendix A.

Hossein Haeri, PhD

Hossein Haeri, senior vice president at Cadmus, has more than 25 years of experience in research, consulting, utility management, and teaching in the energy utility industry. Working in Cadmus’ Energy Services Division, Dr. Haeri specializes in utility strategic planning, integrated resource assessment and portfolio analysis, demand response planning and market assessment, and performance measurement.

Before joining Cadmus, Dr. Haeri was the director of Energy Information Systems at Chevron Energy Solutions (formerly PG&E Energy Services), where he led a team of engineers and IT professionals to design and develop remote monitoring and control systems to support the company’s performance contracts. He was a principal at the consulting firm of Barakat and Chamberlin and managed demand-side planning and assessment at Central Maine Power.

Amy Ellsworth, Principal

Amy Ellsworth, a principal at Cadmus, has 17 years of experience in the energy and environmental industries. She leads Cadmus' Program Design practice, managing a team of 10 professionals. She has expertise in renewable energy; energy-efficiency; climate change technologies, markets, and policy; and primary research and project management. At Cadmus, Ms. Ellsworth's work spans program design, process evaluation, portfolio evaluation management, and community planning. She applies this experience to innovative utility program design, implementation challenges, and best practices. She routinely works with large groups of stakeholders with wide-ranging objectives to identify areas of common interest and reach consensus. Ms. Ellsworth also frequently assists utility clients beyond the program planning stage, supporting the regulatory approval process, developing operating strategies, and assisting with program implementation.

Travis Walker, Associate

Travis Walker, an associate with Cadmus, performs project management and data analysis, with an emphasis on demand-side management potentials assessments, load forecasting, and evaluations of utilities' energy efficiency programs.

Before joining Cadmus, Mr. Walker was a power planning and management intern with the Eugene Water and Electric Board, where he developed econometric load forecasting models for integrated resource planning.

Ashley Fredi, Senior Analyst

Ashley Fredi, a senior analyst with Cadmus, has extensive experience managing a broad range of process and impact evaluations and is proficient in both quantitative and qualitative data analysis in the residential, commercial, and industrial sectors. Ms. Fredi assists in managing large evaluation projects and skillfully coordinates evaluation research activities, including data collection from multiple sources. She applies her professional skills to a broad range of tasks, including survey and interview guide design, implementation, and analysis; data compilation, organization, and analysis; project coordination; budget management; and report preparation. Ms. Fredi is a skilled communicator and is experienced leading large teams to deliver quality program evaluations for clients across the United States.

Before joining Cadmus, Ms. Fredi developed extensive administrative coordination skills working in the legal sector, and she assisted with ecological research for the University of Kentucky.

Aquila Velonis, Senior Associate

Aquila Velonis, a senior associate with Cadmus, conducts quantitative and qualitative engineering data analysis for a broad range of projects, including energy-saving potential assessments, utility program planning (prescriptive and custom programs), and energy-efficiency program evaluations. He is experienced in the areas of renewable energy, engineering modeling, energy efficiency, program planning, codes and standards, technical reference manuals (TRM), and measurement and verification (M&V). In addition, Mr. Velonis has many years of experience in the solar photovoltaic industry, having successfully designed and managed both residential and commercial installations.

Mesut Avci, Associate

Mesut Avci, an associate at Cadmus, conducts onsite verification, metering, and energy assessments at industrial facilities. Dr. Avci's expertise encompasses data-logging a wide range of equipment types and sizes as well as conducting qualitative and quantitative analyses. He has also worked on several research projects in production intensity reduction (e.g., reducing the amount of energy required to manufacture a product) and innovative energy management strategies.

Before joining Cadmus in 2013, Dr. Avci was a lead energy engineer/consultant at the U.S. Department of Energy IAC at the University of Miami. His key responsibilities entailed leading engineering teams to conduct onsite industrial energy assessments in Florida and Puerto Rico, writing formal reports for these assessments, and coordinating energy-related research at the center.

Jessica Aiona, Associate

Jessica Aiona, an associate at Cadmus, specializes in demand response potential assessments and cost-effectiveness analysis and has managed numerous projects for clients across the country. Ms. Aiona conducts quantitative and qualitative data analyses for a broad range of projects, including multiyear portfolio evaluations, market characterizations, and codes and standards attribution analysis. Her responsibilities include performing benefit/cost analysis for planning and evaluation purposes, survey design, data analysis, potential modeling, reporting data trends and findings, and project management.

Janea Magallanes, Associate

Janea Magallanes, an associate with Cadmus, provides expertise in energy efficiency, distributed generation, and energy management within the industrial sector. Ms. Magallanes conducts on-site verification, metering, energy assessments, and project development for industrial facilities.

Before joining Cadmus, Ms. Magallanes was a senior energy engineer for Siemens Industry, where she performed site assessments, design, and engineering for energy efficiency and distribution generation projects in the industrial sector. Previously, she was with Ameresco Intelligent Systems, performing industrial energy audits and developing energy management action plans.

Paul Youchak, Analyst

Paul Youchak, a Cadmus analyst, provides quantitative analyses and support for clients of the Energy Services Division. Mr. Youchak is experienced in supply-side risk assessment, energy efficiency potential studies, program impact evaluation.

Before joining Cadmus in April 2013, Mr. Youchak was a research assistant in the economics department at MIT assessing the economic impacts of ozone pollution. He also worked as an intern at the Pacific Northwest National Laboratory (PNNL), where he modeled state-level nuclear proliferation. Through these experiences, he performed economic impact and policy analysis using econometric and statistical techniques.

Mary Lea Quick, Director of Qualitative Research, Thoroughbred Research Group

Mary Lea Quick is Thoroughbred Research Group’s director of qualitative research. She directs all aspects of project management from client services, research planning, logistics, and administration. She has served as the daily point of contact for multiple clients, from project launch to the final delivery of data. She specializes in focus group facilitation, on-line groups, and one-on-one interviews. Ms. Quick holds a Master of Business Administration and a Bachelor of Science in Business Administration, both from the University of Louisville.

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Scope of Work

Cadmus' proposed approach for this project entails these key tasks:

- Task 1. Project Management
- Task 2. Data Collection
- Task 3. Estimation of Energy Efficiency Potential
- Task 4. Development of a Plan and Program for Delivering the Potential
- Task 5. Preparation and Presentation of the Final Report
- Task 6. Expert Witness Testimony
- Task 7. Optional Demand Response

This section describes these tasks and the methods for accomplishing them.

Task 1. Project Management

Project management is a fundamental effort that lasts for the duration of the project. Its key components encompass both one-time events (the project initiation meeting) and ongoing activities (communication and quality assurance). Consequently, we have assigned a dedicated principal and an experienced project manager to conduct day-to-day management and to assist team members in their tasks. This approach ensures that both the Cadmus team and Company staff members are informed regarding the project's progress and any issues that may arise over the course of the study. As the prime contractor, we will also oversee the efforts of the subcontractor.

Project Initiation Meeting

Cadmus believes that preparing a well-conceived, well-structured statement of work and work plan at the outset of the project is critical. Thus, within one month of being awarded the contract, we will organize a project initiation meeting between key project team members and the Company staff. Also, one week in advance of the meeting, we will submit a data request to the Company listing the information required to complete our analysis. Any questions regarding our data request can then be discussed before or at the meeting.

The primary objectives of this meeting include the following activities:

- Introduce key Company and Cadmus staff and define the project roles.
- Establish management and communication protocols.
- Identify major milestones and work products to be delivered, along with corresponding timelines.
- Provide demonstrations of our analytic tools, if desired by the Company.

After this meeting, we will work with the Company to document the resulting management structure, timeline, deliverables, and procedures. This document will also include the contact information for all

key personnel at both companies, which will facilitate communication and collaboration throughout the project.

Communication

Cadmus understands that ongoing communication is critical to the success of this study. Thus, we will schedule a recurring conference call to discuss project status with Company staff. We recommend the following communication schedule:

- Regularly scheduled status update conference calls (monthly, at a minimum) with Company staff to communicate updates about the project status, issues, and results; and
- In-person meetings and conference calls at key points in the study with Company staff to ensure effective decision-making.

Also, although our analytical staff members are based primarily in Portland, Oregon, our team members who are responsible for the market data collection are located in Kentucky to facilitate communication with staff.

Quality Assurance

Cadmus has a firm-wide quality assurance system to ensure that projects are completed at the highest possible level of quality within project schedules and budget. For this project, we will designate a senior quality assurance lead to review all work products before they are delivered to the Company. This review will focus on the methodology, transparency, accuracy of the results, technical content of materials, and how they are presented.

Task 2. Collect Data

The Cadmus team will collect all of the data necessary for an accurate, relevant potential assessment. This entails the compilation of a large and complex database of information on:

- Utilities (loads and sales forecasts)
- Market data (Industry-specific research)
- End uses (sales by end use and facility type)
- Measure characteristics (technical specifications, life, savings, costs, applicability)

We will compile these data using an incremental approach, which begins with a search of secondary sources. Once the secondary sources are exhausted, we will identify gaps in the data and proceed with primary research. This part of the proposal describes the data requirements and our proposed methodology for obtaining various data elements.

Task 2a. Collect Data from Company

Our preferred approach is to use Company service territory-specific data where possible so that we can customize our analysis. Data sources will include the following:

- **Energy Price Forecasts.** Our estimate of economic potential incorporates future energy prices to determine whether an energy-efficiency measure is cost-effective, as discussed in Task 3.
- **Cost-Effectiveness Assumptions.** Our estimate of economic potential accounts for state- or utility-specific cost-effectiveness assumptions (including discount rate, inflation rate, and line loss).
- **Historic and Forecast Customers and Energy Sales.** We use actual and forecast customer counts and energy sales data from the Company to calibrate our baseline energy consumption forecast.
- **Historic and Forecast Program Activity.** We use program data to understand current energy efficiency program activity and to remove projected program savings from our potential estimates.
- **Customer Databases.** We use industry classification information—such as the North American Industry Classification System (NAICS) or Standard Industrial Classification (SIC), often stored in utility customer databases—to segment customers and energy consumption for our baseline energy forecasts.

As discussed in Task 1, we will send a detailed data request for Company review before the project initiation meeting.

Task 2b. Mine Secondary Data Sources

The Cadmus team will begin data collection with a thorough search of a variety of reputable, publicly available secondary data sources, such as these national databases:

- Manufacturing Energy Consumption Survey
- IAC facility audit databases³
- U.S. Energy Information Administration (EIA) Form 861

Task 2c. Conduct Primary Research

Effective program design requires some primary data collection through interviews and focus groups to identify customer activities and preferences that cannot be obtained through literature review or other readily-available sources. Industrial customers are especially difficult to characterize because they are less homogenous than customers from other sectors. A small portion of industrial customers can account for a large share of total industrial sales.

³ This will include Kentucky-specific data from the Kentucky Industrial Assessment Center(KIAC). Available online: <http://www.engr.uky.edu/power/kiac/>.

The Cadmus team will field a large-n survey of industrial customers and small-n focus groups of the Company's largest industrial customers. We will perform these activities to achieve the following goals:

- Understand which energy efficiency measures customers implement as standard practice.
- Characterize the factors facility managers consider when choosing to invest in energy efficiency (payback, risk, etc.)
- Estimate how rate impacts may affect a customers' decision to opt in to utility-sponsored programs.
- Study barriers to investing in energy efficiency.
- Assess willingness to opt in to demand response programs, such as curtailment or pricing, given different incentive scenarios.

Before fielding surveys and conducting on-line focus groups, Cadmus will carefully review the Company's previous industrial survey to ensure we do not duplicate work. Cadmus' survey will supplement the Company's existing surveys, not supplant it.

Cadmus does not recommend on-site data collection because sales in the industrial sector can be highly sensitive to the sector's largest customers. Large customers are crucial to ensure unbiased results; if they do not participate in on-site assessments, study results will be skewed toward smaller customers. However, in our experience, large industrial customers have been more willing to participate in phone surveys and focus groups than in on-site assessments. To accomplish this we, propose the following two activities:

- **Industrial Customer Surveys.** The Cadmus team will field up to 120 phone surveys of the Company's industrial customers. We will determine the precise sample after we review the Company's industrial customer data. The sample design will be stratified by utility and customer size (in sales) to ensure we do not bias the results toward small industrial customers.
- **Industrial Customer Focus Groups.** We recognize the shortcomings of phone surveys in collecting open-ended responses. These responses can be crucial when characterizing such things as the reasons for investing in energy efficiency or the decision to opt in to utility-sponsored programs. To capture these more nuanced responses, the Cadmus team will moderate either in-person or online focus groups with facility managers from up to 10 largest industrial customers in the Company's service area.

Task 3. Estimate Energy Efficiency Potential

The Cadmus approach to estimating energy efficiency potential is based on industry standard practices. We will organize this complex process into three discrete tasks—performing measure characterization, developing baseline forecasts, and calculating potentials estimates.

Task 3a. Performing Measure Characterization

Our process begins with compiling a comprehensive database of technical and market data on all energy efficiency measures applicable to all end uses in various market segments. At a minimum, our database will contain the following:

- Measures analyzed by the U.S. Department of Energy's Industrial Assessment Centers
- Measures from Cadmus' extensive measures database, developed from industry reports (Lawrence Berkeley National Laboratory, the American Council for an Energy-Efficient Economy [ACEEE], the U.S. Department of Energy, etc.)
- Particular technologies identified by utilities to be of interest and relevant to the study

Qualitative Screening

Using all feasible measures, we will conduct a qualitative screen to evaluate the applicability of the measures to the Company's service territory. This approach creates a transparent process showing why certain measures may not be considered in the technical or economic potential. In general, we may exclude a measure from the analysis for the following reasons:

- It is not commercially available;
- It is not appropriate for the Company, based on weather or other considerations;
- It is at or below the prevailing code or standard in the first year that potential is estimated;
- It is standard practice (that is, the market is fully saturated);
- It increases peak demand; or
- It would be unrealistically expensive to install (such as requiring a major building renovation).

Some measures that pass the initial qualitative screen may be eliminated later if reliable data on savings or costs are unavailable.

We will review these criteria with the Company during the project initiation meeting and then finalize the list of energy efficiency measures.

Compile Measure Data and Populate Model

We will match the measures that pass the qualitative screen to applicable fuels, industries, and end uses and will expand this list to incorporate the complete database of measures.

For each measure, we will populate the database with the following information:

- Costs (full or incremental, depending on the measure);
- Energy and capacity savings as a fraction of end-use consumption (EUC);
- Expected useful life (EUL);
- Applicability (such as technical feasibility and current saturation);
- Adjustments for interactions with other end uses (including lighting and HVAC);

- Competition with other measures, to avoid double-counting of savings; and
- Secondary fuel benefits, if applicable.

We will compile these data from a variety of sources, each of which will be thoroughly documented. Preference will be given to Company-specific data and supplemented with regional and national data, as appropriate. Our sources will include the Company’s utility program tracking data, regional and national databases, and other assessments of potential in similar jurisdictions.

Task 3b. Developing Baseline Forecasts

Cadmus will develop baseline forecasts through using an industry-standard top-down approach.

Segmenting the Market

Cadmus’ first key activity in assessing potential is to identify the appropriate level of granularity for the analysis. For this, we will follow these steps.

1. We will begin by creating a model for each combination of utility and fuel (electricity and natural gas).
2. We will further disaggregate the analysis to specific market segments (industry type).
3. We will work with the Company to identify meaningful market segments. Possible industrial segments include:
 - Chemical Manufacturing
 - Computer Electronic Product Manufacturing
 - Electrical Equipment Manufacturing
 - Fabricated Metal Products
 - Food Manufacturing
 - Furniture Manufacturing
 - Industrial Machinery
 - Miscellaneous Manufacturing
 - Nonmetallic Mineral Products
 - Paper Manufacturing
 - Petroleum and Coal Products
 - Plastics Rubber Products
 - Primary Metal Manufacturing
 - Printing-Related Support
 - Transportation Equipment Manufacturing
 - Wood Product Manufacturing
4. We will further segment each of the identified markets into major end uses, such as lighting, heating, cooling, ventilation, plug load, and other applications expected to be relevant to the estimation of potential. Industrial end uses include the following segments:
 - Fans
 - HVAC
 - Indirect Boiler
 - Lighting
 - Motors Other
 - Other
 - Process Air Compressors
 - Process Electro Chemical
 - Process Heat
 - Process Other
 - Process Refrigeration and Cooling
 - Pumps

Forecast Baseline Consumption

Cadmus will create the baseline forecast by combining the inputs compiled in Task 2 to obtain average consumption estimates (by customer segment, construction vintage, and end use) summed up to the sector level. This bottom-up forecast assumes no future energy efficiency program activity, and it provides the basis for estimating technical potential for each sector, market segment, construction vintage, and end use, based on the following information:

- Current sales by industry
- Industrial sales forecasts
- Future codes and standards⁴

Cadmus will calibrate its end-use forecast to the Company's industrial forecasts to ensure that estimates of DSM potential are aligned with official company projections.

About Naturally Occurring Potential

Naturally occurring potential refers to reductions in energy use due to normal market forces, such as technological changes, energy prices, market transformation efforts, equipment turnover, and improved energy codes and standards.

As discussed above, our baseline forecasts *include the impacts of* future codes and standards. Thus, by accounting for naturally occurring potential in our baseline forecast, we avoid double-counting the savings and under-estimating the technical, economic, available, and programmatic potential.

⁴ The base-case forecast will include codes and standards already established, even if they do not take effect until future years. It will not, however, attempt to predict how codes and standards may change in the future.

Task 3c. Calculate Potentials

Cadmus defines different levels of energy efficiency potential according to the U.S. Environmental Protection Agency National Action Plan for Energy Efficiency (Figure 2).

