notifications and Dow on-site 24-hour emergency response personnel/equipment will respond as needed for fire, medical and other emergencies.

5. What permits are in place for the facility for this type of work? Please list.
Algenol Biofuels Response: *Presently, Dow has a water permit for the site. The facility will be located within the fence-line of The Dow Chemical Company's Freeport, Texas Operations complex. The complex has a site water and hazardous waste permit.*

6. What permits are needed or will be acquired for this type of work? Please list.
Algenol Biofuels Response: *See response to question I.2 above.*

7. How is liquid effluent handled and discharged?

Algenol Biofuels Response: *Laboratory liquid effluent and process liquid effluent will be collected in a tank and transported to Dow's on-site wastewater treatment plant.*

8. How is toxic waste handled, stored, disposed?
Algenol Biofuels Response: *The project will not generate any toxic waste.*

9. Will the work being done create any air pollutants? If so please explain how these are handled/disposed/mitigated.
Algenol Biofuels Response: *Yes. The air emissions from this facility are primarily fugitive emissions of ethyl alcohol. They will be controlled by implementing a leak detection and repair program. Good engineering practice will be used to minimize other sources of potential emissions.*

10. Are Genetically Modified Organisms (GMOs) being used? If so please describe how these will be transported, stored, handled and disposed. How are these classified by APHIS? By TSCA? By state and local agencies?
Algenol Biofuels Response: *Please see response above to Part I, 2. Hybrid Algae*

11. Will prototypes be tested in a separate location, if so, please describe the location and answer questions #1-9?
Algenol Biofuels Response: *Yes.*

- *Algenol has an aquaculture and scale up facility situated on approximately five acres in Loxahatchee, Palm Beach County, Florida. Algenol has approximately 15 scientists, engineers and support staff at this scale up facility. See Sec. I.2 for a further discussion of the Florida facility.*
- *Algenol has a research laboratory in Baltimore, Maryland, that employs nearly 20 scientists, engineers and support staff. The Baltimore laboratory is focused on the identification, molecular modification, and testing of cyanobacteria species suitable for biofuel production. Only basic research is performed at this facility. All research is conducted indoors, in a contained facility, and at laboratory quantities. Hybrid algae at this facility are subject to regulation under TSCA and EPA implementing regulations.*

12. Are subcontractors being used for some of the work? If so please answer Questions #1-10 for work being completed by subcontractors.
Algenol Biofuels Response:

- *No. All laboratory work is expected to be completed on-site by project team members.*

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF RESEARCH AND DEVELOPMENT
NATIONAL RISK MANAGEMENT RESEARCH LABORATORY
CINCINNATI, OHIO 45268

April 23, 2009

Craig R. Smith, M.D.
Executive Vice President, Chief Operating Officer
Algenol Biofuels, Inc.

Dr. Wood,

The purpose of this letter is to indicate our interest in supporting the project "**Demonstration of Pilot-Scale Integrated Biorefinery Operations for Producing Ethanol From Algae**" submitted as a proposal to the U.S. Department of Energy under Funding Opportunity DE-PS36-09GO99038 - Demonstration of Integrated Biorefinery Operations. As you know, the U.S. Environmental Protection Agency's National Risk Management Research Laboratory (USEPA-NRMRL) has an active in-house research program in the conversion of biomass to alcohol-based biofuels with an emphasis on the efficient recovery of the alcohols from dilute bioreactor media and the dehydration of the alcohols to meet product specifications. We believe our background in efficient alcohol-water separation systems will help the Algenol-led team successfully develop their algae-based ethanol production platform.

Our separations research group has a long history of supporting biofuels projects, including collaborating with industrial partners on projects funded by the U.S. Department of Agriculture, U.S. Army, and the U.S. Department of Energy. We are currently collaborating through a cooperative research and development agreement (CRADA) with a membrane separation company and member of your project team, Membrane Technology and Research, Inc. (MTR), to develop highly efficient membrane-based and hybrid distillation-membrane processes for recovery of biofuel alcohols from dilute fermentation broths. During the proposed project, we will provide technical support and facilities to the Algenol-led team that will enable: the identification and implementation of efficient separation processes; the evaluation of such separation processes in our facilities or other project locations; access to our extensive know-how related to design and performance of membrane-based and other innovative separation processes; and the identification of scale-up and life cycle issues related to the algae-based process.

