

REQUEST FOR PROPOSALS (RFP)

RFP Number: DSA-ENERGY # 13-02

The Ohio Development Services Agency, Ohio Coal Development Office is requesting proposals for:

2013 Ohio Coal Research Consortium (OCRC 2013)

- Request For Proposal (RFP) Released – November 2, 2012
- Full proposals due – December 17, 2012
- Successful projects announced – May, 2013
- Projects start – July/August, 2013

Submit Proposals to:

Ohio Coal Development Office
Request for Proposal
Office of Energy
77 South High Street
P.O. Box 1001
Columbus, OH 43216-1001
Attn: *Ohio Coal Research Consortium RFP*

This RFP consists of six (6) sections totaling seventeen (17) pages and six (6) attachments, totaling forty (40) consecutively numbered pages. Please verify that you have a complete copy.



SECTION I. OVERVIEW

A. Background

Most of Ohio's coal is burned in older electric generation plants that have been retrofitted multiple times and require controls be installed or updated to remain in service. With stricter and new emission standards promulgated by the U.S. Environmental Protection Agency¹ (U.S. EPA), the industry has been and is expected to continue to switch to low-sulfur non-Ohio coal and natural gas as fuel sources² for electric generation. In the face of these and other challenges, new and expanded research is required to meet the short-term and long-term needs of the Ohio coal industry.

Proposers are advised to keep current with the latest air emissions restrictions enacted or proposed by the U.S. EPA so that proposers' research and work will remain relevant to the ultimate end user, including CO₂, SO₂, NO_x, particulate matter, mercury, and toxics.

B. Purpose

The Ohio Coal Development Office (OCDO), within the Ohio Development Services Agency (ODSA), invites interested and qualified Ohio institutions of higher education to submit proposals for the 2013 Ohio Coal Research Consortium (OCRC).

The ODSA operates in accordance with state statute (Ohio Revised Code Sections 1551 and 1555) – with the assistance of the Ohio Coal Technical Advisory Committee (TAC). The TAC is comprised of members who serve in both the public and private sectors, and maintain some role or interest in the use, conversion, or study of Ohio Coal. Current members are listed in Attachment 4.

The OCRC was created in 1990 to support university research and is directed to improve the science and technology of chemical and physical processes involved in coal use.

The multi-pronged purpose of the OCRC is:

1. To address technical problems being experienced today by Ohio coal producers and end users and to improve and/or lower the cost of technologies that enable continued or expanded use of Ohio coal;
2. To improve the environmental performance of coal-based technologies and/or lower their cost of operation;
3. To generate innovative research in the field of coal use; and
4. To train a future supply of Ohio-based scientists and technologists in clean coal and emission control technologies.

C. Goals and Objectives

Proposers should exhibit an awareness of the anticipated environmental restrictions end users will have to meet and the cost of meeting environmental restrictions.

All projects should be guided by one or more the following objectives:

- Benefit Ohio Coal by improving the efficiency of the coal to electricity conversion process;
- Benefit Ohio coal before combustion;
- Find novel and more economical ways to convert Ohio coal to a liquid, a gas, or to a chemical feedstock;

¹ <http://epa.gov/carbonpollutionstandard/pdfs/20120327proposal.pdf> and <http://www.epa.gov/carbonpollutionstandard/>

² EIA, Today In Energy, February 16, 2012, <http://www.eia.gov/todayinenergy/detail.cfm?id=5030&src=email>

- Reduce or control the emissions resulting from the use of Ohio coal; or
- Lower the cost of controls, and/or increase the effectiveness of controls that are installed on new or older plants.

With the overarching goal of:

- Generating results that will contribute toward, accelerate, or enable demonstration or early stage deployment of processes or technologies that can enhance or improve the use of Ohio coal in an environmentally acceptable manner; or
- Producing and generating new ideas and processes for improvement and cost reductions of coal technologies and processes that directly benefit and have applicability to Ohio coal.

In addition to research that addresses the current regulations which limit air, water, and solid waste disposal associated with coal combustion, the proposals are solicited that will address research to expand the current uses for coal, i.e. combustion to raise steam to produce electricity. Proposers can examine new uses for coal as a starting material for production of fuels, chemical feedstocks, and other high value end uses. Proposers should demonstrate an awareness of the anticipated capital costs of the proposed system, the proposed systems annual operating and maintenance costs, potential environmental regulations and cost of compliance, and the selling price of the product³. Proposers are encouraged to present a process flow diagram showing the major components of the process, estimated capital and operating and maintenance costs, and what are the key research issues that need to be solved.

ODSA is most interested in developing or advancing technologies in the following areas:

1. Mine Productivity – The OCRC is seeking research which can improve mine productivity or coal transportation, including economic ways to improve product quality, improve the recovery of coal by improving preparation plant efficiency, and waste handling at preparation plants.
2. Coal End Uses – The OCRC is seeking concepts to increase coal markets. Research proposed in this area must show that the concept is economically competitive or can increase the competitiveness of using coal as a feedstock significantly, with either existing technology or with the current method to produce the product. In addition to using coal to produce alternate clean fuels, the OCRC is entertaining proposals that will produce other high volume products from Ohio Bituminous Coal. Proposals that significantly reduce the emission of such conversions are also sought. These products could include metallurgical grade coal or merchant coke, carbon fibers, and other novel products that are high value added materials and could not only expand Ohio's coal mining activity but cause new industries to form in Ohio to exploit these breakthroughs.
3. Improving Power Plant Efficiency – One manner to reduce CO₂ emissions per kilowatt is to develop economical improvements to increase the conversion efficiency at existing or new power plants independent of CO₂ capture. For example, for an existing boiler, the backend temperature could be reduced; for every 40° to 50° F reduction in flue gas temperature, the conversion efficiency improves by 1 percent. This reduces the carbon dioxide emissions by 1percent. Research is needed into determining the economic and process issues associated with reducing the cold end temperature.

³ Applicants should use the most recently available fuel price from EIA found in the latest available Annual Energy Outlook (<http://www.eia.gov/forecasts/aeo/er/>).

For advanced technology systems, such as integrated gasification combined cycle plants, evaluation of the potential to reduce the parasitic energy demand is sought. For example, types of systems to reduce parasitic energy demand that can be evaluated are converting from a cryogenic air separation unit (ASU) to high temperature membranes or similar processes which have a lower energy penalty than a cryogenic ASU. Other options include high temperature sulfur, ammonia, and particulate controls.

4. Greenhouse Gas Control – One factor that could significantly affect coal utilization to produce electricity and conversion of coal to alternate fuels is the cost of CO₂ control⁴. Current economic analyses suggest that CO₂ control for a coal-fired boiler would add between 50 and 70 percent to the cost of electricity. This is significantly greater than the U.S. Department of Energy (U.S. DOE) research target of a 35 percent increase in the cost of electricity². Novel ways to reduce the cost of CO₂ control for new generating units is sought, including ways to reduce the cost of air separation in the generation or introduction of oxygen for gasification or combustion technologies and other incremental process improvements.
5. Environmental Issues – In addition to CO₂ control, efforts in the area of waste water treatment from wet flue gas scrubbers, coal fly ash and flue-gas desulfurization (FGD) by-product utilization are sought due to tightening of disposal regulations. Waste water treatment can force the economic advantage from using an Ohio coal-fired boiler equipped with a wet scrubber, to a Power Ridge Basin coal and a spray dryer. Methods to economically treat FGD waste water are sought.

Other areas include: water intake structures. The U.S. EPA is currently evaluating the need to redesign water intake structures to reduce fish kill, and use of lower quality water at power plants.

In the solid waste area, research topics could include impact of mercury and other trace element controls on by-product utilization (FGD gypsum use in wall board, fly ash in cement, fly ash and scrubber by-products for soil amendments, etc.).

Treatment of flue gas to remove one or more of the following SO₂, SO₃, mercury, NO_x, particulate matter, fine particulates, and HCl will be considered, but preference will be given to projects that propose processes that achieve a 20 percent cost reduction compared to current technology. Preference will also be given to proposals that combine CO₂ and one or more of SO₂, SO₃, mercury, NO_x, particulate matter, fine particulate matter, and HCl control that is included in a single reaction step. Preference will also be given for mercury control for plants where the emission limit is 0.0002 lbs/Gwe (gross)⁵. For new plants, the level of mercury control required is 99.5+ percent. Proposals are also sought for designing selective catalytic reduction (SCR) catalysts to achieve 90+ percent NO_x control while simultaneously oxidizing 99 percent of the coal elemental mercury to the oxidized state in the flue gas downstream of the air preheater. Baghouses or electrostatic precipitators (ESP) which are capable of 0.03 lbs/MMBtu particulate matter emission rates which is the designated emission rate for equivalent compliance with the trace element MACT standard. More wear-tolerant, low-pressure-drop, ultra-high-efficiency baghouses, improved performance of ESP for applications not suited to baghouses or amenable to upgrading in existing power plants. Test and model wet and dry scrubbers which can also be used to remove hazardous air pollutants.

⁴ James Black, Cost and Performance Baseline for Fossil Energy Plants Volume 1: Bituminous Coal and Natural Gas to Electricity, DOE/2010/1397, Revision 2 November 2010. http://www.netl.doe.gov/energy-analyses/pubs/BitBase_FinRep_Rev2.pdf

⁵ EPA MACT rule 2011. (Section 40CFR Part 63)

Unless the economic and annual usage volume advantages are clearly shown to be superior to current end uses, using coal fly ash as a soil amendment and scrubber produced gypsum or sludge to manufacture wall board, road underlayment, or reclaiming strip mines will be considered non-responsive, as these systems have been clearly demonstrated and are in commercial use today.

6. Other – Areas not listed above are also acceptable, but must have a direct connection to the purpose of the OCRC and to the overarching goals of the program. Projects that are outside of the scope of the recommended areas should also have a clearly defined market application and addresses a major challenge facing the Ohio coal industry. Preference will be given to projects that have industry partners either strategically or financially involved in the project.

D. Review Process

The Consortium Review Committee (CRC) is charged with the initial review and ranking of proposals received under this annual RFP. The CRC is comprised of individuals from various fields of coal expertise, which includes electric utilities, coal producers, federal and state government, private research entities, private coal consultants and scientists. A list of CRC members is listed in Attachment 4. The CRC members rank the proposals and the CRC makes funding recommendations to the TAC who meet publicly, discuss the projects, and vote to fund or not fund the recommended projects. ODSA will make final determination and announce successful proposals to the CRC chair.

Once projects are selected and approved by the TAC and ODSA, CRC members are ultimately assigned to specific project(s) based upon topic and area of expertise, and serve in an advisory capacity to the project team for the duration of the study.

SECTION II. AWARD INFORMATION

A. Estimated Funding

Approximately \$1.5 million in ODSA funding is expected to be available under this RFP.

B. Maximum Award Size

The maximum ODSA contribution for an individual project awarded funding under this RFP:

- Up to \$100,000 for two years with expenditure limits of up to \$50,000 per project year from ODSA funds.

C. Cost Share

Proposers are expected to contribute a reasonable amount of cash and/or in-kind funding.

ODSA's maximum contribution towards a project will be:

- Up to 50 percent of the total project cost.

Proposer cost share should be provided throughout the two years in proportion to the release of ODSA funds.

Proposers should attempt to use OCRC Grants to leverage co-funding from other sources such as federal funds or other state or private funds for the project. An executive summary of any companion proposal(s) submitted to U.S. DOE, other federal, state or private entity or funding program should be attached as an appendix to the proposal. The anticipated decision date and funding time frame of companion proposals should be included. Full proposals that contain a companion proposal executive summary will be evaluated more favorably than those that have not attempted the same. (Note: If a proposal was submitted and the final decision was unfavorable, the attempt to leverage will still be recognized.)

Commitment letters must be provided for each Cost Share provider and Collaborator identified in the Budget. Commitment letters may not be more than two 2 pages. The letters must:

- Be submitted on the letterhead of the Collaborator or Cost Share Provider;
- Include the name of the Principal Investigator, the title of the Proposal;
- Briefly state the nature of the collaboration;
- State the duration of the collaboration;
- State the resources, other than Cost Share, the Collaborator or University is committing to the proposed Project;
- State the specific amount of the commitment that matches the Cost Share amount on the corresponding Budget;
- State the source of the commitment;
- State when the committed resources will be available to the Principal Investigator; and
- Be dated and signed by a representative with the authority to make the Cost Share commitment.

D. Expected Number of Awards

ODSA expects to make approximately 10-15 awards under this RFP.

E. Period of Performance

Projects can be up to two years in length which allows for the continuous cycling in of topics which address ever changing research priorities based upon current indicators (economic, environmental, etc.) of the coal industry. It is anticipated that the majority of projects will include a full two year research period. However, to insure sufficient progress, a review (review of status reports that are described on page 16, site visit or conference call) during the first year of the project may be made to confirm that the project statement of work and other requirements have been followed. If concerns arise about a project, ODSA, technical advisors and the project mentor from the CRC will discuss the situation with the funded project sponsor to attempt

resolution. If resolution of concerned area(s) is not possible, the project funding may be discontinued at the end of year one or an extension of the year one milestones may be given, allowing opportunity to correct the problem prior to a decision to fund year two.

There will be events where experimental results make it appropriate to consider changes to the statement of work and Program Plan. In such cases, OCDO staff and the CRC project mentors will work with the project sponsor to adjust the program. Such adjustments of direction, when done in consultation with OCDO staff and the CRC project mentors, will not jeopardize continuation of a project for the full two years of the grant.

F. Expected Start Date

Funding for two-year projects is expected to start on July/August, 2013.

