

**Exhibit A
WORK STATEMENT**

TECHNICAL TASK LIST

Task #	CPR	Task Name
1		Administration
2	X	Collect Background Information
3		Equipment Installation
4		Data Collection
5		Analysis and Summarization
6		Technology Transfer Activities
7		Production Readiness Plan

KEY NAME LIST

Task #	Key Personnel	Key Subcontractor(s)	Key Partner(s)
1	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton – Global	Global Energy Partners, LLC	
2	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global Charles Sopher – Global	Global Energy Partners, LLC	Greg Tirado – Duda
3	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global Charles Sopher – Global	Global Energy Partners, LLC	Greg Tirado – Duda
4	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global Charles Sopher – Global	Global Energy Partners, LLC	Greg Tirado – Duda
5	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global Charles Sopher – Global	Global Energy Partners, LLC	
6	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global	Global Energy Partners, LLC	
7	Ray Ehrhard – Washington Univ. John Murphy – Washington Univ. Gerry Hamilton - Global	Global Energy Partners, LLC	

GLOSSARY

Specific terms and acronyms used throughout this scope of work are defined as follows:

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Term/ Acronym	Definition
BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
CPR	Critical Project Review
Duda	Duda Farm Fresh Foods, Inc.
Global	Global Energy Partners, Inc.
EPRI	Electric Power Research Institute
kW	Kilowatt
PAC	Project Advisory Committee
PIER	Public Interest Energy Research
RD&D	Research, Development and Demonstration
UV	Ultra Violet light

Problem Statement:

Both fresh cut fruit and vegetable operations use large amounts of water for washing and rinsing the cut products. During the washing and rinsing process, antimicrobial agents such as chlorine, tri-sodium phosphate and peracetic acid are often added to enhance microbial reductions. Once the cut products and the rinse solutions are separated, the water is returned to the rinse water source or discharged depending on the cleanliness of the water. As exudates from the cut products, precipitates from antimicrobial reactions, and dirt from raw products often render the rinse water too contaminated for further use, it is expelled in a wastewater stream to either a wastewater facility or a land application wastewater field.

To minimize microbial contamination, rinse water is typically chilled. Water temperatures of 38 degrees Fahrenheit are common but open doors and higher outside temperatures may lead to rinse water temperatures rising to 42-45 degrees Fahrenheit. In aggregate, the total electricity consumed in California for fresh fruit and vegetable processing is 600-800 million kilowatt hours (kWh) per year. The amount of electricity used for process cooling and refrigeration is estimated at 50% of processing plant use. In California, winter water chilling demands are usually low but summer electrical demands for this purpose can be very high in warmer locations. Wastewater consumes electricity primarily through pumping and treatment technologies and is an environmental hazard if not handled properly. Antimicrobial chemicals such as chlorine and peracetic acid, if utilized at close to the allowable United States Food and Drug Administration limits, can lead to worker discomfort in the processing plant. Disposal of used wash water containing these chemicals can be problematic and lead to high biological oxygen demand (BOD) and chemical oxygen demand (COD) charges from the local wastewater treatment utility.

Duda Farm Fresh Foods processes fresh celery at its Oxnard, CA facility. Ozone, Ultra Violet (UV) light, and advanced oxidation technologies will be evaluated for the celery washing system to enhance product safety (clean celery), reduce electrical demand (chilling costs), and decrease environmental impact (water use and wastewater

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discharge). When utilized to treat the wash water, these technologies oxidize most organics including microbes and do not generate precipitates often associated with chemical washes. Once the product is washed, a low level treatment of peroxyacetic acid will be used to provide residual microorganism control. After the ozone wash and peroxyacetic acid treatment the celery products will be rapidly packaged in a microbe free environment. The original wash water will be filtered, cooled if needed and retreated with the selected ozone, UV and advanced oxidation treatments. This water will then be utilized for further wash cycles. In the previous Electric Power Research Institute (EPRI) studies, water use reductions were noted but not quantified; electricity use for water chilling was also noted but not closely measured. Furthermore, the EPRI study did not consider or evaluate the utilization of UV light and advanced oxidation technologies.¹ This technology demonstration project will quantify the energy savings and enhanced food safety from the ozonated water and residual antimicrobial treatment for the California market.

