Part III - Administrative, Procedural, and Miscellaneous

Qualifying Advanced Energy Project Credit

Notice 2009-72

SECTION 1. PURPOSE

This notice establishes the qualifying advanced energy project program under § 48C(d) of the Internal Revenue Code and announces an initial allocation round of the qualifying advanced energy project credit under the qualifying advanced energy project program. The purpose of the qualifying advanced energy project program is to encourage taxpayers to re-equip, expand or establish manufacturing facilities for the production of certain energy related property.

SECTION 2. BACKGROUND

.01 Section 46 provides that the amount of the investment credit for any taxable year is the sum of the credits listed in § 46. That list includes the qualifying advanced energy project credit.

.02 The qualifying advanced energy project credit is provided under § 48C.

Section 48C(a) provides that the qualifying advanced energy project credit for a taxable year is an amount equal to 30 percent of the qualified investment (as defined in § 48C(b)) for that taxable year with respect to the taxpayer's qualifying advanced energy project (as defined in § 48C(c)(1)). The qualifying advanced energy project credit with respect to any project for all taxable years may not exceed the amount of credit allocated to the project under section 5 of this notice.

.03 Section 48C(b)(1) provides that the qualified investment for any taxable year is the basis of eligible property that is placed in service by the taxpayer during such taxable year and is part of a qualifying advanced energy project.

.04 Section 48C(d)(1)(B) provides that the aggregate credits allowed under the qualifying advanced energy project program may not exceed $2.3 billion.

.05 Section 48C(d)(3) specifies the criteria that must be considered in determining which qualifying advanced energy projects are certified under § 48C(d).

.06 The at-risk rules in § 49 and the recapture and other special rules in § 50 apply to the qualifying advanced energy project credit. Further, the qualifying advanced energy project credit generally is allowed in the taxable year in which the eligible property (as defined in § 48C(c)(2)) is placed in service (as defined in section 4.04 of this notice) by the taxpayer. Pursuant to § 48C(d)(2)(C), a taxpayer that receives a certification under § 48C(d)(2) has 3 years from the date of issuance of certification to place the qualifying advanced energy project in service. If the taxpayer does not place the project in service by the end of that period, the certification is no longer valid. The Internal Revenue Service (Service) has no authority to extend that period.

SECTION 3. ESTABLISHMENT OF THE QUALIFYING ADVANCED ENERGY PROJECT PROGRAM

Section 48C(d)(1) provides that the Secretary of the Treasury or his delegate (the Secretary), in consultation with the Secretary of Energy, shall establish a qualifying advanced energy project program to consider and issue certifications for qualified investments eligible for the credit to qualifying advanced energy project sponsors. The Treasury Department and the Service hereby establish the qualifying advanced energy project program under the rules set forth in sections 5 through 12 of this notice.

SECTION 4. DEFINITIONS

The following definitions apply for purposes of § 48C and this notice:

.01 Qualifying Advanced Energy Project. A qualifying advanced energy project is a project that meets the following requirements:

(1) the project re-equips, expands or establishes a manufacturing facility (as defined in section 4.05 of this notice) for the production of specified advanced energy property or property that, after further manufacture, will become specified advanced energy property;

(2) the Service has certified pursuant to § 48C(d)(2) that part or all of the qualified investment in the project is eligible for a credit under § 48C; and

(3) the project does not produce any property which is used in the refining or blending of any transportation fuel (other than renewable fuels) (*i.e.*, a qualifying advanced energy project can produce property which is used in the refining or blending of any transportation fuel only if the property is used solely in the refining or blending of

transportation fuels that are renewable fuels).

.02 Specified Advanced Energy Property. Specified advanced energy property means any of the following:

(1) property designed for use in the production of energy from the sun, wind, geothermal deposits (within the meaning of § 613(e)(2)), or other renewable resources;

(2) fuel cells, microturbines, or an energy storage system for use with electric or hybrid-electric motor vehicles;

(3) electric grids to support the transmission of intermittent sources of renewable energy, including property for the storage of such energy;

(4) property designed to capture and sequester carbon dioxide and sequester carbon dioxide emissions;

(5) property designed to refine or blend renewable fuels (but not fossil fuels) or to produce energy conservation technologies (including energy-conserving lighting technologies and smart grid technologies);

(6) new plug-in electric drive motor vehicles (as defined by § 30D), qualified plug-in electric vehicles (as defined by § 30(d)), or components that are designed specifically for use with such vehicles, including electric motors, generators, and power control units or;

(7) other property designed to reduce greenhouse gas emissions as may be determined by the Service.

.03 Eligible Property. Eligible property is any property (other than a building or its structural components) that meets the following requirements:

(1) The property is necessary for the production of specified advanced energy property described in § 48C(c)(1)(A)(i) or section 4.02 of this notice.

(2) The property is:

(a) tangible personal property; or

(b) other tangible property (not including a building or its structural components) that is used as an integral part of the qualifying advanced energy project.

(3) Depreciation (or amortization in lieu of depreciation) is allowable with respect to the property.

.04 Placed In Service. For purposes of § 48C, property is placed in service in the taxable year in which the property is placed in a condition or state of readiness and availability for a specifically assigned function. See § 1.46-3(d)(1)(ii) of the Income Tax Regulations. Thus, a qualifying advanced energy project is placed in service in the taxable year in which the project is placed in a condition or state of readiness and availability for its intended purpose. Eligible property (as defined in § 48C(c)(2)) that is a part of the project is placed in service in the taxable year in which the property is placed in a condition or state of readiness and availability for its intended purpose.

.05 Manufacturing Facilities. For purposes of § 48C, manufacturing facilities are facilities that make, or process raw materials into, finished products (or accomplish any intermediate stage in that process).

.06 Advanced Energy Property Designed To Reduce Greenhouse Gas Emissions. The Secretary may determine that a property is designed to reduce greenhouse gas emissions in published guidance or in the letter notifying a taxpayer

that the Service has accepted the taxpayer's application for § 48C certification with respect to the property.

SECTION 5. QUALIFYING ADVANCED ENERGY PROJECT PROGRAM

.01 In General. The Service will consider a project under the qualifying advanced energy project program only if the U.S. Department of Energy (DOE) provides a recommendation and ranking for the project (DOE recommendation). DOE will provide a recommendation and ranking only if it determines that the project has a reasonable expectation of commercial viability and merits a recommendation based on the criteria in § 48C(d)(3)(B). Accordingly, a taxpayer must submit, for each project that it sponsors: (1) a preliminary application and a final application for recommendation by DOE (application for DOE recommendation), and (2) an application for certification under § 48C(d)(2) by the Service (application for § 48C certification). Certifications will be issued and credits will be allocated to projects in annual allocation rounds. The initial allocation round will be conducted in 2009-2010, and if necessary, an additional allocation round will be conducted in 2010-2011.

.02 Program Specifications.

(1) The Service determines the amount of the qualifying advanced energy project credit allocated to a qualifying advanced energy project at the time the Service accepts the application for certification for that project in accordance with section 5.02(8) of this notice (see section 6 of this notice for the requirements applicable to the application for DOE recommendation and the application for § 48C certification).

(2) The DOE recommendations will include a ranking of projects in descending

order (that is, first, second, third, etc.). The project receiving the highest ranking (that is, first) will be allocated the full amount of credit requested before any credit is allocated to a lower-ranked project. The amount of credit allocated to a project reduces the amount of credit available to lower-ranked projects. The same process will apply to the second and lower-ranked projects until the amount available for allocation is exhausted. DOE will recommend and rank projects only to the extent necessary to exhaust the amount available for allocation.

(3) If the amount available for allocation is not fully allocated in the 2009-2010 allocation round, a similar allocation round will be conducted in 2010-2011. The Service will announce the results after the close of each allocation round.

(4) For each allocation round there will be an annual application period during which a taxpayer may file its application for certification. The Service will consider a project in an allocation round only if the application for certification for the project is submitted during the application period for that round and the DOE provides the DOE recommendation for the project.

(5) For the 2009-2010 allocation round, the application period for certification begins on August 14, 2009, and ends on December 16, 2009. Any completed application for certification submitted to the Service after August 13, 2009, and before December 17, 2009, will be deemed to be submitted by the taxpayer on December 16, 2009.

(6) For the 2009-2010 allocation round, a preliminary application for DOE recommendation must be submitted by September 16, 2009. A final application for

DOE recommendation must be submitted by October 16, 2009. If a final application for DOE recommendation is received on or before October 16, 2009, DOE will determine the feasibility of the project and (for projects determined to be feasible) provide the DOE recommendation to the Service by December 16, 2009. See section 6.02 of this notice and Appendix B to this notice for the information required to be submitted to DOE in an application for DOE recommendation. Also, see Appendix B to this notice for a discussion relating to the process for applying for DOE recommendation and the instructions and address for filing the preliminary and final applications for DOE recommendation.

(7) For purposes of determining the timeliness of submission of applications, § 7502 shall apply in determining the timeliness of any application for § 48C certification or DOE recommendation.

(8) For the 2009-2010 allocation round, the Service will accept or reject the taxpayer's application for § 48C certification by January 15, 2010, and will notify the taxpayer, by letter, of its decision. If the application is accepted, the date of this letter will be treated as the acceptance date.

(9) If the taxpayer's application for § 48C certification is accepted, the acceptance letter will state the amount of the credit allocated to the project. If a credit is allocated to a taxpayer's project, the taxpayer will be required to execute an agreement in the form set forth in Appendix A to this notice. For credits allocated in the 2009-2010 allocation round, the taxpayer must execute and return the agreement to the Service by March 15, 2010, at the appropriate address listed in section 6.04 of this notice or listed

in later guidance published in the Internal Revenue Bulletin. The Service will execute and return the agreement to the taxpayer by April 16, 2010. The executed agreement applies only to the taxpayer who signed the agreement. Any successor in interest must execute a new agreement with the Service no later than the due date (including extensions) of the successor in interest's Federal income tax return for the taxable year in which the transfer occurs. If the successor in interest does not execute a new agreement, the following rules apply:

(a) In the case of an interest acquired at or before the time the qualifying advanced energy project is placed in service, any credit allocated to the project will be fully forfeited (and rules similar to the recapture rules of § 50(a) apply with respect to qualified progress expenditures); and

(b) In the case of an interest acquired after the qualifying advanced energy project is placed in service, the project ceases to be investment credit property and the recapture rules of § 50(a) (and similar rules with respect to qualified progress expenditures) apply.

.03 For qualifying advanced energy projects that re-equip or expand a manufacturing facility, the taxpayer's qualified investment is limited to property that re-equips or expands the facility to produce specified advanced energy property listed in section 4.02 of this notice.

.04 The qualifying advanced energy project credit will not be allocated to a project with respect to any qualified investment for which a credit is allowed under § 48, 48A, or 48B, or for which a payment is received under §1603 of the American Recovery

and Reinvestment Tax Act of 2009, Division B of Pub. L. 111-5, 123 Stat 115.

SECTION 6. APPLICATIONS FOR DOE RECOMMENDATION AND § 48C CERTIFICATION

.01 In General. An application for DOE recommendation and a separate application for § 48C certification must be submitted for each project that a taxpayer sponsors. If an application for DOE recommendation does not include all of the information required by section 6.02 of this notice and meet the requirements in sections 8.01 and 8.02 of this notice, DOE may decline to consider the application. If an application for § 48C certification does not include all of the information listed in section 6.03 of this notice and meet the requirements in sections 8.01 and 8.02 of this notice, the Service will not consider the application.

.02 Information Required in the Application for DOE Recommendation. A preliminary application and final application for DOE recommendation must include the information as requested in Appendix B to this notice.

.03 Information To Be Included in the Application for § 48C Certification.

An application for certification must include all of the following:

(1) The name, address, and taxpayer identification number of the taxpayer. If the taxpayer is a member of an affiliated group filing consolidated returns, the taxpayer must also provide the name, address, and taxpayer identification number of the common parent of the group.

(2) The name, telephone number, email address, and fax number of a contact person. For such person, attach a properly executed power of attorney, preferably on

Form 2848, Power of Attorney and Declaration of Representative.

(3) One electronic version on a CD of the completed application for DOE recommendation submitted with respect to the project in accordance with section 6.02 of this notice.

.04 Instructions and Address for Filing § 48C Application. Applications for certification should be marked: APPLICATION FOR § 48C CERTIFICATION. There is no user fee for these applications. Taxpayers may submit their application by U.S. mail, designated private delivery service (as prescribed in § 7501), or hand delivery (between the hours of 8 a.m. and 4 p.m. Central time, Monday through Friday) to:

Internal Revenue Service
Industry Director, Natural Resources and Construction
Attn: Executive Assistant
1919 Smith Street, Floor P2
Stop HOU-1000
Houston, TX 77002

SECTION 7. ISSUANCE OF CERTIFICATION

.01 In General. Section 48C(d)(2)(B) provides that a taxpayer shall have 1 year from the date of acceptance of the § 48C application during which to provide evidence that the requirements of the certification have been met. Section 48C(d)(2)(C) provides that a taxpayer that receives a certification has 3 years from the date of issuance of the certification to place the project in service and that the certification is void if the project is not placed in service by the end of that three-year period.

.02 Requirements for Certification.

(1) Within 1 year from the acceptance date (as determined in section 5.02(8) of

this notice), the taxpayer must submit to the Service documentation establishing the following:

(a) The taxpayer has received all federal, state, and local permits, including environmental authorization or reviews necessary to commence construction of the project.

(b) The taxpayer has completed all steps that must be accomplished during the 1-year period beginning on the acceptance date if the project is to be placed in service before the end of the 3-year period beginning on the date of issuance of the certification (assuming such certification will be issued on the one-year anniversary of the acceptance date).

(2) The taxpayer must also comply with the requirements of sections 8.01 and 8.02 of this notice. The taxpayer should mark the package, ”SECTION 48C CERTIFICATION REQUIREMENTS” and send it to the appropriate address listed in section 6.04 of this notice or listed in later guidance published in the Internal Revenue Bulletin.

.03 Service’s Action on Certification. After receiving the submission described in section 7.02 of this notice, the Service will decide whether or not to certify the project and will notify the taxpayer, by letter, of that decision. If the Service certifies the project, the date of this letter is the date of issuance of the certification.

SECTION 8. OTHER REQUIREMENTS

.01 Signature. Each submission under sections 6 and 7 of this notice must be signed and dated by the taxpayer. A stamped signature or faxed signature is not

permitted.

.02 Penalties of Perjury Statement.

