

# EXHIBIT A

**ASSISTANCE AGREEMENT**

1. Award No. DE-FE0001882		2. Modification No. 017	3. Effective Date 02/01/2013	4. CFDA No. 81.130	
5. Awarded To FutureGen Industrial Alliance, Inc Attn: Ken Humphres 1101 PENNSYLVANIA AVENUE NW 6TH FLOOR STE 6613 WASHINGTON DC 200042514			6. Sponsoring Office Office of Fossil Energy		7. Period of Performance 10/01/2010 through 12/31/2020
8. Type of Agreement <input type="checkbox"/> Grant <input checked="" type="checkbox"/> Cooperative Agreement <input type="checkbox"/> Other		9. Authority See Page 2 for Full Authority		10. Purchase Request or Funding Document No. 13FE001652	
11. Remittance Address FutureGen Industrial Alliance, Inc Attn: Ken Humphres 1101 PENNSYLVANIA AVENUE NW 6TH FLOOR STE 6613 WASHINGTON DC 200042514		12. Total Amount Govt. Share: \$458,604,112.00  Cost Share : \$114,651,029.00  Total : \$573,255,141.00		13. Funds Obligated This action: \$0.00  Total : \$458,604,112.00	
14. Principal Investigator Ken Humphreys Phone: 509-521-7784		15. Program Manager Jeffrey W. Hoffmann Phone: 412-386-5134		16. Administrator U.S. DOE/NETL Pittsburgh Campus 626 Cochrans Mill Road PO Box 10940 Attn: Brittley Robbins Pittsburgh PA 15236-0940	
17. Submit Payment Requests To OR for NETL (Pittsburgh) U.S. Department of Energy Oak Ridge Financial Service Center P.O. Box 4967 Oak Ridge TN 37831		18. Paying Office OR for NETL (Pittsburgh) U.S. Department of Energy Oak Ridge Financial Service Center P.O. Box 4967 Oak Ridge TN 37831		19. Submit Reports To	
20. Accounting and Appropriation Data See Schedule					
21. Research Title and/or Description of Project RECOVERY ACT: FUTUREGEN 2.0: PIPELINE AND REGIONAL CARBON CAPTURE STORAGE RESERVOIR PROJECT					
For the Recipient			For the United States of America		
22. Signature of Person Authorized to Sign			25. Signature of Grants/Agreements Officer  Signature on File		
23. Name and Title		24. Date Signed	26. Name of Officer Keith R. Miles		27. Date Signed 02/01/2013

**CONTINUATION SHEET**

REFERENCE NO. OF DOCUMENT BEING CONTINUED  
DE-FE0001882/017

PAGE OF  
2 | 2

NAME OF OFFEROR OR CONTRACTOR  
FutureGen Industrial Alliance, Inc

ITEM NO. (A)	SUPPLIES/SERVICES (B)	QUANTITY (C)	UNIT (D)	UNIT PRICE (E)	AMOUNT (F)
	<p>DUNS Number: 603703799</p> <p>-----</p> <p>Continued from Block 9, Authority: PL 95-91 DOE Organization Act, PL 111-5 American Recovery and Reinvestment Act of 2009 and PL 109-58 Energy Policy Act 2005</p> <p>-----</p> <p>See attached Terms and Conditions plus Attachments 1 through 6.</p> <p>-----</p> <p>POINTS OF CONTACT</p> <p>DOE Award Administrator/Contract Specialist Brittley K. Robbins Phone: 412-386-5430 E-Mail: Brittley.Robbins@netl.doe.gov</p> <p>DOE Program Manager/Project Officer Jeffrey Hoffmann Phone: 412-386-5134 E-Mail: Jeffrey.Hoffmann@NETL.DOE.GOV</p> <p>FGIA Business Officer Frans Klinkenbergh Phone: 202-742-6762 E-Mail: FKlinkenbergh@futgen.org</p> <p>FGIA Project Manager Ken Humphreys Phone: 509-521-7784 E-Mail: humphreysk@futgen.org</p> <p>-----</p> <p>ASAP: NO: STD IMMEDIATE Extent Competed: NOT COMPETED Davis-Bacon Act: YES PI: Ken K. Humphreys</p>				

**Background:** On September 29, 2010, DOE awarded approximately \$1 billion in funding appropriated by the American Recovery and Reinvestment Act (ARRA) to the two projects that constitute the FutureGen 2.0 program: (1) Ameren Energy Resource's (Ameren) repowering of one of its electrical generating units at its Meredosia Energy Center using oxy-combustion combined with CO<sub>2</sub> capture (the power plant project) under Cooperative Agreement DE-FE0005054); and (2) the FutureGen Industrial Alliance's (Alliance) CO<sub>2</sub> transportation and injection project, consisting of a pipeline and a facility to inject CO<sub>2</sub> into a deep geologic formation (the sequestration project) under Cooperative Agreement DE-FE0001882).

In the summer of 2011, Ameren informed DOE of a projected \$363 million increase in the cost of the power plant project and that it would not continue the project beyond Phase I. The Alliance announced that it would negotiate with Ameren to purchase the facilities Ameren had intended to use for the power plant project and would request that DOE approve a novation of this Cooperative Agreement to the Alliance. In addition to seeking a novation, the Alliance requested (through the submission of Phase II Decision Point Applications (DPAs)) that the Department reduce the non-federal cost share to 1 percent for both projects until all of the ARRA funding was expended, and that DOE authorize the Alliance to take both projects into Phase II.<sup>1</sup>

The Office of Fossil Energy conducted in-depth reviews of the DPAs and the novation request that identified significant risks to the Alliance's ability to achieve financial close as a result of risks regarding schedule, capabilities, cost, and ability to obtain financing. These risks are set forth in greater detail in a memorandum from the Assistant Secretary of Fossil Energy dated January 30, 2013. On December 26, 2012, the Secretary directed the Office of Fossil Energy to begin negotiating with the Alliance on the conditions and requirements for novating this Cooperative Agreement and authorizing the Alliance to take both projects into Phase II. The conditions and requirements were to include, among other things,: (1) expanded federal rights in the data, designs and other intellectual property developed during Phase II (these expanded rights would be extinguished if the Alliance achieved financial close and took the program into Phase III); and (2) interim milestones and other safeguards that would allow DOE to suspend or terminate funding if the Alliance failed to make sufficient progress or schedule delays made it unlikely that the Alliance could prudently expend the ARRA funding before it expires on September 30, 2015. This amendment incorporates these conditions and requirements, as well as the changes resulting from DOE's conditional approval of the novation request and the decision to reduce the non-federal cost share.

**Description of Amendment 017:** DOE has conditionally approved the novation request and authorizes the Alliance to continue this project and take over the power project into Phase II subject to its satisfaction of a number of conditions by April 9, 2013. Accordingly, this reissued Cooperative Agreement:

1. Reduces the non-federal cost share to 1 percent until all federal funds obligated to the Cooperative Agreement from ARRA appropriations are expended.
2. Incorporates changes to the Statement of Project Objectives (SOPO) as well as changes to the project, schedule and budget proposed by the Alliance.
3. Imposes a number of conditions that the Alliance must satisfy in order for the Cooperative Agreement to extend beyond April 9, 2013.
4. Identifies the Recipient as "high-risk" pursuant to 10 CFR 600.114 and DOE's Guide to Financial Assistance Section 2.5.4.
5. Establishes interim milestones and other safeguards that allow DOE to suspend or terminate funding during Phase II if the Alliance failed to make sufficient progress or schedule delays made it unlikely that the Alliance could prudently expend the ARRA funding before it expires on September 30, 2015.
6. Aligns the terminology used for Phase descriptions to be consistent between both FG 2.0 projects and the SOPO.

The conditions DOE imposes in this reissued Cooperative Agreement include:

1. Limits the activities the Alliance can perform during the definitization process of Phase IIa.
2. The Alliance and its partner (Battelle) must provide DOE with expanded rights in intellectual property, data, and technical information developed during Phase II. The rights will be expanded relative to the terms included in cooperative agreements DE-FE0005054 and DE-FE0001882 as issued in 2010. The expanded rights will not extend to background intellectual property or intellectual property created prior to Phase II, and would terminate if the Alliance achieves financial close and takes the FutureGen 2.0 program

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<sup>1</sup> Ameren has agreed to continue providing assistance for permitting and maintenance of the power plant during Phase II.

into Phase III.

As of the effective date of this Amendment, the Cooperative Agreement is as follows:

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**TABLE OF CONTENTS**

<b>TERMS AND CONDITIONS.....</b>	<b>5</b>
1. <b>RESOLUTION OF CONFLICTING CONDITIONS.....</b>	<b>5</b>
2. <b>AWARD AGREEMENT TERMS AND CONDITIONS.....</b>	<b>5</b>
3. <b>AWARD PROJECT PERIOD AND PHASES/SUBPHASES.....</b>	<b>5</b>
4. <b>PAYMENT PROCEDURES - REIMBURSEMENT THROUGH THE AUTOMATED CLEARING HOUSE (ACH) VENDER INQUIRY PAYMENT ELECTRONIC REPORTING SYSTEM (VIPERS).....</b>	<b>5</b>
5. <b>COST SHARING.....</b>	<b>6</b>
6. <b>REBUDGETING AND RECOVERY OF INDIRECT COSTS - REIMBURSABLE INDIRECT COSTS AND FRINGE BENEFITS.....</b>	<b>7</b>
7. <b>USE OF PROGRAM INCOME - COST SHARING.....</b>	<b>7</b>
8. <b>STATEMENT OF FEDERAL STEWARDSHIP.....</b>	<b>7</b>
9. <b>STATEMENT OF SUBSTANTIAL INVOLVEMENT.....</b>	<b>7</b>
10. <b>SITE VISITS.....</b>	<b>10</b>
11. <b>REPORTING REQUIREMENTS.....</b>	<b>10</b>
12. <b>PUBLICATIONS.....</b>	<b>10</b>
13. <b>FEDERAL, STATE, AND MUNICIPAL REQUIREMENTS.....</b>	<b>11</b>
14. <b>INTELLECTUAL PROPERTY PROVISIONS AND CONTACT INFORMATION.....</b>	<b>11</b>
15. <b>NATIONAL SECURITY: CLASSIFIABLE RESULTS ORIGINATING UNDER AN AWARD.....</b>	<b>11</b>
16. <b>LOBBYING RESTRICTIONS.....</b>	<b>12</b>
17. <b>NOTICE REGARDING THE PURCHASE OF AMERICAN-MADE EQUIPMENT AND PRODUCTS -- SENSE OF CONGRESS.....</b>	<b>12</b>
18. <b>FUNDING OF PHASES.....</b>	<b>12</b>
19. <b>INSOLVENCY, BANKRUPTCY OR RECEIVERSHIP.....</b>	<b>12</b>
20. <b>NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REQUIREMENTS.....</b>	<b>13</b>
21. <b>SPECIAL PROVISIONS RELATING TO WORK FUNDED UNDER AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (Mar 2009).....</b>	<b>13</b>
22. <b>REPORTING AND REGISTRATION REQUIREMENTS UNDER SECTION 1512 OF THE RECOVERY ACT.....</b>	<b>16</b>
23. <b>REQUIRED USE OF AMERICAN IRON, STEEL, AND MANUFACTURED GOODS (COVERED UNDER INTERNATIONAL AGREEMENTS)--SECTION 1605 OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009.....</b>	<b>17</b>
24. <b>WAGE RATE REQUIREMENTS UNDER SECTION 1606 OF THE RECOVERY ACT.....</b>	<b>19</b>
25. <b>RECOVERY ACT TRANSACTIONS LISTED IN SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS AND RECIPIENT RESPONSIBILITIES FOR INFORMING SUBRECIPIENTS.....</b>	<b>20</b>
26. <b>DAVIS BACON ACT AND CONTRACT WORK HOURS AND SAFETY STANDARDS ACT.....</b>	<b>20</b>
27. <b>RECIPIENT FUNCTIONS.....</b>	<b>26</b>
28. <b>FINAL INCURRED COST AUDIT.....</b>	<b>26</b>
29. <b>FURTHER ASSURANCES.....</b>	<b>26</b>
30. <b>SUBRECIPIENT/SUBCONTRACT APPROVALS.....</b>	<b>27</b>
31. <b>INDEMNITY.....</b>	<b>28</b>
32. <b>COMMUNICATION PLANS.....</b>	<b>28</b>
33. <b>POST-COMPLETION REVIEW.....</b>	<b>29</b>
34. <b>DECISION POINTS AND COORDINATION OF DOE DECISIONS REGARDING FUTUREGEN 2.0 29</b>	
35. <b>COST OVERRUN.....</b>	<b>30</b>
36. <b>PRIMAVERA.....</b>	<b>30</b>
37. <b>WORK BREAKDOWN STRUCTURE.....</b>	<b>31</b>
38. <b>INTERIM INCURRED COST AUDITS.....</b>	<b>31</b>
39. <b>LIMITATION ON DOE FUNDING.....</b>	<b>31</b>
40. <b>APPROVED RECIPIENT MEMBER LABOR RATES.....</b>	<b>31</b>
41. <b>EMPLOYEE COMPENSATION/FIXED BILLING RATES.....</b>	<b>31</b>
42. <b>NOTICE OF HIGH RISK STATUS – DOE’S INCREASED LEVEL OF OVERSIGHT AND DUE DILIGENCE.....</b>	<b>32</b>
43. <b>CONDITIONS ON AWARD/DEFINITIZATION OF PHASE II.....</b>	<b>32</b>
A. <b>APPROVED PHASE II PERFORMANCE ACTIVITIES.....</b>	<b>33</b>
B. <b>TOTAL ESTIMATED PROJECT COSTS/PAYMENT OF COSTS.....</b>	<b>33</b>

**C. STATEMENT OF PROJECT OBJECTIVES/SCHEDULE .....33**  
**D. ADVANCE UNDERSTANDING ON INTELLECTUAL PROPERTY .....34**  
**E. HIRING OF KEY PERSONNEL .....34**  
**F. DEFINITIZATION ELEMENTS AND PERIOD.....34**

## TERMS AND CONDITIONS

The Terms and Conditions contained herein are also referred to individually and collectively as “Articles”.

### 1. RESOLUTION OF CONFLICTING CONDITIONS

Any apparent inconsistency between Federal statutes and regulations and the terms and conditions contained in this award must be referred to the DOE Award Administrator for guidance.

### 2. AWARD AGREEMENT TERMS AND CONDITIONS

This award/agreement consists of the Assistance Agreement cover page, plus the following:

- a. Terms and Conditions.
- b. Attachments:

Attachment No.	Title
1	Intellectual Property Provisions
2	Statement of Project Objectives
3	Federal Assistance Reporting Checklist
4	Budget Pages
5	Department of Labor Wage Determination (reserved)
6	Cooperation and Technology Agreement (reserved)

- c. Applicable program regulations: None.
- d. DOE Assistance Regulations, 10 CFR 600 at <http://www.eCFR.gov>.
- e. If the award is for research and to a university or non-profit, the Research Terms & Conditions and the DOE Agency Specific Requirements at <http://www.nsf.gov/bfa/dias/policy/rtc/index.jsp>.
- f. Application/proposal as approved by DOE.
- g. National Policy Assurances to Be Incorporated as Award Terms in effect on date of award at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

### 3. AWARD PROJECT PERIOD AND PHASES/SUBPHASES

The Project Period for this award is 10/1/2010 through 12/31/2022 consisting of the following Phases.

	Start Date	End Date
Phase I – Project Definition	10/1/2010	02/04/2013
Phase II – National Environmental Policy Act (NEPA), Permitting, and Design	02/05/2013	06/15/2014
Subphase IIa	04/10/2013	04/09/2013
Subphase IIb	09/17/2013	09/16/2013
Subphase IIc	12/17/2013	12/16/2013
Subphase IId	04/01/2014	03/31/2014
Subphase Iie		06/16/2014
Phase III – Construction and Commissioning	06/16/2014	09/29/2017
Phase IV – Operations	09/30/2017	12/31/2022

### 4. PAYMENT PROCEDURES - REIMBURSEMENT THROUGH THE AUTOMATED CLEARING HOUSE (ACH) VENDER INQUIRY PAYMENT ELECTRONIC REPORTING SYSTEM (VIPERS)

- a. Method of Payment. Payment will be made by reimbursement through ACH.
- b. Requesting Reimbursement. Requests for reimbursements must be made electronically through Department of Energy's Oak Ridge Financial Service Center (ORFSC) VIPERS. To access and use VIPERS, you must enroll at <https://finweb.oro.doe.gov/vipers.htm>. Detailed instructions on how to enroll are provided on the web site.

For non-construction awards, you must submit a Standard Form (SF) 270, "Request for Advance or Reimbursement" at <https://finweb.oro.doe.gov/vipers.htm> and attach a file containing appropriate supporting documentation. The file attachment must show the total federal share claimed on the SF 270, the non-federal share claimed for the billing

period if cost sharing is required, and cumulative expenditures to date (both Federal and non-Federal) for each of the following categories: salaries/wages and fringe benefits; equipment; travel; Recipient/training support costs, if any; other direct costs, including subawards/contracts; and indirect costs. For construction awards, you must submit a SF 271, "Outlay Report and Request for Reimbursement for Construction Programs," through VIPERS.

c. Timing of submittals. Submittal of the SF 270 or SF 271 should coincide with your normal billing pattern, but not more frequently than every two weeks. Requests for reimbursement shall be made in accordance with the instructions contained on the SF 270 or SF 271.

d. Adjusting payment requests for available cash. You must disburse any funds that are available from repayments to and interest earned on a revolving fund, program income, rebates, refunds, contract settlements, audit recoveries, credits, discounts, and interest earned on any of those funds before requesting additional cash payments from DOE.

e. Payments. The DOE approving official will approve the invoice as soon as practicable but not later than 30 days after your request is received, unless the billing is improper. Upon receipt of an invoice payment authorization from the DOE approving official, the ORFSC will disburse payment to you. You may check the status of your payments at the VIPERS web site. All payments are made by electronic funds transfer to the bank account identified on the ACH Vendor/Miscellaneous Payment Enrollment Form (SF 3881) that you filed.

**5. COST SHARING**

All costs will be shared between DOE and the Recipient on an “as-expended”, dollar-for-dollar basis. In order to be recognized as allowable cost sharing, a cost must be otherwise allowable in accordance with the applicable Federal cost principles and DOE Regulations (10CFR600.123; 600.224; or 600.313) governing cost sharing. Cost sharing may be in various forms or combinations, which includes but is not limited to cash outlays and in-kind contributions. All allowable Project costs, whether cash or in-kind, shall be shared by DOE when such costs are incurred by applying the share ratios set forth in the Cooperative Agreement. The value of in-kind contributions not requiring cash outlays (e.g., existing assets) shall be pro-rated over the life of the Project, beginning when the in-kind contribution is initially required for performance of the Cooperative Agreement.

a. Total Estimated Project Cost is the sum of the Government share and Recipient share of the estimated Project costs. The Recipient's cost share must come from non-Federal sources unless otherwise allowed by law. By accepting federal funds under this award, you agree that you are liable for your percentage share of total allowable Project costs, on a per Phase, “as expended”, dollar-for-dollar basis, even if the Project is terminated early or is not funded to its completion. This cost is shared as follows:

Phase No.	Government Share		Recipient Share		Total
	\$	%	\$	%	
I	\$32,925,004	99.0%	\$332,576	1.0%	\$33,257,580
II*	\$27,557,692	99.0%	\$278,361	1.0%	\$27,836,053
II a	\$3,334,143	99.0%	\$33,679	1.0%	\$3,367,822
II b	TBD		TBD		TBD
II c	TBD		TBD		TBD
II d	TBD		TBD		TBD
II e	TBD		TBD		TBD
III**	\$374,496,424	99.0%	\$3,782,792	1.0%	\$378,279,216
IV**	\$23,624,992	17.6%	\$110,257,300	82.4%	\$133,882,292
<b>Total Project</b>	<b>\$458,604,112</b>	<b>80.0%</b>	<b>\$114,651,029</b>	<b>20.0%</b>	<b>\$573,255,141</b>
<b>ARRA</b>	\$404,985,000				
<b>Prior Appropriations</b>	\$53,619,112				

\*Cost for Phase II is subject to the definitization process specified in the Article “Conditions on Award”

\*\*Costs for Phases III and IV are subject to review during the Decision Point Application process.

b. If you discover that you may be unable to provide cost sharing of at least the amount identified in paragraph a of this Article, you should immediately provide written notification to the DOE Award Administrator

indicating whether you will continue or phase out the Project. If you plan to continue the Project, the notification must describe how replacement cost sharing will be secured.

c. You must maintain records of all Project costs that you claim as cost sharing, including in-kind costs, as well as records of costs to be paid by DOE. Such records are subject to audit.

d. Failure to provide the cost sharing required by this Article may result in the subsequent recovery by DOE of some or all the funds provided under the award.

e. Recipient acknowledges that the Government has agreed to reduce current non-federal cost share of Phases I, II, III to 1 percent. Beginning in Phase IV, the Recipient will cost share at 82.4%. The Recipient shall achieve an overall 20 percent non-federal cost share over the life of the project (Phase 1 through Phase 4). After DOE funds in the amount of \$458,604,112 have been disbursed to the Recipient, DOE has no further obligation to provide additional funding.

f. DOE intends to authorize carryover funding for the Recipient pending Recipient's demonstrated need of additional funding for completion of the Project.

## **6. REBUDGETING AND RECOVERY OF INDIRECT COSTS - REIMBURSABLE INDIRECT COSTS AND FRINGE BENEFITS**

a. If actual allowable indirect costs are less than those budgeted and funded under the award, you may use the difference to pay additional allowable direct costs during the Project period. If at the completion of the award the Government's share of total allowable costs (i.e., direct and indirect), is less than the total costs reimbursed, you must refund the difference.

b. Recipients are expected to manage their indirect costs. DOE will not amend an award solely to provide additional funds for changes in indirect cost rates. DOE recognizes that the inability to obtain full reimbursement for indirect costs means the recipient must absorb the underrecovery. Such underrecovery may be allocated as part of the organization's required cost sharing.

## **7. USE OF PROGRAM INCOME - COST SHARING**

If you earn program income during the Project period as a result of this award, you may use the program income to meet your cost sharing requirement.

## **8. STATEMENT OF FEDERAL STEWARDSHIP**

In light of the substantial federal cost share and the significant risks resulting from Ameren's decision not to proceed with this Project, DOE will exercise heightened Federal stewardship in overseeing the Project activities performed under this award. Stewardship activities include, but are not limited to, conducting site visits; reviewing performance and financial reports; providing technical assistance and/or temporary intervention in unusual circumstances to correct deficiencies which develop during the Project; participating in meetings with regulatory agencies and others, assuring compliance with terms and conditions; and reviewing technical performance after Project completion to ensure that the award objectives have been accomplished.

## **9. STATEMENT OF SUBSTANTIAL INVOLVEMENT**

In light of the substantial federal cost share and the significant risks resulting from Ameren's decision not to proceed with this Project, substantial involvement will be necessary between DOE and the Recipient during performance of this Cooperative Agreement. Pursuant to 10 CFR 600.5(b)&(d), DOE will share responsibility for the management, control, and direction of the Project, and has the right to intervene in the conduct and performance of project activities for programmatic reasons. DOE and Recipient will collaborate and share responsibility for the management of the Project as further described in this section.

## **RECIPIENT'S RESPONSIBILITIES.**

The Recipient shall be responsible for all aspects of Project performance as set forth in this Cooperative Agreement

and the Statement of Project Objectives contained herein. The Recipient Principal Investigator shall serve as the Recipient's authorized representative for the technical elements of all work to be performed under this Cooperative Agreement. The Recipient Business Officer shall serve as the Recipient's authorized representative for administrative elements dealing with the Cooperative Agreement. Specific examples of the Recipient's responsibilities include:

- Performing the activities delineated in this Cooperative Agreement and associated Statement of Project Objectives in accordance with the Project Management Plan, including providing the required personnel, facilities, equipment, supplies and services.
- Satisfactory performance and periodic status reporting of the activities in the SOPO. Phase II will be conducted as five (5) Subphases, each with a set of accomplishments<sup>2</sup> that the Recipient must achieve by the dates specified below. Once the Recipient has reported to DOE that the critical accomplishments for a Subphase have been accomplished on or before the dates specified below, it is authorized to proceed into the next Subphase.

**Subphase IIa – February 1, 2013-April 9, 2013**

- Successful satisfaction of the Conditions on Award specified within this Cooperative Agreement.

**Subphase IIb – April 10, 2013-September 16, 2013**

- Submission to DOE of Power Purchase Agreements signed by Ameren Illinois and ComEd
- Submission of CO<sub>2</sub> injection permit application to U.S. EPA
- Submission of pipeline permit application to Illinois Commerce Commission

**Subphase IIc – September 17, 2013-December 16, 2013**

- Completion of Front End Engineering Design (FEED) and submission to DOE
- Control of surface and subsurface rights required for 20-year CO<sub>2</sub> storage

**Subphase II d – December 17, 2013-March 31, 2014**

- Submission to DOE of a definitive estimate of Project cost
- Issuance of a CO<sub>2</sub> injection permit by U.S. EPA
- Issuance of a final pipeline permit by Illinois Commerce Commission
- Issuance of non-appealable air and water permits
- Execution of Engineering Procurement and Construction (EPC), Operating & Management (O&M), and commodity contracts

**Subphase IIe – April 1, 2014-June 16, 2014**

- Achieve Financial Close
- Performing the activities delineated in this Cooperative Agreement and SOPO in accordance with the Project Management Plan, including providing the required personnel, facilities, equipment, supplies and services.
- Managing and controlling Project activities in accordance with established processes and procedures to ensure tasks and subtasks are completed within the schedule and budget constraints defined by the current Project Management Plan.
- Notifying the DOE Project Officer and Contracting Officer in a timely manner of issues that arise during the course of the Project that jeopardize the technical, schedule or budget objectives.
- Implementing an approach to identify, analyze and respond to Project risks that is commensurate with the complexity of the Project.
- Defining and revising technical and managerial approaches and plans, (i.e. Test Plans) submitting the plans to DOE for review and concurrence, and incorporating DOE comments.

<sup>2</sup> It is understood that the Phase II Subphase accomplishments may be a responsibility of the other FutureGen 2.0 Cooperative Agreement (DE-FE0005054).

- Coordinating Project activities with external organizations, including subrecipients, subcontractors, and consultants to ensure effective integration of all work elements.
- Attending annual program review meetings and reporting Project status.
- Submitting technical reports and incorporating DOE comments.
- Reporting per ARRA requirements as defined in paragraph d. of the Article entitled “REPORTING AND REGISTRATION REQUIREMENTS UNDER SECTION 1512 OF THE RECOVERY ACT”.
- Presenting the Project results at appropriate technical conferences or meetings as approved by the DOE Project Officer.
- Facilitating DOE inspection and/or evaluation of Project work on the premises of the Recipient or subrecipient, at all reasonable times and in a manner that will not unduly delay the work. The Recipient shall furnish and shall require subrecipients to furnish all reasonable facilities and assistance for the safe, efficient and convenient performance of these duties.
- Whenever the costs at the sub-subtask level (Level 5) are anticipated to deviate by more than \$50,000 from the budgeted costs, the Recipient shall notify DOE prior to incurring such costs. The Recipient shall involve DOE in the decision making process prior to incurring such costs. Additionally, the Recipient shall provide an explanation for this variance between the actual and budgeted costs.
- Assisting DOE with completion of the NEPA process in a timely manner by participating in the NEPA planning efforts, participating in the public participation activities under NEPA, providing Project planning and design information and analyses to support environmental impact evaluations, and assisting in gathering information for inclusion in the Environmental Impact Statement (EIS).
- Notifying DOE of important meetings, proceedings, and other events as soon as possible so that DOE can decide whether to participate.

#### **DOE RESPONSIBILITIES**

DOE shall monitor the Recipient’s progress in performing the Project and shall have a substantial involvement in the management, control and direction of the Project. Specific examples of DOE responsibilities include:

- Confirm that the Recipient has achieved the specified Subphase accomplishments. In the event that the Recipient fails to achieve any Subphase accomplishment DOE will notify the Recipient and take appropriate action (which may include, among other things, including suspension and/or termination).
- Collaborating with the Recipient on Project plans to include project management, test, and technology transfer plans and making recommendation for alternate approaches if the plans do not address critical programmatic issues.
- Collaborating with the Recipient regarding technical progress and recommending alternate approaches or shifting work emphasis, if needed, to adequately address critical Project and programmatic issues.
- Conducting semiannual program review meetings to evaluate progress with respect to Project and program objectives.
- Participating in project management planning activities, including risk analysis, to ensure DOE’s program requirements or limitations are considered in performance of the work elements.
- Promoting and facilitating technology transfer activities, including disseminating Project results through presentations and publications.
- Serving as scientific/technical liaison between awardees and other program or industry staff.

- At DOE's discretion, physically inspecting and evaluating the work performed or being performed under the Cooperative Agreement, including associated documentation, and the premises where the work is being performed.
- Conducting and completing the NEPA process for the FutureGen 2.0 program.
- Reviewing and assessing performance to ensure that adequate progress is made within the current Phase of both FutureGen 2.0 Projects before deciding whether to authorize work on the next Phase pursuant to the terms and conditions in this Cooperative Agreement.
- Serving as an ex-officio member of all FutureGen Alliance technical committees and subcommittees funded as a direct cost under this agreement.

## 10. SITE VISITS

DOE's authorized representatives have the right to make site visits at reasonable times to review Project accomplishments and management control systems and to provide technical assistance, if required. You must provide, and must require your subawardees to provide, reasonable access to facilities, office space, resources, and assistance for the safety and convenience of the government representatives in the performance of their duties. All site visits and evaluations must be performed in a manner that does not unduly interfere with or delay the work.

## 11. REPORTING REQUIREMENTS

- a. Requirements. The reporting requirements for this award are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to this award. Failure to comply with these reporting requirements is considered a material noncompliance with the terms of the award. Noncompliance may result in withholding of future payments, suspension, or termination of the current award, and withholding of future awards. A willful failure to perform, a history of failure to perform, or unsatisfactory performance of this and/or other financial assistance awards, may also result in a debarment action to preclude future awards by Federal agencies.
- b. Dissemination of scientific/technical reports. Scientific/technical reports submitted under this award will be disseminated on the Internet via the DOE Information Bridge ([www.osti.gov/bridge](http://www.osti.gov/bridge)), unless the report contains patentable material, protected data, or SBIR/STTR data. Citations for journal Articles produced under the award will appear on the DOE Energy Citations Database ([www.osti.gov/energycitations](http://www.osti.gov/energycitations)).
- c. Restrictions. Reports submitted to the DOE Information Bridge must not contain any Protected Personal Identifiable Information (PII), limited rights data (proprietary data), classified information, information subject to export control classification, or other information not subject to release.

## 12. PUBLICATIONS

- a. You are encouraged to publish or otherwise make publicly available the results of the work conducted under the award.
- b. An acknowledgment of Federal support and a disclaimer must appear in the publication of any material, whether copyrighted or not, based on or developed under this Project, as follows:

Acknowledgment: "This material is based upon work supported by the Department of Energy Office of Fossil Energy under Award Number DE-FE0001882."

Disclaimer: "This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed

herein do not necessarily state or reflect those of the United States Government or any agency thereof."

### **13. FEDERAL, STATE, AND MUNICIPAL REQUIREMENTS**

You must obtain any required permits and comply with applicable federal, state, and municipal laws, codes, and regulations for work performed under this award.

### **14. INTELLECTUAL PROPERTY PROVISIONS AND CONTACT INFORMATION**

a. The intellectual property provisions applicable to this award are provided as an attachment to this award or are referenced on the Agreement Face Page. A list of all intellectual property provisions may be found at <http://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

b. Questions regarding intellectual property matters should be referred to the DOE Award Administrator and the Patent Counsel designated as the service provider for the DOE office that issued the award. The IP Service Providers List is found at <http://energy.gov/gc/downloads/intellectual-property-ip-service-providers-acquisition-and-assistance-transactions>.

c. The Recipient acknowledges and agrees that as part of the definitization of this Cooperative Agreement, the Recipient, its sub-recipients, and other partners will be required to provide DOE with expanded rights in the intellectual property developed under this Agreement that are acceptable to DOE. The expanded rights would be extinguished should the Recipient achieve financial close and take the Project into Phase III.

### **15. NATIONAL SECURITY: CLASSIFIABLE RESULTS ORIGINATING UNDER AN AWARD**

a. This award is intended for unclassified, publicly releasable research. You will not be granted access to classified information. DOE does not expect that the results of the research Project will involve classified information. Under certain circumstances, however, a classification review of information originated under the award may be required. The Department may review research work generated under this award at any time to determine if it requires classification.

b. Executive Order 12958 (60 Fed. Reg. 19,825 (1995)) states that basic scientific research information not clearly related to the national security shall not be classified. Nevertheless, some information concerning (among other things) scientific, technological, or economic matters relating to national security or cryptology may require classification. If you originate information during the course of this award that you believe requires classification, you must promptly:

1. Notify the DOE Project Officer and the DOE Award Administrator;

2. Submit the information by registered mail directly to the Director, Office of Classification and Information Control, SO-10.2; U.S. Department of Energy; P.O. Box A; Germantown, MD 20875-0963, for classification review.

3. Restrict access to the information to the maximum extent possible until you are informed that the information is not classified, but no longer than 30 days after receipt by the Director, Office of Classification and Information Control.

c. If you originate information concerning the production or utilization of special nuclear material (i.e., plutonium, uranium enriched in the isotope 233 or 235, and any other material so determined under section 51 of the Atomic Energy Act) or nuclear energy, you must:

1. Notify the DOE Project Officer and the DOE Award Administrator;

2. Submit the information by registered mail directly to the Director, Office of Classification and Information Control, SO-10.2; U.S. Department of Energy; P. O. Box A; Germantown, MD 20875-0963 for classification review within 180 days of the date the recipient first discovers or first has reason to believe that the information is useful in such production or utilization; and

3. Restrict access to the information to the maximum extent possible until you are informed that the information is not classified, but no longer than 90 days after receipt by the Director, Office of Classification and Information Control.

d. If DOE determines any of the information requires classification, you agree that the Government may terminate the award by mutual agreement in accordance with 10 CFR 600.25(d). All material deemed to be classified must be forwarded to the DOE, in a manner specified by DOE.

e. If DOE does not respond within the specified time periods, you are under no further obligation to restrict access to the information.

## **16. LOBBYING RESTRICTIONS**

By accepting funds under this award, you agree that none of the funds obligated on the award shall be expended, directly or indirectly, to influence officials of any government on any legislation, law, ratification, policy or appropriation matters pending before such officials, other than to communicate with such officials as described in 18 U.S.C. 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

## **17. NOTICE REGARDING THE PURCHASE OF AMERICAN-MADE EQUIPMENT AND PRODUCTS -- SENSE OF CONGRESS**

It is the sense of the Congress that, to the greatest extent practicable, all equipment and products purchased with funds made available under this award should be American-made.

## **18. FUNDING OF PHASES**

DOE has obligated \$458,604,113 for completion of the Project funded by this Cooperative Agreement; however, only \$60,482,696 is available for work performed by the Recipient during Phases I and II of the Project. For Phases III through IV, the remainder (\$398,121,416) would be available contingent upon (1) availability of funds appropriated by Congress for the purpose of this program; (2) the availability of future-year budget authority; (3) satisfactory and timely completion of the tasks required; (4) submittal of required reports; (5) compliance with the terms and conditions of the award; (6) the submission by the Recipient of a complete and acceptable Decision Point Application; and (7) written approval of the Decision Point Application by the DOE Contracting Officer.

In the event that the Recipient does not submit a continuation application for subsequent Phases or DOE disapproves a Decision Point Application for subsequent Phases, the maximum DOE liability to the Recipient is the funds that are available for the current approved Phase(s). In such event, DOE reserves the right to deobligate any remaining funds.

## **19. INSOLVENCY, BANKRUPTCY OR RECEIVERSHIP**

a. You shall immediately notify the DOE of the occurrence of any of the following events: (i) you or your parent's filing of a voluntary case seeking liquidation or reorganization under the Bankruptcy Act; (ii) your consent to the institution of an involuntary case under the Bankruptcy Act against you or your parent; (iii) the filing of any similar proceeding for or against you or your parent, or its consent to, the dissolution, winding-up or readjustment of your debts, appointment of a receiver, conservator, trustee, or other officer with similar powers over you, under any other applicable state or federal law; or (iv) your insolvency due to your inability to pay your debts generally as they become due.

b. Such notification shall be in writing and shall: (i) specifically set out the details of the occurrence of an event referenced in paragraph a; (ii) provide the facts surrounding that event; and (iii) provide the impact such event will have on the Project being funded by this award.

c. Upon the occurrence of any of the four events described in the first paragraph, DOE reserves the right to conduct a review of your award to determine your compliance with the required elements of the award (including such items as cost share, progress towards technical Project objectives, and submission of required reports). If the DOE review determines that there are significant deficiencies or concerns with your performance under the award, DOE reserves the right to impose additional requirements, as needed, including (i) change your payment method; or (ii) institute

payment controls.

d. Failure of the Recipient to comply with this provision may be considered a material noncompliance of this financial assistance award by the Contracting Officer.

## **20. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) REQUIREMENTS**

Recipient is restricted from taking any action using Federal funds that would have an adverse effect on the environment or limit the choice of reasonable alternatives prior to DOE issuing a Record of Decision (ROD). Prohibited actions include, but are not limited to, demolition/decontamination of existing buildings, site preparation/clearing, ground breaking, excavation/construction, and detailed design. This restriction also prohibits the purchasing of any long lead-time equipment using federal funds until a ROD is issued. However, activities necessary to perform site characterization/sampling/monitoring; preparation of conceptual design data/analysis/documentation to include Project planning assistance/training, may be performed before a ROD is issued.

Prior to the issuance of a ROD, DOE agrees to discuss with the Recipient any proposed conditions and requirements that may be included in it (or in a mitigation action plan (MAP) issued pursuant to a ROD) if DOE decides to proceed with its proposed action. However, DOE retains sole discretion on whether to issue a ROD and what conditions and requirements to include in it or in a MAP if one is issued.

If DOE decides to proceed with its proposed action subject to conditions, limitations, mitigation requirements, or monitoring requirements specified in a ROD, MAP, or both, the Recipient agrees to:

- a) abide by the conditions, limitations, mitigation requirements, and monitoring requirements specified in the ROD or MAP;
- b) negotiate changes to the Project schedule, costs, and/or scope as necessary to effect the requirements or conditions in the ROD or MAP;
- c) allow DOE's authorized representatives to visit the site and facilities upon notice to verify Project status and compliance to include conditions and requirements in the ROD or MAP; and
- d) submit data or otherwise meet specified reporting requirements that may be in the ROD or MAP.

If the Recipient finds the conditions and requirements to be unacceptable, the Recipient reserves the right to terminate the award in accordance with 10 CFR 600.161(a)(3), 244(b), 351(a)(3), as applicable.

DOE and the Recipient will coordinate the NEPA review of the FutureGen 2.0 program with the environmental review conducted under applicable Illinois statutes and regulations by appropriate Illinois agencies, including but not limited to the Illinois Environmental Protection Agency, the Illinois Department of Natural Resources, and the Illinois Historic Preservation Agency, in order to ensure an expedited and efficient federal and state review of potential environmental impacts.

## **21. SPECIAL PROVISIONS RELATING TO WORK FUNDED UNDER AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (Mar 2009)**

### Preamble

The American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, (Recovery Act) was enacted to preserve and create jobs and promote economic recovery, assist those most impacted by the recession, provide investments needed to increase economic efficiency by spurring technological advances in science and health, invest in transportation, environmental protection, and other infrastructure that will provide long-term economic benefits, stabilize State and local government budgets, in order to minimize and avoid reductions in essential services and counterproductive State and local tax increases. Recipients shall use grant funds in a manner that maximizes job creation and economic benefit.

The Recipient shall comply with all terms and conditions in the Recovery Act relating generally to governance, accountability, transparency, data collection and resources as specified in Act itself and as discussed below.

Recipients should begin planning activities for their first tier subrecipients, including obtaining a DUNS number (or updating the existing DUNS record), and registering with the Central Contractor Registration (CCR).

Be advised that Recovery Act funds can be used in conjunction with other funding as necessary to complete projects, but tracking and reporting must be separate to meet the reporting requirements of the Recovery Act and related guidance. For projects funded by sources other than the Recovery Act, Contractors must keep separate records for Recovery Act funds and to ensure those records comply with the requirements of the Act.

The Government has not fully developed the implementing instructions of the Recovery Act, particularly concerning specific procedural requirements for the new reporting requirements. The Recipient will be provided these details as they become available. The Recipient must comply with all requirements of the Act. If the recipient believes there is any inconsistency between ARRA requirements and current award terms and conditions, the issues will be referred to the Contracting Officer for reconciliation.

#### Definitions

For purposes of this clause, Covered Funds means funds expended or obligated from appropriations under the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5. Covered Funds will have special accounting codes and will be identified as Recovery Act funds in the grant, cooperative agreement or TIA and/or modification using Recovery Act funds. Covered Funds must be reimbursed by September 30, 2015.

Non-Federal employer means any employer with respect to covered funds – the contractor, subcontractor, grantee, or recipient, as the case may be, if the contractor, subcontractor, grantee, or recipient is an employer; and any professional membership organization, certification of other professional body, any agent or licensee of the Federal government, or any person acting directly or indirectly in the interest of an employer receiving covered funds; or with respect to covered funds received by a State or local government, the State or local government receiving the funds and any contractor or subcontractor receiving the funds and any contractor or subcontractor of the State or local government; and does not mean any department, agency, or other entity of the federal government.

Recipient means any entity that receives Recovery Act funds directly from the Federal government (including Recovery Act funds received through grant, loan, or contract) other than an individual and includes a State that receives Recovery Act Funds.

#### Special Provisions

##### A. Flow Down Requirement

Recipients must include these special terms and conditions in any subaward.

##### B. Segregation of Costs

Recipients must segregate the obligations and expenditures related to funding under the Recovery Act. Financial and accounting systems should be revised as necessary to segregate, track and maintain these funds apart and separate from other revenue streams. No part of the funds from the Recovery Act shall be commingled with any other funds or used for a purpose other than that of making payments for costs allowable for Recovery Act projects.