G. Other Funding Details and Restrictions

Restrictions include, but are not limited to the following:

1. ODSA will fund equipment necessary to complete the work up to 50 percent of its actual cost. Upon successful completion of the project, title to the equipment will be granted to the University. The proposer may count the other 50 percent of the equipment's cost toward cost share.
2. Faculty compensation during the academic year is not an allowable cost. During academic calendar summer months, ODSA shall fund up to a total of two months faculty time. The two months can be divided between the Principal Investigator (PI) and Co-PIs as appropriate for the project. Actual charges will be based upon 1/12 of the academic year base salary of the PI and Co-PIs and their portion of the two-month limit. Otherwise, unlimited additional faculty time may be funded by the participating university and/or by a third-party funder and counted toward the required cost share.
3. Graduate student costs shall be at school's regular rates for the appropriate level of the student.
4. Travel in the project budget should be limited to actual travel necessary to complete the project (example: a car trip between one school and another in order to collaborate research or a trip to a Consortium meeting. With the possible exception of Canada (with strong justification), no international travel will be reimbursed by ODSA. If "travel expenses" as defined in Ohio Administrative Code Section 126-1-02, are a cost of the Project eligible for reimbursement with Grant Funds, Grantee shall be reimbursed for those permissible travel expenses in amounts in accordance with Ohio Administrative Code 126-1-02, as updated from time to time (the "Expense Rule") and Grantee agrees that it shall not be reimbursed and Grantor shall not pay any items that are deemed to be "non-reimbursable travel expenses" under the Expense Rule, whether by the Grantee or Grantor or their respective employees or agents.
5. Overhead charges shall be kept to a minimum. However, overhead charges may be used as part of an institution's cost share commitment, provided that federally approved overhead rates are used. Overhead charges, if any, to ODSA cannot – in any case exceed the University's federally negotiated indirect rate for research.
6. All ODSA grant agreements include clauses that make grant awards and continuations contingent upon both availability of funds and appropriation authority.

SECTION III. APPLICATION INSTRUCTIONS

A. Proposal Submission Format and Requirements

Proposals must be submitted by a designated PI, who is a Professor, an Associate Professor, or an Assistant Professor.

Six paper copies of the proposal and one Adobe Acrobat PDF copy and one Microsoft Word copy on a CD shall be submitted to:

Ohio Coal Development Office — OCRC 2013 RFP
Ohio Development Services Agency
77 South High Street
Columbus, OH 43216-1001

- Proposals must be received at the location specified above before the last day proposals are accepted.
- No alterations or addenda to a proposal shall be permitted after the deadlines.
- Proposals may not be submitted by fax or email.
- Proposals are to be submitted on 8.5 x 11-inch paper.
- Margins must not be less than $\frac{3}{4}$ of an inch on all sides.
- Font must be 11 point or larger with no more than six lines per inch.
- All pages must be numbered consecutively using the format —Page [#] of [total number of pages] (e.g., Page 2 of 25).
- The proposal title, PI name, must appear at the bottom of each page.
- Proposals should not include color figures that cannot be understood when photocopied in black and white.
- Proposals must be stapled once in the upper left hand corner and must not be bound.
- ODSA is not responsible for proposals not received.

Applicants are advised there will be no opportunity to correct mistakes or deficiencies in their proposals after the submission deadline. Further, incomplete proposals will not be scored. It is the applicant's responsibility to ensure timely submission of a complete proposal. The ODSA is under no obligation to consider a proposal which is received after the deadline, that is incomplete, or that is submitted after the RFP has closed. Late proposals will not be scored. No supplementary or revised materials will be considered after the scheduled date for submission unless specifically requested by ODSA. The ODSA reserves the right to close this RFP early.

All information submitted in response to this RFP shall be public information unless a statutory exception exists which would exclude the information from being released to the public. All proposals submitted will become the property of the ODSA and any information submitted in response to this RFP will not be returned to the applicant.

The ODSA will not release any portion of a proposal or copies a proposal until the execution of the grant agreement occurs.

The ODSA reserves the right to:

- Accept or reject any and all proposals if the State of Ohio determines that it is in its best interest to do so;
- Reissue the RFP requesting new proposals from qualified parties;
- Waive or modify minor irregularities in proposals received;
- Negotiate with applicants, within the requirements of the RFP, to best serve the interests of the State of Ohio;

- Require the submission of modifications or additions to proposals as a condition of further participation in the selection process;
- Fund any proposal in full or in part; and
- Adjust the dates for whatever reason it deems appropriate.

After the Proposals are submitted for this program, the ODSA reserves the right to request additional information from any or all Lead Applicants to assist in its evaluation process.

Proposers may make inquiries or seek clarifications regarding this RFP any time after the RFP is released, but they must be received 14 days before the last day proposals are accepted (subject to change). To make an inquiry, Proposers must submit written questions to the ODSA to the email address or fax number indicated below:

Subject: Consortium RFP Question
Email: EnergyRFP@development.ohio.gov
Fax: (614) 466-1864

The ODSA accepts no responsibility for faxes or emails that are not delivered. Proposers who submitted the inquiry will not receive an email response to the question. The questions and answers will be posted on the ODSA website at:
http://www.development.ohio.gov/bs/bs_ohiocoaldev.htm.

ODSA reserves the right to edit questions for brevity and clarity and to consolidate the same general question if received from more than one individual.

The ODSA will try to respond to inquiries within seven business days.

No other form of communication is acceptable. This includes: no Lead Applicant, Collaborator, or others acting on their behalf contacting any committee member, the CRC, and/or ODSA staff during the Proposal Period regarding this RFP (other than through the approved inquiry process identified above). The Proposal Period is considered to be the date of submission for this RFP through the date of the ODSA award. Current Proposers responding to this RFP are expected to limit their contact to those ODSA staff with whom they ordinarily interact regarding the administration of Coal office programs and grants. Proposers, Collaborators and others acting on their behalf are to avoid direct contact with committee members or other ODSA staff during the Proposal Period, other than that which might occur at regularly scheduled meetings.

If a Proposer, Lead Applicant, Collaborator and/or others acting on their behalf makes prohibited contact, ODSA in its discretion may subject the Applicant/Proposal to elimination from the RFP process.

B. Trade Secret Information

All Applicants are strongly discouraged from including in a Proposal any information that the Lead Applicant considers to be a "trade secret," as that term is defined in Section 1333.61(D) of the Ohio Revised Code. All information submitted in response to this RFP is public information unless a statutory exception exists that exempts it from public release. If any information in the Proposal is to be treated as a trade secret, the Proposal must:

- Identify each and every occurrence of the information within the Proposal with an asterisk before and after each line containing trade secret information and underline the trade secret information itself.
- Respond positively to Question Number 6 on the Proposal Summary, Attachment 2, disclosing that the proposal contains proprietary or trade secret information.
- Include a page immediately after the Proposal Summary, Attachment 2 that lists each page in the Proposal that includes trade secret information and the number of occurrences of trade secret information on that page.

To determine what qualifies as trade secret information, refer to the definition of “trade secret” in the Ohio Revised Code at 1333.61(D), which is reproduced below for reference:

- (D) “Trade Secret” means information, including the whole or any portion or phase of any scientific or technical information, design, process, procedure, formula, pattern, compilation, program, device, method, technique, or improvement, or any business information or plans, financial information, or listing of names, addresses, or telephone numbers, that satisfies both of the following:
- (1) It derives independent economic value, actual or potential, from not being generally known to, and not being readily ascertainable by proper means by, other persons who can obtain economic value from its disclosure or use.
 - (2) It is the subject of efforts that are reasonable under the circumstances to maintain its secrecy.

ODSA requires non-disclosure agreements from all non-ODSA persons who may have access to Proposals containing trade secret information, including evaluators.

Entire proposals or entire pages so marked cannot be deemed as confidential.

ODSA does not fund black boxes – the Proposal must identify clearly any chemical reactions, compounds, processes and other details that are core to the proposed research. ODSA has the authority and responsibility to protect and keep confidential trade secrets and other proprietary information. In the event that the materials or data submitted are deemed to consist of trade secrets or other proprietary information, as defined by the Ohio Revised Code, Sect. 1333.61 and as set forth in Ohio Revised Code, Sect. 1555.01, then only those portions of the document can be kept confidential by ODSA.

C. Eligibility Guidelines and Restrictions

Only projects that meet all the requirements of the Program as stated herein will be considered for assistance.

This solicitation is limited to Universities located within the state of Ohio. Causes for rejection of a proposal without detailed review (In no particular order) include, but are not limited to:

1. Applicant is not College or University located in Ohio;
2. Proposal is not received by the 5:00 p.m. submission deadline;
3. Proposal does not contain Attachment 2 or an original signature by an authorized school authority;
4. Proposed work is outside the topic area of this solicitation;

5. Proposed work is too broad and not focused;
6. Proposal fails to meet the solicitation format requirements;
7. Proposal duplicates other work previously completed or currently underway by another organization (EPRI, U.S. DOE, U.S. EPA or others);
8. Proposals for continuation of active projects did not demonstrate progress in the prior year;
9. Proposed work and associated budget is not feasible or reasonable;
10. Proposed budget does not meet the required cost share;
11. Budget otherwise fails to conform to requirements set forth in this solicitation;

D. Restrictions on Numbers of Proposals a PI May Submit

It is the goal of the RFP that PIs only submit their best concepts for consideration. The submittal of numerous proposals by one PI is not acceptable and therefore, the following restrictions will be placed on the number of proposals a PI can submit.

1. A PI must be a Professor, Associate Professor, or an Assistant Professor. Post-Doctoral students and administrators of laboratories can serve as Co-PIs but they may not submit proposals nor serve as PIs on a project.
2. A PI may submit only one proposal, unless they are proposing continuation of an existing or previously funded OCRC project, in which case they may submit a proposal to continue funding for their existing project and one additional proposal for a new project.

E. Collaboration

Collaboration with industry partners is encouraged. Partnerships should demonstrate increased likelihood that technology/results of the project are relevant to producers and/or end users of Ohio coal, and/or have a pathway towards further development and eventual field deployment. International collaboration may be counted as match, but ODSA funds must be used to support only domestic work.

SECTION IV. PROPOSAL CONTENT

A. Proposal Content

The total length of the proposal should not exceed **10 pages plus Attachment 2.**

The sections of the proposal must include the following:

1. Cover Page and Letter – complete all sections of Attachment 2 and attach it as the top page of the proposal. Attachment 2 must have an original signature by an authorized school authority. All proposals must acknowledge in the cover letter that their school is not in arrears for federal, state, or local taxes of any type, and that there are no outstanding liens, levy, lawsuits or investigations of any type pending against their organization. If such an acknowledgement cannot be provided, the proposer must provide detailed information explaining such lien, levy, lawsuit, or investigation. The proposer shall state in the cover letter that it will comply with all applicable federal, and state laws regarding equal employment opportunity, and anti-discrimination and intimidation laws on account of race, religion, sex, disability, national origin or ancestry. The cover letter and Attachment 2 must bear the original signature of an authorized authority of the school. Attachment 2 and cover letter does not count toward the ten-page text limit.
2. The Objective – a brief statement should be presented of the specific goals for each year of a two-year project (approximately one page). It is essential that the proposal clearly state the objectives and the basis of the proposed work and very preliminary economic rationale for the proposed work (what is the economic justification to support the benefits of the proposed research), including specifically a paragraph about how the project increases the utilization of Ohio coal in an environmentally acceptable manner as a fuel or as a chemical feedstock.
3. Background and literature review – this discussion should define the state-of-the-art of the proposed concept, process, etc., covering only the most important points and showing how the proposed work is a logical next step forward. This discussion should include key chemical reactions, or process concepts to be studied (approximately two pages). For proposals that are requesting continuation of current consortium projects, this section should also include a road map to commercialization, i.e. where is the work at the present time and what steps remain to be completed before commercialization is possible.
4. Statement of Work – a detailed discussion should be presented on tasks to be completed in a two-year project. The information should be clearly divided into two sections, one for year one and a second for year two (approximately two pages) and include methodologies, designs, and techniques proposed to be used by the PI.
5. Discussion and Anticipated End Result – this section should also identify the end users of the results of projects and address how the project could eventually be transferred or scaled up to impact end users.
6. Reference list – brief (approximately one page).
7. Project Personnel and Responsibilities – identify the PI and Co-PI, if any, who will be the person directly responsible for the completion of the project within the grant agreement's parameters, including adherence to the Scope of Work (SOW) and project budget.

Provide curriculum vitae (CV) of the PI and Co-PI and other major project personnel as an appendix to the proposal. While the CVs will not count toward the ten-page limit, CVs exceeding one page are discouraged – include what is appropriate to this proposal.

8. Publications and Patent Applications – attach abstracts of published, peer-reviewed papers and abstract of patent applications filed, based upon past consortium projects. These attachments will not count toward the 10-page limit or the proposal patent applications will be protected if noted.
9. Project Budget – a budget specifying ODSA and the proposers cost share must be presented by line item using Attachment 3 (the total ODSA funds and university cost share should be the same as on the Attachment 2 of the proposal). In addition, a budget justification section should be presented defining the following: a) all PI, Co-PI, and student time charged to the ODSA and/or provided as cost share; and b) an Equipment List and justification for each piece of equipment to be purchased. Additional sheets may be included in order to clarify the budget if necessary. Attachment 3 and the budget justification will not count toward the 10-page text limit.
10. Gantt Chart – a detailed Gantt chart with a time line for each task and subtask of the SOW should follow the SOW. This chart will not count toward the ten-page limit.
11. Leveraging of ODSA Funds – describe any opportunities to find synergy among potential sponsors. Proposers should attempt to use grants from ODSA in leveraging co-funding from other sources such as federal funds or other state or private funds for the project. An executive summary of any companion proposal(s) submitted to U.S. DOE, other federal, state or private entity or funding program should be attached as an appendix to the proposal. The anticipated decision date and funding timeframe of companion proposals should be included. This will not count toward the 10-page limit of the full proposal.
12. Litigation – please describe any material litigation to which your company is currently a party regarding coal or any type of coal technology. In addition, please describe any material litigation that your company has been involved in over the last three years regarding coal or coal technology (Attachment 5 Questions). Finally, please provide (as an appendix) a list and describe litigation brought or threatened against your company by existing or former clients over the past five years regarding coal or coal technology.
13. Affirmation – please affirm that this proposal does not represent a duplication of effort as described in Section III. C. 7, on page number 10.

B. Attachment 1

This contains typical operating ranges for a large-scale Pulverized Coal (PC) fired power plant. Specifically, for the process being investigated, describe the anticipated location in the gas train and the appropriate range of temperatures, gas composition, residence times, pressure drop, etc. Proposals should contain citations and specific information from accepted industry standards, such as those found in Babcock & Wilcox's STEAM, to corroborate the proposal's assumed operating conditions of the proposed process or concept. It is acceptable for the technology to be aimed at a smaller scale plant as long as the proposal cites typical operating conditions found in such units.

SECTION V. CRITERIA FOR SELECTION

It is the policy of the ODSA that all financial assistance is awarded through a merit and priority based selection process, which means a thorough, consistent and independent examination of applications based on pre-established criteria by persons knowledgeable in the field of the proposed project. The points are a guide for the CRC, but not determinative.

