



***Request for Qualifications for EM&V 2022-2024 Evaluation-
Three Research Areas
for the Connecticut EEB***

Issued by:

CT Energy Efficiency Board (EEB) Evaluation Committee
Sole Contacts: CT EEB Evaluation Administrator (EA) Team

Reply to all EA Team Members listed below:

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Issue Date: January 21, 2022

Response Date: February 28, 2022, 5pm Eastern Time

RFQ Schedule:

1/21/22	Issue Date
1/31/22	Deadline for all questions (must be submitted to the 5 email addresses above)
2/3/22	MANDATORY Intent to bid (not binding; provides email addresses for Q&A responses)
2/4/22	Written answers to Q&A provided by email to all firms submitting an intent to bid
2/28/22	Electronic Submittals to RFQ due 5:00 EDT and sent to all 5 email addresses above

NOTE – FOR INTERESTED PARTIES OBTAINING THIS RFQ FROM A POSTING ON A WEBSITE, YOU MUST EMAIL skumatz@serainc.com FOR THE NEEDED APPENDICES (UTILITY CONTRACTING DOCS, ETC.).

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Appendix B – UIL contract terms and conditions (provided as separate electronic document)

Appendix C – Form B –Required Excel Budget workbook (blank)

Appendix D – 2021 CT Evaluation Roadmap (provided as separate electronic document)

FORM A

***Intent to Bid – Submit separately by due date
(Non-binding, but required in order to receive the Q&A answers)***

Submit this form (or an email or facsimile with the same information) by Deadline on Cover Sheet
Submit by email with subject line CT_Intent to Bid (your firm name) to ALL FIVE EMAILS of the EA team
listed on page 1

Firm Name: _____

Contact Name: _____ Date: _____

Contact Email Address: _____

Contact Telephone Number: _____

2nd contact name / phone/email (REQUIRED): _____

Address: _____

Research Areas in which you intend to bid (non-binding)

_____ Residential

_____ Commercial

_____ Cross cutting & topics

_____ Will Not Respond on the 2022 RFQ.

FORM B

**Excel workbook attached; contents / image reproduced below
Budget Format for 2022 'Sample' Projects in Part A).**

Label tabs with project number

One workbook RFQ Research Area your firm is bidding on.

May not be more than 1 page wide, landscape, when pasted into word document.

One workbook sheet for each 2022 Sample Project in the Research Area. NOTE: Add columns for tasks and rows for staff or expense categories as needed. Please break out (primary) data collection task separately (surveys, etc.), and explain the derivation of data collection costs in detail at the bottom of the budget. Please also break out the costs you assume for the process of obtaining needed data from the utilities (requests, checking, cleaning, tracking). Options based on variations in sample size, etc. may be presented below the table, with revised assumptions clearly labeled. Optional tasks should be presented to the right of the main body of the submittal, or as second budget for the same project beneath the first as another landscape page in the same tab. On each tab, include a footnote reconfirming the company's policy on travel time and on mark-up for direct expenses. **RATES:** Present fully loaded rates. IF A PROJECT is conducted in more than one year, and proposed rates vary by year, show a blended rate.

Staff Name	Staff Title	Firm Name	Years of Experience	Hourly Rate	Task 1- K/O & Lit Review	Task 2- Data Collection	Task 3- Analysis	Task 4- Reporting & PM	Total Hours	Total Cost	Percent of Labor Hours	Percent of Total Cost	% of time over elapsed months of project	Optional Tasks at right
John Smith	VP	ABC Consul	18	\$285	12	12	12	20	56	\$15,960	8%	10%	4.7%	
Jane Jones	Snr Engineer	XYZ Inc.	14	\$240	24	40	40	30	134	\$32,160	19%	21%	11.1%	
A. Baker	Consultant	ABC Consul	10	\$190			100	40	140	\$26,600	20%	17%	11.6%	
B. Jacobs	Consultant	ABC Consul	8	\$170	36		80	30	146	\$24,820	21%	16%	12.1%	
J. McCoy	Jnr. Analyst	XYZ Inc.	5	\$170		80	20	16	116	\$19,720	16%	13%	9.6%	
M. Frank	Jnr. Engineer	XYZ Inc.	5	\$160		80	20	16	116	\$18,560	16%	12%	9.6%	
Labor Hours					72	212	272	152	708		100%	0%	58.8%	
Labor Cost					\$15,300	\$39,420	\$52,220	\$30,880		\$137,820		88%		
Expenses Travel										\$0		0%		
Expenses Surveys						\$18,950				\$18,950		12%		
Total Cost					\$15,300	\$58,370	\$52,220	\$30,880		\$156,770		100%		
Percent Cost by Task					10%	37%	33%	20%		100%				
SCHEDULE														
Start Month					1	1	3	6						
End Month					1	3	5	7						
Primary Data collection summary														
Number and cost of survey or on-site data collection or metering eqpt, etc.									Fill in white cells at top with hours per staff per task					
									Fill in cream cells with cost for expense categories per task					
Number	Type	Interviewees	Cost per unit	Total Cost	In Expenses or Labor	Fill in white cells in schedule area with start/end months per task								
68	Phone	Participant	\$100	\$6,800	Expenses	Fill in primary data collection table as shown / as needed								
270	Web	Participant	\$10	\$2,700	Expenses	adding as many rows as needed. Multiple cells								
270	Incentive	Participant	\$25	\$6,750	Expenses	across or wrapped text may be used to better identify								
6	IDI Phone	NJ Program Staff	\$300	\$1,800	Expenses	interviewees or data collection types.								
3	IDI Phone	Programs other stat	\$300	\$900	Labor	Percent of cost denominator is of total costs including expenses.								
Percent of elapsed time uses end month of project in schedule section.														

Request for Qualifications

1. Statement of Purpose

On behalf of its Evaluation Committee, the Connecticut (CT) Energy Efficiency Board is issuing this Request for Qualifications to select winning Teams for each of three Research Areas:

- Residential, covering studies focusing on residential sector programs, measures, customers, and issues
- Commercial, covering studies focusing on commercial sector programs, measures, customers, and issues
- Cross-cutting, including projects that include work in multiple sectors, or cover topics that do not relate solely to one sector.

The winning Team will be the lead Team for evaluation work in that research area for the Three-Year period 2022-24. Our intention is to select one Team for each research area, unless special conditions make it in the best interest of the state to designate two teams in any research area(s). Note, separate submittal document sets are required for each Research Area on which a firm or team wishes to bid.

The selection relies on submittal documents that contain two parts:

- Part A: Descriptions of approach, budget, and staffing for conducting three selected “sample” projects for each Research Area.
- Part B: Qualifications that show in-depth firm and staff expertise and experience in a variety of topic areas expected to be represented by projects in the Research Area over the Three-Year timeframe.

The intended work to be performed is providing third-party independent energy efficiency program evaluation services and related research. These evaluations are for the energy efficiency programs delivered by the CT utility companies and are part of the EnergizeCTSM initiatives. Deadlines and budget maximums for the projects are identified in the individual project descriptions.

This RFQ does not commit the EEB to award a contract, pay any costs incurred in the preparation of a submittal in response to the RFQ, or to procure or contract for services. The EEB reserves the right to accept or reject any or all submittals received as a result of this request, to negotiate with any or all qualified Contractors, or to cancel this RFQ in part or in its entirety, if it is in their best interests to do so. This RFQ is organized to provide evaluators with an overview of the process and requirements. Contracting requirements, including the mandatory budget form, are provided. It includes a section that has links to relevant, publicly available documents mentioned throughout the RFQ document.