##### C. Prohibition on Use of Funds

None of the funds provided under this agreement derived from the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, may be used by any State or local government, or any private entity, for any casino or other gambling establishment, aquarium, zoo, golf course, or swimming pool.

##### D. Access to Records

With respect to each financial assistance agreement awarded utilizing at least some of the funds appropriated or

otherwise made available by the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, any representative of an appropriate inspector general appointed under section 3 or 8G of the Inspector General Act of 1988 (5 U.S.C. App.) or of the Comptroller General is authorized –

- (1) to examine any records of the contractor or grantee, any of its subcontractors or subgrantees, or any State or local agency administering such contract that pertain to, and involve transactions that relate to, the subcontract, subcontract, grant, or subgrant; and
- (2) to interview any officer or employee of the contractor, grantee, subgrantee, or agency regarding such transactions.

#### E. Publication

An application may contain technical data and other data, including trade secrets and/or privileged or confidential information, which the applicant does not want disclosed to the public or used by the Government for any purpose other than the application. To protect such data, the applicant should specifically identify each page including each line or paragraph thereof containing the data to be protected and mark the cover sheet of the application with the following Notice as well as referring to the Notice on each page to which the Notice applies:

##### Notice of Restriction on Disclosure and Use of Data

The data contained in pages ---- 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 here 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.

Information about this agreement will be published on the Internet and linked to the website [www.recovery.gov](http://www.recovery.gov), maintained by the Accountability and Transparency Board. The Board may exclude posting contractual or other information on the website on a case-by-case basis when necessary to protect national security or to protect information that is not subject to disclosure under sections 552 and 552a of title 5, United States Code.

#### F. Protecting State and Local Government and Contractor Whistleblowers.

The requirements of Section 1553 of the Act are summarized below. They include, but are not limited to:

**Prohibition on Reprisals:** An employee of any non-Federal employer receiving covered funds under the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, may not be discharged, demoted, or otherwise discriminated against as a reprisal for disclosing, including a disclosure made in the ordinary course of an employee's duties, to the Accountability and Transparency Board, an inspector general, the Comptroller General, a member of Congress, a State or Federal regulatory or law enforcement agency, a person with supervisory authority over the employee (or other person working for the employer who has the authority to investigate, discover or terminate misconduct), a court or grand jury, the head of a Federal agency, or their representatives information that the employee believes is evidence of:

- gross mis-management of an agency contract or grant relating to covered funds;
- a gross waste of covered funds;
- a substantial and specific danger to public health or safety related to the implementation or use of covered funds;
- an abuse of authority related to the implementation or use of covered funds; or
- as violation of law, rule, or regulation related to an agency contract (including the competition for or negotiation of a contract) or grant, awarded or issued relating to covered funds.

**Agency Action:** Not later than 30 days after receiving an inspector general report of an alleged reprisal, the head of the agency shall determine whether there is sufficient basis to conclude that the non-Federal employer has subjected the employee to a prohibited reprisal. The agency shall either issue an order denying relief in whole or in part or shall take one or more of the following actions:

- Order the employer to take affirmative action to abate the reprisal.
- Order the employer to reinstate the person to the position that the person held before the reprisal, together with compensation including back pay, compensatory damages, employment benefits, and other terms and conditions of employment that would apply to the person in that position if the reprisal had not been taken.

- Order the employer to pay the employee an amount equal to the aggregate amount of all costs and expenses (including attorneys' fees and expert witnesses' fees) that were reasonably incurred by the employee for or in connection with, bringing the complaint regarding the reprisal, as determined by the head of a court of competent jurisdiction.

Nonenforceability of Certain Provisions Waiving Rights and Remedies or Requiring Arbitration: Except as provided in a collective bargaining agreement, the rights and remedies provided to aggrieved employees by this section may not be waived by any agreement, policy, form, or condition of employment, including any predispute arbitration agreement. No predispute arbitration agreement shall be valid or enforceable if it requires arbitration of a dispute arising out of this section.

Requirement to Post Notice of Rights and Remedies: Any employer receiving covered funds under the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, shall post notice of the rights and remedies as required therein. (Refer to section 1553 of the American Recovery and Reinvestment Act of 2009, Pub. L. 111-5, [www.Recovery.gov](http://www.Recovery.gov), for specific requirements of this section and prescribed language for the notices.)

#### G. Reserved

#### H. False Claims Act

Recipient and sub-recipients shall promptly refer to the DOE or other appropriate Inspector General any credible evidence that a principal, employee, agent, contractor, sub-grantee, subcontractor or other person has submitted a false claim under the False Claims Act or has committed a criminal or civil violation of laws pertaining to fraud, conflict of interest, bribery, gratuity or similar misconduct involving those funds.

#### I. Information in Support of Recovery Act Reporting

Recipient may be required to submit backup documentation for expenditures of funds under the Recovery Act including such items as timecards and invoices. Recipient shall provide copies of backup documentation at the request of the Contracting Officer or designee.

#### J. Availability of Funds

Funds appropriated under the Recovery Act and obligated to this award are available for reimbursement of costs until September 30, 2015.

## **22. REPORTING AND REGISTRATION REQUIREMENTS UNDER SECTION 1512 OF THE RECOVERY ACT**

- (a) This award requires the recipient to complete projects or activities which are funded under the American Recovery and Reinvestment Act of 2009 (Recovery Act) and to report on use of Recovery Act funds provided through this award. Information from these reports will be made available to the public.
- (b) The reports are due no later than ten calendar days after each calendar quarter in which the recipient receives the assistance award funded in whole or in part by the Recovery Act.
- (c) Recipients and their first-tier recipients must maintain current registrations in the Central Contractor Registration (<http://www.ccr.gov>) at all times during which they have active federal awards funded with Recovery Act funds. A Dun and Bradstreet Data Universal Numbering System (DUNS) Number (<http://www.dnb.com>) is one of the requirements for registration in the Central Contractor Registration.
- (d) The recipient shall report the information described in section 1512(c) of the Recovery Act using the reporting instructions and data elements that will be provided online at <http://www.FederalReporting.gov> and ensure that any information that is pre-filled is corrected or updated as needed.

NOTE to clause entitled "REQUIRED USE OF AMERICAN IRON, STEEL, AND MANUFACTURED GOODS (COVERED UNDER INTERNATIONAL AGREEMENTS)—SECTION 1605 OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009": The Project funded under this DOE Cooperative Agreement

numbered DE-FE0005054 does not involve the construction, alteration, maintenance or repair of a “public building” or “public work” as defined within the following clause and at 2 CFR Section 176.140(a)(2); therefore, the requirements of Section 1605 of the American Recovery and Reinvestment Act of 2009 and the following clause do not apply. In the event the Project changes to involve such activities, the following clause will apply to the construction, alteration, maintenance or repair of the “public building” or “public work”.

**23. REQUIRED USE OF AMERICAN IRON, STEEL, AND MANUFACTURED GOODS (COVERED UNDER INTERNATIONAL AGREEMENTS)--SECTION 1605 OF THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009**

(a) Definitions. As used in this award term and condition--

*Designated country* —

(1) A World Trade Organization Government Procurement Agreement country (Aruba, Austria, Belgium, Bulgaria, Canada, Chinese Taipei (Taiwan), Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea (Republic of), Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Singapore, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom;

(2) A Free Trade Agreement (FTA) country (Australia, Bahrain, Canada, Chile, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Israel, Mexico, Morocco, Nicaragua, Oman, Peru, or Singapore);

(3) A United States-European Communities Exchange of Letters (May 15, 1995) country: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, and United Kingdom; or

(4) An Agreement between Canada and the United States of America on Government Procurement country (Canada).

*Designated country iron, steel, and/or manufactured goods* —

(1) Is wholly the growth, product, or manufacture of a designated country; or

(2) In the case of a manufactured good that consist in whole or in part of materials from another country, has been substantially transformed in a designated country into a new and different manufactured good distinct from the materials from which it was transformed.

*Domestic iron, steel, and/or manufactured good* —

(1) Is wholly the growth, product, or manufacture of the United States; or

(2) In the case of a manufactured good that consists in whole or in part of materials from another country, has been substantially transformed in the United States into a new and different manufactured good distinct from the materials from which it was transformed. There is no requirement with regard to the origin of components or subcomponents in manufactured goods or products, as long as the manufacture of the goods occurs in the United States.

*Foreign iron, steel, and/or manufactured good* means iron, steel and/or manufactured good that is not domestic or designated country iron, steel, and/or manufactured goods.

*Manufactured good* means a good brought to the construction site for incorporation into the building or work that has been--

(1) Processed into a specific form and shape; or

(2) Combined with other raw material to create a material that has different properties than the properties of the individual raw materials.

*Public building and public work* means a public building of, and a public work of, a governmental entity (the United States; the District of Columbia; commonwealths, territories, and minor outlying islands of the United States; State and local governments; and multi-State, regional, or interstate entities which have governmental functions). These buildings and works may include, without limitation, bridges, dams, plants, highways, parkways, streets, subways, tunnels, sewers, mains, power lines, pumping stations, heavy generators, railways, airports, terminals, docks, piers, wharves, ways, lighthouses, buoys, jetties, breakwaters, levees, and canals, and the construction, alteration, maintenance, or repair of such buildings and works.

*Steel* means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements.

(b) *Iron, steel, and manufactured goods.*

(1) The award term and condition described in this section implements—

(i) Section 1605(a) of the American Recovery and Reinvestment Act of 2009 (Pub. L. 111—5) (Recovery Act), by requiring that all iron, steel, and manufactured goods used in the Project are produced in the United States; and

(ii) Section 1605(d), which requires application of the Buy American requirement in a manner consistent with U.S. obligations under international agreements. The restrictions of section 1605 of the Recovery Act do not apply to designated country iron, steel, and/or manufactured goods. The Buy American requirement in section 1605 shall not be applied where the iron, steel or manufactured goods used in the Project are from a Party to an international agreement that obligates the recipient to treat the goods and services of that Party the same as domestic goods and services. As of January 1, 2010, this obligation shall only apply to projects with an estimated value of \$7,804,000 or more.

(2) The recipient shall use only domestic or designated country iron, steel, and manufactured goods in performing the work funded in whole or part with this award, except as provided in paragraphs (b)(3) and (b)(4) of this section.

(3) The requirement in paragraph (b)(2) of this section does not apply to the iron, steel, and manufactured goods listed by the Federal Government as follows: none.

(4) The award official may add other iron, steel, and manufactured goods to the list in paragraph (b)(3) of this section if the Federal Government determines that--

(i) The cost of domestic iron, steel, and/or manufactured goods would be unreasonable. The cost of domestic iron, steel, and/or manufactured goods used in the Project is unreasonable when the cumulative cost of such material will increase the overall cost of the Project by more than 25 percent;

(ii) The iron, steel, and/or manufactured good is not produced, or manufactured in the United States in sufficient and reasonably available commercial quantities of a satisfactory quality; or

(iii) The application of the restriction of section 1605 of the Recovery Act would be inconsistent with the public interest.

(c) Request for determination of inapplicability of section 1605 of the Recovery Act or the Buy American Act. (1)(i) Any recipient request to use foreign iron, steel, and/or manufactured goods in accordance with paragraph (b)(4) of this section shall include adequate information for Federal Government evaluation of the request, including--

(A) A description of the foreign and domestic iron, steel, and/or manufactured goods;

(B) Unit of measure;

(C) Quantity;

(D) Cost;

(E) Time of delivery or availability;

(F) Location of the Project;

(G) Name and address of the proposed supplier; and

(H) A detailed justification of the reason for use of foreign iron, steel, and/or manufactured goods cited in accordance with paragraph (b)(4) of this section.

(ii) A request based on unreasonable cost shall include a reasonable survey of the market and a completed cost comparison table in the format in paragraph (d) of this section.

(iii) The cost of iron, steel, or manufactured goods shall include all delivery costs to the construction site and any applicable duty.

(iv) Any recipient request for a determination submitted after Recovery Act funds have been obligated for a Project for construction, alteration, maintenance, or repair shall explain why the recipient could not reasonably foresee the need for such determination and could not have requested the determination before the funds were obligated. If the recipient does not submit a satisfactory explanation, the award official need not make a determination.

(2) If the Federal Government determines after funds have been obligated for a Project for construction, alteration, maintenance, or repair that an exception to section 1605 of the Recovery Act applies, the award official will amend the award to allow use of the foreign iron, steel, and/or relevant manufactured goods. When the basis for the exception is nonavailability or public interest, the amended award shall reflect adjustment of the award amount, redistribution of budgeted funds, and/or other appropriate actions taken to cover costs associated with acquiring or using the foreign iron, steel, and/or relevant manufactured goods.. When the basis for the exception is the unreasonable cost of the domestic iron, steel, or manufactured goods, the award official shall adjust the award amount or redistribute budgeted funds, as appropriate, by at least the differential established in 2 CFR 176.110(a).

(3) Unless the Federal Government determines that an exception to section 1605 of the Recovery Act applies, use of foreign iron, steel, and/or manufactured goods other than designated country iron, steel, and/or manufactured goods is noncompliant with the applicable Act.

(d) Data. To permit evaluation of requests under paragraph (b) of this section based on unreasonable cost, the applicant shall include the following information and any applicable supporting data based on the survey of suppliers:

Foreign and Domestic Items Cost Comparison

Description	Unit of measure	Quantity	Cost (dollars)*
Item 1:			
Foreign steel, iron, or manufactured good	_____	_____	_____
Domestic steel, iron, or manufactured good	_____	_____	_____
Item 2:			
Foreign steel, iron, or manufactured good	_____	_____	_____
Domestic steel, iron, or manufactured good	_____	_____	_____

[List name, address, telephone number, email address, and contact for suppliers surveyed. Attach copy of response; if oral, attach summary.]

[Include other applicable supporting information.]

[\*Include all delivery costs to the construction site.]

**24. WAGE RATE REQUIREMENTS UNDER SECTION 1606 OF THE RECOVERY ACT**

(a) Section 1606 of the Recovery Act requires that all laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government pursuant to the Recovery Act shall be paid wages at rates not less than those prevailing on projects of a character

similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code.

Pursuant to Reorganization Plan No. 14 and the Copeland Act, 40 U.S.C. 3145, the Department of Labor has issued regulations at 29 CFR parts 1, 3, and 5 to implement the Davis-Bacon and related Acts. Regulations in 29 CFR 5.5 instruct agencies concerning application of the standard Davis-Bacon contract clauses set forth in that section. Federal agencies providing grants, cooperative agreements, and loans under the Recovery Act shall ensure that the standard Davis-Bacon contract clauses found in 29 CFR 5.5(a) are incorporated in any resultant covered contracts that are in excess of \$2,000 for construction, alteration or repair (including painting and decorating).

(b) For additional guidance on the wage rate requirements of section 1606, contact your awarding agency. Recipients of grants, cooperative agreements and loans should direct their initial inquiries concerning the application of Davis-Bacon requirements to a particular federally assisted project to the Federal agency funding the project. The Secretary of Labor retains final coverage authority under Reorganization Plan Number 14.

## **25. RECOVERY ACT TRANSACTIONS LISTED IN SCHEDULE OF EXPENDITURES OF FEDERAL AWARDS AND RECIPIENT RESPONSIBILITIES FOR INFORMING SUBRECIPIENTS**

(a) To maximize the transparency and accountability of funds authorized under the American Recovery and Reinvestment Act of 2009 (Pub. L. 111-5) (Recovery Act) as required by Congress and in accordance with 2 CFR 215.21 “Uniform Administrative Requirements for Grants and Agreements” and OMB Circular A-102 Common Rules provisions, recipients agree to maintain records that identify adequately the source and application of Recovery Act funds. OMB Circular A-102 is available at <http://www.whitehouse.gov/omb/circulars/a102/a102.html>

(b) For recipients covered by the Single Audit Act Amendments of 1996 and OMB Circular A-133, “Audits of States, Local Governments, and Non-Profit Organizations,” recipients agree to separately identify the expenditures for Federal awards under the Recovery Act on the Schedule of Expenditures of Federal Awards (SEFA) and the Data Collection Form (SF-SAC) required by OMB Circular A-133. OMB Circular A-133 is available at <http://www.whitehouse.gov/omb/circulars/a133/a133.html>. This shall be accomplished by identifying expenditures for Federal awards made under the Recovery Act separately on the SEFA, and as separate rows under Item 9 of Part III on the SF-SAC by CFDA number, and inclusion of the prefix “ARRA-” in identifying the name of the Federal program on the SEFA and as the first characters in Item 9d of Part III on the SF-SAC.

(c) Recipients agree to separately identify to each subrecipient, and document at the time of subaward and at the time of disbursement of funds, the Federal award number, CFDA number, and amount of Recovery Act funds. When a recipient awards Recovery Act funds for an existing program, the information furnished to subrecipients shall distinguish the subawards of incremental Recovery Act funds from regular subawards under the existing program.

(d) Recipients agree to require their subrecipients to include on their SEFA information to specifically identify Recovery Act funding similar to the requirements for the recipient SEFA described above. This information is needed to allow the recipient to properly monitor subrecipient expenditure of ARRA funds as well as oversight by the Federal awarding agencies, Offices of Inspector General and the Government Accountability Office.

## **26. DAVIS BACON ACT AND CONTRACT WORK HOURS AND SAFETY STANDARDS ACT**

**Definitions:** For purposes of this Article, Davis Bacon Act and Contract Work Hours and Safety Standards Act, the following definitions are applicable:

(1) “Award” means any grant, cooperative agreement or technology investment agreement made with Recovery Act funds by the Department of Energy (DOE) to a Recipient. Such Award must require compliance with the labor standards clauses and wage rate requirements of the Davis-Bacon Act (DBA) for work performed by all laborers and mechanics employed by Recipients (other than a unit of State or local government whose own employees perform the construction) Subrecipients, Contractors and subcontractors.

(2) “Contractor” means an entity that enters into a Contract. For purposes of these clauses, Contractor shall include (as applicable) prime contractors, Recipients, Subrecipients, and Recipients’ or Subrecipients’ contractors, subcontractors, and lower-tier subcontractors. “Contractor” does not mean a unit of State or local government where

construction is performed by its own employees.”

(3) “Contract” means a contract executed by a Recipient, Subrecipient, prime contractor or any tier subcontractor for construction, alteration, or repair. It may also mean (as applicable) (i) financial assistance instruments such as grants, cooperative agreements, technology investment agreements, and loans; and, (ii) Sub awards, contracts and subcontracts issued under financial assistance agreements. “Contract” does not mean a financial assistance instrument with a unit of State or local government where construction is performed by its own employees.

(4) “Contracting Officer” means the DOE official authorized to execute an Award on behalf of DOE and who is responsible for the business management and non-program aspects of the financial assistance process.

(5) “Recipient” means any entity other than an individual that receives an Award of Federal funds in the form of a grant, cooperative agreement or technology investment agreement directly from the Federal Government and is financially accountable for the use of any DOE funds or property, and is legally responsible for carrying out the terms and conditions of the program and Award.

(6) “Subaward” means an award of financial assistance in the form of money, or property in lieu of money, made under an award by a Recipient to an eligible Subrecipient or by a Subrecipient to a lower- tier subrecipient. The term includes financial assistance when provided by any legal agreement, even if the agreement is called a contract, but does not include the Recipient’s procurement of goods and services to carry out the program nor does it include any form of assistance which is excluded from the definition of “Award” above.

(7) “Subrecipient” means a non-Federal entity that expends Federal funds received from a Recipient to carry out a Federal program, but does not include an individual that is a beneficiary of such a program.

**(a) Davis Bacon Act**

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the Project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3) ), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which will be attached to this agreement at a later date, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

(ii)(A) The Contracting Officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the Contract shall be classified in conformance with the wage determination. The Contracting Officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage

determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the Contracting Officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administrator of the Wage and Hour Division, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(C) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions, including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided*, That the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. 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 the Contractor under this Contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the Project), all or part of the wages required by the Contract, the Department of Energy, Recipient, or Subrecipient, may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the Project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act),

daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii) (A) The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the Department of Energy if the agency is a party to the Contract, but if the agency is not such a party, the Contractor will submit the payrolls to the Recipient or Subrecipient (as applicable), applicant, sponsor, or owner, as the case may be, for transmission to the Department of Energy. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime Contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Department of Energy if the agency is a party to the Contract, but if the agency is not such a party, the Contractor will submit them to the Recipient or Subrecipient (as applicable), applicant, sponsor, or owner, as the case may be, for transmission to the Department of Energy, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the Recipient or Subrecipient (as applicable), applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 3729 of title 31 of the United States Code.

(iii) The Contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the Department of Energy or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal agency

may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees--

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, 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 therefore 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.

## **27. RECIPIENT FUNCTIONS**

- (1) On behalf of the Department of Energy (DOE), Recipient shall perform the following functions:
  - (a) Obtain, maintain, and monitor all DBA certified payroll records submitted by the Subrecipients and Contractors at any tier under this Award;
  - (b) Review all DBA certified payroll records for compliance with DBA requirements, including applicable DOL wage determinations;
  - (c) 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 (b) above;
  - (d) 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;
  - (e) Provide DOE with detailed information regarding the resolution of any DBA non-compliance issues;
  - (f) Perform services in support of DOE investigations of complaints filed regarding noncompliance by Subrecipients and Contractors with DBA requirements;
  - (g) Perform audit services as necessary to ensure compliance by Subrecipients and Contractors with DBA requirements and as requested by the Contracting Officer; and
  - (h) Provide copies of all records upon request by DOE or DOL in a timely manner.
- (2) All records maintained on behalf of the DOE in accordance with paragraph (1) above are federal government (DOE) owned records. DOE or an authorized representative shall be granted access to the records at all times.
- (3) In the event of, and in response to any Freedom of Information Act, 5 U.S.C. 552, requests submitted to DOE, Recipient shall provide such records to DOE within 5 business days of receipt of a request from DOE.

## **28. FINAL INCURRED COST AUDIT**

In accordance with 10 CFR 600, DOE reserves the right to initiate a final incurred cost audit on this award. If the audit has not been performed or completed prior to the closeout of the award, DOE retains the right to recover an appropriate amount after fully considering the recommendations on disallowed costs resulting from the final audit.

## **NETL SPECIAL TERMS AND CONDITIONS**

## **29. FURTHER ASSURANCES**

The Parties have agreed that prior to DOE authorizing the Recipient to take the Project into Phase III, an appropriate provision will be included in this Cooperative Agreement that provides DOE with an appropriate remedy if

Recipient were to fail to perform the long-term test requirements specified in the Statement of Project Objectives for Phase IV. The Parties agree that such a provision would apply only if: (i) the Project was not terminated before completion; (ii) DOE has fulfilled its cost sharing obligations under this Cooperative Agreement; and (iii) Recipient has completed the Project and the Project is authorized to and capable of performing the long-term test requirements specified in the Statement of Project Objectives for Phase IV. The Parties also agree that such a provision will specify appropriate force majeure events that would temporarily or permanently excuse the Recipient from performing the long-term test requirements, including without limitation, failures due to circumstances outside Recipient’s control.

**30. SUBRECIPIENT/SUBCONTRACT APPROVALS**

Except for the subawards and/or subcontracts specifically listed in the table below, the Recipient must notify the DOE Contracting Officer and Project Officer in writing 30 days prior to the execution of new or modified subawards/subcontracts. This notification does not constitute a waiver of the prior approval requirements outlined in 10 CFR 600, nor does it relieve the Recipient from its obligation to comply with applicable Federal statutes, regulations, and executive orders.

In order to satisfy this notification requirement, Recipient documentation must, as a minimum, include the following:

1. A description of the research to be performed, the service to be provided, or the equipment to be purchased;
2. Cost share commitment letter if the subawardee is providing cost share to the award;
3. An assurance that the process undertaken by the Recipient to solicit the subaward/subcontract complies with their written procurement procedures as outlined in 10 CFR 600.144, 10 CFR 600.236, or 10 CFR 600.331;
4. An assurance that no planned, actual or apparent conflict of interest exists between the Recipient and the selected subawardee/subcontractor and that the Recipient’s written standards of conduct were followed;
5. A completed Environmental Questionnaire, if applicable;
6. An assurance that the subawardee/subcontractor is not a debarred or suspended entity; and
7. An assurance that all required award provisions will be flowed down in the resulting subaward/subcontract.

The Recipient is responsible for making a final determination to award or modify subawards/subcontracts under this agreement, but the Recipient may not proceed with the subaward/subcontract until the Contracting Officer determines, and provides the Recipient written notification, that the information provided is adequate.

Should the Recipient not receive a written notification of adequacy from the Contracting Officer within 30 days of the submission of the subaward/subcontract documentation stipulated above, Recipient may proceed to award or modify the proposed subaward/subcontract.

Subawards or agreements will not contain provisions that are inconsistent with the Cooperative Agreement nor would adversely affect the ability of the Recipient to perform its obligations under this Cooperative Agreement.

As shown in the Table below, DOE approval is provided for the following Phase IIa subcontracts at not-to-exceed costs shown below.

<b>Sub-Recipient/ Sub-Contractor</b>	<b>Purpose</b>	<b>Phase II Budget</b>
Battelle	CO2 storage site design, cost estimate, and project integration/technical support	██████████
Van Ness Feldman	Permitting support	██████████
Patrick Engineering	FEED, final design, and cost estimates for storage site surface facilities	██████████
VSP Contract – TBD	VSP services	██████████
Hamilton Metals, Inc.	7” SS casing	██████████
Rocky Ballard	Land acquisition	██████████
Rhine Ernst, LLP	Support for storage site rights, pipeline siting, and	██████████

	other land issues	
McGuire Woods	Illinois and Morgan County legal support	
Land Services – TBD	Team to secure pipeline easements	
PKM Energy	Financial modeling, CO2 services agreement	
Lucinda Low Swartz, Esq.	NEPA support	
Total		

**31. INDEMNITY**

a. The Recipient shall indemnify the Government and its officers, agents, or employees for any and all liability, including litigation expenses and attorneys' fees, arising from suits, actions, or claims of any character for death, bodily injury, or loss of or damage to property or to the environment, resulting from the Project, except to the extent that such liability results from the direct fault or negligence of Government officers, agents or employees, or to the extent such liability may be covered by applicable allowable costs provisions.

b. During Phase IIa, the Recipient will have DOE named as a third-party insured on its insurance policies providing general, umbrella, automobile and property coverage.

c. Prior to the commencement of any demolition or construction work at the Project site, the Recipient will have DOE named as a third-party insured on any insurance policies covering the Recipient’s activities at the site.

d. To the fullest extent allowable by law, the Alliance will indemnify the Government and its officers, agents, or employees for any and all liability related to the generation, transport and long-term storage of any solid, liquid or gaseous effluents that result from the activities conducted under this cooperative agreement, including but not limited to the supercritical CO2 and any low concentration or trace constituents present in the CO2 Purification Unit (CPU) discharge streams transported in the CO2 pipeline as well as any waste or by-product streams associated with the injection and long term storage of the transported CO2 stream.

**32. COMMUNICATION PLANS**

Knowledge dissemination is an integral part of the Federally funded RD&D process. Effective dissemination requires planned, active, and coordinated participation of governmental entities and funded research partners.

To ensure the effective dissemination of knowledge gained during this RD&D Project, the recipient will consult with NETL's Public Affairs staff to identify communication goals, objectives, and strategies. The recipient will make an initial contact for consultation within 30 days of the award date. The recipient will make subsequent contacts whenever progress on the Project warrants external communication, but no less than once a quarter.

Actions and products designed to disseminate nonproprietary Project-related knowledge will be coordinated with NETL's Public Affairs staff. Examples of such actions and products include, but are not limited to:

- Press releases
- Articles in newspapers, newsletters, and magazines
- Papers in peer-reviewed journals
- Radio, television, and newspaper interviews
- Presentation of research results at conferences, workshops, and seminars
- Publication of results on web pages
- Information for government officials

When issuing statements, press releases, requests for proposals, bid solicitations, and other documents describing this Project, the Recipient shall acknowledge federal funding by clearly stating (1) the percentage of the total cost of the Project which will be financed with Federal money, and (2) the dollar amount of Federal funds for the Project.

All Recipient press releases shall be reviewed and approved by DOE prior to issuance. Therefore, the Recipient shall, at least ten (10) calendar days prior to the planned issue date, submit a draft copy to the Contracting Officer of any planned press releases related to work performed under this award. The Contracting Officer will then obtain necessary reviews and clearances and provide the Recipient with the results of such reviews prior to the planned issue date.

### 33. POST-COMPLETION REVIEW

Within two (2) years after completion of the Project, the Recipient agrees to participate with DOE in a post-completion Project review meeting. The time and location of the meeting will be established by agreement of the Parties. The purpose of the meeting is to review the success of the Project as well as any problems that may have arisen since Project completion.

### 34. DECISION POINTS AND COORDINATION OF DOE DECISIONS REGARDING FUTUREGEN 2.0

The Parties agree that: (1) the scope of the FutureGen 2.0 program comprises research, development and large-scale test activities involving oxy-combustion and CO<sub>2</sub> capture, transportation, and sequestration; (2) the FutureGen 2.0 program consists of the “FutureGen 2.0: Oxy-combustion Large Scale Test” and the “FutureGen 2.0: Pipeline and Regional CO<sub>2</sub> Storage Reservoir Project”; and (3) both of these Projects are needed to fully achieve the objectives of the program. The Parties also agree that the FutureGen 2.0 program is complex and may face technical, financial, regulatory, and other issues that cannot be anticipated at this time. In light of the potential for such issues to arise and DOE’s need to ensure prudent stewardship of federal funds, DOE requires flexibility in the coordination and phasing of its decision-making regarding funding subsequent Phases and Subphases of these two Projects. Accordingly, DOE will assess at each decision point for Recipient’s Project the overall status and progress of the FutureGen 2.0 program, and may, based on that assessment and in its sole discretion, delay a decision on funding the next Phase or Subphase of Recipient’s Project, or interrupt, suspend or terminate Recipient’s Cooperative Agreement. In lieu of terminating Recipient’s Cooperative Agreement, DOE may propose a modification to it. In the event DOE proposes a modification, it agrees to negotiate in good faith with Recipient to reach agreement on how best to effectuate the proposed modification.

Should the Recipient decide to terminate the FutureGen 2.0: Pipeline and Regional CO<sub>2</sub> Storage Reservoir Project, the parties agree that DOE may suspend payments to Recipient under this Cooperative Agreement until DOE can assess how best to proceed, and may, based on that assessment and in its sole discretion, continue with, propose modifications to, interrupt, suspend or terminate Recipient’s Cooperative Agreement. In the event DOE proposes a modification to the Cooperative Agreement, it will negotiate in good faith with Recipient to reach agreement on how best to effectuate the proposed modification. In the event DOE terminates or delays the Project pursuant to this Cooperative Agreement, DOE agrees that it will continue to reimburse Recipient for allowable costs associated with the delay or termination in accordance with OMB Circular A-21.

In light of the substantial federal cost share and the significant risks resulting from Ameren’s decision not to proceed with this Project, substantial involvement is necessary between DOE and the Recipient during performance of this Cooperative Agreement. Pursuant to 10 CFR 600.5(b)&(d), DOE will share responsibility for the management, control, and direction of the Project, and has the right to intervene in the conduct and performance of project activities for programmatic reasons.

#### Decision Point Applications:

- a. Decision Point Application – A Decision Point Application is a non-competitive application whereby the Recipient requests permission from DOE to continue the Project into subsequent Phases within a previously approved Project Period.
- b. In order to receive continued DOE funding under the Project, Recipient shall submit Decision Point Applications at the conclusion of the following Phases of the Project: Phase I – Project Definition, Phase II – NEPA, Permitting, and Design, and Phase III – Construction and Commissioning as delineated in the SOPO.
- c. Submission Requirements – The Recipient shall prepare and submit the Decision Point Application in accordance with the requirements of this clause and consistent with the prescribed content, format, and submission instructions outlined and identified for each Phase in the Statement of Project Objectives.
- d. DOE Approval – DOE’s decision whether to proceed into subsequent Phases of Recipient’s Project will be based on (1) availability of funds; (2) substantial progress towards meeting the objectives of the Project and of FutureGen 2.0; (3) submittal of required reports; (4) compliance with the Terms and Conditions of the Award; and (5) the ability of the Project to meet the objectives of the FutureGen 2.0 program, including but not limited

to the ability of the Recipient to prudently expend the ARRA funds obligated to this Cooperative Agreement prior to September 30, 2015. This decision should occur in a timely manner, consistent with the Project schedule.

- e. Subphases – DOE has established a number of Subphases within Phase II. Although the Recipient is not required to submit a Decision Point Application to DOE before proceeding to the next Subphase, the Recipient must submit to DOE satisfactory evidence that it has achieved the accomplishments for the current Subphase by the date specified.
- f. The Recipient is not required to submit a Decision Point Application at any point during the Project. If at any point during or following the completion of a Phase of the Project, the Recipient determines that it no longer wishes to continue with the Project, the Recipient shall notify the Contracting Officer in writing of such decision, and Recipient's performance under this Cooperative Agreement shall be considered complete.

DOE reserves the right to de-obligate any remaining funds obligated to the Cooperative Agreement, if, at a Decision Point, it determines not to fund subsequent Phases of the Project.

### 35. COST OVERRUN

The Government is under no obligation to share any cost overruns (i.e., costs incurred during the Project that are more than those estimated at the date of award). DOE does not plan to set-aside funds for overruns. If appropriated funds are available in the future for supporting overruns, the Government's share of overruns will not exceed the Government's percentage cost share for the overall Project as specified in Article 5.

### 36. PRIMAVERA

The Recipient shall provide the necessary project management files developed using Primavera to DOE. The Primavera files shall include work breakdown structure, resource loaded schedules, and milestones. Relevant supporting information, such as assumptions and calculations, shall be provided to facilitate analysis and due diligence for project management purposes. Other requirements shall include:

- a. A baseline (target) Project resource loaded schedule (including earned values) is due at the initiation of Phase II.
- b. All baseline and updated schedules are to be provided in a format that is readable with Oracle Primavera P6 Version 7.0, as an exported (.xer) file. These schedules shall be fully resource-loaded, and percent completion shall be shown as "Schedule % Complete", as well as "Physical % Complete" where appropriate. The schedule is not required to be cost-loaded in Primavera.
- c. Background and supporting documentation is also required to be submitted with the baseline schedule and with each update schedule when an item below is changed, to include, but not limited to, the following:
  - i. Oracle Primavera layout (.plf) file;
  - ii. The summary document describing the principle changes made to the update;
  - iii. A list of the Project schedule calendar(s) used, and how constructed;
  - iv. A list of the Project roles (position titles) used, where appropriate;
  - v. A list of the Project labor resources (names of persons used to fill roles) where appropriate;
  - vi. A list of the Project activity codes;
  - vii. A list of user-defined fields, and how constructed;
  - viii. The variance analysis reports;

Note 1. The schedule and cost data will enable NETL Project Managers to effectively comply with ARRA requirements and to perform risk analysis. The Oracle Primavera schedule will be used by NETL to independently analyze and track changes in the updates, and to produce summary reports for NETL upper management with profiles of labor, costs, equipment and materials usage, and the trends and variances in schedule, costs, and scope.

Note 2. The total Project costs shall include (but not limited to) the following:

- a) Resource hours/days & costs including direct and indirect labor hours/days & costs, materials quantities & costs.
- b) Non-resource expenses including equipment rental or lease costs, training, travel, consulting and subcontractor

charges. Expenses may be spread equally over the duration of an activity, unless otherwise specified.

**37. WORK BREAKDOWN STRUCTURE**

The Recipient will manage and report on the technical scope, budget and schedule basis consistent with a minimum Level-5 product-oriented work breakdown structure that notionally represents the following systems: Level 1 is Project; Level 2 is Phase (e.g., Project Definition; NEPA, Permitting, and Design; Construction and Commissioning; and Operations.); Level 3 is Task(s) (including e.g., permitting, CO2 capture, CO2 compression and transport/delivery, CO2 injection and/or storage, and MVA); Level 4 is Sub-Task; Level 5 is Sub-sub Task.

**38. INTERIM INCURRED COST AUDITS**

DOE reserves the right to initiate an incurred cost audit for each Phase under this award. If the results of such audit indicate that there are questioned and/or unallowable costs which have been billed to the Project, Recipient agrees to enter into negotiations with DOE to determine what, if any, credit shall be issued to the DOE for such costs.

*The paragraph below shall be flowed down and included in the subcontract agreements with Battelle.*

As a condition of this subcontract, [enter subrecipient name] agrees that the DOE reserves the right to initiate an incurred cost audit for each Phase under this award. If the results of such audit indicate that there are questioned and/or unallowable costs which have been billed to the Project, [enter subrecipient name] agrees to promptly notify Recipient of the dollar amount associated with such costs and further agrees to enter into negotiations with DOE and Recipient to determine what, if any, credit shall be issued to the DOE for such costs.

Notwithstanding the above, and in accordance with Article 6 entitled “*Rebudgeting and Recovery of Indirect Costs – Reimbursable Indirect Costs and Fringe Benefits*”, Recipient and subrecipients reserve the right to seek appropriate accommodations for any under-recovered indirect costs or fringe benefits under the Project, subject to availability of DOE funds.

**39. LIMITATION ON DOE FUNDING**

It is the intent of DOE that all reimbursements made by the Government under this Cooperative Agreement be made with respect to costs that are non-operational in nature. As a result, DOE will not reimburse the FutureGen Industrial Alliance for any costs that are operational in nature.

**40. APPROVED RECIPIENT MEMBER LABOR RATES**

The Statement of Project Objectives (SOPO) includes a work scope that will be conducted (in aggregate) by the Alliance member companies. Member companies having approved financial management systems will bill at actual hourly rates. The direct labor being furnished from the remaining member companies will be billed at the following rates for the labor categories identified:

<u>Labor Category</u>	<u>Approved Hourly Rate</u>
Sr. Executive Manager	
Sr. Technical Manager	
Senior Engineer/Senior Engineer V	
Legal Counsel	

Rates for new Alliance members not having approved financial management systems will be subject to approval by the DOE Contracting Officer.

**41. EMPLOYEE COMPENSATION/FIXED BILLING RATES**

Recipient shall bill the project for labor expended by its own employees using the labor rates set forth below. Should the Recipient find that labor categories not reflected below are required to perform the project; the Recipient shall request approval of additional categories and rates from the DOE Contracting Officer.

Notwithstanding any other Article(s) of this agreement, the Government shall not reimburse the Recipient for labor at rates in excess of those identified below (including authorized amendments thereto). Labor costs in excess of these rates shall be borne by the Recipient and will not be considered allowable project costs for cost-sharing purposes.

Labor Category	Unburdened Hourly Rate
CEO	[REDACTED]
Contract and Procurement Mgr	[REDACTED]
Accounting & Administrative Mgr.	[REDACTED]
Executive Administrator	[REDACTED]
VP Generation	[REDACTED]
Oxy-Combustion Project Mgr.	[REDACTED]

**42. NOTICE OF HIGH RISK STATUS – DOE’S INCREASED LEVEL OF OVERSIGHT AND DUE DILIGENCE**

Pursuant to 10 CFR 600.114 and DOE’s Guide to Financial Assistance Section 2.5.4, DOE has determined the Recipient to be “high-risk” because of its substantial dependence on federal funding for the Project and that the availability of this funding expires on September 30, 2015. As a result, DOE has determined that there is a need to protect the Government’s financial interest by providing an increased level of oversight, due diligence, and control in the management and administration of the Project such that, if any of the following events<sup>3</sup> occur, DOE may, at its sole discretion, unilaterally terminate the award:

1. Conditions required to definitize the Cooperative Agreements are not met (e.g., hiring of critical key personnel, execution of power plant Asset Purchase Agreement, providing evidence of non-federal cost share, and providing expanded IP rights to Phase II work products).
2. Withdrawal of a subrecipient or critical subcontractor (i.e., B&W, Air Liquide, URS, Burns & McDonnell, or Battelle), if replacement resources are not available on a schedule that maintains the ability to prudently expend the ARRA funding by the statutory deadline.
3. Non-appealable denial of any permit or authorization necessary to secure financing (e.g., CO2 injection, air construction, or water construction permits) or other delay in permitting that compromises the Recipient’s ability to prudently expend the ARRA funding by the statutory deadline.
4. Loss of the power purchase agreements or sourcing agreement due to court or other governmental action.
5. Termination of the power plant Asset Purchase Agreement.
6. Interruption of retrofit-ready maintenance activities at the power plant if the interruption renders the power plant asset unsuitable for use.
7. Definitive determination that the CO<sub>2</sub> storage site geology is unsuitable.
8. Capital cost of the Project increase by 20% or more.
9. Determination by a court or regulatory authority that the power plant is subject to new source review (NSR).
10. Determination that the project cannot be financed on a schedule that maintains the Recipient’s ability to prudently expend the ARRA funding by the statutory deadline.

**43. CONDITIONS ON AWARD/DEFINITIZATION OF PHASE II**

DOE has authorized continuation into Phase II of the project subject to satisfactory resolution and negotiation of the following Conditions on Award as specified in paragraphs A through F. The time period established to satisfactorily resolve the Conditions on Award is referred to as the definitization period and is the period starting with the Effective Date of this Amendment through April 9, 2013.

Notwithstanding any other Article within this Cooperative Agreement, only certain activities (paragraph A) and costs (paragraph B) are eligible for reimbursement by DOE during the definitization period.

DOE’s determination that these Conditions have been satisfactorily resolved would be made through an amendment

<sup>3</sup> It is understood that the identified events may be within the scope of the other FutureGen 2.0 Cooperative Agreement (DE-FE0005054).

to the Cooperative Agreement.

#### **A. APPROVED PHASE II PERFORMANCE ACTIVITIES**

Consistent with the Subphase IIa SOPO, the costs of the following activities constitute allowable costs during the Phase II definitization period. The costs of other activities are considered unallowable.

- Project management and controls, including but not limited to reporting and rebaselining the schedule and cash flow for the actual Phase II start date
- Advance environmental permitting and the NEPA process
- finalize acquisition of pore space purchase options and obtain other necessary commitments from landowners on the properties needed for the pipeline, storage site surface facilities, and VRT facilities;
- Advance Front-End Engineering and Design (FEED)
- advance a final design and cost estimate
- prepare an MVA Program Plan
- execute the Cooperation and Technology Agreement with the oxy-combustion project
- execute a CO<sub>2</sub> Off-Take Agreement (after an acceptable power purchase agreement is negotiated by the oxy-combustion project sponsor)
- G&A activities.

