

Attachment D
Exhibit A – Statement of Work
Clean Energy Communities Program
[Insert NYSERDA Project Title]
CEC #####/Contract #####

Project Background

[Insert Project Background here]

Definitions

{CONTRACTOR TEAM DEFINITION – SELECT MOST APPROPRIATE OPTION}

{Option 1 - If no subcontractors are identified, language should read as follows:}

Contractor Team: At the beginning of the Project Period, the Contractor Team for this Agreement shall consist of the Contractor, and any Subcontractors to be identified and selected in accordance with Article V of this Agreement. Any Subcontractors selected for work performed under the Agreement shall be promptly communicated to the NYSERDA Project Manager. The Contractor shall have the sole responsibility for satisfactory completion of all Tasks and Deliverables outlined in this Agreement.

{Option 2 - If subcontractors are identified, language should read as follows:}

Contractor Team: At the beginning of the Project Period, the Contractor Team for this Agreement shall consist of the Contractor and its Subcontractors [insert Subcontractors here]. Any additional Subcontractors shall be identified and selected in accordance with Article V of this Agreement and shall be promptly communicated to the NYSERDA Project Manager. The Contractor shall have the sole responsibility for satisfactory completion of all Tasks and Deliverables outlined in this Agreement.

NYSERDA Project Manager: NYSERDA shall assign a staff member as the NYSERDA Project Manager, designated to oversee and serve as the main point of contact for the Contractor. The NYSERDA Project Manager shall review Deliverables and provide direction to the Contractor in a streamlined fashion. The NYSERDA Project Manager shall be responsible for approving Deliverables and ensuring compliance with this Statement of Work.

Cost Share: In kind or financial contributions by the Contractor, excluding grants or incentives from NYSERDA and other New York State agencies.

Performance Metrics: The standards of comparison, determined and documented as outlined in Exhibit F, NYSERDA shall use to: assess activities in the project, capture the extent of benefits delivered, and gauge performance of the project and of the CEC Program.

Deliverable Review Process

The Contractor shall submit all Deliverables outlined in this Agreement to the NYSERDA Project Manager once a Task is completed. The Contractor shall submit all Deliverables in Microsoft Word and PDF format (or other format as identified in the Tasks below). Within fifteen (15) business days of receipt of each Deliverable, the NYSERDA Project Manager shall provide comments to the Contractor or, if the Deliverable is acceptable, the NYSERDA Project Manager shall provide final approval. The Contractor shall prepare revisions to the Deliverable reflecting the NYSERDA Project Manager's comments, and resubmit the revised Deliverable in Microsoft Word and PDF format (or other format as identified below), within fifteen (15) business days after receipt of these comments.

The NYSERDA Project Manager may provide additional comments and requests for information following receipt of the Contractor's revisions. In the event that NYSERDA requires additional time for considering approval, NYSERDA shall specify the additional amount of review time necessary up to fifteen (15) business days. All Deliverables shall not be considered final unless approved by NYSERDA in writing to the Contractor.

Tasks

The total NYSERDA award amount for all Tasks shall not exceed \$[insert total NYSERDA contribution]. The Contractor shall be required to provide a cost share of \$[insert total Contractor cost share]. The total project cost is \$[insert total project cost]. Any modifications to this amount shall be by mutual agreement. All cost overruns shall be the sole responsibility of the Contractor.

Regardless of any subcontracting arrangements, the Contractor is solely responsible for all Tasks in this Statement of Work. The Contractor shall conduct all work as outlined in the following Tasks:

Task 1: Contract Management and Reporting

The Contractor shall be responsible for overall Contract management and coordination of all Tasks in this Agreement. Contract management activities shall include, but not be limited to, the following Tasks:

Task 1.1 Project Execution Plan*

To ensure the successful development of the Deliverables, the Contractor shall submit a Project Execution Plan ("PEP"), limited to no more than 10 pages and in a template provided by NYSERDA within four (4) weeks of the execution of this agreement.

The PEP shall include the following components:

- Partner Organizations or Municipalities– A list of all partner organizations, including both a primary and secondary contact person for each organization, with a breakdown of any financial or staff assistance that each organization or municipality has committed to provide in support of the project;
- Contractor Team Members - An organizational chart of the Contractor Team and list of contributing partner organizations by deliverable;
- Subcontractors- A list of all entities that will contribute, either directly or indirectly, to completion of the Project, with a description of their scope of work, deliverables with which they will be involved, and a budget for each member of the Contractor Team performing work specifically outlined in this Agreement.
- Work Plan – A Work Plan that more narrowly define the Tasks and deliverables outlined in this agreement, including detailed task descriptions. The Work Plan shall include approximate dates for when key deliverables are expected to be submitted for NYSERDA approval. The Work Plan shall also set forth how the deliverables relate to one another. Lastly, the Work Plan shall provide a summary of how approvals will be attained by the Contractor's internal team for key deliverables and list the point people for each stage of approval.
- Performance Metrics – Include a draft Project Benefits Metrics Report (PBMR) with proposed performance metrics and projected benefit values, including methods for data collection and calculations as described in Exhibit F.

Deliverable:

- 1.1 PEP including the draft PBMR

*GO/NO GO DECISION – THE CONTRACTOR SHALL NOT BE ALLOWED TO WORK ON ANY FURTHER TASKS UNDER THIS AGREEMENT WITHOUT WRITTEN PERMISSION FROM THE NYSERDA PROJECT MANAGER, WHICH SHALL BE ISSUED AT NYSERDA’S SOLE DISCRETION.

Task 1.2: Contract Management and Quarterly Progress Reports

The Contractor shall participate in conference calls and meetings as outlined below; prepare and submit quarterly reports as outlined below; coordinate and manage all Subcontractors; provide documentation and information as requested by NYSERDA for creation of press releases or case studies to showcase the success of the Tasks completed in this Agreement; and review all Deliverables prior to submission to the NYSERDA Project Manager. The Contractor shall submit Quarterly Progress Reports to NYSERDA, in a template provided by NYSERDA, within 30 days after the end of each quarter. During each calendar year, quarter start and end dates are as follows: Quarter 1: January 1-March 31, Quarter 2: April 1-June 30, Q3: July 1-September 30, Quarter 4: October 1-December 31.

