

who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the



wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Contract.

(6) Contracts and Subcontracts. The Recipient, Subrecipient, the Recipient's, and Subrecipient's contractors and subcontractor shall insert in any Contracts the clauses contained herein in(a)(1) through (10) and such other clauses as the Department of Energy may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Recipient shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all of the paragraphs in this clause.

(7) Contract termination: debarment. A breach of the Contract clauses in 29 CFR 5.5 may be grounds for termination of the Contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this Contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Recipient, Subrecipient, the Contractor (or any of its subcontractors), and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).



(ii) No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

**(b) Contract Work Hours and Safety Standards Act.** As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No Contractor or subcontractor contracting for any part of the Contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (b)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The Department of Energy or the Recipient or Subrecipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any other Federal contract with the same prime Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Contracts and Subcontracts. The Recipient, Subrecipient, and Recipient's and Subrecipient's contractor or subcontractor shall insert in any Contracts, the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Recipient shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.



(5) The Contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the Contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. The records to be maintained under this paragraph shall be made available by the Contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Department of Energy and the Department of Labor, and the Contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

**(c) Recipient Responsibilities for Davis Bacon Act**

(1) On behalf of the Department of Energy (DOE), Recipient shall perform the following functions:

- (i) Obtain, maintain, and monitor all Davis Bacon Act (DBA) certified payroll records submitted by the Subrecipients and Contractors at any tier under this Award;
- (ii) Review all DBA certified payroll records for compliance with DBA requirements, including applicable DOL wage determinations;
- (iii) Notify DOE of any non-compliance with DBA requirements by Subrecipients or Contractors at any tier, including any non-compliances identified as the result of reviews performed pursuant to paragraph (ii) above;
- (iv) Address any Subrecipient and any Contractor DBA non-compliance issues; if DBA non-compliance issues cannot be resolved in a timely manner, forward complaints, summary of investigations and all relevant information to DOE;
- (v) Provide DOE with detailed information regarding the resolution of any DBA non-compliance issues;
- (vi) Perform services in support of DOE investigations of complaints filed regarding noncompliance by Subrecipients and Contractors with DBA requirements;
- (vii) Perform audit services as necessary to ensure compliance by Subrecipients and Contractors with DBA requirements and as requested by the Contracting Officer; and
- (viii) Provide copies of all records upon request by DOE or DOL in a timely manner.



**(d) Rates of Wages**

The minimum wages to be paid laborers and mechanics under this award involved in performance of work at the project site, as determined by the Secretary of Labor to be prevailing for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the pertinent locality, are found at <http://www.wdol.gov/>, by clicking on “Selecting DBA WDs”. The Wage Determination Number(s) and General Decision Number(s) specific to this award are found below. These wage rates are minimum rates and are not intended to represent the actual wage rates that the Contractor may have to pay.

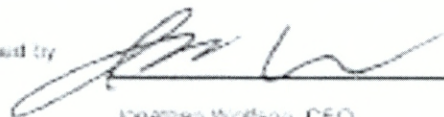
CONSTRUCTION TYPE	WAGE DETERMINATION NUMBER	GENERAL DECISION NUMBER
Building	PA8; CA29; TX121; IA131	PA080008 02/19/2010 PA8; CA080029 02/19/2010 CA29; TX080121 02/26/2010 TX121; IA080131 02/12/2010 IA131



American Recovery and Reinvestment Act of 2009, P.L. 111-5 (Recovery Act) Additional Budget Justification Information Applications shall provide information which validates that all laborers and mechanics on projects funded directly by or assisted in whole or in part by and through funding appropriated by the Recovery Act are paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by subchapter IV of Chapter 31 of title 40, United States Code (Davis-Bacon Act). For guidance on how to comply with this provision, see <http://www.dcl.gov/esaw/hrs/contracts/dbra.htm>

To satisfy this requirement, please provide a written affirmation that you will comply with the Davis-Bacon Act, as identified above, along with

Affirmed by



Jonathan Wolfson, CEO

Soltzyme Inc.



**U.S. DEPARTMENT OF ENERGY  
EERE - PROJECT MANAGEMENT CENTER**



**AWARD DOCUMENTS - REQUEST FOR SCANNING**

**STRIPES Award No.** DE-EE0002877 / 004

**OAFA Specialist:** Molly Hames

**Procurement Specialist:** \_\_\_\_\_

**Program:** Office of the Biomass Program

<p><b>OAFA SPECIALIST</b></p> <p>Mark the box next to each document included in this package for scanning.</p> <p>Initials: _____</p> <p>Date Package submitted to Scanning POC: _____</p>	<p><b>AWARD DOCUMENTS TO BE SCANNED:</b></p> <p><b>DOCUMENTS:</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> AWD-001 Financial Assistance Award Index &amp; Checklist</li> <li><input type="checkbox"/> AWD-002 Selection Statement</li> <li><input type="checkbox"/> AWD-003 Determination of Non-Competitive Financial Assistance (DNFA) Documentation</li> <li><input type="checkbox"/> AWD-004 HCA Approval</li> <li><input type="checkbox"/> AWD-005 HQ Business Clearance Documentation</li> <li><input type="checkbox"/> AWD-006 Congressional Affairs Notification (DOE F 4220.10)</li> <li><input checked="" type="checkbox"/> AWD-007 Successful Application Documentation (PRIME &amp; SUBS)</li> <li><input type="checkbox"/> AWD-008 National Environmental Policy Act (NEPA) Documentation</li> <li><input type="checkbox"/> AWD-009 Pre-Award Information Sheet (PMC 121.1)</li> <li><input type="checkbox"/> AWD-010 Dun&amp;Bradstreet Risk Assessment (PMC 460.2)</li> <li><input checked="" type="checkbox"/> AWD-011 Combined Technical Evaluation / Negotiation Memo (PMC 120.2)</li> <li><input type="checkbox"/> AWD-012 Intellectual Property Law Division (IPLD) Documentation</li> <li><input type="checkbox"/> AWD-013 Cost Share Determination Documentation</li> <li><input checked="" type="checkbox"/> AWD-014 Cost / Price Documentation</li> <li><input checked="" type="checkbox"/> AWD-015 EPLS</li> <li><input type="checkbox"/> AWD-016 Pre-Award Cost Request and Authorization</li> <li><input type="checkbox"/> AWD-017 Justification for Use of Conditional Availability of Funds Provision (PMC 132.2)</li> </ul> <p><b>LETTERS/OTHER:</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> AWD-018 Misc. Correspondence to Recipients</li> </ul> <p><b>REVIEWS:</b></p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> AWD-019a Request for Review (PMC 112.2)(Review of Award Package)</li> <li><input type="checkbox"/> AWD-019b [insert other as needed]</li> </ul>
<p><b>STRIPES Procurement Assistant</b></p> <p>Initials: _____</p> <p>Date Package returned to OAFA Specialist: _____</p>	<ul style="list-style-type: none"> <li><input type="checkbox"/> all documents indicated above are included in this package</li> <li>(Note: return package to OAFA Specialist if any of the documents indicated above are not included in this package)</li> <li><input type="checkbox"/> all documents indicated above have been scanned to a non-editable .pdf format</li> <li><input type="checkbox"/> .pdf files placed in applicable folder on S:\ drive</li> <li><input type="checkbox"/> PMC 128.3 and document package returned (with all original documents) OAFA Specialist</li> </ul> <p>STRIPES Procurement Assistant to retain electronic copy of PMC 128.3 for 1 year, then destroy</p>
<p><b>OAFA SPECIALIST</b></p>	<p><b>Action Items:</b></p> <ul style="list-style-type: none"> <li>✓ <b>VERIFY</b> that all .pdf files for all documents submitted for scanning were placed in applicable folder on S:\ drive</li> <li>✓ <b>UPLOAD</b> all .pdf files to STRIPES AWARD as Supporting Documents</li> <li>✓ <b>PLACE</b> all hardcopies of AWARD Supporting Documents in a secured shredder bin</li> </ul>

**OAFA Specialist:** I acknowledge that all supporting documents for this award have been reviewed and uploaded to STRIPES. All paper documents contained in this file can be shredded.



Proposed language for Program Income

From: Sarah McQuaid [smcquaid@solazyme.com]  
Sent: Tuesday, June 01, 2010 4:03 PM  
To: Sterner, Christy  
Cc: Schledorn, Michael; neil.rossmeissl@go.doe.gov; Graber, Kim; Wise, Melissa; David Isaacs; Bob Florence; Tyler Painter; Gayle McKenzie  
Subject: Proposed language for Program Income

Dear Christy,

We had a second action item from the conference call between DOE and Solazyme of 13 May, which was to propose language to clarify the allowed disposition of program income, if any, resulting from the SzIBR Integrated Biorefinery program (EE0002877). Please find the proposed language below.