2. Background and Evaluation Process

CT legislation created the CT Energy Efficiency Fund (CEEF) and Energy Efficiency Board (EEB), as described in Connecticut General Statutes Section 16-245m. CEEF supports a variety of programs that provide financial incentives to help Connecticut consumers reduce the amount of energy used in their homes and businesses. CEEF programs are reviewed by the Energy Efficiency Board, a group of advisors

who utilize their experience and expertise with energy issues to evaluate and consult with Connecticut’s electric and natural gas utility companies on how programs should best be structured for and delivered to Connecticut consumers.¹

The Connecticut Energy Efficiency Fund is supported by all Eversource and United Illuminating customers on their electricity bills through the Combined Public Benefits Charge; and by Connecticut Natural Gas, Southern Connecticut Gas Company and Eversource gas customers through a conservation charge included in their rates² (the Utilities).

The EEB is made up of representatives of the CT Department of Energy and Environmental Protection, the Connecticut Office of Consumer Counsel, the CT Attorney General’s Office, utility companies, environmental organizations, and organizations or individuals representing the interests of residential, commercial, and industrial customers. The EEB advises and assists the Utilities in the development and implementation of comprehensive and cost-effective energy conservation and market transformation plans.³

The Utilities, as the program administrators of the Connecticut Energy Efficiency Fund, submit a plan of energy efficiency programs to the Energy Efficiency Board (EEB). The plan is known as the Conservation and Load Management Plan, or C&LM Plan. Plans are developed with the advice and assistance of the Energy Efficiency Board (EEB) and its consultants. The Utilities submit the final C&LM Plan to the EEB for vote and to the Department of Energy and Environmental Protection (DEEP) for the Commissioner’s review and approval. The Conservation and Load Management Plan (C&LM Plan) programs are supported by the CEEF. Each year during the plan, an update is developed. Links to all relevant documents are provided in one section, below.

State law at CGS 16-245m charges the DEEP with the adoption of an independent, comprehensive program evaluation, measurement, and verification process. The EEB, through its Evaluation Committee, contracts with consultants who act as an Evaluation Administrator (EA). The EA advises the EEB regarding development of a schedule and plan for evaluations and oversees the implementation of the evaluation process. The EEB Evaluation Committee and the EEB Evaluation Administrator provide leadership and execute the following responsibilities: evaluation planning, study development, contractor selection, project initiation, project management and completion, and finalization of the evaluation report. The work of the EEB Evaluation Committee and EA is guided by the 2021 EEB Program Evaluation Roadmap which provides detailed information about evaluation procedures. A link to the Roadmap is provided in the Document Links Section of this document.

3. Required Compliance with EEB Program Evaluation Roadmap and EEB Communications Protocol

All contractors having evaluation contracts and/or purchase orders with the Utilities (either current or new contracts issued as a result of this RFQ) must comply with the communication protocols identified in Connecticut General Statutes Section 16-245m(d)(4), and as further described by the *2021 EEB*

¹ <http://www.energizect.com/about/CEEF>

² Ibid.

³ Ibid.

Program Evaluation Roadmap in its current version and as directed by the EEB Evaluation Committee and the EEB Evaluation Administrator. We also clarify additional communication and data procedures and other information in the section below entitled “Special Conditions and Requirements Related to Conducting EM&V Work in CT”.

Current state and Federal COVID-19 orders and protocols will also need to be observed. Projects with on-site components should plan to comply with the latest Federal Government guidance, located at <https://www.saferfederalworkforce.gov/contractors>.

Submittals shall explicitly state that the bidder understands the requirements of the CT “Roadmap”, and requirements of ISO-NE, and that their submittal adheres to the relevant requirements of each, for all Research Areas on which the team is submitting.

Submittals shall note that all responses submitted pursuant to this RFQ shall become the exclusive property of the EEB and may be used for any reasonable purpose by EEB.

Note that winning contractors will enter into a contract with the utilities and will be required to sign the general terms and conditions, non-disclosure agreements, data security protocols, and any other agreements required by the utilities.

4. Overall Submittal Format and Submittal Requirements

In this section we outline the submittal requirements. There are two main sections required within each Research Area submittal:

PART A: Description of Approaches and Budgets for the 3 assigned ‘Sample’ projects, and
PART B: Qualifications for Key Research Areas. Part B follows Part A, with a Labeled Divider between the sections.

Although here is more description of Part A, Part B is extremely important in the selection of the winning Team.

PART A: Descriptions of Approaches and Budgets for ‘Sample’ Projects

Page 1: Cover page listing all firms included on the team along with mail, email, and phone contact information for at least 2 persons from the team.

Page 2: Table of contents (TOC) using word’s automatically-generated TOC. Pages in the Submittal (through all of Sections A and B) should be numbered sequentially throughout, not by sections / subsections. Do not list tables / figures in the table of contents.

Page 5 onward: Proposal for each ‘sample’ project, in turn, including the following sections, in this order. Remember, broad qualifications are included in Part B; so, tailor these quals to the specific project.

- 2 pages total of “why your team” and list of project experience for the project, plus 2 references.
- 2 pages total including brief biographies of all key staff members including titles, role on this project, years of experience, and relevant project experience
- 1 page with a “roles table” for the sample project, summarizing staff assigned, title, years of experience, charge rate, role on this project, and percent of project hours by that staff member.
- 5 pages of scope description (maximum) for each sample residential and cross-cutting research area project, and 8 maximum for each commercial study description. This section should provide information for the project that details data collection and analysis approach, deliverables, timeline, how you’ll organize the work, and other useful information to explain how you’ll accomplish the sample project.
- 1 page of budget using the required budget format. Maximum size is one page wide, landscape. Prepare the budget using the live spreadsheet delivered with this RFQ (Form B), and then paste the image into the word (and PDF) document submittal. Recall that the live excel workbook must also be submitted, and the budget for each sample project must be included on separate tabs, with the tab labeled with the project number. A live excel sheet means the formula must be observable, live, and unprotected.

The sample projects for each research area are listed in the following table, and described individually, in detail, in a later section.

‘Sample’ Projects to be Described for Each Research Area (For Part A)

Residential	Non-Residential	Cross-cutting and Topics
<ul style="list-style-type: none"> • R2246 – Residential Heat Pump Study • R2209 – Residential New Construction Net to Gross (NTG) and Code Compliance Attribution • R2213 -- Impact Oil Savings Impacts – Methods & Attribution 	<ul style="list-style-type: none"> • C2211 - BES/O&M - RCx Impact and Process • C2201 – Commercial Baseline Study and Database • C2230 – Commercial Heat Pump and Electrification Study • X2203 – Agricultural Market and Baseline Assessment 	<ul style="list-style-type: none"> • X2231 – Cross-Cutting Heat Pump and Electrification Study • X2244 -- Review possible shift from EE to GHG policy integration goals and metrics at the State level

PART B – Team Qualifications in Key Research Sub-Areas

For each of the relevant topic areas noted for the Research Area being submitted (see table below), provide the following.