Goals of the Agreement:

The goal of this Agreement is to facilitate controlled test conditions within a full scale cut vegetable processing plant to evaluate the performance of multiple water treatment technologies. The testing will enable key cost and performance data to be collected for four types of treatment technologies:

- Chemical (baseline system)
- Ozone injection
- UV light
- Advance Oxidation

The testing will provide data pertaining to:

- Energy consumption in kilowatt-hours
- Energy demand in kilowatts
- Water consumption
- Wastewater generated
- Operating costs

Objectives of the Agreement:

The objective of this agreement is to produce verifiable knowledge regarding the relative benefits and costs of multiple water treatment technologies used within the California fresh cut fruit and vegetable industries. This knowledge will enable end users to make informed decisions regarding treatment technologies and processing systems employed within their respective operations. The knowledge will address the tradeoffs between product quality, energy demand and consumption, water consumption, wastewater generation, and total costs (capital and operating).

Product Guidelines:

For complete product guidelines, refer to Section 5 in the Terms and Conditions.

¹ EPRI 2002, Treatment of Cut Vegetables with Aqueous Ozone: Technical Assessment, Report Number 1007465, EPRI Palo Alto, CA, Tennessee Valley Authority, Chattanooga, TN.

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TASK 1.0 ADMINISTRATION

Task 1.1 Attend Kick-off Meeting

The goal of this task is to establish the lines of communication and procedures for implementing this Agreement.

The Recipient shall:

- Attend a “Kick-Off” meeting with the California Energy Commission (Energy Commission) Project Manager, the Grants Officer, and a representative of the Accounting Office. The Recipient shall bring its Project Manager, Agreement Administrator, Accounting Officer, and others designated by the Energy Commission Project Manager to this meeting. The administrative and technical aspects of this Agreement will be discussed at the meeting. Prior to the kick-off meeting, the Energy Commission Project Manager will provide an agenda to all potential meeting participants.

The administrative portion of the meeting shall include, but not be limited to, the following:

- Discussion of the terms and conditions of the Agreement
- Discussion of Critical Project Review (Task 1.2)
- Match fund documentation (Task 1.6)
- Permit documentation (Task 1.7)

The technical portion of the meeting shall include, but not be limited to, the following:

- The Energy Commission Project Manager’s expectations for accomplishing tasks described in the Scope of Work
- An updated Schedule of Products
- Discussion of Progress Reports (Task 1.4)
- Discussion of Technical Products (Product Guidelines located in Section 5 of the Terms and Conditions)
- Discussion of the Final Report (Task 1.5)

The Energy Commission Project Manager shall:

- Designate the date and location of this meeting.

Recipient Products:

- Updated Schedule of Products (no draft)
- Updated List of Match Funds (no draft)
- Updated List of Permits (no draft)

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Energy Commission Project Manager Product:

- Kick-Off Meeting Agenda (no draft)

Task 1.2 Critical Project Review (CPR) Meetings

The goal of this task is to determine if the project should continue to receive Energy Commission funding to complete this Agreement and to identify any needed modifications to the tasks, products, schedule or budget.

CPRs provide the opportunity for frank discussions between the Energy Commission and the Recipient. CPRs generally take place at key, predetermined points in the Agreement, as determined by the Energy Commission Project Manager and as shown in the Technical Task List above. However, the Energy Commission Project Manager may schedule additional CPRs as necessary, and any additional costs will be borne by the Recipient.

Participants include the Energy Commission Project Manager and the Recipient and may include the Energy Commission Grants Officer, the Public Interest Energy Research (PIER) Program Team Lead, other Energy Commission staff and Management as well as other individuals selected by the Energy Commission Project Manager to provide support to the Energy Commission.