Figure 2. Definitions of Energy Efficiency Potential

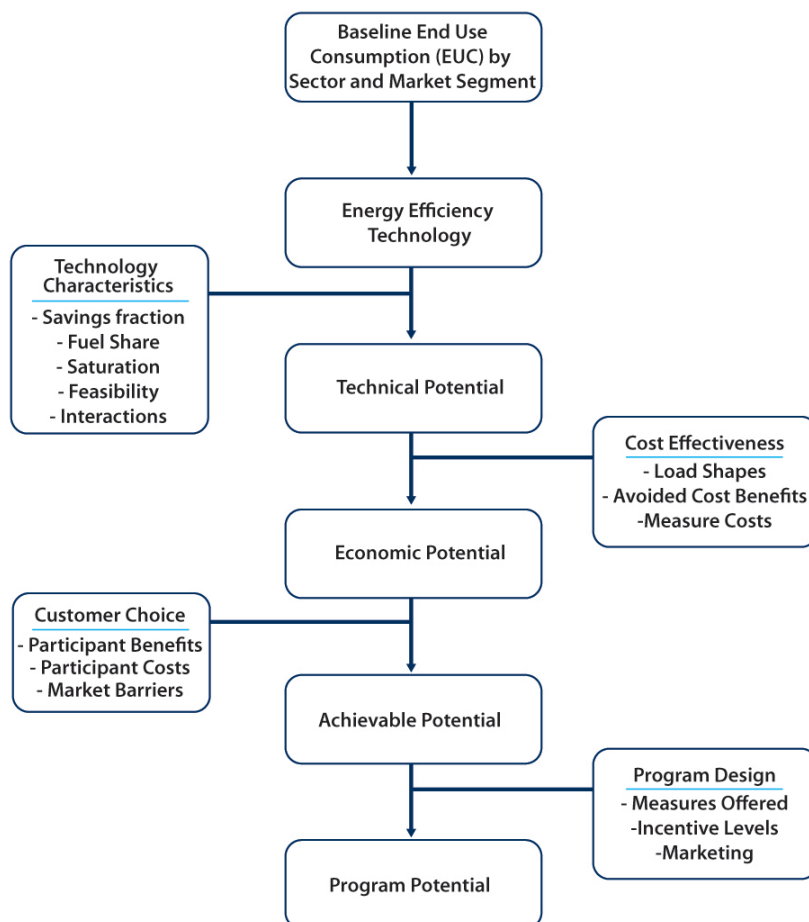
Not Technically Feasible	Technical Potential			
Not Technically Feasible	Not Cost-Effective	Economic Potential		
Not Technically Feasible	Not Cost-Effective	Market Barriers	Achievable Potential	
Not Technically Feasible	Not Cost-Effective	Market Barriers	Budget & Planning Constraints	Program Potential

National Action Plan for Energy Efficiency (2007)

- **Technical potential** assumes that all technically feasible energy efficiency measures are implemented regardless of their costs or market barriers.
- **Economic potential** represents a subset of technical potential, consisting only of measures meeting cost-effectiveness criteria.
- **Achievable potential** is the portion of long-run economic potential assumed to be reasonably achieved under the most aggressive acquisition scenario, accounting for barriers to customers' ability and willingness to participate in utility programs.
- **Program potential** represents the amounts of potential likely to be achievable annually once the utility's specific program design components—such as measures offered, incentive structures, marketing efforts, and program budget constraints—are taken into account.

Figure 3 illustrates the relationships among the various types of potential and our approach to estimating them.

Figure 3. Methodology for Estimating Technical, Economic, and Achievable Energy Efficiency Potential



About Estimating Technical Potential

Technical potential is the theoretical maximum amount of energy and capacity that could be displaced by efficiency, regardless of cost and other barriers that may prevent the installation or adoption of an energy efficiency measure. Technical potential is constrained only by technical factors such as technical feasibility and applicability of measures. In theory it could be acquired immediately by including early replacement of functioning equipment.

For each individual DSM measure, we estimate savings using this basic relationship:

$$SAVE_{ijm} = EUI_{ij} * PCTSAV_{ijm} * APP_{ijm}$$

Where:

- $SAVE_{ijm}$ = Annual energy savings for measure m for end-use j in customer segment i
- EUI_{ije} = Calibrated annual end-use energy consumption for end-use j in customer segment i
- $PCTSAV_{ijem}$ = The percentage savings of measure m relative to the base usage for the end use ij
- APP_{ijem} = Measure applicability, a fraction that represents a combination of the technical feasibility, existing saturation of electronically commutated motors, end-use interaction, and any adjustments to account for competing measures

Cadmus’ proposed method for estimating phase-in technical potential is based on the industry-standard bottom-up approach, in which the phase-in technical potential is estimated by introducing all technically feasible measures into the baseline forecast and calculating the resulting impacts.

The Cadmus method fully captures the interactive effects associated with installation of multiple measures. Through this process, each measure reduces the baseline consumption that the subsequent measure is compared to, thus ensuring that savings estimates do not exceed baseline loads. This iterative approach produces more accurate results than if measures are considered in isolation.

We will perform the technical potential analysis using Microsoft Excel 2010 and will provide the Company with all inputs, outputs, and calculations in a workbook. This workbook will contain the assumed number of measure installations in each year and the annual incremental and cumulative savings of each measure, allowing for summarization by segment and end use.

About Estimating Economic Potential

Cadmus estimates economic potential by applying cost-effectiveness criteria over the measure’s expected useful life. Cost-effectiveness compares the full life-cycle cost of each technically feasible measure to the value of its savings in terms of avoided energy and capacity costs; secondary fuel savings; non-energy resource savings; and other co-benefits such as avoided environmental externalities

Our methods for calculating cost-effectiveness closely follow the guidelines established by the California Standard Practice Manual, which is the standard approach in nearly all jurisdictions.

We will work with the Company to determine the appropriate cost-effectiveness criteria and integrate those criteria into our model. We frequently use benefit-cost ratios such as total resource cost (TRC) or utility cost to screen measures for cost-effectiveness.

Benefit-Cost Ratios

Cost-effectiveness is measured by the expected net present value of its benefits. A measure is considered cost-effective if its net benefits are greater than its costs.

- **Benefit Components.** The benefits we use in the calculation include the value of avoided time and seasonally differentiated avoided energy and capacity costs. Because these costs are typically measured at generation, we adjust for other avoided waste energy such as transmission and distribution losses and for co-benefits such as other fuel savings and externalities.
- **Cost Components.** The cost component of the TRC screening for the economic potential consists only of incremental measure costs. These are the incremental material and labor expenses associated with installation of the measure and its ongoing operation and maintenance costs (where applicable).

In estimating economic potential, we assume that where two or more technically feasible and cost-effective measures compete for the same end use, the one with the highest savings is installed first.

Once all measures have been screened, we apply the impacts of those deemed cost-effective to the baseline consumption estimates and create a separate forecast. The economic potential is calculated by subtracting this new forecast from the baseline forecast.

About Estimating Achievable Potential

Achievable potential is that portion of economic potential assumed to be achievable, considering the market barriers that may impede the adoption of energy efficiency measures or practices by consumers. For the purpose of this study, Cadmus defines achievable potential as an aggressive, energy efficiency resource acquisition scenario in which market barriers are assumed to be mitigated by incentives covering a large portion of the incremental cost of the efficiency measures, the availability of financing, and the application of best-practices marketing.

To add context to the analysis, we employ various methods to calculate market potential, which improves the overall quality and reliability of results. The underlying concept of assessing market potential is the conventional technology diffusion model. This model relates the adoption of energy efficiency measures over time to barriers that may prevent adoption.

Based principally on benchmarking, we will estimate market potential using the following three steps:

1. Using EIA historical data, estimate the relationship between energy efficiency expenditures and savings, relative to total sales. This step results in an estimate of elasticity of savings with respect to expenditures.
2. Determine baseline incentive amounts relative to total measure cost used in TRC calculations, based on historical information from the Company's programs.
3. Use the estimated elasticity and the baseline incentive levels to determine potential savings at different levels of incentives.

We will then benchmark the results against the actual performances of portfolios of similar energy efficiency programs offered by a few other utilities.

Using EIA Historical Data

The Cadmus approach to estimating achievable potential begins with a market-adoption curve based on the historical data for energy efficiency investments and savings. (These data are available from the U.S. Department of Energy, Energy Information Administration Form 861.)

Using these data, we estimate the slope (elasticity) of the relationship between annual utility expenditures on energy efficiency (relative to expected full incremental measure cost) and the realized savings (relative to the utility's annual sales). The relationship is expressed as follows:

$$\log(\% \text{ Savings}) = \beta_1 \text{Sales} + \beta_2 \log(\text{Incentive}) + \beta_3 \text{Rate} + \sum \beta_i \text{Time}_i$$

In this model, Time is an annual indicator variable to capture the variability of reported program savings over time, as utilities vary their program offerings from year to year.

We use the modeled elasticity β_2 to develop the relationship between incentive amount and achievable potential. The elasticity will be applied to the Company's program history to determine how savings would be likely to increase if incentives were increased to 100% of incremental measure cost.

To establish realistic bounds on the savings achievable by actual portfolios, we will further benchmark the derived estimates of market potential against actual recent program experience of utilities with similar programs. Since each approach adds value to the final achievable potential calculation, we believe that our combined approach provides the best results.

Consideration for Opt-Out Provision

Estimates of achievable potential must account for the percentage of customers that may choose to opt out of Company-sponsored energy efficiency programs. Presumably, a customer will opt out of the energy efficiency program if the rate impacts exceed the expected bill savings from energy efficiency. When this happens, the Company must understand if this will lead to increased rate impacts for opt-in customers (and in turn, an increased likelihood that those opt-in customers will then choose to opt out). Cadmus will use industrial surveys to assess customers' willingness to opt in to energy efficiency programs given certain levels of rate impacts and expected bill savings.

About Estimating Program Potential

The quantity of potential realistically achieved through energy efficiency programs can be best determined once programs have been designed and specific parameters have been established. Such parameters include the suite of measures to be offered, corresponding incentive levels, expected marketing efforts, and program budget limitations.

Program potential is ultimately dictated by targets and expenditure levels. The initial effort to determine program potential entails working with the Company to decide on a set of reasonable targets for savings

and budgets. By benchmarking against other utilities with similar portfolios, we will present possible savings targets and expenditure levels.



There are several indicators that may be used to decide appropriate expenditure amounts, including potential rate impacts. In many jurisdictions, the allowed expenditures are determined through regulation or legislation. In the absence of such requirements in Kentucky, the choice of an appropriate level of expenditure is likely to be based on a combination of considerations—public and regulatory expectations, the Company’s long-term resource acquisition objectives, and, critically, potential rate impacts.

About Supply Curves

Cadmus will use estimates of the technical, economic, and achievable assessments to deliver the Company with supply curves showing the relationship between the levelized incremental cost of conserved energy and the potential in each year. Our Excel-based tools (described in Figure 4 below) contain the data necessary to generate conservation supply curves for each sector and utility, as well as for the aggregate.

Figure 4. Cadmus’ Energy Efficiency Analysis Tools

ABOUT CADMUS’ CUSTOM SOFTWARE

<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div> <p style="margin: 0;">CADMUS</p> <p style="margin: 0;">Excel Potential Model</p> </div> </div> <p><i>Excel Potential Model</i> is a versatile tool expressly designed for estimating energy-efficiency technical and economic potentials. This tool allows for simultaneous assessment of energy-efficiency potentials for multiple sectors, market segments, and end uses for a full array of energy conservation measures and practices. It also delivers in flexible Excel 2010 spreadsheets a complete set of technical inputs, assumptions, and outputs of the technical and economic potentials assessment.</p>	<div style="display: flex; align-items: center; margin-bottom: 10px;">  <div> <p style="margin: 0;">CADMUS</p> <p style="margin: 0;">DSM Market Analyzer</p> </div> </div> <p><i>DSM Market Analyzer</i> is a planning tool for analyzing DSM potential savings and identifying market opportunities. It contains a database of costs, energy savings, and lifetime assumptions for every energy-efficiency measure or end use in our studies. It also provides the technical, economic, and achievable potentials across the planning horizon (the number of years over which the potential will be acquired).</p> <p>Through the interface, the user can: (1) manipulate and summarize the measure data with dynamic pivot tables; (2) analyze the potential; and (3) evaluate alternative resource acquisition strategies under alternative ramping assumptions. The tool also allows for the easy creation of conservation supply curves, as it includes both cumulative achievable potential in each year and levelized costs. Additionally, users can summarize potential by levelized cost and can view supply curves in graphical and tabular formats.</p>
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Task 4. Plan and Design Program

In this task, Cadmus will present the energy efficiency potential from Task 3 in the context of developing new DSM programs and/or modifying current program offerings to reach the calculated achievable potential and meet the needs of changing energy efficiency market conditions. Any energy efficiency measures that pass the TRC test will be bundled by similar sector and/or end-use to create a DSM program concept.

For measures identified as having good savings potential, we will consider the market barriers for each customer sector and evaluate innovative program offerings and implementation approaches that encourage adoption.

Cadmus' research on industry characteristics, including standard practice and barriers to adoption, will provide a good basis from which to define opportunities in various market sectors. We will review Kentucky's market characteristics, energy usage trends, and common utility distinctions to recommend opportunities to improve existing programs or add new programs, which may include specific measures and support services, program structures, incentive mechanisms, and marketing approaches.

The Company currently does not offer industrial DSM programs. We will look to best program design practices and the lessons learned from programs currently offered by other utilities in North America. We will also consider best practices technical approaches that incorporate quality installation standards and advanced energy management science. For a potential industrial program, we will provide:

- **Program description** that briefly describes the programs goals and objectives, intended target markets, incentives, expected savings and implementation process, based on utility best practices.
- **Eligibility requirements** that defines particular customer segments, size thresholds, and other characteristics that qualify a customer for participation.
- **Eligible measures** that list energy-efficient technologies, measures, technical services, and other support available to customers participating in the program.
- **Incentive amounts and structure** that specify the type and levels of incentives and how the incentives would be delivered.
- **Estimated energy savings** that use market size, anticipated penetration, and achievable savings-per-measure, rolled up to the program level.
- **Workflow** that uses process flow charts describing a typical customer participation process.
- **Market barriers and planned mitigation approach** that apply this information that is specific to each targeted market sector, program delivery approach, and individual technologies as appropriate.
- **Marketing approach** that identify the intended target market(s) and anticipated marketing strategies and tactics.

- **Quality assurance** that describe procedures for tracking program activities, progress and accomplishments, and how the results would be used to make modifications to the program when warranted.
- **Cost-effectiveness screening:** using Cadmus' DSM Portfolio Pro software to analyze the cost-effectiveness of energy efficiency programs at the measure, program and portfolio levels using various perspectives (total resource cost, utility cost, participant cost, and ratepayer impact),
- **Program costs:** providing detailed annual budgets for the program itemized by cost elements, including incentives, administrative costs, marketing expenses and evaluation budget.

Task 5. Report and Present Results

After completing tasks 2 through 4, Cadmus will prepare a draft report summarizing the inputs, assumptions, methods, and results of the analysis.

Preparing Draft and Final Reports

We will address comments provided by the Company, consistent with the schedule noted in the RFP and this proposal, and we will create a final report. Our general approach to reporting results will be to emphasize the key considerations and validity of our analytical methodology, and highlight the results and conclusions of our study.

Proposed Report Outline

The final report will be organized in two volumes. The first will provide an executive summary of the study findings, an introduction to the study, and the results of tasks 2 through 4 described above. The second volume will contain appendices documenting the data and tools underlying the results (including survey instruments, baseline data, and measure and technology costs and savings). The following is a tentative outline for first volume of the final report.

Contents of Volume 1

- Acknowledgements
- Executive Summary (Overview, Methodology, Planning Considerations)
- Introduction
 - Project Scope and Objectives
 - Definition of Resource Potentials
- Energy Efficiency Potentials
 - Methodology
 - Summary of Potentials (by fuel, utility)
 - Detailed Potentials (by segment and end use)
- Program Design
 - Recommendations (program-level descriptions and detail)

Quality Assurance

Our reports are subjected to a rigorous internal peer review process, which includes thorough reading by task managers, the project manager, and the principal investigator. Before we submit a report to the Company, it is also reviewed by a professional editor, who ensures the material is presented clearly, concisely, and in language suitable to the technical knowledge of the audience.

On-Site Presentations

The Cadmus team will deliver up to five on-site presentations of final results to Company staff and stakeholders at the completion of the project. We will bill these travel expenses at cost, as indicated in our cost proposal.

The Cadmus team will submit a draft of the presentation materials to the Company for review and comments three weeks before the first presentation. For subsequent presentations, we will submit any substantial changes to the materials as soon as possible if three weeks of review is not feasible.

Data Delivery

At the conclusion of the project, Cadmus will provide the Company with the following data and tools:

- Primary data (e.g., survey results and focus group notes) in Excel and Word format, either summarized or in raw form.
- Fully populated versions of our Excel tools described in (Excel Potential Model and DSM Market Analyzer) under bi-lateral nondisclosure agreements.

We will work with the Company to determine the most appropriate format to deliver data. If necessary, we can provide data in other standard database formats in addition to Excel.

Task 6. Provide Expert Witness Testimony

Cadmus staff members have expertise in the regulatory processes associated with DSM programs, rate design, and integrated resource planning. We have testified before state regulatory bodies, public utility boards, and the Federal Energy Regulatory Commission. We have worked with collaborative stakeholder groups in several states, including Kentucky (as a member of the Public Service Commission), California, Iowa, Utah, Washington, Nevada, Pennsylvania, Illinois, Indiana, Oregon, Maine, Missouri, and Massachusetts.

As discussed in our price proposal, we will provide all additional regulatory and stakeholder support services to the Company on a time-and-material basis, subject to a mutually acceptable scope of work.

Task 7. Optional Demand Response Potential Assessment

This task will consist of the following components:

- Determine what program offerings are included in the scope of the assessment
- Establish program inputs
- Conduct analysis and determine market potential estimates
- Report on our findings

Task 7a. Review Program Offerings

Cadmus will review possible industrial demand response program offerings, including critical peak pricing and curtailment programs. For each offering, we will research the programs of other utilities to understand best practices for these elements:

- Program design
- Program performance
- Program costs
- Marketing efforts
- Customer eligibility
- Participation rates

We will also interview Company staff about current demand response offerings. During these interviews, we will also discuss the utilities' interest in expanding their demand response offerings and their ability to do so, especially in the industrial sector.

Task 7b. Program Inputs

When we finalize the programs that will be included in the assessment, Cadmus will determine the following program inputs, each of which plays an important role in calculating market potential:

- ***Customer eligibility.*** Each program will have eligibility criteria. For example, the non-residential curtailment program would probably have a minimum demand requirement.
- ***Available load during peak periods.*** The available load during peak periods for eligible customers is determined by disaggregating each utility's hourly system sales by segment and end use. This allows for estimates of peak demand for average facilities or technologies.