#### **B. TOTAL ESTIMATED PROJECT COSTS/PAYMENT OF COSTS**

The Total Estimated Project Costs identified in Article 5.a are based on the Recipient's "Best and Final Decision Point Application" dated September 27, 2012. DOE has not yet accepted the costs associated with Phases II through IV. Final review of the Recipient's rebaselined Phase II costs will be completed during the definitization of the Cooperative Agreement. Review of the costs for Phases III through IV will occur as part of the Decision Point Application process.

In order to facilitate DOE's review and acceptance of a Phase II budget within the definitization period, the Recipient must provide, not later than March 4, 2013, separate, detailed cost breakdowns for the Recipient and each major sub-recipient and subcontractor by year, Task, and Subtask.

The Recipient shall also provide a summary level cost breakdown for Phases III and IV.

In the event, Recipient does not deliver an acceptable budget by said date, either DOE or Recipient may declare the award terminated by mutual agreement of the parties upon written notice to the other party.

DOE and the Recipient agree that, during the definitization period, the Total Estimated Project Costs may be adjusted based on the results of the review and other matters affecting the estimate. If the Parties cannot mutually agree to final estimated Project costs, the Parties hereby agree that the award will be deemed terminated by mutual agreement of the parties. DOE reserves the right to unilaterally deobligate the balance of funds obligated, but not authorized for expenditure, in the event any one of these Conditions on Award are not satisfied and the Project is terminated.

Notwithstanding DOE's pending review of the remaining Project budget, DOE has reviewed and accepted a budget of \$3,367,822 (DOE: \$3,334,143; Cost Share: \$33,679) associated with the Subphase IIa SOPO. The Recipient may incur costs associated with allowable project activities up to this amount. The Recipient may incur costs beyond this limit at its own risk, subject to later reimbursement by DOE in the event the Project proceeds beyond the definitization period.

#### **C. STATEMENT OF PROJECT OBJECTIVES/SCHEDULE**

Attachment 2 contains the Statement of Project Objectives. DOE and the Recipient agree that only work associated with Subphase IIa activities is authorized for reimbursement at this time. The Parties further agree that the SOPO will be finalized during the definitization period. To facilitate definitization, the Recipient shall provide DOE with a

fully-integrated SOPO (at WBS Level 5) and schedule covering Phase II of the project that reflects the Subphases specified in this Cooperative Agreement. Additionally, the Recipient will revise the SOPO for Phases III and IV as needed and will develop, in conjunction with Cooperative Agreement DE-FE0005054, an integrated project schedule which maintains a similar project structure (i.e., Phases) and clearly delineates Recipient and DOE decision points.

The final negotiated SOPO will be incorporated into this Cooperative Agreement through an amendment signed by the DOE Contracting Officer.

The fully integrated SOPO and schedule for Phases II, and a revised SOPO for Phases III and IV shall be provided to DOE not later than February 27, 2013. In the event, recipient does not deliver an acceptable SOPO and schedule by said date, either DOE or Recipient may declare the award terminated by mutual agreement of the parties upon written notice to the other party.

#### **D. ADVANCE UNDERSTANDING ON INTELLECTUAL PROPERTY**

In consideration of the increased federal cost share of 99 percent, the Recipient acknowledges and agrees that as part of the definitization of this Cooperative Agreement, the Recipient, its sub-recipients, and other partners must provide DOE with expanded rights in the intellectual property developed under this Agreement that are acceptable to DOE in its sole discretion. The expanded rights would be extinguished should the Recipient achieve financial close and take the Project into Phase III.

Accordingly, DOE, the Recipient and its sub-recipients shall begin discussions on an advance understanding of intellectual property as soon as practical after the effective date of this cooperative agreement amendment. By February 26, 2013, the Recipient and its sub-recipients will provide a basic set of principles to DOE for addressing DOE's expanded rights request. Not later than March 20, 2013, the Parties must agree on the following lists of expanded rights that can be inserted into Attachment 1 – Intellectual Property Provisions:

- a publicly releasable list of protected data;
- a publicly releasable list of limited rights data;
- a publicly releasable list of restricted computer software; and
- a listing of the expanded technical data deliverable with unlimited rights.

During the conditional period of the cooperative agreement, Attachment 1 – Intellectual Property Provisions, which was applicable during Phase 1 remains in force unless and until a fully definitized cooperative agreement is issued.

The final agreed-to listings of data will be incorporated into the Cooperative Agreement through an amendment signed by the DOE Contracting Officer.

#### **E. HIRING OF KEY PERSONNEL**

For the purposes of this paragraph, “critical personnel” are defined as i) Vice President Generation and ii) Oxy-combustion Project Manager. In order to ensure the Alliance has adequate resources to fulfill its Phase II obligations, the Alliance is expected to hire these critical personnel. These full-time employees must possess: 1) extensive infrastructure construction management experience with both new and retrofit projects, 2) experience with DOE projects, 3) background in CO<sub>2</sub> capture and storage, and 4) a proven track record of implementing best practices in the power generation sector. By March 1, 2013, the Recipient will provide evidence that candidates for both positions are under an employment option agreement and have been notified that the Alliance will execute the option agreements. By March 28, 2013, the Recipient shall have the critical personnel hired.

#### **F. DEFINITIZATION ELEMENTS AND PERIOD**

For information purposes, the schedule for submission and resolution of items for the definitization period is summarized as follows:

<b>Not later than:</b>	<b>Action:</b>	<b>Reference Article /paragraph:</b>
<i>February 27, 2013</i>	Recipient submits fully integrated Phase II SOPO and schedule at WBS Level 5, and revised SOPO for Phases III and IV	43C
<i>March 1, 2013</i>	Recipient provides employment option agreements for critical personnel	43E
<i>March 4, 2013</i>	Recipient submits detailed budgets	43B
<i>March 20, 2013</i>	Recipient and DOE agree on expanded data rights	43D
<i>March 28, 2013</i>	Recipient submits certificates to DOE showing that DOE has been named as a third-party insured in Recipient's policies; Recipient describes how it provides indemnity to DOE (sources of funds, procedure, etc.)	31b
<i>March 28, 2013</i>	Recipient provides evidence critical personnel are hired	43E

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**ATTACHMENT 1 - INTELLECTUAL PROPERTY PROVISIONS**

**Intellectual Property Provisions (GNP-1003)  
Cooperative Agreement - Special Data Statute  
Research, Development, or Demonstration  
Nonprofit Organization**

Nonprofit organizations are subject to the intellectual property requirements at 10 CFR 600.136.

- 01. FAR 52.227-1: Authorization and Consent - Alternate I (Dec 2007)**
- 02. FAR 52.227-2: Notice and Assistance Regarding Patent and Copyright Infringement (Dec 2007)**
- 03. 10 CFR 600.325 - Appendix A: Rights in Data - Programs Covered Under Special Data Statutes (OCT 2003) with Alternates I and II**
- 04. FAR 52.227-23 Rights to Proposal Data (Technical) (JUN 1987)**
- 05. 10 CFR 600.325 Appendix A: Patent Rights (Small Business Firms and Nonprofit Organizations)**
- 06. Limited Rights Data and Restricted Computer Software with Delivery Restrictions**
- 07. Limited Rights Data**
- 08. Restricted Computer Software**
- 09. Protected Data**
- 10. FAR 52.227-3 Patent Indemnity (APR 1984)**
- 11. FAR 52.227-9 Refund of Royalties (FEB 1995)**
- 12. Availability of Contract and Other Data**

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**01. FAR 52.227-1 Authorization and Consent - Alternate I (Dec 2007)**

(a) The Government authorizes and consents to all use and manufacture of any invention described in and covered by a United States patent in the performance of this contract or any subcontract at any tier.

(b) The Contractor shall include the substance of this clause, including this paragraph (b), in all subcontracts that are expected to exceed the simplified acquisition threshold. However, omission of this clause from any subcontract, including those at or below the simplified acquisition threshold, does not affect this authorization and consent.

(End of clause)

**02. FAR 52.227-2 Notice and Assistance Regarding Patent and Copyright Infringement (Dec 2007)**

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in the Contractor's possession pertaining to such claim or suit. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(c) The Contractor shall include the substance of this clause, including this paragraph (c), in all subcontracts that are expected to exceed the simplified acquisition threshold.

(End of clause)

**03. 10 CFR 600.325 Appendix A, Rights in Data - Programs Covered Under Special Data Statutes (OCT 2003) with Alternates I and II**

(a) Definitions

Computer Data Bases, as used in this clause, means a collection of data in a form capable of, and for the purpose of, being stored in, processed, and operated on by a computer. The term does not include computer software.

Computer software, as used in this clause, means (i) computer programs which are data comprising a series of instructions, rules, routines, or statements, regardless of the media in which recorded, that allow or cause a computer to perform a specific operation or series of operations and (ii) data comprising source code listings, design details, algorithms, processes, flow charts, formulae and related material that would enable the computer program to be produced, created or compiled. The term does not include computer data bases.

Data, as used in this clause, means recorded information, regardless of form or the media on which it may be recorded. The term includes technical data and computer software. The term does not include information incidental to administration, such as financial, administrative, cost or pricing or management information.

Form, fit, and function data, as used in this clause, means data relating to items, components, or processes that are sufficient to enable physical and functional interchangeability as well as data identifying source, size, configuration, mating and attachment characteristics, functional characteristics, and performance requirements except that for computer software it means data identifying source, functional characteristics, and performance requirements but specifically excludes the source code, algorithm, process, formulae, and flow charts of the software.

Limited rights data, as used in this clause, means data (other than computer software) developed at private expense that embody trade secrets or are commercial or financial and confidential or privileged.

Restricted computer software, as used in this clause, means computer software developed at private expense and that is a trade secret; is commercial or financial and confidential or privileged; or is published copyrighted computer software; including modifications of such computer software.

Protected data, as used in this clause, means technical data or commercial or financial data first produced in the performance of the award which, if it had been obtained from and first produced by a non-federal party, would be a trade secret or commercial or financial information that is privileged or confidential under the meaning of 5 U.S.C. 552(b)(4) and which data is marked as being protected data by a party to the award.

Protected rights, as used in this clause, mean the rights in protected data set forth in the Protected Rights Notice of paragraph (g) of this clause.

Technical data, as used in this clause, means that data which are of a scientific or technical nature. Technical data does not include computer software, but does include manuals and instructional materials and technical data formatted as a computer data base.

Unlimited rights, as used in this clause, means the right of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose whatsoever, and to have or permit others to do so.

#### (b) Allocation of Rights

(1) Except as provided in paragraph (c) of this clause regarding copyright, the Government shall have unlimited rights in--

- (i) Data specifically identified in this agreement as data to be delivered without restriction;
- (ii) Form, fit, and function data delivered under this agreement;
- (iii) Data delivered under this agreement (except for restricted computer software) that constitute manuals or instructional and training material for installation, operation, or routine maintenance and repair of items, components, or processes delivered or furnished for use under this agreement; and
- (iv) All other data delivered under this agreement unless provided otherwise for protected data in accordance with paragraph (g) of this clause or for limited rights data or restricted computer software in accordance with paragraph (h) of this clause.

(2) The Recipient shall have the right to--

- (i) Protect rights in protected data delivered under this agreement in the manner and to the extent provided in paragraph (g) of this clause;
- (ii) Withhold from delivery those data which are limited rights data or restricted computer software to the extent provided in paragraph (h) of this clause;
- (iii) Substantiate use of, add, or correct protected rights or copyrights notices and to take other appropriate action, in accordance with paragraph (e) of this clause; and
- (iv) Establish claim to copyright subsisting in data first produced in the performance of this agreement to the extent provided in subparagraph (c)(1) of this clause.

#### (c) Copyright

(1) Data first produced in the performance of this agreement. Except as otherwise specifically provided in this agreement, the Recipient may establish, without the prior approval of the Contracting Officer, claim to copyright subsisting in any data first produced in the performance of this agreement. If claim to copyright is made, the Recipient shall affix the applicable copyright notice of 17 U.S.C. 401 or 402 and acknowledgment of Government sponsorship (including agreement number) to the data when such data are delivered to the Government, as well as when the data are published or deposited for registration as a published work in the U.S. Copyright Office. For such copyrighted data, including computer software, the Recipient grants to the Government, and others acting on its behalf, a paid-up nonexclusive, irrevocable, worldwide license to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government, for all such data.

(2) Data not first produced in the performance of this agreement. The Recipient shall not, without prior written permission of the Contracting Officer, incorporate in data delivered under this agreement any data that are not first produced in the performance of this agreement and that contain the copyright notice of 17 U.S.C. 401 or 402, unless the Recipient identifies such data and grants to the Government, or acquires on its behalf, a license of the same scope as set forth in subparagraph (c)(1) of this clause; provided, however, that if such data are computer software, the Government shall acquire a copyright license as set forth in subparagraph (h)(3) of this clause if included in this agreement or as otherwise may be provided in a collateral agreement incorporated or made a part of this agreement.

(3) Removal of copyright notices. The Government agrees not to remove any copyright notices placed on data pursuant to this paragraph (c), and to include such notices on all reproductions of the data.

(d) Release, Publication and Use of Data

(1) The Recipient shall have the right to use, release to others, reproduce, distribute, or publish any data first produced or specifically used by the Recipient in the performance of this contract, except to the extent such data may be subject to the Federal export control or national security laws or regulations, or unless otherwise provided in this paragraph of this clause or expressly set forth in this contract.

(2) The Recipient agrees that to the extent it receives or is given access to data necessary for the performance of this agreement which contain restrictive markings, the Recipient shall treat the data in accordance with such markings unless otherwise specifically authorized in writing by the Contracting Officer.

(e) Unauthorized Marking of Data

(1) Notwithstanding any other provisions of this agreement concerning inspection or acceptance, if any data delivered under this agreement are marked with the notices specified in subparagraph (g)(1) or (h)(2) of this clause and use of such is not authorized by this clause, or if such data bears any other restrictive or limiting markings not authorized by this agreement, the Contracting Officer may at any time either return the data to the Recipient or cancel or ignore the markings. However, the following procedures shall apply prior to canceling or ignoring the markings.

(i) The Contracting Officer shall make written inquiry to the Recipient affording the Recipient 30 days from receipt of the inquiry to provide written justification to substantiate the propriety of the markings;

(ii) If the Recipient fails to respond or fails to provide written justification to substantiate the propriety of the markings within the 30-day period (or a longer time not exceeding 90 days approved in writing by the Contracting Officer for good cause shown), the Government shall have the right to cancel or ignore the markings at any time after said period and the data will no longer be made subject to any disclosure prohibitions.

(iii) If the Recipient provides written justification to substantiate the propriety of the markings within the period set in subdivision (e)(1)(i) of this clause, the Contracting Officer shall consider such written justification and determine whether or not the markings are to be cancelled or ignored. If the Contracting Officer determines that the markings are authorized, the Recipient shall be so notified in writing. If the Contracting Officer determines, with concurrence of the head of the contracting activity, that the markings are not authorized, the Contracting Officer shall furnish the Recipient a written determination, which determination shall become the final agency decision regarding the appropriateness of the markings unless the Recipient files suit in a court of competent jurisdiction within 90 days of receipt of the Contracting Officer's decision. The Government shall continue to abide by the markings under this subdivision (e)(1)(iii) until final resolution of the matter either by the Contracting Officer's determination become final (in which instance the Government shall thereafter have the right to cancel or ignore the markings at any time and the data will no longer be made subject to any disclosure prohibitions), or by final disposition of the matter by court decision if suit is filed.

(2) The time limits in the procedures set forth in subparagraph (e)(1) of this clause may be modified in accordance with agency regulations implementing the Freedom of Information Act (5 U.S.C. 552) if necessary to respond to a request there under.

(f) Omitted or Incorrect Markings

(1) Data delivered to the Government without either the limited rights or restricted rights notice as authorized by paragraph (h) of this clause, or the copyright notice required by paragraph (c) of this clause, shall be deemed to have been furnished with unlimited rights, and the Government assumes no liability for the disclosure, use, or reproduction of such data. However, to the extent the data has not been disclosed without restriction outside the Government, the Recipient may request, within 6 months (or a longer time approved by the Contracting Officer for good cause shown) after delivery of such data, permission to have notices placed on qualifying data at the Recipient's expense, and the Contracting Officer may agree to do so if the Recipient--

(i) Identifies the data to which the omitted notice is to be applied;

(ii) Demonstrates that the omission of the notice was inadvertent;

(iii) Establishes that the use of the proposed notice is authorized; and

(iv) Acknowledges that the Government has no liability with respect to the disclosure, use, or reproduction of any such data made prior to the addition of the notice or resulting from the omission of the notice.

(2) The Contracting Officer may also:

- (i) Permit correction at the Recipient's expense of incorrect notices if the Recipient identifies the data on which correction of the notice is to be made, and demonstrates that the correct notice is authorized; or
- (ii) Correct any incorrect notices.

(g) Rights to Protected Data

(1) The Recipient may, with the concurrence of DOE, claim and mark as protected data, any data first produced in the performance of this award that would have been treated as a trade secret if developed at private expense. Any such claimed "protected data" will be clearly marked with the following Protected Rights Notice, and will be treated in accordance with such Notice, subject to the provisions of paragraphs (e) and (f) of this clause.

#### PROTECTED RIGHTS NOTICE

These protected data were produced under agreement no. DE-FE0001882 with the U.S. Department of Energy and may not be published, disseminated, or disclosed to others outside the Government until five years after it was generated, unless express written authorization is obtained from the recipient. 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).

(2) Any such marked Protected Data may be disclosed under obligations of confidentiality for the following purposes:

(a) For evaluation purposes under the restriction that the "Protected Data" be retained in confidence and not be further disclosed; or

(b) To subcontractors or other team members performing work under the Government's FutureGen program of which this award is a part, for information or use in connection with the work performed under their activity, and under the restriction that the Protected Data be retained in confidence and not be further disclosed

(3) The obligations of confidentiality and restrictions on publication and dissemination shall end for any Protected Data.

(a) At the end of the protected period;

(b) If the data becomes publicly known or available from other sources without a breach of the obligation of confidentiality with respect to the Protected Data;

(c) If the same data is independently developed by someone who did not have access to the Protected Data and such data is made available without obligations of confidentiality; or

(d) If the Recipient disseminates or authorizes another to disseminate such data without obligations of confidentiality.

(4) However, the Recipient agrees that the following types of data are not considered to be protected and shall be provided to the Government when required by this award without any claim that the data are Protected Data. The parties agree that notwithstanding the following lists of types of data, nothing precludes the Government from seeking delivery of additional data in accordance with this award, or from making publicly available additional nonprotected data, nor does the following list constitute any admission by the Government that technical data not on the list is Protected Data.

#### Unlimited Rights Data (Alliance)

The following types of data pertain to all aspects of work or services performed under this award, including instrumentation and controls, CO2 compression and transport systems, geologic injection operations, and sequestration monitoring, verification, and accounting (MVA). For purposes of the listing below of Unlimited Rights Data, the term "non-proprietary" means information or data that does not qualify as either Limited Rights Data, Protected Data or Restricted Computer Software as defined in paragraph (a) of this clause.

1. Equipment Lists – Non-proprietary summary of the major equipment (component systems and subsystems) for the project CO<sub>2</sub> delivery, geologic injection and MVA activities. Equipment is to be sorted by flow diagram, equipment type, and equipment number. General non-proprietary description data are to be provided for each equipment item, including, but not limited to the number required for operation, size or capacity, major non-proprietary operating and design parameters, and manufacturer and/or vendor.
2. Design Information – All non-proprietary project design information including sufficient background information to provide an overview of the project and to serve as a reference for the design considerations involved in a commercial-scale CO<sub>2</sub> delivery, geologic injection and MVA operation. This includes a non-proprietary overview description of the technology/systems; non-proprietary process performance requirements and the evaluations and operating philosophies upon which those performance requirements are based; a complete set of non-proprietary equipment plot and elevation drawings, and process and instrumentation diagrams, which describe the operational configuration; and non-proprietary experimental methods (by description or reference).
3. Process Flow Diagrams – The complete set of non-proprietary flow diagrams with all updates and modifications depicting process steps and interconnecting streams with qualitative descriptions of the process steps.
4. Stream Data – The complete set of non-proprietary stream data. This would include material and energy balances, both the expected values and ranges of flows, stream properties, and constituents at various operating conditions. Stream data may be included as part of the Process Flow Diagrams.
5. Environmental Emissions – Compositions and flow rates of all solid, liquid and gaseous streams discharged to the environment, as required by and submitted to regulatory agencies in the form of publicly disclosed data.
6. Sequestration Data – All sequestration/injection monitoring, mitigation and verification data, as required by and submitted to regulatory agencies in the form of publicly disclosed data.
7. Capital Cost Data – Non-proprietary data and documentation for all costs associated with the project, systems and subsystems, with a breakdown by process area and equipment type, defined as: CO<sub>2</sub> compression, geologic injection and MVA monitoring equipment, controls and electrical. Such data would be provided with a breakdown by process area, which would permit this information to be used for systems economic analysis and other analyses to accurately show the true repeatable, cost to transport and store CO<sub>2</sub>.
8. Operating Cost Data - Non-proprietary data and documentation for all projected and actual costs associated with the operation of the systems and subsystems, under conditions that represent reliable plant performance.
9. Operational Data - Non-proprietary performance data, start-up and operating experience information, overall and component availability, qualitative materials performance, and qualitative description of the control philosophy for the operation.
10. Unexpected Events, Encountered Problems, and Final Resolution – Non-proprietary data and documentation describing unexpected events or results, encountered problems, cause and alternatives analysis, and final resolution.

(5) The Government's sole obligation with respect to any protected data shall be as set forth in this paragraph (g).

(h) Protection of Limited Rights Data

(1) When data other than that listed in subparagraphs (b)(1)(i), (ii), and (iii) of this clause are specified to be delivered under this agreement and such data qualify as either limited rights data or restricted computer software, the Recipient, if the Recipient desires to continue protection of such data, shall withhold such data and not furnish them

to the Government under this agreement. As a condition to this withholding the Recipient shall identify the data being withheld and furnish form, fit, and function data in lieu thereof.

(2) Notwithstanding subparagraph (h)(1) of this clause, the agreement may identify and specify the delivery of limited rights data, or the Contracting Officer may require by written request the delivery of limited rights data that has been withheld or would otherwise be withholdable. If delivery of such data is so required, the Recipient may affix the following "Limited Rights Notice" to the data and the Government will thereafter treat the data, in accordance with such Notice:

#### LIMITED RIGHTS NOTICE

(a) These data are submitted with limited rights under Government agreement No. DE-FE0001882 (and subaward/contract No. \_\_\_\_\_, if appropriate). These data may be reproduced and used by the Government with the express limitation that they will not, without written permission of the Recipient, be used for purposes of manufacture nor disclosed outside the Government; except that the Government may disclose these data outside the Government for the following purposes, if any, provided that the Government makes such disclosure subject to prohibition against further use and disclosure:

- (1) Use (except for manufacture) by Federal support services contractors within the scope of their contracts;
- (2) This "limited rights data" may be disclosed for evaluation purposes under the restriction that the "limited rights data" be retained in confidence and not be further disclosed;
- (3) This "limited rights data" may be disclosed to other contractors participating in the Government's program of which this Recipient is a part for information or use (except for manufacture) in connection with the work performed under their awards and under the restriction that the "limited rights data" be retained in confidence and not be further disclosed;
- (4) This "limited rights data" may be used by the Government or others on its behalf for emergency repair or overhaul work under the restriction that the "limited rights data" be retained in confidence and not be further disclosed;
- (5) Release to a foreign government, or instrumentality thereof, as the interests of the United States Government may require, for information or evaluation, or for emergency repair or overhaul work by such government; and
- (6) As otherwise allowed in this agreement, use by the Government or others on its behalf to the extent necessary to enable the Government to complete the Statement of Project Objectives of this agreement.

(b) This Notice shall be marked on any reproduction of these data, in whole or in part.  
(End of notice)

(3)(i) Notwithstanding subparagraph (h)(1) of this clause, the agreement may identify and specify the delivery of restricted computer software, or the Contracting Officer may require by written request the delivery of restricted computer software that has been withheld or would otherwise be withholdable. If delivery of such computer software is so required, the Recipient may affix the following "Restricted Rights Notice" to the computer software and the Government will thereafter treat the computer software, subject to paragraphs (d) and (e) of this clause, in accordance with the Notice:

#### RESTRICTED RIGHTS NOTICE

(a) This computer software is submitted with restricted rights under Government Agreement No. DE-FE0001882 (and subaward/contract \_\_\_\_\_, if appropriate). It may not be used, reproduced, or disclosed by the Government except as provided in paragraph (b) of this Notice or as otherwise expressly stated in the agreement.

(b) This computer software may be—

- (1) Used or copied for use in or with the computer or computers for which it was acquired, including use at any Government installation to which such computer or computers may be transferred;
- (2) Used or copied for use in a backup computer if any computer for which it was acquired is inoperative;
- (3) Reproduced for safekeeping (archives) or backup purposes;
- (4) Modified, adapted, or combined with other computer software, provided that the modified, combined, or adapted portions of the derivative software are made subject to the same restricted rights;
- (5) Disclosed to and reproduced for use by support service Recipients in accordance with subparagraphs (b)(1)

through (4) of this clause, provided the Government makes such disclosure or reproduction subject to these restricted rights;

(6) Used or copied for use in or transferred to a replacement computer; and

(7) As otherwise allowed in this agreement, use by the Government or others on its behalf to the extent necessary to enable the Government to complete the Statement of Project Objectives of this agreement.

(c) Notwithstanding the foregoing, if this computer software is published copyrighted computer software, it is licensed to the Government, without disclosure prohibitions, with the minimum rights set forth in paragraph (b) of this clause.

(d) Any other rights or limitations regarding the use, duplication, or disclosure of this computer software are to be expressly stated in, or incorporated in, the agreement.

(e) This Notice shall be marked on any reproduction of this computer software, in whole or in part.  
(End of notice)

(ii) Where it is impractical to include the Restricted Rights Notice on restricted computer software, the following short-form Notice may be used in lieu thereof:

#### RESTRICTED RIGHTS NOTICE

Use, reproduction, or disclosure is subject to restrictions set forth in Agreement No. DE-FE0001882 (and subaward/contract \_\_\_\_\_, if appropriate) with \_\_\_\_\_ (name of Recipient and subrecipient/contractor).  
(End of notice)

(iii) If restricted computer software is delivered with the copyright notice of 17 U.S.C. 401, it will be presumed to be published copyrighted computer software licensed to the Government without disclosure prohibitions, with the minimum rights set forth in paragraph (b) of this clause, unless the Recipient includes the following statement with such copyright notice: "Unpublished--rights reserved under the Copyright Laws of the United States."  
(End of clause)

(i) Subaward/Contract

The Recipient has the responsibility to obtain from its subrecipients/contractors all data and rights therein necessary to fulfill the Recipient's obligations to the Government under this agreement. If a subrecipient/contractor refuses to accept terms affording the Government such rights, the Recipient shall promptly bring such refusal to the attention of the Contracting Officer and not proceed with subaward/contract award without further authorization.

(j) Additional Data Requirements

In addition to the data specified elsewhere in this agreement to be delivered, the Contracting Officer may, at anytime during agreement performance or within a period of 3 years after acceptance of all items to be delivered under this agreement, order any data first produced or specifically used in the performance of this agreement. This clause is applicable to all data ordered under this subparagraph. Nothing contained in this subparagraph shall require the Recipient to deliver any data the withholding of which is authorized by this clause or data which are specifically identified in this agreement as not subject to this clause. When data are to be delivered under this subparagraph, the Recipient will be compensated for converting the data into the prescribed form, for reproduction, and for delivery.

(k) The Recipient agrees, except as may be otherwise specified in this agreement for specific data items listed as not subject to this paragraph, that the Contracting Officer or an authorized representative may, up to three years after acceptance of all items to be delivered under this contract, inspect at the Recipient's facility any data withheld pursuant to paragraph (h) of this clause, for purposes of verifying the Recipient's assertion pertaining to the limited rights or restricted rights status of the data or for evaluating work performance. Where the Recipient whose data are to be inspected demonstrates to the Contracting Officer that there would be a possible conflict of interest if the inspection were made by a particular representative, the Contracting Officer shall designate an alternate inspector.

(End of clause)

**04. FAR 52.227-23 Rights to Proposal Data (Technical) (JUN 1987)**

It is agreed that as a condition of award of this contract, and notwithstanding the conditions of any notice appearing thereon, the Government shall have unlimited rights (as defined in the "Rights in Data—Programs Covered under Special Data Statutes" clause contained in this contract) in and to the technical data contained in the proposal dated September 4, 2010, with revisions/additions dated September 7, 2010, November 30, 2010, and December 21, 2010, upon which this contract is based.

**05. Patent Rights (Small Business Firms and Nonprofit Organizations)**

(a) Definitions

Invention means any invention or discovery which is or may be patentable or otherwise protectable under title 35 of the United States Code, or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 U.S.C. 2321 et seq. ).

Made when used in relation to any invention means the conception or first actual reduction to practice of such invention.

Nonprofit organization means a university or other institution of higher education or an organization of the type described in section 501(c)(3) of the Internal Revenue Code of 1954 (26 U.S.C. 501(c)) and exempt from taxation under section 501(a) of the Internal Revenue Code (26 U.S.C. 501(a)) or any nonprofit scientific or educational organization qualified under a State nonprofit organization statute.

Practical application means to manufacture in the case of a composition or product, to practice in the case of a process or method, or to operate in the case of a machine or system; and, in each case, under such conditions as to establish that the invention is being utilized and that its benefits are to the extent permitted by law or Government regulations available to the public on reasonable terms.

Small business firm means a small business concern as defined at section 2 of Public Law 85-536 (16 U.S.C. 632) and implementing regulations of the Administrator of the Small Business Administration. For the purpose of this clause, the size standards for small business concerns involved in Government procurement and subcontracting at 13 CFR 121.3 through 121.8 and 13 CFR 121.3 through 121.12, respectively, will be used.

Subject invention means any invention of the Recipient conceived or first actually reduced to practice in the performance of work under this award, provided that in the case of a variety of plant, the date of determination (as defined in section 41(d) of the Plant Variety Protection Act, 7 U.S.C. 2401(d) must also occur during the period of award performance.

(b) Allocation of Principal Rights

The Recipient may retain the entire right, title, and interest throughout the world to each subject invention subject to the provisions of this Patent Rights clause and 35 U.S.C. 203. With respect to any subject invention in which the Recipient retains title, the Federal Government shall have a non-exclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the U.S. the subject invention throughout the world.

(c) Invention Disclosure, Election of Title and Filing of Patent Applications by Recipient

(1) The Recipient will disclose each subject invention to DOE within two months after the inventor discloses it in writing to Recipient personnel responsible for the administration of patent matters. The disclosure to DOE shall be in the form of a written report and shall identify the award under which the invention was made and the inventor(s). It shall be sufficiently complete in technical detail to convey a clear understanding to the extent known at the time of disclosure, of the nature, purpose, operation, and the physical, chemical, biological or electrical characteristics of the

invention. The disclosure shall also identify any publication, on sale or public use of the invention and whether a manuscript describing the invention has been submitted for publication and, if so, whether it has been accepted for publication at the time of disclosure. In addition, after disclosure to DOE, the Recipient will promptly notify DOE of the acceptance of any manuscript describing the invention for publication or of any on sale or public use planned by the Recipient.

(2) The Recipient will elect in writing whether or not to retain title to any such invention by notifying DOE within two years of disclosure to DOE. However, in any case where publication, on sale, or public use has initiated the one-year statutory period wherein valid patent protection can still be obtained in the U.S., the period for election of title may be shortened by the agency to a date that is no more than 60 days prior to the end of the statutory period.

(3) The Recipient will file its initial patent application on an invention to which it elects to retain title within one year after election of title or, if earlier, prior to the end of any statutory period wherein valid patent protection can be obtained in the U.S. after a publication, on sale, or public use. The Recipient will file patent applications in additional countries or international patent offices within either ten months of the corresponding initial patent application, or six months from the date when permission is granted by the Commissioner of Patents and Trademarks to file foreign patent applications when such filing has been prohibited by a Secrecy Order.

(4) Requests for extension of the time for disclosure to DOE, election, and filing under subparagraphs (c)(1), (2), and (3) of this clause may, at the discretion of DOE, be granted.

(d) Conditions When the Government May Obtain Title

The Recipient will convey to DOE, upon written request, title to any subject invention:

(1) If the Recipient fails to disclose or elect the subject invention within the times specified in paragraph (c) of this patent rights clause, or elects not to retain title; provided that DOE may only request title within 60 days after learning of the failure of the Recipient to disclose or elect within the specified times;

(2) In those countries in which the Recipient fails to file patent applications within the times specified in paragraph (c) of this Patent Rights clause; provided, however, that if the Recipient has filed a patent application in a country after the times specified in paragraph (c) of this Patent Rights clause, but prior to its receipt of the written request of DOE, the Recipient shall continue to retain title in that country; or

(3) In any country in which the Recipient decides not to continue the prosecution of any application for, to pay the maintenance fees on, or defend in a reexamination or opposition proceeding on, a patent on a subject invention.

(e) Minimum Rights to Recipient and Protection of the Recipient Right To File

(1) The Recipient will retain a non-exclusive royalty-free license throughout the world in each subject invention to which the Government obtains title, except if the Recipient fails to disclose the subject invention within the times specified in paragraph (c) of this Patent Rights clause. The Recipient's license extends to its domestic subsidiaries and affiliates, if any, within the corporate structure of which the Recipient is a party and includes the right to grant sublicenses of the same scope of the extent the Recipient was legally obligated to do so at the time the award was awarded. The license is transferable only with the approval of DOE except when transferred to the successor of that part of the Recipient's business to which the invention pertains.

(2) The Recipient's domestic license may be revoked or modified by DOE to the extent necessary to achieve expeditious practical application of the subject invention pursuant to an application for an exclusive license submitted in accordance with applicable provisions at 37 CFR part 404 and the agency's licensing regulation, if any. This license will not be revoked in that field of use or the geographical areas in which the Recipient has achieved practical application and continues to make the benefits of the invention reasonably accessible to the public. The license in any foreign country may be revoked or modified at discretion of the funding Federal agency to the extent the Recipient, its licensees, or its domestic subsidiaries or affiliates have failed to achieve practical application in that foreign country.

(3) Before revocation or modification of the license, the funding Federal agency will furnish the Recipient a written notice of its intention to revoke or modify the license, and the Recipient will be allowed thirty days (or such other time as may be authorized by DOE for good cause shown by the Recipient) after the notice to show cause why the license should not be revoked or modified. The Recipient has the right to appeal, in accordance with applicable regulations in 37 CFR part 404 and the agency's licensing regulations, if any, concerning the licensing of Government-owned inventions, any decision concerning the revocation or modification of its license.

(f) Recipient Action To Protect Government's Interest

(1) The Recipient agrees to execute or to have executed and promptly deliver to DOE all instruments necessary to:

(i) Establish or confirm the rights the Government has throughout the world in those subject inventions for which the Recipient retains title; and

(ii) Convey title to DOE when requested under paragraph (d) of this Patent Rights clause, and to enable the government to obtain patent protection throughout the world in that subject invention.

(2) The Recipient agrees to require, by written agreement, its employees, other than clerical and non-technical employees, to disclose promptly in writing to personnel identified as responsible for the administration of patent matters and in a format suggested by the Recipient each subject invention made under this award in order that the Recipient can comply with the disclosure provisions of paragraph (c) of this Patent Rights clause, and to execute all papers necessary to file patent applications on subject inventions and to establish the Government's rights in the subject inventions. The disclosure format should require, as a minimum, the information requested by paragraph (c)(1) of this Patent Rights clause. The Recipient shall instruct such employees through the employee agreements or other suitable educational programs on the importance of reporting inventions in sufficient time to permit the filing of patent applications prior to U.S. or foreign statutory bars.

(3) The Recipient will notify DOE of any decision not to continue prosecution of a patent application, pay maintenance fees, or defend in a reexamination or opposition proceeding on a patent, in any country, not less than 30 days before the expiration of the response period required by the relevant patent office.

(4) The Recipient agrees to include, within the specification of any U.S. patent application and any patent issuing thereon covering a subject invention, the following statement: "This invention was made with Government support under (identify the award) awarded by (identify DOE). The Government has certain rights in this invention."

(g) Subaward/Contract

(1) The Recipient will include this Patent Rights clause, suitably modified to identify the parties, in all subawards/contracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or nonprofit organization. The subrecipient/contractor will retain all rights provided for the Recipient in this Patent Rights clause, and the Recipient will not, as part of the consideration for awarding the subcontract, obtain rights in the subcontractors' subject inventions.

(2) The Recipient will include in all other subawards/contracts, regardless of tier, for experimental, developmental or research work, the patent rights clause required by 10 CFR 600.325(c).

(3) In the case of subawards/contracts at any tier, DOE, the Recipient, and the subrecipient/contractor agree that the mutual obligations of the parties created by this clause constitute a contract between the subrecipient/contractor and DOE with respect to those matters covered by the clause.

(h) Reporting on Utilization of Subject Inventions

The Recipient agrees to submit on request periodic reports no more frequently than annually on the utilization of a subject invention or on efforts at obtaining such utilization that are being made by the Recipient or its licensees or

assignees. Such reports shall include information regarding the status of development, date of first commercial sale or use, gross royalties received by the Recipient and such other data and information as DOE may reasonably specify. The Recipient also agrees to provide additional reports in connection with any march-in proceeding undertaken by DOE in accordance with paragraph (j) of this Patent Rights clause. As required by 35 U.S.C. 202(c)(5), DOE agrees it will not disclose such information to persons outside the Government without the permission of the Recipient.

(i) Preference for United States Industry.

Notwithstanding any other provision of this Patent Rights clause, the Recipient agrees that neither it nor any assignee will grant to any person the exclusive right to use or sell any subject invention in the U.S. unless such person agrees that any products embodying the subject invention or produced through the use of the subject invention will be manufactured substantially in the U.S. However, in individual cases, the requirement for such an agreement may be waived by DOE upon a showing by the Recipient or its assignee that reasonable but unsuccessful efforts have been made to grant licenses on similar terms to potential licensees that would be likely to manufacture substantially in the U.S. or that under the circumstances domestic manufacture is not commercially feasible.

(j) March-in-Rights

The Recipient agrees that with respect to any subject invention in which it has acquired title, DOE has the right in accordance with procedures at 37 CFR 401.6 and any supplemental regulations of the Agency to require the Recipient, an assignee or exclusive licensee of a subject invention to grant a non-exclusive, partially exclusive, or exclusive license in any field of use to a responsible applicant or applicants, upon terms that are reasonable under the circumstances and if the Recipient, assignee, or exclusive licensee refuses such a request, DOE has the right to grant such a license itself if DOE determines that:

- (1) Such action is necessary because the Recipient or assignee has not taken or is not expected to take within a reasonable time, effective steps to achieve practical application of the subject invention in such field of use;
- (2) Such action is necessary to alleviate health or safety needs which are not reasonably satisfied by the Recipient, assignee, or their licensees;
- (3) Such action is necessary to meet requirements for public use specified by Federal regulations and such requirements are not reasonably satisfied by the Recipient, assignee, or licensee; or
- (4) Such action is necessary because the agreement required by paragraph (i) of this Patent Rights clause has not been obtained or waived or because a licensee of the exclusive right to use or sell any subject invention in the U.S. is in breach of such agreement.

(k) Special Provisions for Awards With Nonprofit Organizations

If the Recipient is a nonprofit organization, it agrees that:

- (1) Rights to a subject invention in the U.S. may not be assigned without the approval of DOE, except where such assignment is made to an organization which has as one of its primary functions the management of inventions, provided that such assignee will be subject to the same provisions as the Recipient;
- (2) The Recipient will share royalties collected on a subject invention with the inventor, including Federal employee co-inventors (when DOE deems it appropriate) when the subject invention is assigned in accordance with 35 U.S.C. 202(e) and 37 CFR 401.10;
- (3) The balance of any royalties or income earned by the Recipient with respect to subject inventions, after payment of expenses (including payments to inventors) incidental to the administration of subject inventions, will be utilized for the support of scientific or engineering research or education; and

(4) It will make efforts that are reasonable under the circumstances to attract licensees of subject inventions that are small business firms and that it will give preference to a small business firm if the Recipient determines that the small business firm has a plan or proposal for marketing the invention which, if executed, is equally likely to bring the invention to practical application as any plans or proposals from applicants that are not small business firms; provided that the Recipient is also satisfied that the small business firm has the capability and resources to carry out its plan or proposal. The decision whether to give a preference in any specific case will be at the discretion of the Recipient. However, the Recipient agrees that the Secretary of Commerce may review the Recipient's licensing program and decisions regarding small business applicants, and the Recipient will negotiate changes to its licensing policies, procedures or practices with the Secretary when the Secretary's review discloses that the Recipient could take reasonable steps to implement more effectively the requirements of this paragraph (k)(4).

(l) Communications

All communications required by this Patent Rights clause should be sent to the DOE Patent Counsel address listed in the Award Document.

(m) Electronic Filing

Unless otherwise Specified in the award, the information identified in paragraphs (f)(2) and (f)(3) may be electronically filed.

**06. Limited Rights Data and Restricted Computer Software with Delivery Restrictions**

a. The DOE agrees to treat the data and software set forth below as Limited Rights Data and Restricted Computer Software with Delivery Restrictions, to treat the data and software as confidential, and to deny access to this data and software by non-U.S. Government parties, except to DOE support contractors working on this program, to the extent permitted by law.