The Contractor shall complete the following activities for Contract management:

- The Contractor shall review all Contract expenditures by itself and its Subcontractors for accuracy and completeness. The Contractor shall prepare and submit invoices utilizing a template provided by NYSERDA and all necessary backup documentation;
- Provide oversight of the schedule, resources, budgets, and program outcomes including subcontractors;
- Report any significant events, program feedback, or issues to the NYSERDA Project Manager; and
- Participate with NYSERDA in monthly calls and face-to-face meetings as needed to gauge project status. NYSERDA shall schedule and conduct on an as-needed basis in-person visits, conference calls, or face-to-face meetings to verify project requirements and the completion of project Tasks.

Each Quarterly Report shall include:

- A summary of progress and accomplishments over the previous quarter, including a discussion of major Tasks and Deliverables worked on and/or completed in the prior quarter;
- Explanation of Contract management activities completed in the previous quarter with backup documentation including timesheets showing hours worked, hourly rate, staff person, and title;
- Explanation of current quarter’s activities and plans, including Tasks and Deliverables to be completed; and
- Discussion of any major issues or problems encountered during the prior quarter, deviations from schedule and budget as outlined in this Agreement and in the PEP approved under Task 1.1, and other issues related to the successful outcome of this Agreement.

If the Project timeline is extended past the end of the Project Period as specified in the Milestone Payment Schedule (attached at the end of this Exhibit A), the Contractor shall continue to submit Quarterly Reports but no additional payments shall be allocated for those Deliverables.

NYSERDA reserves the right to request additional analysis, clarification on certain Tasks, or other content for inclusion in the Quarterly Reports.

Deliverable:

- 1.2A Contract Management and Quarterly Progress Report #1
- 1.2B Contract Management and Quarterly Progress Report #2
- 1.2C Contract Management and Quarterly Progress Report #3
- 1.2D Contract Management and Quarterly Progress Report #4
- 1.2E Contract Management and Quarterly Progress Report #5

1.2F Contract Management and Quarterly Progress Report #6
[Insert additional Contract Management and Quarterly Progress Reports as needed, based on your expected project timeline.]

Task 1.3: Public Outreach Strategy

{ONLY INCLUDE THIS TASK IF APPLICABLE (e.g. Comprehensive Plans, Zoning Ordinances, Site Development Plans, etc.)}

The Contractor shall develop and submit a Public Outreach Strategy for the Project. The Public Outreach Strategy shall include, but not be limited to, the components listed below.

- A description of stakeholders or Steering Committee to guide development of the [insert planning activity], including a description of the Steering Committee's purpose, the selection process for Steering Committee members, list of members (including names, titles, and contact information), purpose of each planned meeting and tentative schedule of meetings. The Steering Committee shall include residents and local business representatives, and may include, but are not limited to, members of the [insert municipality type (city, town, village, or county)] Planning and Development Committee, [insert municipality type (city, town, village, or county)] Council/Board, and other public organizations.
- Outline for public meetings, public hearings, and public workshops that are open to the general public and focus on discussion of the Project, including meeting format, purpose and objectives, anticipated locations, advertising strategy, presentation materials including slide presentations and handouts to be prepared by the Contractor prior to each meeting, and tentative dates for the proposed public meetings.
- Interviews, surveys or other outreach methods used to reach directly impacted property owners or other stakeholders. The Contractor shall submit a draft of any outreach and education materials, including those proposed to be developed for mass printing, and presentations, to the NYSERDA Project Manager no less than three (3) weeks prior to the publication/print date for approval. It is possible that some of the materials may lead to creation of new templates approved by NYSERDA's marketing unit. Any materials are subject to NYSERDA Project Manager approval prior to creation and distribution including the use of NYSERDA logos. Any materials developed after the approval of this deliverable may be eligible for reimbursement under Task 1.2 above, subject to the approval of the NYSERDA Project Manager.

Deliverable:

1.3 Public Outreach Strategy as outlined under Task 1.3 above.

Task 1.4: Final Report and Technology Transfer

The Contractor, in conjunction with the rest of the Contractor Team, shall prepare a comprehensive Final Report, in a format approved by NYSERDA, including all required elements outlined in Exhibit E - NYSERDA Report Content Guide, and limited to no more than 25 pages plus attached final products, which describes the work performed and the results associated with the Tasks outlined in this Agreement.

To further NYSERDA's goal of transferring technology or knowledge amongst all NYS communities, the Contractor shall make all final project Deliverables available for public use and agree to work with NYSERDA to promote the project throughout its implementation through NYSERDA's outreach outlets. The Contractor shall also honor any reasonable request made by NYSERDA to provide any additional information necessary to create a press release or case study showcasing this project.

Minimum Final Report Content:

- Table of Contents;
- Brief overview of CEC Program;
- Project overview and description;
- Summary of Tasks completed;
- Narrative describing activities that took place;
- Summary of lessons learned;
- Table outlining Tasks that received NYSERDA funding, total cost of Tasks as implemented, and NYSERDA funding amounts;
- Appendices including:
 - Documentation outlined in Tasks 1.3 through [Insert last Task#] of this Statement of Work;
 - Names, contact information and roles for project participants; and
 - Performance Metrics – Include final PBMR as described in Exhibit F.

NYSERDA reserves the right to request additional analysis, clarification on certain Tasks, or other content for inclusion in the draft or Final Reports.

Measurement & Verification (M&V):

{ONLY INCLUDE THIS SECTION IF APPLICABLE (e.g. capital projects, such as LED Street Lighting, construction projects, etc.)}

The Contractor shall comply with reasonable requests made by NYSERDA to perform M&V activities on the [Project/Project Name] projects for a period of up to 10 years after completion. The costs of any M&V activities, aside from typical building operating costs and Contractor staff time incurred during the activities, shall be borne by NYSERDA. M&V activities initiated and covered by NYSERDA may include, but are not limited to, hiring a Professional Engineer to inspect or test equipment on the [Project/Project Name] project sites as well as costs of any [relevant examples e.g. any sub-metering equipment]. Costs borne by the Contractor for M&V activities may include, but are not limited to, staff time spent showing NYSERDA or its Contractor where relevant equipment is located or time spent gathering and drafting necessary documentation to demonstrate equipment performance.

Deliverable:

1.4 Final Report including the Final PBMR

Task 2.0: Project Design*

The Contractor shall submit a draft and Final Design Report that outlines all of the design elements for the Project. Examples of elements that this Design Report shall include, but are not limited to, the components outlined below (as applicable depending on project type). The Contractor shall include a detailed Task description in the PEP developed under Task 1.1.