Criterion 1:

The overall merit of the proposed project (0 to 5 points). The research represents a significant contribution to expanding the base of knowledge in the defined focus area. The proposed approach is innovative and represents a significant departure from state-of-the-art approaches to the described problem and has the potential to significantly increase the use of Ohio coal in an environmentally acceptable manner. An awareness of the state-of-the-art in related areas of coal research is demonstrated.

Criterion 2:

The proposal contains a preliminary capital and Total Annual Cost analysis of the process as configured (0 to 5 points). The basis shall be 7,446 hours of operation per year, 500 MW equivalent if electric generation is the purpose or 250 tons of coal per hour if a byproduct or other product is the objective.

Criterion 3:

The stated objectives and feasibility of achieving those objectives (0 to 5 points). The application clearly addresses a problem, concept or question described within the research areas defined above. A well-defined, logical statement of work is provided to effectively address the technical issues. An approach is described that is scientifically sound, well planned and uses current methods (or methods adequate to solve the problem) in the investigation.

Criterion 4:

Leveraging of cost sharing funds from industry or government sources (0 to 3 points). One hope of the OCRC program is that OCRC support will be used as cost share in proposals submitted to other sources of government and industrial funding. The university would be expected to maintain its cost share at 50 percent (or greater) of ODSA's contribution to the project. The outside funds would be used to either expand the program or reduce ODSA's contribution to the project. Executive summaries of companion proposals must be attached as an appendix to demonstrate the attempt to leverage third part funding. ODSA staff will assign scores on this criterion as follows:

Points	Criteria Description
0	No effort was made to obtain outside funding
1	Project can demonstrate attempt(s) were made to receive outside funding, but were declined
1	Project can demonstrate attempt(s) were made to receive outside funding, but have not received a decision
3	Project has received outside funding

Criterion 5:

The facilities or specialized equipment and techniques available to the applicants to meet the project objectives (0 to 2 points). Zero if key equipment or techniques are not available or not included in the list of equipment to be purchased by the project. Two points if equipment is available.

Criterion 6:

Publication of research in peer-reviewed journals and applications for patents (0 to 2 points). For projects that have received OCRC funding for a number of years, it is expected that by the end of the third year that a paper has been submitted to a peer-reviewed journal for publication and/or a patent application has been filed. Reviewers will assign scores on this criterion as follows: two for the filing of a patent application; or two for peer-reviewed paper submissions for publication; and zero if after completion of three years of work, no patent application has been filed and a peer-reviewed paper has not been submitted for publication.

Criterion 7:

Relevance (0 to 3 points). The project has a high transferability to end users of Ohio coal, will lead to increases in the consumption of Ohio coal in an environmentally acceptable manner, and has the potential to greatly improve Ohio's economy.

Criterion 8:

Applicability (0 to 2 points). Overall how well the project relates to each the four purposes of the OCRC.

Criterion 9:

Collaboration (0 to 2 points). Demonstrated financial and/or strategic partnerships with industry producers and/or end users that will increase the likelihood that the technology/results of the project will have a pathway towards further development and eventual field deployment.

Final Scoring – based upon completeness of proposal and supporting documentation provided	
1. Overall merit	___ (0 to 5 Points)
2. Capital and total annual cost analysis	___ (0 to 5 Points)
3. Objective feasibility	___ (0 to 5 Points)
4. Leveraging	___ (0 to 3 Points)
5. Equipment and techniques availability	___ (0 to 2 Points)
6. Publication and patent applications	___ (0 to 2 Points)
7. Relevance	___ (0 to 3 Points)
8. Applicability	___ (0 to 2 Points)
9. Collaboration	___ (0 to 2 Points)
Total Score	___ (0 to 29 Points)

SECTION VI. FUNDING AGREEMENT REQUIREMENTS

A. ODSA Funding Limitations

All costs incurred in the preparation of the proposal and negotiation of subsequent legal agreements shall be borne by the proposer. ODSA shall not contribute in any way including cost share to the cost of the preparation of the proposal.

At any point during the selection process, ODSA (which includes the CRC) reserves the right to request additional information to assist in the review process, and the proposer may be asked to provide additional information/clarification.

B. Award Deliverables

Some of the basic requirements of the sub-grant agreement are as follows:

1. Quarterly status reports, describing technical progress, must be prepared covering the periods September 1 – November 30; December 1 – February 28; March 1 – May 31; June 1 – August 30 for each of the two years of the project. A final project report will also be required, which summarizes accomplishments over the two years of the project. These reports must be completed according to a format to be specified in the grant agreement. Reports are to be submitted to ODSA, including one paper copy and an Adobe Acrobat PDF file on CD.
2. Financial reports, in a standard ODSA format, must be submitted summarizing the project financial status, including actual project expenditures to date, and grantee cost share. Invoices must be submitted quarterly, for periods corresponding to the project performance period. All invoices must bear sufficient documentation to back up both charges to the grant and the total cost share expended.
3. If invoices are not submitted within 45 days of the close of a quarter, the university shall forfeit the funds for the period. However, such forfeited funds may count towards the university's project cost share.
4. Administrative reports, indicating project employment and cost projections, must be submitted.
5. Proposers should plan to attend up to one mandatory meeting with the full OCRC each year to present the progress to date on their project, to collaborate with others in the OCRC, and to review various on-site demonstration projects.
6. Each university shall execute a payment agreement with ODSA that enables the state of Ohio to receive a commercially reasonable portion of any revenue stream (via the sale, lease, license, etc.) derived from the work supported by ODSA funds.

C. Grant Agreement Procedure

ODSA's standard subgrant agreement template is included as part of this RFP (Attachment 6). Also included are Exhibits that are attached to a final Agreement ("Agreement") and become as legally binding as the Agreement. Most notable among the Exhibits is the Exhibit H, "Royalty/Payment Agreement." Any Proposer is advised to review all of these documents prior to preparing a proposal to ODSA.

Please note: ODSA understands that the grant agreement template is a model and it may be necessary to make modifications to meet the needs of individual projects. By identifying possible changes in the template early, ODSA hopes to significantly shorten the grant negotiation process. Resolving requested exceptions before any action by ODSA will allow final negotiations to focus on substantive work statement and budget issues. If you choose to request exceptions, please remember that ODSA will consider them with an eye toward

balancing the needs of the project and the stewardship responsibilities of ODSA for its public funds.

A special word about Exhibit H, "Royalty/Payment Agreement:" In recognition of the risk taken by the state of Ohio in entering into research, development and deployment projects, the Ohio Revised Code authorizes the ODSA Director to include royalty or repayment agreements as a condition of ODSA support. ODSA recognizes that determining the amount of this payment can be complicated. If you choose to request an exception in this area, please present a clear business case supporting your alternative language. This will not only help ODSA evaluate your request; it will build a valuable database that improves the state's ability to craft equitable royalty/repayment agreements in the future.

D. Requests for Exceptions to the Grant Agreement

If a Proposer has no exceptions to the Grant Agreement, then a separate sheet must be included in the proposal that bears the statement, "This Proposer has no exceptions to the ODSA grant agreement and its attached Exhibits, including the Royalty/Payment Agreement."

Exceptions (including **minor** alterations, additions or deletions) **must** include an explanation of why the exception is being sought and the effect it would have on the Proposer's ability to perform the project. The exception must also provide suggested alternative language. Any requests for exceptions must identify the Section and Paragraph of the Grant Agreement or the Royalty/Payment Agreement, or the Exhibit by its letter.

Exceptions deemed by ODSA to be major will be reviewed by ODSA legal counsel before any technical review commences. A diligent and quick attempt will be made to resolve any differences. If, after advice of legal counsel, resolution is not possible, ODSA reserves the right to reject the proposal without further review.

Exceptions deemed by ODSA to be minor will not delay technical review and will be addressed during that review process.

All exception issues (major or minor) must be resolved before any proposal is presented to a meeting of the ODSA. After thorough discussion with the Proposer, ODSA will identify in writing exceptions that have been accepted, modified or rejected. If the Proposer wishes to continue, the proposal will proceed through the usual review and approval process.

Common Operating Ranges in Large Scale Coal Fired Power Plants

Boiler Conditions

- Residence time – 2-3 seconds
- Temperature (after leaving convective section) 1200°-1400°F
- Composition – approximately: 3-4 percent O₂, 12-15 percent CO₂, 5-7 percent H₂O, 2000-3000 ppm SO₂, 150-500 ppm NO (depending on the use of low NO_x burners or staged combustion). There are times when the O₂ levels can approach 0 percent locally. These low O₂ areas are also at a higher temperature than the rest of the flue gas.

Economizer

- Residence time <0.5 second
- Temperature at outlet < 750°F (600°-750°F typical)

SCR (Selective Catalytic Reduction)

- Typical inlet temperature 650° to 620° F
- May require reheat to maintain minimum gas temperature
- Typically 3 to 5 beds of catalysts at 1 in w.c. per bed
- Ammonia slip typically 2 to 5 ppmv
- Residence times of less than 1 second
- Can remove 90+ percent of NO depending on amount of NH₃ injected
- Can oxidize 0.5-1 percent of SO₂ to SO₃

Air Heaters

- Air leakage – approximately 7 percent of bulk flow
- Outlet temperature of flue gas < 350°F (280° to 350°F typical)
- Residence time – negligible

Precipitators

- Pressure drop < 1 in w.c.
- Residence time < 10 seconds (about 2 seconds per field)
- Outlet temperature < 350° F (280° to 320° F typical, limited by the SO₃ content of flue gas)
- 99+ percent particulate removal typical

Wet scrubbers

- Pressure drop < 8 in w.c.
- Residence time of the flue gas < 2 seconds (1 second in intense contact zone)
- Outlet temperature < 140° F (and saturated with water, typically 125° F)
- 90+ percent SO₂ removal typical, 95+ percent typical

Typical flue gas volume 3500-4500 acfm at 325° F per megawatt

Proposal Summary

OCRC ID # 2013

(Leave Blank)

1. Project Title	<input style="width: 100%; height: 20px;" type="text"/>		
	<input style="width: 100%; height: 20px;" type="text"/>		
2. Sponsoring University	<input style="width: 100%; height: 20px;" type="text"/>		
Address	<input style="width: 100%; height: 20px;" type="text"/>		
City/State/Zip	<input style="width: 100%; height: 20px;" type="text"/>		
Authorized Signature	<input style="width: 60%; height: 20px;" type="text"/>	Title	<input style="width: 20%; height: 20px;" type="text"/>
Co-sponsoring Agency	<input style="width: 100%; height: 20px;" type="text"/>		
Address	<input style="width: 100%; height: 20px;" type="text"/>		
City/State/Zip	<input style="width: 100%; height: 20px;" type="text"/>		
Authorized Signature	<input style="width: 60%; height: 20px;" type="text"/>	Title	<input style="width: 20%; height: 20px;" type="text"/>
3. Principal Investigator	<input style="width: 45%; height: 20px;" type="text"/>	Title	<input style="width: 50%; height: 20px;" type="text"/>
Phone	<input style="width: 45%; height: 20px;" type="text"/>	Fax	<input style="width: 50%; height: 20px;" type="text"/>
Email	<input style="width: 100%; height: 20px;" type="text"/>		
Co-Principal Investigator	<input style="width: 45%; height: 20px;" type="text"/>	Title	<input style="width: 50%; height: 20px;" type="text"/>
Phone	<input style="width: 45%; height: 20px;" type="text"/>	Fax	<input style="width: 50%; height: 20px;" type="text"/>
Email	<input style="width: 100%; height: 20px;" type="text"/>		
Co-Principal Investigator	<input style="width: 45%; height: 20px;" type="text"/>	Title	<input style="width: 50%; height: 20px;" type="text"/>
Phone	<input style="width: 45%; height: 20px;" type="text"/>	Fax	<input style="width: 50%; height: 20px;" type="text"/>
Email	<input style="width: 100%; height: 20px;" type="text"/>		
4. Project Location	<input style="width: 100%; height: 20px;" type="text"/>		
5. Continuation Work?	<input style="width: 15%; height: 20px;" type="text"/>	If yes, indicate Year 3 Project Number	<input style="width: 15%; height: 20px;" type="text"/>
6. Does the proposal contain proprietary or trade secret information?	If yes , include a page immediately after this attachment that lists each page in the Proposal that includes trade secret information and the number of occurrences of trade secret information on that page.		

Budget Summary

	Contributor	Dollar Contribution	Percentage of Total
OCDO			
Sponsoring University			
Co-sponsor #1			
Co-sponsor #2			
Co-sponsor #3			
Co-sponsor #4			
Co-sponsor #5			
Total Project Cost			

Project Budget Summary¹

Attachment 3

Categories	Entity Name	Phase 1	Phase 2	Phase 3	Phase 4	Total
Total Personnel						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						
Total Fringe						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						
Total Equipment						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						
Total Supplies						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						
Total Contractual						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						

Total Travel						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						

Total Other (Tuition waiver/postage/phone)						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						

Total Indirect Cost						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						

Total Project Cost						
ODSA						
Sponsoring University						
Co-sponsor 1						
Co-sponsor 2						
Co-sponsor 3						
Co-sponsor 4						
Co-sponsor 5						

¹ Add pages as necessary to fully disclose the budget.

List of Current Coal Technical Advisory Committee Members

NAME	ORGANIZATION	REPRESENTING
Joseph Shields	Ohio University	University R&D
Alternate: Shane Gilkey	Ohio University	University R&D
Michael Carey	Ohio Coal Association	Coal production companies
Alternate: Alisa Parker	Ohio Coal Association	Coal production companies
Babe Erdos	United Mine Workers of America	United Mine Workers of America
Representative Al Landis	Ohio House of Representatives	Ohio House Majority
Alternate: Tim Maly	Ohio House of Representatives	Ohio House Majority
Vacant		Ohio House Minority
Commissioner Lynn Slaby	Public Utilities Commission of Ohio	PUCO
Alternate: James Dunn	Public Utilities Commission of Ohio	PUCO
Scott Nally	Ohio EPA	EPA, Ex Officio
Designee: Bob Hodanbosi	Ohio EPA	EPA, Ex Officio
Senator Troy Balderson	Ohio Senate	Ohio Senate Majority
Alternate: Alexander Lapso	Ohio Senate	Ohio Senate Majority
James J. Reuther	Battelle	Non-university R&D
Alternate: Rick Givens	Battelle	Non-university R&D
John M. McManus	American Electric Power Company	Utilities
Alternate: Timothy Riordan	American Electric Power Company	Utilities
Nolan Moser	Ohio Environmental Council	Environmental
Alternate: Trent Dougherty	Ohio Environmental Council	Environmental
Senator Joe Schiavoni	Ohio Senate	Ohio Senate Minority
Alternate: Ryan Monell	Ohio Senate	Ohio Senate Minority
Vacant		Manufacturers that use Ohio Coal

List of Current Consortium Review Committee

NAME	ORGANIZATION
Robert Statnick	Clear Skies Consulting
Mario Maracco	OCDO (Ex Officio)
Representative	U.S. EPA
Tom Flynn	Babcock and Wilcox
Bob Hodanbosi	Ohio EPA
Mark Golightly	First Energy
Dick Rhudy	Electric Power Research Institute
Representative	American Electric Power
Representative	Duke Energy
Bob Brown	Former OCOD, retired

Agencies/companies that have a 'Representative' listed have confirmed their willingness to participate, but based upon timing of when the RFP is released and when the CRC would meet would dictate who would serve.