We welcome your questions or comments.

Very best regards,

Sarah

\*\*\*\*\*

Proposed Language:

USE OF PROGRAM INCOME - COST SHARING (ALTERNATIVE TWO) (See, 10 CFR Part 600.314(d)(2))

If the Recipient earns income during the project period as a result of this award, that program income may be used by Recipient to finance its' cost sharing requirement under the award. In addition, the Recipient may use program income to reimburse actual expenditures of Contingency Funds established under this award.

\*\*\*\*\*

---

Sarah Larkin McQuaid, Ph.D., P.M.P.,  
Assoc. Director Program Management,  
Solazyme Inc.  
Phone: 650.780.4777 x 5122

RE Status of Current Amendment and Question

From: Sarah McQuaid [smcquaid@solazyme.com]  
Sent: Monday, February 14, 2011 5:53 PM  
To: Sterner, Christy  
Cc: Adrian Galvez; Gayle McKenzie; Bob Florence; Hank Majdeski  
Subject: RE: Status of Current Amendment and Question  
Attachments: EE\_0002877\_PMC134\_1\_amendment2-SOPO\_Feb2011\_F.doc;  
EE0002877\_PMC123.1\_Mod4\_Feb2011.xls

Hi Christy,

Here are the two documents that you requested with the activity replaced in BP2. Thank you so much for your assistance with this modification Christy, as you know we are

REDACTED  
EXEMPTION4

Best regards,

Sarah

Sarah Larkin McQuaid, Ph.D., P.M.P.,  
Assoc. Director Program Management,  
Solazyme Inc.  
Phone: 650.416.5122  
Cell: 619.867.3055

-----Original Message-----

From: Sterner, Christy [mailto:christy.sterner@go.doe.gov]  
Sent: Monday, February 14, 2011 2:30 PM  
To: Sarah McQuaid  
Subject: Status of Current Amendment and Question

Hi Sarah,

I hope all is well with you and that you enjoyed the Peer Review. I apologize that I wasn't able to join the calls last week and that this is the first chance I've had to get back to you. I am working from home and catching up on everything...moving this amendment is a priority!

The good news is that the amendment is essentially ready to go to the CO for review and signature...the bad news is that I need to change it now in light of the information received last week. I do think we can make the changes and move very quickly on the current amendment. In order to do so, I need some additional information from you.

The ~~amendment~~ <sup>is</sup> currently approved in BP1 and included in the pending

Have any ~~activities~~ <sup>REDACTED</sup> actually been started and/or completed?  
EXEMPTION4  
If not, I have to remove these activities from BP1. If they have, can you send me a brief description of what was done, when, and for how much?

If ~~activities~~ <sup>REDACTED</sup> have not taken place at the existing site, I need a revised SOPO removing that activity from BP1. Similarly, I have to remove the associated costs from the budget for BP1. I think I can do this with the information we have and then send it back to you for concurrence, or if you would prefer, you could make the changes directly and send it to me.

I think with this activity accurately addressed based on what we know now, the pending amendment can be reviewed and signed quickly. The CO will not sign it as it is.

If you have questions or concerns, please contact me. Also, please let me know if you would like me to make the changes and send them to you or if you would



RE Status of Current Amendment and Question  
prefer to make them initially.

Thanks for your time and attention to this and please let me know if and how I can help. I look forward to hearing from you.

Best regards,

Christy

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

## PROTECTED RIGHTS NOTICE

*The protected data in pages 3 – 6 of this document were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.*

*(End of notice).*

### **STATEMENT OF WORK (SOW) (May 2011, BP2 Update)**

Solazyme, Inc.

Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

#### **1.0 PROJECT BACKGROUND**

Solazyme, Inc. has developed innovative and proprietary technologies that use algae to renewably produce clean fuels in standard fermentation facilities. Solazyme has already produced thousands of gallons of algal oil in non-integrated tolling facilities.

Furthermore, Solazyme's algal oils have been refined to transportation fuels that meet industry specifications.

Solazyme has demonstrated oil production at laboratory scale utilizing a wide variety of nonfood carbon feedstocks, including miscanthus, bagasse, sugar beet pulp, molasses, municipal green waste, switchgrass, corn stover, and wheat straw.

#### **2.0 PROJECT SCOPE**

The scope of the proposed project encompasses (i) building, operating and optimizing a pilot-scale integrated biorefinery, (ii) cultivating oil-producing algae, (iii) extracting and purifying oil from the algae, (iv) refining the algal oil to standard liquid transportation fuels, (v) optimizing fermentation and oil recovery parameters at both laboratory and pilot scale, and (vi) gathering data to assist in the design of subsequent demonstration and commercial facilities.

As part of the proposed project, Solazyme shall produce algal oil derived entirely from lignocellulosic feedstocks (switchgrass, corn stover, wheat straw and/or municipal green waste) as well as other feedstocks.

The project advances the goals of the DOE Biomass Program and accelerates the nation's ability to achieve the production targets mandated by the federal Renewable Fuel Standard (RFS).

#### **3.0 PROJECT REQUIREMENTS**

The specific work tasks shall be identified in Section 4. These tasks, developed to satisfy program/project needs, are essentially the work requirements for Solazyme and its partners.

#### **4.0 TASKS TO BE PERFORMED**

Solazyme, Inc. shall complete the following tasks:

#### **BUDGET PERIOD 1: PRELIMINARY ACTIVITIES**

##### **A BP-1 Submission (Preparation/Approval/Reporting)**



Every line on this page contains confidential and proprietary information of Solazyme, Inc. and may not be released to persons outside the Department of Energy, without prior written consent of Solazyme, Inc.

- A.1 Selection Kick-Off Meeting (DOE Core)**
- A.2 Submission of Award 1 application (DOE Core)**
- A.3 Acceptance of Award 1 application (DOE Core)**
- A.4 Release of Award 1 funds (DOE Core)**
- B Prepare SzIBR manufacturing site:**

Solazyme shall submit permit applications, finalize and sign the engineering design contract, procure vendor technical design information for the bulk of the process and utility equipment, complete basic engineering drawings and procure the longest-lead time equipment items, and update the safety plan for the manufacturing site.
- B.2.5 EPC (Engineering Design Firm) contract finalized & signed (DOE Core)**
- C BP-2 Application/Submission/Approval**
- C.1 Cherokee Facility BP2 application materials preparation**
- C.2 Peoria Facility BP2 application materials preparation**
- C.2.2.1 NEPA approval to proceed (DOE CORE)**
- C.2.4 Update Risk Management Plan (Risk Planning)**
- C.2.5 Update PMP (Schedule/Cost Planning)**
- C.3.4 EPCM contract finalized and signed (DOE Core)**
- C.5 Submission of Award 2 application (DOE Core)**
- C.6 Reporting BP-1**

Solazyme shall submit reports, including monthly standard and quarterly Recovery Act status and financial reports, and annual reports. Reports will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein.
- C.7.1 Risk mitigation plan validation completed – Award 2 (DOE Core)**
- C.7.2 CD-2 Approve Performance Baseline (DOE Core)**
- C.7.3 Acceptance of Award 2 application (DOE Core)**

## **BUDGET PERIOD 2: CONSTRUCTION AND OPERATION**

- D Funding approval and release activities**
- D.1 CD-3 Approve Start of Construction (DOE Core)**
- D.2 Release of Award 2 funds (DOE Core)**
- E Feedstock sourcing**
- F Create and qualify pilot-scale SzIBR at manufacturing site:**

Solazyme shall

Solazyme shall prepare space for equipment as needed, including any required REDACTED and EXEMPTION 4 on new equipment and conduct start-up/safety inspection.
- F.4.2 Define commissioning criteria (DOE Core)**
- F.6 CD-4: Start of Operation Approval – Initiate Shakedown (DOE Core)**
- F.7 Perform start-up and commissioning:**



Every line on this page contains confidential and proprietary information of Solazyme, Inc. and may not be released to persons outside the Department of Energy, without prior written consent of Solazyme, Inc.

Solazyme shall install automation and conduct start-up of unit operations and water checks. Solazyme shall facilitate an Independent Engineer Report.

**F.8 Shakedown complete (DOE Core)**

**F.10 Integrated process start-up**

Solazyme shall start process flow by unit operations to complete a full integrated cycle.