- Item 1. Up to 2 pages: Title of Research Area and Subtopic at the top of the first page. Then on the first line, name the firm from the Team that would be expected to be technical LEAD for projects in this topic area. Then list at least 2 references and contact information for the Research Area. Then provide a description of “why us” section that can incorporate the entire team’s qualifications and background.
- Item 2. Next page: List of key personnel related to the topic area that are expected to be available for the Connecticut work. Provide, in a table (one row per staff), their name, title, firm, years of experience in the field, and fully-loaded rate. At lower staffing levels, include at least one name for each category of staff.

- Item 3. Next page: Table clearly listing columns for title only (not descriptions), clients, firm(s) performing the work, and years performed for the relevant projects in this area that demonstrate your team’s qualifications in the area. The Table must also list the proposed staff that worked on that project. Put N/A in this column if none of the proposed staff worked on that project.
- Item 4. Up to 5 pages including paragraph descriptions of several of the most relevant projects. State project manager (whether or not they are currently being proposed) and name the roles of any proposed staff for each project listed.
- Item 5. Up to 5 pages of brief biographies of the key staff in this topic area.
- REPEAT Items 1-5 above for each topic area.
- At the very end of Part B, after the cycles of items by topic area, include Resumes for each key staff member, labeling sections of the resume, or underlining key words that help identify experience pertaining to the topic areas included for this Research Area.

Topic Qualification Areas of Interest for Each Research Area (For Part B)

Residential	Commercial	Cross-cutting Sectors and Topics
1. Impact and Process evaluation and equity	1. Impact and Process evaluation and equity	1. Multifamily
2. Baseline, NTG, ISP	2. Baseline, NTG, ISP	2. EUL / AML
3. Saturation and metering studies	3. Saturation studies, metering studies	3. NEIs/NEBs
4. Multifamily – in-unit	4. Multifamily-building-wide	4. DR
5. New construction	5. Agricultural	5. HP, electrification, gas incentives, programs and policies
6. Market & measure-specific studies & new/next measures / potential	6. New construction	6. Evaluation methods, evaluability, data issues
7. Upstream and mid-market programs	7. Market & measure-specific studies & new/next measures / potential	7. Other studies you might wish to highlight
8. Other studies you wish to highlight	8. Upstream and mid-market programs	
	9. Other studies you wish to highlight	

Overall Submittal Instructions

Submit the materials in 3 separate emails for each Research Area. Use the required file name as your subject line. No email or file may exceed 6MB.

- Word document, one file, numbered consecutively 1 to end. – named “CT2022-24 Quals_XXX_(your lead firm’s name).docx”, where XXX is either “R” for Res, “C” for Coml or “XC for Cross-cutting depending on which research area the submittal is in response to. **Separate sets of submittal documents are required for responses for each research area.**
- PDF document, one file, numbered consecutively 1 to end with the same name as above (.pdf)
- Separate Excel workbook with the same name above (.xls). The tabs of the workbook must be labeled with the number of the individual project budget contained on the sheet, and use Form B for individual project budgets.

Submittal Font size may not be smaller than 11 except in tables (minimum 9-point font for tables). Margins must be at least 0.75” on all sides. Pages may not be spaced closer than single space.

Email submittals by deadline listed on title page, or as amended, by email to the five emails noted on the cover sheet of this RFQ.

Submittals shall explicitly state that the bidder understands the requirements of the CT “Roadmap” and requirements of ISO-NE and that their submittal adheres to the relevant requirements of each, for all Research Areas and projects on which the team is submitting.

Submittals shall note that all Submittals submitted pursuant to this RFQ shall become the exclusive property of the EEB and may be used for any reasonable purpose by EEB.

Adding length to the Submittals by repeating material that can be easily referenced is strongly discouraged and scoring will be negatively affected.

It is strongly encouraged to reduce the file size of pictures included in the Submittal and this will likely be required to meet the file size limit if many pictures or graphics are included. Print copies of Submittals will not be accepted. Late submittals will be rejected.

NOTE: The contract terms and conditions for each utility are included later in this RFQ. You must include responses from your team on exceptions to those terms at the end of Part B. Be aware that the utilities may not allow exceptions to the terms, and that not agreeing to the terms may disqualify the bidder.

5. Requirements for the Submittals for 2022-24 Research Area RFQ

Your response to this RFQ for 2022-24 Research Area RFQs should include responses to all elements for the Research Area in one combined document. Your response should be submitted in word and PDF form, with budgets embedded in the proposal and “live” in a separate Excel workbook. Submittal requirements are listed above. Note that the firms included on teams will be required to be stable, and a firm may not move to another team for the 2022-2024 period. The documents should be labeled specifically and submitted in THREE emails as noted above for **each** Research Area being submitted. If qualifications in multiple research areas are submitted, additional sets of three documents must be submitted for each.

The information in this document will enable the recipient to formulate a response to meet the requirements as described in this RFQ. Bidders should use this information, unless notified, to create estimates for pricing and response purposes. Once projects are awarded, contractors will have a chance to revise their pricing based on changes in participant populations and other scope refinements based on discussions and clarifications with the client, but we expect price per unit (e.g., survey cost per complete, or site visit cost per site, etc.) must be kept to within 5% of the proposed cost per unit.

6. Additional Information for Part A of Submittals

Items to keep in mind as you prepare your response are listed below. For EACH project, we will be looking for the types of information listed below:

1. Why Us / Focused qualifications on the project
 - Include information and project experience that illustrates your expertise and distinguishes your firm from other bidders, and reflects creativity and efficiency.
2. Scope / Approach / Task Description.
 - Specialized project experience. Although the research area portion of the project includes past project experience (include CT and regional work), we encourage you to include project experience especially related to this project in this part of the submittal.
 - Include information outlining the ways in which the project will be conducted according to industry standard or better standards.
 - In the Task Descriptions, include descriptions that make clear the:
 1. Major expected outcomes of the research and the issues to be explored
 2. Analysis methods and rationales
 3. Estimated sample sizes and proposed sample design including expected confidence levels, and sampling rationales / assumptions / justification – whether it be for surveys, metering or whatever is appropriate to the analysis method(s) you recommend.
 4. Survey method(s), targets, and survey instrument topic areas, and expected survey length, data collection procedures. Be sure to mention how you plan to achieve your expected response rates, including possible use of incentives, etc.
 5. Project descriptions should identify expectations for data requests from the utilities.
3. Timeline, Deliverables and References: Identify the timeline for the project’s tasks and activities and list key deliverables / milestones and dates – identifying dates as a number of weeks from project start.
 - Provide a timeline for the study, assuming the study starts in “Week1”. Identify any timing issues affecting the timing of the project.
 - Provide at least 2 most-relevant references, including Client, contact name, title, phone, and email; project name; when project conducted; and other relevant information.
4. Each project budget shall be submitted using the fully completed (labeled) tab in the Excel workbook, with the budget provided according to Budget Format B, including supporting information and assumptions as requested. Assumptions relevant to the cost estimates should be specified (e.g., number / ratio of sample provided, number of call-backs, influence of use of advance letters, etc.). Submit budget matching Form B format for each project on which you are proposing in a live excel spreadsheet format (functioning formula). Project descriptions are required to submit a budget that does not exceed the maximum budget stipulated in the RFQ for each project.

Additional budget and scoping considerations include:

- The budget must include a task estimating the cost assumptions for requesting, checking, cleaning, and tracking utility data.
- Costs are an important consideration in the selection process. Bidders must submit an approach and budget that does not exceed the allowed cost maximum.
- Bidders may also offer enhancements that require additional funds as optional approaches for consideration. Describe the extra efforts and their advantages, and use

the column on the right-hand side of the budget form to identify the extra cost for these efforts.

