REQUEST FOR PROPOSALS (RFP)

RFP Number: DSA- ENERGY AND REDEVELOPMENT #15-01

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

2015 Ohio Coal Research Consortium (OCRC 2015)

- Request For Proposal (RFP) Released – January 14, 2015
- Full proposals due – February 16, 2015
- Successful projects announced – June 1, 2015
- Projects start – September 1, 2015

Submit proposals to:

Ohio Development Services Agency
Ohio Coal Development Office
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 eighteen (18) pages and six (6) attachments, totaling seventy eight (78) pages. Please verify that you have a complete copy.

Ohio | Development Services Agency

SECTION I. OVERVIEW

A. Background

Most of Ohio's coal is burned in older electric generation plants that have been retrofitted to meet existing environmental requirements. The United States Environmental Protection Agency (U.S. EPA) has proposed limits on greenhouse gas emissions from new power plants and limits on existing power plants. For new power plants, the U.S. EPA is proposing that natural gas combined cycle electric generating units (greater than 850 MMBtu/H) should be limited to 1,000 pounds of CO_2 per MWh. Natural gas-fired combined cycle units less than or equal to 850 MMBtu/H and coal-fired units (greater than or equal to 25 MWe), would be limited to 1,100 pounds of CO_2 per MWh. These proposed standards can readily be achieved in natural gas-fired plants without the addition of CO_2 capture technology. However, coal-fired plants would be required to reduce carbon emissions by approximately 30-40 percent (depending on the cycle selected). With stricter standards for particulate matter, SO_2, mercury, air toxics, NO_x and new emission standards for CO_2 promulgated by the U.S. EPA[1], the electric generation industry has been and is expected to continue to switch to natural gas as a fuel source for electric generation. The final rule for new power plants is expected in early 2015. In June, 2014, the U.S. EPA proposed separate regulations for existing power plants that aims to cut CO2 emissions from existing power plants to 30 percent below 2005 levels by 2030. 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.

Principal Investigators (PI) are advised to keep current with the latest air emissions restrictions enacted or proposed by the U.S. EPA that impact electric generation, or industrial end-users, so that PI's research and work will remain relevant, including CO_2, SO_2, NOx, 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 colleges/universities to submit proposals for the 2015 Ohio Coal Research Consortium (OCRC).

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 college/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.

[1] http://www2.epa.gov/carbon-pollution-standards

C. Goals and Objectives

PIs should exhibit an awareness of the anticipated environmental restrictions end users will have to meet and the cost of meeting those 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 chemical feedstock;
- Reduce or control the emissions resulting from the use of Ohio coal that can meet proposed emission reduction regulations; or
- Lower the cost of controls, and/or increase the effectiveness of controls that are installed on new or existing power plants that meet proposed emission reduction regulations.

With the overarching goal of:

- Generating results that will contribute toward accelerating development and supporting 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 and proposed environmental regulations which limit air emissions, water effluents, and solid waste disposal practices associated with coal combustion, proposals are solicited that will address research to expand the current uses for coal beyond combustion to raise steam to produce electricity. The Principle Investigator (PI) can propose new uses for coal as a starting material for production of fuels, chemical feedstocks, and other high value end uses. PIs 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 product[2]. PIs 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. <u>Mine Productivity</u> – 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. Economic methods to reduce greenhouse gas emissions during coal mining and coal preparation plant operations are sought.

2. <u>Coal End Uses</u> – 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 competiveness 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

[2] PIs 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/).

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 utilize these breakthroughs.

3. Improving Power Plant Efficiency – One manner to reduce CO_2 emissions per kilowatt is to develop economical improvements to increase the conversion efficiency at existing or new power plants independent of CO_2 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 1 percent. Research is needed into determining the economic and process issues associated with reducing the cold end temperature.

   For advanced technology systems, such as integrated gasification combined cycle or ultra-supercritical plants, evaluation of the potential to reduce the capital and annual revenue requirements to lower the parasitic energy demand or improve plant capacity factor by reducing outages for Ohio bituminous coal are sought. For example, types of systems to reduce parasitic energy demand that can be evaluated such as 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 CO_2 control[3]. Current economic analyses suggest that CO_2 control for a coal-fired boiler would add between 50 and 80 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 electricity[2] for new plants. Novel ways to reduce the cost of CO_2 control for new generating units are 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.

   If U.S. EPA finalizes a standard of performance for new natural gas-fired combined cycle (NGCC) systems which fire at more than 850MMBtu/H of 1,000 pounds of CO_2 per MWh and a new coal-fired plant or NGCC unit firing less than or equal to 850 MMBtu/H at 1,100 pounds of CO_2 per MWh, then the NGCC system will not require any greenhouse gas controls while the coal-fired plant would be required to remove about 30 percent of the greenhouse gas emissions based on an ultra-supercritical boiler design with a heat rate of 8600 Btu/KWh. This would result in increased capital and operating costs for the coal plant, compared to the natural gas-fired plant. The U.S. EPA has also proposed greenhouse gas emission standards for existing electric generating units in June 2014 and is expected to finalize standards by 2015. There are several options made available by the U.S. EPA to states on how to meet the proposed emission reduction targets for existing power plants. Those include; increase plant efficiency, use low-emitting power sources, use more zero or low-emitting power sources, and use electricity more efficiently.

5. Sequestration of CO_2 – To have zero or low-emitting power sources from coal, CO_2 must be captured and effectively sequestered. Sequestration is dependent on the quality of the cap rock above the geological zone used for sequestration. Additionally, there are chemical differences in the composition of the sequestration zone, which can

[3] 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

limit the volume of CO_2 sequestered in a given strata. The OCOD seeks projects that attempt to better understand the behavior of CO_2 when stored in Ohio's geologic formations.

6. Markets for CO_2 – Using the captured CO_2 for enhanced oil recovery is a well-known use of carbon dioxide. Research to determine enhanced oil recovery applications in Ohio and factors that limit the Ohio enhanced oil recovery applications are requested. In addition to enhanced oil recovery, Ohio is seeking innovative ideas for new markets for CO_2 such as CO_2 as a chemical feedstock, non-geological storage of CO_2 that immobilizes CO_2 permanently by producing a stable solid useful material, or other novel applications.