(1) Each submission under sections 6 and 7 of this notice must be accompanied by the following declaration: “Under penalties of perjury, I declare that I have examined this submission, including accompanying documents, and, to the best of my knowledge and belief, all of the facts contained herein are true, correct, and complete.”

(2) The declaration must be signed and dated by the taxpayer. The person signing for the taxpayer must have personal knowledge of the facts. Further, the declaration must be signed by a person authorized to bind the taxpayer such as an officer on behalf of a corporation, a general partner on behalf of a state-law partnership, a member-manager on behalf of a limited liability company, a trustee on behalf of a trust, and the proprietor in the case of a sole proprietorship. If the taxpayer is a member of an affiliated group filing consolidated returns, the declaration also must be signed by a duly authorized officer of the common parent of the group. A stamped signature or faxed signature is not permitted.

.03 Significant Change in Plans. The taxpayer must inform the Service if the plans for the project change in any significant respect from the plans set forth in the applications for § 48C certification and DOE recommendation. A significant change is any change that a reasonable person would conclude might have influenced DOE in recommending or ranking the project or the Service in accepting the project application had they known about the change when they were considering the application. Any significant change to the plans set forth in the applications will have the following

effects:

(1) If the Service is informed of the change after the date on which the final applications for DOE recommendation were due for the allocation round under section 5.02(6) of this notice and before the Service accepts or rejects the taxpayer's application for certification under section 5.02(8) of this notice, the Service will not consider the project during the allocation round; and

(2) If the Service is informed of the change after it has accepted the taxpayer's application for certification, any allocation or certification based on that acceptance is void.

.04 Effect of an Acceptance, Allocation, or Certification. An acceptance, allocation, or certification by the Service under this notice is not a determination that a project is eligible for the qualifying advanced energy project credit under § 48C or that any property that is part of the project is an eligible property under § 48C(c)(2). The Service may, upon examination (and after any appropriate consultation with DOE), determine that the project does not qualify for this credit or that the property is not an eligible property for purposes of this credit.

.05 No Right to a Conference or Appeal. A taxpayer does not have a right to a conference relating to any matters under this notice. Further, a taxpayer does not have a right to appeal the decisions made under this notice (including the acceptance or rejection of the application for DOE recommendation or § 48C certification, the amount of credit allocated to the project, or whether or not to certify the project) to any official of DOE or the Service.

SECTION 9. FUTURE ALLOCATION ROUNDS

.01 2010-2011 Allocation Round. If, after the allocation round in 2009-2010, the entire credit under the qualifying advanced energy project is not fully subscribed (that is, the aggregate credit for the program has not been fully allocated), the Service will conduct an additional allocation round in 2010-2011. Future guidance will prescribe the procedures applicable to applications in the 2010-2011 allocation round.

.02 Review and Redistribution of Credits. Pursuant to § 48C(d)(4)(A), the Service will review credits allocated under § 48C not later than February 17, 2013. Under § 48C(d)(4)(B), credits available under § 48C(d)(1)(B) may be reallocated if (i) there is an insufficient quantity of qualifying applications for certification pending at the time of the review, or (ii) any certification made pursuant to § 48C(d)(2) has been revoked pursuant to § 48C(d)(2)(B). If credits under § 48C(d) are available for reallocation, § 48C(d)(4)(C) authorizes the Service to conduct an additional program for applications for certification. Future guidance will prescribe the procedures applicable to applications in this program.

.03 Reduction or forfeiture of allocated credits. Under the agreement set forth in Appendix A to this notice, the qualifying advanced energy project credits allocated under section 5 of this notice will be reduced or forfeited in certain situations. A taxpayer must notify the Service of the amount of any reduction or forfeiture required under the agreement. This notification must be sent to the appropriate address listed in section 6.04 of this notice or listed in later guidance published in the Internal Revenue Bulletin. The amount of any reduction or forfeiture of the allocated credits will be

returned and included in the aggregate credit remaining to be allocated in the 2010-2011 allocation round (if the reduction or forfeiture occurs before that allocation round) and under the procedures prescribed pursuant to section 9.02 of this notice (if the reduction or forfeiture occurs after the 2010-2011 allocation round).

SECTION 10. QUALIFIED PROGRESS EXPENDITURES

.01 Section 48C(b)(2) provides that rules similar to the rules of § 46(c)(4) and (d) (as in effect on the day before the enactment of the Revenue Reconciliation Act of 1990) shall apply for purposes of § 48C. Former § 46(c)(4) and (d) provided the rules for claiming the investment credit on qualified progress expenditures (as defined in former § 46(d)(3)) made by a taxpayer during the taxable year for the construction of progress expenditure property (as defined in former § 46(d)(2)).

.02 In the case of self-constructed property (as defined in former § 46(d)(5)(A)), former § 46(d)(3)(A) defined qualified progress expenditures to mean the amount that is properly chargeable (during the taxable year) to the capital account with respect to that property. With respect to a qualifying advanced energy project that is self-constructed property, amounts paid or incurred are chargeable to the capital account at the time and to the extent they are properly includible in computing basis under the taxpayer's method of accounting (for example, after applying the requirements of § 461, including the economic performance requirement of § 461(h)).

.03 To claim the advanced energy project credit on the qualified progress expenditures paid or incurred by a taxpayer during the taxable year for construction of a qualifying advanced energy project, the taxpayer must make an election under the rules

set forth in § 1.46-5(o) of the Income Tax Regulations. A taxpayer may not make the qualified progress expenditures election for a qualifying advanced energy project until the taxpayer has received an acceptance letter for the project under section 5.02(8) of this notice.

.04 If a taxpayer makes the qualified progress expenditures election pursuant to section 10.03 of this notice, rules similar to the recapture rules in § 50(a)(2)(A) through (D) apply. In addition to the cessation events listed in § 50(a)(2)(A), examples of other events that will cause the project to cease being a qualifying advanced energy project are:

(1) Failure to receive a certification for the project in accordance with section 7 of this notice;

(2) Failure to place the project in service within 3 years from the date of issuance of the certification under section 7.01 of this notice; or

(3) A significant change to the plans for the project as set forth in the applications for § 48C certification or DOE recommendation if, under section 8.03 of this notice, the Service's acceptance of the project is void as a result of the change.

SECTION 11. DISCLOSURE OF INFORMATION

.01 Announcement. Section 48C(d)(5) provides that the Service shall, upon making a certification, publicly disclose the identity of the applicant and the amount of the credit certified with respect to such applicant. Accordingly, the Service will publish the results of the allocation process, and disclose the following information in the event a qualifying advanced energy project credit is allocated to the taxpayer's project: (a) the

name of the taxpayer and (b) the amount of the qualifying advanced energy project credit allocated to the project.

.02 In General. An application for DOE recommendation, an application for § 48C certification, any other documentation submitted by the taxpayer pursuant to section 7.02 of this notice, and any documentation generated by the Service or DOE as part of this process are return information subject to § 6103. Except for the items of information that § 48C(d)(5) requires the Service to make available to the public, the other material remains the applicant's confidential return information, which is exempt from disclosure under the Freedom of Information Act (FOIA), 5 USC § 552(b)(3), in conjunction with § 6103. Other FOIA exemptions may also apply. For example, FOIA includes exemptions for trade secrets and commercial or financial information (5 USC § 552 (b)(4)), as well as personal information (5 USC § 552(b)(6)).

.03 FOIA requests. Anyone interested in submitting a request for records under the FOIA with respect to the qualifying advanced energy project program under § 48C (including a request for records relating to the application for DOE recommendation) should direct a request that conforms to the Service's FOIA regulations, found at 26 C.F.R. § 601.702, to the following address:

IRS FOIA Request
Baltimore Disclosure Office
Room 940
31 Hopkins Plaza
Baltimore, MD 21201

SECTION 12. EFFECTIVE DATE

This notice is effective August 14, 2009.

SECTION 13. PAPERWORK REDUCTION ACT

The collection of information contained in this notice has been reviewed and approved by the Office of Management and Budget (OMB) in accordance with the Paperwork Reduction Act (44 U.S.C. § 3507) under control number 1545-2151.

An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection of information displays a valid OMB control number.

The collections of information in this notice are in sections 5, 6, 7, 8, and Appendix B of this notice. This information is required to obtain an allocation of qualifying advanced energy project credits. This information will be used by the Service to verify that the taxpayer is eligible for the qualifying advanced energy project credits. The collection of information is required to obtain a benefit. The likely respondents are business or other for-profit institutions.

The estimated total annual reporting burden is 110 hours.

The estimated annual burden per respondent varies from 70 to 150 hours, depending on individual circumstances, with an estimated average of 110 hours. The estimated number of respondents is 1000.

The estimated annual frequency of responses is on occasion.

Books or records relating to a collection of information must be retained as long as their contents may become material in the administration of any internal revenue law. Generally, tax returns and return information are confidential, as required by 26 U.S.C. § 6103.

SECTION 14. DRAFTING INFORMATION

The principal author of this notice is Philip Tiegerman of the Office of Associate Chief Counsel (Passthroughs & Special Industries). For further information regarding this notice contact Philip Tiegerman at (202) 622-3110 (not a toll-free number). For further information regarding the application for certification, the documentation to be submitted to the Service establishing that the requirements of § 48C(d)(2) are satisfied, and the issuance of the certification that the requirements of § 48C(d)(2) are satisfied, contact Tina Meaux, Executive Assistant, Office of the Industry Director, Natural Resources and Construction, at (713) 209-3615 (not a toll-free number).

APPENDIX A

AGREEMENT

[Insert taxpayer's name, address, and identifying number] ("Taxpayer") and the Commissioner of Internal Revenue ("Commissioner") make the following agreement:

WHEREAS:

1. On or before [insert date and year], Taxpayer submitted to the Internal Revenue Service ("IRS"), an application for certification under the qualifying advanced energy project program described in Notice 2009-72 ("Application for § 48C Certification");

2. Taxpayer's Application for § 48C Certification is for the qualifying advanced energy project (the "Project") described below--

(1) The Project will be located at [insert address or other identifying designation];

(2) The Project [insert either: "re-equips"; "expands"; or "establishes"] a manufacturing facility for the production of [insert type of property as described in § 48C(c)(1)(A)(i)(I) – (VII)].

(3) On [insert date of acceptance letter issued under section 5.02(8) of Notice 2009-72, the IRS accepted Taxpayer's Application for § 48C Certification for the Project and allocated a qualifying advanced energy project credit under § 48C in the amount of $[insert number] to the Project.

NOW IT IS HEREBY DETERMINED AND AGREED FOR FEDERAL INCOME TAX PURPOSES THAT:

1. The total amount of the qualifying advanced energy project credit to be claimed for the Project under § 48C(a) must not exceed $[insert the number in WHEREAS clause #3].

2. If Taxpayer fails to satisfy the certification requirements under section 7.02 of Notice 2009-72 within the time specified in § 48C(d)(2)(B) (1 year from [insert the date in WHEREAS clause #3]), or if the IRS does not issue a certification for the Project under Notice 2009-72, the qualifying advanced energy project credit in the amount of $[insert the number in WHEREAS clause #3] allocated to the Project is fully forfeited.

3. Taxpayer will notify the IRS in writing to the address listed in section 6.04 of Notice 2009-72 when the Project is placed in service.

4. If the Project is not placed in service by Taxpayer within 3 years of the date of issuance of the certification as determined under section 7.03 of Notice 2009-72, the qualifying advanced energy project credit in the amount of $[insert the number in WHEREAS clause #3] allocated to the Project is fully forfeited.

5. If the plans for the Project change in any significant respect from the plans set forth in the application for DOE recommendation (as defined in section 5.01 of Notice 2009-72) and the Application for § 48C Certification (as defined in section 5.01 of Notice 2009-72) and, under section 8.03 of Notice 2009-72, the acceptance of Taxpayer's Application for § 48C Certification on [insert the date in WHEREAS clause #3] is void, the qualifying advanced energy project credit in the amount of $[insert the number in

WHEREAS clause #3] allocated to the Project is fully forfeited.

6. Taxpayer will not claim the qualifying advanced energy project credit under § 48C for any qualified investment for which a credit is allowed under §§ 48, 48A, or 48B or for which a payment is received under § 1603 of the American Recovery and Reinvestment Act of 2009, Division B of Pub. L. 111-5, 123 Stat 115.

7. If Taxpayer elects to claim the qualifying advanced energy project credit on the qualified progress expenditures paid or incurred by Taxpayer during the taxable year(s) during which the Project is under construction and the Project ceases to be a qualifying advanced energy project (whether before, at the time, or after the Project is placed in service), rules similar to the recapture rules in § 50(a)(2)(A) through (D) apply.

8. Taxpayer reasserts that the following information is trade secret or proprietary information: [Insert "All information identified as trade secret or proprietary in Taxpayer's application for DOE recommendation" or list the specific information in Taxpayer's application for DOE recommendation to which the reassertion applies.]

9. This agreement applies only to Taxpayer. Any successor in interest must execute a new agreement with the IRS. If the interest is acquired at or before the time the Project is placed in service and the successor in interest fails to execute a new agreement, the qualifying advanced energy project credit in the amount of $[insert the number in WHEREAS clause #3] allocated to the Project is fully forfeited. If the interest is acquired after the time the Project is placed in service and the successor in interest fails to execute a new agreement, the Project ceases to be investment credit property and the recapture rules of § 50(a) apply.

THIS AGREEMENT IS FINAL AND CONCLUSIVE EXCEPT:

1. The matter it relates to may be reopened in the event of fraud, malfeasance, or misrepresentation of a material fact;

2. It is subject to the Internal Revenue Code sections that expressly provide that effect be given to their provisions notwithstanding any law or rule of law; and

3. If it relates to a tax period ending after the date of this Agreement, it is subject to any law enacted after such date, which applies to the tax period.

By signing, the parties certify that they have read and agreed to the terms of this Agreement.

Taxpayer: [insert name and identifying number]

By: _____ Date Signed: _____
[insert name]

Title: [insert title]
[insert taxpayer's name]

Commissioner of Internal Revenue

By: _____ Date Signed: _____
[insert name]

Title: [insert title]

I have examined the specific matters involved and recommend the acceptance of the proposed agreement.

(Receiving Officer) .....…

(Title) .....

Date Signed .....

I have reviewed the specific matters involved and recommend the acceptance of the proposed agreement.

(Reviewing Officer) .....……

(Title) .....

Date Signed .....

APPENDIX B

REQUEST FOR APPLICATIONS FOR DOE RECOMMENDATION

The Internal Revenue Service ("IRS") with the assistance of the Department of Energy ("DOE") seeks to select for certification applications that demonstrate a reasonable expectation of commercial viability and is eligible for consideration based on the selection criteria in § 48C(d)(3)(B). To be eligible, applications must be for qualifying advanced energy projects and projects must be commercially feasible.