- Existing conditions analysis, with maps, tables, graphs and other graphics, that documents current demographics, economic conditions, infrastructure, community facilities, land use, and zoning within the [insert municipality type (city, town, village, or county)]. The Contractor shall acquire all relevant Geographic Information System (GIS) data and produce a series of working maps to represent existing conditions, where possible;
- Engineering design report that includes architectural renderings, engineering design drawings, description of energy efficiency and renewable energy measures to be installed, building energy models of the base and proposed building, etc.

- Site plan showing the location of design components;
- Meeting minutes, presentation materials, and attendance lists from public meetings, Steering Committee meetings, and/or public hearings;
- Market study to identify potential uses of the project site including demographic and socio-economic trend data, future absorption rates by use category, interviews with potential developers, real estate brokers, etc.;
- Development alternatives that incorporate renewable and energy efficient infrastructure and equipment, evaluate a wide range of land uses, and illustrate the most suitable locations for buildings, structures, points of vehicular and pedestrian ingress and egress, parking areas, landscaping, walkways, and site drainage; and
- Feasibility study for a specific technologies or technologies.

Deliverable:

2.0 Draft and Final Design Report as outlined in Task 2.0 above.

*GO/NO GO DECISION – THE CONTRACTOR SHALL NOT BE ALLOWED TO WORK ON ANY FURTHER TASKS UNDER THIS AGREEMENT WITHOUT WRITTEN PERMISSION FROM THE NYSERDA PROJECT MANAGER, WHICH SHALL BE ISSUED AT NYSERDA’S SOLE DISCRETION.

Task 3.0: Project Implementation

The Contactor shall submit a draft and Final Implementation Report that outlines all of the implementation elements for the Project. Examples of elements that this Implementation Report shall include, but are not limited to, the components outlined below (as applicable depending on project type). The Contractor shall include a detailed Task description in the PEP developed under Task 1.1.

- Site Inspection: The Contractor shall coordinate with the NYSERDA Project Manager to schedule a date for a site inspection upon the completion of construction of the Project. The Contractor shall conduct a site inspection, identifying each of the major components, and provide documentation including identification of any deficiencies or deviations from the Design Report and provide photographs and invoices of installed materials. The Contractor shall be required to correct any deficiencies identified by the Contractor and justify how any deviations from the approved Design Report still meets the original design intent;
- Documentation of all reimbursable costs, payments to Subcontractors including copies of equipment specification sheets, invoices for equipment purchased, and timesheets to support construction labor costs; and
- Draft and Final [insert type of document (i.e. Comprehensive Plan, Zoning Ordinance, Site Master Plan)] that incorporates clean energy and sustainability principles such as mixed land uses, compact building design and cluster development, walkable neighborhoods, preservation of open space, density that promotes alternative transportation methods, etc.

Deliverable:

3.0 Draft and Final Implementation Report as outlined in Task 3.0 above.

Task 4.0: Project Verification

The Contactor shall submit a draft and Final Verification Report that outlines all of the implementation elements for the Project. Examples of elements that this Verification Report shall include, but are not limited to, the components outlined below (as applicable depending on project type). The Contractor shall include a detailed Task description in the PEP developed under Task 1.1.

- Plan Adoption: Meeting minutes from the public hearing and a copy of the resolution documenting the formal adoption of the final Comprehensive Plan, Zoning Ordinance, and/or Site Master Plan by the [insert municipality type (city, town, village, or county)];
- Commissioning plan and report: The Contractor may use a commissioning provider of their choice, or NYSERDA can help identify a consultant for these services. This commissioning report shall include the following components:
 - Owner’s Project Requirements outlining performance requirements for commissioning;
 - An outline of systems commissioned, any deficiencies noted, and corrective actions taken;
 - Summary of commissioning activities performed and overall results of commissioning;
 - Copy of owner’s project requirements outlining performance requirements for commissioning;
 - Copies of individual commissioning reports for each system commissioned;
 - Commissioning form (Exhibit G) outlining systems that were commissioned, any deficiencies noted, and corrective actions taken; and
 - Operator training materials for training for site staff in the operation and maintenance of systems and equipment installed.

Deliverable:

4.0 Draft and Final Verification Report as outlined in Task 4.0 above.

Milestone Payment Schedule

The Project milestones and schedule of payments is shown below. The budget table below represents the budgets as estimated at the start of the Project Period as defined in Item 4 on page 1 of this Agreement. The Contractor, as part of a quarterly reporting package, may request a change to the NYSERDA share of the budget per Task. If a budget Task reallocation request is made, the Contractor must ensure that the NYSERDA share as a percent of total project cost remains the same or decreases. The NYSERDA Project Manager is authorized to transfer up to 10% of the total NYSERDA share between Tasks without requiring a contract modification. The NYSERDA Project Manager must provide a written approval or rejection of the request. Any reallocation of NYSERDA funding among budget items that cumulatively exceeds 10% of total NYSERDA funding, or any change in total NYSERDA funding, or any change in total NYSERDA funding as a percentage of total project costs, shall require a contract modification. Reasonable modifications to the due dates for each milestone may be allowed without formal Contract modification, but are subject to the written approval of the NYSERDA Project Manager.

The Contractor shall submit invoices for payment of a completed milestone once the associated Deliverables are approved by the NYSERDA Project Manager as outlined in the Deliverable Review Process above. Invoices shall be submitted in a template provided by NYSERDA and as outlined in Article IV of the Agreement. NYSERDA funding, when combined with the Contractor’s cost-share, shall not exceed 100% of the cost of any milestone. NYSERDA is not responsible for any costs that are greater than the NYSERDA contribution not-to-exceed amount for each milestone. NYSERDA shall pay the Contractor 25% of the total NYSERDA funding for Task 1.2 through Task 4 at the completion and NYSERDA approval of Task 1.1 in addition to the payment for Task 1.1 as outlined in the budget table below in order for the Contractor to begin work on the remaining Tasks for the Project. The remaining 75% will be held by NYSERDA until the completion of each remaining Task. If the Contractor fails to complete Task 1.2 through Task4, the 25% funds disbursed for each uncompleted Task, shall be subject to recapture as outlined in Section 2.03 under Exhibit B.