7. Environmental Issues – In addition to CO_2 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, etc. 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 waters are sought. Other environmental issues include:
    a. Water intake structures that reduces impacts. The U.S. EPA is currently evaluating the need to redesign water intake structures to reduce fish kills, and the feasibility of using of lower quality water at power plants.
    b. Solid waste. 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.).
    c. Treatment of flue gas to remove several pollutants in a single step (SO_2, SO_3, mercury, NOx, particulate matter, fine particulates and HCl). Preference will be given to projects that propose processes that:
        i. Achieve a 20 percent cost reduction compared to current technology.
        ii. Combine CO_2 and one or more of SO_2, SO_3, mercury, NOx, particulate matter, fine particulate matter, and HCl control that is included in a single reaction step.
        iii. Mercury control for plants where the emission limits is 0.0002 lbs/Gwe (gross)[4]. For new plants, the level of mercury control required is 99.5+ percent.
        iv. Designing selective catalytic reduction (SCR) catalysts to achieve 90+ percent NOx control while simultaneously oxidizing 99 percent of the coal elemental mercury to the oxidized state in the flue gas downstream of the air preheater.
        v. Baghouses or electrostatic precipitators (ESP) which are capable of 0.01 lbs/MMBtu particulate matter emission rates which is the designated emission rate for equivalent compliance with the trace element MACT standard.
        vi. More wear-tolerant, low-pressure-drop, ultra-high-efficiency baghouses.
        vii. Improved performance of ESP for applications not suited to baghouses or amenable to upgrading in existing power plants.
        viii. Test and model wet and dry scrubbers which can also be used to remove hazardous air pollutants. 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-

[4] EPA MACT rule 2011. (Section 40CFR Part 63)

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.

ix. Acid mine drainage mitigation/remediation.

8. Techno-economic Studies for Emerging Technologies – Studies must follow the most recent and available U.S. DOE fossil energy baseline report cost assumptions. An example of a techno-economic study funded by the U.S. DOE report is titled: **Assessment of Hydrogen Production with CO2 Capture Volume 1: Baseline State of the Art Plants DOE/NETL-2010/1434.** All studies must be independently conducted. The Principal Investigator and the independent organization performing the techno-economic study must execute Confidentiality Agreements and Non-disclosure Agreements.

9. 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 recommended projects to the ODSA Director. ODSA will make final determinations and announce successful proposals to the CRC chair.

Once projects are reviewed by the TAC and recommended for funding, and projects are approved by ODSA Director, CRC members 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 Ohio Development Services Agency (ODSA) funding is expected to be available under this RFP.

B. Maximum Award Size

The maximum ODSA award for an individual project awarded funding under this RFP will be limited in accordance with the following parameters:

- Up to $160,000 for a two-year project, or up to $80,000 for a one-year project.

C. Cost Share

PIs are expected to contribute or secure from third parties other than the state of Ohio cash and/or in-kind funding. ODSA's maximum contribution towards a project will be:

- Up to 80 percent of the total project cost.

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

PIs 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 pages. The letters must adhere to the following parameters:

- Be submitted on the letterhead of the collaborator or cost share provider;
- Include the name of the Principal Investigator (PI), 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 college/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 PI; 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 awards under this RFP.

E. Period of Performance

It is anticipated that grants will cover project activities that will be performed for a period of one or two years. It is anticipated that the majority of projects will include a full two-year research period. However, to ensure sufficient progress, a review (review of status reports that are described on page 17, 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 is expected to start in September 2015.

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 80 percent of its actual cost. Upon successful completion of the project, title to the equipment will be granted to the college/university. PIs may count the other 20 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 the academic year salary rate 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 college/university and/or by a third-party funder and counted toward the required cost share.
3. Graduate student costs shall be at the college/university'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 exceed the college/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.
7. Applicants may not submit the same project to ODSA more than once per funding cycle. This includes submitting the same project to both the 2015 OCRC and the 2015 Demonstration and Pilot Program RFP. Whichever application is received later will be rejected and returned to the applicant.

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 Development Services Agency
Attn: Ohio Coal Development Office — OCRC 2015 RFP
77 South High Street
P.O. Box 1001
Columbus, OH 43216-1001

- Proposals must be received at the location specified above on or 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 ¾ 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.

PIs 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 PI's responsibility to ensure timely submission of a complete proposal. 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. 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 ODSA and any information submitted in response to this RFP will not be returned to the PI.

ODSA reserves the right to:

- Accept or reject any and all proposals if ODSA 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 PIs, 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, ODSA reserves the right to request additional information from any or all PIs, sponsoring college/university, collaborators or others acting on their behalf to assist in its evaluation process.

PIs may make inquiries or seek clarifications regarding this RFP any time after the RFP is released, but questions must be received 14 days before the last day proposals are accepted (subject to change). To make an inquiry, PIs must submit written questions to 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. PIs who submitted the inquiry will not receive an email response to the question. The questions and answers will be posted with a link 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: PI, sponsoring college/university, 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 PIs responding to this RFP are expected to limit their contact to those ODSA staff with whom they ordinarily interact regarding the administration of OCDO programs and outstanding grants. PIs, 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 PI, sponsoring college/university, collaborator and/or others acting on their behalf makes prohibited contact, ODSA in its discretion may subject the PI, sponsoring college/university, and/or proposal to elimination from the RFP process.

B. Financial and Trade Secret Information

Any information submitted with the proposal, which the PI feels is a trade secret as that term is defined in Ohio Revised Code § 1331.61 or financial or commercial information under Ohio Revised Code §122.36, must be conspicuously designated as such.

ODSA has the authority and responsibility to protect trade secrets and other financial or commercial information. In the event that the materials or data submitted are deemed to consist of trade secrets or other financial or commercial information, as defined by the Ohio Revised Code, Sect. 1333.61 and as set forth in Ohio Revised Code, Sect. 122.36, then only those portions of the document can be protected from disclosure by ODSA and duly noted as such.

It is sole responsibility of the PI to conspicuously mark such items as a trade secret or financial or commercial information. Attach a summary sheet in your proposal that lists each page that includes such information and the number of occurrences of such information on that page.

If any information in the proposal is to be treated as a trade secret or commercial or financial information, the proposal must: Identify each and every occurrence of such information within the proposal with an asterisk before and after each line containing such information and underline the specific information itself.

- Respond positively to Question Number 6 on the Proposal Summary, Attachment 2, disclosing that the proposal contains trade secret or commercial or financial information.
- Include a page immediately after the Proposal Summary, Attachment 2 that lists each page in the Proposal that includes trade secret or commercial or financial information and the number of occurrences of such information on that page.

The public abstract must not contain any trade secret or financial or commercial information.

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 colleges/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. Sponsoring college /university is not 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 a sponsoring college/university authorized individual;
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 a continuation of existing or previously funded OCRC project(s). In which case, they may submit proposal(s) to continue funding for their existing project(s) and one additional proposal for their new project.
3. PIs who submit more than two proposals are required to rank the preference of their proposals (1st, 2nd, 3rd, 4th etc.) on the Proposal Summary page. If project recommendations for funding exceed the available funds listed in Section II, PIs who submit more than two proposals will have their 3rd and subsequent proposals removed from consideration.