As of: 9/20/2012

Required Forms and Questions

All documents below are required. **Please make sure to complete, sign, and submit or attach the following forms individually to your application.**

- W-9
- Tax Release

Please answer the following questions. False answers may result in the state of Ohio withdrawing any and all offers of financial assistance.

FINANCIAL LIABILITY

ODSA will not give financial assistance of any type to an applicant or company with outstanding financial obligations to the state or to an Ohio community or with outstanding environmental issues. The status of each applicant will be verified with the Ohio Department of Taxation and with the Ohio Environmental Protection Agency. Does the applicant and property owner (if different from applicant):

1. Owe any delinquent taxes to the state of Ohio, any state agency, or a political subdivision of the state?

Yes: No: If Yes, explain:

2. Owe any monies to the state of Ohio or to a state agency for the administration or enforcement of the environmental laws of the state?

Yes: No: If Yes, explain:

3. Owe any past-due monies to the state of Ohio, a state agency, or a political subdivision of the state?

Yes: No: If Yes, explain:

4. Have any existing tax liens by the state of or a political subdivision of the state?

Yes: No: If Yes, explain:

5. Have a state loan on which it has defaulted?

Yes: No: If Yes, explain:

PRIOR LEGAL ACTIONS

Have the applicant (or user), related companies, or any of their respective officers:

1. Been convicted of a felony?

Yes: No: If Yes, explain:

2. Been convicted of or enjoined from any violation of state or federal securities law?

Yes: No: If Yes, explain:

3. Been a party to any consent order or entry with respect to an alleged state or federal securities law violation?

Yes: No: If Yes, explain:

4. Been a defendant in a civil or criminal action?

Yes: No: If Yes, explain:

Request for Taxpayer Identification Number and Certification

**Give Form to the
requester. Do not
send to the IRS.**

Print or type See Specific Instructions on page 2.	Name (as shown on your income tax return)	
	Business name/disregarded entity name, if different from above	
	Check appropriate box for federal tax classification: <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see instructions) ▶ _____	
	<input type="checkbox"/> Exempt payee	
	Address (number, street, and apt. or suite no.)	Requester's name and address (optional)
City, state, and ZIP code		
List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Social security number									

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

Employer identification number									

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	----------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

The person who gives Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States is in the following cases:

- The U.S. owner of a disregarded entity and not the entity,
- The U.S. grantor or other owner of a grantor trust and not the trust, and
- The U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person, do not use Form W-9. Instead, use the appropriate Form W-8 (see Publication 515, Withholding of Tax on Nonresident Aliens and Foreign Entities).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a “saving clause.” Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items:

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity not subject to backup withholding, give the requester the appropriate completed Form W-8.

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS a percentage of such payments. This is called “backup withholding.” Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the Part II instructions on page 3 for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See the instructions below and the separate Instructions for the Requester of Form W-9.

Also see *Special rules for partnerships* on page 1.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account, for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Name

If you are an individual, you must generally enter the name shown on your income tax return. However, if you have changed your last name, for instance, due to marriage without informing the Social Security Administration of the name change, enter your first name, the last name shown on your social security card, and your new last name.

If the account is in joint names, list first, and then circle, the name of the person or entity whose number you entered in Part I of the form.

Sole proprietor. Enter your individual name as shown on your income tax return on the “Name” line. You may enter your business, trade, or “doing business as (DBA)” name on the “Business name/disregarded entity name” line.

Partnership, C Corporation, or S Corporation. Enter the entity's name on the “Name” line and any business, trade, or “doing business as (DBA) name” on the “Business name/disregarded entity name” line.

Disregarded entity. Enter the owner's name on the “Name” line. The name of the entity entered on the “Name” line should never be a disregarded entity. The name on the “Name” line must be the name shown on the income tax return on which the income will be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a domestic owner, the domestic owner's name is required to be provided on the “Name” line. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity's name on the “Business name/disregarded entity name” line. If the owner of the disregarded entity is a foreign person, you must complete an appropriate Form W-8.

Note. Check the appropriate box for the federal tax classification of the person whose name is entered on the “Name” line (Individual/sole proprietor, Partnership, C Corporation, S Corporation, Trust/estate).

Limited Liability Company (LLC). If the person identified on the “Name” line is an LLC, check the “Limited liability company” box only and enter the appropriate code for the tax classification in the space provided. If you are an LLC that is treated as a partnership for federal tax purposes, enter “P” for partnership. If you are an LLC that has filed a Form 8832 or a Form 2553 to be taxed as a corporation, enter “C” for C corporation or “S” for S corporation. If you are an LLC that is disregarded as an entity separate from its owner under Regulation section 301.7701-3 (except for employment and excise tax), do not check the LLC box unless the owner of the LLC (required to be identified on the “Name” line) is another LLC that is not disregarded for federal tax purposes. If the LLC is disregarded as an entity separate from its owner, enter the appropriate tax classification of the owner identified on the “Name” line.

Other entities. Enter your business name as shown on required federal tax documents on the "Name" line. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on the "Business name/disregarded entity name" line.

Exempt Payee

If you are exempt from backup withholding, enter your name as described above and check the appropriate box for your status, then check the "Exempt payee" box in the line following the "Business name/disregarded entity name," sign and date the form.

Generally, individuals (including sole proprietors) are not exempt from backup withholding. Corporations are exempt from backup withholding for certain payments, such as interest and dividends.

Note. If you are exempt from backup withholding, you should still complete this form to avoid possible erroneous backup withholding.

The following payees are exempt from backup withholding:

1. An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2),
 2. The United States or any of its agencies or instrumentalities,
 3. A state, the District of Columbia, a possession of the United States, or any of their political subdivisions or instrumentalities,
 4. A foreign government or any of its political subdivisions, agencies, or instrumentalities, or
 5. An international organization or any of its agencies or instrumentalities.
- Other payees that may be exempt from backup withholding include:
6. A corporation,
 7. A foreign central bank of issue,
 8. A dealer in securities or commodities required to register in the United States, the District of Columbia, or a possession of the United States,
 9. A futures commission merchant registered with the Commodity Futures Trading Commission,
 10. A real estate investment trust,
 11. An entity registered at all times during the tax year under the Investment Company Act of 1940,
 12. A common trust fund operated by a bank under section 584(a),
 13. A financial institution,
 14. A middleman known in the investment community as a nominee or custodian, or
 15. A trust exempt from tax under section 664 or described in section 4947.

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 15.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 9
Broker transactions	Exempt payees 1 through 5 and 7 through 13. Also, C corporations.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 5
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 7 ²

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney, and payments for services paid by a federal executive agency.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN. However, the IRS prefers that you use your SSN.

If you are a single-member LLC that is disregarded as an entity separate from its owner (see *Limited Liability Company (LLC)* on page 2), enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note. See the chart on page 4 for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local Social Security Administration office or get this form online at www.ssa.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/businesses and clicking on Employer Identification Number (EIN) under Starting a Business. You can get Forms W-7 and SS-4 from the IRS by visiting IRS.gov or by calling 1-800-TAX-FORM (1-800-829-3676).

If you are asked to complete Form W-9 but do not have a TIN, write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note. Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded domestic entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, below, and items 4 and 5 on page 4 indicate otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on the "Name" line must sign. Exempt payees, see *Exempt Payee* on page 3.

Signature requirements. Complete the certification as indicated in items 1 through 3, below, and items 4 and 5 on page 4.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983. You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983. You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account)	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Custodian account of a minor (Uniform Gift to Minors Act)	The minor ²
4. a. The usual revocable savings trust (grantor is also trustee) b. So-called trust account that is not a legal or valid trust under state law	The grantor-trustee ¹ The actual owner ¹
5. Sole proprietorship or disregarded entity owned by an individual	The owner ³
6. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulation section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
7. Disregarded entity not owned by an individual	The owner
8. A valid trust, estate, or pension trust	Legal entity ⁴
9. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
10. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
11. Partnership or multi-member LLC	The partnership
12. A broker or registered nominee	The broker or nominee
13. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
14. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulation section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or "DBA" name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships* on page 1.

*Note. Grantor also must provide a Form W-9 to trustee of trust.

Note. If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records from Identity Theft

Identity theft occurs when someone uses your personal information such as your name, social security number (SSN), or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Publication 4535, Identity Theft Prevention and Victim Assistance.

Victims of identity theft who are experiencing economic harm or a system problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at: spam@uce.gov or contact them at www.ftc.gov/idtheft or 1-877-IDTHEFT (1-877-438-4338).

Visit IRS.gov to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

**AUTHORIZATION TO RELEASE TAX INFORMATION
OHIO DEVELOPMENT SERVICES AGENCY AND JOBSOHIO**

I, _____, (printed name of taxpayer) hereby authorize the Ohio Department of Taxation and any of its agents and/or employees to release my tax records to the Ohio Development Services Agency (ODSA) and/or JobsOhio. I understand that these records may be used by the ODSA and/or JobsOhio to ensure my taxpayer compliance with all tax laws and to verify the information reported to the ODSA and/or JobsOhio for various purposes relating to evaluation of potential tax credits, grant awards, or loan issuances. Except as authorized by this waiver, the ODSA and/or JobsOhio must maintain the confidentiality of the information received pursuant to O.R.C. 1347.15(H) with respect to this waiver.

I certify under penalties of perjury that I am the taxpayer identified below or an agent authorized to certify on its behalf.

Company Name: _____

Name and Title of Authorized Agent (printed): _____

Signature of Authorized Agent: _____

Date: _____

Company Address: _____

Company Telephone Number: _____

Social Security Number (if an individual): _____

Federal Employer Identification Number: _____

Ohio Charter Number: _____

Ohio Franchise Tax Identification Number: _____

Commercial Activity Tax Account Number: _____

Ohio Employer Withholding Account Number: _____

Ohio Vendor's License Number: _____

Ohio Consumer's Use Tax Account Number: _____

Ohio Direct Pay Permit Number: _____

OHIO COAL RESEARCH AND DEVELOPMENT SUBGRANT AGREEMENT

Subgrantee:					
Address:					
City:		State:		Zip:	
Contact:		Email:		Phone:	
Project City:		Effective Date:			
Project County:		Project Completion Date:			

This Subgrant Agreement (the “Agreement”) is made and entered into by and between _____ (“**Grantee**”) and **Subgrantee** to set forth the terms and conditions upon which the Ohio Development Services Agency (ODSA) (the “Grantor”), will provide financial assistance to Grantee, and Grantee will use the financial assistance to undertake, the Ohio Coal Research and Development project further described in the Project Application Form (the “Application”) submitted by Grantee (the “**Project**”). This Agreement includes Grantee’s Application, which is not attached but is incorporated by this reference, and the “Scope of Work”.

1. Project Funding.

(a) State Grant. Grantor has determined that Grantee’s Application and the activities included therein meets the requirements of a coal research and development project pursuant to Ohio Revised Code (“**ORC**”) Chapter 1555. A portion of the Grant Funds granted to Grantee for the Project shall be disbursed to Subgrantee in the amount of _____ in accordance with Exhibit C attached hereto. Subgrantee shall undertake and complete the Project substantially as described in Scope of Work and Budget. Subgrantee may not use the Grant Funds for any purpose other than completion of the Project.

(b) Availability of Other Funds. It is a condition to the award of Grant Funds that Subgrantee provides additional funds from other non-Grantor sources to pay Project costs in excess of the Grant Funds. Subgrantee represents and warrants to Grantor that Subgrantee has obtained such additional funds or that Subgrantee has a binding commitment for such additional funds and, with the exercise of reasonable diligence, will have obtained such additional funds no later than the time such funds will be required to pay Project costs as and when such costs are incurred and payable. No Grant Funds will be disbursed to reimburse Project costs unless and until Subgrantee documents to Grantor that the Project costs have been incurred and that related costs have been paid.

(c) Alternative Funding Sources. The Subgrantee shall be required to explore and report on existing, planned, or possible relationships with other research and development programs sponsored by the State of Ohio and listed in Exhibit M, attached hereto and titled “Ohio Research & Development Alignment Programs.” If any additional funding may be obtained from any of these programs, the Subgrantee must pursue funding, technical and/or other assistance from these programs. The Subgrantee must submit to Grantor a letter within ninety (90) days of execution of this Agreement stating that the Subgrantee has reviewed these programs and has determined whether or not the Subgrantee is eligible for additional assistance from any of these programs. If any additional assistance is available, Subgrantee will inform Grantor in writing of such assistance through its Quarterly Status Reports to the Grantor. If such assistance is not available, the letter should state no additional assistance is available from the Ohio Research and Development Programs. Further, the letter must state if the Subgrantee has found and is working with other State of Ohio programs that are not listed in Exhibit M.

(d) Tax Consequences. Subgrantee acknowledges that the Grant Funds may be subject to taxation. Subgrantee is solely responsible for any taxes that may be assess on the Grant Funds by any taxing authority.

2. Payment of Grant Funds.

(a) Disbursement. Subject to the retainage outlined in Section 2(e) of this Agreement, Grantee shall disburse the Grant Funds to Subgrantee on a reimbursement basis in proportion to the Cost Share ratio as provided in the Application. Subgrantee shall submit to Grantee, for review and approval, requests for reimbursement detailing expenditures which have then been incurred by Grantee in accordance with the Project budget included in Exhibit C. Subgrantee shall submit reimbursement requests on forms provided by Grantor from time to time. Grantor shall be the sole judge of the adequacy of reimbursement requests. All expenses to be reimbursed with Grant Funds shall be supported by contracts, invoices, vouchers, paid receipts and other documentation as appropriate to evidence the costs incurred by Subgrantee to perform the work substantially as described in Exhibit A-SUB and Exhibit C. Subgrantee shall submit to Grantor, such documentation necessary to substantiate a reimbursement request.