The Contractor shall outline all cost-share amounts in invoices submitted to NYSERDA and shall provide the following documentation to support the NYSERDA contribution and cost share amount for each invoice:

- Capital Costs: Invoice supporting total capital costs incurred.
- Labor costs (in-kind or subcontracted): Breakout of the staff that worked on this Task and the number of hours, multiplied times the hourly rate to get the total amount.
- Document Cash Contributions from non-NYS Source: with a signed letter of commitment from the contributing entity (i.e. Federal grant award). On the milestone payment requests, the Contractor shall note the amount of money provided by the contributing entity that is being contributed to that Task.

Milestone #	Deliverable Description	Due Date	NYSERDA Contribution			Contractor Cost Share	Total Cost
			Base Payment (25%)	Retained Until Milestone Completion (75%)	Total Not to Exceed		
1.0	Contract Management						
1.1	Draft PBMR	Q3 2017	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2A	Contract Management and Quarterly Progress Report #1	Q4 2017	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2B	Contract Management and Quarterly Progress Report #2	Q1 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2C	Contract Management and Quarterly Progress Report #3	Q2 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2D	Contract Management and Quarterly Progress Report #4	Q3 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2E	Quarterly Progress Report #5	Q4 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.2F	Quarterly Progress Report #6	Q1 2019	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.3	Public Outreach Strategy	Q4 2017	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
1.4	Final Report with Final PBMR	Q2 2019	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total Task 1		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
2	Project Design						
2.0	Draft and Final Design Report	Q2 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
3	Project Implementation						

Milestone #	Deliverable Description	Due Date	NYSERDA Contribution			Contractor Cost Share	Total Cost
			Base Payment (25%)	Retained Until Milestone Completion (75%)	Total Not to Exceed		
3.0	Draft and Final Implementation Report	Q4 2018	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total Task 3		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
4							
	Project Verification						
4.0	Draft and Final Verification Report	Q1 2019	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total Task 4		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total Program Budget		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
	Total Up-Front Payment (25%)		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

Exhibit F

Project Benefits Metrics Report

Overview

This guide is designed to help customers of NYSERDA's Clean Energy Communities (CEC) Program develop the standardized Project Benefits Metrics Report (PBMR) that must be submitted as in draft form in Task 1.1 and in final form as part of the Final Report. NYSERDA expects all CEC investment to create near-term benefits, and have the potential to create significant long-term environmental, community, and economic development benefits. All CEC customers are required to develop a PBMR with quantified benefits estimated and a description of methods of analysis and submit it in Task 1.1 in the format described in this guide. Customers will have a chance to update the PBMR and refine the estimates during project development and submit a final PBMR with the Final Report. A PBMR template is available in *Attachment A: Project Benefits Metrics Report Template*.

Definitions

CEC Program Performance Metrics

These are a preliminary set of metrics that NYSERDA has identified to track (or predict) the benefits of its entire portfolio of CEC projects. The metrics are shown at the end of this guide in

Attachment B: CEC Program Performance Metrics. There are two types of Program Performance Metrics:

Required Performance Metrics (RPMs): These are metrics NYSERDA anticipates using to demonstrate CEC Program value by rolling them up across all projects. The RPMs may be used in other NYSERDA programs. All CEC customers must therefore estimate potential project benefits for all of these metrics. *It is not required, however, that projects positively impact all of these metrics.* The RPMs are as follows:

- GHG savings/year (MTCDE)
- Conventional Energy Savings (MMBTU / Year), defined as a change in use of conventional grid electricity and fossil fuels.
- Conventional Energy Cost Savings / Year (\$)
- Number of Permanent Jobs Created
- NYSERDA CEC Investment (\$)
- Investment by Others (\$)

Sector Common Metrics (SCMs): All other non-required CEC Performance Metrics shown in Attachment B are considered to be SCMs. NYSERDA would like to record these wherever possible, but understands they are applicable only to select projects. To assist NYSERDA, customers are strongly encouraged to review metrics in Attachment B and include them in their PBMRs where applicable. For example, land use and transportation-related projects and plans would be strongly encouraged to attempt to estimate VMT Reduction as a metric.

Sustainability Indicators

Sustainability indicators describe community performance and are used by planners to set and to track progress towards goals. These are two types:

Common Planning Indicators (CPIs): This is a set of community indicators related to energy and transportation demand that NYSERDA would like to have baselines for, to the extent possible, for all communities receiving planning funding. Generally, these indicators will rely on data available via the census or from similar online sources. The indicators may be reviewed by NYSERDA at intervals in the future to evaluate community performance. CPIs may use performance indicators and standards used within LEED® for Neighborhood Development (LEED- ND) or other systems and standards commonly used to quantify the benefits of sustainable planning practices.

Regional Sustainability Plan Indicators (RSPIs): Sustainability indicators describe community performance and are used by planners to set and to track progress towards goals. Under Phase I of the Cleaner, Greener Communities (CGC) Program, the CGC Program developed a comprehensive list of potential performance indicators to support the Regional Sustainability Plans. All customers will be required to demonstrate their project's ability to positively influence indicators in its applicable Regional Sustainability Plan as discussed in Section 4 of the PBMR.

Instructions for Creating a PBMR

The PBMR format is flexible and designed to let customers customize it for their needs. Each PBMR should contain the four sections discussed below, although not all sections will require content. Once complete, the applicant should submit a preliminary PBMR in Task 1.1 and the Final PBMR in the Final Report. PBMRs should be kept concise and limited to no more than fifteen pages, excluding data and attachments.

Standard Format of the PBMR

Section 1. Benefits Overview

Provide a brief description of the components of the project that will result in the benefits discussed in the statement.

Section 2. Expected Annual Benefits by Close of CEC Project Period

This section describes the cumulative and/or effective annual rate of benefits customers expect to achieve by close of CEC funding. For example, if a project installs equipment in its last month, the annual savings rate would be the effective rate expected from that point forward. This section is only required for projects with tangible infrastructure or technology components, and/or for programs that expect to engage markets or communities during the CEC funding period. Other customers should list "N/A" under this heading in their PBMR and move to Section 3.

Section 2 Instructions

Customers should review

Attachment B: CEC Program Performance **Metrics** and prepare a table as shown below that includes all RPMs and any optional SCMs relevant to the project. For example, smart growth and transportation-related projects are strongly encouraged to include the SCM “VMT Reduction” in the table. In addition, customers are encouraged to include in the table any other custom metrics that they feel will convey the benefits of the proposed project as shown above.