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 a sponsoring college/university authorized individual. 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 sponsoring college/university must provide detailed information explaining such lien, levy, lawsuit, or investigation. The sponsoring college/university 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 the cover letter does not count toward the 10-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 current state 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 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 10-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, or relevant to the new proposal. 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 PIs cost share must be presented by line item using Attachment 3 (the total ODSA funds and college/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 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 scope of work should follow the scope of work. This chart will not count toward the 10-page limit.

11. Leveraging of ODSA Funds – describe any opportunities to find synergy among potential sponsors. PIs 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 institution/company is currently a party regarding coal or any type of coal technology. In addition, please describe any material litigation that your institution/company has been involved in over the last three years regarding coal or coal technology (Attachment 5 Required Forms and Questions). Finally, please provide (as an appendix) a list and describe litigation brought or threatened against your institution/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 11.

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

These criterion 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 current 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 goal 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 college/university would be expected to maintain its cost share at 20 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 party 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 are available to the PIs 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 consumers of Ohio coal, will lead to increases in the use of Ohio coal in an environmentally acceptable manner and has the potential to 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 listed on page 2 of the RFP.

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 PI. ODSA shall not contribute in any way, including cost share, for 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 PI 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. Administrative reports, indicating project employment and cost projections, must be submitted.
4. PI 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.
5. Each college/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 grant 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 PI 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 minor 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.

Article 8.15 of the Ohio Constitution authorizes the ODSA Director to include provisions to share in any royalties, profits, or other financial gains resulting from the research and development conducted and supported by this program. The details of which can be found in Exhibit H, Royalty/Payment Agreement. .

D. Requests for Exceptions to the Grant 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 PI'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 may 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.

After thorough discussion with the PI, ODSA will identify in writing exceptions that have been accepted, modified or rejected. If the PI 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 O_2, 12-15 percent CO_2, 5-7 percent H_2O, 2000-3000 ppm SO_2, 150-500 ppm NO (depending on the use of low NOx burners or staged combustion). There are times when the O_2 levels can approach 0 percent locally. These low O_2 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 NH_3 injected
- Can oxidize 0.5-1 percent of SO_2 to SO_3

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 SO_3 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 SO_2 removal typical, 95+ percent typical

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

Proposal Summary

PI Proposal Preference Rank _____ (Only complete if submitting more than two proposals)

OCRC ID # 2015 _____ (Leave Blank)

1. Project Title

2. Sponsoring College/University
   Address
   City/State/Zip
   Authorized Signature | Title

   Co-sponsoring Agency
   Address
   City/State/Zip
   Authorized Signature | Title

3. Principal Investigator | Title
   Phone | Fax
   Email

   Co-Principal Investigator | Title
   Phone | Fax
   Email

   Co-Principal Investigator | Title
   Phone | Fax
   Email

4. Project Location

5. Continuation Work? If yes, indicate Year 3 Project Number

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			0.00%
Sponsoring College/University			0.00%
Co-sponsor #1			0.00%
Co-sponsor #2			0.00%
Co-sponsor #3			0.00%
Co-sponsor #4			0.00%
Co-sponsor #5			0.00%
Total Project Cost		$0.00	0.00%

Project Budget Summary[1] **Attachment 3**

Categories	Entity Name	Phase 1	Phase 2	Phase 3	Phase 4	Total
Total Personnel		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00
Total Fringe		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00
Total Equipment		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00
Total Supplies		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00
Total Contractual		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00

Total Travel		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00

Total Other (Tuition waiver/postage/phone)		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00

Total Indirect Cost		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00

Total Project Cost		$0.00	$0.00	$0.00	$0.00	$0.00
ODSA						$0.00
Sponsoring University						$0.00
Co-sponsor 1						$0.00
Co-sponsor 2						$0.00
Co-sponsor 3						$0.00
Co-sponsor 4						$0.00
Co-sponsor 5						$0.00

		$0.00	$0.00	$0.00	$0.00	$0.00
						$0.00
						$0.00
						$0.00
						$0.00
						$0.00
						$0.00
						$0.00

[1] Add pages as necessary to fully disclose the budget.

Attachment 4

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: Christian Palich	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: Krista West	Ohio House of Representatives	Ohio House Majority
Representative Jack Cera	Ohio House of Representatives	Ohio House Minority
Alternate: Pam Wilson	Ohio House of Representatives	Ohio House of Representatives
Commissioner Lynn Slaby	Public Utilities Commission of Ohio	PUCO
Alternate: Chris Zoeller	Public Utilities Commission of Ohio	PUCO
Craig Butler	Ohio EPA	EPA, Ex Officio
Alternate: Bob Hodanbosi	Ohio EPA	EPA, Ex Officio
Senator Troy Balderson	Ohio Senate	Ohio Senate Majority
Alternate: Greg Bennett	Ohio Senate	Ohio Senate Majority
James J. Reuther	Battelle	Non-university R&D
Alternate: Duncan Langlois	Battelle	Non-university R&D
John M. McManus	American Electric Power Company	Utilities
Alternate: Timothy Riordan	American Electric Power Company	Utilities
Vacant		Environmental Organization
Senator Lou Gentile	Ohio Senate	Ohio Senate Minority
Alternate: Maria Haberman	Ohio Senate	Ohio Senate Minority
Vacant		Manufacturers that use Ohio Coal

List of Current Consortium Review Committee Representatives

Company Represented	Individual
AEP	Indra Bhattacharya
Dayton Power & Light	Scott Atenstein
FirstEnergy	Mark Golightley
B&W	Tom Flynn
US EPA	John Chang
US DOE	Lynn Brickett
Ohio EPA	Dana Thompson
Consultant	Mario Marrocco
Consultant	Robert Brown
Consultant	Robert Statnick

As of: 1/13/2015

Attachment 5

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
- EPA Information

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:

Form **W-9**
(Rev. December 2014)
Department of the Treasury
Internal Revenue Service

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.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification; check only **one** of the following seven boxes:
☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate
☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ 0
Note. For a single-member LLC that is disregarded, do not check LLC; check the appropriate box in the line above for the tax classification of the single-member owner.
☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
Exempt payee code (if any) _____
Exemption from FATCA reporting code (if any) _____
(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.)

Requester's name and address (optional)

6 City, state, and ZIP code

7 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 line 1 to avoid backup withholding. For individuals, this is generally 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.

Note. If the account is in more than one name, see the instructions for line 1 and the chart on page 4 for guidelines on whose number to enter.

