

## FutureGen Industrial Alliance, Inc. Request for Site Proposals for FutureGen 2.0 CO<sub>2</sub> Storage Hub Site

### 1. Introduction and Background

In support of the U.S. Department of Energy's (DOE) FutureGen 2.0 Program, the non-profit, private sector FutureGen Industrial Alliance (FGA) invites proposals for sites upon which the FGA will construct and operate a regional carbon dioxide (CO<sub>2</sub>) storage site ("hub") in the Mount Simon Formation (a deep geologic saline formation) within the State of Illinois. The first source of CO<sub>2</sub> that will be stored at the hub will originate from a power plant in Meredosia, Illinois, owned by Ameren Energy Resources. As part of the FutureGen 2.0 program, this power plant will be repowered (*i.e.*, upgraded) with advanced oxy-combustion technology that will allow the capture of its CO<sub>2</sub>. The CO<sub>2</sub> will then be transported to the storage hub using proven pipeline technology. The hub will also be designed to provide the opportunity for future storage of CO<sub>2</sub> from other electric generating facilities and large industrial sources. The CO<sub>2</sub> storage hub will comply with all environmental regulations and permit requirements.

This Request for Site Proposals (RFP) sets forth the instructions and procedures for responding and describes the criteria against which offered sites will be evaluated. The FGA reserves the right to exclude from evaluation any proposals that do not comply with the instructions and procedures described in this RFP or to waive all or part of any such non-compliance.

The FGA will sponsor a meeting for prospective site offerors (a bidders meeting) on October 28, 2010, from 1 p.m. to 4 p.m. at Northfield Inn & Suites Conference Center, 3280 Northfield Drive in Springfield, Illinois. At the bidders meeting, FGA representatives will describe FutureGen 2.0 and the CO<sub>2</sub> storage hub, discuss the RFP, and respond to questions regarding the RFP. **Prospective bidders may send up to 4 representatives per site to the bidders meeting; names of these individuals must be provided by sending an electronic mail message to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) no later than 12:00 p.m. Central Time on October 27, 2010.**

An open house for members of the public to learn more about the FutureGen 2.0 program will be held from 5 p.m. to 8 p.m. on October 28, 2010, at the same location.

Clarifying questions on the RFP may be submitted by sending an electronic mail message to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) no later than 3:00 p.m. Central Time on November 10, 2010. The FGA will post responses to questions received on its website ([www.FutureGenAlliance.org](http://www.FutureGenAlliance.org))

**Offerors must submit a notice of intent to submit a proposal, and the latitude/longitude coordinates of the sites that will be proposed, no later than 3:00 p.m. Central Time on November 3, 2010, by sending an electronic mail message to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org). The names of offerors submitting notices will not be publicly released. Proposals submitted without prior notice will not be accepted.**

Notices of intent to submit a proposal may be rescinded by the offeror at any time. For its planning purposes, the FGA requests that such rescissions be provided by sending an electronic mail message to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) as soon as possible after a subsequent decision not to submit a proposal is reached.

**Electronic copies of proposals submitted in response to this RFP must be received by the FGA no later than 3:00 p.m. Central Time on November 15, 2010. Additional documentation that cannot be sent electronically must be submitted in hard copy no later than 3:00 p.m. Central Time on November 16, 2010. Proposals and hard copy documentation received after these deadlines will not be evaluated. Please see Section 1.4 for specific proposal submission details and requirements.**

### **1.1. Overview of FutureGen 2.0**

FutureGen 2.0 is a public-private partnership to build and operate the first, commercial-scale, oxy-combustion repowering project in the world that will use carbon capture and storage (CCS) technology. CCS is widely viewed as an essential technology in the effort to address climate change concerns because it offers the potential to largely eliminate the carbon dioxide emissions associated with power plants, cement plants, refineries, and other stationary sources.

FutureGen 2.0 will advance one approach to the deployment of CCS – that is, the development of a regional CO<sub>2</sub> storage hub that could accept CO<sub>2</sub> from a variety of sources for safe storage. As it will be a first-of-its-kind facility, the CO<sub>2</sub> storage hub is expected to be the focus of global attention. Researchers and visitors from around the world will visit to learn about its operations so that they may replicate those lessons

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learned elsewhere. The hub will include a visitors' center as well as research and training facilities in support of its mission.

On September 28, 2010, DOE entered into a cooperative agreement with the FGA to build the FutureGen 2.0 CO<sub>2</sub> pipeline network and storage site. Under the agreement, the FGA will select, develop, and operate a permanent CO<sub>2</sub> storage site and a CO<sub>2</sub> pipeline from the Ameren plant in Meredosia, Illinois (the Meredosia plant). The hub will be designed to accept and store a minimum of 1.3 million metric tons (MMT) of CO<sub>2</sub> per year, initially supplied by the Meredosia plant for at least 30 years. The hub will also be designed to provide the opportunity for future acceptance of CO<sub>2</sub> from other electric generating plants and large industrial sources. Therefore, the minimum capacity of the hub will be 39 MMT (*i.e.*, 1.3 MMT over 30 years) with the potential for future expansion.

Initially, and contingent upon favorable environmental studies and regulatory approvals, the storage hub will be permitted to accept up to 100 MMT of CO<sub>2</sub>. This will allow the storage of CO<sub>2</sub> from the Meredosia plant (approximately 39 MMT over 30 years), the ability to store any additional CO<sub>2</sub> produced by the Meredosia plant, and the ability to store CO<sub>2</sub> produced by a limited number of other sources. Subject to further environmental studies, future regulatory approvals, and stakeholder acceptance, the storage hub could be expanded to accept up to 500 MMT of CO<sub>2</sub>. This represents between 0.6 and 2.5 percent of the Mt. Simon Formation's estimated storage capacity within the State of Illinois, based on estimates derived from the 2nd Edition of DOE's Carbon Sequestration Atlas.

The FGA is a non-profit corporation and is a 501(c)(3) organization under the rules of the U.S. Internal Revenue Code. FGA member companies are among the largest coal producers and energy generators in the world. The operations of member companies span six continents: North America, Africa, Asia, Australia, Europe, and South America. FGA members will contribute substantially toward the project's final cost and, in addition, will bring valuable technical and industrial project management expertise to the project. Further, the FGA will facilitate the introduction of advanced technologies into the project that are based upon tens of millions of dollars of past industrial investment. The active role of industry in this project ensures that the public and private sector share the cost and risk of developing a regional CO<sub>2</sub> hub that can be commercialized and replicated broadly.

This RFP seeks proposals for suitable sites upon which to build the CO<sub>2</sub> storage hub, as well as visitors, research, and training facilities. It describes the site requirements

including geologic attributes, CO<sub>2</sub> storage potential, surface and subsurface ownership, environmental conditions, and other related issues. Based on the responses to this RFP and the results of the FGA's own due diligence inquiries and using the selection process described below, the FGA will select a site for the CO<sub>2</sub> storage hub and related facilities. DOE will assess the potential environmental impacts of the construction and operation of a CO<sub>2</sub> storage hub at the selected site in its FutureGen 2.0 environmental impact statement (EIS) prepared in compliance with the National Environmental Policy Act (NEPA). The EIS will also address the potential environmental impacts of the development of Ameren's oxy-combustion power plant and the construction and operation of a pipeline to transport the captured CO<sub>2</sub> from the Meredosia plant to the selected CO<sub>2</sub> storage site.