This Request for Applications for DOE Recommendation:

1. Describes the information to be provided by the applicant to allow DOE to review and recommend projects, and
2. Identifies the merit review criteria and Program Policy Factors to be used by DOE in the review of applications.

In conducting this review, the DOE may utilize assistance and advice from qualified personnel from other Federal agencies and/or contractors that do not have a personal or organizational conflict of interest. DOE will obtain assurances in the form of a non-disclosure acknowledgement/agreement in advance from all reviewers that application information shall be kept confidential and used only for reviewing purposes.

DOE reserves the right to request clarifications and/or supplemental information from some or all applicants through written submissions and/or oral presentations.

DOE may determine whether to recommend an application to the IRS at any time after the application has been received, without further exchanges or discussions. Therefore, all applicants are advised to submit their most complete and responsive application.

Applications will not be returned.

Neither a procurement action (under Title 48 of the Code of Federal Regulations) nor a financial assistance award (under 10 CFR Part 600) is contemplated based on an application.

SUBMISSION INFORMATION FOR DOE RECOMMENDATION PROCESS

A. General

An application for DOE recommendation and ranking must include a Project Information Memorandum as described below, together with the information required by sections 6.02, 8.01, and 8.02 of Notice 2009-72 (Notice.) All applications shall be prepared in accordance with this request for applications for DOE recommendation in order to provide a standard basis for review and to ensure that each application will be uniform as to format and sequence.

Each application should clearly address each merit review criterion and program policy factor to demonstrate the applicant's capability, knowledge, and experience regarding the requirements described herein.

Applicants should fully address the requirements of the Notice and this request and **not** rely on the presumed background knowledge of reviewers. DOE may reject an application that does not follow the instructions regarding the organization and content of the application when the nature of the deviation and/or omission precludes meaningful review of the application.

B. Unnecessarily Elaborate Applications

Unnecessarily elaborate brochures or other presentations beyond those sufficient to present a complete and effective application are not desired. Elaborate art work, graphics and pictures are neither required nor encouraged.

C. Application Submission for DOE Recommendation

The application to DOE must include the information and documentation required by sections 8.01 and 8.02 of the Notice.

An application to DOE will not be considered in the allocation conducted in 2009-2010 unless the preliminary application is received by September 16, 2009 and the final application is received by October 16, 2009. Two electronic copies (on a compact disc) of both the preliminary application and final application should be sent to DOE: one original with full text and one copy with confidential information redacted.

If elements of and/or attachments to an application contain information the applicant considers to be trade secret, confidential, privileged or otherwise exempt from disclosure under the Freedom of Information Act (FOIA, 5 U.S.C. 552), the applicant

shall assert a claim of exemption at the time of application by placing the following text on the **first** page of the application, and specify the page or pages of the application to be restricted:

> *"The data contained in pages [____] of this document which hereby forms a part of the application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for review purposes, provided that, if this applicant is issued a tax credit under Section 1302 of the American Recovery and Reinvestment Act of 2009 as a result of or in connection with the submission of this application, DOE shall have the right to use or disclose the data herein, other than such data that have been properly reasserted as being trade secret or proprietary in the agreement required under section 5.02 of Notice 2009-72. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant."*

To further protect trade secret, confidential, privileged or otherwise exempt information, each line or paragraph on the page or pages containing such data must be specifically identified and marked with text that is similar to the following:

> *"The following contains proprietary information that [name of applicant] requests not be released to persons outside the Government, except for purposes of review."*

Applications may be submitted electronically to 48Capplications@hq.doe.gov. Alternatively, applications may be submitted to the physical address which will be posted on www.energy.gov/recovery/48C.htm.

THE INFORMATION REQUIRED BY THIS REQUEST FOR APPLICATIONS FOR DOE RECOMMENDATION MUST BE SUBMITTED USING THE FORMAT AND THE HEADINGS OF THE "PROJECT INFORMATION MEMORANDUM" AS DESCRIBED BELOW.

To aid in review, applications shall be clearly and concisely written and logically assembled. All pages of each part shall be appropriately numbered and identified with the name of the applicant and the date.

The application, including the Project Information Memorandum, MUST be formatted in one of the following software applications:

Microsoft Word™ 2002 or later edition
Microsoft Excel™ 2002 or later edition
Adobe Acrobat™ PDF 6.0 or later edition

Financial models should be submitted using the Excel[tm] spreadsheet and must include calculation formulas and assumptions.

The applicant is responsible for the integrity and structure of the electronic files. The DOE will not be responsible for reformatting, restructuring or converting any files submitted in response to this request.

The Project Information Memorandum, excluding Appendices, shall not exceed thirty (30) pages for the final application. Pages in excess of the page limitation will not be considered for review. All text shall be typed, single spaced, using 12 point font, 1 inch margins, and unreduced 8-1/2-inch by 11-inch pages. Illustrations and charts shall be legible with all text in legible font. Pages shall be sequentially numbered. Except as otherwise noted herein, the page guidelines previously set forth constitute a limitation on the total amount of material that may be submitted for review. No material may be incorporated in any application by reference as a means to circumvent the page limitation.

Application sections shall be saved as separate files and named as described below:

APPLICATION SECTION	FILE NAME
Preliminary Application	Preliminary Application applicant name.doc (or .pdf)
Project Information Memorandum Chapter 1. Executive Summary Chapter 2. Advanced Energy Project Qualification Chapter 3. Emissions and Pollution Impact Chapter 4. Technological Innovation Chapter 5. Project Schedule	Project Information Memorandum applicant name.doc (or .pdf)
Applicant Data Input Spreadsheet	Applicant Data Input Spreadsheet applicant name.xls
Appendices	Appendix 1 applicant name.doc (or .pdf), and as needed Appendices 2, 3, 4 etc.

D. Application Process for DOE Recommendation and Due Dates

DOE requires a short summary of the project in the form of a preliminary application as well as a final application. Please read carefully the Notice and the statute to determine if your project is eligible for the manufacturing tax credit. **The tax credits are for manufacturing facilities; they are not for renewables or energy efficiency installation projects.**

DOE plans to review applications and recommend for tax credits through the following specific steps:

Application Timeline	Due Date
Applicant submission of a Preliminary Application	9/16/2009
Applicant submission of a Final Application	10/16/2009
DOE completion of merit review of Final Applications	12/16/2009

E. Preliminary Application Content and Format

The applicant should fill out the preliminary application in Section I, which is for the DOE to preview the types of forthcoming final applications in order to establish the relevant resources for an efficient and effective review process.

In part 2 of the preliminary application, "Narrative Describing the Scope of the Project", the applicant should provide a brief description of the project, including such details as:

- A summary of the project.
- The specified advanced energy property (SAEP) the re-equipped, expanded or new manufacturing facility will produce. In the case of a project producing property that, after further manufacture, will become SAEP, the applicant should describe both the property produced at the facility and the SAEP for which the produced property will be used.
- Current project status and progress to date.
- Project schedule and milestones through the placed in service date.

F. Final Application Process

DOE will review and recommend projects based on the following eligibility and evaluation criteria and Program Policy Factors:

Eligibility Criteria

- Eligibility Criterion 1: qualifies as an advanced energy project
- Eligibility Criterion 2: has a reasonable expectation of commercial viability

Evaluation Criteria

- Evaluation Criterion 1: provides the greatest domestic job creation (both direct and indirect) during the credit period (February 17, 2009, through February 17, 2013);
- Evaluation Criterion 2: provides the greatest net impact in avoiding or reducing air pollutants or anthropogenic emissions of greenhouse gases;
- Evaluation Criterion 3: has the greatest potential for technological innovation and commercial deployment, as indicated by (i) the production of new or significantly improved technologies, (ii) improvements in levelized costs and performance, and (iii) manufacturing significance and value; and
- Evaluation Criterion 4: has shortest project time from certification to completion.

These four Evaluation Criteria are all equally weighted.

Program Policy Factors

- Program Policy Factor 1: Geographic Diversity
- Program Policy Factor 2: Technology Diversity
- Program Policy Factor 3: Project Size Diversity
- Program Policy Factor 4: Regional Economic Development

In an effort to make the application process suitable to a diverse set of projects and streamline the DOE review, applicants must input the data necessary to address the merit review criteria into the Applicant Data Input Spreadsheet, shown in Section J[1].

Each proposed project will be reviewed based on the SAEP produced at the manufacturing facility. In the case of a project producing property that, after further manufacture, will become SAEP, the DOE will review the project based on the SAEP for which the property produced at the facility will be used. For example, the review under the emissions criterion for a project that manufactures wind turbine blades will be in the context of the emissions profile of wind turbines, rather than the more narrow characteristics of blade production alone. In this example, the wind turbine blade will be assigned a portion of the overall emissions profile of a wind turbine based on the percentage of the wind turbine's cost that is attributable to the wind turbine blade, as discussed in Section G below.

[1] If an applicant can justify that it has a value that better represents its project than the values referenced in the Applicant Data Input Spreadsheet, the applicant may 1) select a value reported in the open literature, justify the use of this value as opposed to one supplied by DOE, and perform any necessary unit conversions, or 2) develop an independent estimate analogous to ones supplied in the Section H. Any customized calculations should be done according to commonly accepted industry standards and be sufficiently transparent to be reproducible by the merit review panel.

The applicant must calculate the incremental energy produced, saved or stored due to the project. The applicant will be required to provide and show the work used to produce derived numeric values specific to its manufacturing facility. In addition, it is critical that the applicant show and support all necessary calculation steps in the project's narrative.

The DOE review and recommendation process generally requires the use of the United States (U.S.) national averages (e.g., national grid mix, national fleet fuel efficiency) as a baseline for certain comparisons[2].

G. Final Application Content and Format

This section outlines the format of the final application to be submitted by the applicant to the DOE for project recommendation. Guidelines and suggestions for specific content are included below.

Outline for Final Application

I. EXECUTIVE SUMMARY AND INTRODUCTION

Provide an overall summary of the project to manufacture qualifying advanced energy property, covering things such as:

- A description of the project, including incremental manufacturing capacity.
- Location of the project.
- The SAEP the re-equipped, expanded or new manufacturing facility will produce. In the case of a project producing property that, after further manufacture, will become SAEP, the applicant should describe both the property produced at the facility and the SAEP for which the produced property will be used.
- The amount of tax credit requested and the estimated amount that will be treated as a qualified investment. (The applicant must request a credit equal to 30 percent of the estimated amount that will be treated as a qualified investment (as determined under § 48C) if the project is certified as a qualified advanced energy project. The applicant may use any reasonable methodology and assumptions in determining such estimated amount.)
- Current project status and schedule, with milestones, through the placed in service date.

[2] An applicant may provide a different baseline for comparison if the applicant can justify that the specified advanced energy property attributable to the project will be put in service in a more narrowly-defined geographic region. Any customized calculations should be done according to commonly accepted industry standards and be sufficiently transparent to be reproducible by the merit review panel.

- Summary of the main parties to the project, including owners, investors and technical partners.
- Summary of the financial strength of owners, investors and technical partners and the technical capabilities and experience of the technical partners providing key components to the project.
- Overview of the intellectual property arrangements with respect to the property produced.
- Confirmed or potential customers who will purchase, lease or use the property produced.

II. DEMONSTRATION OF ELIGIBILITY

A. ADVANCED ENERGY PROJECT QUALIFICATION

To facilitate a determination of eligibility that the project qualifies as an advanced energy project, the applicant should submit a description of the proposed project, including such details as:

1. Whether the project will re-equip, expand or establish a manufacturing facility.
2. The SAEP the re-equipped, expanded or new manufacturing facility will produce. In the case of a project producing property that, after further manufacture, will become SAEP, the applicant should (a) describe both the property produced at the facility and the SAEP for which the produced property will be used, and (b) state the percentage of the property produced at the facility that will be used for the production of SAEP.

B. COMMERCIAL VIABILIITY

To describe the project economics and present evidence of commercial viability, the applicant should provide as appendices:

1. A business plan which provides a description of the proposed project, containing such information as:
    a. A list of the key management team members who will design, construct, permit, and operate the facility.
    b. A description of the capabilities and experience of the applicant, contractor, and suppliers of major subsystems or equipment. The applicant should demonstrate that the management team members have a corporate history of successful completion of similar projects, including, if applicable, similar projects completed outside the U.S.
    c. The financing and ownership structure, including all beneficiaries. The applicant must be a U.S. taxpayer.
    d. The financial strength of owners, investors and technical partners.

e. Overview of intellectual property arrangements with respect to the property produced.
f. The estimated amount that will be treated as a qualified investment (as determined under § 48C) if the project is certified as a qualified advanced energy project. The applicant may use any reasonable methodology and assumptions in determining such estimated amount[3].
g. The estimated amount, together with a description of the methodology and assumptions used in determining such costs, of the following expenses, if applicable:
    i. Costs of acquisition, lease, or rental of real property, including engineering fees, surveys, title insurance, recording fees, and legal fees incurred in connection with land acquisition, lease or rental, site improvements, site restoration, access roads, and fencing;
    ii. Costs of engineering, design, architectural, legal and bond fees, and insurance paid in connection with construction of the facility; and materials, labor, services, travel and transportation for facility design, construction, startup, commissioning and shakedown;
    iii. Costs to provide equipment, facilities, and services related to safety and environmental protection;
    iv. Financial and legal services costs, including other professional services and fees necessary to obtain required licenses and permits and to prepare environmental reports and data;
    v. Costs of issuing project debt, such as fees, transaction and legal costs and other normal charges imposed by lenders;
    vi. Costs of necessary and appropriate insurance and bonds of all types;
    vii. Costs of obtaining licenses to intellectual property necessary to design, construct, and operate the project;
    viii. A reasonable contingency reserve for cost overruns during construction;
    ix. Capitalized interest necessary to meet market requirements, reasonably required reserve funds and other carrying costs during construction; and
    x. Other necessary and reasonable costs.
h. The timeframe, with milestones, required for construction and commissioning of the project.
i. Confirmed or potential customers who will purchase, lease or use the property produced.
j. A description of the amount and timing of off-take agreements to be entered into prior to commercial operation and the financial strength of off-takers.

[3] The applicant should note that eligible property does not include a building or its structural components.

k. A discussion of current competing products and competitors likely to enter the target market.
l. If applicable, any infrastructure improvements necessary for target markets, the concurrent capital needed, and other factors necessary for deployment of the SAEP attributable to the project.