- **Program and event participation.** After we identify the eligible demand and capacity, we will estimate the percentages of those that are likely to participate in programs and events. These percentages are informed by each utility's program history (if available) and by data that is available from other utility programs. Our analysis will focus on the remaining potential; that is, it will account for all existing programs, current participation levels, and load impacts.
- **Program costs.** We use the expected costs of deploying each program to develop the supply curves and to assess cost-effectiveness. We will gather cost information from the utilities and from other secondary sources.

Task 7c. Market Potential Estimates

After we finalize the program inputs, Cadmus will estimate market potential. We will use our in-house demand response market-assessment model to calculate the potential for each utility and each program. The identified market potential will represent an expected or medium level of demand impacts based on a most likely combination of program inputs. In practice, market potential may be higher or lower, based on actual market conditions and program design parameters.

To provide the utilities with added flexibility, we will generate cases that represent lower and upper bounds on market potential, based on the extremes of participation (due to higher or lower marketing efforts and incentive levels).

Cadmus will also estimate the levelized cost for each demand response program. The levelized-costs will serve as cost-effectiveness screeners and will be the basis for supply curves for each utility. Cadmus will create supply curves for the low-, medium-, and high-potential scenarios.

Task 7d. Reporting

Cadmus will include a section in the potential study report that details the program offerings, research conducted, methodology used for analysis, and our findings. Our report will show the potential for each program and each utility. We will also include supply curves and details on the levelized cost for each program.

Schedule of Deliverables

Table 2 shows Cadmus’ estimated time for completing the tasks and providing the corresponding deliverables. These estimates are based on our current knowledge of the project, our experience with similar projects, and our assumption that the project will start in January 2015. Meeting this timeline will require close coordination with the project team to ensure effective communications and rapid turnaround and delivery of all information required.

Table 2. Proposed Timelines and Milestones by Task

Task	2015											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Task 1 Management	1,2											
Task 2 Data Collection		3	4,5									
Task 3a Measure Characterization			6		7							
Task 3b Baseline Forecast					8							
Task 3c Potentials Estimate						9,10	11					
Task 4 Program Design								12	13			
Task 5 Reporting										14,15	16	17,18

Figure 5. Schedule of Project Milestones

Task	Milestone Number	Description	Tentative Date
1	1	Initial Data Request	1/15/2015
	2	Project Initiation Meeting (On-Site)	1/29/2015
2	3	Review Secondary Data	2/5/2015
	4	Phone Surveys Complete	3/17/2015
	5	Focus Groups Complete	3/24/2015
3	6	Initial Measure List to Company	3/24/2015
	7	Measure Characterization Complete	5/13/2015
	8	Baseline Forecast Complete	5/27/2015
	9	Initial Potentials Estimate	6/17/2015
	10	On-Site Review of Potentials	6/24/2015
	11	Potentials Estimate Complete	7/8/2015
4	12	Review Other Industrial Programs	8/7/2015
	13	Program Design Complete	9/7/2015
5	14	Draft Report	10/7/2015
	15	Draft Presentation	10/21/2015
	16	Final Report	11/20/2015
	17	Final Presentation (On-Site)	12/4/2015
	18	Deliver Data	12/11/2015

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References

Current Projects

[Redacted text block 1]

[Redacted text block 2]

[Redacted text block 3]

[Redacted text block 4]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Completed Projects

[REDACTED]

[REDACTED]

CADMUS

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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Attachment A. Conditions of Bid

Attachment A
CONDITIONS OF BID

In submitting a response to this RFP, respondent acknowledges and accepts the following conditions, and makes the following representations. **Please initial (blue ink) each sub-paragraph in each box below in your response.**

- A-1 **Ownership of Proposals** – All Proposals in response to this RFP are to be the sole property of Company, Louisville, Kentucky.
- A-2 **Oral Contracts** – Any alleged oral Contracts or arrangements made by a respondent with any employee of Company will be superseded by the written Contract.
- A-3 **Amending or Canceling Request** - Company reserves the right to amend or cancel this RFP, at any time, if it is in the best interest of Company
- A-4 **Rejection for Default or Misrepresentation** – Company reserves the right to reject the Proposal of any bidder that is in default of any prior contract or for misrepresentation.
- A-5 **Clerical Errors in Awards** – Company reserves the right to correct inaccurate awards resulting from its clerical errors.
- A-6 **Rejection of Qualified Proposals** – Proposals are subject to rejection in whole or in part if they limit or modify any of the terms and/or specifications of the RFP.
- A-7 **Presentation of Supporting Evidence** – If requested, respondent(s) shall present evidence of experience, ability and financial standing necessary to satisfactorily meet the requirements set forth in the RFP or those implied in the Proposal.
- A-8 **Consistency in Submissions** – The hardcopy submission of the Proposal will prevail in the case of a discrepancy between the electronic and hardcopy version of the documents.
- A-9 **Changes to Proposals** – No additions or other changes to the original Proposal will be allowed after submittal. While changes are not permitted, clarification at the request of Company may be required at the sole expense of the respondent.
- A-10 **Collusion** – In submitting a Proposal, the respondent implicitly states that the Proposal is not made in connection with any competing respondent submitting a separate response to the RFP, and is in all respects fair and without collusion or fraud.
- A-11 **Costs** – Company shall not be liable for any cost incurred by the respondent in the preparation of this RFP.
- A-12 **Subcontractors** – The use of subcontractors must be clearly identified and explained in the Proposal. The prime contractor shall be wholly responsible for the performance of the contract in its entirety whether or not subcontractors are used. Subcontractors shall be bound by the terms and conditions of any Contract with the respondent. The prime contractor shall indemnify and hold Company harmless from any and all activities related to the services provided by the subcontractor(s) under this contract.
- A-13 **Legal Compliance** – In submitting a Proposal, the respondent warrants that it is legally authorized to do business in the state of Kentucky, is in compliance with all applicable laws and regulations, is not prohibited from doing business with Company by law, order, regulation, or otherwise, and the person submitting the Proposal on behalf of the bidder is authorized by the bidder to bind it to the terms of the Proposal.

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Attachment B. Bidder Information

A. BIDDER'S COMPANY NAME The Cadmus Group, Inc.

B. BIDDER'S MAILING ADDRESS 100 Fifth Avenue, First Floor

Waltham, MA 02451

C. BIDDER'S PHYSICAL ADDRESS (if different from above) 720 SW Washington, Suite 400

Portland, OR 97205

D. PRIMARY CONTACT NAME Hossein Haeri, Ph.D., Senior Vice President

E. TELEPHONE NUMBER [REDACTED]

F. ALTERNATE PHONE NUMBER [REDACTED]

G. FAX NUMBER [REDACTED]

H. EMAIL ADDRESS [REDACTED]

I. RFP # 3682

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Attachment C. Company Profile

In five (5) pages or less, provide the following general information about your company.

- C-1 Name of company: [The Cadmus Group, Inc.](#)
- C-2 Address of company (primary place of business): [100 Fifth Avenue, First Floor, Waltham, MA 02451](#)
- C-3 Telephone number: [\(617\) 673-7000](#)
- C-4 Dun & Bradstreet number: [REDACTED]
- C-5 Tax identification number: [REDACTED]
- C-6 Age of company: [31 years](#)
- C-7 Size of company, including the number of employees: [REDACTED] [Employees](#)
[REDACTED] [Revenue](#)
[REDACTED] [Avg. Annual Growth \[REDACTED\] years\)](#)
- C-8 Year and state of incorporation, if relevant: [1983, Massachusetts](#)
- C-9 Provide a current Certificate of Insurance: [Attached as separate document](#)
- C-10 Recent or pending mergers, acquisitions or IPOs:

[REDACTED]

[REDACTED]

[REDACTED]

- C-11 Number of specifically relevant comparable accounts in which directly comparable services are provided, with a summary of the term of the account, the services provided, and the size of the account:

[At this time, Cadmus has approximately \[REDACTED\] projects that are current or recently completed that are similar planning and/or design studies. They are as follows:](#)



Project Title	Client	Value	Term Start and Duration (Months)	Description
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

C-12 Concise description of any business partners that may be providing support services as part of this RFP. This information should include the same information requested in Attachment B. Please clearly define the nature of the relationship (i.e. reseller, subcontractor, subsidiary, parent, unrelated joint bidder, etc.).

We are using one subcontractor, Thoroughbred whose Attachment C follows this page. Thoroughbred would act as a subcontractor for this project providing local support for data collection activities.

**Attachment C. COMPANY PROFILE
(Thoroughbred Research Group)**

In five (5) pages or less, provide the following general information about your company.

- C-1 Name of company -- Thoroughbred Research Group
- C-2 Address of company (primary place of business) – 1941 Bishop Lane, Suite 1017
Louisville, KY 40218
- C-3 Telephone number – 502.459.3133
- C-4 Dun & Bradstreet number -- [REDACTED]
- C-5 Tax identification number – [REDACTED]
- C-6 Age of company – 38 years
- C-7 Size of company, including the number of employees – [REDACTED] employees, [REDACTED] telephone
interviewing data collection centers ([REDACTED] CATI stations)
- C-8 Year and state of incorporation, if relevant – 1981, Kentucky
- C-9 Provide a current Certificate of Insurance
- C-10 Recent or pending mergers, acquisitions or IPO's -- [REDACTED]
- C-11 Number of specifically relevant comparable accounts in which directly comparable services are
provided, with a summary of the term of the account, the services provided, and the size of the
account
-

Following is a description of recent utility clients of Thoroughbred Research:

Client: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Client: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Client: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Client: [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

Attachment D. Business Classification

Identify which category(s) your company falls into (see below for classification definitions). Attach any certificates verifying your company as a Small Business, Small Disadvantaged Business, Minority Business Enterprise (MBE), Woman-Owned Business Enterprise (WBE), Disabled-Owned Business, or Veteran-Owned Business.

_____ Large Business – Over 500 people or dominant in field

x Small Business – Less than 500 people and not dominant in field

_____ Small Disadvantaged Business – Less than 500 people, not dominant in field and meeting criteria below

_____ Minority Business Enterprise

_____ Woman-Owned Business Enterprise

_____ Disabled Owned Business

_____ Veteran Owned Business

Tier 2 (Suppliers and Subcontractor) Use of MBE or MBE Firms

Company Name

Percentage or Value of Proposal

Thoroughbred Research _____

_____ ████ % _____

BUSINESS CLASSIFICATION DESCRIPTIONS

- A) Small Business – Defined as a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on government contracts, and qualified as a small business under the criteria and size standards in 13 CFR Part 121 (see 19.102). Such a concern is "not dominant in its field of operation" when it does not exercise a controlling or major influence on a national basis in a kind of business activity in which a number of business concerns are primarily engaged. In determining whether dominance exists, consideration shall be given to all appropriate factors, including volume of business, number of employees, financial resources, competitive status or position, ownership or control of materials, processes, patents, license agreements, facilities, sales territory, and nature of business activity.
- B) Small Disadvantaged Business – Defined as a small business concern that is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business that has at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals and that has its management and daily business controlled by one or more such individuals, This term also means small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned by one of these entities, that has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and that meets the requirements of 13 CFR 124.
- C) Minority Business Enterprise – Defined as a for profit enterprise, regardless of size, physically located in the United States or its trust territories, which is owned, operated and controlled by minority group members. "Minority group members:" are U.S. citizens who are African-American, Hispanic American, Native American, Asian-Pacific American, and Asian-Indian American. "Ownership" by minority individuals means business is at least 51% owned by such individuals or, in the case of a publicly owned business, at least 51% of the stock is owned by one or more such individuals. Further, the management and daily business operations are controlled by those minority group members.
- D) Woman-Owned Business – Defined as a business that is at least 51% owned by a woman or women who also control and operate it. "Control" in this context means being actively involved in the day-to-day management.
- E) Large Business – Defined as more than 500 employees
-

Attachment E. Bid Clarification and/or Exceptions

1. Bidder offers the following clarifications and/or exceptions taken to any requirement or provision of this RFP and any proposed modifications or replacement language for each clarification or exception (If none, so state.):

The Cadmus Group, Inc. has reviewed the terms and conditions provided as part of RFP 3682 which included the following documents:

- Administrative Services Agreement – Exceptions and clarifications noted below
- General Services Agreement Policy Procurement Statement – No exceptions
- Contractor Code of Business Conduct – No Exceptions
- Sample Contract Provided in Body of RFP – Clarifications noted below

We are always happy to work with our clients to develop mutually acceptable language.

Administrative Services Agreement	
<p>Preamble Section:</p> <p>WHEREAS, the Administrative And/Or Professional Non-Engineering Related Services to be rendered by Contractor, as defined in Article 1.01, do not constitute any engineering services, electrical reliability studies, surveys and/or environmentally related services (if engineering services, electrical reliability studies, surveys and/or environmentally professional services should ever be rendered by Contractor to Company, or if Contractor should ever provide any goods and/or render any engineering related and/or construction services to the Company pursuant to any Contract, Statement of Work and/or Purchase Order (or any change orders related thereto), Contractor must then enter into Company’s standard “General Services Agreement”; provided, however, that nothing in this Agreement shall preclude Contractor from rendering other types of professional and/or business administrative types of services (i.e., accounting, medical, legal, etc.) which do not constitute engineering services, electrical reliability studies, surveys and/or environmentally related services; and</p>	<p>Cadmus does not take exception to this language, however, we wish to note that it appears that a General Services Agreement is required per the scope of the RFP and the language included in the Sample Contract provided in the RFP. The General Services Agreement was not included in the RFP so Cadmus has not had the opportunity to review those terms and conditions. In the event that we are the successful bidder, we request the opportunity to review and negotiate the terms of the General Services Agreement, if necessary.</p>
<p>ARTICLE 8 AUDITING</p> <p>8.01 Rights of Inspection of Records and Auditing. Contractor shall maintain complete records relating to any cost-based (i.e., Work</p>	<p>Cadmus requests a limit as records will not be kept indefinitely.</p>

not covered by firm prices) components billed under this Agreement or relating to the quantity of units billed under any unit price provisions of this Agreement (all the foregoing hereinafter referred to collectively as "Records") which shall be open to inspection and subject to audit and reproduction during normal working hours, by Company or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments, time sheets, or claims based on Contractor's actual costs incurred in the performance of Work under this Agreement. For the purpose of evaluating or verifying such actual or claimed costs, Company or its authorized representative shall have access to said Records at any time, ~~including any time~~ for a period of up to three years after final payment by Company to Contractor pursuant to this Agreement. All non-public information obtained in the course of such audits shall be held in confidence except pursuant to judicial and administrative order. Company or its authorized representatives shall have access, during normal working hours, to all necessary Contractor facilities and shall be provided adequate and appropriate work space to conduct audits in compliance with the provisions of this Article. Company shall give Contractor reasonable notice of intended audits.

Article 12: Indemnity by Contractor

Contractor shall indemnify, defend, and hold harmless Company, its directors, members, managers, officers, employees, and agents, from any and all damage, loss, claim, demand, suit, liability, penalty and/or fine (pursuant to Section 9.04 or otherwise), or forfeiture of every kind and nature, including but not limited to costs and expenses of defending against the same and payment of any settlement or judgment therefore, by reason of (a) bodily and other personal injuries to or deaths of persons, (b) damages to property, (c) the release or threatened release of a hazardous substance or any pollution or contamination of or other adverse effects on the environment, (d) violations of any Applicable Laws, or (e) infringement of patent, copyright, trademark, trade secret, or other property right, whether suffered directly by Company or indirectly by reason of third party claims, demands, or suits, **to the extent that they are** resulting or alleged to have resulted from **the negligent** acts or omissions of Contractor, its employees, agents, subcontractors, or other representatives or otherwise from performance of this

Requesting additional language shown in **bold, underline.**

<p>Agreement. This obligation to indemnify, defend, and hold harmless shall survive termination or expiration of this Agreement.</p>	
<p>Article 15: Ownership of Intellectual Property; Patents</p> <p>All inventions, discoveries, processes, methods, designs, drawings, blueprints, information, software, works of authorship and know-how, or the like, whether or not patentable or copyrightable (collectively, “Intellectual Property”), which Contractor conceives, develops, or begins to develop, either alone or in conjunction with Company or others, in connection with the Work, shall be “work made for hire” and the sole and exclusive property of Company. Upon request, Contractor shall promptly execute all applications, assignments, and other documents that Company shall deem necessary to apply for and obtain letters patent of the United States and/or copyright registration for the Intellectual Property and in order to evidence Company’s sole ownership thereof.</p> <p><u>Ownership of all pre-existing materials or intellectual property of the Contractor used in the development or delivery of the Work shall remain solely with the Contractor.</u></p>	<p>Requesting additional language shown in <u>bold, underline.</u></p>
<p>Article 21: Incidental / Consequential Damages</p> <p>Other than with respect to a force majeure as provided in Article 5 and Contractor’s compliance therewith, Company expressly reserves its right to seek all incidental and/or consequential damages that may arise from the scope of Work of Contractor’s performance and/or non-performance herein or regarding any of Contractor’s employees, sub-contractors, agents and/or representatives; provided, however, that in no event shall Contractor have the right to assert any claims of incidental and/or consequential damages against Company.</p>	<p>Cadmus requests that this clause be replaced in its entirety with a mutual waiver of special, incidental or consequential damages as follows:</p> <p>In no event shall either party be liable for consequential, special, or indirect damages, including lost profits or lost goodwill, arising from or related to this contract.</p>
<p>Sample Contract</p>	
<p>Cadmus does not take exception to the terms provided in this contract except to note, as above, that we have not had the opportunity to review the terms of the General Services Agreement and also that it is our understanding that Articles 2 and 3, Description of Work and Reporting, are subject to modification pending the final negotiation and acceptance of the proposed approach in the proposal.</p>	

Bidder understands that unless itemized above, no other clarifications or exceptions to this Request for Proposal are taken by the Bidder.