**F.14**

**Commissioning – Start of operation (DOE Core)**

**G Operate SzIBR to optimize and demonstrate integrated process:**

Solazyme shall conduct a series of major campaigns through the entire integrated process flow at SzIBR, collect extensive process data, and optimize the process parameters.

**H Optimize fermentation parameters at laboratory scale to support integrated pilot operations at SzIBR:**

Solazyme shall optimize the fermentation performance at laboratory scale in support of operations at SzIBR.

**I Generate concentrated sugars derived from lignocellulosic feedstocks:**

Subcontractors will generate sugars derived from lignocellulosic feedstocks.

**J Integrated process campaign on cellulosic-derived sugars at manufacturing site**

Solazyme will conduct at  
on  
parameters.

REDACTED  
EXEMPTION 4

**K Refine algal oil from SzIBR to standard liquid transportation fuels:**

Solazyme will deliver purified algal oil generated in Task G to subcontractors that will refine the oil to standard liquid transportation fuels, including biodiesel and renewable diesel.

**L Complete commissioning of SzIBR**

**L.1 Facilitate Independent Engineers Performance Test**

**L.2 Completion of Commissioning Criteria (DOE Core)**

**M Project Management BP-2**

Solazyme shall submit progress and financial reports, including standard and Recovery Act status reports, and annual reports, as well as the Final Technical Report, including Pro Forma, property disposition and IP reports. Reports will be provided in accordance with the Federal Assistance Reporting Checklist following the instructions included therein.

Every line on this page contains confidential and proprietary information of Solazyme, Inc. and may not be released to persons outside the Department of Energy, without prior written consent of Solazyme, Inc.

## **5.0 MILESTONES/DELIVERABLES.**

REDACTED  
EXEMPTION 4

## **6.0 PERIOD OF PERFORMANCE**

Solazyme will begin the award period on 1/29/10 with a 48 month period of execution.

## **7.0 PLACE OF PERFORMANCE**

Work will be accomplished at the following locations.

- 0001. Solazyme, Inc., 225 Gateway Boulevard, South San Francisco, CA 94080
- 0002. Solazyme Manufacturing #1, LLC. 900N.E. Adams Street, Peoria, IL 61603
- 0003. BlueFire Ethanol, Inc., 31 Musick Street, Anaheim, CA 92618
- 0004. Abengoa Bioenergy Corp., 1414 Road O, York, NE 68467
- 0005. Renewable Energy Group, Inc., 416 South Bell Street, Ames, IA 50010
- 0006. UOP, LLC, 5200 Underwood Road, Pasadena, TX, 77501

# ABENGOA BIOENERGY ABENGOA BIOENERGY NEW TECHNOLOGIES

1030 S. Johnson Rd.  
Golden, CO 80401

May 5, 2011

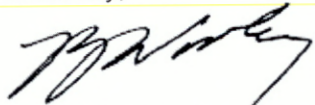
Sarah McQuaid, PhD  
Associate Director Program Management  
Solazyme Inc.  
225 Gateway Boulevard  
South San Francisco, CA 94080

Dear Dr. McQuaid:

Abengoa Bioenergy New Technology is committed to supporting the Solazyme DOE integrated biorefinery project, SzIBR. We fully expect to be able to supply fermentable sugars from biomass, produced in our York, NE pilot plant, for your use in the production of lipid oils from algae as we indicated in our support letter to Dr. Day back on June 19, 2009.

We look forward to doing what we can to help you be successful in this project.

Sincerely,



Robert J. Wooley, PhD, PE  
Director, Process Engineering



---

**From:** Sarah McQuaid [smcquaid@solazyme.com]  
**Sent:** Friday, May 13, 2011 3:47 PM  
**To:** Clark, Ivan L.; Crump, William R.  
**Cc:** Sterner, Christy; Lindeman, Chris; Adrian Galvez; Hank Majdeski; Bob Florence; Gayle McKenzie  
**Subject:** FW: E-mail of continued interest in participating with Solazyme in the DOE Pilot Plant program

Dear Ivan, Bill,

Please find below an email from Bluefire Renewables confirming their continued commitment to the SzIBR project, Award # DE-EE0002877. This, along with the letter from Abengoa mailed under separate cover, satisfies EIR2 checklist item F5 regarding cellulosic feedstock supply commitments.

Thank you and have a great weekend,

Sarah

---

Sarah Larkin McQuaid, Ph.D., P.M.P.,  
Assoc. Director Program Management,  
Solazyme Inc.  
Phone: 650.416.5122  
Cell: 619.867.3055

-----Original Message-----

**From:** John Cuzens [<mailto:jcuzens@bfreinc.com>]  
**Sent:** Wednesday, May 04, 2011 3:02 PM  
**To:** Sarah McQuaid  
**Cc:** Tracy Palmer  
**Subject:** E-mail of continued interest in participating with Solazyme in the DOE Pilot Plant program

Dear Sarah,

This message is to confirm that BlueFire Renewables **EX 4** are still interested in cooperating with Solazyme to support the DOE Pilot Plant program we bid in 2009.

We have confirmation from [redacted] that the resources are still available to

REDACTED  
EXEMPTION 4

Please let us know when you are available for a conference call to restart the program activities.

Best Regards,

John Cuzens

--

---

John E. Cuzens, P.E.

SR. V.P., Chief Technology Officer

Bluefire Renewables, Inc.

949-588-3767 (x306)

949-243-4613 (cp)

949-588-3972 (fax)

31 Musick, Irvine, CA. 92618

[HTTP://bluefireethanol.com](http://bluefireethanol.com)

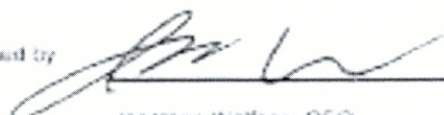
This email and any files transmitted with it are confidential and intended solely for the use of the organization or individual to whom they are addressed. It is expressly forbidden to retransmit or copy email and/or this attached files without our permission . If you are not

the addressee indicated in this message (or responsible for delivery of the message to such person), you may not copy or deliver this message to anyone. In such case, you should destroy this message and kindly notify the sender by reply email. Please advise immediately if you or your employer does not consent to Internet email for messages of this kind. Opinions, conclusions and other information in this message that do not relate to the official business of my firm shall be understood as neither given nor endorsed by it.

American Recovery and Reinvestment Act of 2009, P.L. 111-5 (Recovery Act) Additional Budget Justification Information Applications shall provide information which validates that all laborers and mechanics on projects funded directly by or assisted in whole or in part by and through funding appropriated by the Recovery Act are paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by subchapter IV of Chapter 31 of title 40, United States Code (Davis-Bacon Act). For guidance on how to comply with this provision, see <http://www.dot.gov/esa/whd/contracts/dba.htm>

To satisfy this requirement, please provide a written affirmation that you will comply with the Davis-Bacon Act, as identified above, along with

Affirmed by



Jonathan Wolfson, CEO

Solazyme Inc.





**REDACTED**  
**FOIA EXEMPTION 5**  
**(Deliberative Process)**

Recipient:	Solazyme, Inc.		
Grant/Cooperative Agreement No.:	DE-EE0002877		
Project Title:	Recovery Act: Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae		
Version:	A	Date:	2/14/2011

Description:	Site Relocation – Description
--------------	-------------------------------

**Introduction:**

REDACTED  
EXEMPTION 4

**PROTECTED RIGHTS NOTICE**

*These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until, unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.*

*(End of notice).*

**REDACTED**  
**FOIA EXEMPTION 4**

---



---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---



---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---

---

**REDACTED**  
**FOIA EXEMPTION 4**

---



Memorandum

DATE: March 8, 2011

FROM: Melissa Wise, Contracting Officer *MW*

THRU: Kim Graber, Legal Counsel *kg*  
Christy Sterner, Project Officer *CS*

TO: Paul F. Bryan, Program Manager, Biomass Program

SUBJECT:

REDACTED  
EXEMPTION 4

REDACTED  
EXEMPTION 5  
(Deliberative Process)  
(Attorney / Client Privilege)

REDACTED  
EXEMPTION 4

**REDACTED**  
**FOIA EXEMPTION 5**  
**(Deliberative Process)**  
*(Attorney/Client Privilege)*

---

**REDACTED**  
**FOIA EXEMPTION 5**  
**(Deliberative Process)**

---

**REDACTED**  
**FOIA EXEMPTION 5**  
**(Deliberative Process)**

---



March 14, 2011

Ms. Sarah Larkin McQuaid, Ph.D., P.M.P.  
Associate Director Program Management  
Solazyme, Inc.  
225 Gateway Boulevard,  
South San Francisco, CA 94080

Dear Dr. McQuaid:

SUBJECT: \_\_\_\_\_, Award No. DE-EE0002877, "Recovery Act – Solazyme Integrated  
Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae"

This letter is to notify you that the Department of Energy (DOE) has reviewed the information submitted  
by Solazyme regarding the \_\_\_\_\_ in your request, dated February 14, 2011. DOE  
approves the \_\_\_\_\_

REDACTED  
EXEMPTION 4

As a reminder, Solazyme \_\_\_\_\_

\_\_\_\_\_ In addition, Solazyme must  
submit a revised Statement of Project Objectives, Budget, and Budget Justification to reflect any changes  
resulting from tl \_\_\_\_\_

Should you have any questions, please contact Molly Hames, Grants and Agreements Specialist, at  
[molly.hames@go.doe.gov](mailto:molly.hames@go.doe.gov) or 303-275-4864.