2. A financial plan for the proposed project, containing such information as:
   a. The amount of equity to be invested and the sources of such equity. Include as a separate appendix copies of any existing equity funding commitments or expressions of interest from equity funding sources for the project.
   b. The amount of the total debt obligations to be incurred and the funding sources of all such debt. Include as a separate appendix copies of any existing debt funding commitments or expressions of interest from debt funding sources for the project.
   c. Any other Federal, State or local government funding assistance.
   d. A financial model detailing the investments in and the cash flows generated and anticipated from the project over the project's expected lifecycle, including a complete explanation of the facts, assumptions, and methodologies in the financial model.

III. EVALUATION CRITERIA

A. DOMESTIC JOB CREATION

The DOE will primarily focus on direct job creation for this evaluation criterion. In addition, DOE will take into consideration indirect job creation. For both direct and indirect jobs, DOE will emphasize those jobs that are created during the credit period (February 17, 2009, through February 17, 2013).

Please fill out the "Direct Jobs" tab in the Applicant Data Input Spreadsheet and list the direct jobs in terms of full-time equivalents (FTEs) that will be created during both construction and operation of your facility.[4] Please be as specific as possible, as reviewers will assess the reasonableness of applicants' assertions. Direct Jobs are jobs of people whose work is directly billed to the project.

[4] Full-time equivalent (FTE) is a way to measure a worker's involvement in a project. An FTE of 1.0 means that the person is equivalent to a full-time worker, while an FTE of 0.5 signals that the worker is only half-time. FTE is defined by the Government Accountability Office (GAO) as the number of total hours worked divided by the maximum number of compensable hours in a work year as defined by law. For example, if the work year is defined as 2,080 hours, then one worker occupying a paid full time job all year would consume one FTE. Two employees working for 1,040 hours each would consume one FTE between the two of them.

Do not list Indirect Jobs. Indirect Jobs are employees in the supply chain who are not included as direct jobs. Examples include those working for producers of materials, equipment, and services that are used on the project, such as steel producers, accounting services or end use installers. The review team will calculate the indirect jobs using a consistent methodology based on nationwide input/output economic models for advanced manufacturing.

B. IMPACT ON AIR POLLUTION AND ANTHROPOGENIC EMISSIONS OF GREENHOUSE GASES

Describe the direct impact that the SAEP will have on air pollution and anthropogenic emissions of greenhouse gases (GHG). Annual pollution and GHG emissions from the manufacture, deployment, and operation of the manufactured product should be quantified and discussed. This description includes:

1. Total emissions reduced as derived by the project's Attributable Annual Manufacturing Capacity (AAMC) and the output of the Applicant Data Input Spreadsheet, as shown in Section J, for the re-equipped, expanded or new manufacturing facility. Emissions reduction will be divided by the amount of tax credit requested to determine a normalized value for comparing different project proposals.[5]
2. A discussion of additional emissions considerations beyond the calculation in part 1, above. This should include such details as the emissions of the manufacturing facility relative to the emissions of comparable manufacturing facilities.
3. A discussion of GHG emissions and air pollutants generated, along the full supply chain, for the manufacture, installation, operation, and decommissioning of the SAEP to which the project will contribute. If this is unknown, the applicant should make an estimate based on the SAEP, using cited numbers.

C. TECHNOLOGICAL INNOVATION AND COST REDUCTION

To present evidence of the potential for technological innovation and commercial deployment, as indicated by (i) the production of new or significantly improved technologies, (ii) improvements in levelized costs and performance, and (iii)

[5] If the applicant believes that the total emissions reduced from the specified advanced energy property attributable to the project is not accurately represented by the values provided in the Applicant Data Input Spreadsheet, the applicant may, in addition to completing the respective sections of the Applicant Data Input Spreadsheet, provide a transparent justification of a different calculation and should employ cited numbers wherever assumptions are made.

manufacturing significance and value, the applicant should provide:

1. A discussion of whether the project will produce a new or significantly improved technology as compared to commercial technologies currently in service in the U.S. [6,7]
2. Calculations of incremental cost improvements for the SAEP attributable to the facility, relative to comparable existing energy solutions. This information is captured with the related metrics of cost advantage over competitors, levelized cost, and the cost of CO_2 abatement. Section G(IV) below explains these metrics and their quantification in greater detail.
   a. In addition to cost improvements, the applicant should describe other technological improvements for the SAEP attributable to the facility, as compared to the respective baseline energy solution.
3. A calculation of the AAMC in the "Attributable Manufacturing" tab of the Applicant Data Input Spreadsheet. The AAMC will be divided by the amount of tax credit requested to determine a normalized value for comparing different project proposals.

D. PROJECT SCHEDULE AND TIME TO COMPLETION

1. To quantify the time from certification to completion, the applicant should fill out the respective sections of the "Applicant Data Sheet" tab of the Applicant Data Input Spreadsheet. The dates required are: date of receiving all permits; date of construction; date of commencement of production.
2. In addition, the applicant should provide a narrative supporting the applicant's capability to accomplish the technical objectives of the proposed project and demonstrating the overall feasibility of implementing the project at the proposed site. This includes, but is not limited to:
   a. A project schedule that (1) is comprehensive and provides sufficient detail to demonstrate how applicant will meet the certification requirements, and (2) demonstrates that the project is on track to be placed in service within 3 years of such certification. The schedule

[6] A new or significantly improved technology means a technology that is concerned with the production, consumption or transportation of energy is not a commercial technology currently in use in the U.S., and either (i) has only recently been developed, discovered or learned; or (ii) involves or constitutes one or more meaningful and important improvements in productivity or value in comparison to commercial technologies currently in use in the U.S.

[7] A commercial technology currently in use in the U.S. means a technology currently in general use in the commercial marketplace in the U.S. A technology is in general use if it has been installed in and is being used in three or more commercial projects in the U.S. in the same general application as in the proposed project, and has been in operation in each such commercial project for a period of at least five years. The five-year period shall be measured, for each project, starting on the in-service date of the project or facility employing that particular technology and ending on October 16, 2009.

should demonstrate that the applicant understands the required tasks and has allowed realistic times for accomplishing the technical and financial tasks. The schedule should include the milestones.

b. A description of the applicant's plan to obtain and complete all necessary permits, and environmental authorizations and reviews.
c. A description of the current infrastructure at the site available to meet the needs of the project.

3. This section requires the following documentation, as is applicable to the project, to be included as appendices:
   a. A complete list of all Federal, Federal, State, and local permits, including environmental authorizations (if applicable) or reviews, necessary to commence construction of the project. Explain what actions have been taken to date to satisfy the required authorizations and reviews, and the status of each.
   b. Documentation supporting applicant's conclusion that the proposed site can fully meet all environmental, water supply, transmission interconnect (if applicable), and other applicable requirements. Such documentation may include signed agreements, letters of intent, or term sheets, such as for supply and product transportation, and regulatory approvals (if applicable) supporting the key claims.
   c. Documentation demonstrating the applicant's ownership or control of the project site, such as a deed, a signed option to purchase the site from the site owner, or a letter of intent to sell or lease.
   d. Copies of the contracts or summaries of the key provisions of the following agreements:
      i. Operations & Maintenance Agreement: include a summary of the terms and conditions of the contract and a copy of the contract.
      ii. Shareholders Agreement: summarize key terms and include the agreement as an appendix.
      iii. Engineering, Procurement and Construction Agreement: describe the key terms of the existing or expected contract arrangement, including firm price, liquidated damages, hold-backs, performance guarantees, etc.

IV. INSTRUCTIONS REGARDING QUANTITATIVE FACTORS INFORMATION SUBMISSION

Applicants should fill out the Applicant Data Input Spreadsheet with the relevant data and include it with the application. This is intended to capture information in a consistent manner to allow a quantitative comparison to be made across all eligible projects. It is essential that applicants conform to this process in order to ensure a competitive review of all proposals. Additionally, applicants should substantiate in their narrative any data which is inputted into the Applicant Data

Input Spreadsheet. Specifically, applicants should cite or justify their stated assumptions and show any calculations which are not performed by the Applicant Data Input Spreadsheet. The information below provides instructions for inputting data, examples specific to each type of SAEP, and guidance on how to use the reference data listed in Section H.

AAMC

In order to assess the significance of an applicant's proposed project, the following formulas (or their equivalent) must be used to quantify the AAMC. AAMC measures the total impact over the lifetime of deployed property which is attributable to one year of manufacturing. The AAMC will be divided by the qualified investment to determine the relative value, per dollar of tax credit, of different project proposals. Finally, the AAMC will be used to assess production significance and emissions abatement on a per-dollar-of-tax-credit basis.

General AAMC Instructions: The AAMC is calculated with four terms, annual production, fractional system contribution, annual performance of the SAEP, and expected lifetime of the deployed property. For annual production, applicants are required to justify the claimed production by providing yield loss (both manufacturing and downstream) and throughput data wherever possible. In particular, applicants should discuss previous manufacturing experience on similar or identical manufacturing equipment. If the applicant's annual production is not measured in terms of kWh, gallons of gasoline, or Mtons CO_2 (e.g., solar water heating, biodiesel, or methane gas recapture, respectively) then a conversion factor between the units of measurement and kWh, gallons of gasoline, or Mtons CO_2 should be cited and applied. When calculating the fractional system contribution, applicants should transparently state and justify (with citations wherever possible) current and future pricing assumptions for all significant value chain segments, including the property produced at the proposed facility. To calculate real-world annual performance, applicants should identify and employ the necessary de-rating factors, including degradation rates, such that the claimed annual performance is reflective of the average annual performance over the lifetime of the SAEP. Where appropriate, typical resource and use conditions should be chosen from the reference data provided in Section H. If the necessary reference data is not available or representative of the applicant's specific manufactured property, the applicant should provide and substantiate assumptions with market reports and/or field data where possible. A similar approach should be taken for the deployed property lifetime. Specifically, if reference data from Section H is not used, the applicant should cite life-cycle performance data of previously deployed, comparable property. Provided below are equations and examples corresponding to each type of SAEP which can be used as high level guidance when calculating AAMC.

Electricity Generation: For SAEP used to produce energy from the sun, wind, geothermal, or other renewable resources, the following formulas shall be used to estimate the electricity generation attributable to property produced at the proposed facility. Specifically, the AAMC is the kWhs generated which can be attributed to one year's worth of production from the proposed project:

$$AAMC_{(kWh)} = \frac{W_{Peak}}{Year} \times \begin{pmatrix} Fractional \\ System \\ Contribution \end{pmatrix} \times \begin{pmatrix} Capacity \\ Factor \end{pmatrix} \times \begin{pmatrix} Deployed \\ Property \\ Lifetime \end{pmatrix}_{(yrs)}$$

Where:

$$\begin{pmatrix} Fractional \\ System \\ Contribution \end{pmatrix} = \left(\frac{ManufacturingCosts + SalesMargin}{TotalSystemHardware\ Price}\right) \times \begin{pmatrix} Percentage \\ SAEP \end{pmatrix}$$

And:

$$\begin{pmatrix} Capacity \\ Factor \end{pmatrix} = \frac{AnnualEnergyOutput_{(kWh\ AC)}}{PeakPowerRating \times 8760hrs}$$

Example:

A photovoltaic company is building a "50 MW" crystalline silicon solar cell manufacturing line. 50 MW is input as the first term "$W_{peak\ production}$ per year" which is the annual peak power output of property produced from the manufacturing line. This 50 MW number is multiplied by a series of terms to produce an AAMC that represents the true lifetime electricity generation from this property after it is deployed.

The second term, "Fractional System Contribution" is used to discount the 50 MW by the solar cell's fraction of a solar system's total value. In this example, the company purchases silicon wafers and other consumable materials and processes them into a functional cell. The Fractional System Contribution represents the added value that the manufacturing process adds to the final system price. If the market value of a wafer and consumables is $\$1/W_p$, the cells are sold for $\$1.50/W_p$, and the total factory gate price of the entire photovoltaic system (including the inverter and balance of system components) is $\$5/W_p$, then the Fractional System Contribution is (1.5-1)/5=10%. Note: in this example, 100% of the product manufactured by the solar cell line is allocated for SAEP. If instead, some fraction of the rated 50 MW capacity was allocated for an application other than SAEP, then the "Percentage SAEP" would be reduced from 100% to account for this diverted product stream.

The third term, "Capacity Factor" is used to calculate the ratio of annual energy produced to the total energy implied by the peak power rating of the manufactured property. In this example, the power output of the cells are

reduced slightly when they are incorporated into a module and reduced further when the DC power from the module is converted to useable AC power via an inverter. Additionally, the modules are projected to degrade over their deployed lifetime. The actual average annual energy output of the system over its lifetime is determined by these reductions and the annual solar insulation or resource which is typical of current installations.

The fourth term, "Deployed Property Lifetime", is the anticipated hours of operation of the manufactured property over its lifetime (after being incorporated into an end of supply chain component or system). In this example, the end of supply chain component is a photovoltaic module which may have a lifetime of 30 years. Thus the Deployed Property Lifetime would be 219000 hours (30 years multiplied by 8760 hours per year). Note: if the end of supply chain component property was instead, a PV inverter, then the Deployed Property Lifetime would be the expected lifetime, as evidenced by warranty or field data, of the inverter <u>not</u> the PV system. If the potential lifetime of the end of supply chain component is *longer* than the expected lifetime of the generation system, then the Deployed Property Lifetime should be equal to the expected system lifetime.

<u>Energy Conservation</u>: For SAEP designed to conserve energy, such as advanced building, smart grid, or industrial technologies, the following formulas shall be used to estimate the energy saved which is attributable to the incorporation of the property produced at the proposed facility. Specifically, the AAMC is the kWhs saved which can be attributed to one year's worth of production from the proposed project:

$$AAMC_{(kWh)} = \frac{\#Units}{Year} \times \begin{pmatrix} Fractional \\ Component \\ Contribution \end{pmatrix} \times \left(\frac{Annual Energy Savings}{Unit}\right) \times \begin{pmatrix} Deployed \\ Property \\ Lifetime \end{pmatrix}_{(yrs)}$$

Where:

$$\begin{pmatrix} Fractional \\ System \\ Contribution \end{pmatrix} = \left(\frac{Unit Manufacturing Costs + Unit Sales Margin}{Total Price of Efficiency Component}\right) \times \begin{pmatrix} Percentage \\ SAEP \end{pmatrix}$$

And:

$$\frac{Annual\ Energy\ Savings}{Unit} = \begin{pmatrix} Annual\ Baseline \\ System \\ Consumption \end{pmatrix} - \begin{pmatrix} Annual \\ Improved\ System \\ Consumption \end{pmatrix}$$

Example:

A heating, ventilating, and air conditioning (HVAC) equipment supplier is re-equipping a factory for the manufacture of advanced condensers. The re-

equipping will enable 10,000 advanced condensers to be manufactured annually. This number will be input as the first term "# Units per year." For the equations used above, the condenser could represent a sub-component of an advanced HVAC "component" (the complete collection of sub-components required to enable the conservation of energy, e.g., an advanced air handler, controller, packaging unit, etc). Alternatively, if the condenser alone provides the full energy conservation benefit and can be integrated with traditional HVAC systems in a straightforward manner, then the condenser would be the "component". In either case, the energy consuming "system" is the entire energy load which is directly impacted by, and fully encompassing of the energy conservation benefit. For this example, the system is simply a building.