Social security number
☐☐☐ – ☐☐ – ☐☐☐☐

or

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); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

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 3.

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

General Instructions

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

Future developments. Information about developments affecting Form W-9 (such as legislation enacted after we release it) is at *www.irs.gov/fw9*.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following:

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See *What is backup withholding?* on page 2.

By signing the filled-out form, you:

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, and

4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting?* on page 2 for further information.

Note. If you are a U.S. person and 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 under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 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 section 1446 withholding on your share of partnership income.

In the cases below, the following person must give 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:

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (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, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 28% 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, payments made in settlement of payment card and third party network transactions, 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 *Exempt payee code* on page 3 and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships* above.

What is FATCA reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code* on page 3 and the Instructions for the Requester of Form W-9 for more information.

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

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account, list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note. ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or "doing business as" (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C Corporation, or S Corporation.** Enter the entity's name as shown on the entity's tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. 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 line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a "disregarded entity." See Regulations section 301.7701-2(c)(2)(iii). Enter the owner's name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner's name is required to be provided on line 1. 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 line 2, "Business name/disregarded entity name." If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box in line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box in line 3.

Limited Liability Company (LLC). If the name on line 1 is an LLC treated as a partnership for U.S. federal tax purposes, check the "Limited Liability Company" box and enter "P" in the space provided. If the LLC has filed Form 8832 or 2553 to be taxed as a corporation, check the "Limited Liability Company" box and in the space provided enter "C" for C corporation or "S" for S corporation. If it is a single-member LLC that is a disregarded entity, do not check the "Limited Liability Company" box; instead check the first box in line 3 "Individual/sole proprietor or single-member LLC."

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space in line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys' fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

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 U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

4—A foreign government or any of its political subdivisions, agencies, or instrumentalities

5—A corporation

6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession

7—A futures commission merchant registered with the Commodity Futures Trading Commission

8—A real estate investment trust

9—An entity registered at all times during the tax year under the Investment Company Act of 1940

10—A common trust fund operated by a bank under section 584(a)

11—A financial institution

12—A middleman known in the investment community as a nominee or custodian

13—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 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over $600 required to be reported and direct sales over $5,000[1]	Generally, exempt payees 1 through 5[2]
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

[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 reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note. You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns.

Line 6

Enter your city, state, and ZIP code.

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 this page), 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 SSA 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, apply for a TIN and 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 U.S. 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 items 1, 4, or 5 below 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 line 1 must sign. Exempt payees, see *Exempt payee code* earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

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 made in settlement of payment card and third party network transactions, 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)	The grantor-trustee[1]
b. So-called trust account that is not a legal or valid trust under state law	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 Regulations 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 Regulations 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 2.

***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, 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 (TIGTA) 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. commonwealths and 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.

CENTRAL OFFICE USE ONLY

EPA INFORMATION

COMPANY NAME: _____

ADDRESS: _____

P.O. BOX: _____

CITY: _____

STATE: _____

ZIP: _____

County: _____

FTI #: _____

CENTRAL OFFICE USE ONLY

EPA INFORMATION

COMPANY NAME: _____

PROJECT ADDRESS: _____

P.O. BOX: _____

CITY: _____

STATE: _____

ZIP: _____

County: _____

FTI #: _____

OHIO COAL RESEARCH AND DEVELOPMENT GRANT (CONSORTIUM AGREEMENT)

Grantee:				Grant Control No.:			
Address:							
City:				State:		Zip:	
Contact:		E-mail:			Phone:		
Project City:			**Effective Date**:				
Project County:			**Project Completion Date**:				
Investment							
Funds Leveraged			$				

This Grant Agreement (the "Agreement") is made and entered into by and between the **State of Ohio, Development Services Agency**, ("**Grantor**") and **Grantee** to set forth the terms and conditions upon which Grantor will provide financial assistance to Grantee, and Grantee will use the financial assistance to fund and administer, the OCRC 2015 Ohio Coal Research Consortium and its projects further described in Exhibits A, B and C, (Hereinafter referred to as the "Project").

1. Project Funding.

(a) State Grant. Grantor has determined that the Project and the activities included therein meet the requirements of a coal research and development project pursuant to Ohio Revised Code ("**ORC**") Chapter 1555. Subject to the other terms of this Section 1, Grantor hereby grants to Grantee funds in the lesser of _____ Dollars ($__.__) or __ percent (__.__%) of the total cost of the Project (the "**Grant Funds**") to be used for the sole and express purpose of managing and administering the Project. $___ shall be paid to Grantee in accordance with Budget attached hereto as Exhibit B. $__.__ of the Grant Funds shall be paid to approved Subgrantees of Grantee, in accordance with the Budgets and Project Proposals attached hereto as Exhibit C**.** Grantee shall support the Grantor in the management of the Project substantially as described in the Exhibit E. Grantee may not use the Grant Funds for any purpose other than as outlined in Exhibit B and Exhibit C.

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

2. Payment of Grant Funds.

(a) Disbursement. Subject to the final payment outlined in Section 2(f) of this Agreement, Grantor shall disburse the Grant Funds to Grantee on a reimbursement basis for subgrantee research expenditures, separately budgeted consortium travel, and consultant services in proportion to the Cost Share ratio as provided in the approved Sugrantees' Applications and Exhibit B. Grantor shall disburse grant funds to Grantee in eight quarterly payments upon receipt and approval of Grantee reimbursement requests and all Grantee and Subgrantee reports required under this Agreement. Grantee shall submit to Grantor, for review and approval, requests for reimbursement detailing expenditures which have then been incurred by Grantee in accordance with the Project Budgets included in Exhibit B and Exhibit C, subject to the allowance provided in the following sentence. So long as the Grant Funds are used for the Project, Grantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantor to be consistent with the Project Budget. Grantee 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 included under Deliverable 2 and Deliverable 3 of Exhibit B 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 Grantee to perform the

work described in Exhibit A**.** Grantee shall submit to Grantor, such documentation necessary to substantiate a reimbursement request.

(b) Specific Project Funding. The Administrative Budget of OCRC 2015 covers Grantee's costs from the Effective Date listed on page 1 until the Project Completion Date listed on page 1. The Research Projects, __, and __ are funded for no longer than two years and covers costs after the Effective Date listed on page 1. No Research Project may have an end date beyond the Project Completion Date listed on page 1 of the Consortium Agreement, without approval in writing by Grantor to Grantee.