In order to assist your efforts, we are prepared to obligate two members of our separations group, Dr.

REDACTED
EXEMPTION 4

We look forward to the opportunity to partner with Algenol and the other collaborators on this project.

Sincerely,

Douglas Young

Douglas Young, Ph.D.
Chief, Clean Processes Branch
Sustainable Technology Division

Department of Energy
Golden Field Office
1617 Cole Boulevard
Golden, Colorado 80401-3393

May 26, 2009

Mr. Hank Eggink
Contracting Officer
U.S. Department of Energy
Golden Field Office
Mail Stop 1501
1617 Cole Boulevard
Golden, Colorado 80401
Phone: 303-275-4825
Fax: 303-275-4858

Re: DOE Funding Opportunity Announcement, Recovery Act – Demonstration of Integrated Biorefinery Operations, No. DE-FOA-0000096

Dear Mr. Eggink:

Authorization is granted for the National Bioenergy Center of the National Renewable Energy Laboratory to assist Algenol Biofuels, Inc., with a simulated laboratory analysis of natural gas power plant flue gas and its impacts on Algenol cyanobacteria samples, as well as development of an Aspen Plus technoeconomic model for the Algenol algae-to-ethanol production process for the above-cited solicitation. The proposed work is consistent with, or complementary to, the missions of the laboratory and will not adversely impact execution of the laboratory's DOE-assigned programs.

Sincerely yours,

Jean M. Siekerka
Contracting Officer

Cc:
Phil Pienkos, NREL

Federal Recycling Program Printed on Recycled Paper

Applicant Name: Georgia Institute of Technology - Cumulative Award Number:

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$912,040	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$912,040		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) DE - FOA - 0000096	(2)	(3)	(4)	
a. Personnel *	Exemption 4				
b. Fringe Benefits *					
c. Travel *					
d. Equipment					
e. Supplies *					
f. Contractual University of Colorado (***GTchgs O/H on 1st $25K of contract year 1 only**)					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges (51%) (* indicates eligible for O/H)					
k. **Totals** (sum of 6i-6j)					
7. Program Income					$0

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Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096		Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$0			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$484,400	$154,398	$117,802	$117,802	$94,398
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096	$427,600			
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$427,600	$0	$0	$0

Section F - Other Budget Information

21. Direct Charges	22. Indirect Charges

23. Remarks

Applicant Name: Georgia Institute of Technology - Year1 Award Number:

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$484,400	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$484,400		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) DE - FOA - 0000096	(2)	(3)	(4)	
a. Personnel *	Exemption 4				
b. Fringe Benefits *					
c. Travel *					
d. Equipment					
e. Supplies *					
f. Contractual University of Colorado (***GTchgs O/H on 1st $25K of contract year 1 only**)					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges (51%) (* indicates eligible for O/H)					
k. **Totals** (sum of 6i-6j)					
7. Program Income					$0

Previous Edition Usable

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Prescribed by OMB Circular A-102

Authorized for Local Reproduction

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096		Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$0			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$484,400	$154,398	$117,802	$117,802	$94,398
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096	$427,600			
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$427,600	$0	$0	$0

Section F - Other Budget Information

21. Direct Charges	22. Indirect Charges

23. Remarks

Applicant Name: Georgia Institute of Technology - Year 2 Award Number:

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$427,640	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$427,640		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) DE - FOA - 0000096	(2)	(3)	(4)	
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment (see below)					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges (51%)					
Equipment (no indirect costs)					
Subcontract (University of Colorado)					
k. **Totals** (sum of 6i-6j)					
7. Program Income					$0

SF-424A (Rev. 4-92)

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - GOA - 0000096		Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$0			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$484,400	$154,398	$117,802	$117,802	$94,398
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16.				
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$0	$0	$0	$0

Section F - Other Budget Information

21. Direct Charges	22. Indirect Charges

23. Remarks

Georgia Institute of Technology
The Strategic Energy Institute

May 21, 2009

Algenol Biofuels Inc.
Craig R. Smith, M.D.
Executive Vice President, Chief Operating Officer
28100 Bonita Grande Drive, Suite 200
Bonita Springs FL 34135

Subject: "Pilot-Scale Integrated Biorefinery Operations for Producing Ethanol From Algae"

Dear Dr. Smith,

The purpose of this letter is to confirm our support for and participation in the project **"Pilot-Scale Integrated Biorefinery Operations for Producing Ethanol From Algae,"** which will be submitted as a proposal to the US Department of Energy under Funding Opportunity DE-PS36-09GO99038.