The second term, "Fractional Component Contribution" is used to calculate the value fraction of an end of supply chain component that the manufactured condenser comprises. In this example, the company purchases supplies (fans, tubing, etc.) and materials (sheet metal, solder, etc.) to assemble a functional condenser. The "Fractional Component Contribution" represents the added value that the manufacturing process adds to the final component price. If the market value of the supplies and materials is $100 per unit, the controller assembly is sold to downstream manufacturers for $200, and the total "factory gate" price to a HVAC installer of the entire HVAC component is $2000, then the "Fractional Component Contribution" is (200-100)/2000 = 5%. Note: if for example, 20% of the units manufactured were used in a different system where there was no energy conservation benefit, then the "Percentage SAEP" term would be 80% and the "Fractional Component Contribution" would be further reduced accordingly.

The third term, "Annual Energy Savings per Unit" is used to calculate the annual energy savings which is enabled by incorporating *only* the component into a system and assuming typical climate and operation. In this example, the electricity consumption of the building may be decreased by 5000kWh per year.

The fourth term, "Deployed Property Lifetime", is the anticipated years of operation of the manufactured property over its lifetime. In this example, the anticipated years of operation should equal the warranty on the entire HVAC unit. Note: if the sub-component lifetime is shorter than the expected lifetime of the component, then the sub-component lifetime should be used for the "Deployed Property Lifetime". The lifetime of the sub-component cannot be longer than the lifetime of the component or system in which it is installed.

Fuel Efficiency: For SAEP which increases fuel efficiency, such as a hybrid-electric or plug-in electric drive motor vehicle, the following formulas shall be used to estimate the annual energy saved which is attributable to the incorporation of the property produced at the proposed facility. Specifically, the AAMC is annual fuel savings which can be attributed to one year's worth of production from the proposed project:

$$AAMC_{pos} = \frac{\#Units}{yr} \times \frac{Fractional\ Component\ Contribution}{} \times \frac{Annual\ Fuel\ Savings}{Unit} \times \left(\frac{Deployed\ Property\ Lifetime}{}\right)_{yrs}$$

Where:

$$\frac{Fractional\ Component\ Contribution}{} = \frac{Unit\ Manufacturing\ Cost + Unit\ Sales\ Margin}{Total\ Price\ of\ Efficiency\ Component} \times \frac{Percentage\ SAEP}{}$$

And:

$$\frac{Annual\ Fuel\ Savings}{Unit} = \frac{Annual\ Baseline\ System\ Consumption}{} - \frac{Annual\ Impoved\ System\ Consumption}{}$$

Example 1:

An automobile supplier is expanding a factory for the manufacture of hybrid-electric controller assemblies. The expansion will enable 10,000 additional controllers to be manufactured annually. This number will be input as the first term "# Units per year." For the equations used above, the controller could represent a sub-component of a hybrid drive train "component" (the complete collection of sub-components required to enable the efficiency improvement, e.g., a controller, battery, and electric motors). Alternatively, if the controller alone provides the full fuel efficiency improvement and can be integrated with a traditional powertrain, then the controller would be the "component". In either case, the fuel consuming "system" is the entire load which is directly impacted by, and fully encompassing of the fuel efficiency improvement. For this example, the system is simply the vehicle.

The second term, "Fractional Component Contribution" is used to calculate the value fraction of an end of supply chain component that the manufactured controller assembly comprises. In this example, the company purchases supplies (PCBs, power controllers, etc.) and materials (adhesives, wiring, etc) to assemble a functional controller. The "Fractional Component Contribution" represents the added value that the manufacturing process adds to the final component price. If the market value of the supplies and materials is $500 per unit, the controller assembly is sold to downstream manufacturers for $1000, and the total "factory gate" price to an automobile manufacturer of the entire hybrid electric component is $4000, then the "Fractional Component Contribution" is 12.5%. Note: if, for example, 10% of the units manufactured were allocated instead for electric golf carts (non-SAEP) then the "Percentage SAEP" term would be 90% and the "Fractional Component Contribution" would

be further reduced accordingly.

The third term, “Annual Fuel Savings per Unit” is used to calculate the annual fuel savings which is enabled by incorporating *only* the component into a system under typical use patterns. In this example, the fuel economy of the vehicle may be increased by 10 miles per gallon. The actual annual fuel savings would be determined by this increase in fuel economy and the annual vehicle miles traveled, for which the applicant should provide cited data. For alternative fuels such as diesel, savings should be converted to gallons of gasoline equivalent (GGE). For electric vehicle (EV) or plug-in hybrid electric vehicle (PHEV) systems, where electricity is consumed to further reduce the fuel consumption, an additional calculation of MWh consumed per GGE saved is required in the calculation of CO2 emissions. See further instructions under “Impact on Air Pollution and Anthropogenic Emissions of Greenhouse Gases”.

The fourth term, “Deployed Property Lifetime”, is the anticipated years of operation of the manufactured property over its lifetime. In this example, the anticipated years of operation should be substantiated by citing fleet lifetime of previously deployed comparable systems. Note: if the sub-component lifetime is shorter than the expected lifetime of the system, then the sub-component lifetime should be used for the “Deployed Property Lifetime”. For example, if the subcomponent was a battery for an electric vehicle then the anticipated lifetime might be the warrantied lifetime of the battery rather than the anticipated lifetime of the vehicle. The lifetime of the sub-component cannot be longer than the lifetime of the component or system in which it is installed.

Example 2:

A manufacturer of reciprocating engines is building a new factory to manufacture a new, high-efficiency engine for use in Combined Heat and Power (CHP) systems. CHP applications are included in “fuel efficiency” for purpose of this notice because they consume energy in the production of electricity and thermal energy.[8]

The new factory will enable 1,000 high-efficiency engines to be manufactured annually. This number will be input as the first term “# Units per year”. For the equations used above, the reciprocating engines could represent a sub-component of a CHP “component” (the complete collection of sub-components required to enable the efficiency improvement – e.g., fuel handling, thermal recovery unit, integrated controls, etc). The energy consuming “system” is the entire energy load which is directly impacted by, and fully encompassing of the efficiency improvement. For CHP, the system may be an industrial building, hospital or other building.

The second term, “Fractional Component Contribution” is used to

[8] Although the energy source for a CHP system may be renewable (e.g., landfill gas), the CHP system displaces thermal energy production (e.g., a boiler) that would typically use fossil fuel. Because fossil energy consumption is displaced by the CHP system, the “fuel efficiency” analysis is used.

calculate the value fraction of an end of supply chain component that the manufactured engine comprises. In this example the company purchases supplies (fuel pumps, tubing, etc) and materials (engine blocks, wire, etc) to assemble a completed engine. The "Fractional Component Contribution" represents the added value that the manufacturing process adds to the final component price. If the market value of the supplies and materials is $40,000 per unit, the controller assembly is sold to downstream manufacturers for $100,000, and the total "factory gate" price to an engineering firm of the complete CHP system $150,000, then the "Fractional Component Contribution" is (100,000-40,000)/150,000 = 40%. Note: if for example, 25% of the units manufactured were used in a different system where there was no efficiency improvement or the system does not qualify as SAEP, then the "Percentage SAEP" term would be 75% and the "Fractional Component Contribution" would be further reduced accordingly.

The third term, "Annual Energy Savings per Unit" is used to calculate the annual energy savings which is enabled by incorporating *only* the component into a system and assuming typical climate and operation. In this example, the CHP system saves energy by displacing electricity from the grid and onsite thermal energy generation that would be generated by a boiler or other device. The net annual energy savings is the energy that would be consumed by grid generated electricity plus the energy that would be consumed by the onsite boiler minus the energy consumed by the CHP system. This net energy should be expressed in terms of gallons of gasoline equivalent using the conversion factors provided in the Applicant Data Input Spreadsheet.

The fourth term, "Deployed Property Lifetime", is the anticipated years of operation of the manufactured property over its lifetime. In this example, the anticipated years of operation should equal the warranty on the entire CHP system. Note: if the sub-component lifetime is shorter than the expected lifetime of the system, then the sub-component lifetime should be used for the "Deployed Property Lifetime". The lifetime of the sub-component cannot be longer than the lifetime of the component or system in which it is installed.

<u>GHG Emission Reduction</u>: For SAEP with the primary purpose of reducing emissions or sequestering GHG, the following formulas shall be used to estimate the annual emission reduction in CO_2 equivalent gases. Specifically, the AAMC is the Mtons of avoided CO_2 equivalent gas emission which can be attributed to one year's worth of production from the proposed project.

$$AAMC_{(Mtons\ CO_{2\ eq})} = \frac{\#Units}{Year} \times \left(Fractional\ Component\ Contribution\right) \times \left(\frac{CO_{2\ eq}\ Reduction}{Units}\right) \times \left(Deployed\ Property\ Lifetime\right)_{(yrs)}$$

Where:

$$\begin{pmatrix}\text{Fractional}\\ \text{System}\\ \text{Contribution}\end{pmatrix} = \left(\frac{\text{Unit Manufacturing Cost} + \text{Unit Sales Margin}}{\text{Total Cost of Emmissions Reduction Components}}\right) \times \begin{pmatrix}\text{Percentage}\\ \text{SAEP}\end{pmatrix}$$

And:

$$\frac{CO_{2\,eq}\ \text{Reduction}}{\text{Unit}} = \begin{pmatrix}\text{Annual Baseline}\\ CO_{2\,eq}\\ \text{Emissions}\end{pmatrix} - \begin{pmatrix}\text{Annual}\\ \text{Improved } CO_{2\,eq}\\ \text{Emissions}\end{pmatrix}$$

Example:

A chemical supplier is building a factory for the manufacture of physical solvents for CO_2 capture. The factory will produce 100,000 gallons of solvent. This volume will be input as the first term "# Units per year." For the equations used above, the physical solvent would represent a sub-component of a CCS "component" (the collection of sub-components required for the full Carbon Capture and Sequestration (CCS) process). The "system" is the entire carbon emitting facility which is directly impacted by, and fully encompassing of, the CCS process.

The second term, "Fractional Component Contribution" is used to calculate the value fraction of an end of supply chain component that the manufactured solvent comprises. In this example the company purchases feedstock materials to process the solvent. The "Fractional Component Contribution" represents the added value that the manufacturing process adds to the final component price. If the feedstock costs $50 per unit volume, this volume is sold to downstream manufacturers for $500, and the total "factory gate" price of a functional CCS apparatus is $5000 (per unit volume), then the "Fractional Component Contribution" is (500-50)/5000 = 9%. Note: if, for example, 30% of the annual manufactured volume was sold for non-CCS applications then the "Percentage SAEP" term would be 70% and the "Fractional Component Contribution" would be further reduced accordingly.

The third term, "CO_{2eq} Reduction per Unit" is used to calculate the annual CO_{2eq} reduction which is enabled from incorporating *only* the full CCS component into a system under typical use patterns. In this example, the system emissions will be reduced by 1000 Mtons per year per unit.

The fourth term, "Deployed Property Lifetime", is the anticipated years of operation of the manufactured property over its lifetime. In this example, the anticipated years of operation should be substantiated by providing information on likely solvent replacement schedules. Note: if the sub-component lifetime is shorter than the expected lifetime of the component, then the sub-component lifetime should be used for the "Deployed Property Lifetime". The lifetime of the sub-component cannot be longer than the lifetime of the component or system in which it is installed.

Renewable Fuel Refining or Blending: For SAEP to be used exclusively in the refining or blending of renewable fuels, the following formulas shall be used to estimate the production of renewable fuel which is directly attributable to the annually manufactured property. Specifically, the AAMC is the renewable fuel generation which can be attributed to one year's worth of production from the proposed project:

$$AAMC_{(acc)} = \frac{\#Units}{Year} \times \left(\frac{Capacity}{Unit}\right) \times \begin{pmatrix} Fractional \\ Component \\ Contribution \end{pmatrix} \times \begin{pmatrix} Deployed \\ Property \\ Lifetime \end{pmatrix}_{(yrs)}$$

Where:

$$\begin{pmatrix} Fractional \\ System \\ Contribution \end{pmatrix} = \left(\frac{Manufacturing Costs + Sales Margin}{Total Installed System Price}\right) \times \begin{pmatrix} Percentage \\ SAEP \end{pmatrix}$$

Example:

A pump manufacturer is building a factory for the manufacture of pumps specifically designed for renewable fuel refining or blending. The factory will produce 10,000 pumps per year. This volume will be inputted as the first term "# Units per year."

The second term, "Capacity per Unit" is the estimated annual volume of fuel refined or blended annually, which is enabled by the pump under typical plant operations. For example, if a single pump is installed per biofuel refinery, the enabled capacity is the annual refined or blended product from the biofuel refinery.

The third term, "Fractional System Contribution" is used to calculate the value fraction of an end of supply chain system that the manufactured pump comprises. In this example the company purchases sub-components and materials to manufacture each pump. The "Fractional System Contribution" represents the added value that the manufacturing process adds to the final component price. If the sub-component and materials cost $5000 per pump, this pump is sold to a construction company for $10,000, and the total price of the constructed refinery, the "system," is $1M, then the "Fractional Component Contribution" is (10,000-5000)/1,000,000 = 0.5%. Note: as per the requirement that no portion of such a project be used for the refining or blending of non-renewable fuels, the "Percentage SAEP" term must be equal to 100% for such SAEP.

The fourth term, "Deployed Property Lifetime", is the anticipated years of operation of the manufactured property over its lifetime. In this example, the anticipated years of operation should equal the anticipated lifetime based on the planned service schedule or warranty. The lifetime of the component cannot be

longer than the lifetime of the system in which it is installed.

Other Advanced Energy Technologies: For other technologies with the primary benefit of storing or transmitting renewable energy, applicants should quantify the annual renewable energy generated and/or saved which is directly attributable to the manufacture of their technology discounted by the likely fraction of their annual production which will be used for this purpose. Although no generic equations are provided for this technology area, applicants should review the equations and methodology above and transparently employ analogous calculations where possible and appropriate.