The Energy Commission Project Manager shall:

- Determine the location, date, and time of each CPR meeting with the Recipient. These meetings generally take place at the Energy Commission, but they may take place at another location.
- Send the Recipient the agenda and a list of expected participants in advance of each CPR. If applicable, the agenda shall include a discussion on both match funding and permits.
- Conduct and make a record of each CPR meeting. One of the outcomes of this meeting will be a schedule for providing the written determination described below.
- Determine whether to continue the project, and if continuing, whether or not modifications are needed to the tasks, schedule, products, and/or budget for the remainder of the Agreement. Modifications to the Agreement may require a formal amendment (please see the Terms and Conditions). If the Energy Commission Project Manager concludes that satisfactory progress is not being made, this conclusion will be referred to the Energy Commission's Research, Development and Demonstration (RD&D) Policy Committee for its concurrence.
- Provide the Recipient with a written determination in accordance with the schedule. The written response may include a requirement for the Recipient to revise one or more product(s) that were included in the CPR.

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The Recipient shall:

- Prepare a CPR Report for each CPR that discusses the progress of the Agreement toward achieving its goals and objectives. This report shall include recommendations and conclusions regarding continued work of the projects. This report shall be submitted along with any other products identified in this scope of work. The Recipient shall submit these documents to the Energy Commission Project Manager and any other designated reviewers at least 15 working days in advance of each CPR meeting.
- Present the required information at each CPR meeting and participate in a discussion about the Agreement.

Energy Commission Project Manager Products:

- Agenda and a list of expected participants (no draft)
- Schedule for written determination (no draft)
- Written determination (no draft)

Recipient Product:

- CPR Report(s) (no draft)

Task 1.3 Final Meeting

The goal of this task is to closeout this Agreement.

The Recipient shall:

- Meet with Energy Commission staff to present the findings, conclusions, and recommendations. The final meeting must be completed during the closeout of this Agreement.

This meeting will be attended by, at a minimum, the Recipient, the Energy Commission Grants Office Officer, and the Energy Commission Project Manager. The technical and administrative aspects of Agreement closeout will be discussed at the meeting, which may be two separate meetings at the discretion of the Energy Commission Project Manager.

The technical portion of the meeting shall present an assessment of the degree to which project and task goals and objectives were achieved, findings, conclusions, recommended next steps (if any) for the Agreement, and recommendations for improvements. The Energy Commission Project Manager will determine the appropriate meeting participants.

The administrative portion of the meeting shall be a discussion with the Energy Commission Project Manager and the Grants Officer about the following Agreement closeout items:

- What to do with any equipment purchased with Energy Commission

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- funds (Options)
- Energy Commission's request for specific "generated" data (not already provided in Agreement products)
- Need to document Recipient's disclosure of "subject inventions" developed under the Agreement
- "Surviving" Agreement provisions, such as repayment provisions and confidential Products
- Final invoicing and release of retention
- Prepare a schedule for completing the closeout activities for this Agreement

Products:

- Written documentation of meeting agreements (no draft)
- Schedule for completing closeout activities (no draft)

Task 1.4 Monthly Progress Reports

The goal of this task is to periodically verify that satisfactory and continued progress is made towards achieving the research objectives of this Agreement on time and within budget.

The objectives of this task are to summarize activities performed during the reporting period, to identify activities planned for the next reporting period, to identify issues that may affect performance and expenditures, and to form the basis for determining whether invoices are consistent with work performed.

The Recipient shall:

- Prepare a Monthly Progress Report which summarizes all Agreement activities conducted by the Recipient for the reporting period, including an assessment of the ability to complete the Agreement within the current budget and any anticipated cost overruns. Each progress report is due to the Energy Commission Project Manager within 10 days of the end of the reporting period. The recommended specifications for each progress report are contained in Exhibit A, Attachment A-2.

Product:

- Monthly Progress Reports (no draft)

Task 1.5 Final Report

The goal of the Final Report is to assess the project's success in achieving its goals and objectives, advancing science and technology, and providing energy-related and other benefits to California.

The objectives of the Final Report are to clearly and completely describe the project's

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purpose, approach, activities performed, results, and advancements in science and technology; to present a public assessment of the success of the project as measured by the degree to which goals and objectives were achieved; to make insightful observations based on results obtained; to draw conclusions; and to make recommendations for further RD&D projects and improvements to the PIER project management processes.