(b) Specific Project Funding. The Research Projects, _____ are funded for no longer than two years and covers costs after _____. No Research Project may have an end date beyond _____.

(c) Permissible Expenses. Reimbursement of travel expenses is limited to certain transportation and lodging expenses as provided in the Program Manual. If "travel expenses," as defined in Ohio Administrative Code Section 126-1-02, are a cost of the Project eligible for reimbursement with Grant Funds, Subgrantee shall be reimbursed for those permissible travel expenses in amounts in accordance with the Ohio Administrative Code Section 126-1-02, as updated from time to time (the "Expense Rule") and Subgrantee agrees that it shall not be reimbursed and Grantor shall not pay any items that are deemed to be "non-reimbursable travel expenses" under the Expense Rule, whether purchased by the Subgrantee or Grantor or their respective employees or agents. Unless expressly authorized under Scope of Work or Budget, any travel expenses will not be costs eligible for reimbursement with Grant Funds subject to this Section (2)(a).

(d) Invoices. SubGrantee must submit Quarterly invoices to Grantee. Grantee shall disburse Grant Funds, in accordance with Section 2(a) of this Agreement, to Subgrantee contingent upon the following conditions:

(i) Subgrantee will invoice Grantee by fully completing and submitting to Grantee the Request for Payment, which is attached hereto as Exhibit G. Each invoice must include documentation of expenditures which total the amount requested by the invoice. Each invoice will also set forth Subgrantee's cost share expended to date and must have documentation verifying Grantee's cost.

(ii) Subgrantee shall also generate and attach the Form G-1 to the invoice and a Request for Payment. This is the Subgrantee's estimated vs. Actual Grantor Quarterly Cash Draw. It is included in Exhibit G.

(iv) Subgrantee must timely file all required reports prior to the approval and payment of an invoice. Failure to submit timely reports may result in the withholding of Grant Funds and subject to penalty under Section 8 (i) of this Agreement.

(e) Final Payment. A final payment in the amount of _____ Dollars (\$), representing ten (10) percent of the total amount of this grant, will be paid to Subgrantee upon approval by Grantor of an acceptable Final Report and all other Project Work Tasks and Deliverables set forth in Application as performed or submitted by Grantee and all Subgrantees.

4. Grant Funds Not Expended.

If the Grant Funds are not expended by Subgrantee in accordance with the terms and conditions of this Agreement or within the time period set forth in this Agreement, the award of the Grant Funds shall cease and Grantee shall have no further obligation to disburse the Grant Funds. Grantee shall also have no obligation to disburse any amount of the Grant Funds that exceeds the eligible costs of the Project actually incurred by Subgrantee. If Grant

Funds have been paid to Subgrantee and Grantee determines that Subgrantee has not performed in accordance with the terms and conditions of this Agreement, Subgrantee shall return such improperly expended Grant Funds within thirty (30) days after demand by Grantee. In the event that Subgrantee does not submit any requests for reimbursement by the Grant Expiration Date (as such date may be extended as provided in Section 4) and/or the Project is affirmatively abandoned by Subgrantee, this Agreement shall be null and void without any further action by the parties and neither party shall have any obligation under this Agreement.

5. Agreement Deadlines and Term.

(a) Project Completion. Subgrantee shall complete the Project not later than the Project Completion Date set forth on the first page of this Agreement. If Subgrantee anticipates that the Project will not be completed by the Project Completion Date, Subgrantee must request an extension of time to complete the Project at least sixty (60) days before the scheduled Project Completion Date. It will be within the sole discretion of Grantor to grant or deny such extension of time.

(b) Term of Agreement. This Agreement shall be in effect from the Effective Date set forth on the first page of this Agreement through the first quarterly reporting date which is at least one (1) year after the Project Completion Date (the “**Expiration Date**”), unless it is terminated earlier as provided in Section 12 (collectively, the “**Term**”). Subgrantee acknowledges that the Term may extend beyond the Expiration Date for purposes of reporting by Subgrantee and monitoring by Grantor of the results of the award of Grant Funds if a royalty agreement is in place that extends beyond this timeframe, and that Subgrantee’s obligation to file any delinquent reports survive the expiration or earlier termination of this Agreement.

6. Project Performance.

(a) Maintenance and Safekeeping. Subgrantee shall provide for the security and safekeeping of all items obtained through this grant, and shall insure that the facility or project be maintained and kept in good condition and repair and in accordance with Ohio law and local ordinances where applicable.

(b) Royalty. Subject to Grantor's satisfaction that the agreement and payments referred to in this Section, will not cause the interest on the Coal Research and Development Bonds to become subject to federal income taxation, Grantor shall require Subgrantee to pay a reasonable royalty or portion of the income or profits arising out of the developments, discoveries, inventions, or improvements, including patents or copyrights which result in whole or in part from coal research and development projects conducted under this Agreement as authorized under ORC 1555.03(D). Alternatively, the Subgrantee may buy out this royalty obligation by reimbursing to the Grantor a sum three times the Grant Agreement amount as set forth in Section 1(a) above. Any such royalties or payments will be pursuant to the “Royalty/Payment Agreement” between Grantor and Subgrantee, which is attached hereto as Exhibit H.

(c) Subgrantee. Grantee shall subgrant portions of work or activities related to the Project in accordance with the Exhibit C and its supporting proposals including in the Application. All Subgrantees shall be bound by the terms, conditions, and Exhibits of the Original Grant Agreement between Grantor and Grantee regarding the Project, and that Original Agreement shall be incorporated by reference into each subcontract and become binding upon each Subgrantee. Grantee shall provide to all Subgrantees a complete copy of that Original Agreement and all its Exhibits, either on electronic disc or paper photocopy, to each Subgrantee and each Principal Investigator.

(d) Modifications. Any changes to the Project’s statement of work, budget, or work schedule are subject to Grantor’s approval. Any changes that individual project Principal Investigators deem necessary shall be made in a timely manner, shall be in writing, shall provide justification for the desired change, and shall be reviewed by the Program Manager, who shall make a recommendation of approval or disapproval to the Grantor, which shall

make the final decision. The Grantor may administratively approve in writing requested changes to the Statements of Work and/or budget when it has become apparent that the current course of research is not productive or another avenue of research has revealed itself to be more productive than that originally planned. However, the changes must be in keeping with the original project objectives.

(e) Ohio Coal Provision. Grantor's funds shall be used to test only Ohio coal and the products remaining from their use or to otherwise advantage Ohio coal. Any testing on non-Ohio coal for comparison purposes may be done with the project cost share funds.

(f) Maintenance and Safekeeping. Grantee shall provide for the security and safekeeping of all items obtained through this grant, and shall insure that the facility or project be maintained and kept in good condition and repair and in accordance with Ohio law and local ordinances where applicable.

(g) Notice of Change. If Subgrantee intends to sell or otherwise transfer its interests in the Project, or sell or transfer any equipment for which the purchase price was reimbursed in whole or in part with Grant Funds prior to the Expiration Date, Subgrantee shall give Grantor written notice of such intended action at least five (5) business days prior to implementation unless Subgrantee is expressly prohibited by applicable law from giving such notice. If prior notice is prohibited by law, Subgrantee shall notify Grantor in the most expeditious manner possible at the time such intended actions are implemented. Vacancies created by resignation or other termination of employment of individual employees shall not require notice under this Section 5(b) if Subgrantee anticipates filling such vacancies within a reasonable time and in the ordinary course of its business.

7. Technology and Job Creation Goal

(a) Technology or Materials. If the award of Grant Funds is based on a commitment to use innovative technology or materials, Subgrantee shall use the technology or materials described in the Application.

(b) Commercialization. Subgrantee must use its best efforts to commercialize and market its clean coal technology systems or process to increase the environmentally sound, cost-effective use of Ohio coals. Subgrantee may use an affiliate to meet this obligation. The technology, system or process shall be deemed to be commercially viable upon the installation, or manufacture and sale, lease or licensing by Subgrantee, its successors, assignees, lessees, or licensees, anywhere in the world, of a system or process, or generation of any revenue, which is substantially based upon information developed in the course of the work performed under this Agreement.

(c) Energy Performance. If the award of Grant Funds is based on a commitment, to yield the energy benefits, the Subgrantee shall achieve the energy benefits described in the Application. Subgrantee shall report information necessary for Grantor to evaluate the Project against the Energy Commitment during Measurement Period. Failure of the Project to achieve the Energy Commitment shall not be a breach of this Agreement provided that the Project is completed in accordance with the Application.

(d) Job Creation Goal. While the primary focus of the award is the discovery of new technologies, equipment, processes or the demonstration or application of existing technologies, equipment or processes to enable the conversion or use of Ohio coal as a fuel or chemical feedstock in an environmentally acceptable manner thereby enhancing the marketability and fostering the use of Ohio's vast reserves of coal, as described in the Application, one of the secondary goals is the creation of jobs as a result of the award. Subgrantees are required to report any job creation or retention in their final project report.

7. Non-Discrimination.

(a) Minority Hiring Goal. Subgrantee shall make a good faith effort to employ minority persons in the

completion of the Project in the same percentage as the average percentage of minority persons who reside in the county in which the Project is located and any contiguous Ohio counties.

(b) Equal Employment Opportunity. Subgrantee shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, disability, age, military status or ancestry. Subgrantee shall ensure that applicants for employment are considered for employment, and that employees are treated during employment, without regard to their race, religion, color, sex, national origin, disability, age, military status or ancestry. Subgrantee will incorporate the requirements of this paragraph in all of its contracts for any of the work undertaken on the Project (other than subcontracts for standard commercial supplies or raw materials), and Subgrantee will require all of its contractors for any part of such work to incorporate such requirements in all subcontracts for such work.

8. Reporting.

(a) Quarterly Status Reports. Quarterly Status Reports must be submitted by Subgrantee to Grantee by the fifth day of each succeeding month. Quarterly Status Reports must be prepared pursuant to Grantor's "Status Report Format," which is attached hereto as Exhibit I. Quarterly Status Reports must be accompanied by color photographs of the project, as appropriate.

(b) Project Completion. Subgrantee shall notify Grantee promptly in writing when the Project is completed. Thereafter, Grantor shall review the completed Project. Notice of Project completion and Grantor review shall be conditions to disbursement of the Grant Funds. Subgrantee must submit to Grantee a comprehensive draft of the Final Project Report no less than sixty (60) days prior to the Project Completion Date. The Final Report shall be prepared pursuant to Grantor's "Final Report Format Guidelines" which are attached hereto as Exhibit J. Upon review, Grantor may accept the draft as submitted or may return comments to the Subgrantee within thirty (30) days in order to correct any errors, modify the report for greater clarification, or provide greater description of the project and its results. Should the Final Report need modification, supplementation or further explanation after Grantor has reviewed it, Subgrantee must modify, correct, supplement, or explain such questioned portions of the Final Report and submit it to the Grantor prior to the Project Completion Date. Subgrantee shall submit to Grantee copies of the comprehensive Final Report as follows: two bound copies, one loose-lead single sided copy; one copy on CD in Adobe, portable document format (pdf).

(c) Project Employment Data Sheet. Subgrantee shall complete the Project Employment Data Sheet, which is attached hereto as Exhibit K upon the execution of this Agreement and include in the Final Project Report.

(d) Annual Project Abstract. Upon execution of this Agreement and each succeeding December 31 under this Agreement, Subgrantee will complete a brief Annual Project Abstract of the Project for inclusion on Grantor's internet web page for general public distribution. The Annual Project Abstract shall be prepared in the manner displayed in the Annual Project Abstract Format, which is attached hereto as Exhibit L. It is expressly understood that the Annual Project Abstract will not replace or supplant any other required report. In the event Subgrantee sells, assigns, leaves or otherwise transfers the rights to the technology or process resulting from the Project to a third party, Subgrantee will be responsible for insuring that this reporting requirement becomes a part of the subsequent agreement between Subgrantee and the third party.

(e) Patent and Commercialization Update. At the conclusion of The Research Projects each project PI will complete a brief "Patent and Commercialization Update" as listed in "Deliverables and Formats", which is identified as Exhibit N. This report shall include copies of abstracts of patents filed and patents awarded on discoveries of The Research Projects. It shall also include a discussion on Grantee's commercialization efforts for the year. Thereafter, annual updates of the "Patent and Commercialization Update" report shall be submitted to Grantor for a period of ten years beyond the project completion date. In the event the university of the projects of The Research Projects sells, assigns, leases or otherwise transfers the rights to the technology or process resulting

from the Project to a third party, the university will be responsible for insuring that this reporting requirement becomes a part of the subsequent agreement between it and the third party.

(f) Project Meetings. Subgrantee shall provide Grantor reasonable advance notice of any Project review or Project management meetings and permit Grantor's participation by attendance or conference call when possible. To the extent possible, Subgrantee shall schedule such meetings in Ohio.

(g) Signature and Costs. Subgrantee (if Subgrantee is an individual) or the chief executive officer, chief financial officer, or other officer of Subgrantee authorized to sign tax returns on behalf of Subgrantee (if Subgrantee is an entity) shall certify by his or her signature of each report required by this Section 8 that the information reported by Subgrantee is true, complete and correct.

(h) Remedy. Quarterly Status Reports and Annual Project Abstracts are essential for Grantee's effective administration of this grant and its financial incentive programs, generally. If Subgrantee fails to submit any required report and such breach continues uncured for more than thirty (30) days, Grantee may recover, and Subgrantee shall pay, as liquidated damages for the breach, an amount equal to \$500 for each month or part of a month that the report is past due.

9. Records Maintenance and Access.

(a) Maintenance of Records. Subgrantee shall establish and maintain for at least three (3) years after the Expiration Date or any earlier termination date its records regarding this Agreement, the Grant Funds and the Project, including, but not limited to, financial reports, job creation and retention statistics, and all other information pertaining to Subgrantee's performance of its obligations under this Agreement. If any audit, dispute or litigation is then pending, however, Subgrantee shall maintain such records as may be relevant to such matter until it is finally resolved.