- Seismic, geologic, and geophysical data belonging to, licensed or purchased from a 3<sup>rd</sup> party generated outside of the FutureGen project and labeled "Proprietary".

b. DOE shall be permitted to call for the delivery of the data listed in a. above only in the following circumstances:

(1) To defend litigation brought against the government, including patent infringement, environmental and tort claims;

(2) To pursue litigation brought by the government against Recipient or one of Recipient's team members or subcontractors growing out of work performed under the ICCS Cooperative Agreement entered into between Recipient and DOE;

(3) In the event the Government requires the information for investigations of fraud, mischarging, or similar charges against Recipient or one of its team members or subcontractors;

(4) In the event of a catastrophic occurrence at the demonstration facility such as an explosion, accident or hazardous material release, where the Government requires the information to conduct an analysis of the occurrence; or

(5) In the event DOE requires call-up of such data in connection with any other administrative requirement specifically defined in the cooperative agreement.

c. DOE shall have the right to inspect the data listed in a. above at any time.

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## 07. Limited Rights Data

1. The limited rights data subject to the “Rights in Data” clause in this award are listed below. This listing of data, which are asserted by the Recipient to be limited rights data, does not constitute an admission by the Government that the data is in fact limited rights data.
  - All data in site proposals.
  - All data in other proposals, except for that data which is contained in the proposal dated September 4, 2010, with revisions/additions dated September 7, 2010, November 30, 2010, and December 21, 2010, upon which this contract is based .
  - Seismic data belonging to, licensed or purchased from a 3<sup>rd</sup> party generated outside of the FutureGen project and labeled “Proprietary”.
  - Pre-existing work products and data owned by the Illinois Department of Natural Resources (IDNR) and licensed to Patrick Engineering that will be used for EIS preparation.
2. If a patent is issued by the United States Patent and Trademark Office or the patent office of any foreign country based on any information asserted to be limited rights data, the Government will no longer treat any data contained in such issued patent as limited rights data. In addition, if any information asserted to be limited rights data results in or becomes a Subject Invention, as that term is defined in the patent rights clause of this agreement, the Government will only treat such data as limited rights data until the Recipient has filed its initial patent application.
3. The Recipient shall not introduce or utilize any limited rights data not identified in paragraph (1) above in the performance of the award without the expressed written permission of the Contracting Officer.

## 08. Restricted Computer Software

The restricted computer software subject to the provisions of the “Rights in Data” clause in this agreement are listed below. This list of software programs, which are asserted by the Recipient to be restricted computer software, does not constitute an admission by the Government that the software is in fact restricted computer software.

1. STOMP simulation software
2. CO2 Injection Cost Estimator (CO2-ICE)

The Recipient shall not introduce or utilize any restricted computer software not identified above without advance written notification of the Contracting Officer.

## 09. Protected Data

The following is a listing of data anticipated to be generated under this award that the Recipient expects will qualify as “Protected Data,” as that term is defined in the “Rights in Data” clause in this award. Incorporating this listing of data into this agreement does not constitute a guarantee by the Government that the data will in fact qualify for this designation.

DOE and the Recipient recognize that some items in the listing of Protected Data below and the listing in Subparagraph 03.(g)(4) titled “Unlimited Rights Data (Alliance)” are similar in description. As the project progresses, the below Items 1 through 27 may be refined to provide more specific descriptions of what the DOE

agrees may be treated as Protected Data. The Recipient and DOE may, from time to time, amend in writing this Paragraph 09. to incorporate the more specific descriptions of Items 1 through 27. Upon agreement of DOE, this same list may be expanded periodically to include Protected Data not yet identified which the Recipient desires be included in this list.

1. Sensitive business information, confidential communications, non-disclosure and confidentiality agreements, proposal and offer evaluations, and other materials and data mutually deemed sensitive by the Alliance and DOE.
2. Data in proposals received by the Alliance that are produced in the performance of the award and that do not contain Limited Rights Data of the proposer.
3. All site-specific data, including site proposal evaluations, seismic data, geologic data, well logs, property ownership data, site-specific cost analyses, siting ranking sheets, analyses and internal communications related to the evaluations of each site.
4. The spreadsheet model prepared by Patrick Engineering to rank the offered sites.
5. Proprietary capital and operating cost estimates.
6. Project risk evaluation matrix, including specific risks, their probability, their potential impact, and possible mitigation actions.
7. Proprietary detailed project specifications.
8. Detailed design drawings.
9. Interface specifications at plant boundary (boundary conditions).
10. Detailed Process Flow Diagrams.
11. Process control drawings.
12. Environmental By-products (flows & analysis), including discharged water and air emissions.
13. Equipment Design Details.
14. Equipment Specification Sheets.
15. Pressure relief system design & calculations.
16. Detailed Equipment drawings.
17. Detailed instrument list.
18. Instrumentation sizing (valves, flow meters, etc).
19. Instrumentation installation drawings, wiring, etc.
20. Control Drawings.
21. DCS Layout.
22. Alarm Summary Sheets.
23. Detailed utility consumption (by equipment).
24. All detailed project schedule data.
25. Detailed elevation drawings.
26. Building plans and elevations.
27. Detailed Reports from all design reviews, safety and Process Hazard Analysis.

If a patent is issued by the United States Patent and Trademark Office or the patent office of any foreign country based on any information asserted to be Protected Data, the Government will no longer treat any data contained in such issued patent as Protected Data. In addition, if any information asserted to be Protected Data results in or becomes a Subject Invention, as that term is defined in the patent rights clause of this agreement, the Government will only treat such data as Protected Data until the Recipient has filed its initial patent application.

#### **10. FAR 52.227-3 Patent Indemnity (APR 1984)**

- (a) The Contractor shall indemnify the Government and its officers, agents, and employees against liability, including costs, for infringement of any United States patent (except a patent issued upon an application that is now or may hereafter be withheld from issue pursuant to a Secrecy Order under 35 U.S.C. 181) arising out of the manufacture or delivery of supplies, the performance of services, or the construction, alteration, modification, or repair of real property (hereinafter referred to as "construction work") under this contract, or out of the use or disposal by or for the account of the Government of such supplies or construction work.

- (b) This indemnity shall not apply unless the Contractor shall have been informed as soon as practicable by the Government of the suit or action alleging such infringement and shall have been given such opportunity as is afforded by applicable laws, rules, or regulations to participate in its defense. Further, this indemnity shall not apply to -
- (1) An infringement resulting from compliance with specific written instructions of the Contracting Officer directing a change in the supplies to be delivered or in the materials or equipment to be used, or directing a manner of performance of the contract not normally used by the Contractor;
  - (2) An infringement resulting from addition to or change in supplies or components furnished or construction work performed that was made subsequent to delivery or performance; or
  - (3) A claimed infringement that is unreasonably settled without the consent of the Contractor, unless required by final decree of a court of competent jurisdiction.

**11. FAR 52.227-9 Refund of Royalties (FEB 1995)**

- (a) The contract price includes certain amounts for royalties payable by the Contractor or subcontractors or both, which amounts have been reported to the Contracting Officer.
- (b) The term "royalties" as used in this clause refers to any costs or charges in the nature of royalties, license fees, patent or license amortization costs, or the like, for the use of or for rights in patents and patent applications in connection with performing this contract or any subcontract here-under. The term also includes any costs or charges associated with the access to, use of, or other right pertaining to data that is represented to be proprietary and is related to the performance of this contract or the copying of such data or data that is copyrighted.
- (c) The Contractor shall furnish to the Contracting Officer, before final payment under this contract, a statement of royalties paid or required to be paid in connection with performing this contract and subcontracts hereunder together with the reasons.
- (d) The Contractor will be compensated for royalties reported under paragraph (c) of this clause, only to the extent that such royalties were included in the contract price and are determined by the Contracting Officer to be properly chargeable to the Government and allocable to the contract. To the extent that any royalties that are included in the contract price are not, in fact, paid by the Contractor or are determined by the Contracting Officer not to be properly chargeable to the government and allocable to the contract, the contract price shall be reduced. Repayment or credit to the Government shall be made as the Contracting Officer directs. The approval by DOE of any individual payments or royalties shall not prevent the Government from contesting at any time the enforceability, validity, scope of, or title to, any patent or the proprietary nature of data pursuant to which a royalty or other payment is to be or has been made.
- (e) If, at any time within 3 years after final payment under this contract, the Contractor for any reason is relieved in whole or in part from the payment of the royalties included in the final contract price as adjusted pursuant to paragraph (d) of this clause, the Contractor shall promptly notify the Contracting Officer of that fact and shall reimburse the Government in a corresponding amount.
- (f) The substance of this clause, including this paragraph (f), shall be included in any subcontract in which the amount of royalties reported during negotiation of the subcontract exceeds \$250.

**12. Availability of Contract and Other Data**

- (a) The Recipient will, for the entire period of Recipient's participation in the project at the Facility (including operation of the Facility) and for three years thereafter, whether or not under a Government Cooperative Agreement, keep and maintain all technical data, including limited rights data and data obtained from subcontractors and licensors, necessary to construct and/or operate the Facility, and all data including business and financial data

necessary to evaluate the technical and economic operation of the Facility. During the entire period of construction and/or operation of the Facility, regardless of whether the Government participates past Design, the Recipient shall permit the Government and its representative the right to inspect at the Facility any data kept and maintained pursuant to this paragraph. The Recipient shall, after termination of the Government's participation in the project at the facility, periodically deliver reports to the Government on the construction and operation of the facility, which reports shall not include limited rights data.

(b) If the Recipient withdraws from this Cooperative Agreement or defaults after Design or Construction, the Government shall have the right to have all data kept and maintained pursuant to Paragraph (a) above, delivered to the Government or otherwise disposed of as the Contracting Officer shall direct upon such termination, unless delivery of such data has been excused under Articles 08 or 09 above. Any limited rights data delivered pursuant to this paragraph shall be marked as provided in Paragraph (g)(2) of the Rights in Data – General clause with the addition to the legend thereof after (a)(5) as follows: (6) Use by Government or others on its behalf to the extent necessary to enable the Government to complete Construction and/or Operations.

(c) The Recipient agrees to and does hereby grant to the Government or others acting on its behalf, an irrevocable nonexclusive paid-up license in and to any limited rights data of the Recipient which are incorporated or embodied in the design or construction or utilized in the operation of the Facility: (1) to practice, or to have practiced, by or for the Government at the Facility, and (2) to transfer such license with the transfer of that Facility. Further, the Recipient agrees to obtain an equivalent license from its contractors, subcontractors, and licensors, if any. The license granted pursuant to this subparagraph shall be for the limited purpose of completion, repair or operation of the demonstration facility.

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## **ATTACHMENT 2 - STATEMENT OF PROJECT OBJECTIVES (SOPO)**

### **RECOVERY ACT: FUTUREGEN 2.0 PIPELINE AND REGIONAL CO<sub>2</sub> STORAGE RESERVOIR PROJECT**

**THIS SECTION OF THE SOPO (PAGES 1 – 27) DESCRIBES THE TOTAL PROJECT IN TERMS OF OVERALL OBJECTIVES AND SCOPE, AND THEN DETAILS PHASE 1.**

**THIS VERSION IS FOUND IN AMENDMENT 012 TO THE COOPERATIVE AGREEMENT.**

#### **A. PROJECT OBJECTIVES**

The primary objective of the FutureGen 2.0 – Pipeline and Regional CO<sub>2</sub> Storage Reservoir Project (Downstream Project) is to site, design, construct, and operate a CO<sub>2</sub> pipeline and CO<sub>2</sub> storage reservoir to be fully integrated in terms of project management, capacity, capabilities, technical scope, cost, and schedule with the FutureGen 2.0 – Oxy-Combustion Large Scale Test (Upstream Project). The Downstream Project will be designed with sufficient capacity to accept, transport, and sequester at least 1.3 million metric tons (MMT) of CO<sub>2</sub> annually in a deep saline geologic formation. The Upstream Project is planned to be located in Meredosia, Illinois. Other specific objectives for this project are:

- Demonstrate operation of the CO<sub>2</sub> pipeline and CO<sub>2</sub> storage reservoir fully integrated with the Upstream Project (an estimated rate of 1.3 MMT of CO<sub>2</sub> per year) for a period of three years.
- Execute a monitoring, verification and accounting program for CO<sub>2</sub> stored during the three-year demonstration program and for two years thereafter.
- Demonstrate technologies and protocols for CO<sub>2</sub> monitoring, verification, and accounting (MVA) necessary to establish the permanence of the sequestered CO<sub>2</sub> and provide a full accounting for all captured CO<sub>2</sub>.
- If possible, provide the flexibility needed to operate the Project as a storage hub that would allow for expansion to accommodate CO<sub>2</sub> from other sources.
- If possible, provide the flexibility needed to use captured CO<sub>2</sub> for beneficial use or enhanced oil recovery, as long as the primary objective of proving the viability of sequestering CO<sub>2</sub> in a deep saline formation with rigorous monitoring, verification, and accounting is not compromised.
- Provide visitor, research, education and training facilities.

#### **DESCRIPTION OF WORK TO BE PERFORMED**

The objectives of the project will be achieved in four phases. Each phase represents a distinct aspect of the project execution and the cost and schedule for each phase will be appropriately managed and reported to DOE as expressed in this Statement of Project Objectives. Specific objectives for each phase are as follows:

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Phase I: Project Definition – The objectives of Phase I are to select a site for the CO<sub>2</sub> storage facility, obtain site purchase options, complete a conceptual design and cost estimate for the Project, initiate the NEPA process, and execute a Cooperation and Technology Agreement between Recipient and Ameren Energy Resources (Ameren).

Phase II: NEPA, Permitting, and Preliminary Design – The objectives of Phase II are to complete environmental permitting and the NEPA process, obtain commitments on properties needed for the pipeline and sequestration site; complete Preliminary Design and cost estimate, prepare an MVA Plan, execute a CO<sub>2</sub> services agreement (after an acceptable power sales agreement is negotiated by the Upstream Project sponsor), and complete final preparations for financial closing (if required).

Phase III: Final Design, Construction, and Commissioning – The objectives of Phase III are to secure full funding of the non-DOE cost share of the project, complete the Final Design and cost estimate, construct the pipeline and facilities at the storage site including the visitor research center and training and educational facilities, and commission the system.

Phase IV: Operations and Post-Operations Monitoring – The objectives of Phase IV are to execute operation of the pipeline and storage facility systems to transport and sequester CO<sub>2</sub>, and to test technologies and protocols for CO<sub>2</sub> MVA necessary to establish the permanence of sequestration and provide a full accounting for all captured CO<sub>2</sub>.

## **B. SCOPE OF PROJECT**

The FutureGen Industrial Alliance, Inc. (the Alliance), will site, design, obtain required permits and regulatory approvals, procure material and equipment, construct, and operate a CO<sub>2</sub> pipeline and CO<sub>2</sub> storage reservoir that is fully integrated in terms of project management, technical scope, cost, and schedule with the FutureGen 2.0 – Oxy-Combustion Large Scale Test project, which is planned to be located in Meredosia, Illinois. The Alliance will design the storage hub to have the capacity to accept, transport, and store CO<sub>2</sub> at a minimum rate of 1.3 MMT per year in a deep saline geologic formation from the Upstream Project. During Phase IV the Alliance will operate a CO<sub>2</sub> pipeline and CO<sub>2</sub> storage facility including comprehensive monitoring, verification, and accounting (MVA). Phase IV will consist of a three year operational period followed by a two year post-operational period.

The Alliance will develop criteria for siting the CO<sub>2</sub> storage hub, select a site, develop pipeline routings and supplemental compression as required, and construct the visitor research center and training and educational facilities.

Initially, the Alliance will site and permit the storage hub to accommodate CO<sub>2</sub> from the Upstream Project, but the Alliance may pursue a storage hub that has the potential for future expansion to accommodate CO<sub>2</sub> from other regional sources if it can do so without increasing DOE's cost share or unduly delaying the project.

Consistent with the hub concept, the Alliance may evaluate the use of some of the captured CO<sub>2</sub> for beneficial use or EOR. The Alliance may implement these activities using CO<sub>2</sub> in excess of 1.3 MMT annually from the Upstream Project, or using CO<sub>2</sub> from other sources, so long as the

primary storage objective, proving the viability of sequestering up to 1.3 MMT per year of CO<sub>2</sub> in deep saline formation(s) with rigorous monitoring, verification, and accounting (MVA), is not compromised.

### **C. TASKS TO BE PERFORMED**

As previously described, the FutureGen 2.0 – Pipeline and Regional CO<sub>2</sub> Storage Reservoir Project consists of four phases: 1) Project Definition, 2) NEPA, Permitting and Preliminary Design, 3) Final Design, Construction, and Commissioning and 4) Operations and Post-Operations Monitoring. The tasks to be performed during Phase 1 are described below.

#### **PHASE I PROJECT DEFINITION (10/01/10 – 09/30/2012)**

Phase I activities will be focused on siting the project and developing a conceptual design, which will include an updated project scope, cost, and schedule. Phase I activities will also include project integration, reporting, stakeholder involvement, development of a CO<sub>2</sub> services agreement, financing, planning, and project controls.

The following are key milestones for Phase I of the project:

- Initiation of negotiations on the CO<sub>2</sub> services agreement – October 4, 2010
- Draft Cooperation and Technology Agreement Completed – November 30, 2010
- Storage Site Selection Process Complete (i.e., public announcement of preferred site) – February 28, 2011
- Initiation of the NEPA process – March 1, 2011
- Obtain Initial Site Purchase Options – May 27, 2011
- Storage Site Conceptual Design and Cost Estimate Complete – July 1, 2011
- Pipeline Conceptual Design and Cost Estimate Complete – July 1, 2011
- Initial Visitor and Educational Facility Conceptual Design and Cost Estimate Complete – July 1, 2011
- Critical Design and Operational Specifications at CO<sub>2</sub> Transfer Point Complete – July 1, 2011
- Pro forma Financial Model Completed – April 23, 2011
- Award Contract for Morgan County Characterization/Monitoring Well – September 15, 2011
- Initiate drilling activities for Morgan County Characterization/Monitoring Well – October 5, 2011
- A signed Agricultural Impact Mitigation Agreement with IDOA – January 20, 2012
- Complete Morgan County Characterization Well – February 28, 2012
- Borehole Completion Report – August 30, 2012
- Submit Decision Point (DP)-1 Application – April 23, 2012

- Non-Federal Funding Secured for Phase II – April 23 , 2012
- Submit applications for Class VI Injection Well Permit to EPA Region 5 – August 31, 2012
- Site Characterization Report – August 31, 2012

The following are deliverables for Phase I of the project:

- Project Management Plan – November 30, 2010
- Results of Storage Site Selection Process for DOE review – February 27, 2011
- Storage Site Selection Report – March 31, 2011
- Executed Cooperation and Technology Agreement – July 1, 2011
- Final Draft CO<sub>2</sub> Services Agreement – July 1, 2011
- Drilling and Characterization Plan Morgan County Characterization/Monitoring Well – July 8, 2011
- Phase I Environmental Information Volume – September 30, 2011
- Phase I Topical Report including Public Conceptual Design Report – September 30, 2011
- Borehole Completion Report – August 30, 2012
- Phase II Decision Point Application – April 23, 2012
- Technology Cost Data Report – June 30, 2012
- Site Characterization Report – August 30 , 2012

## **1.1 Project Integration**

### **1.1.1 Project and Interface Management**

Project management, project control, and project integration activities will be performed under this task. These activities will be used to provide oversight and control throughout Phase I. The Alliance will utilize earned value management techniques meeting industry standards for tracking completion of work, keeping activities on schedule, and controlling costs to remain within the budget. The Alliance will implement and manage the Project and report on activities in accordance with the approved Project Management Plan (PMP) for the total Project.

The Alliance will perform activities to facilitate communication with DOE and Ameren, who is responsible for implementing the Upstream Project.

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this Statement of Project Objectives.

Sub-award management, communications, outreach, and technology transfer functions will also be performed under this task.

The Alliance will prepare a Decision Point Application under this task.

The following activities will be conducted under Project Integration:

- Project Management
- Project Reporting
- Project Team Development
- Project Financial Planning
- Development of Legal framework for CO<sub>2</sub> transportation and storage
- Stakeholder Involvement and Communication

### **Project Management**

The Alliance will develop a baseline Project Management Plan (PMP) that will serve as the guiding document for execution of the Project. The PMP will be updated as appropriate to reflect any significant changes such as changes in Project management policies and procedures, significant changes in scope, changes in methods or approaches, or as otherwise required to ensure that the PMP is the appropriate governing plan for the Project work required to accomplish the Project objectives.

The PMP will be the critical document that integrates how: (a) work is executed to accomplish the Project objectives; (b) Project risks are considered; (c) the Project technical scope, cost, and schedule are managed; (d) Project performance is monitored and controlled; and, (e) Project information is communicated within the Integrated Project Team (IPT) (which includes the DOE) and to external stakeholders. The Alliance will involve DOE in the development and approval of the PMP and updates in subsequent phases.

The PMP will describe the integration activities identified above and shall address the following aspects of Project management:

- i. Executive Summary – succinctly describing the Project, background, rationale, goals and objectives.
- ii. Risk Management – identification of significant technical, resource, and management issues that have the potential to impede Project progress and strategies to minimize impacts from those issues.
- iii. Project Milestones – milestones for each Phase of the Project, including title, planned completion date and a description of the method/process/measure used to verify completion. Milestones will be established for major Project deliverables and will show progression towards Phase and/or Project goals.
- iv. Funding and Costing Profile – will show (a) by Phase, the total required funding and cost share percentages showing the ratio of federal funding to non-federal funding, (b) the budget broken down in accordance with Work Breakdown Structure for each Phase, and (c) the Project spend plan, by month, for the expenditure of Government funds in the current Phase. The costing profile will show expenditures on an as-expended basis, which may precede government reimbursement by one or more months. The funding

- profile will illustrate how the Alliance anticipates having sufficient cash flow to operate given this lag time.
- v. Resource-Loaded Integrated Project Schedule and Primavera Files– a schedule timeline of the Project broken down by Phase consistent with the work breakdown structure and the funding and costing profile. The timeline will also show any interdependencies within this project and the associated Upstream Project and note the Project milestones.
  - vi. Project Management Organization –Project team membership presented by discipline and organizational hierarchy, listing contact information for each IPT member. The project team membership will be presented for each element of work, and will identify performing organizations and responsible organizations.
  - vii. Roles and Responsibilities – For members of the IPT and for each entity (i.e., Government, the Alliance and participating teaming entities). Roles and responsibilities will be identified for each element of work, and for performing organizations and responsible organizations.
  - viii. Key Personnel – personnel considered essential to a Project should be identified. Prior to removing or replacing such personnel, the Alliance will notify DOE so that the impact to the Project can be ascertained.
  - ix. Work Breakdown Structure – The Alliance will utilize a work breakdown structure that allows it to effectively management and control the work activities. The detail level and type of work breakdown structure for each Phase shall be determined based on the type of work being performed [i.e., Task and/or systems]. The work breakdown structure will be consistent in the Project estimate, Project cost tracking, and Project scheduling system. Cost and schedule performance will be tracked at different levels of the work breakdown structure but will roll-up to the appropriate level for performance reporting.
  - x. Communications –The Alliance will establish the appropriate exchange of Project information within the Integrated Project Team (IPT), which consists of DOE, the Alliance, Ameren, key stakeholders, and external stakeholders including: (a) routine Project meetings (e.g., face-to-face, and remote conferencing); (b) design reviews; (c) Government review and approval of Alliance press releases, conference papers and journal articles; (d) dissemination of Project documentation (e.g., engineering drawings, modeling results, equipment lists, test plans, etc.); and (e) briefings to the Government.
  - xi. Project Monitoring, Change Control and Process Improvement – clearly showing how: (a) the Project will be monitored and changes controlled relative to the technical scope, budget and schedule basis, including changes that affect the Project management plan and the financial assistance award instrument; (b) Project variances will be determined, evaluated and documented; (c) steps will be taken to mitigate problems; and, (d) all these processes will be reported. The Alliance will implement these monitoring, change control and process improvement processes to revise and update the PMP when changes: (a) to Project management policies and procedures are appropriate; (b) to the technical scope, budget and/or schedule basis are approved; or, (c) are otherwise required to ensure that it is the appropriate governing plan for the work required to accomplish Project objectives.

- xii. Environment, Safety, and Health (ES&H) - The Alliance regards protection of the environment, promotion of employee well being, and development and maintenance of a comprehensive security program as essential components in its overall management system, and commits to appropriately consider and include these elements in all of its operations, facilities, and activities. This will be accomplished through the development and implementation of an Integrated Safety and Security Management (IS&SM) Plan, which will accomplish the following objectives:
- Establish the organized system wherein the design, construction, turnover, and initial operation activities are planned, performed, assessed, and improved.
  - Define the strategy for integrating environment, safety, health, and security requirements, regulations, codes, standards, and guidance not imposed by regulation during the project stages.
  - Ensure a high degree of safety and quality through compliance with relevant federal, state, and local regulations; the DOE requirements as flowed down through the Cooperative Agreement between DOE and the FutureGen Alliance; industry best practices; and the specific plans, conditions, and requirements of the project.

For the purposes of understanding the cost of the advanced technologies being demonstrated, the Alliance shall compile costs associated with the technology with separated project management and reporting costs. Project costs will be recorded as follows:

**Task Related Cost Breakdown** – the Alliance will plan and schedule the project; estimate cost; and report schedule progress and physical accomplishment, actual cost and earned value at WBS level 5. In most cases, actual cost and earned value will be reported at WBS level 5, with the exception being situations where the WBS does not logically permit actual costs to be collected at level 5. Progress will be planned, measured, and reported at the lowest levels of the WBS and aggregated up to the appropriate levels for assimilation with actual costs. This process will allow for uniform reporting of variances from plan and standard project performance indices, such as Schedule Performance Index (SPI) and Cost Performance Index (CPI), with plans for any required corrective actions.

**A Technology Cost Data Report** will be provided to the DOE Program Manager/Project Officer at the end of Phase I. Based on the costs of CO<sub>2</sub> compression/pumping, delivery, injection, geologic sequestration, and MVA, the Alliance will provide to DOE the capital and operating costs (estimated, including percent accuracy, and actual when available) and the total Project cost. The costs of any other technologies used in the Project will be included in this reporting. The cost data to be provided by the Alliance will include (but not necessarily be limited to):

- Project budget broken down by WBS levels, i.e., budgeted and actual costs at the deliverable level, rolled up to the subtask level, task, Phase, and total Project. The total Project budget will include personnel (direct labor), fringe, travel, equipment, supplies, sub-recipients (or subcontractors), consultants, other direct costs, and indirect costs (e.g., overhead, general and administrative).

- Capital and operating cost (CAPEX and OPEX) breakdown (excluding project management and reporting costs) and other costs including project equipment and material costs, capital costs, operating costs (budgeted and actual) and other costs as mutually (DOE and the Alliance) determined appropriate.

#### *Milestones*

- Integrated Project Schedule Developed – October 29, 2010
- Project Management Plan – November 30, 2010
- Submit DP-1 Application – April 23, 2012
- Technology Cost Data Report – June 30, 2012

### **Project Reporting**

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this Statement of Project Objectives.

The Alliance will submit monthly progress reports via email to the DOE Program Manager/Project Officer and Contract Specialist to aid in their oversight of the project. Monthly reports may include sections or pages containing confidential or other business sensitive information. Such sections or pages will carry a designation of “Business Sensitive and Confidential.” Monthly reports will be submitted on or before the 20<sup>th</sup> day of the month following period covered by the report. The format for the monthly report is contained in Attachment 1.

#### *Milestones*

- Project Monthly Report – The 20<sup>th</sup> day of the following month
- Quarterly Reports – 30 days after the end of the fiscal quarter
- Decision point Application Submitted to DOE – April 23, 2012
- Community Corner Updates – Bi-weekly
- Weekly Highlight Reports – Weekly

### **Project Team Development**

A Cooperation and Technology Agreement (CTA) between Ameren and the Alliance will be executed and implemented subject to DOE approval. The CTA will define a Technical Review Committee (TC), which will be comprised of representatives from Alliance member companies, Alliance employees, and DOE representatives. The TC will have the opportunity to observe and provide input to the design and operation of both the upstream and downstream projects. The CTA will also define procedures for project planning and knowledge base information sharing and cooperation among the parties, as well as procedures for access to facilities.

The Alliance will develop a project schedule integrated with the FutureGen 2.0 “Oxy-combustion Large Scale Test” project schedule in cooperation with Ameren.

### *Milestones*

- Draft Cooperation Technology Agreement – November 30, 2010
- Formation of FGA/Ameren Technical Committee – March 21, 2011
- Technical Committee Meetings – As Scheduled

## **Project Financing**

### **Financial and CO<sub>2</sub> Services Agreement Planning**

Key to the financial success of the project is execution of a CO<sub>2</sub> Services Agreement between Ameren Energy Resources and the FutureGen Industrial Alliance that will provide sufficient financing for design, procurement, construction, and operation of the CO<sub>2</sub> pipeline and storage facility.

The Alliance will work with Ameren Energy Resources to craft an acceptable agreement that will include financial terms, legal terms, and technical performance criteria. The Alliance expects the agreement to have both a capacity demand charge component and a variable charge component for managing the CO<sub>2</sub> from the Ameren facility. The current intention is that the Alliance will be taking on debt to build the pipeline that will be repaid over 20 to 30 years. The term of the CO<sub>2</sub> Services Agreement is expected to be comparable with the Alliance's debt term(s) and Ameren's Power Sales Arrangement term(s).

### *Milestones*

- Final Draft CO<sub>2</sub> Services Agreement – July 2, 2011

### **Pipeline Financing**

This activity will include: financial analysis, preliminary financial community outreach, monitoring and cycling back of lessons learned on other CCS projects seeking financing, screening and securing the necessary financial advisors, engagement with the Illinois Finance Authority (IFA), design of a "Wall Street" outreach approach that is ultimately intended to build the confidence in CCS and FutureGen 2.0 with future bondholders.

Consistent with the charter above, as part of this activity the preliminary pro forma financial model provided as part of the application will be enhanced based on refined cost estimates provided by the technical tasks and well as refined financial assumptions based on discussions with the IFA and financial community.

### *Milestones*

- Updated Financial Model – July 1, 2011
- Revised Financial Model – April 23, 2012

### **Stakeholder Involvement and Communications**

The objectives of the Stakeholder Involvement and Communications activities are to

- To engage communities throughout the state of Illinois to educate them about the opportunity to compete in being selected as a regional CO<sub>2</sub> storage site.

- To provide information to these communities and understand their issues and concerns and answer their questions so that they can make informed decisions regarding acceptance of the project.
- To communicate regionally, nationally, and globally with non-government organizations (NGOs), academics, industry, governments, and other stakeholders in order to explain the project, build support for its objectives, and resolve concerns early.

The Alliance will form and coordinate a team to conduct stakeholder engagement in communities across the state. The stakeholder engagement team will address local, Illinois State, national, and global issues. With respect to Illinois-specific activities related to siting, the Alliance will partner with the Illinois Coal Development Office and the Illinois State Geological Survey (ISGS) to address Illinois-specific siting issues.

A short survey will be sent to the point of contact (POC) listed in each proposal directly after proposals are received to solicit feedback on stakeholder perception and acceptance of CCS. The intention is to:

1. Alert the POC that the Alliance Stakeholder Engagement Team is interested in working with them to determine stakeholder perception and acceptance of CCS.
2. Ask the POC to describe their community:
  - a. Describe the entities and/or individuals seen as community leaders,
  - b. Describe the economic vitality of the community (growing, stable, or declining),
  - c. Describe the permanency of residents in the community,
  - d. Describe the main communication networks through which citizens share information and/or become informed
  - e. Describe the main employment opportunities in the community.
  - f. Describe post high school educational opportunities that are near-by.
3. Ask whether there are any Environmental NGOs in the region and if so whether the POC is aware of their stand on CCS.
4. Ask whether the POC follows social media including blogs written about his/her community.
5. Estimate the community's level of knowledge about CCS (from very low to high) and on what that information is this based?
6. Ask whether there has been any similar project proposed in the community and if so, to describe it and the outcome?

This survey is to serve as a baseline to help inform the Alliance about each community and to build on in conducting site visits.

The Stakeholder Engagement Team plans to have a brief meeting with each candidate site's community leaders to help inform the site selection process. The team will work through the POC who will organize the meeting and invite the community leaders. The list will ideally

include: environmental NGOs, local business leaders, government officials, farmers, homeowners/landowners, and managers of business located in close proximity to the proposed sites, service organization representatives, and school and university officials. The team will assess stakeholder perception and acceptance of CCS during these meetings.

The team will also review media clips throughout the site selection period to understand local sentiment in each of the proposed communities. In addition, blogs will also be monitored. This desktop research will help inform the team on local sentiment.

The team will analyze stakeholder perception and acceptance of CCS through these activities and provide a report to the site selection team to aid in the site selection process.

Once a preferred site is selected, the Alliance/ISGS team will conduct one-on-one interviews and group meetings with stakeholders. Meetings will be held with stakeholders prior to public hearings to answer questions and discuss carbon capture and storage. These meeting will be designed to engage stakeholders in the process prior to public hearing(s) for NEPA or environmental permits.

The Alliance will coordinate stakeholder involvement and communication activities with Ameren throughout the project. The Alliance stakeholder team will identify the communication leads at both companies and design a detailed strategy for engaging stakeholders and for communications in general, including media outreach.

The Stakeholder Engagement Team will identify a set of stakeholder representatives to serve on a formal FutureGen 2.0 stakeholder group. This group will meet or speak at least once each quarter to ensure that stakeholder issues are considered throughout the process. This group will include local, regional, state, and potentially national and global stakeholders from a broad set of perspectives. The Alliance will solicit feedback from FutureGen 2.0 stakeholder group on issues that may concern or interest stakeholders. The Alliance will request the group members reach out through their respective networks to solicit input and communicate information.

Lessons-learned from the original FutureGen project outreach activities will be incorporated into FutureGen 2.0. Some of the key lessons-learned that will be applied to FutureGen 2.0 include:

- Engage stakeholders early and often with varied speakers, experts, and organizations
- Value local knowledge and provide stakeholders opportunities to provide project-based input – stakeholders who invest their own time, often at their expense, to engage with the project developers want to know that their suggestions were at least considered, and ideally made a difference
- Create a stakeholder feedback system that ensures feedback from information providers
- Encourage alignment between goals of local project team and the Alliance project development team
- Utilize formal processes, such as a regulatory process, where local project team and project developers can appear together to answer questions, provide information, and gain feedback

For FutureGen 2.0 to be successful, communication lines between the various players need to be as open and transparent as possible. Stakeholders need to feel that their issues and concerns are being heard and considered. The media will likely report on the project much more favorably if these values are supported.

The Alliance team will:

- Provide strategic communications counsel and guidance.
- Develop message platform to demonstrate clarity of mission and momentum of the project.
- Update collateral material to reflect new messaging platform
- Maintain ongoing media relations and activities to support pipeline activities, power plant acquisition, and findings from geologic testing, new member recruitment, stakeholder involvement, legislative/regulatory activity and project progress.
- Bi-weekly updates to the Community Corner on the FutureGen website.

#### *Milestones*

- Site Selection Public Meeting – October 28, 2010
- Survey sent to community POCs – November 16, 2010
- Initiate community meetings conducted – November 29, 2010
- Stakeholder Group Formed – March 30, 2011

## **1.2 Design and Construction**

### **1.2.1 Siting, NEPA, and Permitting**

#### **1.2.1.1 Siting**

The Alliance will site a CO<sub>2</sub> storage facility and associated pipeline network to initially service the Upstream Project planned to be located in Meredosia, Illinois. However, the Alliance's design and siting effort may consider, to the extent permitted by funding and schedule, a storage facility that could accept CO<sub>2</sub> from other industrial sources in the future.

Ameren's facility in Meredosia, Illinois is planned as the host site for the FutureGen 2.0 – Oxy-Combustion Large Scale Test. At Meredosia, CO<sub>2</sub> will be captured and delivered to the Alliance at the plant gate. The Alliance will identify a short list of candidate CO<sub>2</sub> storage sites and identify the pipeline routes between the Meredosia plant and the candidate sites. As part of

determining which sites are considered for final selection, the Alliance will engage DOE in consultations regarding the ability of the candidate sites to meet all minimum DOE and Alliance requirements. If it is indeterminate as to whether any candidate sites can meet the minimum requirements, then DOE and the Alliance will determine a mutually agreeable course of action and if deemed necessary develop a set of interim deliverables for the balance of the siting process. The Alliance may subsequently perform additional due diligence, including seismic surveys on one or more of sites considered candidates for final selection. With DOE concurrence, the Alliance may secure various rights at one or more sites. The Alliance will announce a preferred site by early 2011. If the preferred site is not characterized sufficiently to assure reasonable success of the project, the Alliance may identify one back-up site for inclusion in the Environmental Impact Statement (EIS). In support of DOE's EIS, the Alliance will provide the necessary site characterization information for the CO<sub>2</sub> storage site(s) and the pipeline route. The Alliance may also provide information regarding existing regional CO<sub>2</sub> sources and existing rights-of-way that could be used for establishing the FutureGen 2.0 CO<sub>2</sub> pipeline network.

The following activities will be conducted:

- Conduct outreach to interested host sites and the communities surrounding those sites
- Develop criteria for acceptable sites and for evaluation of the proposals. The Alliance recognizes that they are developing specific site acceptance and selection criteria
- Develop Request for Proposals (RFP) for prospective offerors
- Evaluate the proposals received
- Develop a short-list of candidate sites.
- Conduct characterization of the Candidate Site(s) and provide a reference design for the pipeline, injection well, and research and training facilities for use in the EIS Information Collection
- Make a final selection of a site (and back-up site if required) for the EIS

### **Request for Proposals**

The Alliance will, in consultation with DOE and the Illinois State Geologic Survey, develop site selection criteria. The site selection process, criteria and schedule will be consistent with those contained in Attachment 2.

- *Qualifying Criteria* – criteria that a site must meet in order to be considered further. These will include, but may not be limited to, the ability of the Alliance to obtain access to the proposed CO<sub>2</sub> target formation, the physical characteristics of the target formation, the thickness of the primary seal for the target formation, the distance from sensitive features such as dams and hazardous waste injection sites, the seismic stability of the proposed target formation, and reasonable assurances that prerequisite storage rights and pipeline rights of way are available. These criteria will be mandatory requirements, and any proposals that do not meet all of the qualifying criteria will be excluded from further consideration.

- *Scoring Criteria* – criteria against which sites will be compared to help identify the most qualified site. These criteria will include, but not be limited to, the distance from the Ameren plant, the proximity to other CO<sub>2</sub> sources, the ability of the site offeror to obtain the necessary property rights on behalf of the Alliance, the geologic properties of the proposed CO<sub>2</sub> storage formation, the ability to monitor each target formation and measure and verify the location and movement of stored CO<sub>2</sub>, the extent to which the site would be conducive to a research and training facility, the degree to which the community supports the development of a CO<sub>2</sub> storage site at the location, the availability of data to support an expedited EIS, and the availability of storage and pipeline rights of way rights.
- *Best Value Criteria* – criteria that will allow the Alliance to use information provided by site offerors regarding cost, availability of data, land ownership, sensitive receptors above the target formation, and similar issues.

#### *Milestones*

- Issue Guidance to Prospective Site Offerors – October 6, 2010
- Issue Request for Storage Site Proposals – October 25, 2010
- Hold Public Meeting – October 28, 2010

#### **Proposal Evaluation**

Upon receipt of proposals, the Alliance will evaluate the prospective sites against the qualifying, scoring, and best value criteria and will conduct site visits. The Alliance will use internal and external subject matter experts in its proposal evaluation to the extent that time and their availability allow. The conduct and results of the Alliance's evaluation process will be available for review by DOE and will be the subject of a publicly available report.

#### *Milestones*

- Receive Storage Site Proposals – November 15, 2010
- Brief DOE on Site Viability Assessment – December 10, 2010
- Complete Evaluation of Storage Site Proposals – February 18, 2011

#### **Site Selection**

Prospective sites that are the most highly rated based on the outcome of the evaluation process will be put forward as Candidate Sites. If a site is identified that exhibits exceptional characteristics and meets all the project's needs, including the site's risk profile, the Alliance reserves the right to down select to a single Candidate Site. The Alliance will obtain site purchase options for Candidate Site(s).

#### *Milestones*

- Announce Candidate Sites for CO<sub>2</sub> Storage – December 14, 2010

### **Final Site Selection**

The Alliance will select the site (and back-up site if required) that offers the best opportunity for a successful FutureGen 2.0 CO<sub>2</sub> storage program. The site decision will be made in mid-February. The basis for the Alliance's final site selection decision will be available for review by DOE. DOE approval on a site announcement press release will be made prior to a public announcement.

#### *Milestones*

- Announce Storage Site Preferred Site – February 28, 2011
- Storage Site Selection Report – March 31, 2011

### **1.2.1.2 NEPA**

To support DOE's preparation of its EIS, the Alliance will collect the required environmental data regarding the Candidate Site(s). In addition, for each Candidate Site, the Alliance will identify one or more potential CO<sub>2</sub> pipeline corridors between the Meredosia site and the Preferred Site (and back-up site). For each of these corridors, the Alliance will collect information regarding potential impacts to environmental resources along those corridors. The Alliance will prepare and submit to DOE an Environmental Information Volume for use in preparing the EIS.

If existing site characterization information is required, as part of the site evaluation process, a 2D seismic survey will be performed (i.e., at the most qualified candidate sites). The intent of conducting 2D seismic surveys during the site evaluation and selection process is to provide site-specific information to help qualify each site. Specifically, the seismic survey data will provide information about the approximate depth, thickness and lateral continuity of the potential reservoirs and seals at the site and the presence or absence of faults and/or fractures that could interfere with the goal of permanent storage. Depending on the location of the site, existing 2D seismic data may also be available to augment the planned survey. After a site is selected, the Alliance may choose to do additional characterization (e.g., drill a characterization well into the target storage formation) to inform the NEPA process. Acceleration of site-specific activities may be considered and such activities will be proposed to DOE in advance of execution. Upon approval by the DOE, accelerated site-specific activities will be conducted to the extent that sufficient funding and resources are available,

#### *Milestones*

- Deliver Initial Environmental Data to NEPA Contractor – March 31, 2011
- Complete Seismic Survey to Support Site Selection – February 10, 2011
- Preliminary Seismic Survey Data Analysis – February 18, 2011
- Final Seismic Survey Data Analysis – March 31, 2011

- Review preliminary draft sections of the EIS for accuracy and consistency – TBD
- Develop materials for use in public information workshops preceding the Draft EIS hearings and identify potential speakers at the hearings – TBD

### **1.2.1.3 Permitting**

The Alliance will develop a permitting requirements report, identifying what permits are needed, when they are required, and the processes and data necessary to obtain them. The Alliance will initiate preliminary permitting activities as necessary.