- Teams are encouraged to describe– and justify -- improved, more robust, or more efficient study designs.
 - Optional research will be most likely to be considered if it can be accomplished under the maximum budget provided.
 - However, if the expenditure of funds above the maximum budget produces an exceptionally better study, the bidder may offer the enhanced approach as an option.
 - Respondents should clearly state which efforts are most important for addressing research objectives.
5. Mini-Bios. Describe experience, roles, and responsibilities of key staff assigned to this project. Focus bios on previous project experience relevant to specific tasks / roles for the proposed individual. Include education in the bio. Recall that resumes were presented in the qualifications package. However, if staff that are key in the project were not in the previous set of resumes (because they were newer hires, etc.), please note this and attach resumes for these key personnel.
6. Roles Table: We request a separate Roles table that clearly identifies the lead or task manager on each task, and supporting staff. Please identify the specific, named, staff associated with key roles in the project, including, for example:
- Overall Evaluation Project Manager
 - Sample design lead, include qualifications and experience for Stratified Ratio Estimation sampling method as relevant
 - Site level impact lead
 - Survey development and survey deployment lead
 - Site engineers (where relevant) include experience with site visit methods: on-site measurements and detailed engineering analysis, such as International Performance Measurement and Verification Protocol (IPMVP) Option methods and site level M&V plans and protocol development
 - Quality control and training for surveys, metering and program level analyses as appropriate to the project

Special Conditions and Requirements Related to Conducting EM&V Work in CT:

Many of these topics are discussed in *2021 EEB Program Evaluation Roadmap*, located at <https://energizect.com/connecticut-energy-efficiency-board/energy-efficiency-board-committees/evaluation-committee>), and attached.

- Project Contracting: Note that the chosen evaluation firms will be contracting with the utilities (Eversource and UIL).
- Data Requests: It will be important to identify the utility data requests required to conduct the work in the proposal, including types of variables, expected turnaround, etc. Note also that CT requires:
 - Written data requests, followed up by a call with the utilities to discuss the content, and get email agreement from the utilities on content and deadline for the data delivery.
 - Tracking of progress of data requests, gaps, timing.

- The proposer should be explicit about the assumptions and costs for obtaining, reviewing, and analyzing utility-sourced data, and processes in place to deal with or protect against cost overruns due to data challenges and customer recruitment challenges.
 - Note all data are transferred via secure sites and data security must be maintained at all times.
- **Communication and Oversight:** The Evaluation Administrators (five persons on the cover page) are your oversight team for all aspects of your work. There are some restrictions on direct contact with the utilities regarding content / methods / design of the evaluation projects, to minimize influence. However, communication regarding data is encouraged, and conversations on this and broader topics can be conducted with the Evaluation Administrator (EA) Team on the call.
 - **Project Development and finalization:** The project's scope and work plan are refined in concert with the EA Team, and data requirements are discussed with the utilities, and program changes and other issues are discussed with the utilities and EEB consultants prior to developing the refined work plan. The State desires projects that are designed to best industry standards / practices. Prior to finalization, a webinar kickoff meeting is held to allow the Evaluation Committee members, Technical consultants, utilities, and others to understand the project's design and to ask questions and provide comments. With the oversight of the EA Team, the project's final design is developed, incorporating key comments. The project is monitored weekly or fortnightly, and the EA team reviews interim documents. As issues are uncovered during the conduct of the study, discussions with the utilities and /or Technical consultants may be conducted to determine causes and inform the study. When the project is nearing completion, the contractor works with the EA team to prepare a review draft report that meets the EA Team's approval. The report is put out for review by the Committee and stakeholders, and they are provided with 2 weeks to review (longer for long reports.). Working with the EA Team, comments are incorporated and the report finalized and posted. If comments require major changes, the report may go out for a second review draft, and finalization / posting phase. After the report is posted, a webinar / presentation is conducted. The project is finalized and last invoice is paid after a written commitment that relevant project data are being maintained⁴ and the firm promises access for no additional fee a period of not less than 5 years.
 - **Report Content / Special Elements:** All reports will include an abstract (1-2 pages), executive summary, and a chapter that compares results to previous CT reports and to similar programs or evaluations in other states to provide context, trends, and indications for best practices.
 - **Results and Timing:** There is an emphasis on providing forward-looking results that inform the PSD and project planning. Where possible, if projects can be constructed and timed so that final reports are available by May 15 (or December 1) so results can be integrated into the next C&LM Plan. These are the two cut-off dates for information to be included the next TRM update. A presentation of key results to stakeholders may be requested prior to preparation of the report.

⁴ The requirement is that input data from the utilities, plus important interim stages and final analysis data sets are maintained in reasonably-documented files, in a secure and well-labeled location, and available upon request at no additional fee.

- **Project Tracking and Updates:** For project updates, we require weekly or fortnightly calls with selected members of the Evaluation Administrator (EA) team (all five members listed on cover page). In addition, we require updates to an excel project reporting form monthly at least a week ahead of the Evaluation Committee Meeting, updating the EA team in writing on: project progress, problematic issues / holdups, next steps and invoicing to date.
- **Project Invoicing:** The projects are invoiced monthly. Two monthly invoices are required per project, sharing out project costs and providing one invoice to Eversource and one to UI. Invoices must first be approved by the EA team. Invoices must list detailed staff hours and costs by task, and expenses. The detail must be included as backup excel pages, and a summary page must present the overall costs for the Utility, and also include a table with costs by task in the following columns: cost this month, cost this year, cost to date. The dollars left and percent of budget left are also reported.
- **Coordination, Leveraging, and Context:** *Where there is potential to leverage evaluation efforts from neighboring states without sacrificing rigor / applicability to CT programs, proposers are encouraged to identify/describe potential efficiencies and added value to CT from coordinating and/or collaborating with other states' efforts. This applies to learnings from designs or leveraging instruments and tools as well.* Finally, note that we require all studies to include separate chapters that provide context for the study's CT results, including comparison to CT results over time and to results from other states and similar programs elsewhere, and implications for best practices.
- **Other Requirements and Considerations:** Quantitative results should report confidence intervals and other statistics, reports including surveys should report the Coefficient of Variation (CV) experienced for future reference and project planning purposes. Surveys for residential projects are usually planned for a minimum of 90/10, but the best possible performance for budget is desired. Commercial projects should be designed to meet project requirements. Where possible, projects involving metering should plan to provide information in 8760 format to allow CT to use the data even if ISO-NE specifies different peak periods. Where possible, project results should be presented by utility.

7. Selection Process and Evaluation Criteria

A thorough review and evaluation, and straightforward selection and contracting process for these RFQs is planned. Teams selected as the 2022-24 Research Area Contractor will be expected to perform the 'sample' 2022 projects in substantially the design and timeline / expenditure pattern described in the RFQ, with modifications discussed and agreed in meetings with the EA team. Work on the 2022 projects will be expected to begin as soon as possible after award and contracting. Note that the 'sample' projects are not the full inventory of 2022 projects that will be contracted with the winning bidder for each area.

The evaluation of Qualifications Submittals will be conducted by the EA team (with a minimum of 3 reviewers per research area), based on the criteria below. The review and selection process will be conducted as described in the *2021 EEB Program Evaluation Roadmap*, located at <https://energizect.com/connecticut-energy-efficiency-board/energy-efficiency-board-committees/evaluation-committee> and attached.