Sincerely,

Melissa Wise  
Contracting Officer



## Department of Energy

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401-3393

March 14, 2011

Ms. Sarah Larkin McQuaid, Ph.D., P.M.P.  
Associate Director Program Management  
Solazyme, Inc.  
225 Gateway Boulevard,  
South San Francisco, CA 94080

Dear Dr. McQuaid:

SUBJECT: [REDACTED], Award No. DE-EE0002877, "Recovery Act – Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae"

This letter is to notify you that the Department of Energy (DOE) has reviewed the information submitted by Solazyme regarding the [REDACTED] your request, dated February 14, 2011. DOE approves the c [REDACTED]


As a reminder, Solazyme [REDACTED]

**REDACTED  
EXEMPTION 4**

In addition, Solazyme must submit a revised Statement of Project Objectives, Budget, and Budget Justification to reflect any changes resulting from [REDACTED]

Should you have any questions, please contact Molly Hames, Grants and Agreements Specialist, at [molly.hames@go.doe.gov](mailto:molly.hames@go.doe.gov) or 303-275-4864.

Sincerely,

  
Melissa Wise  
Contracting Officer





**Department of Energy**

Golden Field Office  
1617 Cole Boulevard  
Golden, Colorado 80401 3393

February 24, 2011

Ms. Sarah Larkin McQuaid, Ph.D., P.M.P.  
Associate Director Program Management  
Solazyme, Inc.  
561 Eccles Ave.  
South San Francisco, CA 94080-1906

Dear Dr. McQuaid:

SUBJECT: Award No. DE-EE0002877, "Recovery Act – Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae"

This letter is in response to REDACTED EXEMPTION 4 dated February 14, 2011, seeking Department of Energy (DOE) approval

At this time, DOE agrees to consider approving the the SzIBR, in accordance with the following procedures and conditions:

1. After careful consideration of the information contained in Solazyme's t, the DOE Project Officer must concur with your request and recommend approval c t. DOE may request further information from Solazyme detailing the benefits of the REDACTED EXEMPTION 4
2. The DOE Selection Official must concur with the DOE Project Officer's recommendation and approve the
3. The DOE Contracting Officer may then issue an approval letter for the

If DOE can determine with reasonable confidence that Solazyme will be able to fulfill the terms and conditions of the current award, in a timely fashion then DOE may agree to continue funding the project DOE is currently reviewing t, and we expect to issue a decision soon.

REDACTED EXEMPTION 4

addition, Solazyme must submit a revised Statement of Project Objectives, Budget, and Budget Justification to reflect any changes resulting

Should you have any questions, please contact Molly Hames, Grants and Agreements Specialist, at [molly.hames@go.doe.gov](mailto:molly.hames@go.doe.gov) or 303-275-4864.

Sincerely,

Melissa Wise  
Contracting Officer





*The data contained in every page (pages 1 to 5) of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award 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 to the extent provided in the award. This restriction does not limit the government's right to use or disclose data obtained without restriction from any source, including the applicant.*

*Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.*

## Risk Management Plan

Risk Management Plan Index:

1. Risk Management Strategy .....	1
2. Project Risks and Mitigation.....	2
3. Preliminary Process Hazard Analysis (PHA).....	3

### 1. Risk Management Strategy

Following is the risk management methodology that will be followed for the Solazyme Integrated Biorefinery (SzIBR) project.

This risk management process has been adapted to be scalable to ensure that the level, type, and visibility of risk management are commensurate with both the risk and the importance of this project.

- A. Preliminary Risk Identification – Risks are identified in Table RMP-1.0, listing significant risk factors. Risks will continue to be identified as additional parts of the project management plan are implemented (i.e. project monitoring, project controlling, procurement plan and construction management plan). Additional risks will be identified up to and during Period 1.
- B. Risk Impact Assessment – For each risk identified, the risk will be assessed in terms of likelihood of occurrence and its effect on project objectives if the event occurs. This information will be used to prioritize the risk and develop a mitigation strategy.
- C. Risk Response Planning – Each risk will be reviewed as part of the project review meeting for risk management as outlined in PMP section 1.4 – Communication Plan. The review meetings will determine the options and actions to reduce the likelihood or consequences of impact to the project's objectives. The results of the review meeting will provide an appropriate response for planning the actions to be taken to mitigate the risks.
- D. Monitor Risk:
  - Systematic reviews are scheduled and outlined in PMP section 1.4 – Communication Plan.
  - These reviews will ensure:
    - All of the requirements of the Risk Management Plan are being implemented
    - Assess currently defined risks
    - Evaluate effectiveness of actions taken
    - Status of actions to be taken
    - Validate previous risk assessment (likelihood and impact)
    - Validate previous assumptions
    - State new assumptions



Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.

- Identify new risks

E. Control Risk:

- Validate mitigation strategies and alternatives
- Take corrective action when actual events occur
- Assess impact on the project of actions taken (\$\$, time, resources)
- Identify new risks resulting from risk mitigation actions
- Ensure the Project Execution Plan (including the Risk Management Plan) is maintained
- Ensure change control addresses risks associated with the proposed change. Change control is addressed in great detail in section PMP section **Error! Reference source not found.- Error! Reference source not found..**
- Revise Risk Response Plan

## 2. Project Risks and Mitigation

It is anticipated that project milestones and schedules may change as new information is generated and unforeseen operational problems such as equipment delivery delays or breakdowns occur. When these occur, project risks and mitigation will be re-evaluated during regular meetings as outlined in the Communication Plan. Elements of effective risk management include the following:

- Experienced project team.
- Complete and effective design criteria.
- Clear project objectives.
- Clear and effective communications.
- Identify the nature of any uncertainties.
- Effective decision making.
- Effective risk control measures.
- Earned value management.
- Critical path scheduling.
- Management of change.

Significant Risk Factors	WBS	Mitigation Strategies
--------------------------	-----	-----------------------

REDACTED  
EXEMPTION 4

Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.

Significant Risk Factors	WBS	Mitigation Strategies
--------------------------	-----	-----------------------

REDACTED  
EXEMPTION 4

Significant Risk Factors	WBS	Mitigation Strategies

Table RMP 1.0 – Project risk factors and mitigation strategies

NOTE: The proposed project schedule includes four months to gather NEPA documentation and obtain a CX. If an EA or EIS is required, the transition to Period 2 could be delayed without incurring any expense. The separation between Period 1 and Period 2 is a logical break point.

### 3. Preliminary Process Hazard Analysis (PHA)

#### Overview

The Construction Management Agent will perform HAZOP analysis using a formally structured method of systematically investigating each piece of equipment in the SzIBR process. This information will be assembled in the most detailed of the four OSHA recommended formats, 29 CFR. 1910.119. The hazard and operability problems will be determined by a study of the Piping and Instrument Diagrams (P&ID's) and the equipment Standard Operating Procedures (SOPs). NFPA guidelines are also utilized where applicable. The analysis is assembled into the following categories:

- Deviation
- Causes
- Consequences
- Safeguards
- Hazard Category
- Recommended Changes

Project personnel with extensive operational and start-up experience will critically analyze the system design for potential problems arising in each component of the plant operation. Possible causes of failure will be identified. Important parameters that can deviate from the intended design conditions and their associated Consequences will then be identified. A Hazard Category will be assigned based on Frequency and Severity. The P&ID, SOP, and NFPA documents will be used to ensure that the proper instrumentation, alarms and interlocks are incorporated as Safeguards into the design to prevent injury, loss of life, significant equipment damage, and production downtime.



Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.

Multiple concurrent failures will also be included in the analysis and recommendations appropriate to risk management will be provided.