#### *Milestones*

- Permit Requirements Report – August 1, 2011

### **SHPO Consultations for Pipeline**

The Alliance team will complete Cultural Resource Surveys, which are literature reviews and on the ground walk over of the entire length of the preferred pipeline route while the crops are off the fields this winter season. It is assumed that these surveys will begin during the January – March 2012 period but will not be completed until the April – June 2012 period.

Compliance with this process is required by the National Historic Preservation Act (NHPA Section 106) and other regulations for protecting these resources. SHPO requires surveys of the entire route. Failure to complete these surveys during this period would either require crop removals later in the season or would delay SHPO approvals for an additional year, which could delay start of construction.

#### *Milestones*

- Field Survey Protocol for SHPO review – February 29, 2012
- Phase I Cultural Resource Report for the Preferred Pipeline Route – July 31, 2012.
- Review meetings with the SHPO – July and September 2012

### **USFWS SECTION 7 INFORMAL CONSULTATIONS FOR PIPELINE**

The Alliance team needs to generate sufficient baseline information on the presence or absence of federally listed T&E species (such as Indiana Bat, Decurrent False Aster, and Eastern prairie fringed orchid) along the pipeline route to facilitate discussions with the US FWS.

The Alliance team will complete Federal T&E surveys in likely habitats located on of the preferred pipeline route during the appropriate seasons (e.g. when the species is present or can be identified/detected). It is assumed that these surveys will begin during the January – March 2012 period but will not be completed until the April – June 2012 period.

The Endangered Species Act (ESA) requires compliance with this process. Failure to complete these surveys during this period could delay US FWS approvals for an additional year or more and affect start of construction.

#### *Milestones*

- Report to US FWS on the results of federally listed species surveys for the Indian Bat and the Eastern prairie fringed orchid (aster surveys will be conducted during Phase 2) along the pipeline route – August 30, 2012.
- Review meetings with the US FWS – February, July, and September 2012.

### **ACOE CONSULTATIONS FOR PIPELINE**

The Alliance team will generate sufficient baseline information on the presence or absence of wetlands along the pipeline route for the US ACOE, and compile sufficient pipeline description and conceptual design information to support preliminary filing, which must include cross-sectional boring drawings for crossing under a federally listed dike.

The Team will evaluate the entire pipeline route and determine whether or not there are any jurisdictional wetlands along the route. Avail the project of the ACOE's offer to accompany the wetland survey team and assist in making the jurisdictional determinations. Upon completion of the surveys, prepare the package for submittal to the ACOE, which must address boring under the listed federal dike. It is assumed that these surveys will begin during the January – March 2012 period but will not be completed until the April – June 2012 period.

Compliance with this process is required by the Clean Water Act (CWA) Section 404 and ACOE approval is required to apply **ACOE Nationwide Permit #12 – Utility Line Activities: A** *“utility line” is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose...* Additionally, an ACOE Levy permit is required to bore under the federally listed dike, “Coon Creek”, which lies in the Illinois River Floodplain.

Filing with the ACOE is also a prerequisite to completing the ICC Pipeline permitting process, and the ICC Certificate of Authority is required before the Alliance has eminent domain authority for pipeline ROW acquisition, therefore, filing with ACOE during the second quarter of CY 2012 is necessary so that the ICC 11 month process is not impeded. The ICC application will be submitted April 2012.

#### *Milestones*

- Report to US ACOE on the presence of wetlands along the pipeline route and information on dike boring – September 28, 2012.
- Review meetings with the US ACOE – April, September 28, 2012.
- Submit preliminary filing to the ACOE – September 28 , 2012

### **IDNR Endangered Species Formal Consultations**

The Alliance team will obtain landowner permission to conduct surveys in critical habitat areas. Generate sufficient baseline information on the presence or absence of state listed T&E species (Chorus frog) along the pipeline route to facilitate the initiation of negotiations with the Illinois Department of Natural Resources (IDNR) over adverse effects and the requirements of mitigation and the terms of an Incidental Take Permit.

The team will complete T&E Surveys in likely habitats located on of the preferred pipeline route during the appropriate season (February – March 2012). It is assumed that these surveys will begin during the January – March 2012 period but reporting and agency review interactions will not be completed until the April – June 2012 period.

The Illinois Endangered Species Act requires compliance with this process. Failure to complete these surveys during this period could delay IDNR approvals and the issuance of the Take Permit for an additional year or more and affect start of construction.

#### *Milestones*

- Report to IDNR on the presence of chorus frogs along the pipeline route – May 30, 2012.
- Review meetings with the IDNR – July, and September 2012.

#### **IDOA Agricultural Impact Mitigation Agreement (AIMA)**

The Illinois Department of Agriculture (IDOA) AIMA sets forth the pipeline construction requirements to minimize and mitigate impacts to farmland. The Alliance is working with the IDOA to develop an AIMA that is acceptable to both parties. Although not a signatory of the AIMA when finalized, the Illinois Farm Bureau has been a participant in its development.

The AIMA addressed the protocols for all pipeline construction and post construction crop impact assessments. It stipulates construction techniques such as depth under prime farmland, and established the process by which post construction crop damages will be assessed. It does not address ROW easement or crop damage payments.

A signed AIMA is a requirement of the ICC Pipeline permitting process and will be included in the notifications to pipeline land owners scheduled for mid-March 2012. In addition, a minimal budget has been included under this Task to maintain the relationship with the IDOA during the second quarter of 2012 and work with the IDOA should their participation in any public meetings with pipeline land owners be required.

#### *Milestones*

- A signed Agricultural Impact Mitigation Agreement with IDOA – January 20, 2012

#### **ICC PIPELINE CERTIFICATE OF AUTHORITY APPLICATION**

Primary objectives are to file petition and all supporting testimony with the Illinois Commerce Commission (ICC); finalize and file all supporting testimony; respond to interventions and opposing parties; prepare for hearing; consultations with client working group in support of the above; and potential travel for meetings with ICC and related parties.

The Alliance team will develop all elements of the ICC application and submit to ICC. Participate in the ICC hearings and supplement the application as needed to respond to the ICC

ICC Certification of Authority is required before the pipeline construction can begin. Since the ICC approval process could take up to 11 months, all elements of the certification application must be submitted during the 2<sup>nd</sup> quarter CY 2012 to allow completion of ROW acquisition using eminent domain where required and not affect project construction schedule

The ICC Certificate of Authority is required before the Alliance has eminent domain authority for pipeline ROW acquisition.

*Milestones*

- Initial application submitted to ICC – September 30, 2012.

**Pipeline and Hazardous Material Safety Administration (PHMSA) Filing**

The Alliance team will compile information needed to submit preliminary filing to PHMSA. In addition to filing information on the design and location of the pipeline, PHMSA requires that the risks to high consequence areas HCAs (as defined by PHMSA) be assessed. In conducting these analyses it is the Alliance's objective to assure that the pipeline route selected would not affect any HCAs and thus the provisions of this section need not apply, and PHMSA concurrence on this conclusion will be reached.

Prior to formal filing, the Alliance must first obtain an Operators Identification number (OPID) from PHMSA. Upon receipt of an OPID, the Alliance will submit the requisite Registry Notification form and supplemental information on the proposed location of the pipeline, and its design specifications. Further submittals will occur in the future as final design information becomes available and a pipeline-operating contractor is selected.

Work will be ongoing on the Risk Assessment during the 1<sup>st</sup> quarter of CY 2012, but during the 2<sup>nd</sup> quarter of CY 2012 the Risk Assessment report will be finalized. These results will be provided to PHMSA.

PHMSA regulations (49 CFR 195) apply to CO<sub>2</sub> pipelines. Prior to start of construction the Alliance must have PHMSA's approval. However, because filing with PHMSA is a requirement of the ICC Pipeline permitting process, and the ICC Certificate of Authority is required before the Alliance has eminent domain authority for pipeline ROW acquisition, filing with PHMSA during the second quarter of CY 2012 is necessary so that the ICC 11 month process is not impeded.

The requirement to assess risk to HCAs comes from: **49 CFR 195.452 - Pipeline integrity management in high consequence areas** - *applies to each hazardous liquid pipeline and carbon dioxide pipeline that could affect a high consequence area, including any pipeline located in a high consequence area unless the operator effectively demonstrates by risk assessment that the pipeline could not affect the area.*

*Milestones*

- Submit OPID application form to PHMSA – April 30, 2012.
- Submit Registry Notification form to PHMSA – May 30, 2012.
- Meet with PHMSA Kansas City Regional Office and present project overview information and the preliminary results of the risk assessment – May 1, 2012.

**Injection and Monitoring Well Sites – Environmental Clearances**

To support the submittal of the UIC VI permit application, it is highly desirable to confirm that there are no environmental issues with any of the well sites and thus avoid the need for negotiating impact mitigations with regulating agencies.

The Alliance team will complete field and literature surveys for each of the 13 sites for wetlands, protected federal and state biological species and habitat and cultural, archaeological, and historic resources.

The regulatory agencies with authority over actions at the well sites include, SHPO, IDNR, US FWS, ACOE and IEPA. For planning purposes it was assumed that the required field surveys would begin in the 1st quarter of CY 2012, but not be completed and reports submitted to agencies until the 2nd quarter CY 2012.

#### *Milestones*

- Submit survey reports to all agencies – September 15, 2012.

#### 1.2.2 Design

The Alliance will provide a Conceptual Storage Site Design and a Pipeline Design, which interfaces at the battery limits of the upstream Oxy-Combustion project located in Meredosia, Illinois. The major components included in the designs are:

- The CO<sub>2</sub> Pipeline
- Pipeline Pumping Stations
- Dense Phase Storage Tanks
- Injection Pumping Station, Manifold, and other infrastructure requirements at the drilling site
- Wells
- Visitor and Educational Facilities, with Educational Facilities including the Training and Research Center
- MVA Facilities and Equipment

##### **1.2.2.1 Conceptual Storage Site Design and Cost Estimate**

A conceptual design and cost estimate for the CO<sub>2</sub> pipeline and storage system will be developed for the Preferred Site and one back-up site (if applicable). This design will include the location and preliminary design of injection and monitoring wells, the location of visitor and education facilities, and basic mapping of access routes.

Based on the costs of CO<sub>2</sub> compression/pumping, delivery, transportation, injection, geologic sequestration, and MVA, the Alliance will provide to DOE the capital and operating costs (estimated, including percent accuracy, and actual when available) and the total Project cost. The costs of any other technologies used in the Project that involve DOE cost shared funding will be included in this reporting. The cost data to be provided by the Alliance will include (but not necessarily be limited to):

- Capital and operating cost (CAPEX and OPEX) breakdown (excluding project management and reporting costs) and other costs including project equipment and material costs, capital costs, and operating costs (budgeted and actual).

### **Land Acquisition**

The Alliance will conduct land acquisition activities to obtain contiguous pore space options. These options will provide the Alliance with flexibility in siting the injection wells and will support the UIC permit application.

Existing pore space options will be renewed on an annual (calendar year) basis. In addition, the Alliance needs to negotiate and finalize agreements for land options for the injection and monitoring wells as well as negotiated access to these sites. These agreements need to be in place to support the UIC permit.

#### *Milestones*

- Obtain Initial Pore Space Options – May 27, 2011
- Pore Space Option Extensions – August 30, 2012
- Injection Well Leases or Easements; Monitoring Well Leases or Easements; Access Way easements – May 30, 2012
- Options on an additional 500 acres – August 30, 2012

### **Morgan County Characterization well**

A characterization well will be drilled and tested at the Morgan County site to obtain key data to 1) validate the suitability of the subsurface geology, 2) support design of the sequestration system and 3) support the NEPA process. The types of data that will be obtained from the characterization well include core, geophysical logging data, and hydraulic test data. These data combined with the results of the 3D seismic surveys conducted during Phase 2 will be used as the basis for an integrated analysis to support the final system design. The characterization well will be constructed in a manner (materials of construction, CO<sub>2</sub> -resistant cements, etc.) and sized appropriately so that they could be used as a monitoring well for the sequestration system at that site. The characterization well will be completed in Phase 1; however, some characterization activities will not be completed until early in Phase 2.

#### *Milestones*

- Award Contract for Morgan County Characterization/Monitoring Well – September 15, 2011
- Storage Site Conceptual Design Complete – July 1, 2011
- Storage Site Cost Estimate Complete – July 1, 2011
- Initiate drilling activities for 1st Characterization/Monitoring Well – October 5, 2011

- Complete Morgan County Characterization Well – February 28, 2012

### ***Data Analysis and Modeling***

The objective of this task is complete the analysis of the data obtained from the Morgan County characterization well, update the site conceptual model based on site-specific information, and develop the numerical models required to assess various CO<sub>2</sub> injection strategies and their impact on AoR spatial extent. These numerical simulations will also be used to guide the design of the MVA program.

Activities supporting the analysis of the Morgan County characterization well data will be completed. The types of data obtained from the characterization well include cores, geophysical logging data, and hydraulic test data. These data combined with the results of the 2D seismic surveys, conducted during Phase 1 will be used as the basis for an integrated analysis to support the final system design.

In addition, activities that will occur under this task include updating the current conceptual understanding of the site based on site specific data obtained from the recently installed characterization well, synthesizing all available information into cohesive parameter sets that span the expected range in parameter variability, implementing this conceptual model with a set of appropriately parameterized numerical models, and simulating the fate and transport for the proposed CO<sub>2</sub> injection scenario. The construction of a conceptual model is the initial step in developing a more quantitative three-dimensional visualization of the total physical and chemical environment in which the injected CO<sub>2</sub> would reside and interact within the subsurface. More specifically, the geological conceptual model serves as a first-order basis for modeling reservoir and CO<sub>2</sub> behavior for preliminary determination of the affected Area of Review (AoR). This initial geologic conceptual model serves as the basis for numerical models for preliminary determination of additional site characterization needs; infrastructure planning; risk assessment; financial planning; best practice reservoir operation management; monitoring and remediation programs; as well as closure and post-closure monitoring. The developed numerical models will be used to assess both CO<sub>2</sub> and pressure front extent. These activities are being performed in support the UIC permit application, specifically the AoR determination.

This activity is key to assembling the UIC permit. Data collected during borehole testing including geophysical logging data, core and sample analysis and hydraulic test data all need to be analyzed for inclusion in the storage site numerical model. The model will then be used to define the AoR (Area of Review) for the UIC permit.

### ***Milestones***

- Borehole Completion Report – August 30, 2012
- Site Characterization Report – August 30, 2012

### ***UIC Permit Application***

The Alliance will prepare and submit a permit for a Class VI injection well to EPA Region 5.

The following sections required for a Class VI injection well permit application will be completed:

- Part 1 – General and Administrative Information
- Part 2 – Site Conceptual Model
- Part 3 – Sequestration Site Area of Review and Corrective Action Plan
- Part 4 – Injection Well #1 Construction and Operations Plan
- Part 5 – Carbon Sequestration Site Testing and Monitoring Plan
- Part 6 – Injection well #1 Plugging Plan
- Part 7 – Sequestration Site Care and Closure Plan
- Part 8 – Sequestration Site Emergency Response Plan
- Part 9 – Sequestration Site Financial Responsibility

Two applications will be completed and submitted; one for each injection well.

EPA Region 5 has indicated that their review of the UIC Permit application will require at least 18 months and could be as long as 24 months. Currently financial close for the pipeline and storage side of FutureGen 2.0 is schedule for September 2013. Receipt of the UIC permit is on the critical path for the project. Further delays in developing and submitting this permit would have a significant adverse impact on the overall project schedule.

#### *Milestones*

- Submit applications for Class VI Injection Well Permit to EPA Region 5 – August 30, 2012

#### **Monitoring Verification and Analysis**

The primary objective of the MVA program is to track the lateral extent of CO<sub>2</sub> within the target reservoir and determine whether it is effectively contained within the reservoir. Other monitoring objectives include characterizing any geochemical or geomechanical changes that occur within the reservoir and overlying caprock and monitoring any change in land surface elevation associated with CO<sub>2</sub> injection. If the overlying confining unit (i.e., Eau Clair Siltstone/Shale unit) is found to not act as a competent caprock material, another primary objective of the monitoring program will be to quantify the magnitude of leakage through the caprock and assess the potential for the identified leak to adversely affect water quality in shallow USDW aquifers and/or surface or near-surface ecological conditions. Monitoring that will be employed at the site includes both direct and indirect reservoir measurements, early leak-detection monitoring within the deepest permeable zone located immediately above the primary caprock, and several near surface, leak detection monitoring approaches.

Activities that will occur under the MVA program through June 2012 will focus primarily on near surface leak-detection monitoring approaches. These activities include 1) installation and initial baseline monitoring of soil gas monitoring equipment, 2) installation and initial baseline monitoring of an atmospheric monitoring station for measurement of near-surface CO<sub>2</sub> concentrations and other weather-related variables (i.e., wind speed/direction, temperature, humidity, solar radiation, precipitation, barometric pressure and soil moisture and temperature), 3) an initial evaluation of the use of remotely sensed data as an indicator of relative productivity and to identify areas of persistent or chronic vegetation stress that might be associated with CO<sub>2</sub> leakage, and 4) laboratory studies of CO<sub>2</sub> interactions both within the reservoir and with USDW aquifer sediments. These activities are being performed in support the UIC permit application, with expected outcomes being refinement of the near surface leak-detection monitoring approaches and an improved understanding of site specific geochemical processes that influence the injection design and predictions of CO<sub>2</sub> fate and transport.

These activities are needed to support the UIC application. These include USDW characterization and assessment of abandoned wells that penetrate the secondary seals (soil gas testing). These activities will be used to provide supporting evidence that the site is a viable storage site and that the monitoring approach will be effective. The following activities support the proposed monitoring techniques which will be proposed in the permit and need validation; remote sensing of crop health and ecological background studies. The following activities are relatively low budget and directly support stakeholder acceptance and landowner agreements; 1) installation of a weather station and 2) internships supporting the long-term monitoring of the site (Ecological and soil gas studies).

#### *Milestones*

- Install soil gas monitoring chambers – September 28, 2012
- Install atmospheric monitoring station – September 28, 2012

#### **Other CO<sub>2</sub> Sources for the Alliance's Project**

The anticipated source of CO<sub>2</sub> for sequestration by the Alliance's Project is Ameren's FutureGen 2.0 - Oxy-combustion Large- Scale Test. The Alliance may consider other sources of CO<sub>2</sub> including, but not limited to, oxy-combustion as an alternate or in addition to Ameren's project provided that obtaining CO<sub>2</sub> from such sources would not increase DOE's cost share for the Alliance's Project or unduly delay its completion.

Should the Alliance decide to pursue other sources of CO<sub>2</sub> for sequestration by its project, it must inform DOE that it intends to do so no later than the Alliance's submission of its Decision Point application for Phase II. DOE must approve the Alliance's proposal to use other sources of CO<sub>2</sub>. If DOE approves the proposal, the Alliance and DOE will work together to make appropriate changes in the Statement of Project Objectives and other Project documents as needed.

#### *Milestones*

- Identification of Additional CO<sub>2</sub> Sources – September 1, 2011

### **1.2.2.2 Pipeline Design**

Initial pipeline design work will focus on right of way (ROW) evaluations to support the siting activities. This will include evaluating ROWs suggested by site offerors and developing cost estimates to both acquire ROW options as well as the costs to exercise those rights in the event that a site is selected.

Pipeline definition will begin when storage site options have narrowed, in which rough order of magnitude estimates (-15%/+30%) for each pipeline option will be provided to the site selection team for their use in selection sequestration site.

#### *Milestones*

- Issue RFP for Pipeline Contractor – October 5, 2010
- Award Contract for Pipeline Contractor – November 8, 2010
- Pipeline Conceptual Design Complete – July 1, 2011
- Pipeline Cost Estimate Complete – July 1, 2011

#### ***Pipeline ROW Acquisition***

Pipeline ROW acquisition is a complicated and time-consuming process. Landowner identifications, notice to landowners, appraisals of property to be used for pipeline rights-of-way; subsequent negotiations with landowners for pipeline rights-of-way are all compliance steps for the federal Uniform Relocation Act and Illinois Carbon Dioxide Transportation Act relating to pipelines:

Because of the length of time necessary to comply with the URA and Carbon Dioxide Transportation Act it is necessary to begin ROW acquisition activities during the second quarter (CY 2012). Activities need to start before crops are in the field so that the necessary surveys can be done and crop damage payments avoided. In addition, it is anticipated that the last few ROWs will likely require exercise of time-consuming eminent domain court procedures. This could have a significant and adverse impact on the overall project schedule.

#### *Milestones*

- Notices to landowners along pipeline route – September 15, 2012
- Appraisals of property affected by pipeline; pipeline rights-of-way – August 30, 2012

### **1.2.2.3 Facilities Design**

The training and visitors center design effort will commence with definition of the requirements from the stakeholders, including the upstream team, local and state stakeholders, the DOE, and the labor unions who will be engaged in the design, procurement, construction and operation of the plant and CO<sub>2</sub> storage site. Existing similar facilities will be identified and evaluated to help guide developing the conceptual for the facilities. In addition, any local facilities of similar type will be evaluated to eliminate any duplication.

*Milestones*

- Initial Visitor/Research and Training Facilities Cost Estimate Complete – July 1, 2011

DECISION POINT 1\* Project Definition – End of Phase I:

In accordance with the provision “DECISION POINTS AND COORDINATION OF DOE DECISIONS REGARDING FUTUREGEN 2.0” (“DECISION POINTS provision”) in this Cooperative Agreement, DOE funding is not authorized beyond Phase I without the written approval of the Contracting Officer. As stated in the DECISION POINTS provision, DOE’s decision to authorize funding for Phase II is based in part on the Recipient’s progress toward meeting the Objectives of the Project and includes an evaluation of the Recipient’s progress toward meeting the Key Milestones and Deliverables. In particular, the following must be completed before DOE authorizes funding for Phase II:

- Phase II Decision Point Application
- Firm commitments for Recipient’s cost share requirements for Phase II consisting of
  - Financial Plan
  - Financial Commitment Letter(s)
  - Complete Pro Forma Model
- Executed Cooperation and Technology Agreement
- Final Draft CO<sub>2</sub> Services Agreement(s)
- Final Storage Site Selection
- Critical Design and Operational Specifications at CO<sub>2</sub> Transfer Point
- Integrated Project Schedule

Consistent with the Topical Report format and instructions prescribed under Attachment 3, the Recipient shall prepare and submit a detailed technical Topical Report discussing the technical results of the work performed under the Phase I SOPO tasks. This report will be submitted to the OSTI website no later than 60 days prior to the end of Phase I – Project Definition. In addition, the Recipient shall submit a “Decision Point Application” directly to the DOE Program Manager/Project Officer and the DOE Contract Specialist no later than 60 days prior to the end of Phase I – Project Definition. The Decision Point Application shall include the following information:

1. A report on Recipient’s progress towards meeting the objectives of the Project, including any significant findings, developments or issues that may affect Recipient’s ability to meet those objectives. Specific discussion and quantitative analysis (when applicable) shall be made regarding progress toward completion of key milestones identified for each Project phase identified within this Statement of Project Objectives. In particular, Recipient’s report should discuss any issues regarding coordination of Recipient’s Project with Ameren’s “Oxy-combustion

Large Scale Test” and how those issues may affect the two Projects ability to achieve the objectives of FutureGen 2.0.

2. A description of the Recipient’s plans for the conduct of the Project during the upcoming Phase. These plans should include:
  - a. An updated Statement of Project Objectives that defines all work to be performed under the upcoming Phase II, showing detail at WBS Level 5, including detail for tasks and subtasks in all remaining phases of the Project.
  - b. A detailed budget and supporting justification for the upcoming Phase II, because a budget for the outlying Phases was not approved at the time of Award. The budget shall identify if additional funds are requested or a reduction of funds is anticipated. The recipient should identify cash and in-kind contributions and include the basis for valuation of in-kind contributions.
  - c. An updated Project Funding Plan for the remainder of the Project, showing sources and uses of funds.
  - d. A financial commitment letter from each funding source which clearly states the nature, amount and timing of proposed funding.
  - e. For each source of funding, audited financial statements for the last three years and any available financial statements for the current year.
  - f. An updated financial model of the Project, including a statement of revenues and expenses (income statement), balance sheet, and cash flow statement.
  - g. An updated plan for executing the CO<sub>2</sub> Services Agreement and contracts with project team partners and vendors. Include actual copies of contracts if available. The recipient should describe their plan for compliance with Davis Bacon Act requirements.

[End of Decision Point]

[End of Phase]

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**THIS SECTION OF THE SOPO (PAGES 28 – 36) DESCRIBES A CONDITIONAL SUB-PHASE 2A AUTHORIZED ON FEBRUARY 1, 2013.**

## **DESCRIPTION OF WORK TO BE PERFORMED IN CONDITIONAL SUB-PHASE 2A**

This section specifies the critical activities that will be performed during the conditional Sub-Phase 2A period.

### ***2A.0 PROJECT MANAGEMENT, NATIONAL ENVIRONMENTAL POLICY ACT, PERMITTING, AND DESIGN***

The effort in Sub-Phase 2A will be focused on the critical tasks of project management, supporting DOE’s NEPA process, obtaining permits for the CO<sub>2</sub> storage system and CO<sub>2</sub> pipeline, and advancing the FEED efforts.

#### ***2A.1 PROJECT INTEGRATION***

Project management and control, communications and stakeholder involvement, legal and financial planning, and project interface management will be performed under this task.

##### *2A.1.1 Project Management and Controls*

This task includes project management, project controls, and project reporting. These activities will be used to provide oversight and control throughout Sub-Phase 2A. Sub-award management and technology transfer functions will also be performed under this task.

The Alliance utilizes earned value management techniques meeting industry standards for tracking completion of work, keeping activities on schedule, and controlling costs to remain within the budget. The Alliance implements and manages the project and reports on activities in accordance with the approved PMP, which is revised throughout the phases of the project.

The Alliance prepares and submits reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

##### *2A.1.2 Project Reporting*

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

The Alliance will submit a monthly progress report by email to the DOE Program Manager/Project Officer and Contract Specialist to aid in their oversight of the project. Monthly reports may include sections or pages containing confidential or other business sensitive information. Such sections or pages will carry a designation of “Business Sensitive and Confidential.” The monthly report will be submitted on or before the 20th day of the

month following the period covered by the report. The Alliance will also provide quarterly reports, including a quarterly financial report.

#### *2A.1.3 Communications and Public Relations*

- Review media clips and monitor blogs throughout Sub-Phase 2A to understand local sentiment in each of the affected communities. This desktop research will help inform the project team on local sentiment.
- Provide input and review for FutureGen 2.0 promotional materials and figures.
- Update Frequently Asked Questions that will be regularly posted to the Alliance's website.
- Work with the communications and public relations subcontractor to draft letters to stakeholders when appropriate.
- Provide periodic updates to the Community Corner portion of the Alliance's website.

#### *2A.1.4 Stakeholder Engagement*

Conduct interviews and focus groups in support of DOE's NEPA process. Meetings will be held with stakeholders prior to DOE's public hearings on the FutureGen 2.0 Draft Environmental Impact Statement (EIS) to answer questions. These meetings will be designed to engage stakeholders in the process prior to the NEPA public hearings.

#### *2A.1.5 Legal and Financial Planning*

Legal services are required for virtually every aspect of the CO<sub>2</sub> pipeline and storage project. Legal counsel provides the Alliance with general corporate legal needs including contractual matters between the Alliance and its multiple vendors and contractors, contractual matters between the Alliance and its member companies, and tax compliance matters. Legal counsel is also responsible for the internal corporate organizational needs of the Alliance and its board of directors.

Legal services are also required for permitting activities. Legal counsel must participate in the development of all federal and state permit applications and review and approve those applications before submittal. One such permit – a Certificate of Authority from the Illinois Commerce Commission (ICC) – will require significant representation in quasi-judicial proceedings before the state agency.

The Alliance will comply with legal requirements to provide notices to land owners before it undertakes any seismic profiling activities.

In addition, local (Illinois) legal services are needed to serve as a liaison to Illinois government officials, agencies, and legislators to keep them informed about the project. Local counsel will also assist the Alliance with the development of an acceptable Morgan County property tax plan and landowner outreach and land acquisition for the CO<sub>2</sub> storage

site and pipeline route. Note that legal services associated with land acquisition issues such as negotiating options and leases are addressed below in those sections related to surface, subsurface, and pipeline.

Financial planning services are also a vital component of this project. The Alliance will update and modify as required the existing project financial model as capital and operating cost estimates are revised. The updated financial model will include income (revenues and expenses), cash flow, and balance sheet statements that reflect the Alliance's business structure and DOE's cost share agreement for the project.

## ***2A.2 SITING, NATIONAL ENVIRONMENTAL POLICY ACT, AND PERMITTING***

This section addresses the activities related to siting for the CO<sub>2</sub> storage site, support for DOE's NEPA compliance efforts, and permitting requirements.

### *2A.2.1 Siting*

The siting process for the CO<sub>2</sub> storage site was completed under Phase I and no siting activities are planned for Sub-Phase 2A. Details of this activity can be found in the Phase I Progress Report submitted as part of the Phase 2 – Best and Final DPA.

### *2A.2.2 National Environmental Policy Act*

To analyze the potential environmental impacts of FutureGen 2.0, DOE is preparing an EIS in compliance with NEPA. In Phase I, the Alliance submitted various sections of the Environmental Information Volume (EIV) for the CO<sub>2</sub> storage site and alternate sites, the CO<sub>2</sub> pipeline corridors, and the VRT facilities. DOE is using this information in its preparation of a Draft EIS.

In Sub-Phase 2A, the Alliance will provide additional support for DOE's NEPA process. This will include reviewing and commenting on preliminary draft versions of the Draft EIS as requested by DOE. The purpose of these reviews will be to ensure that the project is accurately described and that potential environmental impacts are adequately assessed. The comments from all Alliance reviewers, including subject matter experts, will be consolidated for consideration by DOE. The Alliance will also prepare for and participate in DOE's public hearings on the Draft EIS and, as requested by DOE, respond to public comments received.

In preparation for the Final EIS, the Alliance will update its EIV, based on continuing data collection and design efforts, for use in DOE's Final EIS. The updated EIV prepared in Sub-Phase 2A may include new information regarding:

- The parameters of the geologic formation into which the CO<sub>2</sub> will be injected such as its permeability and porosity, the type and number of seals, and the size of the projected CO<sub>2</sub> plume footprint.
- The amount of land needed, the emissions and effluents, and the type and volume of materials used and wastes generated.

- The presence of threatened or endangered species, wetlands, surface water bodies, drinking water sources, and cultural resources at the CO<sub>2</sub> storage site or along the proposed CO<sub>2</sub> pipeline route. It will also include a discussion of the number of residences potentially affected and the extent to which existing rights-of-way could be used or new rights-of-way will be needed.

The Alliance will review and comment on preliminary draft versions of the Final EIS as requested by DOE and will also support the development of DOE's Record of Decision (ROD) as requested.

### 2A.2.3 *Permitting*

This task involves preparing applications for and obtaining all the permits necessary for the construction and operation of the CO<sub>2</sub> storage site, which includes both the surface and subsurface facilities at the CO<sub>2</sub> storage site and the CO<sub>2</sub> pipeline.

#### 2A.2.3.1 Storage Site Permitting

Storage site permitting includes the permits needed for (1) the surface facilities at the storage site and (2) the Class VI (CO<sub>2</sub> injection) Underground Injection Control (UIC) permit required for the construction of the injection wells.

##### 2A.2.3.1.1 *Surface Permitting*

As described in the Alliance's Project Topical Report (included in the Phase 2 – Best and Final DPA) and in Section 2.3.1 below, the surface facilities will include four buildings, two injection wells, and the MVA system. The four buildings are the Site Control Building, the Booster Pump Building, and two Well Annulus Maintenance and Monitoring System (WAMMS) Buildings, one at each of the two injection well locations. The MVA system will include two single-level completion monitoring wells, one multi-level completion well, one above confining zone early detection well, three VSP deep wells, and three shallow microseismic monitoring wells. Other planned monitoring may include 10 to 15 permanent surface monitoring stations for measuring injection-related deformation by Interferometric Synthetic Aperture Radar, gravity surveys, tilt meters, and differential global positioning systems. The construction of the surface facilities is expected to disturb up to 60 acres of land: approximately 25 acres will be needed for construction of surface facilities, resulting in permanent disturbance of approximately 10 acres; new access roads will require about 9 acres of land and upgrades to existing roads will require about 54 acres of land.

Because construction of the surface facilities will require ground disturbance, federal and state laws require environmental studies and approvals by various regulatory agencies. The approval process typically involves multiple consultations with each of the relevant agencies, providing documentation, and responding to questions. Site visits and additional field work could also be necessary. The Alliance's subject matter experts, particularly

biological and cultural resource experts, will be needed to participate in the consultations and in preparing any additional documentation requested.

The Permit Requirements Report, developed in Phase I, identifies the following permits that are expected to be required for the CO<sub>2</sub> storage site surface facilities:

- Consultation with the State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act to obtain a letter of concurrence of “no impact” to cultural resources or to identify acceptable mitigation.
- Consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act to obtain a letter of concurrence of “no impact” to protected plants and animals or to identify acceptable mitigation.
- Consultation with the U.S. Army Corps of Engineers (USACE) and USACE concurrence on the DOE Floodplain/Wetland Assessment required under 10 CFR 1022 and any resulting mitigation plan.
- Application of a permit for storm water discharges under the National Pollutant Discharge Elimination System (NPDES) from the Illinois Environmental Protection Agency (IEPA) for all surface facilities.
- Demonstration that the project will be able to comply with the Illinois Department of Natural Resources (IDNR) Statewide Permit during construction in drainages and floodplains.

#### 2A.2.3.1.2 *Subsurface Permitting*

In addition to the environmental permits and approvals needed for surface disturbance activities, the Alliance will be required to obtain Class VI UIC permits from the U.S. Environmental Protection Agency (USEPA) for the construction of each of the injection wells and injection of CO<sub>2</sub>. During Sub-Phase 2A, the Alliance will continue to conduct subsurface site characterization as described below. The information derived in this effort will likely require modifications to the initial UIC permit applications, including changes to the computational modeling results, the injection well construction plan, and the testing and monitoring plan. Modifications will need to be prepared and submitted in the same manner as the original UIC permit applications.

In addition, planning will take place to identify methods for meeting the financial assurances requirements that are believed to be associated with a UIC Class VI well permit; and the Alliance will arrange for a third party cost estimate as required for the application.

The Class VI UIC permit process is new and a permit for the FutureGen 2.0 project will be the first for a large-scale, commercial project. For these reasons, the Alliance anticipates that there will be substantial interaction required between the Alliance and USEPA as the Alliance’s permit applications are reviewed. USEPA is likely to have questions and comments that will require detailed and substantive answers prepared by the Alliance’s subsurface experts. Additional data collection and analysis and model runs may be required. In addition, this permit review effort will require management and oversight to

ensure responses are complete, timely, and properly documented. The UIC permit process also requires a public hearing in which the Alliance and its experts will need to participate.

Standard well permits will also need to be obtained from IDNR.

#### 2A.2.3.2 Pipeline Permitting

The CO<sub>2</sub> pipeline route between the oxy-combustion project and the Morgan County CO<sub>2</sub> storage site will be approximately 30 miles. Prior to construction, the Alliance must consult with and obtain approvals from several federal and state agencies. Similar to the surface facilities at the storage site, construction of the pipeline will require ground disturbance. As a result, federal and state laws require environmental studies and approvals by various regulatory agencies. The approval process typically involves multiple consultations with each of the relevant agencies, providing documentation, and responding to questions. Site visits and additional field work could also be necessary. The Alliance's subject matter experts, particularly biological and cultural resource experts, will be needed to participate in the consultations and in preparing any additional documentation requested.

The Alliance will also be required to obtain a Certificate of Authority from the ICC in accordance with Illinois' Carbon Dioxide Transportation and Sequestration Act. This act requires the Alliance to submit an application and documentation that the Alliance is fit, willing, and able and has the financial, managerial, legal, and technical qualifications necessary to construct and operate the pipeline. In addition to filing for the environmental permits and approvals described above, the ICC application also requires the filing of an application with the federal Pipeline and Hazardous Material Safety Administration (PHMSA). Prior to obtaining a final Certificate from the ICC, the Alliance must demonstrate that it has obtained all other regulatory approvals necessary for the construction and operation of the pipeline.

The Permit Requirements Report, developed in Phase I, identifies the following consultations and approvals that are expected to be required for the CO<sub>2</sub> pipeline:

- Consultation with the SHPO under Section 106 of the National Historic Preservation Act to obtain a letter of concurrence of "no impact" to cultural resources or to identify acceptable mitigation.
- Consultation with USFWS under Section 7 of the Endangered Species Act to obtain a letter of concurrence of "no impact" to protected plants and animals or to identify acceptable mitigation.
- Consultation with USACE to acquire Nationwide Permit 12 and a dike permit from the St. Louis District of the Army Corps of Engineers. Obtain Corps concurrence on the DOE Floodplain/Wetland Assessment required under 10 CFR 1022 and any resulting mitigation plan.
- Development of a conservation plan to facilitate the granting of an Incidental Take Permit for impacts to the protected Chorus Frog from IDNR if pipeline construction would cause adverse impacts. Negotiate impact mitigation for a protected butterfly.

- Negotiation and implementation of permit to use Illinois Department of Transportation (IDOT) right-of-way (ROW) along State Route 67.
- Compliance with the Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture (IDOA) to address pipeline impacts to prime farmland. Detailed soil mapping of the pipeline route and development of training protocols for pipeline workers will be required in Phase 2.
- Acquisition of a NPDES permit from IEPA for storm water discharges that could result during the construction of the CO2 pipeline.
- Demonstration that the project will be able to comply with the IDNR Statewide Permit during construction in drainages and floodplains
- Completion of the PHMSA application process by submitting final design and pipeline route information to PHMSA. The ICC application also requires the filing of an application with the federal Pipeline and Hazardous Material Safety Administration (PHMSA).
- Acquisition of local permits for road and railroad crossings.
- Acquisition of a Certificate of Authority from the ICC authorizing the construction and operation of the CO2 transportation pipeline. The Alliance will be required to obtain a Certificate of Authority from the ICC in accordance with Illinois' Carbon Dioxide Transportation and Sequestration Act. This act requires the Alliance to submit an application and documentation that the Alliance is fit, willing, and able and has the financial, managerial, legal, and technical qualifications necessary to construct and operate the pipeline.

While not all of these permit issues are likely to be resolved during Sub-Phase 2A, they represent activities on which the Alliance and/or its contractors may be assigned to work depending on the critical permitting work that needs to be advanced during Sub-Phase 2A.

### ***2A.3 PRELIMINARY DESIGN AND LAND ACQUISITION***

This task involves advancement of FEED (preliminary design) and land acquisition for the CO2 storage site (surface and subsurface facilities).

With respect to land acquisition, the CO2 pipeline and storage project requires the acquisition of several different types of real estate rights. In Phase I, the Alliance negotiated with landowners to acquire options for pore space in the Mount Simon formation for the permanent storage of CO2. The Alliance also acquired the rights to use surface areas for a stratigraphic well and options to use additional surface areas for the CO2 storage site. The FutureGen 2.0: CO2 Pipeline and Storage Project Land Acquisition Plan, included with the Phase 2 Best and Final DPA, describes the Alliance's land acquisition plan and the cost basis for the acquisitions.

In Sub-Phase 2A, the Alliance will need to conduct further negotiations to acquire options for ROW along the CO2 pipeline route. These efforts require the services of experienced and

knowledgeable legal counsel and landmen who must, among other things, draft appropriate real estate acquisition documents (e.g., options, deeds, leases), directly negotiate with many landowners and their counsel, conduct title searches, prepare title opinions, and supervise appraisers and other land staff. In Sub-Phase 2A, annual option payments will be made and any additional options will be secured.

### *2A.3.1 Storage Site Design and Land Acquisition*

This section addresses design and land acquisition for the CO<sub>2</sub> storage site surface and subsurface facilities.

#### *2A.3.1.1 Surface Design and Land Acquisition*

This section addresses the design and land acquisition for the CO<sub>2</sub> storage site surface facilities, which consist of four buildings (Site Control Building, Booster Pump Building, and two WAMMS Buildings), two injection wells, and the MVA system.

##### *2A.3.1.1.1 Surface Front-End Engineering Design*

The Alliance expects that the CO<sub>2</sub> storage site will be visited by scientists and dignitaries from across the country and the world. The surface components of the storage facility will be designed to blend in with the surrounding area, and to pose minimal impact to the surrounding environment while being home to an important scientific research and demonstration facility. Steps will be taken to initiate FEED efforts on the Surface facilities.

##### *2A.3.1.1.2 Surface Land Acquisition*

As noted above, up to 60 acres of surface land will be required to accommodate the surface facilities, including the surface facilities, the MVA system, necessary access roads, and upgrades to existing roads. While affected landowners have agreed to options for pore space, additional negotiations will be required to obtain surface areas once those are determined. The Alliance will continue to negotiate terms with affected landowners to obtain use of the surface area for the CO<sub>2</sub> storage site surface facilities.

#### *2A.3.1.2 Subsurface Design, Characterization and Land Acquisition*

This section addresses the design and land acquisition for the subsurface facilities, including the injection wells, at the CO<sub>2</sub> storage site.

There are three main activities planned under this task, set to begin during Sub-Phase 2A, each designed to obtain one or more of the required design parameters for designing the storage site in Phase 2.

- i. Development of a Geomechanical/In-Situ Stress Characterization Program

- ii. Development of a Borehole In-Situ Stress and Threshold Fracture Pressure Program
- iii. Integration of the results in a regional context:
  - Link of stress regime with existing local and regional structural features
  - Potential impact of reservoir pressure buildup on these features
  - Recommendations on the design of the injection wells

#### *2A.3.1.2.1 Subsurface Front-End Engineering Design*

The conceptual design for the subsurface infrastructure developed in Phase I will be refined through the FEED in Sub-Phase 2A. The FEED will provide more detailed, site-specific considerations that were not included in the conceptual design. Actual and precise distances, elevation effects, more detailed geological impacts, and additional land use considerations will be included. The design will yield process flow diagrams, piping and instrumentation diagrams, well construction diagrams, and other engineering drawings for the subsurface storage components of the system.