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Attachment F. Pricing Summaries

Table 4 on the following page lists the estimated hours by task (as described in section 3) for both the key staff members and general staff categories. This is a time-and-materials (T&M) basis budget, with a total not-to-exceed ceiling of [REDACTED] to estimate energy efficiency potential and design programs for electric industrial customers. Consideration for natural gas customers will require an additional \$ [REDACTED] as shown in Table 5. Cadmus also developed a budget for an optional demand response task (Task 7). Demand response potential analysis will require an additional \$ [REDACTED] as shown in Table 6.

Table 3 shows pricing for each component of the study.

Table 3. Pricing Summary

Study	Budget
Electric Study	\$ [REDACTED]
Inclusion of Natural Gas	\$ [REDACTED]
Total for Energy Efficiency Potential	\$ [REDACTED]
Optional Demand Response	\$ [REDACTED]
Total With Demand Response Option	\$ [REDACTED]

This budget was prepared based on our proposed scope of work that reflects our understanding of the Company’s requirements. Cadmus is flexible to negotiate modifications to the proposed scope of work and the associated budget to more fully satisfy the Company’s needs.

Cadmus offers the following pricing benefits to the Company:

- [REDACTED]
- [REDACTED]
- [REDACTED]

This budget is contingent upon the timeline and sample sizes as described in section 3. This budget estimate does not include future regulatory support. In our experience, the regulatory support requirements of each client vary greatly depending on the state and the study findings so there is no way to accurately estimate how much regulatory support may be necessary. The team will provide any required regulatory support on a T&M basis at the same labor rates provided in Table 4 after establishing a mutually acceptable scope of work.

Table 4. Electric Energy Efficiency Potential (LG&E and KU) Pricing

Staff	Title	Rate	Task 1	Task 2	Task 3a	Task 3b	Task 3c	Task 4	Task 5	Task 6	Total Hours	Total Cost
Cadmus Direct Labor (Hours)												
Hossein Haeri	Sr. Vice President	\$										
Travis Walker	Associate	\$										
Amy Ellsworth	Principal	\$										
Aquila Velonis	Senior Associate	\$										
Ashley Fredi	Senior Analyst	\$										
Paul Youchak	Analyst	\$										
Mesut Avci	Associate	\$										
Janea Magallanes	Associate	\$										
	Associate	\$									0	\$0
	Senior Analyst	\$									0	
	Analyst	\$									0	\$0
	Research Analyst	\$									0	
	Editor	\$										
<i>Total</i>			\$	\$		\$	\$	\$		TBD		\$
Primary Data Collection												
	On-Line Bulletin Board	\$										
	Phone Surveys	\$										
	Survey Programming	\$										
	<i>Total Primary Data Collection</i>			\$								\$
Direct Costs												
	Travel		\$				\$		\$			
	Report Production											\$
	<i>Total Direct Costs</i>		\$				\$		\$			\$
Total Cost			\$	\$	\$	\$	\$	\$	\$	TBD		\$

Table 5. Natural Gas Energy Efficiency Potential (LG&E) Pricing

Staff	Title	Rate	Task 1	Task 2	Task 3a	Task 3b	Task 3c	Task 4	Task 5	Task 6	Total Hours	Total Cost
Cadmus Direct Labor (Hours)												
Hossein Haeri	Sr. Vice President	\$ [REDACTED]			[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]	\$ [REDACTED]
Travis Walker	Associate	\$ [REDACTED]			[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]	\$ [REDACTED]
Amy Ellsworth	Principal	\$ [REDACTED]			[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]	\$ [REDACTED]
Aquila Velonis	Senior Associate	\$ [REDACTED]			[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]			[REDACTED]	\$ [REDACTED]
Ashley Fredi	Senior Analyst	\$ [REDACTED]									0	\$0
Paul Youchak	Analyst	\$ [REDACTED]			[REDACTED]	[REDACTED]	[REDACTED]		[REDACTED]		[REDACTED]	\$ [REDACTED]
Mesut Avci	Associate	\$ [REDACTED]			[REDACTED]						[REDACTED]	\$ [REDACTED]
Janea Magallanes	Associate	\$ [REDACTED]			[REDACTED]			[REDACTED]			[REDACTED]	\$ [REDACTED]
	Associate	\$ [REDACTED]						[REDACTED]			[REDACTED]	\$ [REDACTED]
	Senior Analyst	\$ [REDACTED]									0	
	Analyst	\$ [REDACTED]									0	\$0
	Research Analyst	\$ [REDACTED]									0	
	Editor	\$ [REDACTED]									0	\$0
Total			\$0	\$0	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	TBD	[REDACTED]	\$ [REDACTED]
Primary Data Collection												
On-Line Bulletin Board												\$0
Phone Surveys												\$0
Survey Programming												\$0
Total Primary Data Collection												\$0
Direct Costs												
Travel												
Report Production												
Total Direct Costs												\$0
Total Cost			\$0	\$0	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	TBD		\$ [REDACTED]

Table 6. Optional Demand Response

Staff Name	Title	Hourly Rate	Task 7a	Task 7b	Task 7c	Task 7d	Total	
			Program Offerings	Program Inputs	Market Potential	Reporting	Total Hours	Total Dollars
J. Aiona	Associate	\$ [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
	Analyst	\$ [REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	\$ [REDACTED]
Task Cost			\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	\$ [REDACTED]	[REDACTED]	\$ [REDACTED]

Attachment G. Cadmus Resumes

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Education and Certifications

Ph.D., Regional Science, Portland State University

B.A., Quantitative Social Research, University of Oregon

Professional Experience and Qualifications

Hossein Haeri, senior vice president at Cadmus, has more than 25 years of experience in research, consulting, utility management, and teaching in the energy utility industry. Working in Cadmus' Energy Services Division, Dr. Haeri specializes in utility strategic planning, integrated resource assessment and portfolio analysis, demand response planning and market assessment, and performance measurement.

Before joining Cadmus, Dr. Haeri was the director of Energy Information Systems at Chevron Energy Solutions (formerly PG&E Energy Services), where he led a team of engineers and IT professionals to design and develop remote monitoring and control systems to support the company's performance contracts. He was a principal at the consulting firm of Barakat and Chamberlin and managed demand-side planning and assessment at Central Maine Power.

Examples of Relevant Experience

Demand-Side Management Resource Assessment

Dr. Haeri is a nationally recognized expert in energy efficiency and load management resource assessment, planning, and impact evaluation. His work has encompassed all aspects of assessing technical, economic, and achievable potentials, including innovative approaches to determining market potentials. He has led, or been the key technical advisor on, numerous market studies of electric and natural gas efficiency, demand response, distributed generation (including renewable energy), and fuel conversion throughout the United States for entities such as Bonneville Power Administration, Black Hills Energy, MidAmerican Energy, Alliant Energy, Puget Sound Energy, Portland General Electric, Great River Energy, Rocky Mountain Power, Pacific Power, Seattle City Light, and Snohomish County Public Utility District.

Integrated Resource Planning and Forecasting

Dr. Haeri's work has addressed both theoretical and practical aspects of modeling demand-side management (DSM) potential in the integrated resource planning (IRP) process. He is familiar with the various IRP models used by utilities, such as portfolio-based and capacity expansion models. Dr. Haeri typically works with utilities to develop overall strategies for resource planning and the mechanics of incorporating DSM resources in the IRP process.

Resource Portfolio Planning and Assessment

Dr. Haeri has worked closely with utilities in various jurisdictions to establish energy-efficiency resource standards and help them formulate effective strategies to meet their targets. Numerous energy utilities have engaged him to translate the results of DSM market studies into effective and successful programs and to develop portfolios of DSM products and services with appropriate targets, budgets, and implementation evaluation plans. His efforts include providing the necessary public process and regulatory support to gain approval for these plans.

Dr. Haeri has also worked with stakeholder groups to create optimal outcomes for clients in a number of states, and he has worked with regulators on behalf of utilities in jurisdictions in Iowa, Maine, Nevada, New York, Oregon, Utah, and Washington.

In addition, Dr. Haeri has worked extensively on the development of cost-effective tools for program planning and portfolio assessment. He was the architect and lead developer of DSM Portfolio Pro, Cadmus's tool for DSM portfolio planning and risk assessment; DR Pro, an analytic tool for assessing the market potentials and costs for demand response strategies; and DSM Planner, an Excel-based model for the long-term planning and budgeting of DSM portfolios.

Evaluation, Measurement, and Verification

Dr. Haeri brings more than 20 years of experience to projects involving measurement, verification, and quantitative methods for determining the gross and net impacts of energy efficiency and demand response programs. He has led impact evaluation projects involving sample design, primary data collection, and engineering and statistical assessment of load impacts.

Dr. Haeri has recently led the evaluations of multisector portfolios of energy efficiency and demand response programs for PacifiCorp, PPL Electric, BC Hydro, and the Industrial Sector Initiative for the Northwest Energy Efficiency Alliance, BC Hydro's Power Smart Partners Program.

Selected Presentations and Publications

Haeri, Hossein, and M. Sami Khawaja. "Valuing Energy Efficiency: The Search for a Better Yardstick." *Public Utility Fortnightly*, July 2013.

Haeri, Hossein, and M. Sami Khawaja. "The Trouble with Freeriders." *Public Utility Fortnightly*, March 2012.

Haeri, Hossein, Heidi Ochsner, and Jim Stewart. "Efficiency Beyond the Low Fruit." *Public Utility Fortnightly*, October 2012.

Haeri, Hossein, and Eli Morris. "Frontiers of Efficiency." *Public Utilities Fortnightly*, April 2011.

Haeri, Hossein. "Extreme Efficiency." *Public Utilities Fortnightly*, September 2010.

Haeri, Hossein. "Energy Efficiency in New York: Balancing the Risks and Opportunities." *Public Utilities Fortnightly*, January 2010.

Haeri, Hossein. "Technical and Economic Feasibility of Direct Irrigation Load Control in the Northwest." Peak Load Management Alliance Conference. Austin, Texas, October 2008.

Haeri, Hossein, Matei Perussi, and M. Sami Khawaja. "Do Stock Prices Reflect Operational Efficiency?" *Public Utilities Fortnightly*, February 1999.

Haeri, H., J. Forrester, and M. Carter. "The Fortnightly 100, Which Utility Ranks the Highest?" *Public Utilities Fortnightly*, September 1997.

Education and Certifications

B.A., Anthropology, Michigan State University

Masters of Environmental Policy and Management, University of Denver, Colorado

Professional Experience and Qualifications

Amy Ellsworth, a principal at Cadmus, has 17 years of experience in the energy and environmental industries. She leads Cadmus' Program Design practice, managing a team of 10 professionals. She has expertise in renewable energy; energy efficiency; climate change technologies, markets, and policy; and primary research and project management. At Cadmus, Ms. Ellsworth's work spans program design, process evaluation, portfolio evaluation management, and community planning. She applies this experience to innovative utility program design, implementation challenges, and best practices. She routinely works with large groups of stakeholders with wide-ranging objectives to identify areas of common interest and reach consensus. Ms. Ellsworth also frequently assists utility clients beyond the program planning stage, supporting the regulatory approval process, developing operating strategies, and assisting with program implementation.

Relevant Experience

Portfolio EM&V, Entergy Arkansas, Inc., and Southwestern Electric Power Corporation (SWEPCO).

Ms. Ellsworth, project manager for a four-year EM&V effort for Arkansas' two largest electric utilities, leads a large team of Cadmus impact and process evaluation experts and several subcontractors to complete annual quantitative and qualitative evaluations of the utilities' 21 DSM programs and to develop reports for the Arkansas Public Service Commission. The evaluations are under a single contract with customized evaluation activities for each utility; assessing common programs and activities in a collaborative approach gains economies of scale and statewide market perspectives. The planning process is in two phases in order to establish research methodologies, work plans, and tools to guide the entire evaluation process. Ms. Ellsworth is also working with a statewide independent evaluator and working group to contribute to annual updates of the Arkansas Technical Reference Manual and support other policy decisions.

Program Design, Consolidated Edison Company of New York. Ms. Ellsworth led the development of multiple energy efficiency programs under a constrained timeframe for Con Edison, working with Con Edison's staff to design an integrated portfolio of programs that would offer customers a logical, but flexible, continuum of program opportunities and allow Con Edison to achieve significant energy savings over a two-year delivery period. Ms. Ellsworth's team conducted cost-effectiveness analysis, defined equipment eligibility and incentive levels, and estimated participation levels and program impacts. She designed a program delivery approach and work flow; marketing strategy; education and training; quality assurance, measurement, evaluation and verification plans; and plan for integrating with Con Edison's existing customer programs. Cadmus continued to support Con Edison through the regulatory and pre-implementation planning process in its efforts to launch its DSM initiative in early 2009.

PPL Electric Utilities. After leading the design of a comprehensive portfolio of 14 new DSM programs to meet aggressive energy consumption and peak demand reduction targets, Ms. Ellsworth, under a second contract, led a five-year process evaluation of PPL's DSM portfolio. Her responsibilities included managing a large team of program-level process evaluators and overseeing data collection, research and analysis activities; completing a range of primary research tasks to assess PPL's processes, operations, and implementation of a range of portfolio level functions and activities; and managing development of comprehensive annual reports for submittal to the Pennsylvania commission and other statewide stakeholders.

PacifiCorp. Ms. Ellsworth led the process evaluation of seven residential programs in five states, managing a team of program managers who provided a full range of process evaluation tasks, including document reviews, analysis of data integrity, in-depth interviews with program staff and stakeholders, participant and nonparticipant surveys, and a comprehensive review of marketing tactics.

Bonneville Power Administration (BPA). Ms. Ellsworth was the project manager on the development of a new energy efficiency and conservation plan that looked at measure level gaps in achieving efficiency potential, as well as market and institutional barriers, bottlenecks, and untapped opportunities. The work involved conducting a detailed quantitative and qualitative analysis of BPA's existing energy efficiency programs as measured against new aggressive energy savings targets for the Northwest and recommending program strategies to help BPA achieve its targets.

A Guide to Best Practices for Energy Efficiency in Locally-Governed Electric Services Areas in the State for the State Energy Conservation Office (SECO), Texas, under prime contractor Nexant. Ms. Ellsworth worked with teams at Cadmus and Nexant to develop a best practices guide and program design recommendations specifically tailored to municipal and cooperative utilities in Texas. She was the Cadmus' team's project manager and was solely responsible for the program design component. She conducted primary research tasks to understand the market, infrastructure, resource, and policy environment for municipally-owned utilities (MOUs) in Texas and led the development of a comprehensive evaluation tool to screen 400 programs to identify those that achieved the best performance in several areas. Ms. Ellsworth also led development of the guide, which identifies energy efficiency program best practices tailored to the MOUs' market and operating conditions and includes program-specific recommendations and design details to support the MOUs' implementation of energy efficiency programs.

Education and Certifications

M.S., Sustainable Energy Engineering, Royal Institute of Technology, Stockholm, Sweden

B.S., Physics, Fort Lewis College, Durango, Colorado

Professional Experience and Qualifications

Aquila Velonis, a senior associate with Cadmus, conducts quantitative and qualitative engineering data analysis for a broad range of projects, including energy-saving potential assessments, utility program planning (prescriptive and custom programs), and energy-efficiency program evaluations. He is experienced in the areas of renewable energy, engineering modeling, energy efficiency, program planning, codes and standards, technical reference manuals (TRM), and measurement and verification (M&V). In addition, Mr. Velonis has many years of experience in the solar photovoltaic industry, having successfully designed and managed both residential and commercial installations.

Relevant Experience

Project Management

- **Technical lead for all major potential studies at Cadmus in past five years.** Mr. Velonis provides technical guidance on measure characterization, directs Cadmus staff, and conducts regular internal and external communication.
- Dayton Power & Light (DP&L) Custom and Prescriptive Nonresidential Programs. Mr. Velonis manages the impact evaluation for the 2011–current portfolio.
- **Alliant Energy's five-year energy efficiency plan (2014–2019).** As technical lead, Mr. Velonis has managed and supported various parts of plan development including estimating energy savings, program development, projected participation levels, and supporting regulatory documents. To this day, he continues to support Alliant Energy's efficiency programs, which include weekly communication with utility program managers.

Potential Assessments

- Conducts measure characterization and manages technical team of electric and natural gas measures for residential, low-income, commercial, and industrial sectors. Having conducted various potential assessments in the Northwest, Mr. Velonis has a strong familiarity with the Regional Technical Forum (RTF) and the Northwest Power Planning Council's 6th Power Plan.
 - Worked on over 20 potential studies for electric and gas utilities across the country to assess available potential for energy efficiency and renewables. Northwest studies include:
 - Puget Sound Energy: electric and natural gas service territories (2010, 2012, and 2014-under development)
 - PacifiCorp: six-state service territory (2007, 2010, and 2012)
 - Tacoma Power: electric service territory (2009 and 2012)
 - Snohomish Public Utility District: electric service territory (2008)
-

Energy Efficiency and Conservation Plans

- Developed energy efficiency plans for various utilities including Alliant Energy, PPL Electric Utilities, and Black Hills Energy.
- Identified the mix of cost-effective energy efficiency measures for utilities design programs that best serve customers. Work included cost-effective energy efficiency measure analysis, measure qualifications, incentives structures, methods for program tracking, program impacts of pending codes and standards, and new program research.
- Designed programs for residential, commercial, agricultural, and industrial sectors.

Impact Evaluations

- Conducted quantitative and qualitative engineering data analysis on various program evaluations of residential and commercial utility programs for electric and gas utilities.
- Evaluation analysis consisted of developing a measure savings methodology, comparing the outcome with program assumptions, and conducting quality assurance for collected field data.
- Developed the impact analysis methodology for Vectren's electric and natural gas residential and commercial programs for the states of Ohio and Indiana.
- Developed the evaluation impact methodology for Bonneville Power Administration's ongoing Low-Income Weatherization Program, which involved reviewing and incorporating RTF and 6th Plan measure assumptions.

Technical Reference Manuals

- Provided quality assurance, technical support and/or developed measures for technical reference manuals (TRMs) for Wisconsin, Maine, Pennsylvania, Indiana, Illinois, and other states.
- Co-authored a National Renewable Energy Lab report to assess consistency of existing TRMs and other sources of deemed savings and issues for development of a national measures database.