The Final Report shall be a public document. If the Recipient has obtained confidential status from the Energy Commission and will be preparing a confidential version of the Final Report as well, the Recipient shall perform the following activities for both the public and confidential versions of the Final Report.

The Recipient shall:

- Prepare an Outline of the Final Report.
- Prepare a Final Report following the approved outline and the latest version of the PIER Final Report guidelines published on the Energy Commission's website at <http://www.energy.ca.gov/contracts/pier/contractors/index.html> at the time the Recipient begins performing this task, unless otherwise instructed in writing by the Energy Commission Project Manager. Instead of the timeframe listed in the Product Guidelines located in Section 5 of the Terms and Conditions, the Energy Commission Project Manager shall provide written comments on the Draft Final Report within fifteen (15) working days of receipt. The Final Report must be completed on or before the end of the Agreement Term.
- Submit one bound copy of the Final Report with the final invoice.

Products:

- Draft Outline of the Final Report
- Final Outline of the Final Report
- Draft Final Report
- Final Report

Task 1.6 Identify and Obtain Matching Funds

The goal of this task is to ensure that the match funds planned for this Agreement are obtained for and applied to this Agreement during the term of this Agreement.

The costs to obtain and document match fund commitments are not reimbursable through this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient may utilize match funds for this task. Match funds shall be spent concurrently or in advance of PIER funds for each task during the term of this Agreement. Match funds must be identified in writing and the associated commitments obtained before the Recipient can incur any costs for which the Recipient will request reimbursement.

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The Recipient shall:

- Prepare a letter documenting the match funding committed to this Agreement and submit it to the Energy Commission Project Manager at least 2 working days prior to the kick-off meeting. If no match funds were part of the proposal that led to the Energy Commission awarding this Agreement and none have been identified at the time this Agreement starts, then state such in the letter. If match funds were a part of the proposal that led to the Energy Commission awarding this Agreement, then provide in the letter a list of the match funds that identifies the:
 - Amount of each cash match fund, its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied
 - Amount of each in-kind contribution, a description, documented market or book value, and its source, including a contact name, address and telephone number and the task(s) to which the match funds will be applied. If the in-kind contribution is equipment or other tangible or real property, the Recipient shall identify its owner and provide a contact name, address and telephone number, and the address where the property is located
- Provide a copy of the letter of commitment from an authorized representative of each source of cash match funding or in-kind contributions that these funds or contributions have been secured.
- Discuss match funds and the implications to the Agreement if they are reduced or not obtained as committed, at the kick-off meeting. If applicable, match funds will be included as a line item in the progress reports and will be a topic at CPR meetings.
- Provide the appropriate information to the Energy Commission Project Manager if during the course of the Agreement additional match funds are received.
- Notify the Energy Commission Project Manager within 10 days if during the course of the Agreement existing match funds are reduced. Reduction in match funds must be approved through a formal amendment to the Agreement and may trigger an additional CPR.

Products:

- A letter regarding match funds or stating that no match funds are provided (no draft)
- Copy(ies) of each match fund commitment letter(s) (if applicable) (no draft)
- Letter(s) for new match funds (if applicable) (no draft)
- Letter that match funds were reduced (if applicable) (no draft)

Task 1.7 Identify and Obtain Required Permits

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The goal of this task is to obtain all permits required for work completed under this Agreement in advance of the date they are needed to keep the Agreement schedule on track.

Permit costs and the expenses associated with obtaining permits are not reimbursable under this Agreement. Although the PIER budget for this task will be zero dollars, the Recipient shall budget match funds for any expected expenditures associated with obtaining permits. Permits must be identified in writing and obtained before the Recipient can make any expenditures for which a permit is required.