The FGA and the successful offeror will enter into contractual negotiations for the FGA's right to use the site. The FGA contemplates that the parties will enter into a binding site acquisition agreement memorializing the transfer of interests and containing such customary terms as are mutually agreed by the parties. This RFP contemplates that the FGA will own the surface and subsurface facilities and the subsurface area required for CO<sub>2</sub> storage. The FGA is not seeking project development services or site operators at this time.

## **1.2. Site Selection Process**

Once the proposals are received, a site evaluation and selection process will begin. This process will involve the following steps:

- Site offerors' proposals, along with information resulting from the FGA's due diligence inquiries, will be evaluated against the Qualifying Criteria described in Sections 4.1 and 4.2 of this RFP. These criteria are mandatory requirements, and any proposed sites that do not meet all of the Qualifying Criteria will be excluded from further consideration. Potential offerors are urged to consider whether their proposed sites will meet each Qualifying Criterion before submitting a proposal.
- The proposed sites that meet the Qualifying Criteria will be evaluated using the Scoring Criteria described in Sections 4.3 and 4.4 of this RFP. The information provided by the site offeror and/or evidence collected independently by the FGA will receive a quantitative score against each Scoring Criterion. The evidence, the quality of the evidence, and the

importance of each individual criterion to the overall project will all factor into the evaluation.

- The FGA will also conduct a best value assessment as described in Section 4.5 of this RFP. Best Value Assessment Criteria are factors that the FGA believes are critical to the success of the FutureGen 2.0 program but cannot be quantified.
- At the conclusion of the evaluation process and based on the Qualifying, Scoring, and Best Value Assessment Criteria, the FGA will compare and contrast all qualifying proposals to identify a site that can best meet the overall program goals of the FGA and the FutureGen 2.0 program. Using the proposals submitted and information resulting from any site visits and due diligence activities to evaluate each of the offered sites, the FGA will identify a host site in early 2011.
- Following the selection of a site, the FGA will prepare and submit to DOE an Environmental Information Volume (EIV) containing detailed environmental and technical information regarding the site to support DOE's preparation of DOE's FutureGen 2.0 EIS. The information needed for the EIV will be extensive and the site offeror must be able to provide assistance for the FGA's data collection efforts. Additional assistance is likely to be needed during DOE's NEPA process.

### **1.3. Points of Contact**

Clarifying questions on the RFP may be submitted in writing to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) no later than 3:00 p.m. Central Time on November 10, 2010. However, to ensure fairness in the site selection process, from the date this RFP is issued until the FGA announces a host site, potential offerors and their representatives are prohibited from discussing this procurement with any FGA member companies or staff (see Section 1.4.2, below), except for the submission of clarifying questions. Any unauthorized contact may disqualify the offeror from further consideration.

### **1.4. General Requirements and Conditions**

#### **1.4.1. Non-Responsive or Incomplete Proposals**

Offerors should familiarize themselves with the entire solicitation and must furnish the information sought or state that such information is not available and why. The FGA

reserves the right to refuse to evaluate, deem non-responsive, and/or disqualify from further consideration those proposals that are missing substantial amounts of requested information, are difficult to read or understand, or do not follow the format for responding to the RFP. Elaborate brochures or other presentations beyond those sufficient to present a complete and effective response to this RFP are not desired. Material deemed extraneous will not be considered in the proposal evaluation.

#### **1.4.2. Conflict of Interest**

In preparing and submitting their proposals, offerors or their representatives may not consult with any individual or organization that is currently involved in the activities of the FGA on any matter relating to the proposed FutureGen 2.0 facilities, including

- The member companies of the FutureGen Industrial Alliance (Alpha Natural Resources, Anglo American Services (UK) Limited, BHP Billiton Energy Coal Inc., CONSOL Energy Inc., E.ON U.S. LLC, Peabody Energy Corporation, Rio Tinto, and Xstrata Coal Pty Limited) or their affiliated entities;
- Caterpillar Inc.;
- Exelon Corporation;
- Battelle Memorial Institute or any Battelle-affiliated company or National Laboratory managed or co-managed by Battelle;
- Illinois State Geologic Survey (ISGS);<sup>1</sup>
- The law firms of Van Ness Feldman, P.C., McGuireWoods LLP, and RhineErnest LLP ;
- McGuireWoods Consulting LLC;
- FD Consulting;
- Patrick Engineering Incorporated;

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<sup>1</sup> ISGS will support site offerors by providing information regarding subsurface attributes of proposed sites to and through the FGA. Questions must be sent by electronic mail to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) no later than 3:00 p.m. Central on November 10, 2010. All questions received and responses to those questions will be posted on the FGA website ([www.futuregenalliance.org](http://www.futuregenalliance.org)).

- DOE and DOE's National Energy Technology Laboratory (NETL);
- NETL's site support contractors subject to organizational conflict of interest restrictions; and
- Any individual or organization that has reviewed or had other access to this RFP prior to its release.

#### **1.4.3. Proposal Reviewers**

The FGA will obtain assurances in advance from all proposal reviewers that they will keep confidential all proposal information and will use that information only for proposal evaluation purposes. In order to evaluate the proposals, the FGA may obtain assistance and technical expertise from qualified third party reviewers who are not FGA employees or employees of the FGA member companies (Third Party Reviewers). By submitting proposals, the offerors agree to such reviews by Third Party Reviewers. After the FGA concludes its review of the proposals, the FGA may make all the proposals received available to the DOE, along with a report covering the FGA's findings. DOE may review all of these documents before initiating the NEPA process. By submitting proposals, the offerors agree to the provision of the proposals to DOE and their review by DOE personnel and non-conflicted DOE contractor personnel.

#### **1.4.4. Amendment to the RFP**

This RFP can be modified only by express, formal amendment of the RFP and publication by the FGA. No other communication, whether oral or in writing, will modify the terms of this RFP. Any amendments to the RFP will be posted on the FGA website ([www.FutureGenAlliance.org](http://www.FutureGenAlliance.org)). Offerors are responsible for regularly checking the website for any such amendments throughout the proposal response period.

#### **1.4.5. Additional Information**

The FGA expects to identify the host site based on proposals submitted in response to this RFP and subsequent due diligence conducted by the FGA. Offerors are advised to submit their most complete and responsive proposals. However, the FGA reserves the right to request clarifications and/or supplemental information from some or all offerors through written submissions and/or oral presentations. Offerors should ensure that their proposal contains the name of and contact information for a person who will be available to answer questions from the FGA, including during non-business hours and holiday periods. The FGA also reserves the right, at its sole discretion, to request a Best and Final Offer from offerors.

#### **1.4.6. Site Visits**

The FGA reserves the right to visit one or more of the offered sites prior to the completion of the site selection process.