Impact on Air Pollution and Anthropogenic Emissions of Greenhouse Gases:

The DOE anticipates a wide variety of manufacturing proposals and thus no standard, all-encompassing approach will be used to calculate pollutants and GHG emissions. Instead, the applicant is expected to quantify or discuss the pollutant and/or GHG emissions associated with the full value chain manufacture, installation, operation, and end-of-life processes associated with the SAEP attributable to the project.

To quantify the primary effects on CO_2 emissions ("AAMC CO2 Reduction" as listed in the Applicant Data Input Spreadsheet), the following four technology-specific approaches are used.

For Electricity Generation and Energy Conservation SAEP, the following equation is used to calculate the reduction in emissions of CO_2 from the AAMC:

$$\begin{matrix}\text{Reduced} \\ CO_2 \\ \text{Emissions}\end{matrix} = AAMC_{MWh} \times \left(\frac{0.606 Mtons}{MWh}\right)_{US\,Ave}$$

This calculation ignores CO_2 emissions associated with the manufacture, installation, and end-of-life processes and assumes that the dominant impact with respect to CO_2 emissions is the offset consumption of average U.S. grid electricity. Where possible, the applicant is expected to quantify or discuss CO_2 emissions associated with the full value chain manufacture, installation, operation, and end-of-life processes associated with the SAEP attributable to the project. The rationale for requiring a full value chain assessment is to prevent the review process from advantaging the lowest energy manufacturing steps when all value chain steps are required to realize any CO_2 reduction.

For most Fuel Efficiency SAEP, a similar equation is used:

$$Reduced\ CO_2 Emissions = AAMC_{GGE} \times \left(\frac{0.0088\ Mtons}{GGE}\right)$$

As with the previous energy types, applicants should, where possible, discuss the full value chain, life cycle emissions of CO_2 associated with their manufactured property.

For Fuel Efficiency SAEP, such as EVs and PHEVs, which require the consumption of electricity to enable the full fuel efficiency, the following equation is used:

$$Reduced\ CO_2 Emissions = AAMC_{GGE} \times \left[\left(\frac{0.0088\ Mtons}{galGGE}\right) - \left(\frac{MWh}{GGE}\right) \times \left(\frac{0.606 Mtons}{MWh}\right)\right]$$

The "MWh/GGE" term is calculated by the applicant. As with the previous energy types, applicants should, where possible, discuss life cycle emissions of CO_2 associated with their manufactured property.

For Renewable Fuel Refining or Blending SAEP, the calculation is modified to account for CO2 emissions associated with the manufacture of renewable fuel:

$$Reduced\ CO_2 Emissions = AAMC_{GGE} \times \left[\left(\frac{0.0088\ Mtons}{galGGE}\right)_{saved} - \left(\frac{MWh}{GGE}\right)_{LCA}\right]$$

The "LCA" term is determined by the applicant by selecting the most relevant fuel and corresponding process from the "LCA Fuel CO_2 Assumptions" tab. Applicants must select the life cycle analysis (LCA) number which most closely corresponds to their SAEP. If the applicant believes that the actual LCA emissions associated with the operation of the SAEP differs significantly from data provided, then the applicant may substantiate an alternative LCA number in their narrative. No further discussion regarding CO_2 emissions are required because emissions associated with installation, operation, and end-of-life processes associated with the SAEP are encompassed by the LCA number.

For GHG Emission Reduction SAEP, the AAMC is equivalent to the CO_2 emission reduction and thus no additional calculations are necessary.

The AAMC CO_2 Reduction represents the total CO_2 impact over the lifetime of deployed property which is attributable to one year of manufacturing. This number is further adjusted in three ways to assess the magnitude of the CO_2 reduction of a given project. First, the normalized value of this reduction is

assessed by dividing by the tax credit sought. Second, the normalized AAMC CO_2 Reduction is then divided by the deployed property lifetime to capture the CO_2 impact after the first year of SAEP deployment. Third, the normalized AAMC CO_2 Reduction is multiplied by the projected factory lifetime. This number calculates the total carbon impact over the lifetime of all deployed property over the lifetime of the factory. Because this number will scale with the factory lifetime, the applicant should justify the claimed operational period of the factory in the project narrative. All of these three AAMC CO_2 Reduction figures will be used in the scoring of Evaluation Criteria 2.

Technological Innovation and Cost Reduction:

Applicants must provide quantitative information regarding their project's innovation and value. This information is captured with the related metrics of technological or cost advantage over competitors, levelized cost, and the cost of CO_2 abatement. The preferred approach is for the applicant to discuss and quantify each of these three metrics. However, DOE recognizes the difficulty associated with calculating levelized costs (and thus \$/CO_2) for many types eligible property. If the applicant is unable to perform a levelized cost or CO_2 abatement cost calculation for the SAEP then the applicant should provide a quantitative or quantitative assessment of how their technological or cost advantage over competitors translates into system price savings, improved performance, or improved system life.

Technological or Cost Advantage over Competitors: The applicant data sheet requires applicants to identify their "Technological or Cost Advantage over Competitors" with respect to the most relevant figure of merit. Ideally this is an apples-to-apples comparison between similar property of similar function. For example, a wind blade manufacturer might compare the performance and cost of the proposed blade manufacturing to current commercially manufactured blades. Although high level metrics such as levelized costs can capture this cost advantage, applicants are encourage to select a lower level metric (i.e. \$/W, \$/Unit, efficiency, etc.) and later discuss the impact this granular cost advantage has upon the levelized cost. If the applicant's manufactured property has multiple advantages over currently manufactured property, the applicant should select and quantify the most significant advantage in the Applicant Data Input Spreadsheet while discussing all technological and cost advantages in their narrative.

Levelized Cost: The levelized cost of energy (LCOE) calculation should assume that the manufactured property is part of the SAEP and where appropriate, be based on the financial and resource assumptions provided in Section H. This "improved" LCOE value should be expressed in nominal terms and should not

include any Federal, State or other financial incentives. Further, plant and related cost values and prices of commodity fuels or feedstocks used in the calculation should reflect current national wholesale averages where possible. The following information should be provided as documentation:

- Brief description of the methodology used as the basis for the calculation. This methodology should be a commonly accepted industry standard.
- Identification and brief rationale for the source of key values used in the calculation, including capital or first costs, operating and maintenance costs, and prices of commodity fuels or feedstocks.
- Justification for any use of a resource-related parameter (e.g., capacity factor) different than the national averages provided.
- Explanation of any factors impacting the levelized cost that could not be quantified and included in the calculation, and their potential directional effect on the resulting cost (i.e., increase or decrease).
- Explanation of any relationship between the cost of the manufactured property and the performance of the end use energy product.
- If possible, an "unimproved" levelized cost calculation that does not reflect the input of the manufactured property (e.g., relies on the competitive standard of the day), based on the same financial and resource assumptions used in the "improved" calculation.

Cost of Abatement: The form and units of the levelized cost vary across each energy type in the Applicant Data Input Spreadsheet. Thus, the cost of abatement equations are specific to each energy type to ensure consistent, accurate and comparable abatement costs are produced by the Applicant Data Input Spreadsheet. For all energy types the cost of abatement reflects the incremental cost and associated incremental reduction in carbon emissions from a baseline.

For Electricity Generation and Efficiency technologies the cost of abatement is calculated with the following equation:

$$\frac{\$}{Mton_{CO_2}} = 10 \times \left[\frac{\left(\frac{¢}{KWh}\right)_{improved} - \left(\frac{¢}{KWh}\right)_{baseline}}{\left(\frac{Mtons_{CO_2}}{MWh}\right)_{Grid}} \right]$$

The *baseline* ¢/kWh is defined by the retail electric rate of the electricity being generated or saved (i.e. residential, commercial, or utility). The factor of 10 in the numerator provides dimensional consistency. For simplicity, all improved technologies are assumed to non-carbon emitting.

For Fuel Efficiency technologies the cost of abatement is calculated with the

following equation:

Incremental levelized cost / incremental emissions reduction:

$$\frac{\$}{Mton_{CO_2}} = \frac{\left(\frac{\$}{GGE}\right)_{Incremental}}{\left(\frac{Mtons_{CO_{2e}}}{GGE}\right)}$$

In this calculation, an *incremental* LCOE term is used to simplify the applicant's data entry into the Applicant Data Input Spreadsheet. This term represents the difference in LCOE ($/GGE) costs between the baseline system and the improved system. The specific calculation of this difference or increment will vary depending upon the fuel efficiency technology being considered. The denominator represents the emissions reduction associated putting the improved system in place, principally in terms of its displacement of the baseline technology.

For example, for a vehicle fuel efficiency technology, the incremental LCOE ($/GGE) may be calculated as:

$$\left(\frac{\$}{GGE}\right)_{Incremental} = \left(\frac{\left(\frac{\$}{mile}\right)}{\frac{GGE}{mile}}\right)_{Improved} - \left(\frac{\left(\frac{\$}{mile}\right)}{\frac{GGE}{mile}}\right)_{Baseline}$$

In this case the $/Mile term represents the fully-burdened cost associated with each mile driven and includes factors such as depreciation. To calculate the incremental $/GGE, the applicant calculates the difference between baseline and improved $/GGE. The denominator of the cost of abatement term is based on the "well to wheels" emissions associated with burning a GGE of the consumed fuel. Applicants should show their work and reference Section H when calculating these values.

For other fuel efficiency technologies, such as a CHP application, the incremental LCOE ($/GGE) may be calculated as:

$$\frac{\$}{GGE} = \frac{\$}{BTU} \times \frac{BTU}{GGE}$$

In this case, the $/BTU term represents the fully-burdened cost associated with each BTU of heat that the CHP system generates as a by-product of the power generation. The cost of abatement denominator reflects the emissions avoided as a result of the reduced consumption of the fuel that would have be burned to

generate the heat now supplied by the CHP system.

For GHG Reduction technologies the cost of abatement is equivalent to the levelized cost (i.e., for these technologies, the levelized cost is already expressed as the cost abatement) and thus no additional calculations are necessary.

For Renewable Fuel Refining or Blending technologies the cost of abatement calculation is analogous to the Electricity equations provided above:

$$\frac{\$}{Mton_{CO_2}} = \frac{\left(\frac{\$}{GGE}\right)_{refined} - \left(\frac{\$}{GGE}\right)_{traditional}}{\left(\frac{Mtons_{CO_2}}{GGE}\right)_{traditional} - \left(\frac{Mtons_{CO_2}}{GGE}\right)_{refined}}$$

In this case the traditional fuel is the fossil fuel not consumed. The term "Mtons/$GGE_{traditional}$" in the denominator is similar to the denominator term in the fuel efficiency example provided previously. The second term in the denominator "Mtons/$GGE_{refined}$" accounts for the life-cycle ("seed to wheels") carbon emissions associated with consumption of the renewable fuel. This value is referenced from the "LCA Fuel CO2 Assumptions" tab based upon the applicant's renewable fuel type selection.

If an applicant cannot reasonably calculate a LCOE for the SAEP associated with the proposed manufactured property, the applicant can instead provide an estimated cost of GHG emissions abatement. The applicant should provide and justify the use of a cost value from a published study (e.g., McKinsey's published 2009 report estimating global abatement costs) for a comparable energy system.

If the applicant chooses to calculate a cost of abatement without a corresponding LCOE value for the SAEP, the basis of the calculation is similar to that required in the LCOE calculation. For example, an applicant could calculate an incremental LCOE by calculating the net present value of the incremental cost to the baseline system and dividing by the net present value of the incremental performance improvement. This calculation should also be based on the financial and resource assumptions provided and should be expressed in nominal terms and should not include Federal, State or other financial incentives. Further, plant and related cost values and prices of commodity fuels or feedstocks used in the calculation should reflect current national wholesale averages where possible. The following information should be provided as documentation:

- Explanation of why an LCOE value either could not be calculated or was not appropriate to calculate for the end use energy product.

- Brief description of the methodology used as the basis for the calculation. This methodology should be a commonly accepted industry standard.
- Identification and brief rationale for the source of key values used in the calculation, including capital or first costs, operating and maintenance costs, prices of commodity fuels or feedstocks, and carbon emissions associated with the operation of the end use energy product
- Identification and brief rationale for the key values associated with the baseline energy mix, including the cost of generation and carbon emissions.
- Explanation of any factors impacting the cost of abatement that could not be quantified and included in the calculation, and their potential directional effect on the resulting cost (i.e., increase or decrease).
- Explanation of any relationship between the cost of the manufactured property and the performance of the end use energy product.
- If possible, an "unimproved" cost of abatement calculation that does not reflect the input of the manufactured property (e.g., relies on the competitive standard of the day), based on the same financial and resource assumptions used in the "improved" calculation.

Finally, if the applicant chooses to provide a cost of abatement value for the closest comparable end use energy product from a published study, the following information should be provided as documentation:

- Explanation of why an LCOE value either could not be calculated or was not appropriate to calculate for the end use energy product.
- Brief description of the methodology used in the cited study.
- Identification of key assumptions used in the study, including the year basis for which the cost is reported (if the cost is reported in real terms; e.g., $2008), the year of costs and prices of fuel commodities, the year to which the end cost value is referenced (e.g., could be a future year), the extent of technology improvement assumed for the comparable end use energy product, the regional extent of the baseline assumed (e.g., global, U.S., region of U.S.), the carbon emissions associated with the baseline energy mix and the end use energy product, the key financial assumptions (e.g., interest rates, taxes, incentives included), and the resource-related parameters (e.g., capacity factors).
- Explanation of how the above assumptions differ from those provided above for guiding the calculation of the cost of abatement, and the potential directional effect of these differences on the study's cost value (i.e., if the aforementioned assumptions required for cost of abatement

calculation had been used, would the study’s cost value likely have increased or decreased).

V. SUPPORTING DOCUMENTS

The applicant should include such appendices as are applicable to the project. Examples of appropriate appendices include:

- Copy of internal or external engineering reports.
- Copy of site plan, together with evidence that applicant owns or controls a site. Examples of evidence would include a deed, or an executed contract to purchase or lease the site.
- Lists of all Federal, State, and local permits, including environmental authorizations or reviews, necessary to commence construction.
- Information supporting applicant's conclusion that the site is fully acceptable as the project site for a manufacturing facility and for its intended use.
- A business plan which provides a description of the proposed project.
- A financial plan for the proposed project.
- Financial statements for the applicant and other project funding sources for the most recently ended three fiscal years, and the unaudited quarterly interim financial statements for the current fiscal year.
- Expressions of interest or commitment letters from equity and debt financing sources.
- Expressions of interest or commitment letters from potential customers.
- Off-take agreements.