Section 2: CEC Benefits by Point of Project Close			
Type	Metric	Direct	Indirect
RPM	Permanent Jobs Created (FTE)		
RPM	NYSERDA CEC Investment (\$)		N/A
RPM	Investment by Others (matching and leveraged)		
RPM	Conventional Energy Savings (MMBTU/year)		
RPM	Natural Gas Savings (therms/year)		
RPM	Grid Electricity Savings (KWh/year)		
RPM	Gasoline Savings (gallons / year)		
RPM	Diesel Savings (gallons / year)		
RPM	Fuel Oil Savings (gallons / year)		
RPM	Conventional Energy Cost Savings (\$ / year)		
RPM	GHG Savings (MTCDE / year)		
SCM	(Optional) SCM Metric 1 (From Attachment B)		
SCM	(Optional) SCM Metric 2, and so on... (From Attachment B)		
Custom	List all other metrics in separate rows		

Only RPMs for energy types that will be impacted by the project need be included.

Customers should quantify and report benefits in the table. Below it they should concisely *summarize* methods, baseline assumptions, use of external tools, references to studies and protocol, etc. Each metric, and associated methods, should be listed separately.

For GHG savings from grid electricity use, customers are required to use NYSERDA’s state average GHG emission factor of 625 lbs. CO₂e/MWh. Refer to *Attachment D: Calculating GHG Emissions* for emissions factors from all fuels needed to convert energy savings to GHG emission savings.

Direct vs. Indirect Benefits

CEC projects can create benefits in operations and in the wider community around them. Therefore, in Section 2 customers should do their best to list benefits separately as “direct” and “indirect” in the table above. In general, “direct” benefits are those achieved by the components specifically attributed to CEC funding, while “indirect” benefits include all others such as:

- Benefits achieved by the project as a whole, including non-CEC portions.
- Benefits achieved by others because of the project, such as savings by residents moving to a community redevelopment that now have lower energy bills and transportation needs.
- Benefits achieved by residents and businesses participating in a CEC-supported market or service.

- Benefits achieved by energy and/or land use policies or programs that cause shifts in consumption patterns in communities.
- Any other benefits an applicant can reasonably argue are indirectly caused by the proposed project.

Customers are encouraged to think holistically about how their projects may directly and indirectly impact their communities. Because indirect benefits have the potential to be larger than direct benefits, NYSERDA will evaluate the *reasonableness* of the estimates rather than the magnitude of estimates. If an applicant has questions, they may contact the CEC team prior to submission of the PBMR.

Section 3. Potential for Future and/or Long-Term Transformational Benefits

This section is an opportunity for customers to demonstrate how projects will manifest and grow benefits in the future. NYSERDA is particularly interested in understanding how CEC investments have the potential to foster long-term and wide-spread market transformation toward sustainability.

This section is required for all projects. For projects that do not anticipate benefits growing beyond the funded project period, they should list the total annual benefits calculated in Section 2 as they apply to future years as ongoing benefits.

Section 3 Instructions

Customers should review *Attachment B: CEC Program Performance Metrics* and prepare a table as shown below that includes all required metrics (RPMs) and any optional metrics (SCMs) that they believe relevant to the project. For example, smart growth and transportation-related projects are strongly encouraged to include the SCM “VMT Reduction.” In addition, customers are encouraged to include in the table any other custom metrics that they feel will convey the benefits of the proposed project. The Section 3 table should have three columns labeled “at 5 years,” “at 15 years,” and “at 30 years” representing annual estimates of potential near, mid, and long-term benefits.

Section 3: Future and Long Term Transformation Benefits (Annual)				
Type	Metric	at 5 years	at 15 Years	at 30 Years
RPM	Permanent Jobs Created (FTE)			
RPM	NYSERDA CEC Investment (\$)	N/A	N/A	N/A
RPM	Investment by Others (matching and leveraged)			
RPM	Conventional Energy Savings (MMBTU/year)			
RPM	Natural Gas (therms/year)			
RPM	Grid Electricity (KWh/year)			
RPM	Gasoline Savings (gallons / year)			
RPM	Diesel Savings (gallons / year)			
RPM	Fuel Oil Saving (gallons / year)			
RPM	Propane Savings (gallons / year)			
RPM	Conventional Energy Cost Savings (\$ / year)			
RPM	GHG Savings (MTCDE / Year)			
SCM	(Optional) SCM Metric 1 (From Attachment B)			

Only RPMs for energy types that will be impacted by the project need be included.

SCM	(Optional) SCM Metric 2, and so on... (From Attachment B)			
Custom	List all other metrics in separate rows			

Customers should attempt, to the best of their ability, to forecast and report quantifiable potential benefits in the table. NYSERDA understands these forecasts are highly uncertain and will not require customers to achieve these estimates. If a customer is unable to quantify a metric in the preliminary PBMR, they can state “TBD” in the table and provide an explanation of how this metric will be estimated for the PBMR. “TBD” may be noted for about 20% of the projects benefits.

Below the table in the PBMR, customers should include a concise *summary* of how they projected each metric, listing assumptions, methods, and data sources. For long-term benefits customers may use local modeling or cite research studies, literature, and other peer-reviewed rule of thumb sources and tools to estimate long-term benefits of policies. For metrics listed “TBD,” customers can describe qualitatively why and how they think the listed metrics will be positively impacted and on what timeframe, and how they will be quantified in the Final PBMR. Customers should list each metric separately.

For GHG savings from grid electricity use, customers are required to use the NYSERDA state average GHG emission factor of 625 lbs. CO₂e/MWh. Refer to Attachment D for emissions factors from all fuels needed to energy savings to GHG emission savings.

What are long-term transformation benefits and how should one estimate them?

Long-term benefits are those that grow directly, or indirectly, from CEC projects. NYSERDA anticipates that its CEC investments will be poised to inspire, grow, and facilitate market transformation to sustainable practices and services. Some examples of transformational benefits include:

- A project may demonstrate growing benefits through its intent to scale up, or from its potential to be replicated.
- A specific transit investment or plan may create transformational benefits as it grows ridership and attracts investment to the region.
- Neighborhood redevelopment with LEED-ND principles may attract investment, jobs, and reduce energy use and GHG emissions among residents and businesses through compact development.
- A market transformation project for renewable energy will grow benefits as that market grows.
- Investment in public policy and planning can create significant long-term environmental, social, and economic benefits in communities.