The Recipient shall:

- Prepare a letter documenting the permits required to conduct this Agreement and submit it to the Energy Commission Project Manager at least 2 working days prior to the kick-off meeting. If there are no permits required at the start of this Agreement, then state such in the letter. If it is known at the beginning of the Agreement that permits will be required during the course of the Agreement, provide in the letter:
 - A list of the permits that identifies the:
 - Type of permit
 - Name, address and telephone number of the permitting jurisdictions or lead agencies
- The schedule the Recipient will follow in applying for and obtaining these permits.
- Discuss the list of permits and the schedule for obtaining them at the kick-off meeting and develop a timetable for submitting the updated list, schedule and the copies of the permits. The implications to the Agreement if the permits are not obtained in a timely fashion or are denied will also be discussed. If applicable, permits will be included as a line item in the Progress Reports and will be a topic at CPR meetings.
- If during the course of the Agreement additional permits become necessary, provide the appropriate information on each permit and an updated schedule to the Energy Commission Project Manager.
- As permits are obtained, send a copy of each approved permit to the Energy Commission Project Manager.
- If during the course of the Agreement permits are not obtained on time or are denied, notify the Energy Commission Project Manager within 10 days. Either of these events may trigger an additional CPR.

Products:

- Letter documenting the permits or stating that no permits are required (no draft)
- A copy of each approved permit (if applicable) (no draft)
- Updated list of permits as they change during the term of the Agreement (if applicable) (no draft)

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- Updated schedule for acquiring permits as changes occur during the term of the Agreement (if applicable) (no draft)

TECHNICAL TASKS

TASK 2 COLLECT BACKGROUND INFORMATION

The goals of this task are to assemble benchmark or baseline energy and water consumption data related to the product wash process and to assess the current microbial levels experienced within the process. Additional information will be gathered to assess the detailed requirements for the subsequent installation and monitoring of treatment equipment.

The Recipient shall:

- Prepare a baseline performance summary report to include but not be limited to:
 - Literature review that captures any new or updated studies performed on ozone, UV, and/or advanced oxidation technologies suitable for water reuse within the food processing industry.
 - Water consumption baseline at the test site for product wash process
 - Current energy consumption required at the test site for chilling water used in the product washing process
 - Protocol for microbial sampling, including microbial testing procedures (plate counts) to establish both the average and variance of present contamination and microbial loads at key points throughout the processing line(s) at the test site
 - Current baseline for the antimicrobial agent (peroxyacetic acid) used in wash water at the test site
 - Mechanical and electrical installation requirements at the test site for ozone generation, UV, and advanced oxidation equipment
- Develop a test plan for applying and monitoring ozone generation, UV, and advanced oxidation equipment. The test plan report will include but not be limited to:
 - Summary of current processing water use, electrical requirements and wastewater quantities and qualities generated by the product wash process.
 - Baseline data for BOD and COD levels and charges under the existing processes
 - Plan for installation of ozone, UV and advanced oxidation equipment to complement the existing peroxyacetic acid treatment and provide both microbial control and residual product protection
 - Microbial testing procedures to test the new installation
- Participate in a CPR meeting consistent with Task 1.2

Products:

- Baseline Performance Summary Report (No Draft)

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- Test Plan Report (No Draft)

TASK 3 EQUIPMENT INSTALLATION

The goal of this task is to install the ozone generation, UV, and advanced oxidation equipment for testing in a manner that ensures proper operation and application of the respective technologies. Monitoring equipment will also be installed and tested to ensure that accurate data is collected during testing.

The Recipient shall:

- Coordinate equipment installation with the test site Processing Managers
- Support and/or assist as necessary the installation activities carried out by test site maintenance staff
- Inspect system for leaks and potential design problems
- Test functionality of equipment
- Train process operators on ozone, UV, and advanced oxidation procedures
- Prepare an Equipment and Installation Report, which will contain, at a minimum:
 - Equipment and installation procedures
 - Test results from initial operations (results of functionality tests)
 - Written process operational guides for plant staff
 - Written safety procedures
 - Number of operators trained

Products:

- Equipment and Installation Report (No Draft)

TASK 4 DATA COLLECTION

The goal of this task is to fully test the system for water consumption, energy use and wastewater generation. Product safety will also be evaluated by microbial levels experienced at various steps in the system. During this period, dosage levels of ozone, UV and advanced oxidation treatments will be evaluated and optimum doses will be recommended for a combination treatment with peroxyacetic acid.

The Recipient shall:

- Collect water use data, wastewater quantities and qualities generated, energy costs for chilling, ozone, UV and advanced oxidation generation and Food Safety levels from microbial analyses. The project team will work with Southern California Edison's Design and Engineering Services department to develop project specific protocols for the collection and analysis of baseline energy consumption and post implementation energy and demand savings values.