H. Technical References for Advanced Energy Technologies Supplied Figures

This section is provided to assist the applicant in calculating the quantitative factors required in the project proposal. Wherever appropriate, the applicant should use this information for baseline assumptions for estimating factors such as the annual performance of the SAEP, expected lifetime of the deployed property and LCOE property. Additionally, in the event that the applicant is unable to calculate the levelized cost or the cost of abatement, this information *may* be used as inputs to the Applicant Data Input Spreadsheet.

Table 1: Financial Assumptions for Levelized Cost of Energy Analysis

Common Financial Inputs for LCOE Analysis by Market Sector			
Market	**Buildings (grid-tied)**		**Central Generation**
	Residential	Commercial	Utility
Financials			
	Residential Mortgage	Commercial Loan	IPP and Utility
General			
Analysis Period	20	20	20
Inflation Rate	2.5%	2.5%	2.5%
Real Discount Rate	5.5%	5.5%	7.5%
Taxes & Insurance			
Federal Tax	29%	35%	35%
State Tax	7%	7%	8%
Property Tax	0	0	0
Sales Tax	0	0	0
Insurance	0	0	0
Depreciation			
Federal	N/A	MACRS-Mid-Q	MACRS-Mid-Q
State	N/A	MACRS-Mid-Q	MACRS-Mid-Q
Loan			
Loan (Debt) Percent	100%	50%	50%
Loan Term	30	15	20
Loan Rate	6%	6%	6%
Constraining Assumptions			
PPA Escalation Rate	N/A	N/A	0
Target Internal Rate of Return	N/A	N/A	15%

Target Minimum Debt Service Coverage Ratio	N/A	N/A	1.4
Positive Cash Flow	N/A	N/A	No
Incentives			
Federal, State, or Local Subsidies	Do not include	Do not include	Do not include

Suggested LCOE Tools:

All Electricity Generating Technologies (general tool):
RET Finance: http://analysis.nrel.gov/retfinance/
The NREL Strategic Energy Analysis Center launched RET Finance in *October 2001.* It is an Internet-based cost of electricity model that simulates a 30-year nominal dollar cash flow for a variety of renewable energy power projects. As an online application, RET Finance is accessible from anywhere using an Internet connection and a browser. RET Finance calculates project earnings, detailed cash flows, and debt payments and also computes a project's levelized cost-of-electricity, after-tax internal rate of return, and debt service coverage ratio.

Solar Technologies
SAM 3.0.3.0: https://www.nrel.gov/analysis/sam/
The National Renewable Energy Laboratory (NREL), in conjunction with Sandia National Laboratory and in partnership with the U.S. Department of Energy (DOE) Solar Energy Technologies Program (SETP), developed the Solar Advisor Model (SAM) in 2006. This version was last updated on *July 24, 2009*. The Solar Advisor Model evaluates several types of financing (from residential to utility-scale) and a variety of technology-specific cost models for several (and eventually all) SETP technologies. The SETP technologies currently represented in SAM include concentrating solar power (CSP) parabolic trough and dish-stirling systems and photovoltaic (PV) flat plate and concentrating technologies. Other technologies will be added in future versions, including CSP central receivers and residential solar water heating.

Geothermal Technologies
Geothermal Electricity Technology Evaluation Model (GETEM): Posted on-line since *July 31, 2009:* http://www1.eere.energy.gov/geothermal/getem.html. The Geothermal Electricity Technology Evaluation Model (GETEM) was developed to aid the Geothermal Technologies Program (GTP) in understanding the performance and the cost of the technologies it is seeking to improve. It is a detailed model of the estimated performance and costs of currently available

U.S. geothermal power systems. GETEM can be used to analyze and evaluate currently available technologies and it can also be used to estimate what certain technologies might cost five to twenty years in the future, given the direction of potential RD&D projects. The model is intended to help GTP determine which proposed RD&D programs and projects might offer the most improvements for the taxpayer dollar.

Small Wind Technologies
www.nrel.gov/wind/docs/spread_sheet_Final.xls

Global Cost of Measured Reduction in Greenhouse Gas Emissions
Applicants may choose to use published report such as the McKinsey and Company. "Pathways to a Low-Carbon Economy." Version 2 of the Global Greenhouse Gas Abatement Cost Curve (2009). The report can be downloaded here:
http://www.mckinsey.com/clientservice/ccsi/pathways_low_carbon_economy.asp
(Based on Costs of the Full Supply Chain)[9].

Table 2: Vehicle Assumptions

Metric	Value	Units
Annual Miles Traveled	12,000	Miles
Vehicle Lifetime Miles	160,000	Miles
2008 Average US Gasoline Price	$3.26	$
Baseline Vehicle Fuel Economy	23.4	mpg
Vehicle Cost	$23,337	$

Table 3: Common Service Life Years

Technology	Service Life Years
Solar Photovoltaics	30
Fuel Cell	20
Heat Pumps	7 to 20
Electric Water Heaters	20
Natural Gas Engine	20
Oil-Fired Engine	20
Natural Gas Turbine	20
NG Micro Turbine	20

[9] Baseline data and abatement potential can differ slightly between this referenced global abatement study and the national studies previously published by McKinsey. National studies provide a deeper view of the specifics of each respective country and to a much larger extent rely on national baseline data and other national statistics. Also, in national studies additional levers are included which are particularly relevant in that country.

Wind	30
Electric Rooftop Heat Pump	15
Ground-Source Heat Pump Suggested for non-distributed technologies	20 20

Assumption Tables to the EIA AEO, March 2009.
http://www.eia.doe.gov/oiaf/aeo/assumption/index.html

Table 4: Other Common Technical Assumptions and Baseline for Levelized Cost of Energy Analysis

Electricity Generation and Storage

End Use Energy Product (Technology)	Resource Characteristics	Capacity Factor [1]
Biomass (general)	N/A [2]	68%
Geothermal	200 deg C; 3000m depth	84%
Landfill gas utilization (general)	N/A	85%
Wind	Class 5	39%
Wind – Offshore	Class 5	42%
Solar Thermal – CSP	Phoenix AZ	32%
Solar Photovoltaic (general)	Phoenix AZ	20%
Storage – CAES	N/A	25%
Storage – Pumped Hydro	N/A	25%
Storage – Adv. Batteries	N/A	25%
Storage – Flywheel	N/A	25%

[1] Generation - NREL Analysis estimates based on averages from multiple published sources; Storage – Input costs from EPRI 2009 Overview of Electric Energy Storage Options for the Electric Enterprise

[2] A constant nominal price of $2.02/million Btu should be assumed to determine the fuel price contribution to the LCOE.

N/A – not applicable

If a natural gas price is needed to compute the LCOE of at technology, a constant nominal price of $4.66/ thousand cubic feet should be used (based on EIA AEO 2009).

I. 48C Preliminary Application

This preliminary application will enable DOE to preview the types of forthcoming final applications to ensure that we establish the relevant resources for an efficient and effective review process. Please provide brief responses summarizing the content in your final applications. This preliminary application will not be included in the review of the final application as we understand the final numbers might differ slightly from those in the preliminary application. However, you must use numbers that are as accurate as possible, and we would appreciate the data here to be within 10% of the final data.

Applicant Information	
Company Name	
City	
State	
Qualified Investment $	
Tax Credit Requested (30% of Qualified Investment)	

Narrative Describing the Scope of the Project (300 words or less)

Applicant Checklist

Are you an eligible United States taxpayer?	
Yes	
No (do not continue with application)	

Is your proposed project expected to:	
Re-equip a manufacturing facility?	
Expand a manufacturing facility?	
Establish a manufacturing facility?	

Is the manufacturing facility or proposed manufacturing facility in the United States?		
Yes		
If yes, where is the manufacturing facility located or will the manufacturing facility be located?	City	
	State	
No (do not continue with application)		

What is the SAEP that is attributable to your project?	
Property designed to be used to produce energy from the sun, wind, geothermal deposits (within the meaning of § 613(e)(2)), or other renewable resources	
Fuel cells, microturbines, or an energy storage system for use with electric or hybrid-electric motor vehicles	
Electric grids to support the transmission of intermittent sources of renewable energy, including storage of such energy	
Property designed to capture and sequester carbon dioxide emissions	
Property designed to refine or blend renewable fuels or to produce energy conservation technologies (including energy-conserving lighting technologies and smart grid technologies)	
New qualified plug-in electric drive motor vehicles (as defined by section 30D), qualified plug-in electric vehicles (as defined by section 30(d)), or components which are designed specifically for use with such vehicles, including electric motors, generators, and power control units	
Other advanced energy property designed to reduce greenhouse gas emissions as may be determined by the Secretary **(If other, please specify)**	

J. Applicant Data Input Spreadsheet

This section is provided to give the applicant a depiction of the Applicant Data Input Spreadsheet, captured in the images on the following pages.

User Input	Calculated or from other tab	Instructions

This worksheet is used to capture quantitative information regarding applicant proposals. Detailed instructions, examples, and reference data are provided **Section G (IV) and Section H of Appendix B**. Input data and assumptions should be substantiated in and show clear correspondence to applicant's project narrative. Applicant should first fill out the relevant user input (green) cells in the *Applicant Information* section of the *Applicant Data Sheet* tab. Next, applicant should fill out user input cells in both the *Direct Jobs* and *Tech Innovation, Cost Reduction* tabs. Finally, applicant should verify that all necessary calculations have been performed as anticipated and are captured in the calculated cells (pink) for each criteria area shown on the *Applicant Data Sheet* tab. Data will be extracted from this workbook to compare submission. Therefore no cells, rows, or columns, should be added.

Applicant Information			
Company Name			
City			
State			
Qualified Investment $			
Tax Credit Requested $ (30% of Qualified Inv)	$ -		
Energy Type	Click to choose		
Technology Area	Click to choose technology		*Used to categorize applications for review process*
If Other Technology:			
Product Description (<50 words):	*Provide Description Here*		
Factory Lifetime		*Years*	
Deployed property lifetime		*Years*	
Date Complete permitting		*mm/dd/yyyy*	
Date Begin Construction		*mm/dd/yyyy*	
Date Begin Production		*mm/dd/yyyy*	
Levelized Cost (or Incremental Levelized Cost for Fuel Efficiency)			*Net present value assessment for the cost of technolgy using the financial and resource assumptions (where available) provided in Section H of Appendix B and including life cycle costs as possible.*
Type of Electricity Generation Being Replaced or Saved	Click to choose		***Required for Energy Generation or Energy Efficiency Only*** *- Used to calculate the cost of carbon emission reduction.*
Technological or Cost Advantage over Competitors		*Provide "figure of merit" unit here*	*Demonstrated or verified competitiveness over directly comparable technology with respect to most relevant figure of merit (i.e. $/W, ¢/kWh, $/GGE, ¢/BTU, $/Mton CO2, $/sq ft, etc). This number is not used in further calculations.*
Brief description of cost advantage (<50 words). Full description to be provided in narrative.	*Provide Description Here*		

Criterion 1: provides the greatest domestic job creation (both direct and indirect) during the credit period (February 17, 2009, through February 17, 2013)

Direct Job Summary	Number of Employees FTE	Jobs/ $1M Tax Credit
Construction Jobs	262	
Operating Jobs	850	
Total Direct Jobs	1,112	

Criterion 2: that provide the greatest net impact in avoiding or reducing air pollutants or anthropogenic emissions of greenhouse gases

	Information	Data	Units	Descriptor (See appendix B for full examples)
Electricity Generation	AAMC CO2 Reduction		Mtons	Metric tons of CO2 reduction due to the lifetime kWh generated by the attributable annual production of the proposed manufacturing. Example: A solar factory produces 50MW worth of solar cells in one year. "AAMC CO2 Reduction" is the offset emissions due to the attributable energy production of these 50MW over the lifetime of the deployed property.
	AAMC CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of a project's value in terms of CO2 reductions per tax credit dollar.
	First Years Production CO2 Reduction		Mtons/$1M Tax Credit	A measure of a project's CO2 impact during the first year of its property deployment
	Total Project CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of the total CO2 reduction due to cumulative property production over the life of the manufacturing facility and the life of the deployed energy property.
Electricity Efficiency	AAMC CO2 Reduction		Mtons	Metric tons of CO2 reduction due to the lifetime kWh saved by the attributable annual production of the proposed manufacturing. Example: An manufacturer produces 10,000 condensers annually. "AAMC CO2 Reduction" is the offset emissions due to the attributable energy production of these 10,000 units over the lifetime of the deployed property.
	AAMC CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of a project's value in terms of CO2 reductions per tax credit dollar.
	First Years Production CO2 Reduction		Mtons/$1M Tax Credit	A measure of a project's CO2 impact during the first year of its property deployment
	Total Project CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of the total CO2 reduction due to cumulative property production over the life of the manufacturing facility and the life of the deployed energy property.

Fuel Efficiency	AAMC CO2 Reduction		Mtons	Metric tons of CO2 reduction due to the lifetime fuel saved by the attributable annual production of the proposed manufacturing. Example: A automotive manufacturer produces 10,000 hybrid controllers annually. "AAMC CO2 Reduction" is the offset emissions due to the attributable energy production of these 10,000 units over the lifetime of the deployed property.
	AAMC CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of a project's value in terms of CO2 reductions per tax credit dollar.
	First Years Production CO2 Reduction		Mtons/$1M Tax Credit	A measure of a project's CO2 impact during the first year of its property deployment
	Total Project CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of the total CO2 reduction due to cumulative property production over the life of the manufacturing facility and the life of the deployed energy property.
GHG Reduction	AAMC CO2 Reduction		Mtons	Metric tons of CO2 reduction due to the lifetime carbon captured and sequestered by the attributable annual production of the proposed manufacturing. Example: A manufacturer produces 10,000 gallons of a physical CO2 capture solvent annually. "AAMC CO2 Reduction" is the CO2 sequestered due to the attributable production of these 10,000 units over the lifetime of the deployed property.
	AAMC CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of a project's value in terms of CO2 reductions per tax credit dollar.
	First Years Production CO2 Reduction		Mtons/$1M Tax Credit	A measure of a project's CO2 impact during the first year of its property deployment
	Total Project CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of the total CO2 reduction due to cumulative property production over the life of the manufacturing facility and the life of the deployed energy property.
Renewable Fuel Refinement or Blending	AAMC CO2 Reduction		Mtons	Metric tons of CO2 reduction due to the lifetime fuel produced by the attributable annual production of the proposed manufacturing. Example: A manufacturer produces 10,000 biorefinary pumps annually. "AAMC CO2 Reduction" is the offset emissions due to the attributable energy production of these 10,000 units over the lifetime of the deployed property.
	AAMC CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of a project's value in terms of CO2 reductions per tax credit dollar.
	First Years Production CO2 Reduction		Mtons/$1M Tax Credit	A measure of a project's CO2 impact during the first year of its property deployment
	Total Project CO2 Reduction/$TC		Mtons/$1M Tax Credit	A measure of the total CO2 reduction due to cumulative property production over the life of the manufacturing facility and the life of the deployed energy property.