Project RFQ Evaluation Criteria:

1. RFQ score (60% of total)
 - a. Qualifications and project experience of the firm and staff proposed (makes up 50% of the qualifications score)
 - b. Rates and value represented (makes up 50% of the qualifications score)
2. Sample Projects (40% of total)
 - a. Technical qualifications and proposed approach (makes up 35% of sample projects score)
 - b. Qualifications / Experience of Firm and Staff assigned to the projects (makes up 35% of Sample Project Score)
 - c. Rates for staff and overall budget for the projects (makes up 30% of the Sample project score)

The EEB, at its sole discretion may:

- Select a Submittal other than the lowest priced, if the EEB determines, at its sole and absolute discretion, if the State’s interests will best be served by doing so.
- Seek clarification from any Bidder regarding Submittal information and may do so without notification to any other Bidder.
- Continue the review and negotiation process until a Bidder is successfully contracted for each Research Area or until the EEB chooses to reject all Submittals for any or all of the Research Areas.
- Accept any Submittal or alternate as submitted without negotiations.
- Select for negotiations only the overall best Submittal or negotiate all submittals which fall within a competitive range.

8. Document Links and Overarching Information

A description of each of the programs is provided in the C&LM Plan <https://energizect.com/connecticut-energy-efficiency-board/current-and-approved-clm-plans> or other EnergizeCT™ website areas. Additional document links are provided below.

Additional information relevant to submittals and contracting:

1. All utility Confidentiality requirements shall be met. Reference utility specific contract documents for legal requirements (attached).
2. All contractors working on customer’s sites must undergo the UtilitySafe background checks process: This effort will be undertaken at the contractor’s own expense and must be completed before site work can begin. The UtilitySafe program acceptable to CT Utilities is administered by e-VERIFILE INC. No substitutions will be accepted for background checks.
3. In 2019 a new requirement for on-site work was introduced that requires use of certified electricians for certain kinds of site and metering work.

4. Staging of projects will be arranged based on Evaluation Administrator assessment of tradeoffs related to EA and committee workload, timing needs for project results, or to accommodate workload and bandwidth considerations.
5. Contractors should include at least two rounds of review and revision for all interim deliverables and three rounds of review and revision for final deliverables (draft with EA, Review draft incorporating EA comments and released to committee for comment, and Final incorporating comments).
6. All Impact Evaluation Studies for the commercial side and for large residential programs (and any impact study used to support bids into the FCM) shall fully comply with the requirements of ISO NE FCM. This includes, but is not limited to the following:
 - a. Reference: <https://www.iso-ne.com/participate/rules-procedures/manuals> then select document M-MVDR (Revision 07) October 4, 2018.
 - b. Adhere to requirements for the type of method to be used and requirements for the metering equipment.
 - c. The statistical sampling requirement for the ISO is for an 80% confidence at 10% relative precision. (Meeting this requirement with a two-tail test is desired but costs may require that a one-tail test requirement is the only one manageable.)
 - d. To the extent possible, we also request that the metering data be supplied in 8760 format, so ISO knows how CT's measures perform at all hours of the year, and because ISO may change peak periods and we will need to be able to use the data to address this possibility.
 - e. The type and timing for demand estimates will be to meet the two ISO definitions for the time period of interest for demand savings, on-peak hours and seasonal peak hours. The following definitions of demand peaks are taken from ISO New England's FERC Electric Tariff No. 3:
 - i. Demand Resource Seasonal Peak Hours are those hours in which the actual, Real-Time hourly load for Monday through Friday on non-holidays, during the months of June, July, August (Summer), December, and January (Winter), as determined by the ISO, is equal to or greater than 90% of the most recent 50/50 system peak load forecast, as determined by the ISO, for the applicable summer or winter season. The Summer and Winter Seasonal Peak Hours are needed but are more complex to assess. It is conditional in nature and depends upon the relationship between real time system load and the most recent 50/50 system peak load forecast."
 - ii. Demand Resource On-Peak Hours are hours ending 1400 through 1700, Monday through Friday on non-holidays during the months of June, July, and August (Summer) and hours ending 1800 through 1900, Monday through Friday on non-holidays during the months of December and January (Winter). The on-peak demand savings are the average demand savings during these hours.

Document Links:

Links to the key documents follow.

- The C&LM Plan is located at: <https://energizect.com/connecticut-energy-efficiency-board/current-and-approved-clm-plans>
- Previous evaluation reports are located at: <http://www.energizect.com/connecticut-energy-efficiency-board/evaluation-reports>

- 2021 Evaluation Roadmap at <https://energizect.com/connecticut-energy-efficiency-board/energy-efficiency-board-committees/evaluation-committee> and attached.
- ISO-NE: https://www.iso-ne.com/static-assets/documents/2018/10/manual_mvdr_measurement_and_verification_of_onpeak_and_seasonal_peak_demand_resources_rev07_20181004.pdf

9. Descriptions of the Specific Sample Projects for the 3 Research Areas

The following provides an outline of the sample projects for which we request Submittals for each of the three Research Areas. Two special elements are mentioned that should be considered for all projects:

- Where there is potential to leverage evaluation efforts/projects, design learnings, instruments and tools, or other elements from neighboring states without sacrificing rigor / applicability to CT programs, proposers are encouraged to identify/describe potential efficiencies and added value to CT.
- Given the time in which we are making this offering, we acknowledge the realities of conducting research during Covid-19 conditions. We suggest you include a discussion of contingency planning should it remain disallowed to do on-sites in relevant projects.

Sample Studies for Part A - Residential

R2246 – Residential Heat Pump Study

Maximum budget: \$1,150,000

Description of the Project / Project Background:

Program support for residential heat pumps is expected to ramp up over the course of the 2022-2024 period. This project will provide support for these program efforts by providing recommendations for improvements to program design and savings estimation methods.

Research Objectives:

This study will address the following research objectives pertaining to heat pumps in the residential sector:

- Perform field monitoring to assess the actual heating and cooling performance of the latest generation of residential heat pumps being supported by the programs, potentially including field monitoring of baseline technologies.
- Analyze baseline and attribution issues for residential heat pumps.

- Provide periodic technical review of an evaluation being performed for the Connecticut utilities of their 100- heat pump fuel switch residential pilot.

Deliverables Needed:

- Report on baseline and attribution results.
- Report on field monitoring results.
- Periodic presentations and memos to stakeholders reporting on results of review of 100 heat pump pilot and project progress.
- Additional interim deliverables as agreed upon.

Methods Notes:

Likely methods for this study include field monitoring, participant surveys, upstream interviews, and modeling.

Timeline:

This project should begin within a week of contract execution. Given the complexity of field monitoring and the need to collect both summer and winter usage data, the project is expected to run into 2024. However, it will be important to structure the project to facilitate timely reporting of the results from individual research activities as they become available.

Issues / Special Considerations:

The field monitoring component of the study will need to grapple with the fact that residential heat pumps come in many different configurations, levels of displacement of on-site fossil fuels, specific technologies, and baseline scenarios. Prioritization and thoughtful research design will be essential.

As Massachusetts is also considering doing a residential heat pump field monitoring study similar project, there may be an opportunity for a joint two-state effort for that component.

Consideration of heat pump technologies in multifamily buildings will be divided between the residential and commercial heat pump studies, with in-unit equipment being considered in the residential study and equipment serving entire buildings and/or common areas being considered in the commercial study. Bidders should consider the best way to handle MF HPWHs.