As you know, the Georgia Institute of Technology (GT) has significant experience and expertise in renewable energy research, particularly within in our Strategic Energy Institute and our School of Chemical & Biolmolecular Engineering. We believe our background in CO_2 capture, membrane separations, and energy systems analysis will help the Algenol-led team to successfully complete the project.

Georgia Tech will be a significant collaborator in the R&D component of the project. Specifically, Georgia Tech researchers will:

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EXEMPTION 4

The Strategic Energy Institute
Atlanta, Georgia 30332-0362 U.S.A.
Phone: 404•385•0384
Fax: 404•894•7896
web site: http://www.energy.gatech.edu

A Unit of the University System of Georgia
An Equal Education and Employment Opportunity Institution

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EXEMPTION 4

We here at Georgia Tech look forward to working with you and the distinguished team that Algenol has assembled to successfully complete the goals of this project and prepare the technology for commercialization.

Sincerely,

Roger P. Webb, PhD.
Director, Strategic Energy Institute

The Strategic Energy Institute
Atlanta, Georgia 30332-0362 U.S.A.
Phone: 404•385•0384
Fax: 404•894•7896
web site: http://www.energy.gatech.edu

Algenol Lifecycle Energy and Greenhouse Gas Emissions

Exemption 4 *

Georgia Institute of Technology

June 16, 2009

*Principal Investigators

Proprietary Information: All information in this document is proprietary. Algenol Biofuels requests all information in this document not be released to persons outside the Government, except for the purposes of review and evaluation.

1. Introduction

This report is a summary of the lifecycle energy and greenhouse gas emissions of the Algenol ethanol production system. The Algenol system aims at large-scale fuel ethanol production using genetically enhanced photoautotrophic cyanobacteria (algae). This analysis applies to the current vision of a full-scale commercial system.

Exemption 4

Table 1. LCA Data and Sources

Stage	Content	Data	Unit	Reference
Exemption 4				

	Exemption 4			

Exemption 4

Exemption 4

Exemption 4

Exemption 4

Exemption 4

Exemption 4

Exemption 4

Exemption 4

Exemption 4

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Exemption 4

	Exemption 4		

	Exemption 4		

Exemption 4

Exemption 4

Applicant Name: **Membrane Technology and Research, Inc.** Award Number: **YEAR ONE**

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$148,854	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$148,854		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) 81.087	(2)	(3)	(4)	
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income	$0				$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096	$37,214	Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$37,214			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$148,854	$37,214	$37,213	$37,214	$37,213
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096	$615,304	$114,382	$113,508	$0
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$615,304	$114,382	$113,508	$0

Section F - Other Budget Information

21. Direct Charges

22. Indirect Charges
Provisional rate, Exemption 4 includes all allowable indirect costs.

23. Remarks

Applicant Name: **Membrane Technology and Research, Inc.** Award Number: **YEAR TWO**

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$615,304	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$615,304		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity (1) 81.087	(2)	(3)	(4)	Total (5)
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income	$0				$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096	$153,826	Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$153,826			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$148,854	$37,214	$37,213	$37,214	$37,213
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096	$615,304	$114,382	$113,508	$0
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$615,304	$114,382	$113,508	$0

Section F - Other Budget Information

21. Direct Charges

22. Indirect Charges
Provisional rate, Exemption 4 , includes all allowable indirect costs.

23. Remarks

Applicant Name: **Membrane Technology and Research, Inc.** Award Number: **YEAR THREE**

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087			$114,382	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$114,382		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity (1) 81.087	(2)	(3)	(4)	Total (5)
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income	$0				$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096	$28,596	Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$28,596			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$148,854	$37,214	$37,213	$37,214	$37,213
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

(a) Grant Program	**Future Funding Periods (Years)**			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096	$615,304	$114,382	$113,508	$0
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$615,304	$114,382	$113,508	$0