There is no rule to make these forecasts, although customers are encouraged to look for tools, resources, and studies in their sectors to help them make estimates. Recognizing that estimates are speculative and may vary widely between customers for even similar projects, NYSERDA will favor quality and reasonableness of the assumptions over quantity. Examples of reasonableness include:

- A statement that a project will attract \$100 million in commercial investment and create 500 jobs within 10 years will be considered more reasonable if it is backed by a bona fide Market Analysis study as opposed to simple offhand assumptions.
- A statement that the benefits of a pilot project will grow through replication will be considered more reasonable if the project appears to have a strategic approach for fostering market transformation, as opposed to simply asserting that a good idea will replicate on its own.
- Forecasted benefits from programs, policy development, and planning activities will be considered more reasonable if they can cite literature, research, performance of peers, or other references that back assumptions of performance and growth.

Section 4. Potential to Impact Regional and Local Sustainability Indicators

This section must be developed by all customers. NYSERDA anticipates all CEC investments will positively support the long-term goals and indicators adopted in their region’s CGC Phase I Regional Sustainability Plan. Customers for comprehensive or sustainability planning must also include a set of Common Planning Indicators (CPIs) that NYSERDA may use to evaluate community performance over the long term once planning is complete.

Sustainability Indicators are different from CEC Program RPMs and SCMs in that they describe community and regional sustainability performance. Indicators are diverse and cover a vast array of sectors from community livability, land use and transportation, climate adaptation, economic development, and many other sectors. Customers can find resources on the [CGC website](#) including:

- Full Regional Sustainability Plans (RSPs)
- A convenient summary of RSPs and goals adopted by regions in excel format
- A Sustainability Indicators Guidance Document that includes a description of how indicators were calculated at a regional. This is an excellent resource to start identifying additional potential indicators.

Section 4 Instructions

All customers should create a table of indicators in the format shown on the next page and list at least two RSP Indicators to be positively influenced by the planning project. In addition, customers for comprehensive or sustainability planning should review *Attachment C: Common Planning Indicators* and include applicable CPIs so there are at least five total Indicators chosen for each project and listed in the Section 4 table. These indicators should be chosen to demonstrate the impact of CEC planning investment when reviewed independently in the future. These need not be limited to energy, GHG, and transportation indicators.

Customers should create a baseline value for all indicators in the table, drawing on data sources and methods in *Attachment C: Common Planning Indicators*, the Sustainability Indicators Guidance Document, or any other suitable source. Projects for community-scale plans are encouraged to draw indicators that are already known for the community. Customers may list the value as “TBD” if they cannot be developed by submission of the preliminary PBMR required in Task 1.1, but plan to provide

estimates with the Final PBMR. For the brief description of impact (one line only), customers can estimate an actual change, list a potential goal, or simply provide a description of how the indicator will likely change.

Section 4: Potential to Impact Regional and local Common Planning Indicators(EXAMPLE)			
Indicator	Type (RSPI, CPI, Other)	Baseline (if known)	Brief one-line description of impact
(e.g.) Residential Energy Use per Household	CPI	240 MMBtu/year	Decrease by 30% in 50% of Homes
(e.g.) Total Energy Use per Capita	CPI	181 MMBtu/year	Decrease by 10%, related to transportation
(e.g.) H+T Index	CPI		
(e.g.) Average Commute Time	CPI	20 minutes	Reduce to 18 minutes
(e.g.) GHG Emissions per Capita	RSPI	12.48	Reduce by 20%
(e.g.) Percent of Housing Occupied	RSPI	70%	Increase to 75%
etc., list all indicators			

Below the table, customers should include a concise description of the baseline calculation method, and the basis for each indicator’s one-line impact statement. This may include a rationale for the project’s linkage to an indicator, references to studies, additional qualitative description, application of tools, etc. Customers should list each indicator separately and try to limit description for each indicator to no more than 3-4 sentences.

How to link sustainability indicators to individual projects

Some specific projects may need to include the concept of a “project boundary” when reporting an impact on regional sustainability indicators. For example, the Housing and Transportation Index was a required common metric for the Phase I Regional Sustainability Plans. This index is the percent of household income spent on transportation plus housing. A specific urban redevelopment project will positively impact this indicator, but its singular impact may not manifest over a regional average. Therefore, the applicant could assume the “project boundary” to be the future population of the redevelopment and compare this group’s expected Housing and Transportation Index to the regional average as a means to show benefit.

Attachment A: Project Benefits Metrics Report Template

CFA #####, Project Benefits Metrics Report

[Project Title]

Section 1. Benefits Overview

Provide a brief description of the components of the project that will result in the benefits discussed in the statement.

Section 2. Expected Annual Benefits by Close of CEC Project Period

[List N/A under heading if section excluded]

Section 2: CEC Benefits by Point of Project Close			
Type	Metric	Direct	Indirect
RPM	Permanent Jobs Created (FTE)	[e.g., 25]	
RPM	NYSERDA CEC Investment (\$)	[e.g., 2,300,000]	N/A
RPM	Investment by Others (matching and leveraged)		
RPM	Conventional Energy Savings (MMBTU/year)		
RPM	Natural Gas Savings (therms/year)		
RPM	Grid Electricity Savings (KWh/year)		
RPM	Gasoline Savings (gallons / year)		
RPM	Diesel Savings (gallons / year)		
RPM	Fuel Oil Savings (gallons / year)		
RPM	Conventional Energy Cost Savings (\$ / year)		
RPM	GHG Savings (MTCDE / year)		
SCM	(Optional) SCM Metric 1 (From Attachment B)		
SCM	(Optional) SCM Metric 2, and so on... (From Attachment B)		
Cust om	List all other metrics in separate rows: See CGC Phase I Sustainability Plans for Examples		

Only RPMs for energy types that will be impacted by the project need be included.

Fill in an estimated value in all cells, or list "N/A". Use units in table.

Methods and Assumptions [entry for each row in table]

Metric 1: Concisely summarize methods, baseline assumptions, data sources, protocol, studies, ad hoc assumptions, etc., used to make the estimates. Referencing a known method or protocol can replace the need to provide a detailed description thereof. Describe basis of classifying benefits as direct, indirect, or both where applicable.

Metric 2: [methods discussion....]

Metric 3: [methods discussion....]

Metric 4: and so on...