#### **1.4.7. Supplemental Information**

As noted above, the selected site offeror will be required to assist the FGA with further due diligence regarding their offered site, including support for the preparation of an EIV that will be provided to DOE (see [www.netl.doe.gov/business/solicitations/2001pdf/41428/EIV\\_GUIDE.pdf](http://www.netl.doe.gov/business/solicitations/2001pdf/41428/EIV_GUIDE.pdf) for information on the content of DOE EIVs). Requests for additional information for the EIV will be made when the site is announced or shortly thereafter. It is anticipated that the supplemental information would be due approximately 10 weeks after the request is made. The amount of information requested will be commensurate with that required for DOE to conduct the NEPA process and the FGA to begin site characterization. Offerors must cooperate with the FGA, DOE, and DOE's NEPA contractor(s) in information collection and analysis.

#### **1.4.8. Multiple Proposals**

Offerors may, at their option, submit multiple proposals for different sites. In such cases, the FGA will evaluate each proposal independently. A separate, free-standing, complete proposal must be submitted for each offered site.

#### **1.4.9. Cost of Preparing Proposals**

Responses to the information requested in this RFP are expected to be based on existing information to the maximum extent possible. Geologic sampling of proposed sites and other time-consuming or expensive activities are neither encouraged nor required. This RFP is based on the premise that a well-organized and operating proposal team, with an appropriate mix of expertise, and an appropriate site can respond in the timeframe provided for response. Any costs incurred by offerors with respect to this RFP, and for subsequent requests for information, are not reimbursable by the FGA under any circumstances.

#### **1.4.10. Proposal Submission, Modification, and Withdrawal**

Proposals must be submitted to the FGA in electronic format and no later than 3:00 p.m. Central Time on November 15, 2010. The electronic copy of the proposal must be attached to an electronic mail message sent to [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org). To the fullest extent possible, the electronic submission must be in Portable Document Format

(PDF) and consist of a minimum number of separate files (file attachments can be as large as 50 MB).

Documentation that cannot be submitted in electronic format such as large maps or environmental reports may be submitted separately in hard copy, but must be received no later than 3:00 p.m. Central Time on November 16, 2010. Two copies of the documentation must be submitted and it must clearly show the information request number(s) (see Section 3.3) to which it is intended to respond. The separate hard copy documentation must be submitted in a sealed envelope or package addressed to the following:

FutureGen Industrial Alliance, Inc.  
c/o Patrick Engineering Incorporated  
300 W Edwards St, Suite 200  
Springfield, IL 62704  
Telephone: (217) 525-7050

If multiple sites are being proposed by a single offeror, each site offered must be submitted as a separate proposal.

Proposals may be modified in writing if the modification is received by the deadline for receipt of proposals. Proposals may be withdrawn after submission by written notice received by the FGA at [SiteInfo@FutureGenAlliance.org](mailto:SiteInfo@FutureGenAlliance.org) or at the mailing address above.

#### **1.4.11. Disclosure of Offerors**

The FGA reserves the right to make public a list of the offerors and the sites proposed in response to this RFP after the RFP due date.

#### **1.4.12. Release of Proposals**

The FGA reserves the right to (1) disclose all or parts of the proposals received, or summaries of the proposals, except for any portion of a proposal identified by the offeror as proprietary; and (2) disclose all or parts of the proposals received in order to comply with law, regulation, or judicial requirement. Offerors must mark each page of any material submitted to the FGA that is proprietary with the word "PROPRIETARY" in a prominent location on each page. The FGA, in consultation with federal and/or state agencies as applicable, will decline to release information that is deemed to pose security concerns. Proposals will not be returned.

## **2. FutureGen 2.0 Program Information**

This section provides additional information about the scope of the FutureGen 2.0 program and its goals.

### **2.1. Program Scope**

The scope of the FutureGen 2.0 program comprises research, development and demonstration activities involving oxy-combustion and CO<sub>2</sub> capture, transportation, and storage. The program consists of two interrelated projects: (1) Ameren Energy Resources' oxy-combustion large scale test and (2) the FGA's pipeline and regional CO<sub>2</sub> storage reservoir project. Both of these projects are needed to fully achieve the objectives of FutureGen 2.0.

### **2.2. Program Goals**

The primary objective of the CO<sub>2</sub> storage hub 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 oxy-combustion large scale test project and to be sufficient to accept, transport, and store all of the CO<sub>2</sub> produced and captured by the oxy-combustion project in a deep saline geologic formation. The CO<sub>2</sub> storage hub will be designed to transport and store a minimum of 1.3 MMT per year of CO<sub>2</sub> supplied by the oxy-combustion project, which is planned to be located in Meredosia, Illinois. Other specific objectives for this project are:

- Execute a monitoring, verification and accounting (MVA) program during the three year demonstration program and for two years thereafter (even after the FutureGen 2.0 objective has been met, MVA activities will continue as required to meet underground injection control permit conditions).
- Demonstrate technologies and protocols for CO<sub>2</sub> MVA necessary to establish the permanence of the sequestered CO<sub>2</sub> and provide a full accounting for all injected CO<sub>2</sub>.
- If possible, provide the flexibility needed to operate the site as a storage hub that would allow for expansion to accommodate CO<sub>2</sub> from other sources.
- If possible and consistent with Illinois state law, 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> at a minimum rate

of 1.3 MMT per year in the Mount Simon Formation with rigorous monitoring, verification, and accounting is not compromised.

### **2.3. Implications for CO<sub>2</sub> Storage Hub**

Both the overall FutureGen 2.0 program and the CO<sub>2</sub> storage hub project have aggressive goals. The successful operation of the storage hub will build industrial and public support for future carbon storage projects. In order for this first hub to effectively contribute toward that goal, it needs to provide the broad engineering and scientific basis and understanding for siting and constructing future CO<sub>2</sub> storage sites. Some desired features of the design and siting of the FutureGen CO<sub>2</sub> storage hub need to incorporate additional requirements to improve wide applicability and technology transferability. Thus, the siting criteria for the FutureGen CO<sub>2</sub> storage hub may be more stringent than criteria that would be used to site future CO<sub>2</sub> storage facilities.

Some key determinants for siting the CO<sub>2</sub> storage hub include:

- Sound geology for geologic storage of CO<sub>2</sub>
- Sufficient geologic capacity for at least 39 MMT of CO<sub>2</sub> over 30 years, with capacity to expand up to 500 MMT of CO<sub>2</sub>
- Sufficient access to land areas above the anticipated CO<sub>2</sub> plume for CO<sub>2</sub> injection and MVA activities
- Ability to obtain sufficient property rights for the surface and subsurface needs
- Favorable environmental conditions
- Strong community support

### **3. Format for Responses**

#### **3.1 Format for Responses**

Offerors are strongly urged to read the RFP carefully and, to the extent possible, provide specific evidence where requested by the FGA. While the FGA will consider all submitted evidence and information carefully, it reserves the right to ask for clarification and to investigate any evidence or information submitted in support of a site. A proposal containing information known to be false by the offeror or found to be false by the FGA will be rejected.