Section F - Other Budget Information

21. Direct Charges

22. Indirect Charges
Provisional rate, Exemption 4 , includes all allowable indirect costs.

23. Remarks

Applicant Name: **Membrane Technology and Research, Inc.** Award Number: **YEAR FOUR**

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA -0000096	81.087			$113,508	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$113,508		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) 81.087	(2)	(3)	(4)	
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income	$0				$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA -0000096	$28,377	Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$28,377			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$148,854	$37,214	$37,213	$37,214	$37,213
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA -0000096	$615,304	$114,382	$113,508	$0
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$615,304	$114,382	$113,508	$0

Section F - Other Budget Information

21. Direct Charges

22. Indirect Charges

Provisional rate, Exemption 4 , includes all allowable indirect costs.

23. Remarks

Applicant Name: **Membrane Technology and Research, Inc.** Award Number: **CUMULATIVE**

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA -0000096	81.087			$992,048	Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$992,048		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity				Total (5)
	(1) 81.087	(2)	(3)	(4)	
a. Personnel	Exemption 4				
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income	$0				$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA -0000096	$248,013	Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$248,013			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	$148,854	$37,214	$37,213	$37,214	$37,213
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA -0000096	$615,304	$114,382	$113,508	$0
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$615,304	$114,382	$113,508	$0

Section F - Other Budget Information

21. Direct Charges

22. Indirect Charges
Provisional rate, Exemption 4 includes all allowable indirect costs.

23. Remarks

MTR Membrane Technology & Research

May 5, 2009

Algenol Biofuels Inc.
Craig R. Smith, M.D.
Executive Vice President, Chief Operating Officer
28100 Bonita Grande Drive, Suite 200
Bonita Springs FL 34135

Re: Commitment Letter: "Pilot-Scale Integrated Biorefinery Operations for Producing Ethanol From Algae"

Dear Dr. Smith,

The purpose of this letter is to confirm our support for and participation in the project **"Pilot-Scale Integrated Biorefinery Operations for Producing Ethanol From Algae,"** which will be submitted as a proposal to the US Department of Energy under Funding Opportunity DE-PS36-09GO99038.

As you know, MTR has an ongoing development program in the area of membrane permeation applied to the separation of ethanol/water mixtures. The technology we are developing, called BioSep™, has the promise of reducing the energy required for the ethanol/water separation by a factor of two compared to conventional distillation. This energy savings could be a significant factor in reducing the carbon footprint of ethanol produced by the Algenol process. We believe our background will help the Algenol-led team to successfully complete the project.

As described in detail in the Algenol proposal, MTR will

REDACTED
EXEMPTION 4

We look forward to working with you and the distinguished team that Algenol has assembled to successfully complete the goals of this project and prepare the technology for commercialization.

Sincerely,

Richard W. Baker, Ph.D.
Principal Scientist
Membrane Technology and Research, Inc.

1360 Willow Road, Menlo Park, CA 94025, USA Phone: (650)328-2228 http://www.mtrinc.com

Applicant Name: NREL Cumulative

Award Number:

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. DE - FOA - 0000096	81.087				Exemption 4	
2.						
3.						
4.						
5. Totals		$0	$0	$0		

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity (1)	(2)	(3)	(4)	Total (5)
a. Personnel			Exemption 4		
b. Fringe Benefits					
c. Travel					
d. Equipment					
e. Supplies					
f. Contractual					
g. Construction					
h. Other					
i. Total Direct Charges (sum of 6a-6h)					
j. Indirect Charges					
k. **Totals** (sum of 6i-6j)					
7. Program Income					$0

Section C - Non-Federal Resources

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) **Totals**
8. DE - FOA - 0000096		Exemption 4		
9.				
10.				
11.				
12. **Total** (sum of lines 8 - 11)	$0			

Section D - Forecasted Cash Needs

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal					
14. Non-Federal	Exemption 4				
15. **Total** (sum of lines 13 and 14)					

Section E - Budget Estimates of Federal Funds Needed for Balance of the Project

	Future Funding Periods (Years)			
(a) Grant Program	(b) First	(c) Second	(d) Third	(e) Fourth
16. DE - FOA - 0000096				
17.				
18.				
19.				
20. **Total** (sum of lines 16-19)	$0	$0	$0	$0

Section F - Other Budget Information

21. Direct Charges	22. Indirect Charges

23. Remarks

Algenol Biofuels Inc.