Site Visits and Verifications

- Conducted site visits for Portland's Office of Sustainable Development to verify the installation of various energy and water-efficiency measures, including renewable energy installations, green building materials, rainwater harvesting, and eco-roof technology.
- Developed M&V plans and performed site visits for the California Public Utilities Commission. Performed measure verification to evaluate commercial programs in Southern California Edison's (SCE) service territory. This included verifying measures such as high-efficiency chillers (Turbocor), garage exhaust fan VFD controls, lighting power regulators, and other equipment.

Renewable Energy Projects

- Performed preliminary design reviews of photovoltaic installations for New York State Energy Research and Development Authority (NYSERDA).
- Assessed background materials provided by NYSERDA to determine consistent and complete documentation, ensuring compliance with NYSERDA installation requirements, reviewing the accuracy of energy production estimate(s), and ensuring compliance with utility, state, and federal rules and regulations.

Education and Certifications

B.S., Economics, *magna cum laude*, University of Oregon

Professional Experience and Qualifications

Travis Walker, an associate with Cadmus, performs project management and data analysis, with an emphasis on demand-side management (DSM) potentials assessments, load forecasting, and evaluations of utilities' energy efficiency programs.

Before joining Cadmus, Mr. Walker was a power planning and management intern with the Eugene Water and Electric Board, where he developed econometric load forecasting models for integrated resource planning.

Examples of Relevant Experience

Project Management

Mr. Walker has managed several projects of varying scope and duration. These include:

- **Louisville Gas and Electric (LG&E).** Mr. Walker managed Cadmus' assessment of electric and gas conservation potential in LG&E's service territory. He oversees a large team conducting primary data collection, measure development, potentials modeling, and program design. This entails frequent internal and external communication to ensure tasks are completed in accordance with LG&E's regulatory schedule.
- **Central Iowa Power Cooperative (CIPCO).** Mr. Walker managed Cadmus' study of conservation potential for the 12-member Central Iowa Power Cooperative. He provides technical guidance on modeling, directs Cadmus staff, and oversees external communication.
- **Puget Sound Energy (PSE).** Mr. Walker managed conservation potentials modeling and support for PSE's 2013 Integrated Resource Plan (IRP). This project involved coordinating input from multiple stakeholders, and regular internal and external communication.

Conservation Potentials Assessments

- Mr. Walker has contributed to seventeen conservation potential studies either as a project manager, modeling task manager, or modeling analyst. Each of these studies involved load forecasting, cost-effectiveness analysis, and measure analysis. He currently leads the development of Cadmus' proprietary Microsoft Excel-based potentials estimation model.

Energy Efficiency Program Evaluation

Mr. Walker has worked on multiple evaluations of utilities' energy efficiency programs. He has conducted impact evaluations of low-income weatherization, school-based energy education, and residential rebates programs. Mr. Walker's responsibilities included sample design, survey design, onsite audit training, survey analysis, and reporting.

Load Forecasting and Analysis

Mr. Walker has worked on multiple load forecasting projects for clients including Oklahoma Gas and Electric, Salt River Project, and GDF Suez. He has employed the following approaches:

- Top-down econometric energy forecasts
- Hybrid econometric and end use energy and demand forecasts
- Stochastic peak demand forecasts
- “Frozen efficiency” forecasts to capture the impact of federal standards in econometric models

Each forecast involved compiling macroeconomic and weather data, data management, analysis, and the development of automated SAS-based reporting routines.

Technical Skills

Mr. Walker is proficient with multiple statistical software packages, including SAS, STATA, EViews, and R. He has advanced proficiency with Microsoft Excel and other Microsoft Office applications. He has also worked with Cadmus’ proprietary End Use Forecaster and DSM Portfolio Pro applications.

Education and Certifications

Ph.D., Industrial Engineering, University of Miami

M.S., Industrial and Systems Engineering, Colorado State University-Pueblo

B.S., Mechanical Engineering, Yildiz Technical University

Professional Experience and Qualifications

Mesut Avci, an associate at Cadmus, conducts onsite verification, metering, and energy assessments at industrial facilities. Dr. Avci's expertise encompasses data-logging a wide range of equipment types and sizes as well as conducting qualitative and quantitative analyses. He has also worked on several research projects in production intensity reduction (e.g., reducing the amount of energy required to manufacture a product) and innovative energy management strategies.

Before joining Cadmus in 2013, Dr. Avci was a lead energy engineer/consultant at the U.S. Department of Energy IAC at the University of Miami. His key responsibilities entailed leading engineering teams to conduct onsite industrial energy assessments in Florida and Puerto Rico, writing formal reports for these assessments, and coordinating energy-related research at the center.

Program Evaluation and Research

Since joining the firm in 2013, Dr. Avci has conducted onsite measurement and verification and performed engineering analysis for several projects. Currently, he is the assistant project manager for:

- Industrial Facility Site Assessment study for the Northwest Energy Efficiency Alliance, which characterizes energy consumption for every major equipment end use in industrial facilities.
- Impact evaluation for the 2012 Energy Trust of Oregon Production Efficiency Program.

Other projects in which Dr. Avci has participated include:

- Impact evaluation for the 2012-2013 portfolio of commercial and industrial energy efficiency programs for Avista in Idaho and Washington.
- Commercial and industrial impact evaluations for the 2012-2013 Entergy Arkansas Custom program.
- Impact evaluation for the 2013 portfolio of commercial and industrial energy efficiency programs for Northern Indiana Public Service Company.
- Impact evaluation for the 2012 Energy Trust of Oregon Existing Buildings program.
- Impact evaluation for the 2013 Bonneville Power Administration Custom and Lighting Program.

Industrial Energy Efficiency

For the University of Miami IAC, Dr. Avci led approximately 50 energy assessments at industrial facilities, and he has participated in more than 70. His work entailed the following:

- Identifying potential opportunities for energy savings and conservation, increased plant productivity, and waste minimization.

- Performing detailed analyses in electrical demand, lighting, HVAC, air compressors, boilers, chillers, cooling towers, electric motors, VFDs, process heating/cooling, refrigeration, steam systems, waste heat recovery systems, and building envelopes.
- Authoring formal reports of the results of these energy assessments that describe energy/cost savings, implementation cost of developed conservation measures, and associated payback periods.
- Developing comprehensive training strategies for team members and plant personnel that focused on identifying and resolving energy and process related issues, as well as improving and sustaining safety procedures.

Qualitative and Quantitative Data Collection and Analyses

Dr. Avci has broad experience in qualitative and quantitative data collection and analyses:

- Employing data loggers and current transformers to monitor and record power consumption, temperature, and humidity, as well as other advanced equipment such as an infrared camera, combustion analyzer, and ultrasonic leak detector.
- Analyzing collected data, utility rate schedules, and past client utility bills for time of use, demand, and power factor profiles to quantify possible energy conservation measures.

Building Energy Management and Demand Response

Dr. Avci has worked on energy management projects involving commercial and government buildings. His studies have included onsite energy audits, identification of energy saving measures, and data collection and analyses for pre- and post-construction building energy evaluation.

Dr. Avci has also conducted measurement and verification analyses on the accuracy and effectiveness of building energy management systems and smart meters. He developed a cost-effective, energy-efficient, and demand response-enabled model predictive HVAC control strategy for use in building energy management systems by responding to real-time electricity pricing data from the utility company. In addition to incorporating electricity demand in his energy savings calculations, Dr. Avci utilizes demand-response measures to shave and/or shift electricity load during peak hours.

Technical Skills

Dr. Avci is proficient with Microsoft Office applications and several U.S. Department of Energy software packages (DOE AIRMaster+, DOE 3E Plus, DOE MotorMaster). Dr. Avci has also utilized various CAD/CAM tools (AutoCAD, MasterCAM), statistical analysis tools (MINITAB, SPSS), and programming tools (MATLAB, Labview, VBA) in a number of projects.

Presentations and Publications

Avci, Mesut, Murat Erkoç, Amir Rahmani, and Shihab S. Asfour. "Model predictive HVAC load control in buildings using real-time electricity pricing." *Energy and Buildings*, 60 (2013) 199-209.

Avci, Mesut, Murat Erkoç, and Shihab S. Asfour. "Customer-based building energy management using model predictive control." IIE Annual Conference. IIE, 2013.

Education and Certifications

B.A., Economics and Environmental Studies, Bowdoin College, Brunswick, Maine

Professional Experience and Qualifications

Jessica Aiona, an associate at Cadmus, specializes in demand response potential assessments and cost-effectiveness analysis and has managed numerous projects for clients across the country. Ms. Aiona conducts quantitative and qualitative data analyses for a broad range of projects, including multiyear portfolio evaluations, market characterizations, and codes and standards attribution analysis. Her responsibilities include performing benefit/cost analysis for planning and evaluation purposes, survey design, data analysis, potential modeling, reporting data trends and findings, and project management.

Before joining Cadmus, Ms. Aiona performed research and analysis of Qwest's deregulation filing at the Citizens' Utility Board of Oregon.

Examples of Relevant Experience

Program Evaluations

Ms. Aiona has led numerous evaluation efforts including:

- **Vectren *Delivery of Indiana Multiyear Evaluation***. Beginning in 2011, Ms. Aiona has been responsible for managing the process and impact evaluations of the electric Core Plus programs. Her efforts include:
 - Designing surveys for program participants, nonparticipants, and implementer staff
 - Managing data collection efforts
 - Conducting quantitative and qualitative data analysis
 - Assembling recommendations for program improvements
 - Writing reports and presenting findings to utility staff and stakeholders
- **Bonneville Power Administration (BPA) *Demand Response Evaluation Strategy***. In 2013, Ms. Aiona led the development of a process evaluation strategy for BPA's new demand response demonstration projects for residential, commercial, and/or industrial customers. Through this project, Ms. Aiona helped develop step-by-step guidelines for conducting demand response process evaluations, which examined the nuances between different DR strategies and points of resource aggregation.
- **Rochester Gas and Electric and New York State Electric and Gas Corporation**. From 2012-2013 Ms. Aiona managed the Block Bidding Program impact and process evaluations. The impact evaluation included pre- and post-metering activities and established a net-to-gross ratio. The process evaluation focused on interviewing participant and nonparticipant bidders and customers.

Demand Response Potential Assessments

Ms. Aiona's demand response potentials assessment responsibilities include researching current program offerings, determining participation levels, and calculating technical and achievable potential.

- ***PacifiCorp's 2010 and 2012 Potential Assessment.*** Ms. Aiona modeled the potential for several demand response programs including direct load control, load curtailment through a third-party aggregator, critical peak pricing, and thermal energy storage.
- ***Puget Sound Energy's 2010, 2012 and 2014 Potential Assessment.*** Ms. Aiona modeled the potential for space, room, and water heat direct load control for the residential sector, as well as for load curtailment and critical peak pricing for the commercial and industrial sectors.
- ***Missouri River Energy Services 2014 Potential Assessment.*** Ms. Aiona assessed the 26-year potential for MRES' member utilities for two residential direct load control programs.
- ***Oklahoma's 2014 Potential Assessment.*** Ms. Aiona is leading the research effort for the demand response potential assessment task. This includes surveying customers on their willingness to participate in demand response programs, interviewing program staff about demand response offerings, and calculating potential from existing and new demand response programs.

Cost-Effectiveness Analysis

Ms. Aiona has evaluated the cost-effectiveness of demand-side management (DSM) resources for numerous utilities across the country. Her efforts have included assessing measures, programs, and DSM portfolios for both planning and evaluation purposes. Her representative projects include:

- ***Dayton Power and Light.*** Managed the cost-effectiveness analysis of the residential and commercial energy efficiency portfolios, which involved report writing and conducting total resource cost tests for programs such as Appliance Recycling and HVAC Early Replacement.
- ***Con Edison.*** Assisting in program planning and making revisions to meet the Public Service Commission requirements for cost-effective, energy efficiency programs.

Technical Skills

Ms. Aiona is proficient in the Microsoft Excel and Cadmus' cost-effectiveness and market potential assessment tools.

Publications and Conferences

Aiona, Jessica. "Whose Perspective? The Impact of the Utility Cost Test." Paper presented at the 22nd annual meeting for the Association of Energy Services Professionals Conference, San Diego, California, February 6-9, 2012.

Aiona, Jessica. "Riding the Natural Gas Rollercoaster: Program Evaluation in the Face of Volatile Natural Gas Prices." Poster presented at the annual meeting for the International Energy Program Evaluation Conference, Boston, Massachusetts, August 15-18, 2011.

Aiona, Jessica. "Picking a Standard: Implications of Differing TRC Requirements." Paper presented at the 21st annual meeting for the Association of Energy Services Professionals Conference, Orlando, Florida, January 17-21, 2011.

Education and Certifications

M.S., Mechanical Engineering, University of California, Irvine

B.S. Mechanical Engineering, University of California, Irvine

Professional Engineer in Mechanical Engineering, California

Certified Energy Manager, Association of Energy Engineers

Certified Demand Side Manager, Association of Energy Engineers

Qualified Compressed Air Specialist for DOE AIRMaster+

Professional Experience and Qualifications

Janea Magallanes, an associate with Cadmus, provides expertise in energy efficiency, distributed generation, and energy management within the industrial sector. Ms. Magallanes conducts on-site verification, metering, energy assessments, and project development for industrial facilities.

Before joining Cadmus, Ms. Magallanes was a senior energy engineer for Siemens Industry, where she performed site assessments, design, and engineering for energy efficiency and distribution generation projects in the industrial sector. Previously, she was with Ameresco Intelligent Systems, performing industrial energy audits and developing energy management action plans.

Relevant Experience

Program Evaluation and Research

Since joining Cadmus, Ms. Magallanes has conducted on-site verification and analysis for the following projects:

- Industrial facility site assessment study for the Northwest Energy Efficiency Alliance, to characterize energy consumption for every major equipment end-use in industrial facilities
- Impact evaluation for the 2013 portfolio of commercial and industrial energy efficiency for the Northern Indiana Public Service Company
- Impact evaluation for the Bonneville Power Administration site-specific savings for fiscal years 2012-2013.

Industrial Energy Efficiency

Prior to joining Cadmus, Ms. Magallanes led more than 20 energy assessments at industrial facilities, and participated in more than 100. Her work entailed the following:

- Identifying potential opportunities for energy savings and conservation, demand response, increased plant productivity, waste minimization, power generation, and energy management.
- Performing detailed analyses in electrical demand, lighting, HVAC, industrial refrigeration, air compressors, boilers, chillers, cooling towers, electric motors, VFDs, process heating and cooling, steam systems, waste heat recovery systems, energy management, and distributed generation.

- Authoring formal reports of the results of the energy assessments, describing the existing energy consumption, potential energy savings, implementation cost of identified opportunities, and associated payback periods.

Technical Skills

Ms. Magallanes is proficient with Microsoft Office® applications and several Department of Energy software packages (AIRMaster+, MotorMaster, PHAST, SSAT, CHP Tool, PSAT). Ms. Magallanes has also used various CAD tools (AutoCAD, Catia) and programming tools (MATLAB, LabView, Simulink).

Education and Certifications

B.S., Ecology, University of Kentucky, *summa cum laude*

B.A., Anthropology, University of Kentucky, *summa cum laude*, with honors, Phi Beta Kappa

Professional Experience and Qualifications

Ashley Fredi, a senior analyst with Cadmus, has extensive experience managing a broad range of process and impact evaluations and is proficient in both quantitative and qualitative data analysis in the residential, commercial, and industrial sectors. Ms. Fredi assists in managing large evaluation projects and skillfully coordinates evaluation research activities, including data collection from multiple sources. She applies her professional skills to a broad range of tasks, including survey and interview guide design, implementation, and analysis; data compilation, organization, and analysis; project coordination; budget management; and report preparation. Ms. Fredi is a skilled communicator and is experienced leading large teams to deliver quality program evaluations for clients across the United States.

Before joining Cadmus, Ms. Fredi developed extensive administrative coordination skills working in the legal sector, and she assisted with ecological research for the University of Kentucky.

Relevant Experience

Process Evaluation

Ms. Fredi has gained extensive process evaluation experience by managing and conducting several process evaluations. The following represent examples of Ms. Fredi's process evaluation work:

- Led the process evaluation for Salt River Project's (SRP's) Shade Tree, Commercial New Construction, and Energy-Efficient Pools programs; responsibilities included the development and implementation of stakeholder and market actor interview guides and participant and nonparticipant surveys; analyzing interview and survey data; and reporting.
- Led the process evaluation for Ameren Illinois Residential Energy-Efficient Products program; responsibilities included the development and implementation of key stakeholder interviews, database analysis, and reporting.
- Created logic models, performed an evaluability assessment, and developed program theory documents for Alameda County's Multifamily and Green Building Labeling programs under the California Better Buildings Program.
- Developed focus group and participant interview guides for the process evaluation of the Public Utility District No. 1 of Snohomish County Community Power! Program.
- Designed and implemented key informant interviews for the U.S. Department of Energy and Environmental Protection Agency, under contract to Lawrence Berkeley National Laboratory, for a scoping study on the feasibility of a national database of evaluation, monitoring, and verification plans, reports, market studies, and measures.
- Designed participant and nonparticipant surveys for PacifiCorp's Irrigation Energy Savers Program.

- Designed and implemented target audience follow-up interviews for the Northwest Energy Efficiency Alliance (NEEA) Industrial Initiative; analyzed and summarized survey data; and developed reports.

Project Management and Coordination

Ms. Fredi has gained valuable project management experience through her work for SRP, the Snohomish Public Utility District, Ameren Missouri, NEEA, and PacifiCorp, among others. The following represent examples of Ms. Fredi's project management and coordination work:

- Acted as assistant project manager for the evaluation of SRP's FY12, FY13, FY14, and FY15 programs. Ms. Fredi performs budget management and coordinates a large team of evaluators for the process and impact evaluations of this multiyear evaluation.
- Acted as the data collection task lead for the potential study Cadmus performed for Louisville Gas & Electric and Kentucky Utilities.
- Acted as agency liaison for the Iowa Energy Wise low-income program run by the Iowa Utility Association and sponsored by MidAmerican Energy Company, Alliant-IPL, and Black Hills Energy; responsibilities included frequent communication with community action agencies delivering the program, data tracking, and incentive payment coordination.
- Acted as assistant project manager for the evaluation of Ameren Missouri's Multifamily Income Qualified Program. Ms. Fredi coordinated site visits and the process evaluation.
- Coordinated site visits for NEEA's Industrial Initiative and PacifiCorp's Irrigation Energy Savers Program, which included managing subcontractors.