Offerors should ensure that their proposal contains the name of and contact information for a person who will be available to answer questions from the FGA, including during non-business hours and holiday periods. The FGA will use the proposals submitted and information resulting from any site visits and due diligence activities to evaluate each of the offered sites against the criteria described in Section 4.

Proposals must:

- Include a cover letter that explicitly identifies the offeror, provides necessary contact information, and is signed by a person authorized to contractually bind the offeror;
- Provide the information requested in Section 3.3 (using the numerical and alphabetical designations), or explain that the requested information is not available and why;
- Be clearly and concisely written, and logically assembled, with any illustrations, maps, or charts provided in legible font and format and with all pages appropriately identified using page numbers, the identity of the offeror, and the date; and
- Identify data and information submitted separately and include appropriate references to the separately submitted data and information in the text of the proposal.

### 3.2 Definitions

The following definitions are applicable to this RFP:

- *Injection formation* means a geologic formation capable of receiving CO<sub>2</sub> at the rate of at least 1.3 MMT per year and capable of storing at least 39 MMT of CO<sub>2</sub> over 30 years. Offerors must propose the Mount Simon Formation as the primary formation for injection and may propose one or more additional injection formations of any type. Total injection rate and capacity for injection formations in use at one time must equal or exceed 1.3 MMT of CO<sub>2</sub> storage per year, and the total storage capacity of all injection formations in aggregate must equal or exceed 39 MMT of CO<sub>2</sub>. Requested information must be provided for each proposed injection formation.
- *Land area above the anticipated CO<sub>2</sub> plume* means the surface area located above the anticipated volume of the subsurface CO<sub>2</sub> plume. It will include and be more extensive than the surface site (defined below). MVA activities will occur within this area and will likely occur on land beyond this area (*i.e.*, on a buffer zone surrounding the land area above the CO<sub>2</sub> plume). Although the extent of the anticipated CO<sub>2</sub> plume will differ from location to location and can only be confirmed with site-specific evaluation, prior work in the Mount Simon Formation in Mattoon, Illinois suggests that:
  - a 39-MMT CO<sub>2</sub> plume would likely require a circular<sup>2</sup> area of approximately 1,000 acres (a radius of 3,600 feet) surrounding a single injection well;
  - a 100-MMT CO<sub>2</sub> plume (likely requiring at least two injection wells) would likely require two, proximate but non-intersecting, circular areas of approximately 1,200 acres each (radius of 4,000 feet each); and
  - a 500-MMT CO<sub>2</sub> plume (likely requiring at least ten injection wells) would likely require ten, proximate but non-intersecting circular areas of approximately 1,200 acres each (radius of 4,000 feet each).

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<sup>2</sup> To simplify the documentation requirements for site offerors, the FGA is assuming that the land area above subsurface CO<sub>2</sub> plumes would be circular. In reality, the plume shape will be dictated by subsurface properties and any anomalies will likely result in an asymmetrical plume. Further, should more than one injection well be necessary, pressure migration or pressure fronts could influence plume geometry.

- *Large dam* means (1) any dam of 50 feet or more in height, or (2) a dam greater than 16 feet high and having a reservoir volume of more than 4 million cubic yards.
- *Major surface body of water* is one that is greater than 150 feet deep or greater than 20 square miles (excluding rivers).
- *Offeror* means an entity that submits a proposal to the FGA with sufficient information in response to the RFP and is capable of legally executing a contract with the FGA for the use of the offered site.
- *Owner* means an entity that holds legal title to property.
- *Public access area (PAA)* means a state park or national park or preserve, national monument, national lakeshore, national wildlife refuge, designated wilderness area, designated wild and scenic river, or study area for any of the preceding designations.
- *Sensitive feature* means a large dam, hazardous materials storage facility, or Class 1 injection well.
- *Surface site* means the land area to be owned or leased by the FGA that is needed for the injection well(s) and associated injection infrastructure and the visitors, research, and training facilities.
- *Underground source of drinking water* means an aquifer, or its portion, which (1) serves as a source of drinking water for human consumption, or (2) contains both (a) a sufficient quantity of water to supply a public water system, and (b) fewer than 10,000 milligrams per liter of total dissolved solids or constituents that do not exceed maximum concentration limits specified by the U.S. Environmental Protection Agency (EPA) in National Primary Drinking Water Regulations (40 CFR 141.62).

### **3.3 Information and Documentation Requirements**

Please provide the following information or documentation for each site proposed, or indicate that the requested information is not available and why. The quality and completeness of data available is a critical factor in the FGA's ability to meet the FutureGen 2.0 schedule and therefore will be a critical component of the FGA's siting decision.

### ***3.3.1 Background Information***

1. Provide the name, street address, city, and county of the proposed surface site.
2. State the size of the proposed surface site, in acres.
3. Provide the legal description of the proposed surface site.
4. Provide the Illinois State Plane coordinates of the proposed surface site.
5. Provide a USGS topographic map of the proposed surface site (either 7.5-minute quadrangles or 1:100,000 or 1:250,000 scale, as appropriate) with the boundary of the proposed surface site clearly marked.
6. List the owner(s) of the proposed surface site and provide evidence of ownership. Examples of such evidence are existing abstracts of title, title opinions, and title insurance commitments and policies. The FGA will conduct its own investigation of title, but this investigation will be facilitated by such documentation and, given the target selection dates, may impact the site selection.
7. State the nature (whether to sell, lease, or donate) and terms (including proposed cost, if any) for the transfer of land title or leasehold rights to the FGA for the proposed surface site.
8. Stakeholder support is essential to the project's success. Entities submitting proposals will be contacted by the FGA stakeholder engagement team as part of the site selection process. Please designate a point of contact and provide that person's contact information.

**3.3.2 Information/Documentation for Geologic Storage**

9. Injection Formation(s). If more than one injection formation is proposed at one site, provide the required information or documentation for each injection formation.
  - a. Provide the name of the proposed injection formation.
  - b. Demonstrate the ability of the FGA to obtain, purchase, or obtain a non-development covenant for (1) mineral rights within the proposed injection formation(s), (2) any mineral-bearing formation immediately above the proposed injection formation(s), and (3) all mineral-bearing formations below the proposed injection formation(s).
  - c. State the basis of your conclusion that the injection formation is not an underground source of drinking water (see, for example, the map of salinity of the formation waters in the Mount Simon Formation in Illinois posted on the FGA website).
  - d. State the basis of your conclusion that the top of the Mount Simon Formation is at least 3,500 feet below the surface of the proposed surface site (see, for example, the map of the Mount Simon depth posted on the FGA website).
  - e. Provide a list of all PAAs located within 10 miles of any surface site boundary and provide maps showing their locations.
  - f. Provide a list of major surface bodies of water located within 10 miles of any surface site boundary and provide maps showing their locations.
  - g. Provide a list of sensitive features located within 10 miles of any surface site boundary and provide maps showing their locations.
  - h. Provide the distance to the nearest natural gas storage facility located in the in the Mount Simon Formation and in any other proposed injection formation(s).

**3.3.3 Information/Documentation Requests for Surface Areas**

10. Provide the names of the owner(s) of the proposed surface site and evidence of current ownership. Examples of such evidence are existing abstracts of title, title

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opinions, and title insurance commitments and policies. The FGA will conduct its own investigation of title, but this investigation will be facilitated by such documentation and, given the target selection dates, may impact the site selection.