(c) Permissible Expenses. Reimbursement of travel expenses is limited to certain transportation and lodging expenses. 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, including travel of subgrantees, Grantee 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 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 purchased by the Grantee or Grantor or their respective employees or agents. Grantee shall require this provision be included in any subgrantee agreement. Unless expressly authorized under Exhibit B and/or Exhibit C, no travel expenses will be eligible costs for reimbursement with Grant Funds subject to this Section (2)(a).

(d) Procurement**.** When procuring property and services to be paid for in whole or part with Grant Funds, Grantee shall comply with the applicable state and federal procurement standards. Without limiting the foregoing, Grantee acknowledges all of its contracts for the procurement of property and services will contain such contract provisions as may be required by the applicable procurement rules.

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

(i) Grantee will invoice Grantor by fully completing and submitting to Grantor 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 and the proportional cost share amount as set forth in the Project. Each invoice will set forth Grantee's cost share expended to date.

(ii) Grantee shall also generate and attach the Form G-1 to the invoice and a Request for Payment. This is the Grantee's estimated vs. Actual Grantor Quarterly Cash Draw. It is included in Exhibit G. Form G-1 must show in graph form, annotated with numbers, the estimated Quarterly cash draw from the Grantor projected over the life of the project and the actual cash draw through the date of the current invoice. With the first Request for Payment, Grantee must also include the signed Subgrant Agreement with each Subgrantee substantially in the format attached hereto as Exhibit F and the signed Royalty/Payment Agreement attached hereto in Exhibit H for each Subgrantee involved in the Project as required in Section 5(e) of this Agreement.

(iii) Grantee shall submit, as part of the Quarterly invoice, to Grantor, an update on Project Work Tasks and Deliverables set forth for the Project.

(iv) Grantee must timely file, and cause all Subgrantees to 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 remedy under Section 8 (f) of this Agreement.

(f) Final Payment. A final payment in the amount of __ Dollars and __ Cents ($__.__), representing ten (10) percent of the total amount of this grant, will be paid to Grantee upon approval by Grantor of an acceptable Final

Report and all other Project Work Tasks and Deliverables set forth in Project as performed or submitted by Grantee and all Subgrantees.

3. **Grant Funds Not Expended**. If the Grant Funds are not expended by Grantee 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 Grantor shall have no further obligation to disburse the Grant Funds. Grantor shall also have no obligation to disburse any amount of the Grant Funds that exceeds the eligible costs of the Project actually incurred by Grantee. If Grant Funds have been paid to Grantee and Grantor determines that Grantee has not performed in accordance with the terms and conditions of this Agreement, Grantee shall return such improperly expended Grant Funds within thirty (30) days after demand by Grantor. In the event that Grantee 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 Grantee, this Agreement shall be null and void without any further action by the parties and neither party shall have any obligation under this Agreement.

4. **Agreement Deadlines and Term**.

(a) Project Completion. Grantee shall complete the Project not later than the Project Completion Date set forth on the first page of this Agreement. If Grantee anticipates that the Project will not be completed by the Project Completion Date, Grantee 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**").

5. **Project Performance**.

(a) Basis for Grant Award. Grantor has approved an award of financial assistance to Grantee to induce Grantee to undertake, fund and administer the Project with the goal of 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; to assist in the financing of coal research and development and coal research and development projects or facilities for persons doing business in Ohio and educational and scientific institutions located in Ohio; to create or preserve jobs an employment opportunities or improve the economic welfare of the people of Ohio; or to assist and cooperate with such persons and educational and scientific institutions in conducting coal research and development to achieve the objectives of the Ohio Coal Development Office. Accordingly, Grantee's and Subgrantee's performance obligations under this section are essential terms of this Agreement.

(b) Subgrantee. Grantee shall subgrant portions of work or activities related to the Project in accordance with the Exhibit C. Grantee shall provide copies of all executed subgrants of Grantee, which pertain to the Project, substantially in the format attached in Exhibit F. All subgrants of Grantee shall be bound by the terms of this Agreement and the Grantee shall cause the terms of this Agreement to be incorporated by reference into all subgrants. Grantee shall also cause all Subgrantees under this Agreement to execute and deliver to Grantor the "Royalty/Payment Agreement" attached hereto as Exhibit H. In any event, Grantee will be solely responsible for ensuring subgrantees adhere to requirements agreed to in subgrant agreements. Grantee shall promptly report to Grantor any deviations from subgrantee proposal plans, budgets, schedules or reporting not otherwise addressed herein, within 15 days of Grantee learning of such deviation.

(c) Modifications. Any changes to the Project's statement of work, budget, or work schedule are subject to Grantor's approval.

(d) Maintenance and Safekeeping. Grantee shall provide for the security and safekeeping of all items obtained directly by the Grantee through this grant, and shall cause the terms of this provision be incorporated into all subgrants to 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.

(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 shall be done with the project cost share funds.

(f) Notice of Change. If Grantee 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, Grantee shall give Grantor written notice of such intended action at least five (5) business days prior to implementation unless Grantee is expressly prohibited by applicable law from giving such notice. If prior notice is prohibited by law, Grantee shall notify Grantor in the most expeditious manner possible at the time such intended actions are implemented.

6. Job Creation Goal.

(a) 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 Project, one of the secondary goals is the creation of jobs as a result of the award. Grantee and all Subgrantees are required to report any job creation or retention in their final project report.

7. Non-Discrimination.

(a) Minority Hiring Goal. Grantee 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. Grantee shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, national origin, disability, age, military status or ancestry. Grantee 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. Grantee will incorporate the requirements of this paragraph in all of its contracts for any of the work undertaken on the Project (other than subgrants for standard commercial supplies or raw materials), and Grantee will require all of its contractors for any part of such work to incorporate such requirements in all subgrants for such work.

8. Reporting.

(a) Quarterly Status Reports. Quarterly Status Reports must be submitted by Grantee to Grantor by the fifteenth day following the end of each quarter. 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. Grantee shall notify Grantor 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. Grantee must submit to Grantor 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. Any jobs created or retained as a result of the award shall be included in the Final Project Report. Upon review, Grantor may accept the draft as submitted or may return comments to the Grantee 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 ore further explanation after Grantor has reviewed it, Grantee 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. Grantee shall submit to Grantor 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. Grantee 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) Project Meetings. Grantee 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, Grantee shall schedule such meetings in Ohio.

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

(f) Remedy. Quarterly Status Reports and Annual Project Abstracts are essential for Grantor's effective administration of this grant and its financial incentive programs, generally. For any report, deliverable, or invoice not submitted in a timely manner or request for extension made and approved by Grantor, Grantor shall notify Grantee in writing that the infraction has occurred and warning of possible penalty ("Notice of Infraction"). Grantor may waive the Notice of Infraction if the Grantee can show good cause. Two Notices of Infractions shall result in the barring of Grantee from applying to the Grantor for future funds for the following year.