(b) Inspection and Copying. At any time during normal business hours and upon not less than twenty-four (24) hours prior written notice, Subgrantee shall make available to Grantor, Grantee, its agents or other appropriate State agencies or officials all books and records regarding this Agreement, the Grant Funds and the Project which are in the possession or control of Subgrantee, including, but not limited to, records evidencing employment at the Project site. Grantor, its agents and other appropriate State agencies and officials may review, audit and make copies of such books and records, and any such inspection of books and records will be undertaken in such a manner as not to interfere unreasonably with the normal business operations of Subgrantee. Subgrantee shall, at its own cost and expense, segregate records to be made available for inspection pursuant to this Section 8(b) from Subgrantee's other records of operation.

(c) Accounting Format. All moneys paid to Subgrantee under the terms of this Agreement and any interest earned by Subgrantee thereon must be deposited in a separate account upon the books and records of Subgrantee. Subgrantee must keep all records in a manner that is consistent with generally accepted accounting principles. The documentation in support of each action in the accounting records shall be filed in such a manner that it can be made readily available. All disbursements from the account established pursuant to this section 9(c) shall be for obligations incurred in the performance of this Agreement after the Project Starting Date, and shall be supported by contracts, invoices, vouchers, and other data, as appropriate, evidencing such disbursements. Grantor will review and consider accepting federal audits in lieu of requiring a state audit where applicable.

10. Publicity.

(a) Use of Name. Neither Party may use the name of the other in any form of advertising or promotion or otherwise without the prior written consent of the other Party, which consent shall not be unreasonably withheld or delayed. All press statements and other publicity proposed to be given by one party mentioning the other or referring to this Agreement or any materials, ideas or performance data developed under this Agreement shall be

first reviewed by the other party before release. Such materials will be provided, reviews performed and comments made in a timely manner.

(b) Acknowledgements. Notwithstanding the provision of subsection (a) above, all written materials, including all reports, papers, published articles, promotional pieces, newsletters, press releases and other printed materials referencing this project and its work shall credit Grantor's participation in the project by name as "Ohio Development Services Agency."

(c) Technical Forums. For all projects, Subgrantee agrees to make presentations in various technical forums sponsored by the Grantor or similar entities, such as federal agencies or credible conference organizers. For those larger projects involving construction of a significant apparatus, Subgrantee and Grantor shall conduct a technology transfer open house to help promote the awareness and adoption of the technology, unless it is mutually determined that such an open house will not meet the intended goal.

11. Adherence to State and Federal Laws and Regulations.

(a) General. Subgrantee shall comply with all applicable federal, state, and local laws in the performance of Subgrantee's obligations under this Agreement, the completion of the Project and the operation of the Project as long as Subgrantee has any obligation to Grantee under this Agreement. Without limiting the generality of such obligation, Subgrantee shall pay or cause to be paid all unemployment compensation, insurance premiums, workers' compensation premiums, income tax withholding, social security withhold, and any and all other taxes or payroll deductions required for all employees engaged by Subgrantee in connection with the Project, and Subgrantee shall comply with all applicable environmental, zoning, planning and building laws and regulations.

(b) Ethics. In accordance with Executive Order 2011-03K, Subgrantee, by its signature on this document, certifies: (1) it has reviewed and understands Executive Order 2011-03K, (2) has reviewed and understands the Ohio ethics and conflict of interest laws including, without limitation, Ohio Revised Code §§ 102.01 *et seq.*, §§ 2921.01, 2921.42, 2921.421 and 2921.43, and §§ 3517.13(I) and (J), and (3) will take no action inconsistent with those laws and the order, as any of them may be amended or supplemented from time to time. Subgrantee understands that failure to comply with the Ohio ethics and conflict of interest laws, is in itself, grounds for termination of this Agreement and the grant funds made pursuant to this Agreement and may result in the loss of other contracts or grants with the State of Ohio.

(c) Conflict of Interest. No personnel of Subgrantee, contractor of Subgrantee or personnel of any such contractor, and no public official who exercises any functions or responsibilities in connection with the review or approval of any work completed under this Agreement, shall, prior to the completion of such work performed as a result of this Agreement, voluntarily or involuntarily acquire any personal interest, direct or indirect, which is incompatible or in conflict with the discharge or fulfillment of his or her functions or responsibilities with respect to the completion of the work contemplated under this Agreement. Subgrantee shall immediately disclose in writing to Grantee any such person who, prior to or after execution of this Agreement, acquires any personal interest involuntarily or voluntarily. Subgrantee shall cause any such person who, prior to or after the execution of this Agreement, acquires any personal interest, involuntarily or voluntarily, shall immediately disclose his interest to Grantee in writing. Thereafter, such person shall not participate in any action affecting the work under this Agreement unless Grantee determines in writing that, in light of the personal interest disclosed, his or her participation in any such action would not be contrary to the public interest.

(d) Outstanding Liabilities. Subgrantee represents and warrants to Grantee that Subgrantee does not owe: (1) any delinquent taxes to the State of Ohio or a political subdivision of the State of Ohio; (2) any moneys to the State of Ohio or a state agency for the administration or enforcement of any environmental laws of the State of Ohio; and (3) any other moneys to the State of Ohio, a state agency or a political subdivision of the State of Ohio that are past due, whether or not the amounts owed are being contested in a court of law.

(e) Falsification of Information. Subgrantee represents and warrants to Grantee that Subgrantee has made no false statements to Grantee, Grantor or any of its employees or agents in the process of obtaining the award of Grant Funds. Subgrantee acknowledges that any person who knowingly makes a false statement to obtain an award of financial assistance may be required under Ohio Revised Code § 9.66(C) to repay such financial assistance and shall be ineligible for any future economic development assistance from the State of Ohio, any state agency or a political subdivision. In addition, any person who provides a false statement to secure economic development assistance may be guilty of falsification, a misdemeanor of the first degree, pursuant to Ohio Revised Code § 2921.13(F)(1).

(f) Declaration Regarding Material Assistance/Non-assistance to a Terrorist Organization. If applicable, Subgrantee must certify compliance with Ohio Revised Code § 2909.33.

(g) Prevailing Wage. [Reserved, but not applicable to this Agreement.]

(h) Public Records. Subgrantee acknowledges that this Agreement and other records in the possession or control of Subgrantee regarding the Project are public records under Ohio Revised Code § 149.43 and are open to public inspection unless a legal exemption applies. Subgrantee's non-public financial information provided in connection with the application for and award of Grant Funds made pursuant to this Agreement is exempt from disclosure under a specific exception to the public records law set forth in Section 4928.62(D) of the Ohio Revised Code. Subgrantee's non-public trade secrets or other proprietary information provided in connection with the application for and award of Grant Funds made pursuant to this Agreement is exempt from disclosure under a specific exception to the public records law set forth in Section 1551.35 and 1555.17 of the Ohio Revised Code. The parties acknowledge that it is Subgrantee's sole responsibility to conspicuously mark those passages, diagrams, formulas, and other intellectual property, that it deems to be trade secret as defined in ORC Section 1333.61 on any and all materials it submits to Grantor.

12. Default and Remedies.

(a) Default. Subgrantee shall be in default of this Agreement if Subgrantee fails to perform any of its obligations under this Agreement and such failure to perform continues uncured for more than thirty (30) days after written notice (a "Default Notice") from Grantor. During the thirty-day cure period, Subgrantee shall incur only those obligations or expenditures pre-approved by Grantor that are necessary to enable Subgrantee to continue its operations and achieve compliance with the terms and conditions of this Agreement. Subgrantee shall also be in default of this Agreement if Subgrantee is in default of any other agreement between Grantor and/or the Director of Grantor and Subgrantee and such default continues beyond any applicable period of cure or grace.

(b) Remedies. Following a default by Subgrantee, Grantor may exercise one or more of the following remedies:

(i) Discontinue Disbursements. If the Grant Funds have not been fully disbursed, Grantor may terminate any and all of Grantor's obligations under this Agreement, including the obligation to make further disbursements of Grant Funds.

(ii) Demand Repayment of Grant Funds or Liquidated Damages. Under the circumstances described in Section 3 of this Agreement, demand repayment of Grant Funds improperly expended and under the circumstances described in Sections 8 and 11 of this Agreement, demand liquidated damages as provided in Sections 8(i), respectively. Subgrantee shall not be required to refund Grant Funds or pay liquidated damages in an amount that exceeds the Grant Funds awarded.

(iii) Other Legal Remedies. Pursue any other legal or equitable remedies Grantor may have under this Agreement or applicable law.

(c) Property Ownership. All items purchased by Subgrantee are and will remain the property of Subgrantee, except in the event that Subgrantee does not faithfully perform all the terms and conditions of this Agreement. In the event Subgrantee does not faithfully perform all the terms and conditions of this Agreement, Subgrantee will reimburse Grantor a sum of money in the same proportion as Grantor's actual cost-share in the project, computed on the value of the items kept by Subgrantee, or, if such items are disposed of, the sum of money due to Grantor shall be computed on the basis of revenues derived from the disposition of any items (such as but not limited to property and equipment) acquired after the Project Start Date.

(d) Remedies Cumulative. No remedy provided to Grantor under this agreement or otherwise by law or in equity is exclusive of any other available remedy. No delay or omission by Grantor in exercising any right or power accruing upon any default shall impair any such right or power or be construed as a waiver, and each such right or power may be exercised from time to time as often as may be deemed by Grantor to be expedient.

(e) Early Termination. Grantor may also terminate this Agreement if Subgrantee (i) defaults under another Agreement between the Grantor and/or the Tax Credit Authority and Subgrantee, (ii) admits Subgrantee's inability to pay its debts as such debts become due, (iii) Subgrantee commences a voluntary bankruptcy, (iv) an involuntary bankruptcy action occurs against Subgrantee which remains undismissed or unstayed for sixty (60) days, (v) Subgrantee fails to meet the minimum funding requirements under the Employee Retirement Income Security Act or other such employee benefits plan, or (vi) Grantor has reason to believe Subgrantee has ceased operations associated with the Project. The events permitting early termination by Grantor shall be considered a default by Subgrantee and subject to the remedies available under paragraph (b) of this Section 12.

(f) Effects of Termination. Within sixty (60) days after termination of this Agreement following any default, Subgrantee shall provide Grantor with a final report setting forth the total expenditure of the Grant Funds by Subgrantee and the status of the Project at the time of termination. The final report shall be signed and certified in the same manner as the reports required by Section 8 of this Agreement. This reporting obligation shall survive the termination of the Agreement.

(g) Proportional Reduction. Upon determination by Grantor that Subgrantee has failed to comply with the investment and cost share requirements set forth in the ApplicationProject, Grantor may proportionally reduce the amount of grant funds due Subgrantee and require a refund of the amount of Grant Funds which exceed the proportion attributable to the level of performance achieved.

(h) Grantor's Expenses. Subgrantee shall reimburse Grantor for all expenses, including, without limitation, reasonable attorneys' fees, in connection with the enforcement of this Agreement.

13. Liability.

Grantee shall maintain liability and property insurance to cover actionable legal claims for liability or loss which are the result of injury to or death of any person, damage to property (including property of Grantor) caused by the negligent acts or omissions, or negligent conduct of the Grantee, to the extent permitted by law, in connection with the activities of this Agreement. Furthermore, each party to this Agreement agrees to be liable for the negligent acts or negligent omissions by or through itself, its employees, agents and subcontractors. Each party further agrees to defend itself and themselves and pay any judgments and costs arising out of such negligent acts or omissions, and nothing in this Agreement shall impute or transfer any such liability from one to the other.

14. Certification of Funds.

None of the rights, duties and obligations of the parties under this Agreement shall be binding on either party until all statutory provisions of the Ohio Revised Code including, without limitation, Section 126.07, have been complied with, and until such time as all funds have been made available and are forthcoming from the appropriate state agencies.

15. Notice.

Subgrantee must designate a Project Manager, who must be an employee of Subgrantee or an employee of its affiliate, and who will oversee the conduct of the Project activities at Subgrantee's offices or the Project site, and will be the primary person responsible for reporting in a timely manner to Grantor. At Subgrantee's election, Subgrantee may also designate an Administration Manager, who will be an employee of Subgrantee, and who will oversee administrative matters such as invoicing. The Grantor shall also designate a Project Manager and a Fiscal Manager, who shall be the persons to whom the Subgrantee's Project Manager submits reports and shall be responsible for monitoring the Project's progress. Any notice or report required or permitted to be given under this Agreement shall be deemed to have been sufficiently given for all purposes if mailed by first class certified or registered mail or sent by commercial delivery to the following addresses of the parties or to such other address as either party may hereafter furnish by written notice to the other party.

If to Grantor:

Ohio Development Services Agency
77 South High Street, 26th Floor
P.O. Box 1001
Columbus, Ohio 43216-1001
ATTN: Office of Energy

If to Subgrantee:

To the attention of the Grantee at the address
identified on the first page of this
Agreement.

If to Grantee:

With a copy to the Chief Legal Counsel of the Ohio Development Services Agency

16. Miscellaneous.

(a) Governing Law. This Agreement shall be governed by the laws of the State of Ohio as to all matters including, but not limited to, its validity, construction, effect and performance.

(b) Forum and Venue. Subgrantee irrevocably submits to the non-exclusive jurisdiction of any federal or state court sitting in Columbus, Ohio, in any action or proceeding arising out of or related to this Agreement, Subgrantee agrees that all claims in respect of such action or proceeding may be heard and determined in any such court, and Subgrantee irrevocably waives any objection it may now or hereafter have as to the venue of any such action or proceeding brought in such court or that such court is an inconvenient forum. Nothing in this Agreement shall limit the right of Grantor to bring any action or proceedings against Subgrantee in the courts of any other jurisdiction. Any actions or proceedings by Subgrantee against Grantor or the State of Ohio involving, directly or indirectly, any matter in any way arising out of or related to this Agreement shall be brought only in a court in Columbus, Ohio.

(c) Entire Agreement. This Agreement, including its exhibits and documents incorporated into it by reference, constitutes the entire agreement and understanding of the parties with respect to its subject matter. Any prior written or verbal agreement, understanding or representation between the parties or any of their respective officers, agents, or employees is superseded and no such prior agreement, understanding or representation shall be deemed to affect or modify any of the terms or conditions of this Agreement.

(d) Severability. Whenever possible, each provision of this Agreement shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this Agreement is held to be prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions of this Agreement.