Note there is also a Connecticut Heat Pump Pilot for Oil and Propane Homes underway in the state. Its focus is on displacement or replacement of existing oil or propane fired heating systems in weatherized single-family homes. The study includes field monitoring and well as surveys of customers. It will be important for this study to coordinate with the Pilot study in customer sampling and other topics.

R2209 – Residential New Construction Net to Gross (NTG) and Code Compliance Attribution

Maximum budget: \$200,000 with \$100,000 boost if adequately supported

Description of the Project / Project Background:

TBC

Research Objectives:

This study will address the following research objectives pertaining the RNC and Code Compliance Efforts.

- Determine values for NTG for RNC,
- Determine market effects of code compliance activities.

Respondents should describe in detail their approach to assembling the Delphi panel, data and instruction preparation for the panelists, and implementation approach and analysis of the panels.

Deliverables Needed:

Outputs focus on retrospective and prospective NTG values and estimates of savings attributable to code compliance activities by the utilities. All projects require the reports and presentations deliverables specified in this RFQ and in the Roadmap.

Methods Notes:

Likely methods for this study include a Delphi panel to determine likely values. Background information is needed to feed to Delphi participants. Some of that data may not exist and may need to be collected from on-sites of homes, permit offices, interviews with stakeholders, and/or from program tracking data. Respondents should describe what data collection limited to \$100,000 would be of most use in supporting Delphi panelists. Respondents should describe how they would use an additional \$100,000 if it were made available.

Timeline:

This project should begin within a week of contract execution.

Issues / Special Considerations:

There has been very limited support for CT utility involvement in code development and promulgation to date.

R2213 Delivered Fuel Savings Impacts – Methods & Attribution

Maximum Budget: \$125K

Description of the Project / Project Background:

The results of this study will apply to multiple programs in the CT portfolio. The core question relates to how best to estimate the delivered fuel savings that are achieved by residential, and potentially commercial, programs, relevant measures, and relevant end uses, and has policy implications. Delivered fuels should include oil, propane, kerosene and wood. There is also interest in carbon / GHG reduction impacts.

Research Objectives:

The study will review best practices in impact evaluation and ex-ante savings estimation to identify practical and defensible best practices in estimating attributable delivered fuel savings at the program, end-use, and measure levels. There are also broader objectives. The results will:

- Identify methods for estimating gross direct program savings overall and for various end uses and measures, including, but not limited to, weatherization measures, and heat pump conversions;
- Develop methods or algorithms suitable for integration into new vendor / audit tools; and
- Use the results to inform and/or be applied to fuel switching, incentives policy changes, or GHG policies or associated metrics that the State has or may adopt.

The study should:

- Consider special approaches that may be necessary for different measures, including heat pump and other residential and commercial measures.
- Conduct a threshold analysis of the degree to which changes or more sophisticated practices would change the savings estimates developed using current CT practices for these savings, and confirm and lay out the best practices for impact evaluation for these fuels that should be implemented for all relevant residential and commercial impact studies going forward in CT.
- Provide recommendations for savings estimates for weatherization measures and specific recommendations for heat pump conversions, and methods going forward for both sets of measures.
- Provide best estimates or algorithms suitable for use with new residential and commercial vendor /audit tools.

Methods Notes:

Current practice has been to use / convert CT-specific gas savings estimates to delivered fuel units. The study may wish to comment on that approach.

The study is envisioned as a secondary data effort. Conduct a detailed literature review and subject matter expert (SME) interviews to identify the best practices for estimating attributable energy savings for delivered fuels, which have high penetration in CT, and are important for fully assessing savings in CT.

As with all CT Studies, the research must review information from other states on similar programs or policies, or within-CT information to help identify best practices.

If funding is available, to the extent possible, it would be beneficial to review results from existing CT evaluations to identify savings from weatherization measures and HP conversions. If funds are not available, an optional task for this work may be proposed.

Deliverables Needed:

The study's outputs will include a draft and final report, and presentation that include:

- Specific, detailed recommendations about estimation approaches to be integrated into future impact and M&V evaluations, and any data needs or gaps relevant to the CT situation, and best near-term sources / approaches, with special attention to weatherization and heat pump conversion measures;
- Methods, values, or algorithms suitable for CT-relevant vendor / audit tools for oil and delivered fuels and for heat pump conversions.
- Implications for policy setting, and relevant metrics or metric values to help the state in effort toward GHG accounting.

Timeline:

Starts in 2022. Important, front-loaded study.

Sample Studies for Part A - Commercial

C2211 - BES/O&M - RCx Impact and Process

Maximum budget: \$600,000

Description of the Project / Project Background:

This study will provide impact estimates and a process evaluation for the Operation and Maintenance (O&M) and Retro-Commissioning (RCx) components of the Business and Energy Sustainability (BES) umbrella. Strategic Energy Management (SEM) is currently the subject of a process and impact evaluation study (C1906) and is excluded from this project. Impact evaluation results must meet or exceed best practices and the requirements of the New England Independent System Operator (NEISO) Forward Capacity Market (FCM). Process results must provide guidance on the efficiency and effectiveness of the program operation compared to expectations and to similar offerings in other jurisdictions. The last evaluation study for BES/O&M – RCx was C1641 completed in 2018.

Research Objectives:

- Estimate gross energy savings and winter/summer demand savings in compliance with NEISO FCM rules. Estimates are needed by each BES component and for BES overall.
- Provide retrospective and prospective realization rates for energy and demand savings; the prospective values will be included in the PSD.
- Assess the accuracy of savings estimation methods used by PAs and vendors, identify changes where needed.
- Compare outcomes of BES to similar initiatives offered in other jurisdictions with particular attention to neighboring states. Performance metrics include but are not limited to relative savings, cost-effectiveness, penetration by sector and customer type.
- Compare operational structure and efficiency to similar initiatives in other jurisdictions, with an emphasis on neighboring states. Identify improvement opportunities.
- Identify underserved sectors/customer types/businesses that offer opportunities for additional savings.
- Measure customer experience and satisfaction with program operations based on participant and near-participant surveys. Identify improvement opportunities.

Deliverables Needed:

- Interim report on approach, data needs, and data collection plans.
- Interim report on sample design.
- Interim report on M&V plans, survey design, survey instruments.
- Interim report on data analysis and first draft findings.
- Final report meeting research objectives stated above, including recommendations.
- Project database with sample weights.

Methods Notes:

- Site specific M&V data are required for the impact portion of this study. Ex-post savings must be supported with information from metering, EMS trends, maintenance logs, nameplate, spot measurements. RCx pre- and post-intervention data should be reviewed. Facility operators should be interviewed for operating parameters including past and current schedules, and set points.
- Surveys and interviews of participants, vendors, implementers are required for the process evaluation. Analysis tools, data records, and the PSD should be reviewed for adherence to accepted engineering methods. Program structure, success, gaps and other performance parameters must be compared to 3 or more similar offerings in neighboring and similar jurisdictions.
- Virtual or other contactless data collection approaches may be needed or might be more cost effective than conducting in-person site visits. These alternatives should be described in detail.

Timeline:

This project should begin within a week of contract execution. Results are needed by April 2023. Bidders should propose deadlines for interim deliverables.