9. Records Maintenance and Access.

(a) Maintenance of Records. Grantee 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 Grantee's performance of its obligations under this Agreement. If any audit, dispute or litigation is then pending, however, Grantee 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, Grantee shall make available to Grantor, 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 Grantee, 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 Grantee. Grantee shall, at its own cost and expense, segregate records to be made available for inspection pursuant to this Section 9(b) from Grantee's other records of operation.

(c) Accounting Format. All moneys paid to Grantee under the terms of this Agreement and any interest earned by Grantee thereon must be deposited in a separate account upon the books and records of Grantee.

Grantee 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 "Development Services Agency".

(c) Technical Forums. For all projects, Grantee 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, Grantee 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. Grantee shall comply with all applicable federal, state, and local laws in the performance of Grantee's obligations under this Agreement, the completion of the Project and the operation of the Project as long as Grantee has any obligation to Grantor under this Agreement. Without limiting the generality of such obligation, Grantee 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 Grantee in connection with the Project, and Grantee shall comply with all applicable environmental, zoning, planning and building laws and regulations.

(b) Ethics. In accordance with Executive Order 2011-03K, Grantee, 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. Grantee 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 Grantee, contractor of Grantee 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. Grantee shall immediately disclose in writing to Grantor any such person who, prior to or after execution of this Agreement, acquires any personal interest involuntarily or voluntarily. Grantee shall immediately disclose in writing to Grantor any conflict of interest that is disclosed by the Subgrantee to the Grantee. Grantee 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 Grantor in writing. Thereafter, such person shall not participate in any action affecting the work under this Agreement unless Grantor 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. Grantee represents and warrants to Grantor that Grantee 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. Grantee represents and warrants to Grantor that Grantee has made no false statements to Grantor or any of its employees or agents in the process of obtaining the award of Grant Funds. Grantee 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 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) Prevailing Wage. [Reserved, but not applicable to this Agreement.]

(g) Public Records. Grantee acknowledges that this Agreement and other records in the possession or control of Grantee regarding the Project are public records under Ohio Revised Code §149.43 and are open to public inspection unless a legal exemption applies. Grantee's non-public financial information provided in connection with the Project 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. Grantee's non-public trade secrets or other proprietary information provided in connection with Subgrantee Projects (Exhibit C) 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 the Grantee will make a best effort to ensure Subgrantees 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. Grantee shall be in default of this Agreement if Grantee 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, Grantee shall incur only those obligations or expenditures pre-approved by Grantor that are necessary to enable Grantee to continue its operations and achieve compliance with the terms and conditions of this Agreement. Grantee shall also be in default of this Agreement if Grantee is in default of any other agreement between Grantor and/or the Director of Grantor and Grantee and such default continues beyond any applicable period of cure or grace.

(b) Remedies. Following a default by Grantee, 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 .

(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 Grantee are and will remain the property of Grantee, except in the event that Grantee does not faithfully perform all the terms and conditions of this Agreement. In the event Grantee does not faithfully perform all the terms and conditions of this Agreement, Grantee make best efforts to ensure that Subgrantees 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 Grantee, 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 Grantee (i) defaults under another Agreement between the Grantor and/or the Tax Credit Authority and Grantee, (ii) admits Grantee's inability to pay its debts as such debts become due, (iii) Grantee commences a voluntary bankruptcy, (iv) an involuntary bankruptcy action occurs against Grantee which remains undismissed or unstayed for sixty (60) days, (v) Grantee 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 Grantee has ceased operations associated with the Project. The events permitting early termination by Grantor shall be considered a default by Grantee 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, Grantee shall provide Grantor with a final report setting forth the total expenditure of the Grant Funds by Grantee 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 Grantee has failed to comply with the investment and cost share requirements set forth in the Project, Grantor may proportionally reduce the amount of grant funds due Grantee and require a refund of the amount of Grant Funds which exceed the proportion attributable to the level of performance achieved.

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.

Grantee must designate a Project Manager, who must be an employee of Grantee or an employee of its affiliate, and who will oversee the conduct of the Project activities at Grantee's offices or the Project site, and will be the primary person responsible for reporting in a timely manner to Grantor. At Grantee's election, Grantee may also designate an Administration Manager, who will be an employee of Grantee, 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 Grantee'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 43215
ATTN: Ohio Coal Development Office

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

If to Grantee:

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

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. Grantee 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, Grantee agrees that all claims in respect of such action or proceeding may be heard and determined in any such court, and Grantee 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 Grantee in the courts of any other jurisdiction. Any actions or proceedings by Grantee 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 the Ohio Court of Claims, which is the exclusive forum for adjudicating claims against state funded Universities in Ohio. 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.

(c) 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.

(d) 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. Grantee may request changes in the line items of the Grantor's portion of the Budget. So long as the Grant Funds are used for the Project, Grantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantor to be consistent with the Project Budget. If Grantee 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 ODSA.

(e) Forbearance Not a Waiver. No act of forbearance or failure to insist on the prompt performance by Grantee 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.

(f) Ohio Based Services. Grantee 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.

(g) 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.

(h) Headings. Section headings contained in this Agreement are inserted for convenience only and shall not be used in construing this Agreement.

(i) Assignment. Neither this Agreement nor any rights, duties, or obligations of Grantee pursuant to this Agreement shall be assigned by Grantee 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.

(j) 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.

(k) Binding Effect. Each and all of the terms and conditions of this Agreement shall extend to and bind and inure to the benefit of Grantee, its successors and permitted assigns.

(l) 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:

Grantee:	**Grantor:**
Ohio University	**State of Ohio** **Development Services Agency** David Goodman Director Ohio Development Services Agency
By:_____	By:_____
Printed Name: _____	Printed Name: _____
Title: _____	Title: _____
Date:_____	Date:_____

Attachments:

Exhibit A:	Scope of Work
Exhibit B:	Administrative Budget
Exhibit C:	Consortium Project Proposals and Budgets
Exhibit D:	Technical Goals and Objectives
Exhibit E:	Consortium Management Plan
Exhibit F:	Subgrant Agreement Template
Exhibit G:	Request for Payment
Exhibit H:	Royalty/Payment Agreement
Exhibit I:	Project Quarterly Status Report Format
Exhibit J:	Final Report Format
Exhibit K:	Project Employment Date
Exhibit L:	Annual Project Abstract
Exhibit M:	Ohio Research and Development Alignment Programs
Exhibit N:	Patent and Commercialization Update

EXHIBIT A TO GRANT AGREEMENT

Scope of Work

The parties acknowledge that the Consortium is comprised of several entities and that within each entity several PIs are conducting individual research efforts which together constitute the work of the Consortium. Among the universities, Grantee acts as the Consortium Administrative Manager. The Grantee shall administer the Ohio Coal Research Consortium in accordance with the "Budget for the Administration of the Financial and Contractual Aspects of the Ohio Coal Research Consortium", Exhibit B and "Projects and Budgets," Exhibit C, Technical Goals and Objectives, Exhibit D, and the "Consortium Management Plan," Exhibit E.