11. State the basis for the conclusion that the proposed surface site has a low risk from significant seismic events (see, for example, the United States Geologic Survey peak ground acceleration map posted on the FGA website).
12. State the basis for the conclusion that at least 25 contiguous acres of the proposed surface site is above the 500-year floodplain. For sites larger than 25 acres, provide a map showing the areas above 100- and 500-year floodplains on the proposed surface site.
13. Provide available evidence to demonstrate that the proposed surface site is free of hazardous or radioactive materials or wastes. The offeror must certify that it is not aware of any unremediated hazardous wastes identified or listed pursuant to Section 3001 of RCRA that have been disposed of at the proposed surface site. For any proposed surface site that has been remediated pursuant to CERCLA or an applicable state law, provide documentation that the degree of cleanup obtained assures the protection of human health and the environment.
14. Submit a copy of a local zoning map showing that the operation of a CO<sub>2</sub> storage hub on the proposed surface site is consistent with current zoning regulations. . If the proposed surface site must be rezoned to allow the use of the site for the operation of a CO<sub>2</sub> storage hub, provide a description of what steps would need to be taken for rezoning and the anticipated schedule for that process. Provide evidence that any required rezoning would be approved. If no current zoning exists, include a letter from the appropriate local authority affirming that the proposed surface site would not conflict with existing land uses.
15. Provide information (such as a recent cultural resources report or concurrence letters from State Historic Preservation Office (SHPO) and/or Tribal Historic Preservation Office (THPO)) to show that at least 25 contiguous acres of the proposed surface site is free of structures that are listed on, or eligible for listing

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on, the National Register of Historic Places, and are free of known cultural or archeological resources, including Traditional Cultural Properties.

16. Provide information (such as a recent biological survey or a letter from the U.S. Fish and Wildlife Service) to show the absence of threatened or endangered species (TES) or critical habitat for TES on at least 25 contiguous acres of the proposed site. If TES or critical habitat occurs on the site, the affected areas must be shown on the site map provided in response to Request No. 5, above.
17. Provide a map showing the presence of wetlands on the proposed surface site or provide the basis for a conclusion that there are no wetlands present on the site.
18. Indicate whether the proposed surface site is located on or adjacent to tribal lands. If so, provide evidence that the proposal is supported by the affected Native American tribe(s).
19. Provide the distance from site boundary to the nearest improved road (*i.e.*, roads rated to carry at least 20-ton trucks).
20. Identify the nearest major airport and provide the distance to that airport and approximate driving time from the airport to the proposed surface site. Describe the availability of hotel/motel accommodations in the vicinity of the proposed surface site, including distance and driving time to the proposed site.
21. Provide a description of the existing land uses within one mile of the boundaries of the proposed surface site and identify them on a map of appropriate scale.
22. For the land area above the 39-MMT CO<sub>2</sub> plume (assume a circular area of approximately 1,000 acres, with a radius of 3,600 feet, surrounding a single injection well), provide as much of the following information and evidence as possible:
  - a. USGS topographic maps of the land areas above the anticipated CO<sub>2</sub> plume (either 7.5-minute quadrangles or 1:100,000 or 1:250,000 scale, as appropriate).

- b. Recent (within the last 2 years) aerial photographs of the land area above the anticipated CO<sub>2</sub> plume.
  - c. Maps showing the extent to which access to the land area above the anticipated CO<sub>2</sub> plume may be restricted by lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
  - d. The percentage of the land area above the anticipated CO<sub>2</sub> plume that will be physically accessible for the installation and operation of surface and subsurface monitoring equipment, and the basis for this conclusion. Access restrictions include, but are not limited to, lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
  - e. The Illinois State Plane coordinates of and a map showing the location, depth, type (injection or production), deviation and lateral reach, and operating status (active, shut-in, temporarily abandoned, abandoned, or plugged and secured pursuant to an approved plan) of all wells located in the land area above the anticipated CO<sub>2</sub> plume.
  - f. A list of the current owners of the land area above the anticipated CO<sub>2</sub> plume and evidence of ownership. Examples of such evidence are existing abstracts of title, title opinions, and title insurance commitments and policies. The FGA will conduct its own investigation of title, but this investigation will be facilitated by such documentation and, given the target selection dates, may impact the site selection.
  - g. Evidence of landowner permission in principle to access to their property for MVA activities on the land area above the anticipated CO<sub>2</sub> plume.
  - h. Data regarding the 100- and 500-year floodplains, wetlands, TES species and critical habitat, and cultural resources on the land area above the anticipated CO<sub>2</sub> plume.
23. For the land area above the 100-MMT CO<sub>2</sub> plume (assume two, proximate but non-intersecting, circular areas of approximately 1,200 acres each, with a radius of 4,000 feet each), provide as much of the following information and evidence as possible:

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- a. USGS topographic maps of the land area above the anticipated CO<sub>2</sub> plume (either 7.5-minute quadrangles or 1:100,000 or 1:250,000 scale, as appropriate).
- b. Recent (within the last 2 years) aerial photographs of the land area above the anticipated CO<sub>2</sub> plume.
- c. Maps showing the extent to which access to the land areas above the anticipated CO<sub>2</sub> plume may be restricted by lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
- d. The percentage of the land area above the anticipated CO<sub>2</sub> plume that will be physically accessible for the installation and operation of surface and subsurface monitoring equipment, and the basis for this conclusion. Access restrictions include, but are not limited to, lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
- e. The coordinates of and a map showing the location, depth, type (injection or production), deviation and lateral reach, and operating status (active, shut-in, temporarily abandoned, abandoned, or plugged and secured pursuant to an approved plan) of all wells located in the land area above the anticipated CO<sub>2</sub> plume.
- f. A list of the current owners of the land area above the anticipated CO<sub>2</sub> plume and evidence of ownership. Examples of such evidence are existing abstracts of title, title opinions, and title insurance commitments and policies. The FGA will conduct its own investigation of title, but this investigation will be facilitated by such documentation and, given the target selection dates, may impact the site selection.
- g. Evidence of landowner permission in principle to access to their property for MVA activities on the land area above the anticipated CO<sub>2</sub> plume.
- h. Data regarding the 100- and 500-year floodplains, wetlands, TES species and critical habitat, and cultural resources on the land area above the anticipated CO<sub>2</sub> plume.