Issues / Special Considerations:

Commercial baseline study data are traditionally collected by onsite surveys. The COVID-19 pandemic has made onsite data collection problematic. IOU policies on customer contact and COVID safety protocols are updated periodically as the public health guidelines are updated. The bidder should review the current IOU COVID-19 safety policies and describe how the study will be conducted in accordance with these policies. The bidder should propose alternative data collection strategies when onsite data collection is not possible or unnecessary such as engaging site personnel or building operators to take photos or videos of targeted equipment, or engaging service companies that maintain the building for equipment inventories and nameplate data. Strategies that reserve onsite surveys for high value sample points and timed for summer data collection when infection rates are lower should be discussed.

C2201 – Commercial Baseline Study and Database

Maximum budget: \$750,000

Description of the Project / Project Background: The study provides a representative baseline for building characteristics and equipment efficiency in the C&I sector. The study will be used for program planning, identifying efficiency gaps and opportunities, and making projections of current to future potential saturations for selected equipment types. The study will provide key inputs to Efficiency Potential studies and provide support for refining building prototype simulation models used to estimate measure energy savings parameters in the CT PSD. The study will also inform program planning and policy development.

Research Objectives:

- Existing building stock characteristics segmented by building type and vintage⁵. Characteristics to include (including crosstabs where practicable):
 - Building size (SF), age and number of stories
 - Occupancy schedules
 - Exterior opaque envelope characteristics (construction type, insulation levels)
 - Fenestration type (number of panes, frame type, glazing treatments such as tint and low-e). Fenestration area as a fraction of total exterior wall area.
 - Interior lighting. Saturation and vintage of lighting system types (fluorescent, HID, LED, etc.) and associated lighting power density (W/SF)
 - Interior lighting controls. Saturation of lighting control types (occupancy sensors, daylighting controls, networked controls, etc.) as a fraction of connected interior lighting load
 - Exterior lighting. Saturation and vintage of lighting system types (fluorescent, HID, LED, etc.) and controls.
 - HVAC system type and vintage saturation (packaged rooftop, split system, window/wall unit, central VAV system, central CAV system, multizone system etc.)
 - Cooling equipment and vintage saturation (direct expansion (DX) system, air cooled chiller, water cooled chiller etc.)
 - Cooling equipment efficiency (EER or COP) and age by equipment type and size
 - Cooling equipment capacity (SF/ton)
 - Heating equipment saturation (furnace, hot water boiler, steam boiler, heat pump, district heating, RTU, etc.) by fuel type
 - Heating equipment efficiency (AFUE, thermal efficiency, COP) and age by equipment type and size
 - Heating equipment capacity (Btu/hr-SF)
 - Pumping system type saturation (chilled water (CHW), hot water (HW), condensing water (CW))
 - Pumping system connected load (kW/ton for CHW and CW, kW/kBtuh for HW)
 - VFD penetration in ventilation and pumping systems
 - HVAC system controls saturation (standard thermostat, smart thermostats, energy management systems, time clocks)
 - Service hot water system type saturation (central tank type water heater, HW boiler, distributed storage type water heaters, heat pump water heaters, instantaneous water heaters) by fuel type
 - Service hot water equipment efficiency (Energy factor, thermal efficiency, COP) and age by equipment type and size
 - Service hot water equipment capacity (Btu/hr-SF)
 - Onsite power generation (cogeneration, solar thermal, PV) in terms of installed capacity per SF of building
 - Refrigeration system data (refrigerated casework type, temperature (Low, medium, high) and linear feet, walk in coolers/freezer square feet and temperature, number of refrigerated vending machines, number and size of laboratory refrigerators and

⁵ Prototypical building models used in the CT PSD include assembly, auto repair, dormitory, hospital, light industrial, lodging – hotel, lodging – motel, office – large, office – small, religious worship, restaurant – fast food, restaurant – full service, retail – big box, retail – small, retail – large, school – community college, school – post secondary, school – primary, school – secondary, and warehouse.

- freezers), compressor plant type (dedicated compressor or rack system) and size (tons) and heat rejection equipment type (air cooled, evaporative)
 - Commercial kitchen data (type and linear feet of vent hoods, makeup air source, number of commercial dishwashers, number type and fuel source of fryers, warming cabinets, broilers, ovens, etc.)
 - Data centers and server room data (square feet of conditioned data center/server room space, number of servers)
 - Air compressors (quantity, type [reciprocating, screw or centrifugal], horsepower, and hours of use), and compressed air storage in gallons
- Existing building stock energy consumption (site energy/SF) by fuel type segmented by building type and vintage.

Deliverables Needed:

- Interim report on sample design
- Interim report on survey instrument design.
- Interim report on data analysis.
- Final report meeting research objectives stated above
- Project database with sample weights.

Methods Notes:

- Propose a research design strategy to cover each of the research objectives above. A combination of secondary data analysis, market actor interviews, web-based building characteristics surveys, telephone surveys, virtual onsite surveys and in-person onsite surveys will likely be required. Bidders should discuss the following specific methodological issues in their proposal: (a) how their proposed mix of data collection methods has been affected by their experience with various forms of general population data collection in the commercial sector since the onset of the pandemic; (b) their assessment of the current potential for methods other than onsite surveys to accurately capture various specific types of building and equipment characteristics data; and (c) the potential for their proposed methods to provide granular information regarding the characteristics of specific non-lighting equipment types.
- Propose a sample design strategy, including sample frame identification, segmentation strategy and target sample statistics
- Propose a normalization scheme for each of the research objectives above (result/SF, result/ton, result/kBtuh, etc.)
- Provide data crosstabs where practicable. For example, equipment efficiency by type, building type, vintage and capacity.
- Data collection may be conducted at a higher level of building type aggregation but a method to project the study results into the standard commercial building types in the PSD must be described.
- To the extent possible, results on lighting saturation should be integrated with recent CT lighting market share data to provide an overall picture of the commercial lighting market in CT.

Timeline:

This project should begin within a week of contract execution. Final results are needed by December, 2023. Bidders should propose deadlines for interim deliverables.

Issues / Special Considerations:

Commercial baseline study data are traditionally collected by onsite surveys. The COVID-19 pandemic has made onsite data collection problematic. IOU policies on customer contact and COVID safety protocols are updated periodically as the public health guidelines are updated. The bidder should review the current IOU COVID-19 safety policies (link provided elsewhere in this RFQ) and describe how the study will be conducted in accordance with these policies. The bidder should propose alternative data collection strategies when onsite data collection is not possible or unnecessary such as engaging site personnel or building operators to take photos or videos of targeted equipment, or engaging HVAC service companies that maintain the building for equipment inventories and nameplate data. Strategies that reserve onsite surveys for high value sample points and timed for summer data collection when infection rates are lower should be discussed. Bidders are encouraged to propose alternative strategies for obtaining lighting inventory data if onsite surveys are not possible, and potentially provide alternative strategies for how to handle lighting vs. non-lighting measures.

X2203 – Agricultural Market and Baseline Assessment

Maximum budget: \$400,000

Description of the Project / Project Background:

According to the CT Department of Agriculture, “Connecticut may be one of the country’s smaller states, but its agricultural impact is substantial. With a total of 5,521 farms spread across 381,539 acres – each averaging about 69 acres – Connecticut’s ag industry contributes approximately \$4 billion to the state’s economy each year. It also provides approximately 22,000 jobs statewide, whether in production, processing or agribusiness. Greenhouse and nursery products account for over 50% of Connecticut’s agricultural production, while other important crops include apples, hay, dairy products, shellfish (including clams and oysters) and tobacco.” Current CT C&LM programs have had a minor focus on the Agricultural sector.