Section 3. Potential for Future and/or Long Term Transformational Benefits

Section 3: Future and Long Term Transformation Benefits(Annual)				
Type	Metric	at 5 years	at 15 Years	at 30 Years
RPM	Permanent Jobs Created (FTE)			
RPM	NYSERDA CEC Investment (\$)	N/A	N/A	N/A
RPM	Investment by Others (matching and leveraged)			
RPM	Conventional Energy Savings (MMBTU/year)	25,000	40,000	
RPM	Natural Gas (therms/year)			
RPM	Grid Electricity (KWh/year)			
RPM	Gasoline Savings (gallons / year)			
RPM	Diesel Savings (gallons / year)			
RPM	Fuel Oil Saving (gallons / year)			
RPM	Conventional Energy Cost Savings (\$ / year)			
RPM	GHG Savings (MTCDE / Year)			
SCM	(Optional) SCM Metric 1 (From Attachment B)			
SCM	(Optional) SCM Metric 2, and so on... (From Attachment B)			
Custom	List all other metrics in separate rows			

Only RPMs for energy types that will be impacted by the project need be included.

Fill in an estimated value in all cells, or list "N/A". Use units in table. Benefits need not be projected for all time periods.

Methods and Assumptions [entry for each row in table]

Metric 1: Describe custom methods, forecast assumptions, models, studies, growth rates, data sources, etc., used to make the estimates. For metrics listed as “TBD” in the Draft PBMR according to instructions, explain qualitatively the potential impact and on what timeframe impacts will be assessed.

Metric 2: and so on....

Section 4. Projected Impact on Regional and Local Sustainability Indicators

Section 4: Potential to Impact Regional and Local Common Planning Indicators			
Indicator	Type (RSPI, CPI, Other)	Baseline (if known)	Brief one-line description of impact
(e.g.) Residential Energy Use per Household	CPI		
(e.g.) Total Energy Use per Capita	CPI		
(e.g.) H+T Index	CPI		
(e.g.) Average Commute Time	CPI		
(e.g.) GHG Emissions per Capita	RSPI		
(e.g.) Percent of Housing Occupied	RSPI		
etc., list all indicators			

Methods and Assumptions [entry for each row in table]

Indicator 1: include a concise *summary* of the basis of each indicator, references to studies, additional qualitative description, application of tools, explanation of impact, etc.

Indicator 2: and so on...

Attachment B: CEC Program Performance Metrics

This table includes a list of metrics that NYSERDA would like to roll up across all CEC projects to help demonstrate program impact.

Required Performance Metrics (RPMs) should be included in all benefit tables included in Section 2 and Section 3 Project Benefit Reports (PBMRs). For Energy, only RPMs for specific energy types affected need be included.

Sector Common Metrics (SCMs) are optional for Section 2 and Section 3 PBMR responses. NYSERDA encourages customers to include them if their projects will provide benefits to them.

Sector	Type	Metric	Unit
Environment	RPM	GHG Emissions Savings / year	MTCDE/year
Energy	RPM	Total Conventional Energy Savings	MMBTU
	(below)	Conventional Energy Savings (By Type)	(See below)
	RPM	Natural Gas Savings (or increase)	therms / year
	RPM	Grid Electricity Savings (or increase)	KWh / year
	RPM	Gasoline Savings (or increase)	gallons / year
	RPM	Diesel Savings (or increase)	gallons / year
	RPM	Fuel Oil Savings (or increase)	gallons / year
	RPM	Propane Savings (or increase)	gallons / year
	SCM	Biomass Fuel Created	MMBTU / year
	SCM	Renewable Electricity Created	MWh / year
	SCM	Installed Solar/Wind/Geothermal Capacity	MW
SCM	Number of new LEED or Certified Buildings	number	
Transportation	SCM	Vehicle-Miles-Traveled (VMT) Reduced	miles / year
	SCM	Use of CNG	MMBTU / year
	SCM	Use of Ethanol	gallons / year
	SCM	Use of Biodiesel	MMBTU / year
	SCM	Use of Electricity in Vehicles	MWh / year
	SCM	Number of alternative vehicles on road	number
Waste Management	SCM	Organic MSW, sewage sludge, or other waste Composted or Digested	tons / year
	SCM	Landfill / WWTP Gas Captured	MMBTU / year
	SCM	Solid Waste Diverted	tons / year
Economic	RPM	Conventional Energy Cost Savings	\$
	RPM	Permanent Jobs Created	number
	RPM	NYSERDA CEC Investment (funding requested)	\$
	RPM	Investment by Others (matching and leveraged)	\$
	SCM	Operational / Lifecycle Cost Savings	\$/ year
	SCM	Revenue Generated by New or Increased Business	\$/ year

Attachment C: Common Planning Indicators

All Comprehensive and Sustainability planning projects should include at least five Regional and Local Sustainability Indicators, including Common Planning Indicators (CPIs) from the list below. For areas or developments that are not communitywide, the Contractor should estimate the indicators for the population or area subset of the community.

Contractors should favor indicators based on high quality data that is readily available and easily updated in the future. For example, VMT per capita will be a good indicator if high quality community-scale VMT data is available from an MPO or local traffic count study. Conversely, VMT per capita as a local indicator is less valuable if it is derived from state average values scaled to the community. Similarly, for energy use, utility provided data of *actual* community energy use profiles are more valuable than, say, estimated community totals from state or regional averages.

In addition to the data sources listed below, please refer to the Sustainability Indicators Guidance Document for more detailed suggestions on methods and data sources.

Type	Indicator	Common Data Sources
CPI	Energy Consumption (MMBTU) / Capita	Utility Data Request, CEC Program, CEC Regional GHG Inventories, local energy plans
CPI	Household Energy Consumption (MMBTU) / Capita	Same
CPI	Installed Solar Capacity (MWh)	NY-Sun Initiative Tools
CPI	Installed Local Renewable Capacity (MWh)	NY-Sun Initiative Tools , others
CPI	Alternative Commute Mode Share (percent by walking, biking, transit, carpooling)	Census Journey to Work , ACS, Census Transportation Data Products
CPI	Average Commute Time (Minutes)	Same
CPI	Percent that live and work in the same community (percent)	same
CPI	Number of EV Charging Stations	Plugshare.com, Alternative Fuels Data Center , others
CPI	Vehicle miles-traveled (VMT) per Capita	Metropolitan Planning Organizations
CPI	Housing Density (Households / Square mile)	Census and American Community Survey
CPI	Housing and Transportation (H+T) Index	Center for Neighborhood Technologies
CPI	Community average Walk Score	Walkscore.com

Attachment D: Calculating GHG Emissions

Customers can use the tables below to convert energy savings into GHG emissions. EPA’s Clean Energy Website provides Calculations and References for using these emission factors at <http://www.epa.gov/cleanenergy/energy-resources/refs.html>. However, remember that all Customers, regardless of their geographic location within New York State, are required to use NYSERDA’s State Average emission factor of 625 lbs. CO₂e/MWh to convert any grid electricity usage or savings into GHG emissions. GHG savings should be reported in units of MTCDE, or “Metric Tons of Carbon Dioxide Equivalent,” or 1000kg CO₂e. The factors listed in the last column in the chart below would need to be divided by 1000.