**3.3.4 Information/Documentation Requests for Best Value Assessment**

24. Please describe the extent to which there is subsurface characterization data available for the proposed site and identify those data sources, if any. Data that is available from the ISGS should be described generally and will be obtained by the FGA from the ISGS. Privately held data (*e.g.*, historical well logs or seismic survey data) should be specifically identified. This data should be provided if possible, or offerors should describe how the data could be obtained by the FGA and the time period in which it could be obtained. Data that cannot be reasonably obtained by the FGA during the proposal evaluation process cannot be considered.
25. Please state the extent to which there is existing environmental characterization data, prepared within the last five years, for the proposed site. Offerors must identify and submit any environmental assessments; EISs; Phase I or II assessments; biological, cultural, floodplain, or wetland assessments; or other relevant site-specific analyses generated with respect to the proposed surface site prepared within the last five years.
26. Offerors should provide evidence of community support for the CO<sub>2</sub> storage hub at the proposed surface site. Such evidence may include letters from local stakeholders such as community leaders, non-governmental organizations, educators, and neighbors of the proposed site. In addition, offerors should identify the local stakeholders with whom the FGA stakeholder engagement team can interact to share information about the project.
27. Offerors must specify the cost to the FGA for ownership or lease of the proposed surface site. Offerors should identify any financial assistance, cost-share, or in-kind support offered in support of the proposal. The amount of financial support may have a significant impact on selection of the host site.
28. To the extent possible, offerors should identify the number of residences and/or sensitive receptors on the land areas above the anticipated 39-MMT and 100-MMT (and larger) CO<sub>2</sub> plumes.

29. To the extent possible, provide information regarding the land area above the 500-MMT CO<sub>2</sub> plume (assume ten, proximate but non-intersecting, circular areas of approximately 1,200 acres each, with a radius of 4,000 feet each). This information could include:
- a. USGS topographic maps of the land area above the anticipated CO<sub>2</sub> plume (either 7.5-minute quadrangles or 1:100,000 or 1:250,000 scale, as appropriate).
  - b. Recent (within the last 2 years) aerial photographs of the land area above the anticipated CO<sub>2</sub> plume.
  - c. Maps showing the extent to which access to the land areas above the anticipated CO<sub>2</sub> plume may be restricted by lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
30. At their discretion, offerors may provide additional information not specifically requested in this section to demonstrate the suitability and advantages of the offered site for the proposed CO<sub>2</sub> storage hub, including the visitors, research, and training facilities. Please limit such responses to 5 pages. In addition, if site offerors have information or documentation that address any of the criteria described in Section 4, it should be provided to expedite the FGA's evaluation of sites. This optional information should be clearly marked to identify the specific criterion or criteria that it is intended to address.

## 4. Qualifying, Scoring, and Best Value Criteria

The proposals containing the information described in Section 3 will be augmented by due diligence activities conducted by the FGA. Together, this information will be evaluated against the criteria described below in Sections 4.1 through 4.5, and will be used to identify the site that will best meet the needs of the FutureGen 2.0 program. *Note that the ability of a proposed site to meet many of the criteria – especially the geologic attributes of the Mount Simon Formation and any other proposed injection formation(s) – will be determined by the FGA in consultation with ISGS and others. Site offerors are not expected to provide this evidence or information, although they may do so in response to Information Request No. 30 if it is available.*

As explained in Section 1.2, the criteria for site selection are divided into three categories: Qualifying Criteria (the mandatory requirements for any proposed site to be considered for the facility), Scoring Criteria (consisting of desirable attributes for the proposed site, on which all sites that meet the qualifying criteria will be evaluated), and Best Value Assessment Criteria (factors that cannot be easily quantified but that are critical for the project's overall success). The Qualifying and Scoring Criteria for the CO<sub>2</sub> storage hub site are further divided into two broad categories: those pertaining to the CO<sub>2</sub> storage formation(s) and those pertaining to the surface area needed for the injection well(s) and associated infrastructure; the visitors, research, and training facilities; MVA activities; and a CO<sub>2</sub> pipeline, as well as the land area above the anticipated CO<sub>2</sub> plumes.

The FGA will use site offerors' responses to this RFP, as well as the results of its own due diligence inquiries, to evaluate each site against the criteria described below. The FGA also reserves the right, at its sole discretion, to request a Best and Final Offer from offerors.

### 4.1 Geologic Storage Qualifying Criteria

Offered sites must be able to meet all of the following geologic storage criteria for the Mount Simon Formation and for any additional proposed formations.

- 4.1.1 Location.** At least one injection formation must be the Mount Simon Formation. The injection site and injection formation must be located within the State of Illinois with no foreseeable risk of subsurface migration of CO<sub>2</sub> outside the State of Illinois. Because the CO<sub>2</sub> storage hub is a first-of-a-kind demonstration project and because monitoring wells may need to be placed beyond the maximum extent of the expected

CO<sub>2</sub> plume, an injection well may be no closer than 20 miles (32 kilometers) (measured horizontally, not diagonally) from the Illinois state line as a conservative safe distance.

- 4.1.2 Mineral Rights.** To prevent the disruption of the integrity of the injection formation and the primary seal, the FGA must be able to obtain, purchase, or obtain a non-development covenant for (1) mineral rights within the proposed injection formation(s), (2) any mineral-bearing formation immediately above the proposed injection formation(s), and (3) all mineral-bearing formations below the proposed injection formation(s).
- 4.1.3 Underground Source of Drinking Water.** The proposed injection formation(s) must not be an aquifer, or a portion of an aquifer, which (1) serves as a source of drinking water for human consumption, or (2) contains both (a) a sufficient quantity of water to supply a public water system, and (b) fewer than 10,000 milligrams per liter of total dissolved solids or constituents that do not exceed maximum concentration limits specified by the U.S. Environmental Protection Agency (EPA) in National Primary Drinking Water Regulations (40 CFR 141.62).
- 4.1.4 Depth.** At the proposed injection site, the top of the Mount Simon Formation must be at least 3,500 feet below the surface to help ensure the safe, effective storage of the CO<sub>2</sub>.
- 4.1.5 Formation Stimulation.** The injection formation must be able to meet the project goals without dependence on large-scale physical or chemical stimulation techniques. The formation must be able to accept 100 percent of the injectivity target of 1.3 MMT CO<sub>2</sub> per year without stimulation.
- 4.1.6 Primary Seal.** The injection formation must have an overlying primary seal (caprock) capable of long-term containment of the injected CO<sub>2</sub>. The primary seal must have sufficient thickness (greater than 200 feet), be regionally extensive, and be laterally continuous over the entire projected CO<sub>2</sub> plume boundary after injection of 39 MMT of CO<sub>2</sub>. It also must have sufficiently low vertical permeability and have sufficiently high capillary entry pressure to provide a vertical barrier to the migration of CO<sub>2</sub> out of the injection formation.

- 4.1.7 Storage Capacity.** Power plants such as the Ameren Meredosia plant typically have an operating life of at least 30 years. The CO<sub>2</sub> storage hub will be designed and constructed in a manner that allows operation for this timeframe. The injection formation must be capable of storing at least 39 MMT of CO<sub>2</sub> over 30 years.
- 4.1.8 Injection Rate Goal.** In addition to the required total storage capacity of the injection formation, the proposed injection formation(s) also must support a CO<sub>2</sub> injection rate goal of 1.3 MMT of CO<sub>2</sub> per year for up to 30 years.
- 4.1.9 Relation of Primary Seal to Geologic Faults.** The primary seal must not be intersected by any known or seismically resolvable faults above the 39-MMT CO<sub>2</sub> plume.
- 4.1.10 Natural Gas Storage Facilities.** No natural gas storage facilities may be present in the injection formation (*i.e.*, the Mount Simon Formation or other proposed injection formations) within 20 miles of the proposed injection site.