A key activity in the FEED design phase will be the development of a site-specific subsurface CO<sub>2</sub> fate and transport model to determine the type and spacing of injection wells and to assess the potential CO<sub>2</sub> plume size and CO<sub>2</sub> behavior (spreading, trapping), which will be essential for designing the CO<sub>2</sub> monitoring systems. In addition to the subsurface model, an integrated CO<sub>2</sub> pipeline and wellbore model will also be developed to simulate the plant-to-injection well pathway and to determine wellhead pressure requirements needed to inject the CO<sub>2</sub>. This model will also be useful for designing the pipeline and in determining if supplemental pressurization systems are required.

This task also involves the creation and maintenance of a Geographic Information System (GIS) database for all characterization, construction, monitoring, and operations data through the life of the project. The GIS data will include baseline monitoring data collected prior to construction and operations, and changes in the geospatial distributions of land use and potentially affected ecosystems. The costs for this task include labor for computer/database specialists, as well as subject matter experts, specialized computer hardware and software, and subcontracted specialists.

#### *2A.3.1.2.2 Subsurface Land Acquisition*

During Phase I, the Alliance obtained storage options on approximately 5,000 acres of land. Additional storage options will be obtained during Sub-Phase 2A to advance the acquisition of the necessary pore space.

#### *2A.3.1.2.3 Subsurface Site Characterization*

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**THIS SECTION OF THE SOPO (PAGES 37 – 76) DESCRIBES THE BALANCE OF THE PROJECT AFTER PHASE I.**

**THIS IS FROM THE BEST & FINAL DECISION POINT APPLICATION TO ENTER PHASE II**

**SUBMITTED IN SEPTEMBER 2012.**

In Sub-Phase 2A, the Alliance will conduct additional borehole hydraulic testing on the stratigraphic well drilled at the Morgan County CO<sub>2</sub> storage site in Phase I. This will evaluate the potential for the Elmhurst formation to serve as a storage reservoir, in addition to the Mount Simon Formation. The Alliance will also conduct vertical seismic profiles (VSP) on the stratigraphic well to allow for evaluation of the geological structure.

The installation of the final 7” casings will be delayed until further down hole testing in Sub-Phase 2A (and possibility later Sub-Phases) is completed.

#### *2A.3.2 Pipeline Design and Land Acquisition*

This section addresses design and land acquisition for the CO<sub>2</sub> pipeline.

##### *2A.3.2.1 Pipeline Front-End Engineering Design*

In Sub-Phase 2A, a pipeline contractor will be selected to begin the FEED. The pipeline conceptual design developed in Phase I will be refined through the FEED for the planned route from the oxy-combustion project to the Morgan County CO<sub>2</sub> storage site. The selected route will be surveyed and actual and precise distances, elevation effects, detailed geological impacts, additional land use considerations, etc. will be determined. The FEED will eventually include process flow diagrams, piping and instrumentation diagrams, pipeline construction drawings, and other engineering drawings as well as a detailed description of the interface between pipeline and storage components of the system.

##### *2A.3.2.2 Pipeline Land Acquisition*

Pipeline ROW acquisition will begin in Sub-Phase 2A and will continue and be completed in subsequent Sub-Phases (resolution of any eminent domain cases could extend into Phase 3). Pipeline ROW payments will be split into two parts. The first part of the payments will be paid during Sub-Phase 2A. The second part is a crop mitigation payment and will be paid before pipeline construction begins in Phase 3.

[End of Conditional Sub-Phase 2A]

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***PHASE II: NATIONAL ENVIRONMENTAL POLICY ACT, PERMITTING, AND DESIGN***

The effort in Phase II will be focused on the key tasks of supporting DOE's NEPA process, obtaining permits for the CO<sub>2</sub> storage system and CO<sub>2</sub> pipeline, FEED and final design, and MVA planning.

The following are key milestones for Phase II of the project:

- NEPA process completed – June 28, 2013
- CO<sub>2</sub> Off-Take Agreement executed with FutureGen 2.0 oxy-combustion project – September 30, 2013
- MVA Monitoring Plan issued – October 8, 2013
- Pipeline final design completed – November 11, 2013
- VRT facilities final design completed – November 13, 2013
- Storage site final design completed – November 13, 2013
- Environmental permits obtained – December 9, 2013
- Phase III – DPA submitted – December 20, 2013
- DOE decision on Phase III – DPA issued – February 28, 2014
- Evidence of financial commitment for Phase III obtained – February 28, 2014

The following are deliverables for Phase II of the project:

- VRT Facilities Requirements Report – November 30, 2012
- Revised Project Management Plan (PMP) – January 2, 2013
- Configuration Management Plan – January 2, 2013
- Risk Management Plan – January 2, 2013
- Executed CO<sub>2</sub> Off-Take Agreement – September 30, 2013
- MVA Monitoring Plan – October 8, 2013
- Technology Cost Data Report – Subsurface – November 8, 2013
- Stakeholder Involvement Report – December 6, 2013
- Project Cost Estimate Summary – December 18, 2013
- Phase II Project Topical Report – December 18, 2013
- FutureGen 2.0 integrated project schedule – December 18, 2013
- Phase III – DPA – December 20, 2013

## **2.1 PROJECT INTEGRATION**

Project management and control, communications and stakeholder involvement, legal and financial planning, and project interface management will be performed under this task.

### **Project Management and Controls**

This task includes project management, project controls, preparing and submitting the Phase III – DPA, and project reporting. These activities will be used to provide oversight and control throughout Phase II. Sub-award management and technology transfer functions will also be performed under this task.

The Alliance utilizes earned value management techniques meeting industry standards for tracking completion of work, keeping activities on schedule, and controlling costs to remain within the budget. The Alliance implements and manages the project and reports on activities in accordance with the approved PMP, which is revised throughout the phases of the project.

The Alliance prepares and submits reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

### **Project Management**

The PMP has been revised to reflect changes identified during Phase I activities. A copy of this plan is included in the Phase II – DPA. The Alliance will incorporate any additional DOE comments and provide DOE a revised PMP within 60 days of the Phase II start date specified in the Cooperative Agreement.

A Technology Cost Data Report for the CO<sub>2</sub> pipeline and storage site will be provided to DOE at the end of Phase II. Based on the costs of CO<sub>2</sub> compression/pumping, delivery, injection, geologic storage, and MVA, the Alliance will provide to DOE the capital and operating costs (estimated, including percent accuracy, and actual when available) and the total project cost. The costs of any other technologies used in the project will be included in this reporting. The cost data to be provided by the Alliance will include (but not necessarily be limited to):

- Project budget broken down by work breakdown structure (WBS) levels, i.e., budgeted and actual costs at the deliverable level, rolled up to the subtask level, task, phase, and total project. The total project budget will include personnel (direct labor), fringe rate, travel, equipment, supplies, sub-recipients (or subcontractors), consultants, other direct costs, and indirect costs (e.g., overhead, general and administrative).
- Capital and operating cost breakdown (excluding project management and reporting costs) and other costs including project equipment and material costs, capital costs, and operating costs (budgeted and actual)

### **Milestones**

- Revised PMP submitted – January 2, 2013

- Technology Cost Data Report – Subsurface submitted – November 8, 2013

### **Phase III – Decision Point Application**

In accordance with the Cooperative Agreement, DOE funding for Phase III must be authorized in writing by the Contracting Officer. As stated in the Cooperative Agreement, DOE's decision to authorize funding for Phase III will be based in part on the Alliance's progress toward meeting the objectives of the project and will include an evaluation of the Alliance's progress toward meeting the key milestones and deliverables set forth in the Cooperative Agreement. In particular, the following must be completed before DOE authorizes funding for Phase III:

- Phase III – DPA
- Firm commitments for the Alliance's cost share requirements for Phase III consisting of:
  - Financial plan
  - Financial commitment letter(s)
  - Complete Pro Forma model
- NEPA review and issuance of a Record of Decision (ROD) approving (but not authorizing) DOE funding of Phases III and IV
- CO<sub>2</sub> Off-Take Agreement executed with the oxy-combustion project
- Project schedule integrated with the oxy-combustion project
- Environmental permits needed for project construction
- MVA Monitoring Plan
- Final designs and cost estimates

The Alliance will prepare and submit a detailed Project Topical Report discussing the technical results of the work performed in Phase II. This report and the Phase III – DPA will be submitted to DOE no later than 60 days prior to the end of Phase II. The Phase III – DPA will include the following information:

1. A report on the Alliance's progress in meeting the objectives of the project, including any significant findings, developments, or issues that may affect the Alliance's ability to meet those objectives. Specific discussion and quantitative analysis (when applicable) will be presented regarding progress toward completion of key milestones identified for each project phase identified within this SOPO. In particular, the report will discuss any issues regarding coordination of the Alliance's project with the oxy-combustion project and how those issues affect the two projects' ability to achieve the objectives of FutureGen 2.0.

2. A description of the Alliance's plans for the conduct of the project in Phase III. This will include:
  - a. An updated Project Funding Plan for the remainder of the project, showing sources and uses of funds. The funding plan will demonstrate the availability of full non-DOE project funding (including financing if necessary) in the amounts and timing consistent with the project schedule during the first six months of Phase III. The plan will specify and document what requirements for financial closure (if necessary) have been achieved, and specify what requirements remain and how the Alliance plans to achieve these requirements.
  - b. For each source of funding, audited financial statements for the last three years and any available financial statements for the current year.
  - c. An updated SOPO that defines all work to be performed in Phase III, showing detail at WBS Level 5, including detail for tasks and subtasks in all remaining phases of the project.
  - d. A detailed budget and supporting justification for Phase III. The Phase III budget will identify if additional funds are requested or a reduction of funds is anticipated. The Alliance will identify cash and in-kind contributions and include the basis for valuation of in-kind contributions.
  - e. An updated financial model of the project, including a statement of revenues and expenses (income statement), balance sheet, and cash flow statement.
  - f. A financial commitment letter from each funding source.
  - g. An updated plan for executing the contracts with project team partners and vendors including plans for compliance with the Davis-Bacon Act requirements. Actual copies of contracts will be provided, if available.

*Milestones*

- Technology Cost Data Report – Subsurface submitted – November 8, 2013
- Configuration Management Plan submitted – December 18, 2013
- Risk Management Plan submitted – December 18, 2013
- Phase II Project Topical Report – December 18, 2013
- Phase III – DPA submitted – December 20, 2013
  - Updated SOPO (defining work to be performed in Phase III)
  - Detailed budget and supporting justification for Phase III
  - Updated plan for executing the contracts with project team partners and vendors

- DOE decision on Phase III issued – DPA – February 28, 2014

## **Project Reporting**

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

The Alliance will submit a monthly progress report by email to the DOE Program Manager/Project Officer and Contract Specialist to aid in their oversight of the project. Monthly reports may include sections or pages containing confidential or other business sensitive information. Such sections or pages will carry a designation of “Business Sensitive and Confidential.” The monthly report will be submitted on or before the 20<sup>th</sup> day of the month following the period covered by the report. The Alliance will also provide quarterly reports, including a quarterly financial report.

### *Milestones*

- Project Monthly Report – the 20<sup>th</sup> day of the following month
- Project Quarterly Report - 30 days after the end of the fiscal quarter
- Quarterly Federal Financial Report (SF-425) – 30 calendar days after the end of the calendar quarter

### *2.1.1 Communications and Stakeholder Involvement*

**This task provides support for the Alliance’s stakeholder engagement team.** The Alliance formed this team in Phase I to conduct stakeholder engagement in affected Illinois communities. The team utilizes the services of a subcontractor to provide communications and public relations support. The subcontractor will manage press interactions, develop material for events (e.g., newspaper inserts, fact sheets), identify speaking opportunities, and maintain the Alliance’s website (e.g., posting Frequently Asked Questions, *Community Corner* pieces, press releases, and newsworthy links to other websites). The subcontractor will also generate daily media clips that allow the Alliance and DOE to monitor local sentiment regarding the FutureGen 2.0 project in each of the affected communities. The subcontractor will also monitor blogs and other online services.

The stakeholder team also works closely with the Illinois Department of Commerce and Economic Opportunity’s (DCEO) Office of Coal Development and the Illinois State Geological Survey (ISGS) to address local and state environmental, permitting, and economic issues. The team also addresses national and global issues related to carbon capture and storage to ensure that local communities are fully informed.

External communications will be conducted in conjunction with DOE and other project partners. The Alliance will make contact with DOE whenever progress on the project warrants external communication, but not less than once a quarter. Actions and products designed to disseminate nonproprietary project-related knowledge will be coordinated with DOE’s National Energy

Technology Laboratory Public Affairs staff. Examples of such actions and products include, but are not limited to:

- Press releases
- Articles in newspapers, newsletters, and magazines
- Papers in peer-reviewed journals
- Radio, television, and newspaper interviews
- Presentation of research results at conferences, workshops, and seminars
- Publication of results on web pages
- Information for government officials

When issuing statements, press releases, Requests for Proposals (RFP), bid solicitations, and other documents describing this project, the Alliance will acknowledge federal funding by clearly stating (1) the percentage of the total cost of the project which will be financed with federal money, and, (2) the dollar amount of federal funds for the project. All Alliance press releases will be reviewed and approved by DOE prior to issuance. The Alliance will allow at least five and if possible ten calendar days prior to the planned issue date, submit a draft copy to the DOE Contracting Officer of any planned press releases related to work performed under the Cooperative Agreement. The Contracting Officer will then obtain necessary reviews and clearances and provide the Alliance with the results of such reviews prior to the planned issue date.

The activities to be undertaken in the stakeholder and public involvement task fall within in four categories, which are described below.

### **Communications and Public Relations**

- Review media clips and monitor blogs throughout Phase II to understand local sentiment in each of the affected communities. This desktop research will help inform the project team on local sentiment.
- Provide input and review for FutureGen 2.0 promotional materials and figures.
- Update Frequently Asked Questions that will be regularly posted to the Alliance's website.
- Work with the communications and public relations subcontractor to draft letters to stakeholders when appropriate.
- Provide periodic updates to the *Community Corner* portion of the Alliance's website.
- Identify and engage a videographer to track the physical progress of the site (overall site preparation, including groundwater well installation) to record for later use with stakeholders, on the Alliance's website if appropriate, and in the visitor center.

### **Stakeholder Engagement**

- Conduct one-on-one interviews and host focus groups with community stakeholders to listen to concerns and build awareness for the FutureGen 2.0 activities. Meetings will also be held with stakeholders prior to public hearings held for various environmental permitting processes.
- Conduct interviews and focus groups in support of DOE's NEPA process. Meetings will be held with stakeholders prior to DOE's public hearings on the FutureGen 2.0 Draft Environmental Impact Statement (EIS) to answer questions. These meetings will be designed to engage stakeholders in the process prior to the NEPA public hearings.

### **FutureGen 2.0 Citizens' Board**

- Continue to work with the FutureGen 2.0 Citizens' Board created by the Alliance in Phase I. The board, comprised of community stakeholders, will meet or speak by teleconference at least once each quarter during Phase II to ensure that stakeholder issues are considered throughout the process. This group includes stakeholders from a broad set of perspectives. The Alliance will solicit feedback from the Citizens' Board on issues that may concern or interest stakeholders and report those issues to the Alliance.

### **Visitor, Research, and Training Facilities Concept Development**

- Invite the participation of the FutureGen 2.0 Citizens' Board in the concept development process for the VRT facilities. Presidents of both local colleges and the Executive Director of the local community college branch are members of the Citizens' Board. Much engagement already occurred during Phase I and it is clear that they are quite interested in having their institutions involved in these efforts. Other Citizens' Board members will be used as a conduit to the broader community to determine the desired functional requirements of these facilities. The Alliance will continue to stress the importance of sustainability for these facilities so that the region sees the benefits of them and is committed to their long-term success.

#### *Milestones*

- *Community Corner* updates posted to the website – monthly (or more frequent)
- FutureGen Citizens' Board meetings/conference calls held – quarterly
- Website reviewed and updated – quarterly
- VRT Facilities Requirements Report submitted – November 30, 2012
- Stakeholder Involvement Report submitted – December 6, 2013

#### *2.1.2 Legal and Financial Planning*

Legal services are required for virtually every aspect of the CO<sub>2</sub> pipeline and storage project. Legal counsel provides the Alliance with general corporate legal needs including contractual matters between the Alliance and its multiple vendors and contractors, contractual matters

between the Alliance and its member companies, and tax compliance matters. Legal counsel is also responsible for the internal corporate organizational needs of the Alliance and its board of directors.

Legal services are also required for permitting activities. Legal counsel must participate in the development of all federal and state permit applications and review and approve those applications before submittal (see Section 2.2.3 for a description of the myriad permits required for the surface, subsurface, and pipeline components of the project). One such permit – a Certificate of Authority from the Illinois Commerce Commission (ICC) – will require significant representation in quasi-judicial proceedings before the state agency.

In addition, local (Illinois) legal services are needed to serve as a liaison to Illinois government officials, agencies, and legislators to keep them informed about the project. Local counsel will also assist the Alliance with the development of an acceptable Morgan County property tax plan and landowner outreach and land acquisition for the CO<sub>2</sub> storage site and pipeline route. Note that legal services associated with land acquisition issues such as negotiating options and leases are addressed below in those sections related to surface, subsurface, pipeline, and VRT facilities land acquisition.

Financial planning services are also a vital component of this project. The Alliance will update and modify as required the existing project financial model as final capital and operating cost estimates are completed. The updated financial model will include income (revenues and expenses), cash flow, and balance sheet statements that reflect the Alliance's business structure and DOE's cost share agreement for the project. The Alliance will also perform sensitivity and variance analysis and support required reporting requirements for the Phase III - DPA.

Under this task, the Alliance will work closely with financial planners and legal counsel to finalize the CO<sub>2</sub> Off-Take Agreement to ensure that it meets all of the required commercial and technical specifications for the safe, timely, and cost-effective transportation, injection, and storage of the CO<sub>2</sub> received from the oxy-combustion project. Because the CO<sub>2</sub> Off-Take Agreement will likely be considered a material contract necessary for the required third-party financing of the oxy-combustion project, the Alliance will work with its financial and legal advisors to ensure that the CO<sub>2</sub> Service Agreement meets all lender requirements for financial closing anticipated to occur at the beginning of Phase III. The Alliance will also ensure that the costs for the transportation, injection, and storage of the CO<sub>2</sub> are properly reflected in the cost-of-service formula rate being developed for the power purchase agreement required to support the financing of the oxy-combustion project.

The primary goal of the CO<sub>2</sub> pipeline and storage project is to demonstrate the integration of a near-zero emissions power plant with permanent CO<sub>2</sub> storage in a deep saline geologic formation. However, the Cooperative Agreement allows the use of captured CO<sub>2</sub> in excess of 1.0 MMT for other uses.

Finding productive uses for any excess CO<sub>2</sub> (beyond the minimum of 1.0 MMT required to be permanently stored underground pursuant to the Cooperative Agreement with DOE) or the CO<sub>2</sub> captured after the completion of the DOE demonstration project, could improve project economics and make it easier to secure a power purchase agreement. In fact, the ICC has

inquired about the potential of using CO<sub>2</sub> for enhanced oil recovery in a recent hearing on FutureGen 2.0.

To substantively explore whether there are CO<sub>2</sub> utilization opportunities in Illinois that could improve the economics of the FutureGen 2.0 Project and reduce electric ratepayer impact, a carbon capture utilization study is planned under this task in Phase II. The study will focus on enhanced oil recovery opportunities, and will explore any other identified industrial uses of CO<sub>2</sub> in central Illinois. The study will be competitively subcontracted. The scope will include a literature review of existing studies, discussions with industry associations and Illinois agencies to identify existing enhanced oil recovery projects requiring CO<sub>2</sub>, known but undeveloped opportunities (e.g., candidate oil fields in central Illinois that have only been through primary production), and other industrial use opportunities for CO<sub>2</sub>. To the extent that opportunities are identified, they will be screened (i.e., a first order qualitative screening) to assess whether any of them might help strengthen the project's economics and merit deeper analysis.

#### *Milestones*

- CO<sub>2</sub> Off-Take Agreement executed with the oxy-combustion project – September 30, 2013
- Phase III - DPA elements prepared under this task – December 18, 2013
  - Firm commitments for the Alliance's cost share requirements for Phase III consisting of
    - Financial Plan
    - Financial Commitment Letter(s)
    - Complete Pro Forma Model
  - For each source of funding, audited financial statements for the last three years and any available financial statements for the current year.
  - An updated financial model of the project, including a statement of revenues and expenses (income statement), balance sheet, and cash flow statement

#### *2.1.3 Project Interface Management*

In Phase I, the Alliance organized the Technical Committee, which was created by the Alliance and Ameren to serve as a resource for ideas and information, to share information about the oxy-combustion and CO<sub>2</sub> pipeline and storage project technologies to be used, to contribute to the generation and quality of work products, and to contribute to the general knowledge of the FutureGen 2.0 participating companies. On the committee, there are two representatives from each of the Alliance member companies, two representatives from each of the oxy-combustion project members, and one or more representatives from DOE.

One Technical Committee meeting was held in Phase I. In Phase II, the Technical Committee will be convened as needed to provide project oversight and guidance, but not less than quarterly. The Alliance will organize the Technical Committee meetings at times and places

convenient to the members and to DOE and will arrange for presentations and explanatory materials to enable the committee's work.

The exchange of technical and economic information to be facilitated by the Technical Committee is a significant part of the value proposition for the FutureGen 2.0 participating organizations. Apart from regular committee meetings, specific technical exchanges will be needed to address technology challenges, benefits, designs, operating protocols, cost, and performance and reliability characteristics of the fully integrated FutureGen 2.0 projects. Such exchanges will include the following types of information:

- Overall and detailed project layout information
- Plant and system performance data
- System and subsystem configuration
- Plant process information
- Cost information

#### *Milestones*

- Technical Committee meetings held - as needed, but at least every 3 months

## **2.2 SITING, NATIONAL ENVIRONMENTAL POLICY ACT, AND PERMITTING**

This section addresses the activities related to siting for the CO<sub>2</sub> storage site, support for DOE's NEPA compliance efforts, and permitting requirements.

### *2.2.1 Siting*

The siting process for the CO<sub>2</sub> storage site was completed under Phase I and no siting activities are planned for Phase II. Details of this activity can be found in the Phase I Progress Report submitted as part of the Phase II – DPA.

### *2.2.2 National Environmental Policy Act*

To analyze the potential environmental impacts of FutureGen 2.0, DOE is preparing an EIS in compliance with NEPA. In Phase I, the Alliance submitted various sections of the Environmental Information Volume (EIV) for the CO<sub>2</sub> storage site and alternate sites, the CO<sub>2</sub> pipeline corridors, and the VRT facilities. DOE is using this information in its preparation of a Draft EIS.

In Phase II, the Alliance will provide additional support for DOE's NEPA process. This will include reviewing and commenting on preliminary draft versions of the Draft EIS as requested by DOE. The purpose of these reviews will be to ensure that the project is accurately described and that potential environmental impacts are adequately assessed. The comments from all Alliance reviewers, including subject matter experts, will be consolidated for consideration by DOE. The Alliance will also prepare for and participate in DOE's public hearings on the Draft EIS and, as requested by DOE, respond to public comments received.

For the Final EIS, the Alliance will update its EIV, based on continuing data collection and design efforts, for use in DOE's Final EIS. The updated EIV prepared in Phase II will include, but is not limited to, new information regarding:

- The parameters of the geologic formation into which the CO<sub>2</sub> will be injected such as its permeability and porosity, the type and number of seals, and the size of the projected CO<sub>2</sub> plume footprint.
- The amount of land needed, the emissions and effluents, and the type and volume of materials used and wastes generated.
- The presence of threatened or endangered species, wetlands, surface water bodies, drinking water sources, and cultural resources at the CO<sub>2</sub> storage site or along the proposed CO<sub>2</sub> pipeline route. It will also include a discussion of the number of residences potentially affected and the extent to which existing rights-of-way could be used or new rights-of-way will be needed.

In addition to updating the environmental data described above, the Alliance will update its reference design that specifies:

- The number of injection wells required and how they will be constructed;
- The type and duration of MVA activities that will be undertaken;
- The physical attributes of the proposed VRT facilities (such as size and height) and the type of activities that will be conducted;
- The manner in which the pipeline will be constructed; and
- The mitigation measures that will be employed to reduce environmental impacts or the potential for accidents.

The Alliance will review and comment on preliminary draft versions of the Final EIS as requested by DOE and will also support the development of DOE's Record of Decision (ROD) as requested.

#### *Milestones*

- Draft EIS issued by DOE for public comment – November 30, 2012
- Final EIV submitted to DOE – February 28, 2013
- Final EIS issued by DOE – May 3, 2013
- ROD issued by DOE – June 28, 2013

#### *2.2.3 Permitting*

This task involves preparing applications for and obtaining all the permits necessary for the construction and operation of the CO<sub>2</sub> storage site, which includes both the surface and subsurface facilities at the CO<sub>2</sub> storage site and the CO<sub>2</sub> pipeline. The Permit Requirements Report, developed in Phase I, will be used to ensure that all necessary permitting is addressed

and obtained. The Alliance anticipates that all permits necessary for Phase III will be obtained by December 9, 2013. Most federal and state agencies will not issue required permits until after DOE has issued its ROD.

### 2.2.3.1 Storage Site Permitting

Storage site permitting includes the permits needed for (1) the surface facilities at the storage site and (2) the Class VI (CO<sub>2</sub> injection) Underground Injection Control (UIC) permit required for the construction of the injection wells.

#### 2.2.3.1.1 Surface Permitting

As described in the Alliance's Project Topical Report (included in the Phase II – DPA) and in Section 2.3.1 below, the surface facilities will include four buildings, two injection wells, and the MVA system. The four buildings are the Site Control Building, the Booster Pump Building, and two Well Annulus Maintenance and Monitoring System (WAMMS) Buildings, one at each of the two injection well locations. The MVA system will include two single-level completion monitoring wells, one multi-level completion well, one above confining zone early detection well, three VSP deep wells, and three shallow microseismic monitoring wells. Other planned monitoring may include 10 to 15 permanent surface monitoring stations for measuring injection-related deformation by Interferometric Synthetic Aperture Radar, gravity surveys, tilt meters, and differential global positioning systems. The construction of the surface facilities is expected to disturb up to 60 acres of land: approximately 25 acres will be needed for construction of surface facilities, resulting in permanent disturbance of approximately 10 acres; new access roads will require about 9 acres of land and upgrades to existing roads will require about 54 acres of land.

Because construction of the surface facilities will require ground disturbance, federal and state laws require environmental studies and approvals by various regulatory agencies. The approval process typically involves multiple consultations with each of the relevant agencies, providing documentation, and responding to questions. Site visits and additional field work could also be necessary. The Alliance's subject matter experts, particularly biological and cultural resource experts, will be needed to participate in the consultations and in preparing any additional documentation requested.

The Permit Requirements Report, developed in Phase I, identifies the following permits that are expected to be required for the CO<sub>2</sub> storage site surface facilities:

- Consultation with the State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act to obtain a letter of concurrence of “no impact” to cultural resources or to identify acceptable mitigation.
- Consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act to obtain a letter of concurrence of “no impact” to protected plants and animals or to identify acceptable mitigation.

- Consultation with the U.S. Army Corps of Engineers (USACE) and USACE concurrence on the DOE Floodplain/Wetland Assessment required under 10 CFR 1022 and any resulting mitigation plan.
- Application of a permit for storm water discharges under the National Pollutant Discharge Elimination System (NPDES) from the Illinois Environmental Protection Agency (IEPA) for all surface facilities.
- Demonstration that the project will be able to comply with the Illinois Department of Natural Resources (IDNR) Statewide Permit during construction in drainages and floodplains.

#### *Milestones*

- Concurrences obtained from SHPO, USFWS, USACE, IEPA, and IDNR for all CO<sub>2</sub> storage site surface facilities – October 3, 2013

#### 2.2.3.1.2 Subsurface Permitting

In addition to the environmental permits and approvals needed for surface disturbance activities, the Alliance will be required to obtain Class VI UIC permits from the U.S. Environmental Protection Agency (USEPA) for the construction of each of the injection wells and injection of CO<sub>2</sub>. The permit applications will be submitted at the end of Phase I.

During Phase II, the Alliance will continue to conduct subsurface site characterization as described in Section 2.3.1.2.4, below. The information derived in this effort will likely require modifications to the initial UIC permit applications, including changes to the computational modeling results, the injection well construction plan, and the testing and monitoring plan. Modifications will need to be prepared and submitted in the same manner as the original UIC permit applications.

The Class VI UIC permit process is new and a permit for the FutureGen 2.0 project will be the first for a large-scale, commercial project. For these reasons, the Alliance anticipates that there will be substantial interaction required between the Alliance and USEPA as the Alliance's permit applications are reviewed. USEPA is likely to have questions and comments that will require detailed and substantive answers prepared by the Alliance's subsurface experts. Additional data collection and analysis and model runs may be required. In addition, this permit review effort will require management and oversight to ensure responses are complete, timely, and properly documented. The UIC permit process also requires a public hearing in which the Alliance and its experts will need to participate.

Standard well permits will also need to be obtained from IDNR.

#### *Milestones*

- Class VI UIC permits for construction of the CO<sub>2</sub> injection wells issued – December 9, 2013

### 2.2.3.2 Pipeline Permitting

The CO<sub>2</sub> pipeline route between the oxy-combustion project and the Morgan County CO<sub>2</sub> storage site will be approximately 30 miles. Prior to construction, the Alliance must consult with and obtain approvals from several federal and state agencies. Similar to the surface facilities at the storage site, construction of the pipeline will require ground disturbance. As a result, federal and state laws require environmental studies and approvals by various regulatory agencies. The approval process typically involves multiple consultations with each of the relevant agencies, providing documentation, and responding to questions. Site visits and additional field work could also be necessary. The Alliance's subject matter experts, particularly biological and cultural resource experts, will be needed to participate in the consultations and in preparing any additional documentation requested.

The Alliance will also be required to obtain a Certificate of Authority from the ICC in accordance with Illinois' Carbon Dioxide Transportation and Sequestration Act. This act requires the Alliance to submit an application and documentation that the Alliance is fit, willing, and able and has the financial, managerial, legal, and technical qualifications necessary to construct and operate the pipeline. In addition to filing for the environmental permits and approvals described above, the ICC application also requires the filing of an application with the federal Pipeline and Hazardous Material Safety Administration (PHMSA). Prior to obtaining a final Certificate from the ICC, the Alliance must demonstrate that it has obtained all other regulatory approvals necessary for the construction and operation of the pipeline.

The Permit Requirements Report, developed in Phase I, identifies the following consultations and approvals that are expected to be required for the CO<sub>2</sub> pipeline:

- Consultation with the SHPO under Section 106 of the National Historic Preservation Act to obtain a letter of concurrence of "no impact" to cultural resources or to identify acceptable mitigation.
- Consultation with USFWS under Section 7 of the Endangered Species Act to obtain a letter of concurrence of "no impact" to protected plants and animals or to identify acceptable mitigation.
- Consultation with USACE to acquire Nationwide Permit 12 and a dike permit from the St. Louis District of the Army Corps of Engineers. Obtain Corps concurrence on the DOE Floodplain/Wetland Assessment required under 10 CFR 1022 and any resulting mitigation plan.
- Development of a conservation plan to facilitate the granting of an Incidental Take Permit for impacts to the protected Chorus Frog from IDNR if pipeline construction would cause adverse impacts. Negotiate impact mitigation for a protected butterfly.
- Negotiation and implementation of permit to use Illinois Department of Transportation (IDOT) right-of-way (ROW) along State Route 67.
- Compliance with the Agricultural Impact Mitigation Agreement (AIMA) with the Illinois Department of Agriculture (IDOA) to address pipeline impacts to prime farmland. Detailed soil mapping of the pipeline route and development of training protocols for pipeline workers will be required in Phase II.

- Acquisition of a NPDES permit from IEPA for storm water discharges that could result during the construction of the CO<sub>2</sub> pipeline.
- Demonstration that the project will be able to comply with the IDNR Statewide Permit during construction in drainages and floodplains
- Completion of the PHMSA application process by submitting final design and pipeline route information to PHMSA.
- Acquisition of local permits for road and railroad crossings.
- Acquisition of a Certificate of Authority from the ICC authorizing the construction and operation of the CO<sub>2</sub> transportation pipeline.

#### *Milestones*

- Conditional ICC Certificate of Authority issued – July 3, 2013
- Final ICC Certificate of Authority – October 31, 2013
- IDNR endangered species consultation completed – November 27, 2013
- IEPA NPDES permits issued – November 27, 2013
- Use of IDNR Statewide Permit approved – November 27, 2013
- USACE consultation completed and use of Nationwide Permit approved – November 27, 2013
- Letter of concurrence from SHPO issued – November 27, 2013
- Letter of concurrence from USFWS issued – November 27, 2013
- Local permits for road and railroad crossings issued – November 27, 2013
- PHMSA concurrence issued – November 27, 2013

### **2.3 DESIGN AND LAND ACQUISITION**

This task involves development of FEED and final design and land acquisition for the CO<sub>2</sub> storage site (surface and subsurface facilities), the CO<sub>2</sub> pipeline, and the VRT facilities. These tasks will be completed in Phase II.

Moving from the conceptual design developed in Phase I, the Alliance will develop the FEED in Phase II. FEED will involve preliminary design including schematics that illustrate the flow routes, flow rates, equipment plan layouts, general equipment types, and the fluid conditions (temperatures, pressures, phases) that must be managed. Preliminary cost estimates will be developed. This phase of design allows for alternative views and value engineering to narrow the uncertainty and potentially reduce costs. Specific output items will include:

- Preliminary equipment design
- Preliminary layout

- Preliminary schedule
- Preliminary cost estimate
- Specification outline
- Surveying, if required

Major design items such as significant structural requirements and relative soil conditions, onsite and offsite water control preferences, utility decisions (electricity, natural gas, biogas, solar, wind), traffic flow, type of structures, types of piping, and security requirements will also be identified,

Following the issuance of a favorable ROD at the conclusion of DOE's NEPA process, the Alliance will commence final design, using the FEED as the basis. In final design, the details of the design such as piping connections, electrical connections, and mechanical systems will be identified. Other elements of final design will include:

- Purchase-ready equipment specifications
- Definitive cost estimate
- Project execution plan
- Design drawings
- Material specifications
- Electrical and mechanical equipment schedules (lists, sizes, capacities, etc.)

With respect to land acquisition, the CO<sub>2</sub> pipeline and storage project requires the acquisition of several different types of real estate rights. In Phase I, the Alliance negotiated with landowners to acquire options for pore space in the Mount Simon formation for the permanent storage of CO<sub>2</sub>. The Alliance also acquired the rights to use surface areas for a stratigraphic well and options to use additional surface areas for the CO<sub>2</sub> storage site. The *FutureGen 2.0: CO<sub>2</sub> Pipeline and Storage Project Land Acquisition Plan*, included with the Phase II – DPA, describes the Alliance's land acquisition plan and the cost basis for the acquisitions.

In Phase II, the Alliance will need to conduct further negotiations to acquire options for ROW along the CO<sub>2</sub> pipeline route. These efforts require the services of experienced and knowledgeable legal counsel who must, among other things, draft appropriate real estate acquisition documents (e.g., options, deeds, leases), directly negotiate with many landowners and their counsel, conduct title searches, prepare title opinions, and supervise appraisers and other land staff. In Phase II, annual option payments will be made and any additional options will be secured. After issuance of a favorable ROD, the Alliance will exercise those options to obtain ownership and/or access to the land needed for construction in Phase III.

### 2.3.1 *Storage Site Design and Land Acquisition*

This section addresses design and land acquisition for the CO<sub>2</sub> storage site surface and subsurface facilities.

### 2.3.1.1 Surface Design and Land Acquisition

This section addresses the design and land acquisition for the CO<sub>2</sub> storage site surface facilities, which consist of four buildings (Site Control Building, Booster Pump Building, and two WAMMS Buildings), two injection wells, and the MVA system.

#### 2.3.1.1.1 Surface Front-End Engineering Design

The Alliance expects that the CO<sub>2</sub> storage site will be visited by scientists and dignitaries from across the country and the world. The surface components of the storage facility will be designed to blend in with the surrounding area, and to pose minimal impact to the surrounding environment while being home to an important scientific research and demonstration facility. The buildings will be one story to minimize site visual impacts.

As appropriate, Leadership in Energy and Environmental Design (LEED) concepts will be incorporated into the site and building designs with the goal of interacting with the environment positively. The design will provide safeguards to minimize the risk of CO<sub>2</sub> accumulation and to detect any levels of any constituents that pose a risk to human health, safety, and welfare.

The site surface area is expected to require up to 60 acres, including the surface facilities, the MVA system, access roads, and upgrades to existing roads (see Section 2.2.3.1.1). Consideration will be given to installing a fence around critical structures (buildings and injection wells) with farming allowed on areas outside of the fenced area and at sufficient setbacks from monitoring wells.

Both injection wells will be controlled and monitored from the Site Control Building, which may be located near one injection well to allow for visitor observation. Other options for location of the Site Control Building are also being considered. If supplemental compression is required at the site, there will be a single Booster Pump Building to house three booster pumps estimated at 800 horsepower each. Two will be used for normal operations and one will be available as backup. The two pumps will provide the total pumping power required for both injection wells. Both of the pumps will operate continuously under full load. The third pump will be sized to replace one operations pump. The injection wells will each have a WAMMS Building to supply the well with fluid to maintain annulus pressurization.

#### *Milestones*

- Surface storage site FEED complete – June 3, 2013

#### 2.3.1.1.2 Surface Final Design

The FEED discussed above will be advanced to final design along with a final cost estimate. In addition, an RFP will be developed and issued for a construction contractor for surface facility construction.

#### *Milestones*

- Issue RFP for surface facility construction – June 11, 2013
- Receive bids for surface facility construction – July 9, 2013
- Down-select surface facility construction contractor(s) – July 16, 2013
- Complete surface facility final design – November 12, 2013
- Receive best and final bids from construction contractor(s) – November 19, 2013
- Select surface facility construction contractor – November 26, 2013

#### 2.3.1.1.3 Surface Land Acquisition

As noted above, up to 60 acres of surface land will be required to accommodate the surface facilities, including the surface facilities, the MVA system, necessary access roads, and upgrades to existing roads (see Section 2.2.3.1.1). While affected landowners have agreed to options for pore space, additional negotiations will be required to obtain surface areas once those are determined. The Alliance will negotiate terms with affected landowners to obtain use of the surface area for the CO<sub>2</sub> storage site surface facilities.

##### *Milestones*

- Surface facility land acquisition complete – December 20, 2013

#### 2.3.1.2 Subsurface Design and Land Acquisition

This section addresses the design and land acquisition for the subsurface facilities, including the injection wells, at the CO<sub>2</sub> storage site. This task also includes subsurface site characterization and MVA.

##### 2.3.1.2.1 Subsurface Front-End Engineering Design

The conceptual design for the subsurface infrastructure developed in Phase I will be refined through the FEED in Phase II. The FEED will provide more detailed, site-specific considerations that were not included in the conceptual design. Actual and precise distances, elevation effects, more detailed geological impacts, and additional land use considerations will be included. The design will yield process flow diagrams, piping and instrumentation diagrams, well construction diagrams, and other engineering drawings for the subsurface storage components of the system.

A key activity in the preliminary design phase will be the development of a site-specific subsurface CO<sub>2</sub> fate and transport model to determine the type and spacing of injection wells and to assess the potential CO<sub>2</sub> plume size and CO<sub>2</sub> behavior (spreading, trapping), which will be essential for designing the CO<sub>2</sub> monitoring systems. In addition to the subsurface model, an integrated CO<sub>2</sub> pipeline and wellbore model will also be developed to simulate the plant-to-injection well pathway and to determine wellhead pressure requirements needed to inject the CO<sub>2</sub>. This model will also be useful for designing the pipeline and in determining if supplemental pressurization systems are required.

This task also involves the creation and maintenance of a Geographic Information System (GIS) database for all characterization, construction, monitoring, and operations data through the life of the project. The GIS data will include baseline monitoring data collected prior to construction and operations, and changes in the geospatial distributions of land use and potentially affected ecosystems. The costs for this task include labor for computer/database specialists, as well as subject matter experts, specialized computer hardware and software, and subcontracted specialists.

*Milestones*

- Subsurface FEED complete – June 3, 2013
- Technology Cost Data Report – Subsurface submitted – November 8, 2013

2.3.1.2.2 Subsurface Final Design

The FEED discussed above will be advanced to final design along with a final cost estimate. In addition, an RFP will be developed and issued for a construction contractor for subsurface infrastructure construction.

*Milestones*

- RFP for subsurface construction issued – June 10, 2013
- Bids for subsurface construction received – July 9, 2013
- Down-select for subsurface construction contractor(s) completed – July 16, 2013
- Subsurface final design completed – November 13, 2013
- Best and final bids received from construction contractor(s) – November 20, 2013
- Subsurface infrastructure construction contractor selected – November 27, 2013

2.3.1.2.3 Subsurface Land Acquisition

During Phase I, the Alliance obtained storage options on approximately 5,000 acres of land. Additional storage options will be obtained during Phase II to complete the acquisition of the necessary pore space.

*Milestones*

- Purchase of storage site options completed – December 20, 2013

2.3.1.2.4 Subsurface Site Characterization

Early in Phase II, the Alliance will conduct additional borehole hydraulic testing on the stratigraphic well drilled at the Morgan County CO<sub>2</sub> storage site in Phase I. This will evaluate the potential for the Elmhurst formation to serve as a storage reservoir, in addition to the Mount Simon Formation. The Alliance will also conduct vertical seismic profiles (VSP) on the

stratigraphic well to allow for evaluation of the geological structure. This task also includes the reduction and restoration (site completion) of the stratigraphic well drilled in Phase I.

*Milestones*

- Borehole hydrological testing completed – February 4, 2013
- VSP on the stratigraphic well completed – February 4, 2013
- Evaluation of the geologic structure completed – September 4, 2013

2.3.1.2.5 Subsurface Monitoring, Verification, and Accounting

The Alliance will develop and execute a MVA program necessary to meet research and demonstration objectives and UIC permitting requirements. Monitoring is a critical aspect of the demonstration project, and several monitoring methods are planned to meet the requirements of the UIC Class VI regulation, as well as to evaluate and demonstrate emerging technologies for use at CO<sub>2</sub> sequestration sites.