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- Determine the needed dosages of ozone, UV, and advanced oxidation for maximum food safety and shelf life
- Develop cost analyses for the final system recommended to the test site
- Prepare a Data Collection Summary Report, which contains, at a minimum:
 - Project specific protocols for the collection and analysis of baseline energy consumption and post implementation energy and demand saving values.
 - Benchmark data for the ozone, UV, and advanced oxidation system developed in conjunction with peroxyacetic acid for residual microbial control.
 - The effects of different dosages of ozone, UV and advanced oxidation treatments.
 - Comparison of water consumption and wastewater generation between base case and ozone, UV, and advanced oxidation system.
 - Cost analysis for each treatment method, including capital and operating costs and cost savings.

Products:

- Draft Data Collection Summary Report
- Final Data Collection Summary Report

TASK 5 ANALYSIS AND SUMMARIZATION

The goal of this task is to provide a final analysis of the new system of green technologies (ozone, UV and advanced oxidation) coupled with a residual treatment of peroxyacetic acid.

The Recipient shall:

- Summarize and compare original benchmark data collected when only peroxyacetic acid is used with data from the combination treatments of ozone, UV and advanced oxidation coupled with peroxyacetic acid for residual microbial control.
- Based on the findings of Tasks 2-4, prepare a final report recommending technologies and treatment levels for all antimicrobial agents used including peroxyacetic acid.
- Develop a food and worker safety report on the technologies utilized. This report will be incorporated into the Hazard Analysis Critical Control Program (HACCP) for the test site.
- Prepare a Findings and Recommendations Report, which shall include but not be limited to:
 - Comparison of antimicrobial treatments, rates and safety, between the original case when only peroxyacetic acid is used and the combination treatments of ozone, UV and advanced oxidation coupled with peroxyacetic acid for residual microbial control

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- Final recommendations for treatment levels for all antimicrobial agents used, including peroxyacetic acid
- Effects on product quality for each process
- Food and worker safety report

Products:

- Findings and Recommendations Report (No Draft)

TASK 6 TECHNOLOGY TRANSFER PLAN

The goal of this task is to develop a plan to make the knowledge gained, experimental results and lessons learned available to key decision-makers.

The Recipient shall:

- Prepare a Technology Transfer Plan. The plan shall explain how the knowledge gained in this project will be made available to the public. The level of detail expected is least for research-related projects and highest for demonstration projects. Key elements from this report shall be included in the Final Report for this project.
- Develop a brief technical review document that summarizes the technologies employed and the project results. Focus on the technical feasibility and cost effectiveness of the treatment technologies and the impacts on water and energy use and cost.
 - The document shall be similar to a case history
 - The document shall be between 2 to 4 pages in length
 - The document shall be suitable for a general technical audience interested in water treatment and the food processing industry.
- Conduct technology transfer activities in accordance with the Technology Transfer Plan. These activities shall be reported in the Monthly Progress Reports.

Products:

- Draft Technology Transfer Plan
- Final Technology Transfer Plan
- Draft Technical Review Document
- Final Technical Review Document

TASK 7 PRODUCTION READINESS PLAN

The goal of the plan is to determine the steps that will lead to the manufacturing of the technologies developed in this project or to the commercialization of the project's results.

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The Recipient shall:

- Prepare a Production Readiness Plan. The degree of detail in the Production Readiness Plan discussion should be proportional to the complexity of producing or commercializing the proposed product and its state of development. The plan shall include, as appropriate, but not be limited to:
 - Identification of critical production processes, equipment, facilities, personnel resources, and support systems that will be needed to produce a commercially viable product.
 - Internal manufacturing facilities, as well as supplier technologies, capacity constraints imposed by the design under consideration, identification of design critical elements and the use of hazardous or non-recyclable materials. The product manufacturing effort may include “proof of production processes.”
 - A projected “should cost” for the product when in production.
 - The expected investment threshold to launch the commercial product.
 - An implementation plan to ramp up to full production.

Products:

- Draft Production Readiness Plan
- Final Production Readiness Plan