## 4.2 Surface Qualifying Criteria

The following criteria relate to the proposed surface site and to the land area above the anticipated 39-MMT CO<sub>2</sub> plume. Offered sites must meet all of these criteria.

- 4.2.1 Size.** The area and linear dimensions of the proposed surface site must accommodate the injection well and associated infrastructure and the visitors, research, and training facilities. The proposed surface site must not be less than 25 contiguous acres. The FGA has based this acreage on the area required for one injection well and associated infrastructure, along with the area needed for the visitors, research, and training facilities.
- 4.2.2 Control.** The proposed surface site must be available for use by the FGA.
- 4.2.3 Seismic Stability.** The proposed surface site must have low risk from significant seismic events. The proposed surface site must have 1) seismic characteristics with a peak ground acceleration less than 30 percent g, with a 2 percent chance of exceedance in 50 years, based on U.S. Geologic

Survey seismic hazard data, or 2) a site-specific seismic analysis demonstrating equivalent ground motion hazard.

**4.2.4 Floodplains.** The proposed surface site must have low potential for flood damage to the injection well infrastructure. The entire proposed surface site must be above the 500-year floodplain.

**4.2.5 Existing Site Hazards.** The proposed surface site, whether a greenfield or brownfield site, must be free of hazardous or radioactive chemicals and materials and free of wastes requiring special handling, treatment, and/or disposal. Specifically, the proposed site must not currently be on the National Priorities List established under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). For any proposed site that has been remediated pursuant to CERCLA, the degree of cleanup must satisfy the requirements in Section 121(d) of CERCLA [42 U.S. Code (USC) § 9621(d)]. For any proposed site that has been remediated pursuant to state law, the degree of cleanup obtained must assure protection of human health and the environment. Such assurance is assumed if the degree of cleanup satisfies Section 121(d) of CERCLA. No hazardous wastes identified or listed pursuant to Section 3001 of the Resource Conservation and Recovery Act (RCRA) (42 USC § 6921) may be currently generated, treated, or stored at the proposed site. The proposed site may not currently be subject to regulation by the Nuclear Regulatory Commission (NRC) or by an NRC Agreement State operating pursuant to Section 274 of the Atomic Energy Act.

**4.2.6 Zoning.** The proposed surface site must be consistent with current zoning requirements or be capable of being rezoned to meet such requirements in a timeframe consistent with the FutureGen 2.0 project schedule.

**4.2.7 Environmental Conditions.** At least 25 contiguous acres of the proposed surface site must be free of:

- Wetlands;
- Structures that are listed on, or eligible for listing on, the National Register of Historic Places, and be free of known cultural or archeological resources, including Traditional Cultural Properties; and

- Known federally-listed TES and critical habitat for TES (excluding migratory birds).

**4.2.8 Proximity to Public Access Areas.** Unless the owner (*e.g.*, the State of Illinois or federal land management agency) provides unequivocal permission for such use, the proposed surface site must be located outside of and not adjacent to the boundaries of any PAA.

**4.2.9 Proximity to Tribal Lands.** A proposed surface site located on or adjacent to tribal lands must be supported by the affected Native American tribe(s).

**4.2.10 Access.** While ownership of the land area above the anticipated 39-MMT CO<sub>2</sub> plume is not required, the FGA must have sufficient physical access to that land area to implement a rigorous monitoring program. At least 60 percent of the land area above the anticipated 39-MMT CO<sub>2</sub> plume must be physically accessible for installation and operation of surface and subsurface monitoring equipment (including shallow and deep wells and seismic testing). Access restrictions include, but are not limited to, lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.

**4.2.11 Public Access Areas.** Unless the owner (*e.g.*, the State of Illinois or federal land management agency) provides unequivocal permission for such use, the land area above the anticipated 39-MMT CO<sub>2</sub> plume must not be on a PAA.

**4.2.12 Major Bodies of Water.** The land area above the anticipated 39-MMT CO<sub>2</sub> plume must not intersect major surface bodies of water.

**4.2.13 Sensitive Features.** The land area above the anticipated 39-MMT CO<sub>2</sub> plume must not intersect any sensitive feature.

### 4.3 Geologic Storage Scoring Criteria

In addition to the basic geological properties required to satisfy the Geologic Storage Qualifying Criteria, sites that have enhanced characteristics that improve the ability or lower the cost to meet the objectives of the FutureGen 2.0 program will receive higher scores in the FGA's evaluation. These characteristics are described below.

- 4.3.1 Proposed Injection Formation(s).** The FGA requires that at least one injection formation be the Mount Simon Formation and that it be capable of storing a minimum of 100 percent of the total injection target of 39 MMT of CO<sub>2</sub>. The FGA will assign higher scores to sites with multiple injection formations.
- 4.3.2 Orientation.** The distribution and migration of CO<sub>2</sub> in the primary injection formation are greatly influenced by the structural dip of the formation strata. Except for anticlinal closures, the FGA will assign higher scores to sites with lower average structural dip, unless there is sufficient evidence of a structural or stratigraphic trapping mechanism that would prevent up-dip migration of the CO<sub>2</sub>. Dips less than 4 (four) degrees will be classified as "lower" dips.
- 4.3.3 Permeability.** The magnitude and spatial variability of injection formation permeability greatly influences the injectivity of CO<sub>2</sub>, associated bottomhole well pressures required to meet the injection rate target of 1.3 MMT per year, the number of injection wells required, and residual CO<sub>2</sub> saturations. The FGA will assign higher scores to sites with multiple, thick injection formation intervals characterized by average formation permeabilities greater than 50 mD.
- 4.3.4 Capacity.** Over the lifetime of the CO<sub>2</sub> storage hub, it is possible that up to 500 MMT of CO<sub>2</sub> may be captured from other CO<sub>2</sub> sources and stored. Consequently, the FGA will assign higher scores to sites that have a CO<sub>2</sub> storage capability in the Mount Simon Formation greater than the 39-MMT minimum capacity required under the Qualifying Criteria.
- 4.3.5 Lateral Plume Size.** For a variety of reasons associated with cost, access, liability, and schedule, the FGA will assign higher scores to sites that have hydrogeological characteristics that result in a smaller overall land area above the anticipated CO<sub>2</sub> plume than to those with characteristics that

require a larger surface footprint to meet the injectivity and capacity goals set by the FGA.