To this end, the Alliance will develop a MVA Program Plan. The purpose of the plan will be to document the MVA actions to be implemented to provide an accurate accounting of CO<sub>2</sub> supplied to the oxy-combustion project, and establish a high-level of confidence that the CO<sub>2</sub> is safely and permanently stored underground. This may involve the application of innovative, advanced technologies and protocols for MVA of CO<sub>2</sub> storage in geologic formations. Activities in Phase II will be focused on identifying the monitoring techniques in order to track the lateral extent of the injected CO<sub>2</sub> within the injection reservoir and confirm that the injected CO<sub>2</sub> is effectively contained within the reservoir and there are no adverse impacts to underground sources of drinking water (USDW) or to surface ecological conditions. Such techniques may include indirect measurements such as surface/downhole/crossborehole geophysical surveys, land surface elevation mapping, pressure and direct measurements of CO<sub>2</sub> or a tracer or minor constituents in the supercritical CO<sub>2</sub>, aqueous solution, or gas phase.

*Milestones*

- MVA Monitoring Plan issued – October 8, 2013

2.3.2 *Pipeline Design and Land Acquisition*

This section addresses design and land acquisition for the CO<sub>2</sub> pipeline.

2.3.2.1 Pipeline Front-End Engineering Design

Early in Phase II, a pipeline contractor will be selected for completion of the FEED and final design with an option for construction of the pipeline. The pipeline conceptual design developed in Phase I will be refined through the FEED for the planned route from the oxy-combustion project to the Morgan County CO<sub>2</sub> storage site. The selected route will be surveyed and actual and precise distances, elevation effects, detailed geological impacts, additional land use considerations, etc. will be determined. The FEED will include process flow diagrams, piping

and instrumentation diagrams, pipeline construction drawings, and other engineering drawings as well as a detailed description of the interface between pipeline and storage components of the system.

*Milestones*

- RFP for FEED/final design with construction option issued – November 21, 2012
- Contract for FEED/final design with construction option awarded – December 14, 2012
- Pipeline FEED completed – June 14, 2013

2.3.2.2 Pipeline Final Design

The FEED discussed above will be advanced to final design along with a final cost estimate including construction.

*Milestones*

- Pipeline Final Design completed – November 11, 2013

2.3.2.3 Pipeline Land Acquisition

Pipeline ROW acquisition will begin in Phase II and will continue and be completed in Phase III (resolution of any eminent domain cases will extend into Phase III). Pipeline ROW payments will be split into two parts. The first part of the payments will be paid during Phase II. The second part is a crop mitigation payment and will be paid before pipeline construction begins in Phase III. Estimates for these costs are based on information received from the Rocky Mountain Express pipeline.

*Milestones*

- Authority for eminent domain received – September 27, 2013
- Pipeline ROW acquisition needs identified – December 5, 2013

2.3.3 *Visitor, Research, and Training Facilities Design and Land Acquisition*

This section addresses design and land acquisition for the VRT facilities.

2.3.3.1 Visitor, Research, and Training Facilities Front-End Engineering Design

In Phase II, the Alliance will develop a design for the VRT facilities. The design effort will build upon the efforts of the stakeholder engagement team to describe the potential requirements of these facilities as described in Section 2.1.2, above.

Once a clear definition of the facilities has been established by the Alliance, an RFP will be issued for architectural design and engineering services. The selected contractor will develop

multiple conceptual designs for the VRT facilities for consideration by an architectural review team to be assembled by the Alliance. This team will assess the conceptual designs and select the one believed to best meet the requirements as established in the definition effort. After the conceptual design has been selected, the architectural design and engineering subcontractor will develop a FEED for the facilities. The content of these facilities will also be determined under this task.

*Milestones*

- RFP for architectural design and engineering contractor issued – November 30, 2012
- Architectural design and engineering contract awarded – January 23, 2013
- Conceptual designs completed – April 2, 2013
- Conceptual design reviewed and selected – April 30, 2013
- VRT facilities FEED completed – July 18, 2013

2.3.3.2 Visitor, Research, and Training Facilities Final Design

The FEED discussed above will be advanced to final design along with a final cost estimate.

*Milestones*

- RFP for VRT facilities construction issued – July 25, 2013
- Bids for VRT facilities construction received – August 22, 2013
- Down-select for construction contractor(s) completed – August 29, 2013
- VRT facilities final design completed – November 13, 2013
- Best and final bids received from construction contractor(s) – November 20, 2013
- VRT facilities construction contractor(s) selected – November 27, 2013

2.3.3.3 Visitor, Research, and Training Facilities Land Acquisition

The facilities may be co-located and most likely will be in, or near, Morgan County's major population center of Jacksonville. The facilities maybe be built on land acquired by the Alliance or may utilize an existing building in the City of Jacksonville.

*Milestones*

- Land options for VRT facilities obtained – May 31, 2013

**3 PHASE III: CONSTRUCTION, AND COMMISSIONING (3/01/2014 – 06/30/2017)**

The effort in Phase III will be focused on the key tasks of construction, commissioning, and completion of baseline MVA activities.

The following are key milestones for Phase III of the project:

- Construction completed – May 28, 2015
  - Pipeline construction completed – May 15, 2015
  - Storage site subsurface construction completed – May 27, 2015
  - VRT facilities construction completed – May 28, 2015
  - Storage site surface construction completed – May 28, 2015
- Physical integration with CO<sub>2</sub> supplier completed – March 9, 2017
- Commissioning and start-up completed – March 31, 2017
- Baseline MVA activities completed – June 30, 2017

The following are deliverables for Phase III of the project:

- Revised PMP submitted – May 1, 2014
- Phase III Project Topical Report – May 1, 2017
- FutureGen 2.0 integrated project schedule – May 1, 2017
- Phase IV Decision Point Application (Phase IV – DPA) submitted – May 1, 2017
- Technology Cost Data Report – Subsurface submitted – May 26, 2017

### ***3.1 PROJECT INTEGRATION***

In Phase III, this task will involve project management and controls, communications and stakeholder involvement, legal and financial planning and project interface management. Additional details will be provided in the Phase III – DPA.

#### *Project Management and Controls*

Project management, project controls, and project integration activities will be performed under this task. These activities will be used to provide oversight and control throughout Phase III. The Alliance will utilize earned value management techniques meeting industry standards for tracking completion of work, keeping activities on schedule, and controlling costs to remain within the budget. The Alliance will implement and manage the project and report on activities in accordance with the approved PMP as updated throughout the phases of the project.

The Alliance will perform activities to facilitate communication with DOE and will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

Sub-award management, communications, outreach, and technology transfer functions will be performed under this task.

The Alliance will prepare a Phase IV – DPA as part of this task.

### *Project Management*

The PMP will be revised to reflect any changes identified during the Phase II activities. The Alliance will provide DOE an updated PMP within 60-days of the Phase III start date as specified in the Cooperative Agreement.

A Technology Cost Data Report for the CO<sub>2</sub> pipeline and storage site will be provided to DOE at the end of Phase III. Based on the costs of CO<sub>2</sub> compression/pumping, delivery, injection, geologic storage and MVA, the Alliance will provide to DOE the capital and operating costs (estimated, including percent accuracy, and actual when available) and the total project cost. The costs of any other technologies used in the project that involve DOE cost-shared funding will be included in this reporting. The cost data to be provided by the Alliance will include (but not necessarily be limited to):

- Project budget broken down by WBS levels, i.e., budgeted and actual costs at the deliverable level, rolled up to the subtask level, task, Phase, and total project. The total project budget will include personnel (direct labor), fringe rate, travel, equipment, supplies, sub-recipients (or subcontractors), consultants, other direct costs, and indirect costs (e.g., overhead, general and administrative).
- Capital and operating cost breakdown (excluding project management and reporting costs) and other costs including project equipment and material costs, capital costs, and operating costs (budgeted and actual)

### *Milestones*

- Revised PMP submitted – May 1, 2014
- Phase III Project Topical Report submitted – May 1, 2017
- Phase IV – DPA submitted – May 1, 2017
  - Updated SOPO (defining work to be performed in Phase IV)
  - Detailed budget and supporting justification for Phase IV
  - Updated plan for executing the contracts with project team partners and vendors
- Technology Cost Data Report – Subsurface submitted – May 26, 2017

### **Phase IV – Decision Point Application**

In accordance with the Cooperative Agreement, continued DOE funding in Phase IV must be authorized in writing by DOE's Contracting Officer. DOE's decision to authorize funding for Phase IV will be based in part on the Alliance's progress toward meeting the objectives of the project and will include an evaluation of the Alliance's progress toward meeting the key milestones and deliverables in the Cooperative Agreement. In particular, the following must be completed before DOE authorizes funding for Phase IV:

- Phase IV – DPA

- Demonstrated full non-DOE project funding
- Updated MVA Program Plan
- Project schedule integrated with the oxy-combustion project
- Physical integration with CO<sub>2</sub> supplier
- Construction of the CO<sub>2</sub> storage facilities and CO<sub>2</sub> pipeline
- Baseline MVA activities
- Commissioning and start-up

The Alliance will prepare and submit a detailed Project Topical Report discussing the technical results of the work performed in Phase III. This report and the Phase IV – DPA will be submitted to DOE no later than 60 days prior to the end of Phase III. The Phase IV – DPA will include the following information:

1. A report on the Alliance’s progress towards meeting the objectives of the project, including any significant findings, developments or issues that may affect the Alliance’s ability to meet those objectives. Specific discussion and quantitative analysis (when applicable) will be made regarding progress toward completion of key milestones identified for each project phase identified within this SOPO. In particular, the report will discuss any issues regarding coordination of the Alliance’s project with the Oxy-combustion Large Scale Test and how those issues affect the two projects’ ability to achieve the objectives of FutureGen 2.0.
2. A description of the Alliance’s plans for the conduct of the project during Phase IV. This will include:
  - a. An updated Project Funding Plan for the remainder of the project, showing sources and uses of funds. The funding plan will demonstrate the availability of full non-DOE project funding (including financing if necessary) in the amounts and timing consistent with the project schedule during the first six months of Phase III. The plan will specify and document what requirements for financial closure (if necessary) have been achieved, and specify what requirements remain and how the Alliance plans to achieve these requirements.
  - b. For each source of funding, audited financial statements for the last three years and any available financial statements for the current year.
  - c. An updated SOPO that defines all work to be performed under the upcoming Phase IV, showing detail at WBS Level 5, including detail for tasks and subtasks in Phase IV.
  - d. A detailed budget and supporting justification for Phase IV. The budget will identify if additional funds are requested or if a reduction of funds is anticipated. The Alliance will identify cash and in-kind contributions and include the basis for valuation of in-kind contributions.

- e. An updated financial model of the project, including a statement of revenues and expenses (income statement), balance sheet, and cash flow statement.
- f. A financial commitment letter from each funding source.
- g. An updated plan for executing the contracts with project team partners and vendors including plans for compliance with the Davis-Bacon Act requirements. Actual copies of contracts will be provided, if available.

#### *Milestones*

- Phase III Topical Report submitted – May 1, 2017
- Phase IV – DPA submitted – May 1, 2017
  - Updated SOPO (defining work to be performed in Phase IV)
  - Detailed budget and supporting justification for Phase IV
  - Updated plan for executing the contracts with project team partners and vendors
- DOE Decision on Phase IV – DPA issued – June 30, 2017

#### **Project Reporting**

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

The Alliance will submit a monthly progress report by email to the DOE Program Manager/Project Officer and Contract Specialist to aid in their oversight of the project. Monthly reports may include sections or pages containing confidential or other business sensitive. Such sections or pages will carry a designation of “Business Sensitive and Confidential. “ Monthly reports will be submitted on or before the 20<sup>th</sup> day of the month following the period covered by the report. The Alliance will also provide quarterly reports, including a quarterly financial report.

#### *Milestones*

- Project Monthly Reports submitted – the 20<sup>th</sup> day of the following month
- Project Quarterly Reports submitted – 30 days after end of fiscal quarter
- Quarterly Federal Financial Reports (SF-425) submitted – 30 calendar days after the end of calendar quarter
- Project Monthly Reports submitted – The 20<sup>th</sup> day of the following month

#### *3.1.1 Communications and Stakeholder Involvement*

In Phase III, the stakeholder engagement team will continue to address local, Illinois state, national, and global issues with stakeholders. With respect to Illinois-specific activities related to

surface facility and pipeline siting, the Alliance will continue to partner with the Illinois DCEO and ISGS to address Illinois-specific siting issues. The stakeholder team's activities in Phase III will be similar to those undertaken in Phase II. The activities to be undertaken by the team in four specific areas are described below.

### **Communications and Public Relations**

- Continue to review media clips and monitor blogs throughout the project period to understand local sentiment in the affected communities. This desktop research will help inform the Alliance on local sentiment.
- Provide input and review for FutureGen 2.0 promotional materials and figures.
- Update Frequently Asked Questions that will be regularly posted to the Alliance's website.
- Work with the communications and public relations subcontractor to draft letters to stakeholders when appropriate.
- Provide periodic updates to the *Community Corner* portion of the Alliance's website.
- Monitor the progress of the videographer to track the physical progress of the site to record for use with stakeholders, on the Alliance's website if appropriate, and in the visitor center.

### **Stakeholder Engagement**

- Continue to monitor community stakeholder involvement and provide engagement opportunities at project milestones and on an as-needed basis.

### **FutureGen 2.0 Citizens' Board**

- Continue to work with the FutureGen 2.0 Citizens' Board established in Phase I. This group will continue to meet or speak by teleconference on a quarterly (or as needed depending on the Citizens' Board desire) basis throughout Phase III to ensure that stakeholder issues are considered. The Alliance will continue to solicit feedback from the Citizens' Board on issues that may be of concern or interest to stakeholders and report those issues to the Alliance.

### **Visitor, Research, and Training Facilities Concept Development**

- Work with the Citizens' Board, the Alliance, contractors, and other groups to implement the VRT facilities concept developed in Phase II.

### *Milestones*

- *Community Corner* updates made to website – monthly (or more frequent)
- FutureGen 2.0 Citizens' Board Meetings/Conference Calls held – quarterly

- Progress reports on VRT facilities implementation prepared and posted to the website – quarterly
- Website reviewed and updated (if needed) – quarterly
- Stakeholder Involvement Report submitted – May 1, 2017

### *3.1.2 Legal and Financial Planning*

The legal and financial planning activities were described in Section 2.1.3. These activities will continue in Phase III.

#### *Milestones*

- Updated Project Funding Plan (showing sources and uses of funds for the remainder of the project, to be included in Phase IV – DPA) submitted – May 1, 2017
- For each source of funding, audited financial statements for the last three years and any available financial statements for the current year to be included in Phase IV – DPA – May 1, 2017
- A financial commitment letter from each funding source to be included in Phase IV – DPA – May 1, 2017
- An updated financial model of the project, including a statement of revenues and expenses (income statement), balance sheet, and cash flow statement. To be included in Phase IV – DPA – May 1, 2017

### *3.1.3 Project Interface Management*

Similar to the activities described in Section 2.1.4, the Alliance will continue to facilitate communication with DOE and the other project partners. The Technical Committee will be convened as needed to provide oversight and guidance, but not less than quarterly.

#### *Milestones*

- Technical Committee meetings held - at least every 3 months
- Oxy-Combustion and CO<sub>2</sub> Pipeline and Storage Integrated Test Plan submitted – October 31, 2016

## **3.2 SITING, NATIONAL ENVIRONMENTAL POLICY ACT, AND PERMITTING**

This section addresses the activities related to siting for the CO<sub>2</sub> storage site, support for DOE's NEPA compliance efforts, and permitting requirements.

### *3.2.1 Siting*

Siting activities were completed during Phase I. For this reason, no siting activities are planned for Phase III.

### *3.2.2 National Environmental Policy Act*

Most NEPA activities will be completed during Phase II. In Phase III, substantive changes in the project design or other new information relating to potential environmental impacts may require DOE to prepare a Supplement Analysis. The purpose of the Supplement Analysis is to determine whether a supplemental EIS is required. The Alliance will provide data and other input into the DOE Supplement Analysis and to a supplemental EIS if one is prepared.

### *3.2.3 Permitting*

All permits required for the CO<sub>2</sub> storage site and CO<sub>2</sub> pipeline will be obtained during Phase II. The Alliance will continue to monitor and verify compliance with these permits. Several permits will require the training of construction crews prior to construction. For example, the SHPO, IDNR and FWS will require the development of best management procedures and awareness training of construction workers; there are similar requirements in the AIMA. Several permits will require real time monitoring of compliance during and after construction. The AIMA will also require 3 years of post-construction monitoring activities, which will continue into Phase IV. Compliance with the Class VI UIC permit will also require data collection and regular reporting.

In Phase II, the Alliance will identify a location for the VRT facilities and will complete final design. Similar to other ground disturbing activities, construction of the VRT facilities will require environmental permits and approvals from the SHPO, USFWS, USACE, IEPA, and IDNR. Local building and utility permits will also be required. These will be obtained by the Alliance in Phase III, prior to the start of construction.

#### *Milestones*

- Concurrences obtained from SHPO, USFWS, USACE, IEPA, and IDNR for VRT facilities – April 29, 2014
- Local building and utility permits obtained for the VRT facilities – April 29, 2014
- Training of construction crews on environmental requirements completed – April 29, 2014
- Post-construction reports to permitting agencies completed – June 30, 2015
- Annual Crop Damage Assessment Reports submitted – October 2015 and 2016

### *3.2.4 Land Acquisition*

Land acquisition (options and leases) will be completed during Phase II. Options acquired in Phase II will be exercised early in Phase III.

### *Milestones*

- All land acquisition transactions completed – March 31, 2014

## **3.3 CONSTRUCTION AND COMMISSIONING**

In Phase III, the Alliance will construct and commission the CO<sub>2</sub> storage site (surface and subsurface facilities), the CO<sub>2</sub> pipeline, and the VRT facilities. Additional details will be provided in the Phase III – DPA.

### *3.3.1 Storage Site*

This section addresses the construction and commissioning of the CO<sub>2</sub> storage site surface and subsurface facilities.

#### *3.3.1.1 Surface Storage Site*

This section addresses the construction and commissioning of the CO<sub>2</sub> storage site surface facilities, consisting of four buildings (Site Control Building, Booster Pump Building, and two WAMMS Buildings), two injection wells, and the MVA system.

##### *3.3.1.1.1 Surface Storage Site Design*

Surface storage site design will be completed in Phase II.

##### *3.3.1.1.2 Surface Storage Site Construction*

Site infrastructure work will be completed under this activity. This includes local access roads, fences, and access control and site office construction.

### *Milestones*

- Storage site surface construction completed – May 28, 2015

##### *3.3.1.1.3 Surface Storage Site Commissioning*

The operations subcontractor will develop a detailed commissioning plan during the construction phase. This plan will be integrated with the subsurface and pipeline commissioning plan.

### *Milestones*

- Commissioning and start-up completed – March 31, 2017

#### *3.3.1.2 Subsurface Storage Site*

This section addresses the construction and commissioning of the subsurface facilities, including the injection wells, at the CO<sub>2</sub> storage site. This task also includes subsurface site characterization and MVA.

#### 3.3.1.2.1 Subsurface Storage Site Design

Subsurface storage site design will be completed in Phase II.

#### 3.3.1.2.2 Subsurface Storage Site Construction

Storage site subsurface construction includes a number of activities: procurement of materials/services for well drilling/constructing the injection wells, drilling/constructing deep and shallow monitoring wells, construction of above ground systems, and baseline monitoring. Construction of the injection well(s) and deep monitoring wells will be completed in time to allow sufficient time for baseline monitoring that will require the use of these wells (e.g., borehole seismic). Baseline monitoring methods that do not require use of the injection wells or deep monitoring wells can begin later in the construction phase. Examples of these types of methods include surface deformation monitoring (e.g., using tiltmeters), and CO<sub>2</sub> surface-flux monitoring.

A network of shallow monitoring wells will be installed to monitor the USDWs to confirm that injected CO<sub>2</sub> does not migrate into these formations. These wells will be installed early in the construction phase to allow time to collect multiple rounds of baseline groundwater samples. To comply with UIC permitting requirements, as-built information documenting the final construction details of the injection wells and deep monitoring wells (that penetrate the storage reservoir) and above ground components associated with the injection process will be documented in a well completion report and submitted to USEPA during the construction phase. This deliverable will need to be submitted at least 12 months before the planned start of CO<sub>2</sub> injection to avoid delays. Once USEPA has reviewed and approved the report, the agency will issue a permit to inject CO<sub>2</sub>.

##### *Milestones*

- Storage site subsurface construction completed – May 27, 2015

#### 3.3.1.2.3 Subsurface Storage Site Commissioning

The operations subcontractor will develop a detailed commissioning plan during the construction phase. This plan will be integrated with the surface and pipeline commissioning plan.

##### *Milestones*

- Commissioning and start up completed – March 31, 2017

#### 3.3.1.2.4 Subsurface Storage Site Characterization

Subsurface site characterization will be completed in Phase III. Of particular importance is the installation and characterization of the injection wells and monitoring wells to confirm design parameters such as reservoir injectivity and storativity. These are key design parameters for the storage site. The following activities will be conducted during Phase III:

- Logging and coring will be undertaken on eight deep wells, two injection wells, one Mount Simon multilevel monitoring well, one early detection well, three VSP monitoring system wells, and one Mount Simon single-completion monitoring well (the second single-completion monitoring well is assumed to be the Morgan County stratigraphic well drilled in Phase I).
- Logging and sidewall core samples will be taken on eight deep wells and whole core analysis will be conducted on two Mount Simon wells.
- Eight zero offset VSPs and eight walk away VSPs will be performed during Phase III. A third-party service vendor will provide data acquisition and processing of the VSPs information.
- Open borehole hydrologic testing will be conducted on the two injection wells.
  - Tests include dynamic flowmeter logging of the entire Mount Simon Formation, slug tests, and constant-rate injection tests for selected intervals. The goal of these tests is to characterize the vertical distribution of hydraulic properties (transmissivity, permeability) that control injectivity, identify zones for injecting CO<sub>2</sub>, and quantify reservoir parameters needed for modeling plume behavior.
  - Additional hydrologic tests will be conducted after the injection wells have been completed (i.e., cased and perforated). Activities include a composite injection or withdrawal test of the entire perforated section; dynamic fluid logging (flowmeter, fluid temperature, density) for the composite perforated interval; and limited straddle packer tests.
  - A multi-well interference test will be conducted after the injection wells and Mount Simon monitoring wells are installed.
  - A third-party service vendor will provide the testing equipment for the open borehole hydrologic testing, including labor to run packers and operating the equipment.

*Milestones*

- Well Completion Reports submitted – July 31, 2015
- Site Characterization Report submitted – July 31, 2015

3.3.1.2.5 Subsurface Land Acquisition

Under this task, the Alliance will exercise its options for the CO<sub>2</sub> storage site.

*Milestones*

- Land acquisition completed – March 31, 2014

#### 3.3.1.2.6 Monitoring, Verification, and Accounting

The Alliance will implement the MVA Program Plan prepared in Phase II. Updates to the plan will be prepared as necessary. This task also includes maintenance of the GIS database developed in Task 2.3.1.2.1.

##### *Milestones*

- MVA Monitoring Plan updated (if necessary) – May 25, 2016
- Baseline MVA activities and conceptual modeling completed – June 30, 2017

#### 3.3.2 Pipeline Construction and Commissioning

This section addresses the construction and commissioning of the CO<sub>2</sub> pipeline.

##### 3.3.2.1 Pipeline Design

Pipeline design will be completed in Phase II.

##### 3.3.2.2 Pipeline Construction

Pipeline construction activities include pipeline material procurement, pipeline construction mobilization, and pipeline construction for purposes of capturing the construction schedule and cost. There will be many additional sub-work elements added in the Phase IV – DPA.

##### *Milestones*

- Pipeline construction completed – May 15, 2015
- Physical integration with CO<sub>2</sub> supplier completed – March 1, 2017

##### 3.3.2.3 Pipeline Commissioning

The operations subcontractor will develop a detailed commissioning plan during the construction phase. This plan will be integrated with the subsurface and surface commissioning plan.

##### *Milestones*

- Pipeline commissioning and start-up completed – March 31, 2017

##### 3.3.2.4 Pipeline Land Acquisition

Under this task, the Alliance will exercise its options for the CO<sub>2</sub> pipeline. In addition to payments to landowners, this activity will require legal services to exercise and record these options and could require litigation.

*Milestones*

- ROW acquisition completed – October 3, 2014

*3.3.3 Visitor, Research, and Training Facilities*

This section addresses the construction and commissioning of the VRT facilities.

*3.3.3.1 Visitor, Research, and Training Facilities Design*

Design for these facilities will be completed in Phase II.

*3.3.3.2 Visitor, Research, and Training Facilities Construction*

This WBS element includes activities area summarized as Procure VRT Facilities Materials; Mobilize VRT Facilities Construction; and VRT Facilities Construction. There will be additional sub-work elements detailed in the Phase IV – DPA.

*Milestones*

- VRT facilities construction completed – May 28, 2015

*3.3.3.3 Visitor, Research, and Training Facilities Commissioning*

The operations subcontractor will develop a detailed commissioning plan during the construction phase.

*Milestones*

- VRT facilities commissioning and start-up completed – December 18, 2015
- VRT facilities opened to public – January 4, 2016

*3.3.3.4 Visitor, Research, and Training Facilities Land Acquisition*

Under this task, the Alliance will exercise its options for the VRT facilities.

*Milestones*

- Land acquisition completed – May 29, 2014

**4 PHASE IV: OPERATIONS (07/01/2017 – 2/28/2022)**

Efforts under Phase IV will be focused on demonstrating successful operation of the pipeline and storage site, and ensuring permanence of stored CO<sub>2</sub> through appropriate MVA activities.

The following are key milestones for Phase IV of the project:

- Initiate operations – July 1, 2017

- Injection operations (DOE Demonstration) completed – February 28, 2022
- MVA operations (DOE Demonstration) completed – February 28, 2022
- Transition of operations and monitoring to commercial vendor completed – February 28, 2022

The following are deliverables for Phase IV of the project:

- Final Project Topical Report submitted – February 28, 2022
- Technology Cost Data Report – CO<sub>2</sub> Pipeline and Storage Site submitted – February 28, 2022

#### **4.1 PROJECT INTEGRATION**

Project management and control, communications and stakeholder involvement, legal and financial planning, and project interface management will be performed under this task. Additional details will be provided in the Phase IV – DPA.

##### *Project Management and Controls*

This task includes project management, project controls, and project reporting activities. These activities will be used to provide oversight and control throughout Phase IV. The Alliance will utilize earned value management techniques meeting industry standards for tracking completion of work, keeping activities on schedule, and controlling costs to remain within the budget. The Alliance will implement and manage the project and report on activities in accordance with the approved PMP for the as updated throughout the phases of the project.

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

Sub-award management and technology transfer functions will be performed under this task.

##### **Project Management Plan**

The PMP will be revised to reflect any changes identified during the Phase III activities. The Alliance will provide DOE an updated PMP within 60 days after the Phase IV start date as specified in the Cooperative Agreement.

A Technology Cost Data Report for the CO<sub>2</sub> pipeline and storage site will be provided to DOE at the end of Phase IV. Based on the costs of CO<sub>2</sub> compression/pumping, delivery, injection, geologic storage, and MVA, the Alliance will provide to DOE the capital and operating costs (estimated, including percent accuracy, and actual when available) and the total project cost. The costs of any other technologies used in the project will be included in this reporting. The cost data to be provided by the Alliance will include (but not necessarily be limited to):

- Project budget broken down by WBS levels, i.e., budgeted and actual costs at the deliverable level, rolled up to the subtask level, task, Phase, and total project. The

total project budget will include personnel (direct labor), fringe rate, travel, equipment, supplies, sub-recipients (or subcontractors), consultants, other direct costs, and indirect costs (e.g., overhead, general and administrative).

- Capital and operating cost breakdown (excluding project management and reporting costs) and other costs including project equipment and material costs, capital costs, and operating costs (budgeted and actual)

#### *Milestones*

- Technology Cost Data Report – CO<sub>2</sub> Pipeline and Storage Site submitted – February 28, 2022

### **Project Reporting**

The Alliance will prepare and submit reports and deliverables as required in the Financial Assistance Reporting Requirements Checklist and this SOPO.

The Alliance will submit monthly progress reports by email to the DOE Program Manager/Project Officer and Contract Specialist to aid in their oversight of the project. Monthly reports may include sections or pages containing confidential or other business sensitive. Such sections or pages will carry a designation of “Business Sensitive and Confidential.” Monthly reports will be submitted on or before the 20<sup>th</sup> day of the month following the period covered by the report. The Alliance will also provide quarterly reports, including a quarterly financial report.

#### *Milestones*

- Project Monthly Report – the 20<sup>th</sup> day of the following month
- Project Quarterly Reports – 30 days after end of fiscal quarter
- Quarterly Federal Financial Report (SF-425) – 30 calendar days after the end of the calendar quarter
- Final Project Topical Report submitted – February 28, 2022

#### *4.1.1 Communications and Stakeholder Involvement*

In Phase IV, the stakeholder engagement team will continue to address local, Illinois State, national, and global issues with stakeholders. With respect to Illinois-specific activities related to the project, the Alliance will continue to partner with the Illinois DCEO and ISGS to address Illinois-specific issues. The Alliance will continue to provide project updates, and interact with stakeholders through events at the VRT facilities. The stakeholder team will continue to manage press interaction and monitor reporting, develop collateral materials for events, identify speaking engagement opportunities, and update the Alliance’s website.

#### *Milestones*

- Stakeholder Involvement Report submitted – February 28, 2022

#### *4.1.2 Legal and Financial Planning*

Legal activities were described in Section 2.1.3. In Phase IV, legal counsel will continue to provide the Alliance with general corporate legal needs including contractual matters between the Alliance and its multiple vendors and contractors, as well as contractual matters between the Alliance and its member companies and tax compliance matters. Legal counsel is also responsible for the internal corporate organizational needs of the Alliance and its board of directors.

#### *4.1.3 Project Interface Management*

Similar to the activities described in Section 2.1.4, the Alliance will continue to perform activities to facilitate communication with DOE and other project partners. The Technical Committee will be convened as needed to provide oversight and guidance, but not less than quarterly.

##### *Milestones*

- Technical Committee meetings held – at least every 3 months

## **4.2 OPERATIONS**

The following section gives an overview of the future operations activities. Additional details will be provided in the Phase IV – DPA.

Operations will begin after the commissioning and startup period (Phase III) and continue for 56 months, as part of the DOE project. While the DOE involvement in the CO<sub>2</sub> capture, transport, and storage activities will end following 56 months of operation, commercial operations will continue for the tenure of the debt and power purchase agreement (likely 17 to 27 additional years). The major activities during the operations phase will be monitoring, operations, and maintenance of the CO<sub>2</sub> pipeline and storage system including activities such as safety inspections, compressor maintenance, periodic integrity testing of injection wells and deep monitoring wells, and well work overs. Monitoring will include a comprehensive suite of methods aimed at tracking CO<sub>2</sub> migration and retention in the subsurface, as well as injection monitoring and assuring that there is no unintended leakage. The Alliance will also be required to pay costs associated with land leases and crop damages associated with the CO<sub>2</sub> pipeline.

#### *4.2.1 Storage Site Operations*

This section addresses the operation of the CO<sub>2</sub> storage site surface and subsurface facilities.

##### *4.2.1.1 Storage Site Surface Operations*

During operations, the CO<sub>2</sub> storage facility will safely accept and inject an average of approximately 1.1 MMT of CO<sub>2</sub> per year and is expected to be visited by scientists and dignitaries from across the country and the world.

### *Milestones*

- Operations initiated – July 1, 2017
- Operations (DOE Demonstration) completed – February 28, 2022
- Transition of operations to commercial vendor completed – February 28, 2022

#### 4.2.1.2 Storage Site Subsurface Operations

During operations, the CO<sub>2</sub> storage facility will safely and permanently store an average of approximately 1.1 MMT of CO<sub>2</sub> per year, up to a total of 39 MMT. During this time, the Alliance will need to file periodic reports with EPA to maintain its Class VI UIC permit. This task also includes maintenance of the GIS database developed in Task 2.3.1.2.1 (Subsurface FEED).

### *Milestones*

- Operations initiated – July 1, 2017
- MVA operations (DOE Demonstration) completed – February 28, 2022
- Transition of operations to commercial vendor completed – February 28, 2022

#### 4.2.1.3 Storage Site Subsurface Operations Monitoring, Verification, and Accounting

The Alliance will continue to execute its MVA Program Plan to provide accurate accounting of the CO<sub>2</sub> supplied from the oxy-combustion project and establish a high-level of confidence that the CO<sub>2</sub> will remain stored permanently.

### *Milestones*

- MVA operations (DOE Demonstration) completed – February 28, 2022
- Transition of monitoring to commercial vendor completed – February 28, 2022

#### 4.2.2 Pipeline Operations

The CO<sub>2</sub> pipeline will transport CO<sub>2</sub> captured at the repowered power plant at Meredosia, Illinois to the Morgan County CO<sub>2</sub> storage site. Pipeline operations will be monitored on a continuous basis. The control and monitoring of pipeline operations will be from a central control room located at the CO<sub>2</sub> storage site. The central control room will send command and control signals remotely using the supervisory control and data acquisition network to all pump and metering stations and the launcher/receivers in the system.

The Alliance will also be required to conduct post-construction monitoring activities in compliance with various permits and the AIMA.

### *Milestones*

- Operations initiated – July 1, 2017

- Operations (DOE Demonstration) completed – February 28, 2022
- Transition of pipeline operations to commercial vendor completed – February 28, 2022

#### *4.2.3 Visitor, Research, and Training Facilities Operations*

Operational activities associated with the VRT facilities will be determined during Phase II and detailed in the Phase IV – DPA.

### **4.3 POST OPERATIONS**

The Alliance will be required to continue to pay land royalties during the operation of the CO<sub>2</sub> storage site.

[End of SOPO]

DOE F 4600.2

(5/09)

(All Other Editions are Obsolete)

**ATTACHMENT 3**  
**U.S. Department of Energy**  
**FEDERAL ASSISTANCE REPORTING CHECKLIST**  
**AND INSTRUCTIONS**

<b>1. Identification Number:</b> <b>DE-FE0001882</b>	<b>2. Program/Project Title:</b> <b>FutureGen 2.0: Pipeline and Regional CO2 Storage Reservoir Project</b>																																																																																				
<b>3. Recipient:</b> <b>FutureGen Industrial Alliance</b>																																																																																					
<b>4. Reporting Requirements:</b>  <b>A. MANAGEMENT REPORTING</b>  <input checked="" type="checkbox"/> Progress Report <input checked="" type="checkbox"/> Special Status Report  <b>B. SCIENTIFIC/TECHNICAL REPORTING *</b> <small>(Reports/Products must be submitted with appropriate DOE F 241. The 241 forms are available at <a href="https://www.osti.gov/eflink">https://www.osti.gov/eflink</a>)</small>  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Report/Product</th> <th style="text-align: left; border-bottom: 1px solid black;">Form</th> <th style="border-bottom: 1px solid black;">Frequency</th> <th style="border-bottom: 1px solid black;">No. of Copies</th> <th style="border-bottom: 1px solid black;">Addresses</th> </tr> </thead> <tbody> <tr> <td><input checked="" type="checkbox"/> Final Scientific/Technical Report</td> <td>DOE F 241.3</td> <td>Q</td> <td rowspan="2">Electronic Version to NETL&gt;</td> <td rowspan="2" style="text-align: center; vertical-align: middle;"><a href="mailto:FITS@NETL.DOE.GOV">FITS@NETL.DOE.GOV</a></td> </tr> <tr> <td><input checked="" type="checkbox"/> Conference papers/proceedings/etc.*</td> <td>DOE F 241.3</td> <td>A</td> </tr> <tr> <td><input type="checkbox"/> Software/Manual</td> <td>DOE F 241.4</td> <td>FG</td> <td rowspan="2">Electronic Version to E-link&gt;</td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> <a href="http://www.osti.gov/eflink-2413">http://www.osti.gov/eflink-2413</a>  <a href="http://www.osti.gov/eflink-2413">http://www.osti.gov/eflink-2413</a>  <a href="http://www.osti.gov/estsc/241-4pre.jsp">http://www.osti.gov/estsc/241-4pre.jsp</a> </td> </tr> <tr> <td><input checked="" type="checkbox"/> Other (see special instructions)</td> <td></td> <td>A</td> </tr> <tr> <td>Topical</td> <td>DOE F 241.3</td> <td></td> </tr> <tr> <td colspan="5"><i>* Scientific/technical conferences only</i></td> </tr> <tr> <td colspan="5"><b>C. 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**FREQUENCY CODES AND DUE DATES:**

- A - As required; see attached text for applicability.
- FG - Final; within ninety (90) calendar days after the project period ends.
- FC - Final - End of Effort.
- Q - Quarterly; within thirty (30) calendar days after end of the calendar quarter or portion thereof.
- S - Semiannually; within thirty (30) calendar days after end of project year and project half-year.
- YF - Yearly; 90 calendar days after the end of project year.
- YP - Yearly Property - due 15 days after period ending 9/30.

**5. SPECIAL INSTRUCTIONS:**

- The forms identified in the checklist are available at [DOE Financial Assistance Forms Page](#). Alternate formats are acceptable provided the contents remain consistent with the form.
- See Federal Assistance Reporting Instructions on the following page.

**Federal Assistance Reporting Instructions (5/09)**

The Recipient must prepare and submit all scientific/technical reports (including conference papers/proceedings, journal articles, software, and topical reports, if applicable) via E-link at <http://www.osti.gov/mlink-2413> [see specific instructions below regarding form submittal and format]. If you have any technical problems with using E-Link or DOE Form 241.3, calls should be directed to OSTI at 865-576-1223. However, if your question is related to other submission issues, you should contact the award administrator identified under block 16 of the Assistance Agreement Cover Page.

For all other reports indicated on the “Federal Assistance Reporting Checklist” (including management, financial, closeout and other reporting), the Recipient must prepare and submit these via the internet at [FITS@NETL.DOE.GOV](mailto:FITS@NETL.DOE.GOV).

Successful completion of this award is contingent upon submittal of the reports or items specified on the “Federal Assistance Reporting Checklist” in accordance with the following instructions:

Failure to follow these instructions can delay data entry of the report(s) into the **NETL FEDERAL INFORMATION TRACKING SYSTEM (FITS)** and result in the report being lost or considered delinquent.

The level of detail the Recipient provides in the reports must be commensurate with the scope and complexity of the effort and must be as delineated in the guidelines and instructions contained herein. The prime Recipient must be responsible for acquiring data from any contractors or sub recipients and ensuring that any information submitted is compatible with the requirements of the DOE.

**GUIDELINES FOR ELECTRONIC SUBMISSION AND FILE FORMAT OF NON-SCIENTIFIC/TECHNICAL REPORTS (includes management, financial, closeout and other reporting).**

Production of high-quality, electronic documents is dependent on the quality of the input that is provided. Thus, the Recipient must submit an electronic version of each report.

ELECTRONIC REPORTS MUST BE SUBMITTED IN THE ADOBE ACROBAT PORTABLE DOCUMENT FORMAT (PDF) AND BE ONE INTEGRATED PDF FILE THAT CONTAINS ALL TEXT, TABLES, DIAGRAMS, PHOTOGRAPHS, SCHEMATIC, GRAPHS, AND CHARTS. MATERIALS, SUCH AS PRINTS, VIDEOS, AND BOOKS, THAT ARE ESSENTIAL TO THE REPORT BUT CANNOT BE SUBMITTED ELECTRONICALLY, SHOULD BE SENT TO THE DOE ADMINISTRATOR AT THE ADDRESS LISTED IN BLOCK 16 OF THE ASSISTANCE AGREEMENT COVER PAGE. ELECTRONIC REPORTS SUBMITTED IN A FORMAT OTHER THAN ADOBE WILL BE RETURNED AND THE REPORT CONSIDERED DELINQUENT. IN ADDITION, THERE CAN BE NO RESTRICTIONS ON THE PDF FILE SUBMITTED THAT WOULD AFFECT OUR ABILITY TO OPEN OR EDIT THE REPORT DOCUMENT. THEREFORE, THE ONLY SECURITY METHOD THAT WILL BE ACCEPTED IS THE ADOBE ACROBAT “NO SECURITY” OPTION. THIS WILL ENABLE US TO PROPERLY INDEX AND PROCESS REPORT FILES.

The electronic file(s) must be submitted via the Internet at: [FITS@NETL.DOE.GOV](mailto:FITS@NETL.DOE.GOV). An e-mail message sent in conjunction with the file must contain the following information:

DOE Award Number  
Type of Report(s)  
Frequency of Report(s)  
Reporting Period (if applicable)  
Name of submitting organization  
Name, phone number and fax number of preparer

**A. MANAGEMENT REPORTING (See Guidelines for Electronic Submission and File Format of Non-Scientific/Technical Reports)**

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## **PROGRESS REPORT**

The Progress Report must provide a concise narrative assessment of the status of work and include the following information and any other information identified under Special Instructions on the Federal Assistance Reporting Checklist:

1. The DOE award number and name of the recipient.
2. The project title and name of the project director/principal investigator.
3. Date of report and period covered by the report.
4. Executive Summary- A well organized summary that highlights the important accomplishments and new knowledge realized from the project during the reporting period. It should be no less than one page and no more than two pages in length, and should be single spaced. This summary must be more comprehensive than the traditional “abstract” and identify noteworthy advancements in research, design, manufacture or commercialization of technology developments. Also, summarize important breakthroughs that resolve critical science and technology risks or development barriers.
5. A discussion of what was accomplished under these goals during this reporting period, including major activities, significant results, major findings or conclusions, key outcomes or other achievements. This section should not contain any proprietary or classified data, or other information not subject to public release. If such information is important to reporting progress, **do not** include the information in this electronic report. Such information **MUST** be submitted in a separate hard-copy appendix to this report as explained under the **Supplemental Guidelines** below.