NYSERDA does not expect that customers be experts in GHG calculations, and will work with successful customers to refine and improve GHG benefit estimates where needed. Customers may contact the CEC team with questions, and may indicate in their PBMRs that they require assistance.

Fuel (Scope 1) and Electricity (Scope 2) Emission Factors

Fuel Type	Heating Value	CO ₂ Factor	CH ₄ Factor	N ₂ O Factor	CO ₂ e
Electricity Consumption (Scope 2)		lb/MWh	lb/GWh	lb/GWh	kg/MWh
NYSERDA State Average		625	--	--	283.5
Solid Fuels	mmBtu / ton	kg / mmBtu	g / mmBtu	g / mmBtu	kg/mmBtu
Anthracite Coal	25.09	103.54	11	1.60	104.27
Bituminous Coal	24.93	93.40	11	1.60	94.13
Sub-bituminous Coal	17.25	97.02	11	1.60	97.75
Lignite Coal	14.21	96.36	11	1.60	97.09
Mixed (Commercial Sector)	21.39	95.26	11	1.60	95.99
Mixed (Electric Power Sector)	19.73	94.38	11	1.60	95.11
Mixed (Industrial Coking)	26.28	93.65	11	1.60	94.38
Mixed (Industrial Sector)	22.35	93.91	11	1.60	94.64
Coke	24.80	102.04	11	1.60	102.77
Municipal Solid Waste	9.95	90.70	32	4.20	92.67
Petroleum Coke (Solid)	30.00	102.41	32	4.20	104.38
Plastics	38.00	75.00	32	4.20	76.97
Tires	26.87	85.97	32	4.20	87.94
Agricultural Byproducts	8.25	118.17	32	4.20	120.14
Peat	8.00	111.84	32	4.20	113.81
Solid Byproducts	25.83	105.51	32	4.20	107.48
Wood and Wood Residuals	15.38	93.80	32	4.20	95.77
Gaseous Fuels	mmBtu / scf	kg CO ₂ / mmBtu	g CH ₄ / mmBtu	g N ₂ O / mmBtu	kg / mmBtu
Natural Gas (per scf)	0.001028	53.02	1.000	0.100	53.072
Blast Furnace Gas	0.000092	274.32	0.022	0.100	274.351
Coke Oven Gas	0.000599	46.85	0.480	0.100	46.891
Fuel Gas	0.001388	59.00	0.022	0.100	59.031
Propane Gas	0.002516	61.46	0.022	0.100	61.491

Fuel Type	Heating Value	CO ₂ Factor	CH ₄ Factor	N ₂ O Factor	CO ₂ e
Biogas (Captured Methane)	0.000841	52.07	3.200	0.630	52.333
Liquid Fuels	mmBtu / gallon	kg CO ₂ / mmBtu	g CH ₄ / mmBtu	g N ₂ O / mmBtu	kg / mmBtu
Asphalt and Road Oil	0.158	75.36	3.0	0.60	75.609
Aviation Gasoline	0.120	69.25	3.0	0.60	69.499
Butane	0.101	65.15	3.0	0.60	65.399
Butylene	0.103	67.73	3.0	0.60	67.979
Crude Oil	0.138	74.49	3.0	0.60	74.739
Distillate Fuel Oil No. 1	0.139	73.25	3.0	0.60	73.499
Distillate Fuel Oil No. 2	0.138	73.96	3.0	0.60	74.209
Distillate Fuel Oil No. 4	0.146	75.04	3.0	0.60	75.289
Ethane	0.069	62.64	3.0	0.60	62.889
Ethylene	0.100	67.43	3.0	0.60	67.679
Heavy Gas Oils	0.148	74.92	3.0	0.60	75.169
Isobutane	0.097	64.91	3.0	0.60	65.159
Isobutylene	0.103	67.74	3.0	0.60	67.989
Kerosene	0.135	75.20	3.0	0.60	75.449
Kerosene-type Jet Fuel	0.135	72.22	3.0	0.60	72.469
Liquefied Petroleum Gases (LPG)	0.092	62.98	3.0	0.60	63.229
Lubricants	0.144	74.27	3.0	0.60	74.519
Motor Gasoline	0.125	70.22	3.0	0.60	70.469
Naphtha (<401 deg F)	0.125	68.02	3.0	0.60	68.269
Natural Gasoline	0.110	66.83	3.0	0.60	67.079
Other Oil (>401 deg F)	0.139	76.22	3.0	0.60	76.469
Pentanes Plus	0.110	70.02	3.0	0.60	70.269
Petrochemical Feedstocks	0.129	70.97	3.0	0.60	71.219
Petroleum Coke	0.143	102.41	3.0	0.60	102.659
Propane	0.091	61.46	3.0	0.60	61.709
Propylene	0.091	65.95	3.0	0.60	66.199
Residual Fuel Oil No. 5	0.140	72.93	3.0	0.60	73.179
Residual Fuel Oil No. 6	0.150	75.10	3.0	0.60	75.349
Special Naphtha	0.125	72.34	3.0	0.60	72.589
Still Gas	0.143	66.72	3.0	0.60	66.969
Unfinished Oils	0.139	74.49	3.0	0.60	74.739
Used Oil	0.135	74.00	3.0	0.60	74.249
Biodiesel (100%)	0.128	73.84	1.1	0.11	73.897
Ethanol (100%)	0.084	68.44	1.1	0.11	.057
Rendered Animal Fat	0.125	71.06	1.1	0.11	71.117
Vegetable Oil	0.120	81.55	1.1	0.11	81.607

Sources: Solid, gaseous, liquid and biomass fuels: Federal Register (2009) EPA; 40 CFR Parts 86, 87, 89 et al; Mandatory Reporting of Greenhouse Gases; Final Rule, 30Oct09, 261 pp. Tables C-1 and C-2 at FR pp. 56409-56410. Revised emission factors for selected fuels: Federal Register (2010) EPA; 40 CFR Part 98.