- 4.3.6 Faults.** The FGA will evaluate the faults and fracture zones affecting the injection field and will assign higher scores to sites that appear to have a lower risk of fault-induced failure of CO<sub>2</sub> containment.
- 4.3.7 Capillary Entry Pressure.** To prevent permeation of CO<sub>2</sub> through a primary seal, injection pressures required to meet the 1.3 MMT CO<sub>2</sub> per year injection rate target must remain below the capillary entry pressure of the overlying primary caprock seal. The FGA will assign higher scores to injection fields having a primary seal with higher capillary entry pressure compared to bottomhole pressure required to meet the injectivity target.
- 4.3.8 Fracture Gradient.** The FGA will assign higher scores to sites that have orientation of earth stresses with low differential in situ caprock or injection formation stress and high mechanical seal strength relative to injection pressure.
- 4.3.9 Injection Wells.** The FGA will assign higher scores to proposed sites that require fewer injection wells to meet injectivity targets.
- 4.3.10 Other Penetrations.** Proposed sites that have fewer penetrations of the primary seals by active or abandoned non-project wells will require less well characterization and remediation activity. The FGA will assign higher scores to such sites.
- 4.3.11 Secondary Seals.** In addition to the primary seal, secondary seals provide additional backup containment of the CO<sub>2</sub>. Consequently, the FGA will assign higher scores to sites that have secondary seals. Secondary seals must: be present in the stratigraphic section at adequate thickness, be free of known or seismically resolvable faults, be laterally continuous, be greater than 100 feet thick throughout, and cover at least 100 percent of the projected plume after injection of 39 MMT CO<sub>2</sub>.
- 4.3.12 Subsurface Access.** Installation of monitoring well facilities requires appropriate geological conditions for drilling, well completion, and instrument installation. Sites that are well suited for the installation of

monitoring wells will receive higher scores than sites where the installation is less physically or economically achievable.

**4.3.13 Mineral Rights.** Sites where it can be demonstrated that mineral rights would be available for an area larger than the 39-MMT CO<sub>2</sub> plume area will score more highly in comparison to other sites where the ability to obtain mineral rights for larger areas is speculative.

#### 4.4 Surface Scoring Criteria

In addition to the surface attributes required to satisfy the Surface Qualifying Criteria, proposed surface sites that have enhanced characteristics that improve the ability or lower the cost to meet the objectives of the FutureGen 2.0 program will receive higher scores in the FGA's evaluation. Similarly, an enhanced ability to access the land areas above the anticipated CO<sub>2</sub> plumes for MVA activities will receive higher scores. These characteristics are described below.

- 4.4.1 Size.** This criterion addresses the availability of additional acreage at the proposed surface site to support future expandability of the hub. Larger sites are preferred.
- 4.4.2 Shape.** This criterion addresses the shape of the proposed surface site. For maximum flexibility, sites with an aspect ratio (the ratio of the longer dimension of the site to the shorter dimension) closest to 1 will score more highly.
- 4.4.3 Topography.** This criterion addresses how much groundwork will be required at the site before it is suitably graded for facility construction. Flat sites requiring little or no grading are preferred.
- 4.4.4 Wetlands.** It is preferable that adverse impacts to wetlands be avoided as much as possible.
- 4.4.5 TES and Critical Habitat.** It is preferable to have no documented TES or critical habitat on any part of the proposed surface site.
- 4.4.6 Cultural Resources.** It is preferable that the documented occurrence of cultural, historical, or archaeological resources or Traditional Cultural

Properties be such as to allow maximum flexibility on the proposed surface site.

- 4.4.7 Road Access.** It is preferable that improved roads (*i.e.*, roads rated to carry at least 20-ton trucks) providing access to the proposed surface site are as close to the site boundary as possible. Sites with improved roads closer to the site will score more highly.
- 4.4.8 Visitor Access.** It is preferable that the proposed surface site be reasonably close to major airports and hotels/motels to accommodate national and international visitors.
- 4.4.9 Physical Access.** The comprehensive monitoring program will likely include installation of monitoring wells in strategic locations around the land areas above the anticipated CO<sub>2</sub> plumes, in addition to atmospheric and shallow subsurface monitoring stations. The FGA will assign higher scores to sites where more than 60 percent of the land areas above the anticipated CO<sub>2</sub> plumes are physically accessible for the installation and operation of surface and subsurface monitoring equipment (including seismic testing). Access restrictions include, but are not limited to, lakes, rivers, or other bodies of water, PAAs, and infrastructure including roads, buildings, or other developed property.
- 4.4.10 Legal Access.** The FGA will assign higher scores to sites where owners of the land area above the anticipated CO<sub>2</sub> plumes are willing to allow long-term access to their property for MVA activities.
- 4.4.11 Environmental Conditions.** For the land areas above the anticipated CO<sub>2</sub> plumes, it is preferable to have maximum flexibility for MVA access. For that reason, sites with the potential for fewer impacts to wetlands, TES species and critical habitat, forested lands, and cultural resources will be preferred. The ability to avoid adverse impacts as a result of flooding is also preferable.
- 4.4.12 Distance to Meredosia, Illinois.** For cost and rights-of-way acquisition reasons, it is preferable that the proposed site be located a reasonable distance from the Ameren Meredosia plant.

**4.4.13 Distance to Other CO<sub>2</sub> Sources.** To meet the needs of future expansion as a regional CO<sub>2</sub> storage hub, proximity to other CO<sub>2</sub> sources will be preferred.

**4.4.14 Ability to Obtain Pipeline Rights-of-Way.** The ability of the FGA to use existing rights-of-way for CO<sub>2</sub> pipelines will be preferred.

#### **4.5 Best Value Assessment Criteria**

In addition to the Qualifying and Scoring Criteria detailed in Sections 4.1 through 4.4, the FGA will conduct a best value assessment to identify the host CO<sub>2</sub> storage hub site. The Best Value Assessment Criteria are essential to the process of selecting the site that will best achieve FutureGen 2.0 objectives. Offerors should recognize that some very good proposed sites may not be selected because they do not maximize the probability of achieving the overall objective of permanently storing CO<sub>2</sub> in the Mount Simon Formation on a reasonable schedule and in a cost-effective manner with local stakeholder support.

The following Best Value Assessment Criteria will be used after the Qualifying and Scoring criteria are applied to determine which of the proposed sites will be selected as the host site.

**4.5.1 Availability and Quality of Data.** Sites that are better understood in terms of geologic properties, land ownership, environmental conditions, and similar characteristics will be preferred due to the inherently lower risk in siting the CO<sub>2</sub> storage hub at a well-characterized site.

**4.5.2 Stakeholder Support.** Local community support for the CO<sub>2</sub> storage site will be a critical factor in the FGA's site selection. Offerors that demonstrate willingness to work with the FGA stakeholder engagement team to ensure broad local community involvement will be preferred.

**4.5.3 Overall Cost and Schedule.** Sites offered at no or nominal cost to the non-profit FGA will be preferred over sites that require the FGA to pay prevailing market prices. Sites that provide the best opportunity for the FGA and DOE to meet the goals of FutureGen 2.0 within the available funding and in accordance with established schedule requirements (including the associated Ameren Meredosia repowering project) will be

preferred. In addition, proposals that reduce the financial burden of the project proponents will be preferred.

**4.5.4 Land Ownership.** Accessibility to or ownership of land for the proposed surface site, supporting infrastructure, and injection formation, and the timing and cost for such access, are critical to project success. Offerors who are able to demonstrate the highest degree of timely land use availability will be preferred.

**4.5.5 Residences or Sensitive Receptors above Injection Formation.** It is preferable to minimize the potential for impacts to developed areas on the land areas above the anticipated CO<sub>2</sub> plumes. Proposed injection formations that involve the fewest developed areas will be preferred.