- (e) Amendments. This Agreement may not be amended or modified except upon such terms as both parties may agree in a writing executed by authorized representatives of each party. Subgrantee may request changes in the line items of the Grantor's portion of the Budget. Grantor may administratively approve changes that do not exceed ten (10) percent of a line item of this Agreement's Budget for Grantor's funds. For such alterations to the Budget, Subgrantee must first request in writing and must receive Grantor's written approval. If Subgrantee wishes to make changes to any line item of the Agreement's Budget for Grantor's funds that exceed ten (10) percent, a written request with justification must be submitted to Grantor and approved by the Ohio Development Services Agency.
- (f) Forbearance Not a Waiver. No act of forbearance or failure to insist on the prompt performance by Subgrantee of its obligations under this Agreement, either express or implied, shall be construed as a waiver by Grantor of any of its rights under this Agreement or applicable law.
- (g) Ohio Based Services. Subgrantee agrees that, using its best efforts to the fullest extent possible, it will procure and use Ohio-based services, equipment and supplies and will report on same in its Quarterly Status Reports.
- (h) Pronouns. The use of any gender pronoun shall be deemed to include the other gender, and the use of any singular noun or verb shall be deemed to include the plural, and vice versa, whenever the context so requires.
- (i) Headings. Section headings contained in this Agreement are inserted for convenience only and shall not be used in construing this Agreement.
- (j) Assignment. Neither this Agreement nor any rights, duties, or obligations of Subgrantee pursuant to this Agreement shall be assigned by Subgrantee without the prior express written consent of Grantor, which shall not be unreasonably withheld. Any purported assignment not made in accordance with this paragraph shall be void.
- (k) Liability. Nothing stated in this Agreement shall be construed to create a joint venture, partnership, or agency as between the parties hereto; nor constitute a commitment or guarantee on the part of either party to discharge, assume or bear any responsibility, guarantee or liability for acts or omissions of any other person or entity, except where expressly set forth under the Ohio Revised Code or Federal Law; nor its officers, employees or agents of any party hereto. Neither is any party hereto authorized to transact any business or undertake any agreement, contract, representation or warranty in the name of or on behalf of the other.
- (l) Binding Effect. Each and all of the terms and conditions of this Agreement shall extend to and bind and inure to the benefit of Subgrantee, its successors and permitted assigns.
- (m) Survival. Any provision of this Agreement which, by its nature, is intended to survive the expiration or other termination of this Agreement, including, without limitation, any indemnification obligation, shall so survive and shall benefit the parties and their respective successors and permitted assigns.
- (n) Grantor's Authorized Representative. Grantor's Authorized Representative shall be the Director of the Ohio Development Services Agency (the "Director"), or such individual authorized by the Director in writing.

Signature: Each of the parties has caused this Grant Agreement to be executed by its authorized representatives as of the dates set forth below their respective signatures effective as of the Effective Date:

Subgrantee:

Grantee:

By: _____

By: _____

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Scope of Work Budget and Reporting Requirements

A Budget and a Timeline or Gantt chart shall be included as a part of each project's Statement of Work. The Timeline or Gantt chart shall note the due date of each Project Abstract, Quarterly Report, draft Final Report and revised Final Report. Closely correlated with each Project's Budget, the Subgrantee must include the Project's Projected Quarterly Grantor Cash Draw from the Grantor, based upon its Project cost projections. The Projected Quarterly Grantor Cash Draw must also separately distinguish and disclose the Project's estimated cost share draw during the course of the Project. Each Project's Projected Quarterly Cash Draw and the Management Budget Quarterly Cash Draw shall be provided by the Subgrantee to the Grantee upon final execution of each of the Sub-Agreements for the Research Projects. If the actual Grantor quarterly cash draw varies by greater than ten (10) percent in any quarter, it may cause a financial review of the Project's cost and cash draw projections.

All written Deliverables shall be produced in grammatically correct standard American English.

Each Principal Investigator for the projects of The Research Projects agrees to make presentations in various technical forums sponsored by the Grantor or similar entities, such as federal agencies or credible conference organizers.

EXHIBIT G TO GRANT AGREEMENT

Request For Payment

Grantee Name: _____ **Request Number:** _____
Grant Number: _____ **Request Date:** _____
Grantee Contact: _____ **Grant Start Date:** _____
Title: _____ **Grant End Date:** _____
Phone Number: _____ **Final Request:** _____ (Is this your final request? If so, mark "X")

<u>A. Budget Categories</u>	<u>B. Grant Award</u>	<u>C. Previous Grant Expenditures</u> From: _____ To: _____	<u>D. Current Grant Expenditures</u> From: _____ To: _____	<u>E. Grant Balance</u>	<u>F. Non-OCDO Funds Expended</u>	<u>G. Total Project Cost</u>
TOTAL:						

***All Requests For Payment Must Include Supporting Documentation For All Expenditures**

FINANCIAL STATEMENT	
1. Total Grant Award:	
2. Previous Grant Expenditures:	
3. Current Grant Expenditures	
4. Grant Balance Remaining:	

GRANTEE CERTIFICATION:

I hereby certify that the above amounts are true and accurate to the best of my knowledge and that all expenditures are solely for the purpose set forth in the agreement.

Date: _____

Signature: _____

Name: _____

Title: _____

PLEASE RETURN TO:

Ohio Development Services Agency
Office of Energy
77 South High Street, 26th Floor
Columbus, Ohio 43215

FOR STATE USE ONLY

FISCAL APPROVAL

An encumbrance is hereby certified to merit payment in accordance with conditions of the Agreement.

MONITOR APPROVAL

Performance of Grantee to date is hereby certified to merit payment and all reports and supporting documentation have been submitted in accordance with conditions of the Agreement.

Printed Name: _____

Printed Name: _____

Signature: _____

Signature: _____

Date: _____

Date: _____

Exhibit G, Form G-1 Estimated vs. Actual OCDO Quarterly Cash Draw

Request #	Invoice Quarter	Estimated Cost	Actual Cost
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
Total			

Document the estimated monthly cash draw from the Grantor projected over the life of the project and the actual cash drawn through the date of the current invoice. Must show in graph form, annotated with numbers.

**EXHIBIT H TO GRANT AGREEMENT
ROYALTY/PAYMENT AGREEMENT**

This Royalty/Payment Agreement (the "Agreement") is entered between the State of Ohio, Development Services Agency ("Grantor"), 77 South High Street, 29th Floor, P.O. Box 1001, Columbus, Ohio 43216-1001 and _____ ("Company"), located at _____, telephone _____; FTI number _____.

BACKGROUND INFORMATION

A. Grantor and the _____ have entered into a Grant Agreement identified as Grant Agreement No. _____, entitled _____ ("Grant Agreement") which will provide or has provided support to the development of new Technologies, Equipment and/or Processes as defined below. Subsequently, the Company and the _____ entered into a Subgrant Agreement dated _____ for services funded under the Grant Agreement. This Royalty/Payment Agreement (Payment Agreement) is entered into as a result of the requirements set forth in Section 2(d)(i) and Section 5(b) of the Grant Agreement.

B. This Royalty/Payment Agreement is subject to the Grantor's satisfaction that royalty or other payments to the Grantor will not cause the interest on the Coal Research and Development Bonds to become subject to federal income taxation.

C. In accordance with the terms of the Subgrant Agreement, the Company has agreed to make payments payments as agreed upon and set forth in this Payment Agreement in the event that the Company commercialize or otherwise generate revenue from the Demonstration Technology, Equipment and/or Process which were developed as the result of the assistance provided by Grantor during the term of the Grant Agreement.

D. The parties to this Agreement desire to set forth the terms of all royalties and payments in this Agreement.

STATEMENT OF THE AGREEMENT

In consideration of the covenants herein set forth, the parties hereby agree as follows:

1. **Definitions.** For the purposes of this Payment Agreement, the following terms shall have the prescribed meanings:

Demonstration Technology, Equipment, and/or Process: Each and every new technology, equipment, invention, process and/or unique modification/alteration that results from research and work occurring under and/or by reason of the Grant Agreement as well as any and all new materials and/or processes developed by research and work occurring under and/or by reason of the Grant Agreement, whether patented or not. (*If applicable to this project* - At present, this includes the following patents that may or will be affected by activities occurring by reason of the Grant Agreement: Nos. _____.) It is specifically understood and agreed that any future application or applications for new patent or patents that in any manner utilize research and work occurring under and/or by reason of the Grant Agreement are included in this definition.

Gross Revenues: This term includes, but is not limited to, any and all financial amounts and the value of goods and services whether received directly or indirectly by the Company or a subsidiary of the Company or an entity in which the Company has an interest as the result of or by reason of the sale, lease or licensing of Demonstration Technology, Equipment, and/or Process, in whatever form or use, and applications wherein Demonstration Technology, Equipment, and/or Process are used, designed, leased, sold, licensed, furnished, installed or exported by the Company, pursuant to or under rights owned by the Company now or in the future.

2. **Term of this Agreement.** This Agreement shall become effective on the effective date of the Grant Agreement. This Agreement shall survive the term of the Grant Agreement and shall be effective for the longer of a period of twenty (20) years or for the life of any patent obtained for any Demonstration Technology, Equipment and/or Process, including any patent extensions, resulting directly from the assistance provided by the Grant Agreement.

3. **Royalty/Payment Obligation.** The parties hereto acknowledge that, in exchange for the Grantor assuming part of the financial risk in the development of Demonstration Technology, Equipment, and Process under the Grant Agreement, the Company shall pay the Grantor royalties and payments as calculated in Section 4 of this Payment Agreement. For each and every Demonstration Technology, Equipment, and/or Process developed under the Grant Agreement, whether patented or not that generates gross revenues in any manner, the amount of the Company's obligation shall be calculated upon gross revenues as heretofore defined.

4. **Amount of Royalty/Payment Obligation.** The Company shall pay the Grantor an amount equal to:

Five percent (5%) of the Gross Revenues generated from the sale or lease of any and all equipment or items manufactured, fabricated or assembled directly incorporating or employing, the licensing and/or use in whatever form of Demonstration Technology, Equipment, and/or Process;

Alternatively, the Company may buy out this royalty obligation by reimbursing to the Grantor a sum three (3.0) times the Grant Agreement amount set forth in Section 1 (a) of the Grant Agreement.

5. **Ownership of Other Technology.** It is understood that the Company is the sole owners of their respective existing background technology, patents, disclosures, trade secrets, drawings, computer programs, design standards, and process technology. The Grantor shall have no rights of any kind in reference to any technology developed prior to or outside the term of the Grant Agreement. However, the Grantor shall have rights to subsequent technology developments that are substantially based upon the work that occurred under the Grant Agreement.

6. **Schedule of Payments.** The Company shall make annual payments to the Grantor in the amounts as calculated under the terms of paragraph 4 of this Payment Agreement. Payment for any given year is due on March 31st of the following year. Payments shall be in the form of a check made payable to: "State of Ohio Coal R&D Bond Debt Service."

7. **Annual Reporting Requirements.** The Company shall submit, a written report, not later than March 31st of each year, directly to the Grantor, or its successor, which shall pertain to and cover the previous one year period and shall include the following:

A. Both the total dollar amount charged for and actually received for any and all sales and/or leases of equipment and items manufactured, fabricated or assembled as a result of commercialization of each and every Demonstration Technology, Equipment, and/or Process developed under the Grant Agreement;

B. Quantities and descriptions of the equipment and/or items sold and/or leased;

C. Both the total dollar amount charged and actually received in the form of fees for the licensing and/or use, in whatever form, of each and every Demonstration Technology, Equipment, and/or Process developed under the Grant Agreement.

D. Quantities and/or descriptions of transactions under which fees referred to in subparagraph C above occurred. The actual cost of expenses to file and maintain a patent on the Demonstration Technology, Equipment and/or Process during the year.

E. The amount being remitted to the Grantor.

If no such activity occurred during the annual period, the Company shall submit a report so stating. After the first ten (10) years, if the Company has had no gross revenues for a consecutive three (3) year period of time, the Company may cease its annual reporting to the Grantor. If, however, after that period of time the Company receives revenues, the payment and reporting requirements shall resume.

8. Failure to Submit Annual Reports. If the Company fails to submit the required Annual Report required in Section 7 of this Agreement and such breach continues uncured for more than thirty (30) days, Grantor may recover, and Grantee shall pay, as liquidated damages for the breach, an amount equal to \$500 for each month or part of a month that the report is past due.

9. Final Report. At the completion of the twenty (20) year term or the applicable period as defined in paragraph 2 of this Payment Agreement, a comprehensive final summary report from the Company shall be submitted to the Grantor listing each year's activities and total payments, including those years where no activity or payment took place (this may be in the form of a descriptive cover letter and spread sheet).

10. Records, Access, and Maintenance. The Company shall establish and maintain, for at least five (5) such records as are required by the Grantor, including but not limited to, financial reports, and all other relevant information. The records required by the Grantor with respect to any questioned cost, audit disallowances, litigation or dispute between the Grantor and the Company shall be maintained for the time needed for the resolution of said question. In the event of early termination of this Payment Agreement or if for any other reason the Grantor shall require a review of the records related to the Demonstration Technology, Equipment and/or Process, Company shall, at its own cost and expense, segregate all such records related to the project from its other records of operation.

11. Audits and Inspections. At anytime during normal business hours and upon written notice and as often as the Grantor may deem necessary, Company shall make available to the Grantor (or its designee) for examination by appropriate state agencies or officials all of its records with respect to matters covered by this Payment Agreement and shall permit the Grantor or its agents to audit, examine and make excerpts or transcripts from such records.

12. Liability. Neither party shall be liable to the other for any indirect, incidental, special or consequential damages arising from any cause whatsoever, including, without limitation, lost profits, loss of use of capital or revenue, loss of use of equipment, cost of replacement equipment, or damages suffered by customers of the Company whether such liability is based upon or arises under contract, tort, negligence, strict liability, extra contractual liability, or otherwise.

13. Miscellaneous.

A. **Governing Law.** This Payment Agreement shall be governed by the laws of the State of Ohio as to all matters, including but not limited to matters of validity, construction, effect and performance.

B. **Forum and Venue.** All actions regarding this Agreement shall be forumed and venued in a court of competent subject matter jurisdiction, in Franklin County, Ohio.

C. **Entire Agreement.** This Payment Agreement constitutes the complete understanding of the parties and merges and supersedes any and all other discussions, agreements and understandings, either oral or written, between the parties with respect to the subject matter hereof.