### Cause

The causes are developed first through critical thinking analysis of what can go wrong. This is accomplished by asking the question “what if” there is a:

REDACTED  
EXEMPTION 4

Depending on the equipment, some of these may be Deviations or Consequences; however, most are Causes. Since instruments and DCS systems have been developed to include a certain level of self-diagnostic capability, the HazOp is limited to equipment. The intent is to “poke holes” in the design and look for weaknesses.

### Deviation

Pertinent parameters are selected, such as flow rate, temperature, pressure, and equipment position. Then the effect of deviations from design conditions of each parameter is examined. A list of key words, such as equipment stops, high temperature, low pressure or high flow rate is selected for use in describing each potential deviation.

### Consequences

The Consequences list an event or chain of events associated with the deviation. Consequences are listed as if there were no safeguards in place. The consequence could be as simple as plugging a spout or as complex as . The consequences are listed to assist in determining the Severity of the problem.

### Hazard Category

The Hazard Category is a number and a letter that corresponds to the Severity and Frequency of a deviation.

#### Severity

1 – Catastrophic	Over \$10,000 in equipment damage and 24 hrs in downtime
2 – Critical	\$1000 – 10,000 in equipment damage and less than 24 hrs downtime
3 – Marginal	Minimal expense or less than 4 hrs downtime
4 – Negligible	Minimal expense or interruption

#### Frequency

A – Frequent	More than once a month
B – Probable	Once in 1-3 months
C – Occasional	Once in 3 – 12 months
D – Remote	Less than once a year
E – Improbable	Rarely ever occurs

*Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.*

For example, in most parts of the country, it is common to lose power 3 or 4 times a year. Therefore, Loss of Power automatically gets a "C" designation for frequency.

REDACTED  
EXEMPTION 4

### Safeguards

Safeguards are reactive measures that are taken to prevent the possible Consequences. It is important to note that the Safeguards do not address the Deviation or Cause. For example, motorized equipment will stop when there is a power failure. There is nothing that can be done to prevent the power failure; however, reactive measures can be put in place to prevent the Consequences from spiraling into a catastrophic failure.

As a general guideline, if the Hazard Category is a 1,2 and A, B, C, then instrumentation and alarms/interlocks should be put in place to prevent the loss.

### Standard Operating Procedures (SOPs)

In order to complete a HAZOP, SOPs are required of all complex process equipment including all the controls included with each package and a written description of the control logic of each control system. Complex equipment includes

REDACTED  
EXEMPTION 4

The process equipment SOPs are required in order to perform a HAZOP analysis because the HAZOP team has to know if the risk of each possible process deviation is managed properly or if additional controls or procedures are required to insure the safety and operability of operation.



*The data contained in every page (pages 1 to 3) of this application have been submitted in confidence and contain trade secrets or proprietary information, and such data shall be used or disclosed only for evaluation purposes, provided that if this applicant receives an award 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 to the extent provided in the award. This restriction does not limit the U.S. government's right to use or disclose data obtained without restriction from any source, including the applicant.*

*Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the U.S. Government, except for purposes of review and evaluation.*

## **IP Statements and Support Documentation**

### IP Statements

Solazyme owns all the intellectual property necessary to accomplish the tasks set out in this proposal. Some intellectual property rights owned by Solazyme have been nonexclusively licensed to two major international energy companies and a consumer products company. The nonexclusive licenses do not in any way restrict Solazyme's ability to carry out the proposed project nor do they in any way restrict Solazyme's rights to commercialize the technology. There are no intellectual property rights that have been licensed from another party.

Solazyme's Partners have confirmed the following:

"To the best of its knowledge, UOP LLC owns or will have a license to all the intellectual property rights necessary to convert Solazyme's purified algal oil into renewable diesel as set out in proposal in response to DE-FOA-0000096. Limited licenses will be granted to Solazyme only to the extent necessary to use the resulting fuel."

"To the best of its knowledge, Bluefire owns or will have a license to all the intellectual property rights necessary to provide concentrated cellulosic sugars to Solazyme to carry out algal fermentations to produce purified algal oil to be refined into transportation fuels as set out in proposal in response to DE-FOA-0000096. Limited licenses will be granted to Solazyme only to the extent necessary to accomplish the tasks set out in the proposal."

"To the best of its knowledge, The Renewable Energy Group owns or will have a license to all the intellectual property rights necessary to convert Solazyme purified algal oil into FAME biodiesel as set out in proposal in response to DE-FOA-0000096. Limited licenses will be granted to Solazyme only to the extent necessary to use the resulting Fuel."

"To its knowledge, Abengoa Bioenergy New Technologies has all the intellectual property rights necessary to provide concentrated cellulosic sugars to Solazyme. Limited licenses will be granted to Solazyme only to the extent necessary to carry out algal fermentations to produce purified algal oil to be refined into transportation fuels as set out in this proposal."

Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.

### Overview

Solazyme's proprietary platform utilizes non-photosynthetic cultivation of oil-bearing microalgae and other microbes for the production of non-alcohol based fuels and other hydrocarbon or lipid compositions on a large scale for use in transportation fuels. The platform includes: (1) microalgae strain selection; (2) feedstock selection and processing; (3) genetic engineering of microalgae strain(s) and other microbes; (4) scale up and optimization of fermentation processes; (5) oil extraction; and (6) oil to fuel conversion.

REDACTED  
EXEMPTION 4

### Strain/Feedstock Selection, Cultivation and Genetic Engineering

Some microalgae strains can be cultured under heterotrophic conditions (non-photosynthetic process using fermentation tanks) in which a fixed carbon source or feedstock provides energy for growth and lipid accumulation. These microalgae strains can utilize a variety of fixed carbon sources including sucrose, glycerol and cellulosic materials.

REDACTED  
EXEMPTION 4

Listed below are patent applications filed and owned by Solazyme regarding microalgae strain selection, feedstock selection and genetic engineering of microalgae strains and cultivation of these microalgae strains for the production of biomass and oils.

REDACTED  
EXEMPTION 4

### Oil Extraction Process

Once the oil-bearing microalgal biomass has been produced, the oil contained within the microalgal cells, typically in the form of triacylglycerides (TAGs), need to be extracted or separated from the cells. Part of Solazyme's platform technology includes several processes to extract the oil from the microalgal cells. The oil extraction process also include filtration, separation or purification steps needed before the crude algal oil (TAGs) can be subjected to chemical modifications to produce fuels. Listed below are patent applications filed and owned by Solazyme regarding oil extraction from oil-bearing microalgal biomass.



*Every line on this page contains proprietary information that Solazyme, Inc. requests not be released to persons outside the Government, except for purposes of review and evaluation.*

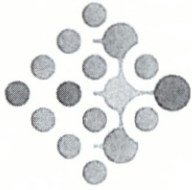
REDACTED  
EXEMPTION 4

#### Oil to Fuel Conversion

Because the crude oil produced by microalgae strains is in the form of TAGs, chemical modification of the crude oil needs to be performed in order to generate fuels. These chemical modifications include transesterification to produce biodiesel (fatty acid methyl esters, FAMES), hydrotreating to produce renewable diesel and a combination of hydrotreating and hydrocracking to produce aviation/jet fuel. Listed below are patent applications filed and owned by Solazyme regarding the conversion of crude microalgal oil/high oil-bearing microalgal biomass into transportation fuels such as biodiesel (FAMES), renewable diesel, and aviation/jet fuel.

REDACTED  
EXEMPTION 4

Solazyme may own additional intellectual property in various forms that covers methods and compositions useful in the proposed project that are not listed above, including inventions conceived but not yet reduced to practice and inventions reduced to practice but not yet described in a filed patent application, as well as trade secrets. Also included in Solazyme's intellectual property are foreign-filed patent applications that correspond to the applications listed above.



February 10, 2010

Ms. Julia Moody  
US Department of Energy  
Golden Field Office, MS 1501  
1617 Cole Boulevard  
Golden, Colorado 80401

Re: DE-FOA 0000096 – IP Recertification

Applicant Name: Solazyme, Inc. ("Solazyme")

Project Title: Solazyme Integrated Biorefinery (SzIBR):  
Diesel Fuels from Heterotrophic Algae

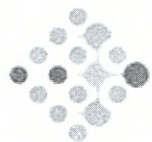
Dear Ms. Moody:

The IP Recertification submitted on February 10, 2010 contains updated patent application information from the original IP Certification submitted on June 29, 2009 as part of Solazyme's response to Funding Opportunity Announcement Number: DE-FOA 0000096. The information that is contained in the February 10, 2010 IP Recertification is current and accurate as of the date of submission.