Data Management and Analysis

On key projects for SRP, PacifiCorp, and the NEEA, Ms. Fredi's data management and analysis experience includes:

- Acted as data security manager for the evaluation of SRP's FY14 and FY15 programs, managed data and performed cost-effectiveness analysis using DSM Portfolio Pro for SRP's FY10-FY15 programs.
- Conducted the impact analysis of SRP's FY11 Appliance Rebate Program.
- Analyzed and summarized site visit data for PacifiCorp's Irrigation Energy Savers Program.
- Managed data, performed data analysis, and analyzed target audience follow-up interviews for NEEA's Industrial Initiative.

Education and Certifications

M.S., Management Science and Engineering: Energy and the Environment, Stanford University

B.S., Nuclear Science and Engineering, Massachusetts Institute of Technology

Professional Experience and Qualifications

Paul Youchak, a Cadmus analyst, provides quantitative analyses and support for clients of the Energy Services Division. Mr. Youchak is experienced in supply-side risk assessment, energy efficiency potential studies, program impact evaluation.

Before joining Cadmus in April 2013, Mr. Youchak was a research assistant in the economics department at MIT assessing the economic impacts of ozone pollution. He also worked as an intern at the Pacific Northwest National Laboratory (PNNL), where he modeled state-level nuclear proliferation. Through these experiences, he performed economic impact and policy analysis using econometric and statistical techniques.

Examples of Relevant Experience

Impact Evaluation

Mr. Youchak has worked on a number of process and impact evaluations of energy efficiency programs for utilities and state governments. Mr. Youchak's responsibilities have included the management and analysis of large databases, statistical analysis of program impacts, data presentation, and the review of Technical Resource Manuals.

Economic Potential Studies

Mr. Youchak has worked on a number of economic potential studies used to evaluate the conservation potential within a defined service territory. Mr. Youchak has shared in project responsibilities ranging from load forecasting, cost-effectiveness analysis, and measure analysis. Mr. Youchak has also worked on improving Cadmus' proprietary Microsoft Excel-based potentials estimation model used in evaluation.

Energy Supply-Side Evaluation

Mr. Youchak used Cadmus' proprietary Portfolio Strategist model to analyze utility's decision basis for generation assets over an extended time frame. Analysis is performed through a Monte-Carlo analysis that incorporates risk factors such as uncertain fossil fuel prices, load shapes, and energy efficiency persistence. The work undertaken for a project with NV Energy has led to the development of a journal article to be published in *Public Utilities Fortnightly*, for which Mr. Youchak is a contributing author.

Technical Skills

Mr. Youchak is experienced with multiple software packages, including Microsoft Excel, VBA, SAS, and R.

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Mary Lea Quick

PROFESSIONAL EXPERIENCE

Thoroughbred Research Group, Louisville, Kentucky

2008 – Present

Director of Qualitative Research

Responsibilities / Accomplishments

- Directs all aspects of project management from client services, research planning, logistics and administration
- Serves as daily point of contact for clients from project launch to delivery of data/report
- Facilitates traditional focus groups, on-line groups and one-on-one interviews
- Involved in all aspects of qualitative research from the design of discussion guides to report writing

Marketing Research of Kentuckiana, Louisville, Kentucky

1987 – 2008

President / Research Director

University of Louisville, Louisville, Kentucky

1998 – 2008

Adjunct Instructor, College of Business

EDUCATION

Master of Business Administration

University of Louisville, Louisville, Ky., May 1995

Bachelor of Science in Business Administration

University of Louisville, Louisville, Ky., May 1992

LG&E and KU Services Company
CONTRACT

This Contract (hereinafter referred to as this "Contract") is entered into effective as of February 3, 2015, between LG&E and KU Services Company (hereinafter referred to as "Company"), whose principal place of business is 220 West Main Street, Louisville, Kentucky 40202, and The Cadmus Group, Inc. (hereinafter referred to as "Contractor"), whose principal place of business is 720 SW Washington Street, Suite 400, Portland, Oregon 97205.

The parties hereto agree as follows:

1.0 GENERAL

Upon resolution of a Company filing with the Kentucky Public Service Commission ("KPSC") concerning Company's cost recovery related to this Contract, Company will provide written notification to Contractor to proceed, at which time Contractor shall perform an Industrial Energy Efficiency Potential Study for Company and Affiliates, as more specifically described in Articles 2.0 and 3.0 hereof (hereinafter referred to as the "Work") and Company shall compensate the Contractor for the Work, under all the terms and conditions hereof.

Contractor shall provide Company technical and analytical consulting services to meet the study objective of developing a comprehensive quantitative assessment of energy efficiency potential in Company's service territory. The study, which will result in a report and a dataset ("Deliverable") to the Company, should consider the technical, economic, achievable, programmatic, and naturally occurring energy efficiency potential for 2016-2035 and focus on all industrial electric and natural gas metered customers. The Deliverable should provide details for LG&E and KU energy efficiency potential separately and collectively.

2.0 DESCRIPTION OF WORK

2.1 Except as otherwise expressly provided herein, Contractor shall supply all labor, supervision, materials, equipment and tools, and warehousing, and shall pay all expenses, necessary or appropriate in the performance of the Work.

2.2 The Work shall include but not be limited to the following:

2.2.1 Contractor shall collect market data in Company's service territory so that Contractor can understand customer trends and decision-making in Company's service territory.

2.2.2 The Contractor will be required to develop, and provide in the Deliverable, a 20-year baseline (business as usual) forecast and will:

2.2.2.1 Identify anything that may influence the baseline estimate.

2.2.2.2 Provide data and assumptions used to develop baseline forecast.

2.2.2.3 Reconcile to Company's load forecast end-use energy efficiency improvement assumptions.

2.2.3 Contractor will be required to develop energy efficiency potential supply curves by program that clearly display the incremental cost of increasing energy efficiency efforts for each year of the study for industrial customers. Curves should also be provided in aggregate for all customers.

2.2.4 Contractor will identify what data Company must provide from Company customer databases, forecasts, or any other data source.

2.2.5 If requested by Company, Contractor shall provide expert witness testimony to the Kentucky Public Service Commission. Testimony may be written or in-person depending on the situation.

3.0 REPORTING REQUIREMENTS

3.1 Contractor shall participate in regularly scheduled update meetings and provide status reports to Company. In addition to overall study progress and timeline review, status meetings should include sharing and review of data and report drafts when applicable.

3.2 Contractor should provide a detailed timeline for completion of the study. The timeline should contain milestones and duration between each milestone.

4.0 DELIVERABLE

4.1 Contractor will be required to provide the Deliverable as electronic copy and as hard copy drafts and final copy. The draft(s) copy shall be provided to Company for their review and comments prior to a final Deliverable being provided or presented by Contractor. The final copy of the Deliverable should clearly communicate the methodology used and study results and include:

4.1.1 Description of how energy efficiency potential is measured, assessed, and communicated for the following: technical, economic, achievable, and naturally occurring energy efficiency potential.

4.1.2 Identification of recommended energy savings measures and programs:

4.1.2.1 Identify market size and penetration levels necessary to achieve recommended energy savings.

- 4.1.2.2 Identify any market barriers for recommended measures and programs.
- 4.1.2.3 Identify best practices for recommended measures and programs.
- 4.1.2.4 Provide details for estimated costs to market and offer programs to customers.
- 4.1.2.5 Define resource requirements of Company to implement programs.
- 4.1.2.6 Provide detailed budgets for each program and expenditures.
- 4.1.2.7 Provide technical data to support savings attributed to programs.
- 4.1.2.8 Provide cost-effectiveness evaluations for each recommended program.
- 4.1.3 Model of the statutory opt-out requirement in Contractor's calculation of achievable potential.
- 4.1.4 Definition of wasted energy with a description of how it was measured and incorporated into the study.
- 4.1.5 Emphasis of the remaining expected potential of Company's existing energy efficiency programs and identify any opportunities for improvement.
- 4.1.6 On mutually agreeable dates, at Company's option, Contractor shall be required to do up to five (5) on-site presentations of the detailed plan in Kentucky. Selected sites are at the Company's discretion. Three weeks prior to the presentation Company will be provided the draft copy of the presentation materials for review and comments.
- 4.1.7 The Deliverable shall be provided to Company by Contractor as an Excel spreadsheet for the dataset and a Word document or .pdf file for the report or in another format agreeable to both parties.

5.0 EXHIBITS AND ATTACHMENTS

All Work shall be performed in strict accordance with the following specifications, exhibits and drawings which are incorporated herein by reference.

5.1	Exhibit No.	Title
	<u>Exhibit No. 1</u>	Timeline

6.0 TERM

This Contract shall become effective February 3, 2015 and continue until December 31, 2016, unless terminated earlier pursuant to the Article titled "Term and Termination" set forth in the Administrative Services Agreement. Unless otherwise specified, Company makes no promise or guarantee as to the amount of Work to be performed under this Contract, nor does it convey an exclusive right to the Contractor to perform Work of the type or nature set forth in this Contract.

7.0 PERFORMANCE SCHEDULE

- 7.1 Contractor shall commence performance of the Work upon receiving the written notification from the Company described in Section 1.0 above. All Work shall be completed not later than December 31, 2016.
- 7.2 Contractor shall not assign or subcontract out any material portion of the work except under extenuating circumstances, which requires advanced written approval by Company. Contractor shall notify Company of its intent to use subcontractors in performance of Work at least forty-eight (48) hours prior to start of Work. See the Article titled "Assignment of Agreement; Subcontracting" in the Administrative Services Agreement.
- 7.3 The performance under this Agreement shall be subject to periodic review by Company or another firm designated by Company for Contractor compliance.

8.0 ADMINISTRATIVE SERVICES AGREEMENT

- 8.1 The terms and conditions set forth in the Administrative Services Agreement and Contractor Code of Business Conduct that are attached hereto, (herein referred to as the "Administrative Services Agreement") are hereby incorporated by reference as fully set forth herein. In the event of a conflict between the terms and conditions of the Administrative Services Agreement and those of this Contract, the terms and conditions of the Administrative Services Agreement shall prevail.
- 8.2 Company will maintain ownership of all data. Customer data is considered confidential and cannot be shared without prior Company authorization.
- 8.3 Customer Satisfaction

The Company has a strategy to increase LG&E and KU customer satisfaction by enhancing the customer experience through respectful relationships, timely solutions, and exceptional service. As such the Company will require its vendors to assist in the continued commitment to workforce and public safety, and the expansion of relationships with customers by delivering positive customer experiences that create value and build trust.

9.0 COMPENSATION

9.1 Full compensation to Contractor for full and complete performance by Contractor of the Work, compliance with all terms and conditions of this Contract and for Contractor's payment of all obligations incurred in, or applicable to, performance of the Work (hereinafter referred to as the "Contract Price") shall be the following:

<u>Title</u>	<u>Hourly Rate</u>
Executive Vice President	\$\$\$
Executive Director	\$\$\$
Vice President	\$\$\$
Principal	\$\$\$
Senior Associate II	\$\$\$
Senior Associate I	\$\$\$
Associate II	\$\$\$
Associate I	\$\$\$
Senior Analyst	\$\$\$
Analyst	\$\$\$
Research Analyst	\$\$\$
Technical Editor	\$\$\$
Engineering Technician II	\$\$\$
Engineering Technician I	\$\$\$
Administrative	\$\$\$

9.2 PRICING FOR CHANGES IN SCOPE OF WORK

By mutual agreement between Company and Contractor, adjustments to the Contract Price for changes in the Scope or Description of Work shall be on a unit price basis.

9.3 SPECIAL INVOICING INSTRUCTIONS

9.3.1 See the Article titled "Invoices and Effect of Payment" in the Administrative Services Agreement

9.3.2 All invoices shall include a Contract Number. Invoices for Work shall include Contract Number 93135 and a separate invoice provided for each utility. All invoices shall be prepared in one original and distributed as follows:

Original: LG&E and KU Services Company
Attention: Program Manager
P.O. Box 32020
Louisville, Kentucky 40232

10.0 CONTRACTUAL NOTICES

See the Article titled "Miscellaneous" in the Administrative Services Agreement for provisions governing contractual notices.

10.1 Company's address: LG&E and KU Services Company.
Attention: Manager, Corporate Purchasing
820 West Broadway
Louisville, Kentucky 40202
502-627-3646 (FAX)

Copy to: LG&E and KU Services Company
Attention: Manager, Energy Efficiency
P.O. Box 32020
Louisville, Kentucky 40232

10.2 Contractor's address: The Cadmus Group, Inc.
Attention: Hossein Haeri
720 SW Washington, Suite 400
Portland, OR 97205
Office: (503) 467-7140

11.0 ENTIRE AGREEMENT

This Contract, including all specifications, exhibits and drawings listed in this Contract and the Administrative Services Agreement, constitutes the entire agreement between the parties relating to the Work and supersedes all prior or contemporaneous oral or written agreements, negotiations, understandings and statements pertaining to the Work or this Contract.

The parties hereto have executed this Contract on the dates written below, but it is effective as of the date first written above.

LG&E and KU SERVICES COMPANY

BY: Will K. Wacht
TITLE: Manager, Contract Purchasing
DATE: 2.6.2015

THE CADMUS GROUP, INC.

BY: [Signature]
TITLE: Senior Vice President
DATE: 02/04/2014

**ADMINISTRATIVE SERVICES AGREEMENT
LG&E AND KU SERVICES COMPANY AND/OR AFFILIATES**

This Administrative Services Agreement (this "Agreement") is made this 3rd day of February, 2015 (the "Effective Date") by and between LG&E and KU Services Company, a Kentucky corporation ("Company") and/or its "Affiliates" (as defined below) and The Cadmus Group, Inc. ("Contractor"), a Oregon company.

WHEREAS, Contractor desires the opportunity to perform Administrative And/Or Professional Non-Engineering Related Services to Company and/or its Affiliates from time to time, and Company desires the opportunity to engage Contractor to provide such Administrative And/Or Professional Non-Engineering Related Services, evaluations and/or recommendations;

WHEREAS, the Administrative And/Or Professional Non-Engineering Related Services to be rendered by Contractor, as defined in Article 1.01, do not constitute any engineering services, electrical reliability studies, surveys and/or environmentally related services (if engineering services, electrical reliability studies, surveys and/or environmentally professional services should ever be rendered by Contractor to Company, or if Contractor should ever provide any goods and/or render any engineering related and/or construction services to the Company pursuant to any Contract, Statement of Work and/or Purchase Order (or any change orders related thereto), Contractor must then enter into Company's standard "General Services Agreement"; provided, however, that nothing in this Agreement shall preclude Contractor from rendering other types of professional and/or business administrative types of services (i.e., accounting, medical, legal, etc.) which do not constitute engineering services, electrical reliability studies, surveys and/or environmentally related services; and

WHEREAS, the parties intend that this Agreement sets forth the exclusive set of terms and conditions which shall govern the performance of the Work by Contractor for Company should Company engage Contractor to provide Work.

NOW THEREFORE, in consideration of the premises, the mutual covenants contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, and incorporating the above stated recitals, the parties do agree as follows:

ARTICLE 1 DEFINITIONS

- 1.01 Administrative And/Or Professional Non-Engineering Related Services:** "Administrative And/Or Professional Non-Engineering Related Services" shall mean any types of professional and/or business administrative types of services (i.e., accounting, medical, legal, etc.) which do not constitute professional engineering services, electrical reliability studies, surveys and/or environmentally related services.
- 1.02 Affiliate:** "Affiliate" shall mean any entity which, from time to time, in whole or in part, and directly or indirectly, controls, is controlled by, or under common control with LG&E and KU Services Company and shall include, without limitation, Louisville Gas and Electric Company and Kentucky Utilities Company, both Kentucky corporations.
- 1.03 Agreement:** "Agreement" shall mean this Administrative Consulting Services Agreement, along with any attachments, specifications, Purchase Orders, engagement letters or Statements of Work sent by Company in accordance with Article 2, and/or other agreed collateral document pursuant to which the Work is to be performed.
- 1.04 Applicable Laws:** "Applicable Laws" shall mean any and all applicable federal, state or local laws, regulations, codes, ordinances, administrative rules, court orders or permits.
- 1.05 Contract:** "Contract" shall mean, in the aggregate, those specialized terms and conditions contained within Statements of Work and/or Purchase Orders, if any, which are issued pursuant to this Agreement with respect to the Administrative And/Or Professional Non-Engineering Related Services.
- 1.06 Contract Price:** "Contract Price" shall mean the aggregate of the particular consideration set forth in one or more Purchase Orders or as otherwise agreed upon. Unless otherwise agreed, the Contract Price includes all applicable taxes, duties, fees and assessments of any nature including, without limitation, all sales and use taxes, due to any governmental authority with respect to the Work.
- 1.07 Contractor:** "Contractor" shall mean the entity designated as the "Contractor" in the opening paragraph of this Agreement.

- 1.08 Company:** "Company" shall mean LG&E and KU Services Company and/or any of its Affiliates as appropriate based on which entity is the party to the Purchase Order, engagement letter, Statement of Work or other binding document. The rights and obligations of LG&E and KU Services Company and each of its Affiliates hereunder shall be limited to the extent of such party's proportionate utilization of Contractor's services hereunder.
- 1.09 LG&E and KU Services Company:** "LG&E and KU Services Company" shall mean LG&E and KU Services Company, a Kentucky corporation.
- 1.10 Purchase Order:** Company may, at its discretion, issue its own "Purchase Order Standard Terms and Conditions" and/or "Contractor's Purchase Agreement" (collectively, the "Purchase Order"), comprising part of the Contract and/or incorporating the Statements of Work, that may supplement, but not contradict this Agreement unless otherwise expressly provided by Company.
- 1.11 Statements of Work:** "Statements of Work", if any shall comprise, in part, the Contract including specifications, instructions, drawings, schedules, scopes and/or descriptions of Work.
- 1.12 Work:** "Work" shall include those Administrative And/Or Professional Non-Engineering Related Services set forth in any instructions, specifications, schedules, Contract, Statement(s) of Work and/or Purchase Order(s) as mutually executed by the parties.