D. **Severability.** Whenever possible, each provision of this Payment Agreement shall be interpreted in such manner as to be effective and valid under applicable law, but if any provision of this

Agreement is held to be prohibited by or invalid under applicable law, such provision shall be ineffective only to the extent of such prohibition or invalidity, without invalidating the remainder of such provisions of this Agreement.

E. Notices. All notices, consents, demands, requests and other communications which may or are required to be given hereunder shall be in writing and shall be deemed duly given if personally delivered or sent by United States mail, registered or certified, return receipt requested, postage prepaid, to the addresses set forth hereunder or to such other address as the other party hereto may designate in written notice transmitted in accordance with this provision.

1). In case of the Grantor, to:

Ohio Coal Development Office
Ohio Development Services Agency
77 South High Street, 26th Floor
P.O. Box 1001
Columbus, OH 43216-1001

With copy to Chief Legal Counsel

2). In case of Company, to:

F. Amendments or Modifications. Either party may at any time during the term of this Payment Agreement request amendments or modifications. Requests for amendment or modification of this Payment Agreement shall be in writing and shall specify the requested changes and the justification of such changes. The parties shall review the request for modification in terms of the regulations and goals relating to the Payment Agreement. Should the parties consent to modification of the Payment Agreement, then an amendment shall be drawn, approved, and executed in the same manner as the original agreement.

G. Pronouns. The use of any gender pronoun shall be deemed to include all the other genders, and the use of any singular noun or verb shall be deemed to include the plural, and vice versa, whenever the context so requires.

H. Headings. Section headings contained in this Payment Agreement are inserted for convenience only and shall not be deemed to be a part of this Agreement.

I. Assignment. Neither this Payment Agreement nor any rights, duties, or obligations described herein shall be assigned or subcontracted by Company without the prior express written consent of the Grantor.

This Payment Agreement is entered into by the parties hereto this _____ day of _____, ____.

SubGrantee

**State of Ohio
Development Services Agency**

Name:
Title:

Christiane Schmenk
Director
Ohio Development Services Agency

OCDO PROJECT QUARTERLY STATUS REPORT FORMAT

On the Subgrantee's/Grantee's letterhead, provide the following information on the first page of the report:

1. Project Title
2. Proposal Number
3. Author(s) of the Report
4. Telephone Number of Author(s)
5. Email Address of Author(s)
6. Status Report Number
7. Reporting Period (start date and end date)

The body of the report shall briefly but thoroughly discuss the following items:

I. Describe the **work performed and results obtained during** the reporting period. Provide your best estimate of the **percentage of the project which has been completed** through the period. In the narrative, make reference to applicable sections of the Statement of Work and/or the Milestone Plan/Gantt Chart from the Subgrantee's application, as well as Section III of your previous Status Report. Include highlights of the noteworthy results and pertinent test or design data, along with a discussion of the extent to which the data meet expectations. Also include a discussion of how the results affect the overall project, and how the results may have changed from those which were anticipated.

II. Cite any **problems or circumstances** (e.g., equipment malfunctions, delivery delays, unanticipated expenditure, etc.) which have or will impede or accelerate timely progress and anticipated results or result in failure to meet project completion date. Indicate whether there are any **anticipated problems with the project budget**, and in particular, **with ODSA's portion of the project budget**, as set forth in the Grant Agreement. Include a description of each problem along with a discussion of how the problem was or will be handled. State whether or not such problems will impede the timely progress and anticipated results of the project.

III. Outline the **work to be performed** over the next Reporting Period. Include, as appropriate, supporting information such as planned or anticipated meetings with cosponsors, subcontractors or project advisory groups, planned test matrices, etc.

OCDO FINAL REPORT FORMAT

Final Report. Project Final Reports are very important documents. They must be stand alone pieces that completely detail the project from start to finish, something someone with no prior knowledge of the effort can pick up and completely follow. Further, they must be written in grammatically correct English. Additionally, to further OCDO's technology transfer efforts, these reports (with the exception of any proprietary/trade secret data) are routinely submitted to the National Technical Information Service and other places for addition to libraries and computerized data bases. These papers bear not only the OCDO's, your organization's and your name, but are indicative of the quality of work OCDO and your organization support and the caliber of work you produce.

Trade Secrets. The Grantee must fully describe all aspects of the project such that they can be followed and verified by the Grantor. However, be assured that the Grantor is prohibited from disclosing any information that is deemed to be a trade secret as defined in Ohio Revised Code Section 1333.61. It is the Grantee's sole responsibility to identify and CONSPICUOUSLY MARK on each page those phrases, equations, diagrams or other data that the Grantee has determined to be a trade secret. Wholesale marking of a document as "Confidential" is not applicable; the report must be redacted line by line on only ONE copy of the total number of copies of the Final Report due to the Grantor. Alternatively, trade secret information may be incorporated into an appendix to the Final Report, which must also be marked "trade secret."

The following shall be construed by the Grantor as the minimum information required in the Final Report. The Grantee should include any additional information deemed pertinent to fully and thoroughly report on the project.

Cover

The cover of the document shall bear the:

- A. Project title;
- B. Name, address, and telephone number of the Grantee;
- C. Name and title of the Project Manager;
- D. Term, "Final Report;"
- E. Grant Agreement Number;
- F. Statement, "This project was funded in part by the Ohio Coal Development Office of the State of Ohio;"
- G. Date of the document's submission to the Ohio Coal Development Office;
- H. Period of Performance;
- I. Statement, "This report [does/does not] contain Trade Secret/Proprietary Information."

At the Grantee's discretion, the cover of the document may also bear the names of:

- J. Significant other employees or project investigators of the Grantee which the Grantee wishes to credit;
- K. Other contributing project co-sponsors.

Disclaimer

Grantee shall include a disclaimer immediately after the cover page, which shall read as follows. For projects with multiple co-sponsors, all co-sponsors may be included in the disclaimer:

“DISCLAIMER

This report was prepared by (Grantee) with support in part by a grant from the Ohio Coal Development Office. Neither the State of Ohio nor any of its agencies, nor any person acting on behalf of the State:

1. Make any warranty or representation, express or implied, with respect to the accuracy, completeness, or usefulness of the information contained in this report, or that the use of any information, apparatus, method, or process disclosed in this report may not infringe privately-owned rights; or
2. Assume any liabilities with respect to the use of, or for damages resulting from the use of, any information, apparatus, method or process disclosed in this report.

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; nor do the views and opinions of authors expressed herein necessarily state or reflect those of the State of Ohio or its agencies.

NOTICE TO JOURNALISTS AND PUBLISHERS: Please feel free to quote and borrow from this report, however, please include a statement noting: “Funding for this project was provided, in part, through the Ohio Coal Development Office.”

Report Abstract

A summary paragraph that describes the impact of the project on Ohio coal use.

Table of Contents

The Final Report shall include a table of contents, including major section headings, illustrations, tables, charts, any addenda, appendices and supporting documentation, and identifying their location by page number.

Executive Summary

The Executive Summary shall:

- A. Summarize the project results;
- B. Specifically state whether the project proceeded as anticipated or achieved expected results;
- C. Describe the implications of the project's results on the near future commercialization of the technology or process and estimate the timetable for same;
- D. Identify the cost of this technology or process in terms of dollars per ton of sulfur dioxide, nitrogen oxide, and/or other pollutants removed, and dollars per ton of coal;
- E. Describe the wastes and byproducts generated by the process, methods for their disposal or reuse, and estimated waste disposal costs on a dollar per ton of sulfur dioxide and nitrogen oxides or other emissions removed, and on a per ton of coal basis;
- F. Estimate/quantify the effects of this project on Ohio coal use and/or by-products reuse;
- G. Briefly describe anticipated next steps following this project, including technical and commercial/marketing, including identification of who potentially would participate in taking such steps.

Full Report

The Full Report shall include, at a minimum, the following information:

Introduction

- A. A "problem statement," including the general background or concern(s) which led to the project and proposal;
- B. The overall objective of the Grantee's total program, and the specific objective(s) of the work performed under this ODSA grant (i.e., a brief discussion of what was expected to be learned, accomplished or proven, technical and economic targets to be achieved in this project);
- C. A brief discussion of the involvement and contributions of other co-sponsors.

Technical Discussion

- D. A description of the technology or process;
- E. If applicable, a description of the plant/work site setup and how this project fits into it;
- F. The approach taken to meet the project objectives;
- G. A detailed description of the actual procedures used or work performed to obtain project results;
- H. A description of any problems or breakthroughs encountered during the course of the project;
- I. detailed project results and analysis of same in comparison to the project's original target performance goals, including a discussion of the implications of these results;
- J. A description of all waste and byproducts, including their chemical components, generated by the process, an estimate of the quantity of same, and a description of the relationships between material input (sulfur in coal, ash in coal, sorbent, etc.) and the material outputs using a material balance or similar method;
- K. A discussion of the options for costs, handling, disposal, or reuse of the wastes and byproducts;
- L. Documentation/calculations/assumptions used to determine A through G in the Executive Summary.

Marketing/Commercialization Discussion

- M. Describe who/what the market is for this project's technology/process, extent of the opportunities for application, and the anticipated marketing/commercialization program;
- N. Discuss the potential market for use of the byproducts from technology/process;
- O. Characterize how the project's results will affect the speed with which the marketplace will incorporate the technology/process;
- P. Calculate the effects of these results on near-term increased use of Ohio coal, include estimated tonnages and timetables;
- Q. Compare with similar competing technologies or processes the costs of sulfur dioxide, mercury nitrogen oxides, and other criteria pollutants removed, or--for coal cleaning processes--the costs of sulfur, mercury, ash, or other criteria pollutant removal, both in dollars per ton of coal and dollars per ton of pollutant removed;
- R. Describe immediate next steps, both technical and marketing;
- S. Develop/describe a marketing plan of action for this technology.

Final Budget Summation

- T. A table noting the total project budget by major category and contributions of all co-sponsors, including Grantee;
- U. A table detailing by line items the expenditure of ODSA funds on this specific project.

Appendices

Appendices shall be included, as appropriate, containing technical, analytical and test data, equipment/material specifications, technical drawings, and/or other information the Grantee deems necessary to fully describe the project and to verify the project's results.

**OHIO COAL DEVELOPMENT OFFICE
PROJECT EMPLOYMENT DATA**

Grantee _____

Project Name _____

Grant Agreement No. _____ Term: From _____
To _____

1. Total number of employees working on this project _____
2. Total number of minorities (American Indian, Eskimo, Aleut, Asian/Pacific, Black, Hispanic) _____
3. Total number of male employees
 - a. American Indian, Eskimo, Aleut _____
 - b. Asian/Pacific _____
 - c. Black _____
 - d. Hispanic _____
 - e. Other _____
4. Total number of female employees
 - a. American Indian, Eskimo, Aleut _____
 - b. Asian/Pacific _____
 - c. Black _____
 - d. Hispanic _____
 - e. Other _____

OHIO COAL DEVELOPMENT OFFICE
ANNUAL PROJECT ABSTRACT
AS OF DECEMBER 201__

1. **PROJECT SPONSOR:**
(entity name/ mailing address)
2. **PROJECT MANAGER/TITLE:**
3. **GRANT NO.**
4. **PHONE:**
EMAIL:
5. **PROJECT TITLE:**
6. **PROJECT TERM FROM:** _____ **TO:** _____
7. **PROJECT UPDATE** _____ **--OR--** **FINAL REPORT** _____
8. **BUDGET:**

<u>CO-SPONSOR'S NAME</u>	<u>COST-SHARE</u>
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
_____	\$ _____
TOTAL PROJECT VALUE:	\$ _____

ABSTRACT

9. **OVERVIEW OF PROJECT AND OBJECTIVES:**
10. **WORK TO DATE AND CONCLUSIONS:**
11. **PLANS FOR COMING YEAR:**
12. **HIGHLIGHTS/ACCOMPLISHMENTS:**
13. **ARTICLES/PRESENTATIONS:**

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 Ohio Board of Regents
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 Columbus, Ohio 43215
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 Fax: 614-466-5866
 Email: handrist@regents.state.oh.us
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Ohio Coal Development Office

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 Ohio Development Services Agency/Office of Energy
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 Email: Chad.Smith@development.ohio.gov
 Website: http://development.ohio.gov/bs/bs_ohiocoaldev.htm

Ohio Third Frontier

Norm Chagnon, Ph.D.

Deputy Chief

Ohio Development Services Agency/Office of
Technology Investments

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Email: Norm.Chagnon@development.ohio.gov

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Thomas Edison Program - Centers

Frank Svet

President

Edison Materials Technology Center

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Email: fsvet@emtec.org

Website: <http://www.emtec.org>

Updated: 12/21/2011

Patent and Commercialization Update This will be a one page document submitted to ODSA for the first time at the end of a project and annually thereafter for a period of ten years on September 30. This document will be placed in the project file and not posted on the ODSA web site. This document may contain trade secret information. However, the PI must clearly identify trade secret information.

1) Format and Content

For many of the projects, the work has continued over a number of funding cycles. It is ODSA's intent that the "Patent and Commercialization Update", be a record of long-term effort on a given body of work as the work continues through a number of funding cycles. Therefore, assuming a Project continues for a full two years it will report a list of patents filed and patents received for work with the Project and all patents received for work in the previous projects on this topic. The report will start with a table that identifies all projects associated with this topic using the format in Table 1.

Table 1. Patent and Commercialization Update

Consortium and Project #	Principal Investigator and University	Project Title	Patents Received Date and Patent number

Following this table will be brief discussion of the university's plans for commercialization of the technology. Abstracts of patents filed and pending will be attached to this document.

2) Wavier of this Requirement

In the third year after the completion of a project, this provision may be waived by Grantor if the university or a Subcontractor informs the Grantor in writing that the research topic in question has been abandoned as nonproductive research.

3) Coordination with an ODSA grant for continuation of the work for another two years

It is the intent of ODSA that the "Patent and Commercialization Update" be a report on a body of work rather than a different report for every funding cycle of the consortium. At that time, Table 1 above would be expanded to include future awards from the Consortium and the table would be amended as in the revised example table below.

Table 1. Patent and Commercialization Update

Consortium and Project #	Principal Investigator and University	Project Title	Patents Received Date and Patent number

The discussion following the table would address commercialization of the body of work rather than specific projects of the table. This will be submitted annually after the end date of the Project for a period of 10 years on September 30 or until waived by Grantor.