Best regards,

A handwritten signature in black ink, appearing to read 'H. Dillon', written over a horizontal line.

Harrison F. Dillon  
President and CTO



## SOLAZYME CONTACTS – DE-FOA-0000096

Name	Title	Email	Phone
David Isaacs	Sr. VP, Government Relations	disaacs@solazyme.com	(202) 285 3709
Tyler Painter	Chief Financial Officer	tpainter@solazyme.com	(650) 963 5241
David Brinkmann	VP, Manufacturing/Project PI	dbrinkmann@solazyme.com	(650) 963 5219
Tony Day	VP, R&D	tday@solazyme.com	(650) 963 5281
Bob Florence	Sr. Dir. Program Management & Logistics	bflorence@solazyme.com	(650) 416 5120
Matthew Frome	Dir., Business Development, Government Relations	mfrome@solazyme.com	(650) 963 5213
Gayle McKenzie	Sr. Corporate Counsel	gmckenzie@solazyme.com	(650) 963 5224
David Ephron	Project Coordinator	dephron@solazyme.com	(650) 367 7808
Gypsy Achong	Project Manager	gachong@solazyme.com	(650) 963 5269
Pete Rocha	Project Manager	procha@solazyme.com	(650) 416 5125
John Herrick	Outside Counsel	JHerrick@BHFS.com	(303) 223 1122
Elizabeth Dolezal	NRG – Environmental	ENDOLEZAL@nrg-llc.com	(612) 347 7866



# Biorefinery Project Management Process

Current State of Project

Initiation		Definition	Execution		Transition / Closeout
WBS 2	WBS 3	WBS 4	WBS 5	WBS 6	WBS 7
Pre-conceptual Design	Conceptual Design / FOA	Preliminary Design	Final Design	Construction	Startup, Commissioning, and Operation

CD-0  
Approve Mission Need vs. FEL-1 Business Planning

CD-1  
Preliminary Planning vs. FEL-2 Scope Development

CD-2  
Approve Performance Baseline vs. FEL-3 Project Planning

CD-3  
Approve Start of Construction vs. FEL-4 Execution

CD-4  
Approve Operation

CD = Critical Decision  
FEL = Front End Loading Phase

IP Recertification Acceptance

From: Moody, Julia  
Sent: Thursday, February 25, 2010 8:08 AM  
To: 'Gypsy Achong'  
Cc: Sterner, Christy; Lindeman, Chris  
Subject: RE: Cover letter for Solazyme's IP recertification

All:

These are acceptable for my purposes.

Julia Cook Moody  
Deputy Chief Counsel  
for Intellectual Property  
U.S. Department of Energy  
Golden Field Office  
303-275-4867

-----Original Message-----

From: Gypsy Achong [mailto:gachong@solazyme.com]  
Sent: Tuesday, February 23, 2010 7:18 PM  
To: Moody, Julia  
Cc: Sterner, Christy; Lindeman, Chris  
Subject: Cover letter for Solazyme's IP recertification

Dear Julia,

Following up on our conversation at Solazyme's Initial Planning Conference in Golden, Colorado on February 11, 2010, attached is a cover letter for the IP recertification that we submitted on February 10, 2010. Also attached is a copy of the February 10, 2010 IP recertification document. The cover letter is from our President and CTO, Harrison Dillon, confirming that the information in the IP recertification is accurate. Please let me know if you require anything further for IP certification.

Best wishes,

Gypsy

Gypsy Achong

Email: gachong@solazyme.com

Phone: 650 780 4777 x5273

Solazyme, Inc.

561 Eccles Avenue

South San Francisco, CA 94080

The information in this e-mail (including attachments, if any) is considered confidential and is intended only for the recipient(s) listed above. Any



IP Recertification Acceptance

review, use, disclosure, distribution or copying of this e-mail is prohibited except by or on behalf of the intended recipient. If you have received this email in error, please notify me immediately by reply email, delete this email, and do not disclose its contents to anyone. Thank you.

**NATIONAL ENVIRONMENTAL POLICY ACT  
DETERMINATION INFORMATION**

**DE-EE0002877**

**Solazyme Integrated Biorefinery (SzIBR):  
Diesel Fuels from Heterotrophic Algae**



---

March 2011

**PROTECTED RIGHTS NOTICE**

*These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until, unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.*

*(End of notice).*



NATIONAL ENVIRONMENTAL POLICY ACT  
DETERMINATION INFORMATION

DE-EE0002877

Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	Recommended NEPA Determination .....	3
<b>2.0</b>	<b>PROPOSED ACTION</b> .....	<b>4</b>
2.1	Construction .....	4
2.2	Operation.....	5
2.2.1	Air .....	5
2.2.2	Waste .....	6
2.2.3	Water .....	6
2.2.4	Import, Manufacture, or Processing of Toxic Substances .....	7
2.2.5	Chemical Storage, Use, and Disposal.....	7
2.2.6	Biological Materials.....	7
2.3	Material Balance.....	8
2.4	Visual Representation .....	8
2.5	Process Description .....	8
2.6	Major Plant Components .....	9
2.6.1	Algae Fermentation .....	9
2.6.2	Algae Concentration .....	9
2.6.3	Algae Drying .....	9
2.6.4	Oil Extraction .....	9
2.6.5	Oil Purification .....	9
2.7	Logistics .....	10
2.8	Environmental Considerations.....	11
2.9	Alternatives to Proposed Action .....	11
<b>3.0</b>	<b>BASELINE CONDITIONS</b> .....	<b>12</b>
3.1	Location .....	12
3.2	General Physical Characteristics.....	14
3.3	Air Quality and Meteorology .....	14
3.4	Geology and Soils .....	17
3.5	Biological Resources .....	17
3.6	Water Resources.....	17
3.7	Waste Management .....	18
3.8	Infrastructure .....	18
3.9	Cultural Resources .....	18
3.10	Land Use .....	19
3.11	Noise .....	19
3.12	Depletion of a non-Renewable Resource.....	19
3.13	Socioeconomics .....	19
3.14	Transportation .....	20
3.15	Odor .....	21
3.16	Pre-existing Contamination .....	21

PROTECTED RIGHTS NOTICE

*These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.*

*(End of notice).*

NATIONAL ENVIRONMENTAL POLICY ACT  
DETERMINATION INFORMATION

DE-EE0002877

Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

LIST OF TABLES

Table 2.7-1	Solazyme SzIBR Project Logistics .....	10
Table 3.3-1	Solazyme SzIBR Project Ambient Air Quality – Peoria County, IL .....	15
Table 3.14-1	Solazyme SzIBR Project Transportation .....	20

APPENDICES

Appendix A	Facility Locations
Appendix B	Seismic Risk (in percent force of gravity) in Project Area

PROTECTED RIGHTS NOTICE

*These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.*

*(End of notice).*



NATIONAL ENVIRONMENTAL POLICY ACT  
DETERMINATION INFORMATION

DE-EE0002877

Solazyme Integrated Biorefinery (SzIBR): Diesel Fuels from Heterotrophic Algae

1.0 INTRODUCTION

Solazyme is proposing to build, operate and optimize a pilot-scale Solazyme Integrated Biorefinery (SzIBR). The SzIBR project will demonstrate integrated scale-up of Solazyme's novel heterotrophic algal oil manufacturing process, validate the projected commercial-scale economics of producing multiple advanced biofuels, and enable Solazyme to collect the data necessary to complete the design of the first commercial-scale facility.

The SzIBR project will be based on Solazyme's innovative process where algae are grown efficiently in the dark, i.e. heterotrophically, in industrial fermentation vessels to very high cell densities. The algae ingest and metabolize carbon substrates provided in the growth media and convert them into triglycerides. The algal triglyceride oil can then be processed by transesterification to yield biodiesel, or hydrotreated to yield renewable diesel or jet fuels.

The scope of the proposed project encompasses (i) building, operating and optimizing a pilot-scale integrated biorefinery, (ii) growing oil-producing algae in fermentation vessels on sugars derived from a range of feedstocks, (iii) extracting and purifying oil from the algae, (iv) refining the algal oil to standard liquid transportation fuels including biodiesel and renewable diesel, (v) optimizing parameters at both laboratory and pilot scale, and (vi) gathering data to assist in the design of subsequent demonstration and commercial facilities.