ARTICLE 2 SCOPE OF AGREEMENT

Unless otherwise agreed in a writing executed by each of the parties (i.e., the Contract) which evidences a clear intention to supersede this Agreement, the parties intend that this Agreement apply to all transactions which may occur between Company and Contractor during the term of this Agreement. Company makes no commitment to Contractor as to the exclusiveness of this relationship or as to the volume and/or quantities (per unit or otherwise), if any, of business Company will perform with Contractor. Such Contract for the provision of Work under this Agreement shall be reflected by (a) each of the parties executing a mutually acceptable schedule to this Agreement or (b) Company providing a Purchase Order and/or engagement letter and/or Statement of Work to Contractor and Contractor accepting such Purchase Order, engagement letter and/or Statement of Work (including by commencing performance pursuant to such Purchase Order). In the event Company provides a Purchase Order, engagement letter and/or Statement of Work to Contractor and Contractor commences performance thereon, Contractor hereby agrees to the formation of a binding agreement as described in the Purchase Order upon Contractor's commencement of performance, waives any argument that it might otherwise have under Applicable Laws that the Purchase Order and/or Statement of Work should have been executed by each of the parties to be enforceable and further agrees to not contest the enforceability of such Purchase Order, engagement letter and/or Statement of Work on those grounds, and agrees to not contest the admissibility of Company's records related to such Purchase Order that are kept in the ordinary course by Company. In addition, in no event shall the terms and conditions of any proposal, Purchase Order acknowledgement, invoice, or other document, in each case as unilaterally issued by Contractor, be binding upon Company without Company's explicit written acceptance thereof. Any Work performed by Contractor without Company's binding commitment for such Work either via a duly executed schedule to this Agreement or a duly executed Purchase Order and/or Statement of Work shall be at Contractor's sole risk and expense, and Company shall have no obligation to pay for any such Work.

ARTICLE 3 CONDITIONS AND RISKS OF WORK; WORK HARMONY

Contractor represents that Contractor has carefully examined all conditions relevant to the Work and its surroundings, and Contractor assumes the risk of such conditions and will, regardless of such conditions, the expense, or difficulty of performing the Work, fully complete the Work for the stated Contract Price without further recourse to Company. Information on the site of the Work and local conditions at such site furnished by Company in specifications, drawings, or otherwise is made without representation or warranty of any nature by Company, is not guaranteed by Company, and is furnished solely for the convenience of Contractor. In case of a conflict between instructions, specifications, drawings, schedules, and/or Purchase Order(s), Company shall resolve such conflict; and Company's resolution shall be binding on Contractor. Contractor agrees that all labor employed by Contractor, its agents, or subcontractors for Work on the premises of Company, if any, shall be in harmony with all other labor being used by Company or other contractors working on Company's premises. To the extent applicable, Contractor agrees to give Company immediate notice of any threatened or actual labor dispute and will provide assistance as determined necessary by Company to resolve any such dispute. Contractor, its agents, or subcontractors, if any, shall remove from Company's premises any person objected to by Company in association with the Work.

ARTICLE 4 COMPANY CHANGES IN WORK

The scope of and conditions applicable to the Work shall be subject to changes by Company from time to time. Such changes shall only be enforceable if documented in a writing executed by Company. Except as otherwise specifically set forth in this Agreement, changes in the scope of or conditions applicable to the Work may result in adjustments in the Contract Price and/or the Work schedule in accordance with this Article 4. If Contractor believes that adjustment of the Contract Price or the Work schedule is justified, whether as a result of a change made pursuant to this Article or as a result of any other circumstance, then Contractor shall (a) give Company written notice of its claim within five (5) business days after receipt of notice of such change or the occurrence of such circumstances and (b) shall supply a written statement supporting Contractor's claim within ten (10) business days after receipt of notice of such change or occurrence of such circumstances, which statement shall include Contractor's detailed estimate of the effect on the Contract Price and/or the Work schedule. Contractor agrees to continue performance of the Work during the time any claim hereunder is pending. Company shall not be bound to any adjustments in the Contract Price or the Work schedule unless expressly agreed to by Company in writing. Company will not be liable for, and Contractor waives, any claims of Contractor that Contractor knew or should have known and that were not reported by Contractor in accordance with the provisions of this Article.

ARTICLE 5 FORCE MAJEURE

Neither party shall be liable to the other for any damages for any failure to perform or for any delays or interruptions beyond that party's reasonable control in performing any of its obligations under this Agreement only due to acts of God, fires, floods, earthquakes, riots, civil insurrection, acts of the public enemy, or acts or failures to act of civil or military authority, unless the time to perform is expressly guaranteed. Contractor shall advise Company immediately of any anticipated and actual failure, delay, or interruption and the cause and estimated duration of such event. Any such failure, delay, or interruption, even though existing on the date of this Agreement or on the date of the start of the Work, shall require Contractor to within five (5) days submit a recovery plan detailing the manner in which the failure, delay, or interruption shall be remedied and the revised schedule. Contractor shall diligently proceed with the Work notwithstanding the occurrence thereof. This Article shall apply only to the part of the Work directly affected by the particular failure, delay, or interruption, and shall not apply to the Work as a whole or any other unaffected part thereof.

ARTICLE 6 CONTRACTOR DELAYS

Time is of the essence in the performance of this Agreement by Contractor. Contractor agrees to cooperate with Company in scheduling the Work so that the project will progress with a minimum of delays. Company shall not be responsible for compensating Contractor for any costs of overtime or other premium time work unless Company has provided separate prior written authorization for additional compensation to Contractor.

ARTICLE 7 COMPANY EXTENSIONS

Company shall have the right to extend schedules or suspend the Work, in whole or in part, at any time upon written notice to Contractor (except that in an emergency or in the event that Company identifies any safety concerns, Company may require an immediate suspension upon oral or written notice to Contractor). Contractor shall, upon receipt of such notice, immediately suspend or delay the Work. Contractor shall resume any suspended Work when directed by Company. If Contractor follows the requirements of Article 4, a mutually agreed equitable adjustment to the Contract Price or to the schedules for payments and performance of the remaining Work may be made to reflect Company's extension of schedules or suspension of the Work. Contractor will provide Company with all information requested in connection with determining the amount of such equitable adjustment.

ARTICLE 8 AUDITING

8.01 Rights of Inspection of Records and Auditing. Contractor shall maintain complete records relating to any cost-based (i.e., Work not covered by firm prices) components billed under this Agreement or relating to the quantity of units billed under any unit price provisions of this Agreement (all the foregoing hereinafter referred to collectively as "Records") which shall be open to inspection and subject to audit and reproduction during normal working hours, by Company or its authorized representative to the extent necessary to adequately permit evaluation and verification of any invoices, payments, time sheets, or claims based on Contractor's actual costs incurred in the performance of Work under this Agreement. For the purpose of evaluating or verifying such actual or claimed costs, Company or its authorized representative shall have access to said Records at any time, including any time after final payment by Company to Contractor pursuant to this Agreement. All non-public information obtained in the course of such audits shall be held in confidence except pursuant to judicial and administrative order. Company or its authorized representatives shall have access, during normal working hours, to all necessary Contractor facilities

and shall be provided adequate and appropriate work space to conduct audits in compliance with the provisions of this Article. Company shall give Contractor reasonable notice of intended audits.

ARTICLE 9 COMPLIANCE WITH APPLICABLE LAWS; SAFETY; DRUG AND ALCOHOL TESTING; IMMIGRATION; NERC RELIABILITY STANDARDS COMPLIANCE

9.01 Applicable Laws and Safety: Contractor agrees to protect its own and its subcontractors' employees and be responsible for their Work until Company's acceptance of the entire project and, if Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, to protect Company's facilities, property, employees and third parties from damage or injury. Contractor shall at all times be solely responsible for complying with all Applicable Laws and facility rules, including without limitation those relating to health and safety, in connection with the Work and for obtaining (but only as approved by Company) all permits and approvals necessary to perform the Work. Without limiting the foregoing, and as applicable, Contractor agrees to strictly abide by and observe (i) all standards of the Occupational Safety & Health Administration (OSHA) which are applicable to the Work being performed now or in the future; (ii) Company's Contractor/Subcontractor Safety Policy; and (iii) Company's Contractor's Code of Business Conduct (Contractor hereby acknowledges receipt of copies of all such policies and agrees to be bound by these and any other rules and regulations of the Company, as well as to any amendments and/or modifications that may be issued in the future with respect thereto. If Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, Contractor shall maintain the Work site in a safe and orderly condition at all times. Company shall have the right but not the obligation to review Contractor's and/or its subcontractor's compliance with safety and cleanup measures. In the event Contractor fails to keep the work area clean, if Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises, Company shall have the right to perform such cleanup on behalf of, at the risk of and at the expense of Contractor. Contractor further specifically acknowledges, agrees and warrants that Contractor has complied, and shall at all times during the term of this Agreement, comply in all respects with all laws, rules and regulations relating to the employment authorization of employees including, but not limited to, the Immigration Reform and Control Act of 1986, as amended, and the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended, whereby Contractor certifies to Company that Contractor has (a) properly maintained, and shall at all times during the term of this Agreement properly maintain all records required by Immigration and Customs Enforcement, such as the completion and maintenance of the Form I-9 for each of Contractor's employees; (b) that Contractor maintains and follows an established policy to verify the employment authorization of its employees; (c) that Contractor has verified the identity and employment eligibility of all employees in compliance with all applicable laws; and (d) that Contractor is without knowledge of any fact that would render any employee or subcontractor of Contractor ineligible to legally work in the United States. Contractor further acknowledges, agrees and warrants that all of its subcontractors will be required to agree to these same terms as a condition to being awarded any subcontract for such Work.

9.02 Hazards and Training: Assuming Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises at any time performing the Work, Contractor shall furnish adequate numbers of trained, qualified, and experienced personnel and appropriate safety and other equipment in first-class condition, suitable for performance of the Work. Such personnel shall be skilled and properly trained to perform the Work and recognize all hazards associated with the Work. Without limiting the foregoing, Contractor shall participate in any safety orientation or other of Company's familiarization initiatives related to safety and shall strictly comply with any monitoring initiatives as determined by Company. Contractor shall accept all equipment, structures, and property of Company as found and acknowledges it has inspected the property, has determined the hazards incident to working thereon or thereabouts, and has adopted suitable precautions and methods for the protection and safety of its employees and the property.

9.03 Drug and Alcohol: Assuming Contractor and/or its employees, agents, representatives and/or subcontractors are on Company's premises at any time performing the Work, no person will perform any of the Work while under the influence of drugs or alcohol. No alcohol may be consumed within four (4) hours of the start of any person's performance of the Work or anytime during the workday. A person will be deemed under the influence of alcohol if a level of .02 percent blood alcohol or greater is found. In addition to the requirements of the drug testing program, as set forth in Company's rules and regulations, all persons who will perform any of the Work will be subject to drug and alcohol testing under either of the following circumstances: (i) where the person's performance either contributed to an accident or cannot be completely discounted as a contributing factor to an accident which involves off-site medical treatment of any person; and (ii) where Company determines in its sole discretion that there is reasonable cause to believe such person is using drugs or alcohol or may otherwise be unfit for duty. Such persons will not be permitted to perform any Work until the test results are established. Contractor shall be solely responsible for administering and conducting drug and alcohol testing, as set forth herein, at Contractor's sole

expense. As applicable and in addition to any other requirements under this Agreement, Contractor shall develop and strictly comply with any and all drug testing requirements as required by Applicable Laws.

9.04 NERC Reliability Standards. The following additional provisions shall apply if Contractor's Work in any way involves areas or assets which are located within physical security perimeters as defined by NERC's Reliability Standards for the Bulk Electric Systems of North America (collectively, the "NERC Standards"), including without limitation any Company data center or control center. Contractor's non-compliance of NERC Standards may result in fines and/or penalties being assessed against the Company that would result in Company seeking indemnification from Contractor as a consequence of Contractor's and/or its subcontractors', agents' and/or representatives' non-compliance of NERC Standards.

A. Information Protection. Without compromising the confidentiality provisions in Article 24, Contractor shall at all times comply with the Company's information protection program(s) as defined by CIP-003, R4. Among the information protected by this program are: (i) all operational procedures; (ii) lists of critical cyber assets; (iii) network topology or similar diagrams; (iv) floor plans of computing centers that contain critical cyber assets; (v) equipment layouts of critical cyber assets; (vi) disaster recovery plans; (vii) incident response plans; and (viii) security configuration information. Contractor shall protect this protected information from disclosure consistent with the program.

B. Access Revocation. Contractor shall *immediately* advise appropriate Company's management if any of Contractor's personnel who have key card access to a restricted area or electronic access to a protected system no longer require such access.

C. Training. If any Contractor personnel require key card access to a restricted area or electronic access to a protected system, Contractor shall ensure that such personnel complete, and retake as requested, all necessary NERC training as requested by Company.

D. Personnel Risk Assessment. If any Contractor personnel require key card access to a restricted area or electronic access to a protected system, Contractor shall ensure that Company receives necessary waivers and information from Contractor's personnel to complete, and repeat as necessary, such background checks as requested by Company.

Continuing Obligations. Contractor further acknowledges that its compliance with the NERC Standards is a continuing obligation during and after the Term. Upon written notice to Contractor, Company shall have the absolute right to audit and inspect any and all information regarding Contractor's compliance with this Section 9.04, and/or to require confirmation of the destruction of any documentation received from or regarding Company. Contractor is encouraged to contact Company's Compliance Department pursuant to Section 9.05 to ensure Contractor understands and complies with this Section 9.04.

9.05 Office of Compliance: The Company has an Office of Compliance. Should Contractor have actual knowledge of violations of any of the herein stated policies of conduct in this Article 9, or have a reasonable basis to believe that such violations will occur in the future, whether by its own employees, agents, representatives or subcontractors, or by another vendor and/or supplier of the Company and its employees, agents, representatives or subcontractors, or by any employee, agent and/or representative of Company, Contractor has an affirmative obligation to immediately report any such known, perceived and/or anticipated violations to the Company's Office of Compliance in care of Director, Compliance and Ethics, LG&E and KU Services Company, 220 West Main Street, Louisville, Kentucky 40202.

ARTICLE 10 STATUS OF CONTRACTOR

Company does not reserve any right to control the methods or manner of performance of the Work by Contractor. Contractor, in performing the Work, shall not act as an agent or employee of Company, but shall be and act as an independent contractor and shall be free to perform the Work by such methods and in such manner as Contractor may choose, doing everything necessary to perform such Work properly and safely and having supervision over and responsibility for the safety and actions of its employees. Contractor's employees and subcontractors shall not be deemed to be employees of Company. Contractor agrees that if any portion of Contractor's Work is subcontracted, all such subcontractors shall be bound by and observe the conditions of this Agreement to the same extent as required of Contractor. In such event, Company strongly encourages the use of Minority Business Enterprises, Women Business Enterprises, and Disadvantaged Business Enterprises, as defined under federal law and as certified by a certifying agency that Company recognizes as proper.

ARTICLE 11 EQUAL EMPLOYMENT OPPORTUNITY

Contractor and its subcontractors shall abide by the requirements of 41 CFR 60-741.5(a). That regulation prohibits discrimination against qualified individuals on the basis of disability, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified individuals with disabilities.

Contractor and its subcontractors shall abide by the requirements of 41 CFR 60-300.5(a). That regulation prohibits discrimination against qualified protected veterans, and requires affirmative action by covered prime contractors and subcontractors to employ and advance in employment qualified protected veterans. To the extent applicable, Contractor and its subcontractors shall comply with all of the following provisions, which are incorporated herein by reference: (i) Equal Opportunity regulations set forth in 41 CFR § 60-1.4(a) and (c), prohibiting employment discrimination against any employee or applicant because of race, color, religion, sex, or national origin; (ii) Vietnam Era Veterans Readjustment Assistance Act regulations set forth in 41 CFR § 60-250.4 relating to the employment and advancement of disabled veterans and Vietnam era veterans; (iii) Rehabilitation Act regulations set forth in 41 CFR § 60-741.4 relating to the employment and advancement of qualified disabled employees and applicants for employment; (iv) the clause known as "Utilization of Small Business Concerns and Small Business Concerns Owned and Controlled by Socially and Economically Disadvantaged Individuals" set forth in 15 USC § 637(d)(3); and (v) the subcontracting plan requirement set forth in 15 USC § 637(d).

ARTICLE 12 INDEMNITY BY CONTRACTOR

Contractor shall indemnify, defend, and hold harmless Company, its directors, members, managers, officers, employees, and agents, from any and all damage, loss, claim, demand, suit, liability, penalty and/or fine (pursuant to Section 9.04 or otherwise), or forfeiture of every kind and nature, including but not limited to costs and expenses of defending against the same and payment of any settlement or judgment therefore, by reason of (a) bodily and other personal injuries to or deaths of persons, (b) damages to property, (c) the release or threatened release of a hazardous substance or any pollution or contamination of or other adverse effects on the environment, (d) violations of any Applicable Laws, or (e) infringement of patent, copyright, trademark, trade secret, or other property right, whether suffered directly by Company or indirectly by reason of third party claims, demands, or suits, resulting or alleged to have resulted from acts or omissions of Contractor, its employees, agents, subcontractors, or other representatives or otherwise from performance of this Agreement. This obligation to indemnify, defend, and hold harmless shall survive termination or expiration of this Agreement.

ARTICLE 13 INSURANCE

13.01 Contractor's Insurance Obligation: During the entire duration of the scope of Work on a per occurrence basis with respect to any Purchase Order issued under this Agreement, Contractor shall provide and maintain, and shall require any subcontractor to provide and maintain the following insurance (and, except with regard to Workers' Compensation, naming Company as additional insured and waiving rights of subrogation against Company and Company's insurance carrier(s)), and shall submit evidence of such coverage to Company prior to the start of the Work and, furthermore, Contractor shall notify Company, prior to the commencement of any Work pursuant to any Statement of Work and/or Purchase Order, of any threatened, pending and/or paid off claims to third parties, individually or in the aggregate, which otherwise affects the availability of the limits of coverage inuring to the benefit of Company as hereinafter specified:

- (a) Workers' Compensation and Employer's Liability Policy, which shall include:
 - 1) Workers' Compensation (Coverage A), with statutory limits, and in accordance with the laws of the state where the Work is performed;
 - 2) Employer's Liability (Coverage B) with minimum limits of One Million Dollars (\$1,000,000) Bodily Injury by Accident, each Accident, \$1,000,000 Bodily Injury by Disease, each Employee;
 - 3) Thirty (30) Day Cancellation Clause; and
 - 4) Broad Form All States Endorsement.
- (b) Commercial General Liability Policy, which shall have minimum limits of One Million Dollars (\$1,000,000) each occurrence; One Million Dollars (\$1,000,000) Products/Completed Operations Aggregate each occurrence; One Million Dollars (\$1,000,000) Personal and Advertising Injury each occurrence, in all cases subject to Two Million Dollars (\$2,000,000) in the General Aggregate for all such claims, and including:
 - 1) Thirty (30) Day Cancellation Clause;
 - 2) Blanket Written Contractual Liability to the extent covered by the policy against liability assumed by Contractor under this Agreement; and
 - 3) Broad Form Property Damage.
- (c) Commercial Automobile Liability Insurance covering the use of all owned, non-owned, and hired automobiles, with a bodily injury, including death, and property damage combined single minimum limit of One Million Dollars (\$1,000,000) each occurrence with respect to Contractor's vehicles assigned to or used in performance of Work under this Agreement.