Criterion 3: that have the greatest potential for technological innovation and commercial deployment, as indicated by (i) the production of new or significantly improved technologies, (ii) improvements in levelized cost and performance, and (iii) manufacturing significance and value			
	Data From Applicant	**Data**	**Units**
Project Details	Expected average system lifetime	0	Yr
	Cost below competitors	0	Provide "figure of merit" unit here
Electricity Generation	AAMC per tax credit $		MWh/yr/$1M
	Levelized Cost of Electricity	0.00	¢/kWh
	Cost of emission reduction		$/Mton
Electricity Efficiency	AAMC per tax credit $		MWh/yr/$1M
	Levelized Cost of Energy Efficiency	0.00	¢/kWh
	Cost of emission reduction		$/Mton
Fuel Efficiency	AAMC per tax credit $		GGE/yr/$1M
	Levelized Cost of Fuel Efficiency	0.00	$/GGE
	Cost of emission reduction		$/Mton
GHG Reduction	AAMC per tax credit $		Mtons CO2eq/yr/$1M
	Levelized Cost of GHG Reduction	0.00	$/Mton CO2
	Cost of emission reduction	-	$/Mton
Renewable Fuel Refinement or Blending	AAMC per tax credit $		GGE/yr/$1M
	Levelized Cost of Renewable Fuel Refinement or Blending	0.00	$/GGE
	Cost of emission reduction		$/Mton

Criterion 4: that have the shortest project time from certification to completion		
Milestone	**Date mm/dd/yyyy**	**Days to complete milestone**
Application Due Date	10/16/2009	
Complete permitting		
Begin Construction		
Begin Production		

User Input	Calculated or from other tab	Instructions

Please list the direct jobs that will be created during both
construction and operations of your facility. Please be as specific as possible.
Direct Jobs are those jobs represented by the number of people whose work is directly billed to the project.
Do not list Indirect Jobs.
Indirect Jobs are employees in the supply chain who are not included as direct jobs.
Examples include those working for producers of materials, equipment,
and services that are used on the project, such as steel producers, accounting
services or end use installers. The review team will calculate the indirect jobs using a consistent
methodology based on nationwide input/output economic models for advanced manufacturing.

Direct Job Summary	Number of FTE
Construction Jobs	-
Operating Jobs	-

Direct Construction Jobs

Job Category Applicant can determine categories	Annualized FTE FY -09	Annualized FTE FY - 10	Annualized FTE FY-11	Annualized FTE FY - 12	Annualized FTE Until 02/ 17/ 13
Welder					
Carpenter					
Foreman					
Engineer					

Direct Operating Jobs

Job Category Applicant can determine categories	Annualized FTE FY -09	Annualized FTE FY - 10	Annualized FTE FY-11	Annualized FTE FY - 12
Line Worker				
Plant Manager				
Office Staff				

User Input	Calculated or from other tab	Instructions

In order to evaluate the significance of an applicant's manufacturing proposal, the following formulas (or their equivalent) must be used to quantify the *Attributable Annual Manufacturing Capacity* (AAMC). AAMC measures the total impact over the lifetime of deployed property which is attributable to one year of manufacturing. The AAMC will be divided by the total project cost to determine the relative value, per dollar of tax credit, of different project proposals. Finally, the AAMC will be used to assess production significance and emissions abatement on a per tax credit basis. Information provided below must clearly corespond to applicant's narrative discussion and which will provide the necessary justifications and verifications of the claimed data inputs below. Further information on these calculations can be found in **section G (IV) of appendix B**.

	Descriptor	Data	Units	Notes from DOE
Electricity Generation	Annual Peak Power Manufacturing Capacity		MWp/yr	Peak rated power of expected shipped annual production. Use equivalent watts for non-electrical technologies such as solar water heating.
	Manufacturing Costs + Sales Margin		$/W	Value added contribution to system resulting by factory production (excludes price paid for feedstock materials, upstream components, etc.).
	Total System Hardware Price		$/W	Price to owner of total system hardware including balance of system but excluding installation labor costs
	Typical Annual Capacity Factor		%	Capacity factor for likely technology use and standard resource assumptions. Defined as (annual energy output)/(peak power rating* 8760 hrs). NOTE: "annual energy output" should be calculated by applicant based on average annual resource for a typical installation (see reference tables in Section H of Appendix B)
	Deployed Property Lifetime	-	yrs	Number of years the deployed property will operate.
	Percent Specified Advanced Energy Property		%	Fraction of production from project that will be allocated for clean energy generation.
	Attributable Annual Manufacturing Capacity (AAMC)		**MWh/yr**	**Total Attributable Annual Manufacturing Capacity**

Electricity Efficiency	Annual Unit Production		#/yr	Projected (not peak or potential) number of units manufactured annually.
	Unit Manufacturing Costs + Unit Sales Margin		$	Value added contribution to system resulting by factory production (excludes price paid for feedstock materials, upstream components, etc.).
	Total Price of Efficiency Component		$	Total price of the efficiency component including the manufactured sub-component.
	Annual Baseline System Consumption		MWh/yr	Likely annual energy consumption of baseline system (WITHOUT efficiency technology) under typical operation.
	Annual Improved System Consumption		MWh/yr	Likely annual energy consumption of improved system (WITH efficiency technology) under typical operation.
	Deployed Property Lifetime	-	yrs	Number of years the deployed property will operate.
	Percent Specified Advanced Energy Property		%	Fraction of production from project that will be allocated for energy efficency as indicated in the "Improved System" calculation.
	Attributable Annual Manufacturing Capacity (AAMC)		**MWh/yr**	**Total Attributable Annual Manufacturing Capacity**

Fuel Efficiency	Annual Unit Production		#/yr	Projected (not peak or potential) number of units manufactured annually.
	Manufacturing Costs + Sales Margin		$	Value added contribution to system resulting by factory production (excludes price paid for feedstock materials, upstream components, etc.).
	Total Price of Efficiency Component		$	Total price of the efficiency component including the manufactured sub-component.
	Annual Baseline System Consumption		GGE/yr	Likely annual energy consumption of baseline system (WITHOUT efficiency technology) under typical operation.
	Annual Improved System Consumption		GGE/yr	Likely annual energy consumption of improved system (WITH efficiency technology) under typical operation.
	Deployed Property Lifetime	-	yrs	Number of years the deployed property will operate.
	Percent Specified Advanced Energy Property		%	Fraction of production from project that will be allocated for fuel efficiency as indicated in the "Improved System" calculation.
	Attributable Annual Manufacturing Capacity (AAMC)		**GGE/yr**	**Total Attributable Annual Manufacturing Capacity**
	MWh consumed per GGE saved	0	MWh/GGE	For technologies such as electric vehicles or PHEVs, which require significant electricity consumption to enable fuel efficiency, state the calculated MWh consumed per GGE saved. This value will be used in the calculation of "AAMC CO2 Reduction" For other Fuel Efficiency technologies, this is not applicable and a value of "0" should be used.

GHG Reduction	Annual Unit Production		#/yr	Projected (not peak or potential) number of units manufactured annually. In the case of liquids, "unit" may be a volume or mass.
	Manufacturing Costs + Sales Margin		$	Value added contribution to system resulting by factory production (excludes price paid for feedstock materials, upstream components, etc.).
	Total Price of GHG Component		$	Total price of the GHG component including the manufactured sub-component.
	Annual Baseline System Performance		Mtons CO2eq/yr	Likely annual GHG emissions of baseline system under typical operation. For CCS technologies, this number can be zero.
	Annual Improved System Performance		Mtons CO2eq/yr	Likely annual GHG emissions of improved system under typical operation. For CCS technologies, this number can be negative
	Deployed Property Lifetime	-	yrs	Number of years the deployed property will operate.
	Percent Specified Advanced Energy Property		%	Fraction of production which will allocated for GHG reduction purpose.
	Attributable Annual Manufacturing Capacity (AAMC)		**Mtons CO2eq/yr**	**Total Attributable Annual Manufacturing Capacity**

Renewable Fuel Refining or Blending	Annual Unit Production		#/yr	Maximum annual refining or blending capacity of renewable fuels, in GGE terms, enabled by manufactured property.
	Typical Annual Capacity per Unit		GGE/yr	Estimated annual volume of fuel refined or blended annually, which is enabled by the pump under typical plant operations.
	Manufacturing Costs + Sales Margin		$	Value added contribution to system resulting by factory production (excludes price paid for feedstock materials, upstream components, etc.).
	Total Installed System Price		$	Price to owner of the entire refining or blending system including balance of system but excluding installation labor costs.
	Deployed Property Lifetime	-	yrs	Number of years the deployed property will operate.
	Percent Specified Advanced Energy Property		%	Fraction of production which will allocated for renewable fuel refinement of blending (NOTE must be 100% for eligible applications).
	Attributable Annual Manufacturing Capacity (AAMC)		**GGE/yr**	**Total Attributable Annual Manufacturing Capacity**
	Renewable Fuel and Process	Select Here	(Mtons CO2e / GGE consumed)	Select the most representative renewable fuel refining processes. This selection will reference the appropriate life cycle CO2 emissions value from the "LCA Fuel CO2 Assumptions" tab and be incorperated in the calculation of the "AAMC CO2 Reduction".

User Input	Calculated or from other tab	Instructions

Note: This sheet is provided only to show assumptions, conversion factors, and their use in interim calculations. No user input is required and all significant calculated data

Assumptions and Conversion Factors

	Metric	Sector	Value	Units
Assumptions	2008 Average U.S. Electric Rates	Residential - 11.36 ¢/kWh	11.36	¢/kWh
		Commercial - 10.28 ¢/kWh	10.28	
		Utility - 7.01 ¢/kWh	7.01	
	2008 Average Gasoline Price		3.26	$/Gallon
Conversion Factors	Average Utility Emission		0.606	Metric Tonnes per Megawatt Hour (Mtons/MWh)
	Life Cycle kg CO2 per Gallon of Gasoline Equivalent (GGE)		0.011	Mtons CO2/GGE ("well to wheels")
	BTUs per GGE		114,000	BTU/GGE

	Data From Applicant	Data	Units	Notes from DOE
User Cost Inputs	Factory Lifetime	-	Years	
	Cost Below Competitors	-	Provide "figure of merit" unit here	Demonstrated or verified competitiveness over comparable technology with respect to most relevant figure of merit (i.e. $/W, ¢/kWh etc.). Where possible, this should be a direct comparison to functionally equivalent technologies, NOT a comparison to a conventional energy technology.

Electricity Generation	AAMC per Tax Credit $		MWh/yr/$1M TC	AAMC divided by tax credit amount
	Baseline LCOE		¢/kWh	LCOE of generation being replaced. (Residential, Commercial, or Utility from above).
	Levelized Cost of Electricity	0.00	¢/kWh	Net present value assessment for the cost of electricity generation using the financial and resource assumptions (where available) provided in appendix B and including all life cycle costs.
	Cost of Emission Reduction		$/Mton	Cost of CO2 emission based on LCOE and "Average Utility Emission".

Electricity Efficiency	AAMC per Tax Credit $		MWh/yr/$1M TC	AAMC divided by tax credit amount
	Baseline LCOE		¢/kWh	LCOE of generation being replaced. (Residential, Commercial, or Utility from above).
	Levelized Cost of Energy Efficiency	0.00	¢/kWh	Net present value assessment for the cost of electricity efficiency using baseline assumptions consistent with AMC calculations. NOTE: This may be a negative number for some efficiency technologies.
	Cost of Emission Reduction		$/Mton	Cost of CO2 emission based on LCOE and "Average Utility Emission".

Fuel Efficiency	AAMC per Tax Credit $		GGE/yr/$1M TC	AAMC divided by tax credit amount
	Incremental Levelized Cost of Fuel Efficiency	0.00	$/GGE	This term represents the difference in LCOE ($/GGE) costs between the baseline system and the improved system. The specific calculation of this difference or increment will vary depending upon the fuel efficiency technology being considered.
	Cost of Emission Reduction		$/Mton	Efficiency and the 2008 average gasoline price.

GHG Reduction	AAMC per Tax Credit $		Mtons CO2eq/yr/$1M TC	AAMC divided by tax credit amount
	Levelized Cost of GHG Reduction	0.00	$/Mton CO2	Net present value assessment for the cost of GHG emission reduction including all life cycle costs.

Renewable Fuel Refining or Blending	AAMC per Tax Credit $		GGE/yr/$1M TC	AAMC divided by tax credit amount
	Levelized Cost of Renewable Fuel Refinement or Blending	0.00	$/GGE	Net present value assessment for the cost of renewable fuel generation using the financial and resource assumptions (where available) provided in appendix B and including all life cycle costs.
	Cost of Emission Reduction		$/Mton	Cost of CO2 emission based on the Levelized Cost of Fuel Efficiency and the 2008 average gasoline price.

User Input | **Calculated or from other tab** | **Instructions**

Note: This sheet is provided to show the life cycle emissions associated with various fuel production processes. No user input is required and all significant calculated data are presented in "Applicant Data Sheet".

Fuel and process Fuel/Vehicle Technology	(Mtons CO2e / GGE consumed) (GGE=Gallons of Gasoline Equivalent)
Biodiesel (Soy) CIDI ICE	0.00423
Butanol - Corn	0.00833
Cellulosic Ethanol - Corn Stover, Fermentation	0.00278
Cellulosic Ethanol - Farmed Trees, Fermentation	0.00053
Cellulosic Ethanol - Forest Residue, Gasification	0.00425
Cellulosic Ethanol - Herbaceous Biomass, Fermentation (ICE)	0.00325
Di-Methyl Ether	0.01286
Ethanol - Corn (ICE)	0.00945
Fischer Tropsch Diesel - CIDI ICE	0.01401
Gaseous Hydrogen - Central Power Plant Production	0.01644
Gaseous Hydrogen - Production from Natural Gas at Refueling Stations	0.01705
Reformulated Gasoline - Hybrid ICE/Electric	0.01287
Liquid Hydrogen - Central Production from Natural Gas	0.02121
Methanol	0.01303
Renewable Diesel - Soy - UOP-HDO	0.00438
Renewable Gasoline - Soy	0.00400