Petroleum Displacement Analysis

	Product	BTU or Joule Content per Gallon	Annual Output of Facility (in gallons)	BTU of Total Output per Year	Equivalent Barrels of Oil
		Exemption 4			

Exemption 4

ALGENOL
BIOFUELS
DIRECT TO ETHANOL™

Pilot-Scale Integrated Biorefinery
Simplified Process Flow Diagram

Redacted
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Detailed blueprints for the Algenol pilot-scale integrated biorefinery are located in the final four pages of the PFD_Data document:
Sheet 1: Site Layout and Notes
Sheet 2: Operations Layout
Sheet 3: Detailed Process Flow Diagram
Sheet 4: Notes and Electrical Loads

Proprietary Information: All information in this document is proprietary. Algenol Biofuels requests all information in this document not be released to persons outside the Government, except for the purposes of review and evaluation.

Process Flow Diagram Step 1

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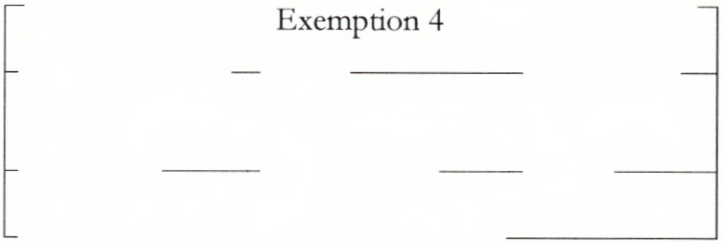

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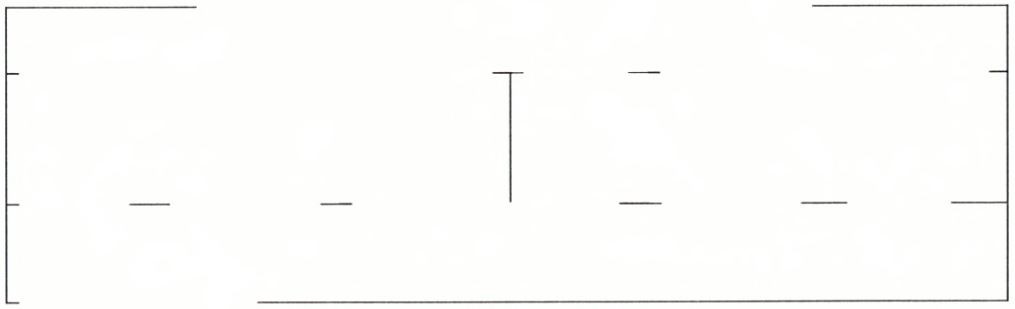

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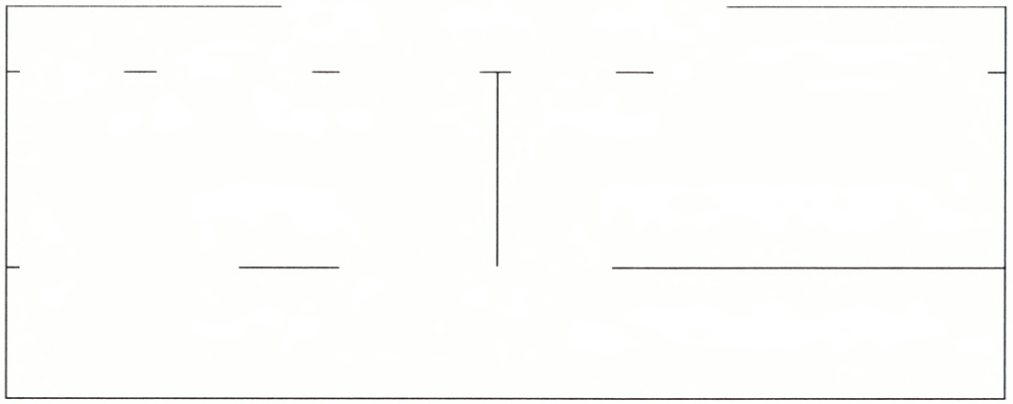
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