The primary objectives of the SzIBR project are to integrate all pre-refining process unit operations successfully into a unified biorefinery, to show that the SzIBR process can be used to produce with current industrial biomanufacturing technology inexpensive, high-quality, renewable oil usable by the existing petroleum refining, distribution, and retail infrastructure grid, and to accelerate development of high-impact lignocellulosic feedstocks. The project advances the goals of the DOE Biomass Program and accelerates the nation's ability to achieve the advanced biofuels production targets mandated by the new federal Renewable Fuel Standard (RFS2).

The SzIBR project will be located at 900 N.E. Adams Street, Peoria, Illinois, 61603 in the EN portion of the PMP Fermentation Products, LLC (PMP) existing commercial manufacturing facility. Solazyme will acquire Parcel 2 of the existing PMP site as shown in Appendix A ("Parcel 2"). The acquisition includes the EN process building and contents, utility building and contents, and 3 wells.

The SzIBR project will use existing utility hookups (including the Greater Peoria Sanitary District (GPSD) sewer and city water). **EX 4** and **EX 4** are available within the utility building on Parcel 2. Parcel 2 also includes ancillary

<p style="text-align: center;">PROTECTED RIGHTS NOTICE</p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until, unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p style="text-align: center;">(End of notice).</p>	<p>DE-EE0002877</p> <p>NEPA DETERMINATION INFORMATION</p> <p>-Page 1 of 24-</p>
--	---



process equipment such as process and storage tanks as well as other process equipment that are currently idle. Solazyme at this time does not intend to use all of this ancillary equipment. If Solazyme chooses to use any or all of this equipment at a later date, Solazyme will obtain any of the necessary permits from the Illinois Environmental Protection Agency (IEPA) and other agencies, as required, prior to use. Additionally, Solazyme will obtain its own water use contract with the City of Peoria, waste water contract with GPSD, and NPDES permit for the SzIBR. Construction will involve installation of equipment to recover oil from the algae once fermentation is complete. All required equipment is commercially available. Minor remodeling of the interior space will be required to install the equipment necessary for the SzIBR project.

Solazyme will utilize feedstock supplies delivered to its preexisting and fully permitted laboratory facilities in South San Francisco, California to optimize fermentation processes during set up of the pilot-scale equipment. Work at this facility will only include ordinary, on-going laboratory activities and no algal oil refining will occur at this location.

The SzIBR project will use domestically-sourced sucrose as a transitional feedstock. During the later phases of the pilot-scale project, Solazyme intends to run a single demonstration batch of cellulosic sugars. An existing and fully permitted facility in York, Nebraska operated by a Solazyme sub-contractor will convert lignocellulosic biomass to cellulosic sugars via enzymatic hydrolysis and deliver them to either the SzIBR facility or to the Solazyme laboratory facilities. No new equipment or construction is required at this Solazyme partner's facility. Additionally, an existing and fully permitted pilot manufacturing facility located in **EX4** and operated by a Solazyme sub-contractor will convert **Ex 4** and deliver them to either the SzIBR facility or to the Solazyme laboratory facilities. All new equipment related to the SzIBR project, except for the process dryer, will be located within the existing EN process building on Parcel 2 of the PMP site (i.e., the SzIBR Facility).

The SzIBR project will utilize existing biorefineries to refine the purified algal oil into biodiesel and renewable diesel. Solazyme will transport a portion of the purified algal oil produced at the SzIBR facility to a transesterification refining facility in Newton, Iowa where it will be transesterified into ASTM D6751 standard biodiesel. Another portion of the algal oil produced at the SzIBR will be transported to a refining facility in Pasadena, Texas for conversion to renewable diesel. No new equipment or construction is required to support the SzIBR project at either refining facility.

The project schedule includes:

- Budget Period 1 (21 months) will be limited to preparation and validation of the SzIBR risk management plan, completion of the NEPA process, submission of DOE application documents, completion of preliminary engineering drawings, submission of applicable regulatory permit applications, finalization of equipment specifications with vendors, generating facility safety plans at the SzIBR and at Solazyme in South San Francisco, definition of the commissioning criteria for the SzIBR, submission of required reports, procurement of long lead equipment

<p><i>PROTECTED RIGHTS NOTICE</i></p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p><i>(End of notice).</i></p>	<p>DE-EE0002877</p> <p>NEPA DETERMINATION INFORMATION</p> <p>-Page 2 of 24-</p>
---	---



items (dryer and evaporator systems), and commitment of all process plant equipment.

- Budget Period 2 (23 months) consists of a detailed engineering design, balance of plant procurement, and construction phase to assemble and qualify SzIBR, and an operational phase when Solazyme shall conduct a series of campaigns through the entire integrated process flow at the SzIBR, collect extensive process data, and optimize the process parameters. This budget period also includes procurement of sugars derived from lignocellulosic feedstocks via **EX 4** from partner organizations, optimization of fermentation performance at laboratory scale in support of operations at the SzIBR, refining of algal oil from the SzIBR to standard liquid transportation fuels, and submission of reports.
- Budget Period 3 (15 months) will continue optimization on cellulosic-derived sugar streams.

At the conclusion of the SzIBR project, Solazyme anticipates transforming the pilot-scale SzIBR in place into a demonstration-scale SzIBR as part of an accelerated pathway to commercialization. It is anticipated that the equipment purchased for the SzIBR project will continue to be used as part of that facility upgrade.

#### 1.1 Recommended NEPA Determination

Solazyme retained the services of an experienced independent consulting firm that has **recommended that the SzIBR project be categorically excluded from further NEPA review for both Budget Period 1 and Budget Period 2.** A Categorical Exclusion under 10 CFR 1021, Subpart D, Appendix A9 and B3.6 is warranted because the SzIBR project comprises information gathering, data analysis, conceptual design, laboratory- and pilot- scale research and development activities. Although the project is split between Budget Period 1 and Budget Period 2, this recommended determination evaluates all tasks under both budget periods.

Detailed reasoning for this determination includes:

- The SzIBR project will be sited at an existing and operational commercial manufacturing facility that will be operated and under the complete control of Solazyme.
- All equipment, except the dryer, will be installed within pre-existing buildings. Further, all equipment will be installed on the existing industrial site located at 900 N.E. Adams Street Peoria, IL 61603.
- No environmental surveys will be needed to proceed with the SzIBR project because it will not involve any ground disturbing activities that could potentially

<p style="text-align: center;"><i>PROTECTED RIGHTS NOTICE</i></p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p style="text-align: center;"><i>(End of notice).</i></p>	<p style="text-align: center;">DE-EE0002877</p> <p style="text-align: center;">NEPA DETERMINATION INFORMATION</p> <p style="text-align: center;">-Page 3 of 24-</p>
---	---



disturb sensitive resources such as wetlands, cultural resources, threatened and endangered species, or sensitive ground water areas.

- A solid waste permit is not likely to be required for the SzIBR project.
- Waste water from SzIBR will be handled within a contract with GPSD.
- A National Pollution Discharge Elimination System (NPDES) discharge permit for surface water runoff and non-contact cooling water will be obtained for the facilities associated with the SzIBR project.
- A state air quality construction and operating permit from the IEPA will be required for emissions generated from the new equipment associated with the SzIBR. The SzIBR will emit a relatively small amount of air emissions, which would not present a significant environmental impact.
- No new permits or modification of existing permits will be required at Solazyme's laboratory facilities in South San Francisco, CA, and at the facilities of Solazyme's partners, as noted above. Furthermore, all locations can properly handle and treat all wastes generated in the SzIBR project with existing facilities under current permits, where required.
- An R&D questionnaire (Form PMC 111.1) has been completed and provided to the DOE for the project which addresses the established safety protocols, chemical handling and waste stream disposal protocols applicable to the SzIBR work.

In summary, Solazyme's SzIBR project will not violate applicable environmental safety and health requirements; will not require siting of waste storage, disposal, recovery facilities or treatment facilities; will not disturb hazardous substances, will not disturb any new or sensitive designated soils, nor adversely affect environmentally sensitive resources. Furthermore, the SzIBR project will not present any extraordinary circumstances such that the action might have a significant impact upon the human environment; nor is it connected to other actions with potentially significant impacts. Additionally, the SzIBR project is not related to other actions with cumulatively significant impacts.

## 2.0 PROPOSED ACTION

### 2.1 Construction

Solazyme proposes to construct the SzIBR on Parcel 2 of the existing PMP site in Peoria, Illinois. The construction phase of the project is anticipated to take 9- 12 months and will involve the specification and procurement of equipment specific to the SzIBR with the purpose of recovering oil from the algae once fermentation is complete, and installation of that equipment within existing structures on Parcel 2. Most equipment will be installed within the existing

<p style="text-align: center;"><i>PROTECTED RIGHTS NOTICE</i></p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p style="text-align: center;"><i>(End of notice).</i></p>	<p>DE-EE0002877</p> <p>NEPA DETERMINATION INFORMATION</p> <p>-Page 4 of 24-</p>
---	---



building with the exception of the dryer, which will be installed immediately outside the building on existing attached concrete pads. No new soil will be disturbed during installation of SzIBR.