A suggested format is:

Approach - this should describe, or reference all experimental, analytical and fabrication methods being used for the research and development efforts. It should also provide detail about materials and equipment being used. Standard methods can be referenced to the appropriate literature, where details can be obtained. Equipment should be described only if it is not standard, or if information is not available through the literature or other reference publications.

Results and Discussion - It is extremely important that this section includes enough relevant data, especially statistical data, to allow the project manager to justify the conclusions. With the relevant data, explain how the data was interpreted and how it relates to the original purpose of the research. Be concise in the discussion on how this research effort solved or contributed to solving the original problem. When investigation methods and/or procedures are being utilized for the first time, they must be described in detail. This description must contain detailed information on equipment and procedures utilized, as well as providing a rationale for their use and the accuracy of the method.

Conclusion - The conclusion should not simply reiterate what was already included in the “Results and Discussion” section. It should, however, summarize what has already been presented, and include any logical implications of how the successes are relevant to technology development in the future. This is extremely important, since “relevancy” continues to be a criterion of the program.

## **STATUS REPORTING:**

The following two sections of the Progress Report are to monitor uncosted obligations and project schedule/performance.

6. **COST STATUS**

The Cost Status reports the actual cost status of the award when compared with the original Baseline Cost Plan (i.e., the “Forecasted Cash Needs” originally provided on the SF-424A, Section D and as set forth in the Project Management Plan submitted with the Application and revised with Task 1.0 of SOPO).

The suggested format for the **Cost Plan/Status** follows:

**COST PLAN/STATUS**

Baseline Reporting Quarter	YEAR 1 Start:			YEAR 2 Start:			YEAR 3 Start:					
	Q1 (From 424A, Sect. E)	Q2	End: Q3	Q4	Q5 (From 424A, Sect. E)	Q6	Q7	Q8	Q9	Q10	Q11	End: Q12
Baseline Cost Plan (From SF-424A)												
Federal Share												
Non-Federal Share												
Total Planned (Federal and Non-Federal)												
Cumulative Baseline Cost												
<b>Actual/Incurred Costs</b>												
Federal Share												
Non-Federal Share												
Total Incurred Costs-Quarterly (Federal and Non-Federal)												
Cumulative Incurred Costs												
<b>VARIANCE</b>												
Federal Share												
Non-Federal Share												
Total Variance-Quarterly (Federal and Non-Federal)												
Cumulative Variance												

Notes:

The Baseline Cost Plan is the “Forecasted Cash Needs” provided on the original SF- 424A, Section D for the current Budget Period (by Calendar Year Quarter) and will not be changed. If there are variances in the baseline, provide a brief analysis and recommendation.

Adjusting the baseline cost requires agreement of the DOE.

For Actual Incurred Costs, the recipient will insert the total amount of actual costs incurred for the quarterly period being reported, comprised of the DOE share and Recipient share.

The Variance is derived by subtracting the actual costs from the planned baseline costs, including an analysis explaining the variance.

7. **SCHEDULE/MILESTONE STATUS**

The Schedule/Milestone Status measures changes in schedule or completion status of the originally anticipated (planned) milestones (as set forth in the Project Management Plan submitted with the Application and revised with Task 1.0 of SOPO) and their actual completion dates.

The Milestone Status will:

- (1) Identify a set of clearly stated project milestones (as contained under the Project Management Plan),
- (2) Clearly depict the actual progress achieved toward planned milestones,
- (3) Identify any individual milestone that was not met during the reporting period, and
- (4) Include a summary statement of the rationale for not meeting the milestone, a future date (Budget Period, calendar year and quarter) when the milestone will be met, the impact to the project of missing the milestone (i.e., schedule slippage, cost growth, other), and a plan to get back on schedule.

A suggested format for the Milestone Status is provided below:



8. Any changes in approach or aims and reasons for change. Remember significant changes to the objectives and scope require prior approval by the Contracting Officer.
9. Actual or anticipated problems or delays and actions taken or planned to resolve them. Identify any event causing a significant schedule slippage or cost growth; an environmental, safety, or health violation; or the achievement of or problems encountered for an important performance objective.
10. Any absences or changes of key personnel or changes in consortium/team arrangement.
11. A description of any product produced or technology transfer activities accomplished during this reporting period, such as:
  - a. Publications (list journal name, volume, issue); conference papers; or other public releases of results as required for submission under Conference Papers/Proceedings and Journal Articles below.
  - b. Website or other Internet sites that reflect the results of this project.
  - c. Networks or collaboration fostered.
  - d. Technologies/Techniques.
  - e. Inventions/Patent Applications.
  - f. Other products, such as data or databases, physical collections, audio or video, software or netware, models, educational aid or curricula, instruments or equipment.
12. Earned Value Analysis

The Recipient shall report Earned Value data used for tracking schedule and cost performance of the project. Earned value is a project management tool which allows for the review of both the schedule and financial progress, as compared to the initial project plan.

The Recipient shall gather and record Earned Value Management (EVM) Data at the appropriate work breakdown structure level on a monthly basis. The Earned Value Analysis Report shall include EVM data as follows:

- Planned Value (PV) or Budgeted Cost of Work Scheduled (BCWS)
- Earned Value (EV) or Budgeted Cost of Work Performed (BCWP)
- Actual Cost (AC) or Actual Cost of Work Performed (ACWP)
- The Cost Performance Index (CPI) is calculated by dividing Earned Value by Actual Cost. (CPI= EV/AC)
- The Schedule Performance Index (SPI) is calculated by dividing Earned Value by Planned Value. (SPI=EV/PV)

The Planned Value (PV) is the cost budgeted for a given portion of planned work. The Actual Cost (AC) is the total of the funds actually spent for the work which was completed. The Earned Value (EV) is the budgeted or planned dollar value of the portion of work which was actually completed. The Cost Performance Index and Schedule Performance Index compare the planned dollar value of the portion of work actually completed with the actual cost for the work actually completed, and the cost budgeted for the give portion of planned work, respectively.

EVM data shall be reported for the period and cumulative for the project. The baseline PV and AC incurred should be reported for the previous period. The projected PV versus EV for the upcoming month shall also be assessed. The Recipient shall provide the DOE summary level access/overview of the project management tool (e.g., Microsoft Project) at the Statement of Project Objectives task/subtask level in order to monitor project operations and status.

The Recipient shall use PV, EV, and AC used to assess the cost and schedule performance of the project by calculating and reporting the Cost Performance Index and the Schedule Performance Index. The Recipient shall provide an analysis of the project performance to date by assessing the Cost Performance Index and Schedule Performance Index, as shown below.

CPI >1 indicates that the project is under budget  
CPI =1 indicates that the project is on budget  
CPI <1 indicates that the project is over budget

SPI >1 indicates that the project is ahead of schedule  
SPI =1 indicates that the project is on schedule  
SPI <1 indicates that the project is behind schedule

### **SPECIAL STATUS REPORT**

The recipient must report the following events to the DOE Project Manager (identified in Block 15 of the Notice of Assistance Agreement Cover Page) by e-mail as soon as possible after they occur:

1. Developments that have a significant favorable impact on the project.
2. Problems, delays, or adverse conditions which materially impair the recipient's ability to meet the objectives of the award or which may require DOE to respond to questions relating to such events from the public. The recipient must report any of the following incidents and include the anticipated impact and remedial action to be taken to correct or resolve the problem/condition:
  - a. Any single fatality or injuries requiring hospitalization of five or more individuals.
  - b. Any significant environmental permit violation.
  - c. Any verbal or written Notice of Violation of any Environmental, Safety, and Health statutes.
  - d. Any incident which causes a significant process or hazard control system failure.
  - e. Any event which is anticipated to cause a significant schedule slippage or cost increase.
  - f. Any damage to Government-owned equipment in excess of \$50,000.
  - g. Any other incident that has the potential for high visibility in the media.
  - h. Any incident which causes a significant process or hazard control system failure, or is indicative of one which may lead to any of the above defined incidents, is to be reported as soon as possible, but within 5 days of discovery.

The e-mail correspondence should include:

1. Recipient's name and address;
2. Award title and number;
3. Date;
4. Brief statement of problem or event;
5. Anticipated impacts; and
6. Corrective action taken or recommended.

When an event results in the need to issue a written or verbal statement to the local media, the statement is to be cleared first; if possible, and coordinated with NETL Communications and Public Affairs Division, the DOE Project Manager and the Contracting Officer.

### **B. SCIENTIFIC/TECHNICAL REPORTS**

Scientific/Technical Reporting includes: Final Scientific/Technical Report, Topical Reports, Conference Papers/Proceedings, Software, and Journal Articles.

### **GUIDELINES FOR ELECTRONIC SUBMISSION AND ORGANIZATION OF FINAL SCIENTIFIC/TECHNICAL AND TOPICAL REPORTS**

Electronic Submission. The final scientific/technical report and topical reports must be submitted electronically via the DOE Energy Link System (E-Link) at <http://www.osti.gov/elink-2413>.

Electronic Format. REPORTS MUST BE SUBMITTED IN THE ADOBE PORTABLE DOCUMENT FORMAT (PDF) AND BE ONE INTEGRATED PDF FILE THAT CONTAINS ALL TEXT, TABLES, DIAGRAMS, PHOTOGRAPHS, SCHEMATIC, GRAPHS, AND CHARTS. ELECTRONIC REPORTS SUBMITTED IN A FORMAT OTHER THAN ADOBE WILL BE RETURNED AND THE REPORT CONSIDERED DELINQUENT. IN ADDITION, THERE CAN BE NO RESTRICTIONS ON THE PDF FILE SUBMITTED THAT WOULD AFFECT OUR ABILITY TO OPEN OR EDIT THE REPORT DOCUMENT. THEREFORE, THE ONLY SECURITY METHOD THAT WILL BE ACCEPTED IS THE ADOBE ACROBAT "NO SECURITY" OPTION. THIS WILL ENABLE US TO PROPERLY INDEX AND PROCESS REPORT FILES.

**Materials, such as prints, videos, and books, that are essential to the report but cannot be submitted electronically, should be sent to the DOE Award Administrator at the address listed in Block 16 of the Assistance Agreement Cover Page.**

Submittal Form. The report must be accompanied by a completed electronic version of **DOE Form 241.3, "U.S. Department of Energy (DOE), Announcement of Scientific and Technical Information (STI)."** You can complete, upload, and submit the DOE F.241.3 online via E-Link. You are encouraged not to submit Protected EAct Information in these electronic technical reports. These technical reports must also not contain any Limited Rights Data (such as trade secret, proprietary or business sensitive information), classified information, information subject to export control classification, or other information not subject to release. Such information **must** be submitted in a separate hard-copy appendix to the electronic technical and topical reports as explained under **Supplemental Guidelines** below.

Organization. The following sections should be included (as appropriate) in the final scientific/technical report and topical reports in the sequence shown. Any section denoted by an asterisk is **required** in all final technical and topical reports.

**TITLE PAGE\*** - The Title Page of the report itself must contain the following information in the following sequence:

Report Title  
Type of Report (Final Scientific/Technical or Topical)  
Reporting Period Start Date  
Reporting Period End Date  
Principal Author(s)  
Date Report was Issued (Month [spelled out] and Year [4 digits])  
DOE Award Number (e.g., DE-FG26-05NT12345) and if appropriate, task number  
Name and Address of Submitting Organization (This section should also contain the name and address of significant subcontractors/sub-recipients participating in the production of the report.)

**DISCLAIMER\*** -- **The Disclaimer must follow the title page, and must contain the following paragraph:**

"This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government

or any agency thereof.”

**ABSTRACT\*** - should be a brief, concise summary of the report.

**TABLE OF CONTENTS\***

**EXECUTIVE SUMMARY\*** - this should be a well organized summary that highlights the important accomplishments of the research during the reporting period. It should be no less than one page and no more than two pages in length, and should be single spaced. This summary must be more comprehensive than the traditional “abstract.”

**REPORT DETAILS** - The body of the final scientific/technical or topical report should address topics such as the following:

**Experimental methods:** Describe, or reference all experimental methods being utilized. Also provide detail(s) about materials and equipment used. Standard methods should reference the appropriate literature, where details can be obtained. Equipment should be described only if it is not standard, or if information is not available thru the literature or other reference publications.

**Results and discussions:** This section should include enough relevant data, especially statistical data, to allow the project manager to justify the conclusions. Explain how the data was interpreted and how it relates to the original purpose of the research. Be concise in the discussion on how this research effort solved or contributed to solving the original problem.

**Conclusion:** The conclusion should not simply reiterate what was already included in “Results and Discussion” but should summarize what has already been presented, and include any logical implications of how the successes are relevant to technology development in the future. This is extremely important, since “relevancy” continues to be a criterion of the program.

**GRAPHICAL MATERIALS LIST(S)**  
**REFERENCES**  
**BIBLIOGRAPHY**  
**LIST OF ACRONYMS AND ABBREVIATIONS**  
**APPENDICES (IF NECESSARY)**

**SUPPLEMENTAL GUIDELINES**

NETL cannot release technical reports that include Limited Rights Data (such as trade secret, proprietary or business sensitive information). Thus, if such information is important to technical reporting requirements, it **must** be submitted in a separate appendix to the electronic technical report. This appendix **MUST NOT** be submitted in an electronic format but rather submitted separately in **TWO GOOD QUALITY PAPER COPIES** when the electronic version of the sanitized technical report is submitted. The appendix must not be referenced in or incorporated into the sanitized technical report deliverable under the award. The appendix must be appropriately marked and identified. Only the legend provided in the Rights in Data clause in this award may be placed on the appendix. The appendix must be sent to:

**NETL AAD DOCUMENT CONTROL**  
**BUILDING 921**  
**U.S. DEPARTMENT OF ENERGY**  
**NATIONAL ENERGY TECHNOLOGY LABORATORY**  
**P.O. BOX 10940**  
**PITTSBURGH, PA 15236-0940**

Further, if this award authorizes the recipient under the provisions of The Energy Policy Act of 1992 (EPA) to request protection from public disclosure for a limited period of time of certain information developed under this award, the main body of electronic technical reports **MUST NOT** contain such Protected Information. **TWO GOOD QUALITY PAPER COPIES** of such information must be submitted to the address above in a separate appendix to the sanitized electronic version of the technical report. The appendix must not be referenced in or incorporated into, the sanitized technical report deliverable under the award. In accordance with the clause titled "Rights in Data-Programs Covered Under Special Data Statutes." the appendix must be appropriately marked, including the date when the period of protection for the data ends. The EPA appendix must be appropriately identified with the recipient's name, award number, type of report (final or topical), and reporting period start and end dates.

**Company Names and Logos** -- Except as indicated above, company names, logos, or similar material should not be incorporated into reports.

**Copyrighted Material** -- Copyrighted material should not be submitted as part of a report unless written authorization to use such material is received from the copyright owner and is submitted to DOE with the report.

**Measurement Units** -- All reports to be delivered under this instrument must use the SI Metric System of Units as the primary units of measure. When reporting units in all reports, primary SI units must be followed by their U.S. Customary Equivalents in parentheses ( ). **The Recipient must insert the text of this clause, including this paragraph, in all subcontracts under this award.** Note: SI is an abbreviation for "Le Systeme International d'Unites."

#### **FINAL SCIENTIFIC/TECHNICAL REPORT**

The Final Scientific/Technical Report must document and summarize all work performed during the award period in a comprehensive manner. It must also present findings and/or conclusions produced as a consequence of this work. This report must not merely be a compilation of information contained in other reports, but must present that information in an integrated fashion, and shall be augmented with findings and conclusions drawn from the research as a whole.

#### **CONFERENCE PAPERS/PROCEEDINGS AND JOURNAL ARTICLES**

Content. The recipient must submit a copy of any conference papers/proceedings, with the following information: (1) Name of conference; (2) Location of conference (city, state, and country); (3) Date of conference (month/day/year); and (4) Conference sponsor.

#### **CONFERENCE PAPERS, PROCEEDINGS AND JOURNAL ARTICLES, GENERATED BY A SMALL BUSINESS OR NONPROFIT ORGANIZATION**

The Recipient must submit to DOE for review and approval all documents generated by the Recipient, or any subcontractor, that is not an educational institution, which communicate the results of scientific or technical work supported by DOE under this award, whether or not specifically identified in the award, prior to submission for publication, announcement, or presentation. The Recipient must submit to DOE for review and comment all documents generated by any subcontractor that is an educational institution. Such documents include conference papers, proceedings and journal articles. Upon completion of review, the DOE Project Officer will notify the Recipient of approval or recommended changes.

Electronic Submission. Scientific/technical conference paper/proceedings must be submitted electronically-via the DOE Energy Link System (E-Link) at <http://www.osti.gov/mlink-2413>. Non-scientific/technical conference papers/proceedings must be sent to the NETL Intranet address at: [FITS@NETL.DOE.GOV](mailto:FITS@NETL.DOE.GOV).

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**Electronic Format.** Conference papers/proceedings must be submitted in the ADOBE PORTABLE DOCUMENT FORMAT (PDF) and be one integrated PDF file that contains all text, tables, diagrams, photographs, schematic, graphs, and charts.

**Submittal Form.** Scientific/technical conference papers/proceedings must be accompanied by a completed DOE Form 241.3. The form and instructions are available on E-Link at <http://www.osti.gov/mlink-2413>. This form is not required for non-scientific or non-technical conference papers or proceedings.

### **SOFTWARE/MANUAL**

**Content.** Unless otherwise specified in the award, the following must be delivered: source code, the executable object code and the minimum support documentation needed by a competent user to understand and use the software and to be able to modify the software in subsequent development efforts.

**Electronic Submission.** Submissions may be submitted electronically-via the DOE Energy Link System (E-Link) at <http://www.osti.gov/estsc/241-4pre.jsp>. They may also be submitted via regular mail to:

Energy Science and Technology Software Center  
P.O. Box 1020  
Oak Ridge, TN 37831

**Submittal Form.** Each software deliverable and its manual must be accompanied by a completed DOE Form 241.4 “Announcement of U.S. Department of Energy Computer Software.” The form and instructions are available on E-Link at <http://www.osti.gov/estsc/241-4pre.jsp>.

### **TOPICAL REPORTS**

Topical reports are intended to provide a comprehensive statement of the technical results of the work performed for a specific task or subtask of the Statement of Project Objectives, or detail significant new scientific or technical advances. The topical report format should follow the guidelines set forth above for technical reporting.

In addition to the Topical Reports required at each Decision Point (see SOPO), two Topical Reports (as a minimum) are required. The two required reports are the Public Preliminary Design Report and the Public Final Design Report. The purpose of the Public Design Reports is to consolidate for public use all available nonproprietary design information on the project. The Public Preliminary Design Report is based on the preliminary design information and is due at the end of Phase II. The Public Final Design Report is based on detailed design information and is due after completion of the Phase III. The Public Final Design Report should contain sufficient background information to provide an overview of the project and pertinent cost data. Since the scope of the reports is limited to nonproprietary information, their content will not be sufficient to provide a complete tool in designing a replicate plant. However, these reports will serve as a reference for the design considerations involved in a commercial-scale facility.

The reports should include an overview description of the technology and a summary of the mass and energy balances for the process. They should also define the overall process performance requirements and describe the evaluations and operating philosophies upon which those performance requirements are based. A summary cost estimate of capital and operating costs and, if possible, an analysis of how costs could be improved for future commercial projects should also be included.

The following deliverables are also to be included as components of the Public Preliminary Design and Public Final Design Reports:

#### **Process Flow Diagrams**

The Recipient shall provide a complete set of nonproprietary Process Flow Diagrams with all updates and modifications.

Stream Data

The Recipient shall provide a complete set of all nonproprietary stream data. This would include both the expected values and ranges of flows, stream properties, and constituents at various operating conditions.

Equipment List

The Equipment List consists of a summary of the major equipment for the plant. Equipment is to be sorted by Flow Diagram, equipment type, and equipment number. General description data are to be provided for each equipment item, including, but not limited to, the number required for operation, size or capacity, major nonproprietary operating and design parameters, and manufacturer and/or vendor.

The Public Final Design Report shall include the final versions of the Public Conceptual and Preliminary Design Reports plus the following:

Drawings

The Recipient shall include a complete set of Equipment Plot and Elevation Drawings, and Process and Instrumentation Diagrams, which describe the plant configuration at the end of the demonstration period.

Plant Capital Cost Data

The Recipient shall include the data and documentation for all projected costs associated with the construction of the plant, with a breakdown which would permit this information to be used for projecting future plant construction costs.

Plant Operating Cost Data

The Recipient shall include the data and documentation for all projected costs associated with the operation of the plant under conditions that represent reliable plant performance.

**PROTECTED PERSONALLY IDENTIFIABLE INFORMATION (PII)** Management Reports or Scientific/Technical Reports must not contain any *Protected* PII. PII is any information about an individual which can be used to distinguish or trace an individual's identity. Some information that is considered to be PII is available in public sources such as telephone books, public websites, university listings, etc. This type of information is considered to be Public PII and includes, for example, first and last name, address, work telephone number, e-mail address, home telephone number, and general educational credentials. In contrast, *Protected* PII is defined as an individual's first name or first initial and last name in combination with any one or more of types of information, including, but not limited to, social security number, passport number, credit card numbers, clearances, bank numbers, biometrics, date and place of birth, mother's maiden name, criminal, medical and financial records, educational transcripts, etc.

**C. FINANCIAL REPORTING**

Recipients must complete the SF-425as identified on the Reporting Checklist in accordance with the report instructions. The SF425A is not authorized for reporting under this award. A fillable version of the SF 425 form is available at [http://www.whitehouse.gov/omb/grants/grants\\_forms.aspx](http://www.whitehouse.gov/omb/grants/grants_forms.aspx).

**D. CLOSEOUT REPORTS**

**FINAL INVENTION AND PATENT REPORT**

The recipient must provide a DOE Form 2050.11, "PATENT CERTIFICATION." This form is available at <http://www.directives.doe.gov/pdfs/forms/2050-11.pdf> and [http://management.energy.gov/business\\_doe/business\\_forms.htm](http://management.energy.gov/business_doe/business_forms.htm).

**PROPERTY CERTIFICATION**

The recipient must provide the Property Certification, including the required inventories of non-exempt property located at <http://www.management.energy.gov/documents/PropertyCertFINAL.doc>.

**E. OTHER REPORTING**

**ANNUAL INDIRECT COST PROPOSAL AND RECONCILIATION**

Requirement. In accordance with the applicable cost principles, the recipient must submit an annual indirect cost proposal, reconciled to its financial statements, within six months after the close of the fiscal year, unless the award is based on a predetermined or fixed indirect rate(s), or a fixed amount for indirect or facilities and administration (F&A) costs.

Cognizant Agency. The recipient must submit its annual indirect cost proposal directly to the cognizant agency for negotiating and approving indirect costs. If the DOE awarding office is the cognizant agency, submit the annual indirect cost proposal to the address on the Reporting Requirements Checklist.

**ANNUAL INVENTORY OF FEDERALLY OWNED PROPERTY**

Requirement. If at any time during the award the recipient is provided Government-furnished property or acquires property with project funds and the award specifies that the property vests in the Federal Government (i.e. federally owned property), the recipient must submit an annual inventory of this property to the address on the Reporting Requirement Checklist no later than October 30<sup>th</sup> of each calendar year, to cover an annual reporting period ending on the preceding September 30<sup>th</sup>.

Content of Inventory. The inventory must include a description of the property, tag number, acquisition date, location of property, and acquisition cost, if purchased with project funds. The report must list all federally owned property, including property located at subcontractor's facilities or other locations.

**F. AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 (RECOVERY ACT) REPORTING**

Refer to the award term entitled, Reporting and Registration Requirements, of the Special Terms and Conditions for Grants and Cooperative Agreements for details on the reporting requirements under Section 1512 of the Recovery Act. The reports are due no later than ten calendar days after each calendar quarter in which the recipient receives the assistance award funded in whole or in part by the Recovery Act.

**ATTACHMENT 4 - BUDGET PAGES (Revised as of Amendment 017)**

**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. FutureGen 2.0	81.130			\$404,985,000	\$4,049,850
2. FutureGen 2.0	81.089			\$53,619,112	\$110,601,179	\$164,220,291	
2a.							
##							
4.							
5. Totals				\$458,604,112	\$114,651,029	\$573,255,141	
Section B - Budget Categories							
6. Object Class Categories	Grant Program, Function or Activity						
	(1) Phase I	(2) Phase 2	(2a) Phase 2a	(3) Phase 3	(4) Phase 4	(5) Total	
a. Personnel	\$514,067	\$299,298	\$13,086	\$1,143,449	\$0	\$1,956,814	
b. Fringe Benefits	\$107,956	\$68,850	\$3,406	\$263,037	\$0	\$439,843	
c. Travel	\$69,648	\$103,277	\$6,455	\$632,200	\$0	\$805,125	
d. Equipment	\$0	\$0	\$0	\$0	\$0	\$0	
e. Supplies	\$265,000	\$0	\$0	\$0	\$0	\$265,000	
f. Contractual	\$27,249,985	\$24,853,360	\$2,887,946	\$284,801,951	\$110,841,139	\$447,746,435	
g. Construction		\$0	\$0	\$0	\$0	\$0	
h. Other	\$3,124,441	\$1,140,668	\$206,018	\$85,156,120	\$14,366,588	\$103,787,817	
i. Total Direct Charges (sum of 6a-6h)	\$31,331,096	\$26,465,453	\$3,116,911	\$371,996,757	\$125,207,727	\$555,001,033	
j. Indirect Charges	\$1,926,484	\$1,508,345	\$250,911	\$6,308,069	\$6,698,612	\$16,441,510	
k. Totals (sum of 6i-6j)	\$33,257,580	\$27,973,798	\$3,367,822	\$378,304,826	\$131,906,339	\$571,442,543	
7. Program Income							

**Section C - Non-Federal Resources**

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) Totals
8. FutureGen 2.0 - Phase I	\$332,576		\$0	\$332,576
9. FutureGen 2.0 - Phase II	\$278,361			\$278,361
10. FutureGen 2.0 - Phase III	\$3,782,792			\$3,782,792
11. FutureGen 2.0 - Phase IV	\$110,257,300			\$110,257,300
12. Total (sum of lines 8 - 11)	\$114,651,029	\$0	\$0	\$114,651,029

**Section D - Forecasted Cash Needs**

	Total Forecasted	Cumulative Billed thru 1st Quarter	2nd Quarter	3rd Quarter	4th quarter
13. Federal	*	*	*	*	*
14. Non-Federal	*	*	*	*	*
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 (Project Phases)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. FutureGen 2.0 (81.130)	*	*	*	*
17.				
18.				
19.				
20. Total (sum of lines 16-19)				

**Section F - Other Budget Information**

21. Direct Charges	TBD	22. Indirect Charges	\$16,441,510
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23. Remarks:  
 \*See Project Management Plan and updates thereto.

**ATTACHMENT 5 – WAGE DETERMINATIONS**

General Decision Number: IL100009 08/13/2010 IL9

Superseded General Decision Number: IL20080009

State: Illinois

Construction Types: Building, Heavy, Highway and Residential

County: Cook County in Illinois.

BUILDING, RESIDENTIAL, HEAVY, AND HIGHWAY PROJECTS (does not include landscape projects).

Modification Number	Publication Date
0	03/12/2010
1	05/14/2010
2	06/04/2010
3	07/02/2010
4	08/06/2010
5	08/13/2010

ASBE0017-001 06/01/2009

	Rates	Fringes
ASBESTOS WORKER/INSULATOR Includes the application of all insulating materials, protective coverings, coatings, and finishes to all types of mechanical systems.....	\$ 42.05	21.00
Fire Stop Technician.....	\$ 24.33	19.80
HAZARDOUS MATERIAL HANDLER includes preparation, wetting, stripping removal scrapping, vacuuming, bagging and disposal of all insulation materials, whether they contain asbestos or not, from mechanical systems.....	\$ 31.54	19.80

BOIL0001-001 07/01/2010

	Rates	Fringes
BOILERMAKER.....	\$ 42.67	19.60

BRIL0021-001 06/01/2009

	Rates	Fringes
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BRICKLAYER.....\$ 39.03 19.90

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BRIL0021-004 06/01/2009

Rates Fringes

Marble Mason.....\$ 39.03 19.90

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BRIL0021-006 06/01/2009

Rates Fringes

TERRAZZO WORKER/SETTER.....\$ 39.01 19.11

TILE FINISHER.....\$ 33.60 15.22

TILE SETTER.....\$ 38.63 15.34

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BRIL0021-009 06/01/2009

Rates Fringes

MARBLE FINISHER.....\$ 29.10 19.90

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BRIL0021-012 06/01/2009

Rates Fringes

Pointer, cleaner and caulker.....\$ 39.20 18.51

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CARP0555-001 06/01/2009

Rates Fringes

CARPENTER

Carpenter, Lather,  
Millwright, Piledriver,  
and Soft Floor Layer.....\$ 40.77 20.13

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CARP0555-002 10/01/2009

Rates Fringes

CARPENTER (Excluding  
structures with elevators and  
structures over 3 1/2 stories)...\$ 35.37 20.12

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\* ELEC0009-003 05/25/2009

Rates Fringes

Line Construction

Groundman.....\$ 31.08 18.08

Lineman and Equipment

Operator.....\$ 39.85 23.18

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ELEC0134-001 06/01/2009

Rates Fringes



equipment room and pulling wire and/or cable through  
 conduit and the installation of any incidental conduit.

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 ELEV0002-003 01/01/2010

	Rates	Fringes
ELEVATOR MECHANIC.....	\$ 46.16	20.035+A+B

FOOTNOTES:

A. Eight paid holidays: New Year's Day; Memorial Day;  
 Independence Day; Labor Day; Thanksgiving Day; Day after  
 Thanksgiving; Veterans' Day and Christmas Day.

B. Employer contributes 8% of regular basic hourly rate as  
 vacation pay credit for employees with more than 5 years of  
 service; and 6% for 6 months to 5 years of service.

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 \* ENGI0150-006 06/01/2009

Building and Residential Construction

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1.....	\$ 45.10	22.80
GROUP 2.....	\$ 43.80	22.80
GROUP 3.....	\$ 41.25	22.80
GROUP 4.....	\$ 39.50	22.80

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Mechanic; Asphalt Plant\*; Asphalt Spreader;  
 Autograde\*; Backhoes with Caisson attachment\*; Batch Plant\*;  
 Benoto(Requires two Engineers); Boiler and Throttle Valve;  
 Caisson Rigs\*; Central Redi-Mix Plant\*; Combination Backhoe  
 Front Endloader Machine; Compressor and Throttle Valve;  
 Concrete Breaker (Truck Mounted)\*; Concrete Conveyor;  
 Concrete Conveyor, Truck Mounted; Concrete Paver over 27E  
 cu. ft.\*; Concrete Paver 27E cu ft and Under\*; Concrete  
 Placer\*; Concrete Placing Boom; Concrete Pump (Truck  
 Mounted); Concrete Tower; Cranes\*; Cranes, Hammerhead\*;  
 Cranes, (GCI and similar type Requires two operators only);  
 Creter Crane; Crusher, Stone, etc; Derricks; Derricks,  
 Traveling\*; Formless Curb and Gutter Machine\*; Grader,  
 Elevating; Grouting Machines; Highlift Shovels or Front  
 Endloader 2 1/4 yd. and over; Hoists, Elevators, Outside  
 Type Rack and pinion and similar Machines; Hoists, One,  
 Two, and Three Drum; Hoists, Two Tugger One Floor;  
 Hydraulic Backhoes\*; Hydraulic Boom Trucks; Hydraulic Vac  
 (and similar equipment); Locomotives; Motor Patrol\*; Pile  
 Drivers amd Skid Rig\*; Post Hole Digger; Pre- Stress  
 Machine; Pump Cretes Dual Ram(Requiring frequent  
 Lubrication and Water); Pump Cretes; Squeeze Cretes-Screw  
 Type Pumps Gypsum Bulker and Pump; Raised and Blind Hole  
 Drill\*; Roto Mill Grinder (36" and Over)\*; Roto Mill  
 Grinder (Less Than 36")\*; Scoops-Tractor Drawn; Slip-Form

Paver\*; Straddle Buggies; Tournapull; Tractor with Boom, and Side Boom; and Trenching Machines\*.

GROUP 2: Bobcat (over 3/4 cu yd); Boilers; Broom, Power Propelled; Bulldozers; Concrete Mixer (Two Bag and over); Conveyor, Portable; Forklift Trucks; Greaser Engineer; Highlift Shovels or Front End loaders under 2 1/4 cu yd; Aotomatic Hoists, Hoists, Inside Elevators; Hoists, Sewer Dragging Machine; Hoists, Tugger Single Drum; Laser Screed; Rock Drill (Self-Propelled); Rock Drill (Truck Mounted)\*; Rollers; Steam Generators; Tractors; Tractor Drawn Vibratory Roller (Receives an additional \$.50 per hour); Winch Trucks with "A" Frame.

GROUP 3: Air Compressor-Small 250 and Under (1 to 5 not to exceed a total of 300 ft); Air Compressor-Large over 250; Combination-Small Equipment Operator; Generator- Small 50 kw and under; Generator-Large over 50 kw; Heaters, Mechanical; Hoists, Inside Elevators (Remodeling or Renovatin work); Hydrualic Power Units (Pile Driving, Extracting, and Drilling); Low Boys; Pumps Over 3" (1 To 3 not to exceed a total of 300 ft); Pumps, Well Points; Welding Machines (2 through 5); Winches, 4 Small Electric Drill Winches; Bobcat (up to and including 3/4 cu yd)

GROUP 4 - Bobcats and/or other Skid Steer Loaders; Brick Forklifts; Oilers

\*-Requires Oiler

\* ENGI0150-025 06/01/2009

Heavy and Highway Construction

	Rates	Fringes
OPERATOR: Power Equipment		
GROUP 1.....	\$ 43.30	22.80
GROUP 2.....	\$ 42.75	22.80
GROUP 3.....	\$ 40.70	22.80
GROUP 4.....	\$ 39.30	22.80
GROUP 5.....	\$ 38.10	22.80

POWER EQUIPMENT OPERATOR CLASSIFICATIONS

GROUP 1: Asphalt Plant\*; Asphalt Heater and Planer combination; Asphalt Heater Scarfire\*, Asphalt Spreader; Autograder/ GOMACO or similar; ABG Paver\*, Backhoes with Caisson attachment\*, Ballast Regulator, Belt Loader\*; Caisson Rigs\*Car Dumper, Central Redi-Mix Plant\*, Combination Backhoe; Front End Loader Machine (1 cu yd or over Backhoe bucket or with attachments); Concrete Breaker (truck mounted); Concrete Conveyor; Concrete Paver over 27E cu ft\*; Concrete Placer\*; Concrete Tube Float; Cranes, all attachments\*; Cranes, Hammerhead, Linden, Peco and machines of a like nature\*; Creter Crane; Crusher, stone; All Derricks; Derrick Boats; Derricks, traveling\*; Dowell Machine with Air Compressor (\$1.00 above Class 1);

Dredges\*; Field Mechanic Welder; Formless Curb and Gutter Machine\*; Gradall and machines of a like nature\*; Grader, Elevating; Grader, Motor Grader, Motor Patrol, Auto Patrol, Form Grader, Pull Grader, Subgrader; Guard Rail Post Driver mounted\*; Hoists, one, two, and three Drum; Hydraulic Backhoes\*; Backhoes with Shear attachments\*; Mucking Machine; Pile Drivers and Skid Rig\*; Pre-Stress Machine; Pump Cretes Dual Ram (requires frequent lubrication and water)\*; Rock Drill- Crawler or Skid Rig\*; Rock Drill truck mounted\*; Rock/ Track Tamper; Roto Mill Grinder, (36" and over)\*; Slip-Form Paver\*; Soil Test Drill Rig, truck mounted\*; Straddle Buggies; Hydraulic Telescoping Form (tunnel); Tractor Drawn Belt Loader\*; Tractor Drawn Belt Loader with attached Pusher (two engineers); Tractor with boom; Tractaire with attachment; Traffic Barrier Transfer Machine\*; Trenching Machine; Truck Mounted Concrete Pump with boom\*; Underground Boring and/or Mining Machines 5 ft in diameter and over tunnel, etc.\*; Wheel Excavator\* & Widener (Apsco); Raised or Blind Hoe Drill, Tunnel & Shaft\*

GROUP 2: Batch Plant\*; Bituminous Mixer; Boiler and Throttle Valve; Bulldozer; Car Loader Trailing Conveyors; Combination Backhoe Front End Loader Machine, (less than 1 cu yd Backhoe Bucket with attachments); Compressor and Throttle Valve; Compressor, common receiver (3); Concrete Breaker or Hydro Hammer; Concrete Grinding Machine; Concrete Mixer or Paver 7S series to and including 27 cu ft; Concrete Spreader; Concrete Curing Machine; Burlap Machine; Belting Machine and Sealing Machine; Concrete Wheel Saw; Conveyor Muck Cars (Haglund or similar type); Drills (all); Finishing Machine-Concrete; Greaser Engineer; Highlift Shovels or Front End Loader; Hoist- Sewer Dragging Machine; Hydraulic Boom Trucks, all attachments; Hydro-Blaster (requires two operators); Laser Screed\*; Locomotives, Dinky; Off-Road Hauling Units (including articulating); Pump Cretes; Squeeze Cretes-Screw Type pumps, Gypsum Bulker and Pump; Roller Asphalt; Rotary Snow Plows; Rototiller, Seaman, self-Propelled; Scoops-Tractor Drawn; Self-propelled Compactor; Spreader-Chip-Stone; Scraper; Scraper-Prime Mover in Tandem regardless of size (add \$1.00 to Group 2 hourly rate for each hour and for each machine attached thereto add \$1.00 to Group 2 hourly rate for each hour); Tank Car Heater; Tractors, Push, pulling Sheeps Foot, Disc, or Compactor, etc; Tug Boats

GROUP 3: Boilers; Brooms, all power propelled; Cement Supply Tender; Compressor, Common Receiver (2); Concrete Mixer, two bag and over; Conveyor, Portable; Farm type Tractors used for mowing, seeding, etc; Fireman on Boilers; Forklift Trucks; Grouting Machines; Hoists, Automatic; Hoists, all Elevators; Hoists, Tugger single Drum; Jeep Diggers; Low Boys; Pipe Jacking Machines; Post-hole Digger; Power Saw, Concrete, Power Driven; Pug Mills; Rollers, other than asphalt; Seed and Straw Blower; Steam Generators; Stump Machine; Winch Trucks with A-Frame; Work Boats; Tamper-Form motor driven

GROUP 4: Air compressor - Small 250 and under (1 to 5 not to

exceed a total of 300 ft); Air Compressor - Large over 250; Combination - Small Equipment Operator; Directional Boring Machine; Generators - Small 50 kw and under; Generators - Large , over 50 kw; Heaters, Mechanical; Hydraulic power unit (Pile Driving, Extracting or Drilling); Light Plants (1 to 5); Pumps, over 3" (1 to 3, not to exceed a total of 300 ft); Pumps, Well Points; Tractaire; Welding Machines (2 through 5); Winches, 4 small electric drill winches;

GROUP 5: Bobcats (All); Brick Forklifts; Oilers; Directional Boring

\*Requires Oiler

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 IRON0001-026 06/01/2010

	Rates	Fringes
IRONWORKER		
Sheeter.....	\$ 41.00	29.84
Structural and Reinforcing..	\$ 40.75	29.84

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 IRON0063-001 06/01/2010

	Rates	Fringes
IRONWORKER, ORNAMENTAL.....	\$ 40.20	25.98

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 IRON0063-002 06/01/2010

	Rates	Fringes
IRONWORKER		
Fence Erector.....	\$ 32.66	21.17

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 IRON0136-001 07/01/2009

	Rates	Fringes
IRONWORKER		
Machinery Movers and Riggers.....	\$ 37.25	25.54
Master Riggers.....	\$ 39.75	25.54

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 LABO0002-006 06/01/2008

	Rates	Fringes
LABORER (BUILDING & RESIDENTIAL)		
GROUP 1.....	\$ 34.75	15.27
GROUP 2.....	\$ 34.75	15.27
GROUP 3.....	\$ 34.825	15.27
GROUP 4.....	\$ 34.85	15.27
GROUP 5.....	\$ 34.90	15.27
GROUP 6.....	\$ 34.95	15.27
GROUP 7.....	\$ 34.975	15.27
GROUP 8.....	\$ 34.975	15.27

GROUP 9.....	\$ 35.025	15.27
GROUP 10.....	\$ 35.20	15.27
GROUP 11.....	\$ 35.025	15.27
GROUP 12.....	\$ 35.75	15.27

LABORER CLASSIFICATIONS

GROUP 1: Building Laborers; Plasterer Tenders; Pumps for Dewatering; and other unclassified laborers.

GROUP 2: Fireproofing and Fire Shop laborers.

GROUP 3: Cement Gun.

GROUP 4: Chimney over 40 ft.; Scaffold Laborers.

GROUP 5: Cement Gun Nozzle Laborers (Gunitite); Windlass and capstan person.

GROUP 6: Stone Derrickmen & Handlers.

GROUP 7: Jackhammermen; Power driven concrete saws; and other power tools.

GROUP 8: Firebrick & Boiler Laborers.

GROUP 9: Chimney on fire brick; Caisson diggers; & Well Point System men.

GROUP 10: Boiler Setter Plastic Laborers.

GROUP 11: Jackhammermen on fire brick work only.

GROUP 12: Dosimeter use (any device) monitoring nuclear exposure); Asbestos Abatement Laborer; Toxic and Hazardous Waste Removal Laborers.

LABO0002-007 06/01/2008

	Rates	Fringes
LABORER (HEAVY & HIGHWAY)		
GROUP 1.....	\$ 34.75	15.27
GROUP 2.....	\$ 35.025	15.27
GROUP 3.....	\$ 34.90	15.27
GROUP 4.....	\$ 35.025	15.27
GROUP 5.....	\$ 35.75	15.27

LABORER CLASSIFICATIONS

GROUP 1: Common laborer; Tenders; Material expeditor (asphalt plant); Street paving, Grade separation, sidewalk, curb & gutter, strippers & All laborers not otherwise mentioned

GROUP 2: Asphalt tampers & smoothers; Cement gun laborers

GROUP 3: Cement Gun Nozzle (laborers), Gunitite