The express purpose of this Agreement is to conduct a fundamental and early applied clean coal technology research program comprised of multiple entities in accordance with the Consortium's "Technical Goals and Objectives," which are identified in Exhibit D**,** and which will be performed in accordance with the "Consortium Management Plan," which is identified as Exhibit E. This Agreement shall support those projects as described in "Statements of Work and Budgets," which is identified as Exhibit C and henceforth referred to as "The Research Projects".

Grantee shall use reasonable efforts to facilitate each member of the Consortium making a visit to the project sites of other demonstration/deployment projects or similar clean coal technology demonstrations located in Ohio, as set forth in the "Consortium Management Plan," Exhibit E**.**

If additional projects are approved by the Grantor during the Term of this Agreement, the Grantee is responsible for administering these additional Ohio Coal Research Consortium projects during the remainder of the Term of this Agreement, and these funds are therefore included as part of the administrative budget. Additional projects to be administered by Grantee will be identified through an addendum to this Agreement. No additional fees will be paid to Grantee for the administration of new projects during the Term of this Agreement.

EXHIBIT B TO GRANT AGREEMENT

Budget for the Administration of the Financial, Technical and Contractual Aspects of the Ohio Coal Research Consortium by Ohio University for duration of *OCRC 2015

EXHIBIT C TO GRANT AGREEMENT

Ohio Coal Research Consortium 2015
Projects and Budgets

#	PI	Title	OCDO	University
Consortium Projects				

INSERT PDF Exhibit C

CONSORTIUM PROPOSALS AND BUDGETS

EXHIBIT D TO GRANT AGREEMENT

Ohio Coal Research Consortium
OCRC 2015 Technical Goals & Objectives
OCRC-AY15

Goal 1: Mine Productivity

Goal 2: Coal End Uses

Goal 3: Improving Power Plant Efficiency

Goal 4: Greenhouse Gas Control

Goal 5: Sequestration of CO2

Goal 6: Markets for CO2

Goal 7: Environmental Issues

Goal 8: Techno-economic Studies for Emerging Technologies

Goal 9: Other

EXHIBIT E TO GRANT AGREEMENT

CONSORTIUM MANAGEMENT PLAN

PROGRAM GOALS

It is recognized that the Ohio Coal Research Consortium ("Consortium") is a group of Ohio research institutions cooperatively working together to further the Grantor's and Consortium's Technical Goals and Objectives (Exhibit A). A further, secondary goal of the Program is to train and educate researchers in the area of clean coal technology in order that they may seek and develop new methods to use Ohio coal in an environmentally acceptable, efficient, cost effective manner. The Program is to be "industry driven," i.e., the Consortium Subcontractors shall actively communicate with and pay particular attention to the clean coal technology research needs of industry so that industry may continue or increase its use of Ohio coal.

CONSORTIUM OUTLINE

The Ohio Research Consortium consists of **five** members: Case Western Reserve University, Ohio University, The Ohio State University, the University of Cincinnati, and the University of Akron. Members may leave the Consortium and new members may join the Consortium (through the annual solicitation process) if:

- the projects fit within its technical goals and objectives;
- the projects have the minimum required 20 percent cost share or such other amount determined by Grantor;
- the proposed projects receive favorable independent review and recommendation by the Consortium Review Committee (CRC) and the Technical Advisory Committee (TAC); and
- the projects are approved by the Ohio Development Services Agency (ODSA).

PROGRAM MANAGEMENT

The activities of the Consortium shall be overseen by the Consortium Project Manager (CPM) and the Consortium Technical Administrator (CTA). The CPM shall be an employee of Ohio University and subject to Grantor approval. The CPM shall be responsible for the administrative matters of the Consortium and shall manage the work of the CTA. The CTA is a contractor(s) hired by the Grantee. . They shall be vested with the responsibility and authority to direct the research effort, subject to the terms of this Agreement between Grantor and Grantee. In furtherance of the foregoing, he CPM shall negotiate subcontracts to the Ohio Coal Development Office's grant agreement and each approved project's attendant statement of work, requiring reporting by members, and assigning of Consortium resources. All of this shall be done with close consultation with Grantor. On behalf of Grantee, the CPM shall be responsible to insure the timely invoicing of Consortium members to Grantee. The CPM shall submit properly documented invoices in a timely manner to the Grantor, as set forth in Grant Agreement. To achieve the above, the CPM shall develop a yearly administrative budget. The CPM, with assistance of the CTA, shall be responsible for arranging meetings of the Steering Committee, the Consortium Review Committee, and Site Reviews referenced below. The CTA will confirm work progress and timely submittal of deliverable reports on a monthly basis to the CPM.

Continued funding for the second year of work for The Research Projects, __, and __ is contingent upon adequate progress during the first year of these projects. The CTA will visit these projects in the spring and summer of 20__ to confirm progress during the academic year 20__-20__. If there are questions regarding adequate progress on a specific project, the CTA will review deficiencies in progress in consultation with the PIs, the CRC project mentors, and the Grantor. If the CTA recommends and the Grantor accepts that deficiencies in progress cannot be resolved, the Subgrantee's Project will be terminated as of September 30, 20__. This termination will be reflected

in an amended "Statements of Work and Budgets," which are identified as Exhibit C. The CTA will submit to the CPM by September 1, 20__ a report identifying those projects that will receive continued funding for the academic year 20__-20__ as well as the projects that will not receive funds and the basis for the decision.

SPECIAL TRAVEL & REPORTING

Subject to Ohio Administrative Code Section 126-1-02, as updated from time to time, within the Grantee's budget shall be a fund to assist Consortium members with costs associated with presentation of papers. The topics of such papers and the results presented must be a direct result of the research performed under the Consortium's sponsorship. The CPM may authorize, at the request of the CTA, up to fifty percent or $550, whichever is less, to an individual of the Consortium for travel and lodging costs to the event where the paper will be presented. Only presenters, not co-authors, are eligible for such consideration. Graduate students are encouraged to present and shall be given preference in such requests. An individual may access this fund only once each year.