In order to accommodate the installation of equipment into the existing structures, removal and/or modification of existing equipment, structure, and piping may be required. All materials removed will be properly characterized. During the characterization process, all materials will be identified as either recyclable materials, waste materials, or saved for re-use or sale. Recyclable materials will be properly cleaned and transferred to a local recycling facility. Waste material will be transferred to permitted waste disposal facilities in accordance with state and federal regulations. Re-used or for-sale materials will be stored in the process building on Parcel 2.

The construction phase is short because the SzIBR extensively leverages existing buildings and infrastructure, and the additional equipment and auxiliaries will be provided with the maximum pre-assembly practical. In addition to the equipment being installed on Parcel 2, equipment will also be installed at a pilot manufacturing facility located in [REDACTED] EXEMPTION 4. The equipment installed at [REDACTED] EXEMPTION 4 will be located within existing structures.

## 2.2 Operation

During operation of the SzIBR, Solazyme will (i) grow oil-producing algae on sugars derived from a range of feedstocks, (ii) concentrate and extract oil from the algae (without the use of solvents), (iii) purify the algal oil, and, (iv) refine the algal oil to standard liquid transportation fuels including biodiesel and renewable diesel. The purified algal oil will be refined by two third-party facilities (i) a biodiesel plant, which will process the algal oil into biodiesel, and (ii) an oil refinery, which will yield renewable diesel. The maximum potential purified algal oil produced by the SzIBR project will be approximately [REDACTED] EXEMPTION 4 standard liquid transportation fuels to interested parties under a material transfer agreement for evaluation purposes.

Operation of the SzIBR will require review and/or permitting as described by resource below.

### 2.2.1 Air

The PMP facility is currently operating under a Clean Air Act Permitting Process (CAAPP) permit. However, preliminary discussions with IEPA have confirmed that the construction and initial operation of the proposed SzIBR project will be authorized through a separate state air quality construction and operating permit from the IEPA to be issued prior to construction and operation. This project will not trigger the need for Prevention of Significant Deterioration (PSD) permitting due to the low levels of air emissions. It is expected to take from 2 to 6 months to receive air permit approval once a complete air application is submitted to the IEPA. The SzIBR project will emit a relatively small amount of air emissions from natural gas combustion as well as small amounts of volatile organic compound (VOC) and particulate emissions from the process operations. The emissions from the entire process will not present a significant environmental impact.

<p style="text-align: center;"><i>PROTECTED RIGHTS NOTICE</i></p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p style="text-align: center;"><i>(End of notice).</i></p>	<p style="text-align: center;">DE-EE0002877</p> <p style="text-align: center;">NEPA DETERMINATION INFORMATION</p> <p style="text-align: center;">-Page 5 of 24-</p>
---	---



No new air permits or modifications of existing air permits will be required at the existing facilities of Solazyme's partners.

### 2.2.2 Waste

Solazyme will establish a process for characterizing and disposing of all waste generated at the SzIBR facility. All wastes will be characterized and manifested as necessary prior to leaving the facility. The solid waste stream from the algal oil process at the SzIBR project is estimated to be

<sup>REDACTED</sup>  
<sup>EXEMPTION 4</sup> . Based on the current regulations regarding hazardous waste (Title 10 CFR § 261.31-33) no materials used or produced by the SzIBR project are classified as hazardous waste.

No permits or modifications will be required for solid waste streams associated with the SzIBR project, as all residual waste will be shipped off-site to permitted waste disposal facilities. Additionally, Solazyme is <sup>EX 4</sup> to determine the feasibility of using <sup>EX 4</sup>, which would further reduce the waste generated by the project.

The transesterification of algal oil into biodiesel at a refining partner's facility will involve the use of methanol. The methanol is contained within a closed loop system for the refining process and only trace amounts are present in the glycerin byproduct. This partner facility is currently permitted as a small quantity hazardous waste generator and will not need to modify its existing coverage under its small quantity hazardous waste permit to refine the algal oil associated with the SzIBR project. No partners will need to modify their existing permits to participate in the SzIBR project.

### 2.2.3 Water

The post processing waste water effluent discharges, generated from the pilot-scale activities at the SzIBR will amount to approximately <sup>REDACTED</sup> This is less than <sup>EXEMPTION 4</sup> of the maximum PMP facility permitted discharge of <sup>EXEMPTION 4</sup> waste water treatment facility. Even though the PMP facility is currently operating well below this discharge limit, the SzIBR will be under separate control and ownership; therefore, SzIBR will enter into a separate contract for discharge to the GPSD waste water treatment system. Similarly, the SzIBR will obtain authorization to use water from the City of Peoria municipal water system.

The post processing waste water from activities at the Solazyme laboratory facilities will be less than <sup>EX 4</sup> This will be disposed of in the municipal sanitary wastewater treatment system. All water use at the laboratory will come from municipal water sources and be disposed of into the public treatment system. No permit modifications or applications will be necessary for water use or disposal at the Solazyme laboratory facilities.

The process associated with refining algal oil to biodiesel and renewable diesel at the refining partner's facilities will not require the approval or modification of any NPDES permits. The non-contact waste water at the biodiesel refining facility will be discharged to the municipal treatment

<p>PROTECTED RIGHTS NOTICE</p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p>(End of notice).</p>	<p>DE-EE0002877</p> <p>NEPA DETERMINATION INFORMATION</p> <p>-Page 6 of 24-</p>
---	---



system through an existing permit and the contact waste water will be discharged to a permitted waste water treatment facility designed to handle Biological Oxygen Demand (BOD) loading. The renewable diesel refining partner stated that it will not require any modifications to its NPDES permits.

No permit modifications or applications will be necessary for water use or disposal at any other Solazyme partners' facilities.

#### 2.2.4 Import, Manufacture, or Processing of Toxic Substances

The production microorganism used in the SzIBR project is an intergenic microorganism subject to the Toxic Substance Control Act (TSCA). The microorganism is exempt from the Microbial Commercial Activity Notice (MCAN) requirements of TSCA under the research and development exemption (40 CFR 725.234 and 40 CFR 725.235).

#### 2.2.5 Chemical Storage, Use, and Disposal

REDACTED  
EXEMPTION 4

Chemicals for the SzIBR project, including

will be stored, used, and disposed of at the SzIBR project facility on Parcel 2. Chemical handling activities will be managed according to Hazard Communication, Biosafety, and Emergency Planning (Tier II) programs, as applicable. These procedures will require that every material be reviewed by the site Safety & Environmental department prior to use. Once approved, material safety data sheets will be entered into the facility's electronic Material Safety Data Sheets system and hazard warning briefs will be developed for use in the facility's Standard Operating Procedures to communicate hazards to the employees. If required, notifications will be made to local and state emergency planning organizations. Additionally, training on chemical hazards and proper handling will be provided during periodic hazard communication and process specifics training.

Specific storage and use volumes of chemicals will be submitted for in-person review.

Work supporting the SzIBR project at Solazyme's laboratory facilities involves usage, storage an disposal of very small amounts of chemicals, including EX 4

Solazyme utilizes protocols outlined in their Laboratory Chemical Hygiene Plan and Hazardous Materials Business Plan to properly handle, store, and dispose of these chemicals.

#### 2.2.6 Biological Materials

The SzIBR project will involve the fermentation and use of genetically modified algae to produce refined algal oil. The algae will be transported, stored, handled and disposed of in accordance with federal, state, and local laws. Algae will be transported from the Solazyme laboratory to the SzIBR facility contained within biological grade vials on dry ice. Genetically modified organisms used for the SzIBR project are classified as Biosafety Level I (no or negligible risk).

<p style="text-align: center;"><i>PROTECTED RIGHTS NOTICE</i></p> <p><i>These protected data were produced under Agreement No. DE-EE0002877 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until and unless express written authorization is obtained from the recipient, Solazyme, Inc. Upon expiration of the period of protection set forth in this Notice, the Government shall have unlimited rights in this data. This Notice shall be marked on any reproduction of this data, in whole or in part.</i></p> <p style="text-align: center;"><i>(End of notice).</i></p>	<p>DE-EE0002877</p> <p>NEPA DETERMINATION INFORMATION</p> <p>-Page 7 of 24-</p>
---	---