- (d) Umbrella/Excess Liability Insurance with minimum limits of Two Million Dollars (\$2,000,000) per occurrence; Two Million Dollars (\$2,000,000) aggregate, to apply to employer's liability, commercial general liability, and automobile liability.
- (f) Professional Liability Insurance, only to the extent applicable, and/or Errors and Admission coverage relating to professional administrative/consulting types of services will be separately provided by Contractor as specified in the Work, with limits, in each respect, of Three Million Dollars (\$3,000,000) per occurrence and Three Million Dollars (\$3,000,000) in the aggregate, which insurance shall be either on an occurrence basis or on a claims made basis (with a retroactive date satisfactory to Company).

13.02 Quality of Insurance Coverage: The above policies to be provided by Contractor shall be written by insurance companies which are both licensed to do business in the state where the Work will be performed and either satisfactory to Company or having a Best Rating of not less than A-. These policies shall not be materially changed or canceled except with thirty (30) days written notice to Company from Contractor and the insurance carrier. Evidence of coverage, notification of cancellation or other changes shall be mailed to: Attn: Manager, Supply Chain, LG&E and KU Services Company, P.O. Box 32020, Louisville, Kentucky 40232.

13.03 Implication of Insurance: Company reserves the right to request and receive a summary of coverage of any of the above policies or endorsements; however, Company shall not be obligated to review any of Contractor's certificates of insurance, insurance policies, or endorsements, or to advise Contractor of any deficiencies in such documents. Any receipt of such documents or their review by Company shall not relieve Contractor from or be deemed a waiver of Company's rights to insist on strict fulfillment of Contractor's obligations under this Agreement.

13.04 Other Notices: Contractor shall provide notice of any accidents or claims relating to the Work to Company's Manager, Risk Management at LG&E and KU Services Company, P.O. Box 32030, Louisville, Kentucky 40232 and Company's site authorized representative.

ARTICLE 14 WARRANTIES

Contractor hereby represents and warrants to Company that all services provided by Contractor in its performance of its obligations under this Agreement shall be provided by personnel who are careful, skilled, experienced, qualified and competent. Contractor represents and warrants that all services, findings, recommendations and advice provided by or on behalf of Contractor under this Agreement shall be rendered in a highly competent and/or professional manner.

ARTICLE 15 OWNERSHIP OF INTELLECTUAL PROPERTY; PATENTS

All inventions, discoveries, processes, methods, designs, drawings, blueprints, information, software, works of authorship and know-how, or the like, whether or not patentable or copyrightable (collectively, "Intellectual Property"), which Contractor conceives, develops, or begins to develop, either alone or in conjunction with Company or others, in connection with the Work, shall be "work made for hire" and the sole and exclusive property of Company. Upon request, Contractor shall promptly execute all applications, assignments, and other documents that Company shall deem necessary to apply for and obtain letters patent of the United States and/or copyright registration for the Intellectual Property and in order to evidence Company's sole ownership thereof.

ARTICLE 16 ASSIGNMENT OF AGREEMENT; SUBCONTRACTING

Upon prior written notice given to Company, Contractor shall not, by operation of law or otherwise, assign and/or subcontract any part of the Work or this Agreement without Company's prior written approval. Such approval, if given by Company, shall not relieve Contractor from full responsibility for the fulfillment of any and all obligations under this Agreement. Under any and all circumstances, any permitted assignee of Contractor, whether or not such assignee shall be a division, subsidiary and/or affiliate entity of Contractor, shall also be fully bound by the terms of this Agreement and, furthermore, upon request by Company, each of Contractor and its permitted assignee shall provide sufficient financial information, as determined by Company in its sole discretion, necessary to validate such assignee's credit worthiness and ability to perform under this Agreement.

ARTICLE 17 INVOICES AND EFFECT OF PAYMENTS; RELEASE OF LIENS

17.01 Invoices: Within a reasonable period of time following the end of each calendar month or other agreed period, Contractor shall submit an invoice to Company that complies with this Article. Payments shall be made within forty-five (45) days of Company's receipt of Contractor's proper invoice, and, in the event that Company's payment is overdue, Contractor shall promptly provide Company with a notice that such payment is overdue. Contractor's invoices shall designate the extent to which LG&E and KU Services Company or any of its Affiliates is

the responsible party. To the extent applicable, such invoices shall reference the contract number and shall also show labor, material and taxes paid regarding the services rendered (including without limitation sales and use taxes, to the extent applicable); retainers to the extent as may be specified in the Purchase Order, Statement of Work and/or other contractual documentation. All invoices shall be submitted with supporting documentation and in acceptable form and quality to Company's authorized representative. Should Company dispute any invoice for any reason, payment on such invoice shall be made within thirty (30) days of the dispute resolution. Payment of the invoice shall not release Contractor from any of its obligations hereunder, including but not limited to its warranty and indemnity obligations.

17.02 Taxes: If Company provides Contractor with an exemption certificate demonstrating an exemption from sales or use taxes in Kentucky, then Contractor shall not withhold or pay Kentucky sales or use taxes to the extent such exemption certificate applies to the Work. In no event shall Contractor rely upon Company's direct pay authorization in not withholding or paying Kentucky sales or use taxes. Otherwise, Contractor shall be solely responsible for paying all appropriate sales, use, and other taxes and duties (including without limitation sales or use tax with respect to materials purchased and consumed in connection with the Work) to, as well as filing appropriate returns with, the appropriate authorities. To the extent specifically included in the Contract Price, Contractor shall bill Company for and Company shall pay Contractor all such taxes and duties, but Company shall in no event be obligated for taxes and duties not specifically included in the Contract Price or for interest or penalties arising out of Contractor's failure to comply with its obligations under this Section 17.

17.03 Billing of Additional Work: All claims for payments of additions to the Contract Price shall be shown on separate Contractor's invoices and must refer to the specific change order or written authorization issued by Company as a condition to being considered for payment.

17.04 Effect of Payments/Offset: No payments shall be considered as evidence of the performance of or acceptance of the Work, either in whole or in part, and all payments are subject to deduction for loss, damage, costs, or expenses for which Contractor may be liable under any Purchase Order or set-off hereunder. In addition to Company's right of off-set for threatened and/or filed liens and/or encumbrances, and/or with respect to payment disputes pursuant to Section 17.05, Company, without waiver or limitation of any rights or remedies of Company, shall be entitled from time to time to deduct from any and all amounts owing by Company to Contractor in connection with this Agreement or any other contract with Company any and all amounts owed by Contractor to Company in connection with this Agreement or any other contract with Company.

17.05 Release and Indemnity Regarding Liens: Contractor hereby releases and/or waives for itself and its successors in interest, and for all subcontractors and their successors in interest, any and all claim or right of mechanics or any other type of lien to assert and/or file upon Company's or any other party's property, the Work, or any part thereof as a result of performing the Work. Contractor shall execute and deliver to Company such documents as may be required by Applicable Laws (i.e., partial and/or final waivers of liens and/or affidavits of indemnification) to make this release effective and shall give all required notices to subcontractors with respect to ensuring the effectiveness of the foregoing releases against those parties. Contractor shall secure the removal of any lien that Contractor has agreed to release in this Article within five (5) working days of receipt of written notice from Company to remove such lien. If not timely removed, Company may remove the lien and charge all costs and expenses including legal fees to Contractor including, without limitation, the costs of bonding off such lien. Company, in its sole discretion, expressly reserves the right to off-set and/or retain any reasonable amount due to Contractor from payment of any one or more of Contractor's invoices upon Company having actual knowledge of any threatened and/or filed liens and/or encumbrances that may be asserted and/or filed by any subcontractor, materialman, independent contractor and/or third party with respect to the Work, with final payment being made by Company only upon verification that such threatened and/or filed liens and/or encumbrances have been irrevocably satisfied, settled, resolved and/or released (as applicable), and/or that any known payment disputes concerning the Work involving Contractor and any of its subcontractors, agents and/or representatives have been resolved so that no actions, liens and/or encumbrances will be filed against Company and/or Company's property.

ARTICLE 18 TERM AND TERMINATION

18.01 Term: This Agreement shall commence on the date set forth above and shall survive in full force and effect until terminated as set forth below and/or otherwise, solely with respect to any Statement of Work and/or Purchase Order, terminate consistent with the specified expiration date as may be stated in any Statement of Work and/or Purchase Order by and between Contractor and Company notwithstanding any terms and conditions to the contrary in this Agreement. A termination under this Article 18 based on certain Work shall only apply to the Statement of Work and/or Purchase Order that covers such Work. Any Statements of Work and/or Purchase Orders that do not relate to such Work shall not be affected by such a termination.

18.02 Termination for Contractor's Breach: If the Work to be done under this Agreement shall be abandoned by Contractor, if this Agreement or any portion thereof shall be assigned by operation of law or otherwise, if Contractor is placed in bankruptcy, or if a receiver be appointed for its properties, if Contractor shall make an assignment for the benefit of creditors, if at any time the necessary progress of Work is not being maintained, if at any time Contractor's professional license (or any professional licenses of any of its employees and/or subcontractors) is revoked or rescinded, or if Contractor is violating any of the conditions or agreements of this Agreement, or has executed this Agreement in bad faith, Company may, without prejudice to any other rights or remedies it may have at law or equity as a result thereof, notify Contractor to discontinue any or all of the Work and terminate this Agreement in whole or part. In the event that Section 365(a) of the Bankruptcy Code or some successor law gives Contractor as debtor-in-possession the right to either accept or reject this Agreement, then Contractor agrees to file an appropriate motion with the Bankruptcy Court to either accept or reject this Agreement within twenty (20) days of the entry of the Order for Relief in the bankruptcy proceeding. Contractor and Company acknowledge and agree that said twenty (20) day period is reasonable under the circumstances. Contractor and Company also agree that if Company has not received notice that Contractor has filed a motion with the Bankruptcy Court to accept or reject this Agreement within said twenty (20) day period, then Company may file a motion with the Bankruptcy Court asking that this Agreement be accepted or rejected, and Contractor shall not oppose such motion.

18.03 Effect of Termination for Contractor's Breach: The expenses of completing the Work in excess of the unpaid portion of the Contract Price, together with any damages suffered by Company, shall be paid by Contractor, and Company shall have the right to set off such amounts from amounts due to Contractor. Company shall not be required to obtain the lowest figures for completing the Work but may make such expenditures as in its sole judgment shall best accomplish such completion.

18.04 Termination for Company's Convenience: Company may terminate this Agreement in whole or in part for its own convenience by fifteen (15) days' written notice at any time, with or without cause. In such event, Company shall pay Contractor all actual direct labor costs incurred on the Work prior to such notice, plus any reasonable unavoidable cancellation costs which Contractor may incur as a result of such termination.

ARTICLE 19 PUBLICITY

Contractor shall not issue news releases, publicize or issue advertising pertaining to the Work or this Agreement without first obtaining the written approval of Company.

ARTICLE 20 CONFIDENTIAL INFORMATION

All information relating to the Work or the business of Company, including, but not limited to, drawings and specifications relating to the Work, shall be held in confidence by Contractor and shall not be used by Contractor for any purpose other than for the performance of the Work or as authorized in writing by Company. All drawings, specifications, or documents furnished by Company to Contractor or developed in connection with the Work shall either be destroyed or returned to Company (including any copies thereof) upon request at any time.

ARTICLE 21 INCIDENTAL/CONSEQUENTIAL DAMAGES

Other than with respect to a force majeure as provided in Article 5 and Contractor's compliance therewith, Company expressly reserves its right to seek all incidental and/or consequential damages that may arise from the scope of Work of Contractor's performance and/or non-performance herein or regarding any of Contractor's employees, subcontractors, agents and/or representatives; provided, however, that in no event shall Contractor have the right to assert any claims of incidental and/or consequential damages against Company.

ARTICLE 22 MISCELLANEOUS.

22.01 Waiver: No waiver by Company of any provision herein or of a breach of any provision shall constitute a waiver of any other breach or of any other provision.

22.02 Headings: The headings of Articles, Sections, Paragraphs, and other parts of this Agreement are for convenience only and do not define, limit, or construe the contents thereof.

22.03 Severability: If any provision of this Agreement shall be held invalid under law, such invalidity shall not affect any other provision or provisions hereof which are otherwise valid.

22.04 State Law Governing Agreement; Consent to Jurisdiction: This Agreement shall be governed by, and construed in accordance with, the laws of the Commonwealth of Kentucky, without regard to its principles of conflicts of laws. The site of any legal actions between the parties shall be held in state and/or federal court in Louisville, Kentucky.

22.05 Enforcement of Rights: Company shall have the right to recover from Contractor all expenses, including but not limited to fees for inside or outside counsel hired by Company, arising out of Contractor's breach of this Agreement or any other action by Company to enforce or defend Company's rights hereunder.

22.06 No Third Party Beneficiaries: Except for Contractor and Company, there are no intended third party beneficiaries of this Agreement and none may rely on this Agreement in making a claim against Company.

22.07 Notices: All notices and communications respecting this Agreement shall be in writing, shall be identified by the contract number, shall be designated for LG&E and KU Services Company, or the appropriate Affiliate, and shall be addressed as follows (which address either party may change upon five (5) days prior notice to the other party):

To Company:

LG&E and KU Services Company
Attn: Manager, Supply Chain
P.O. Box 32020
Louisville, Kentucky 40232

To Contractor:

The Cadmus Group, Inc.
Attn: Hossein Haeri
720 SW Washington, Suite 400
Portland, OR 97205
Office: (503) 467-7140

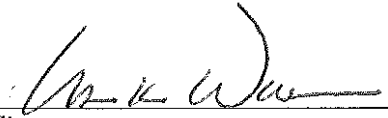
ARTICLE 23 LIABILITY OF AFFILIATES

Any and all liabilities of LG&E and KU Services Company and/or its Affiliates under this Agreement shall be several but not joint.

IN WITNESS WHEREOF, the parties have entered into this Agreement as of the Effective Date.

LG&E AND KU SERVICES COMPANY

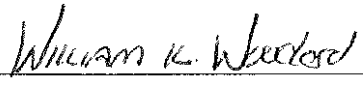
THE CADMUS GROUP, INC.



Signature



Signature



Name (Please Print)

Hossein Haeri

Name (Please Print)

Manager Supply Chain

Title

Senior Vice President

Title

2.6-2015

Date

2/4/2015

Date

Contractor Code of Business Conduct

This LG&E and KU Services Company (a Kentucky corporation) Contractor Code of Business Conduct ("Code") is incorporated by reference into the General Service Agreement or other agreement between you as the contractor ("Contractor") and LG&E and KU Services Company and/or one of its affiliates Kentucky Utilities Company, and Louisville Gas and Electric Company (collectively the "Company"). This Code sets minimum standards for Contractor's conduct in the areas addressed. Contracts between Company and Contractor may provide for standards exceeding the standards of this code.

Observance of Laws

Contractor shall fully comply with the provisions of all federal, state and local laws, regulations and ordinances applicable to its activities performed for the Company or any goods or services provided to or on behalf of the Company, including without limitation, all applicable laws, regulations and ordinances pertaining to occupational health and safety and environmental protection.

Bribes and Kickbacks

Contractor may not under any circumstances accept or pay bribes, kickbacks or other similar compensation or consideration in any way relating to the Company or any activity for or on behalf of the Company.

Dishonest and Fraudulent Activity

Contractor shall not engage in or allow its employees to engage in dishonest acts or fraudulent activity in connection with or in association with the Company's business. For purposes of this policy, the definition of a dishonest act or fraudulent activity includes but is not limited to:

1. An intentional or deliberate act to deprive the Company or any person of something of value, or to gain an unfair benefit using deception, false suggestions, suppression of truth, or other unfair means which are believed and relied upon.
2. A dishonest act or fraudulent activity may be, but is not limited to, an intentional act or activity that is unethical, improper, or illegal such as:
 - a. Embezzlement;
 - b. Misappropriation, misapplication, destruction, removal, or concealment of property;
 - c. Alteration or falsification of paper or electronic documents, including the inappropriate destruction of paper or electronic documents;
 - d. False claims and/or misrepresentation of facts;
 - e. Theft of an asset, including, but not limited to, money, tangible property, trade secrets or intellectual property;

Harassment

Contractor shall not permit sexual advances, actions, comments, or any other conduct that creates an intimidating or otherwise offensive work environment on Company property or any site where Contractor is performing activity for or on behalf of Company. Further, Contractor shall not permit the use of racial and religious slurs, or any other conduct that breeds an offensive work environment, on Company property or any site where Contractor is performing activity for or on behalf of Company.

Drugs and Alcohol

Contractor shall not allow any employee to perform services for or on behalf of Company while under the influence of drugs or alcohol. Contractor shall maintain a drug and alcohol testing program meeting all applicable federal, state and local laws, regulations and ordinances and meeting or exceeding any and all standards stated in any contract with Company or any document incorporated in such a contract.

Misuse of Company Assets

No funds or assets of the Company may be used or paid for any unlawful or improper purpose. A Contractor's employees shall not have access to any Company computers unless the contract between such Contractor and the Company expressly provides for such access in writing.

Reporting of Violations

In the event Contractor learns of any violation of this Code, Contractor shall immediately report such violation to Company's Director, Compliance and Ethics at (502) 627-2648.