No current program.

Research Objectives:

This study should provide a market assessment of energy efficiency opportunities within the whole CT agricultural sector. The report should characterize CT agriculture market (dairy/crop, indoor/outdoor, food/non-food; technology); forecast economic growth and energy requirements by market type and indoor/outdoor class; assess current EE participation and future potential.

Deliverables Needed:

This study needs to provide

- estimates of baseline and forecast economic size and energy needs for the major growth and market types operating in Connecticut. The market breakdown will stratify by indoor (nursery, vegetable, commercial indoor and home grow cannabis markets) and outdoor (crop, dairy animal, poultry). Indoor and outdoor technologies (vertical, horizontal, stacked, natural vs artificial light) and associated and forecast electric and natural gas energy requirements for each will be estimated.
- descriptions of the energy using equipment and technical requirements to achieve optimal production. Energy efficiency and demand reduction measures along with savings algorithms and data needs will be developed for CT using information from other jurisdictions.
- Recommended program delivery strategies where possible focused on specific markets or equipment.

Methods Notes:

The study will include and assessment of best practices in agricultural programs. It may also include upstream interviews, interviews with customers / end-users, and will use the data to identify ISP and potential areas for intervention.

Timeline:

This project should begin within a week of contract execution.

Issues / Special Considerations:

None.

C2230 – Commercial Heat Pump and Electrification Study

Maximum budget: \$500,000

Description of the Project / Project Background:

Program support for commercial heat pumps and other C&I electrification measures is expected to ramp up over the course of the 2022-2024 period. This project will provide support for these program efforts by providing recommendations for improvements to program design and savings estimation methods.

Research Objectives:

This study will address the following research objectives pertaining to heat pumps and electrification in the commercial sector:

- Identify pathways for all electric new construction commercial buildings.
- Assess existing building retrofit opportunities to convert from fossil fuel systems to heat pumps (both heating/cooling and water heating), including different configurations of existing and heat pump systems. Assessment should include estimates of typical cost and performance.
- Help to refine savings estimation methods for commercial heat pumps, including addressing issues such as partial vs full displacement and the effect of manual vs integrated controls
- Analyze attribution and baseline issues for commercial heat pumps
- Provide EM&V support for a commercial heat pump pilot approved by DEEP in its 2021 C&LM plan approval.

Deliverables Needed:

- Report on pathways for all electric new commercial buildings and conversion opportunities in existing buildings
- Report on savings estimation methods for commercial heat pumps
- Report on attribution and baseline issues for commercial heat pumps
- Periodic presentations and memos to stakeholders reporting on results of review of 100 heat pump pilot and project progress.

Methods Notes:

Methods may include field monitoring, participant surveys, and modeling.

Timeline:

This project should begin within a week of contract execution. Given the large number of different research objectives and tasks, the project is expected to run into 2024, with interim deliverables staggered throughout the study period.

Issues / Special Considerations:

The pace of the study may be limited by the pace of commercial heat pump program activity.

Consideration of heat pump technologies in multifamily buildings will be divided between the residential and commercial heat pump studies, with in-unit equipment being considered in the residential study and equipment serving entire buildings and/or common areas being considered in the commercial study. Bidders should consider the best way to handle MF HPWHs.

Sample Studies for Part A – Cross-Cutting and Topics

X2231 – Cross-Cutting Heat Pump and Electrification Study

Maximum budget: \$400,000

Description of the Project / Project Background:

Program support for heat pumps and other electrification measures is expected to ramp up over the course of the 2022-2024 period. This project will provide support for these program efforts by providing recommendations regarding: (1) improvements to program design for electrification efforts in both the residential and C&I sectors; (2) electrification goals; and (3) policies pertaining to beneficial electrification.

Research Objectives:

This study will address the following research objectives pertaining to heat pumps and electrification in both the residential and the commercial sectors:

- Illuminate best practices regarding fossil fuel to electric conversion and design efforts in both existing and new buildings, to include a determination as to the value of integrated controls (that would control both an existing/remaining heating system and the heat pump).
- Identify and characterize new and emerging target measures to help support electrification efforts in both the residential and the commercial sectors. For the commercial sector, this should cover all major existing building HVAC systems where a heat pump and/or VRF system is feasible, including heat pump RTUs and DOAS/heat pump systems.
- Analyze the technical, economic and market potential for beneficial electrification in CT.

Deliverables Needed:

- Report on best practices for fossil fuel to electric conversion and design practices and programs.
- Report on new target measures for electrification, matching existing system configurations with new configuration opportunities.
- Report on technical, economic and market potential for beneficial electrification.
- Periodic presentations to stakeholders on project progress.

Methods Notes:

Methods are likely to include lit review, expert and upstream interviews, customer surveys, and modeling.

Timeline:

This project should begin within a week of contract execution. Results from research objective #1 (best practices) are needed as soon as possible. Results from research objective #2 (new target measures) and research objective #3 (electrification potential) should be available by 2023.

Issues / Special Considerations:

The pace of the study could be limited by the pace of heat pump program activity.

[X2244 Review possible shift from EE to GHG policy integration goals and metrics at the State level](#)

Maximum budget: \$150K

Description of the Project / Project Background:

The State of Connecticut is possibly considering a strategic transition from an EE focus to GHG metrics and focus for program goals and design, and seeks information on options, rationale, and experience in other locations to inform its consideration of this issue.

Research Objectives:

The State is interested in an exploration of the various options for this strategic shift and associated revised goals, including:

- options and associated rationales;
- advantages / disadvantages / tradeoffs assessments

- transitions issues, disruptions, and implementation experience
- best practices
- directions, progress, status, implications, and results / experience in other leading states.
- Potential effects on programs, workforce, customers, stakeholders.

Methods Notes:

The study is envisioned as a secondary data effort. Conduct a detailed literature review and interviews with subject matter expert (SME) and officials / stakeholders in Massachusetts and other leading states to identify the best practices and understand the experience and advantages / disadvantages related to this type of strategic change.

The study will also need to conduct at least a high-level review of legal or other barriers to this change. This will require review of some Connecticut documents, and interviews with relevant Connecticut stakeholders.

Deliverables Needed:

The study's outputs will include a draft and final report, and presentation that include:

- Listing and information on other jurisdictions that are using some or all of the approaches
- Specific, detailed tables and analyses of the options, benefits, and experience.
- Implications for programs, savings, and effects on programs, workforce, and stakeholders.
- Information about barriers or opportunities, given the Connecticut regulatory situation.
- Recommendations on one or more specific options, best practices and supporting information (metrics, data collection, etc.), as well as a summary of the needed next steps for implementing recommended strategic changes.

Timeline:

Starts in 2022.

APPENDIX A AND APPENDIX B - Contract Terms and Conditions

Note that, for convenience, these two documents and the required contracting forms are being provided to you as separate electronic files.

APPENDIX C – Form B Excel Workbook (Blank)

A copy of the Form B, blank (live) excel workbook is attached. Separate workbooks are needed for each Research Area proposal, and a labeled tab presenting the budget for each of the ‘sample’ projects in the research area should be included in the workbook provided as part of your submittal.

APPENDIX D – 2021 CT Evaluation Roadmap

In addition, a copy of the 2021 Roadmap is also provided under separate cover.