The CTA and Grantor shall be given 20 days advance opportunity to review and comment upon a draft of any and all publications and/or presentations prior to their public release. All written materials shall bear the legend, "This project was funded in part by the Ohio Coal Development Office of the Ohio Development Services Agency." Whenever a paper is published or presented, the primary author of that paper is required to send a copy to the CPM and the CTA. The paper should be mentioned in the Principal Investigator's quarterly status reports to the CTA, and a copy of it attached to that status report.

THE STEERING COMMITTEE

The Steering Committee shall act as an advisory body to the CTA. The Committee shall be comprised of one representative, who shall be a Principal Investigator, from each Consortium member (i.e., CWRU, OU, OSU, UC, UT, and UA). The CTA will chair the Steering Committee, but shall not have a vote. The Steering Committee will meet at the call of the chair or at the request of any two members. (A Steering Committee meeting may be held in conjunction with a Site Review.) The purpose of the Steering Committee is to ascertain that the Consortium is meeting its goals, to ensure the smooth progress and operation of the Consortium and to make suggestions for same to the CTA.

SITE REVIEWS AND PERIODIC REVIEW MEETINGS

It is recognized by all members of the Consortium that one of its functions is to educate and train researchers in the problems and solutions to the environmentally acceptable, clean use of Ohio coal. To broaden this knowledge base, each member of the Consortium, if requested by CTA, shall visit the project sites of the other OCDO demonstration/development projects or similar clean coal technology demonstrations located in Ohio. At each site, the technology will be reviewed. A site visit may be held at least once per year, and shall be combined with the periodic review Meeting. Each member of the Consortium in not expected to visit all project sites each year.

THE CONSORTIUM REVIEW COMMITTEE

The members of the Consortium Review Committee (CRC) shall be appointed by the Director, or his or her designee, of the Ohio Development Services Agency, with input and recommendation from the CPM. The chair appointed by Grantee, shall be an *ex officio* member of the CRC. The CRC shall be comprised of individuals who are experts in the areas defined by the Program Technical Goals and Objectives. These experts shall be drawn from at least the following areas: coal-burning electric power generators, industry, public and private sector research institutions, and state and federal government. The CRC shall review, score and make recommendations to the TAC. The CPM , with assistance by the CTA, shall be responsible for arranging at least one meeting (via web or in person) each year (usually in June) of the Consortium Review Committee. The purpose of the meeting shall be the review of proposals for continuation of existing projects and proposals for new projects.

The chairperson of the Consortium Review Committee shall prepare a report to Grantor making recommendations regarding projects to be continued into the next year of the Consortium, existing projects, which should be discontinued, proposed new projects that should be pursued, and proposed new projects that are recommended for rejection, etc. This report shall be submitted to the Grantor's Technical Advisory Committee. All funding recommendations by the Consortium Review Committee must be put before the Grantor's Technical Advisory Committee for review and recommendation for its approval or disapproval.

INVOICING & BUDGETS

The CPM shall receive invoices from the Consortium members and shall review and verify the requests. A separate sheet summarizing the financial status of each project shall be included with the invoice. The CPM shall advise the Grantor as soon as possible in writing if such problems develop, which the CPM cannot resolve before the deadline for submittal of invoices by the CPM to the Grantor.

The CTA will confirm work progress and timely submittal of reports. If the CTA finds that the project is behind in schedule or has not delivered timely status reports, the CTA shall advise the CPM in writing to hold payment to that specific request until the CTA notifies the CPM in writing that the problem has been resolved.

Each Principal Investigator is responsible for performing the project within the confines of his/her statement of work and budget. So long as the Grant Funds are used for the Project, Subgrantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantee to be consistent with the Project Budget, as long as written notification to the CPM, with a copy to the CTA is given. Reasons for the change must be provided, along with the new, revised budget spreadsheet. Should the cumulative changes exceed ten (10) percent, the Principal Investigator must request approval in writing from the CPM, with a copy to the CTA prior to making such changes. The request must state the reasons for the change and submit a proposed amended budget.

EXHIBIT F TO GRANT AGREEMENT

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 Ohio University ("**Grantee**") and **Subgrantee** to set forth the terms and conditions upon which the Ohio Development Services Agency (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" attached hereto as Exhibit A-SUB.

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 Exhibit A-SUB and Exhibit C. 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. So long as the Grant Funds are used for the Project, Subgrantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantee to be consistent with the Project Budget. 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 Project may have an end date beyond the Project Completion Date listed on page 1 of the Consortium agreement.

(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 Exhibit A-SUB or Exhibit B, 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 reported 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 remedy under Section 8 (h) of this Agreement.

(v) Subgrantee shall receive a current Ohio Environmental Protection Agency clearance.

(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.

3. 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.

4. 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.

5. 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. So long as the Grant Funds are used for the Project, Subgrantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantee to be consistent with the Project Budget. If Subgrantee wishes to make changes to any line item of the Budget for Grantee's funds that exceed ten (10) percent, a written request with justification must be submitted to Grantor and approved by the ODSA.

(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.

6. 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 tenth 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 ore 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 for more than thirty (30) days, Grantee shall notify Subgrantee in writing that the infraction has occurred and warning of possible penalty ("Notice of Infraction"). Grantee may waive the Notice of Infraction if the Subgrantee can show good cause. Grantee shall notify Grantor of any Notice of Infraction that is issued. Two Notices of Infractions shall result in the barring of Subgrantee from applying to the Grantor for future funds for the following year.

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 "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 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.

(iv) 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 Application Project 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.

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 Grantee:

Ohio Development Services Agency
77 South High Street, 26th Floor
P.O. Box 1001
Columbus, Ohio 43215
ATTN: Ohio Coal Development Office

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

If to Subgrantee:

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

If to Grantee:

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. So long as the Grant Funds are used for the Project, Subgrantee shall have discretion to reallocate an amount not greater than ten percent (10%) of the Grant Funds among budget line items otherwise funded in whole or in part with Grant Funds, and any such reallocation shall be considered by Grantee to be consistent with the Project Budget. 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 ODSA.

(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.

(o) 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:

By:_____

Printed Name:_____

Title:_____

Date:_____

Grantee:

By:_____

Printed Name: _____

Title: _____

Date:_____

Scope of Work 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")**

A. Budget Categories	B. Grant Award	C. Previous Grant Expenditures From:_____ To: _____	D. Current Grant Expenditures From:_____ To: _____	E. Grant Balance	F. Non-OCDO Funds Expended	G. Total Project Cost
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
				$0.00		$0.00
TOTAL:	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00

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

FINANCIAL STATEMENT	
1. Total Grant Award:	$0.00
2. Previous Grant Expenditures:	$0.00
3. Current Grant Expenditures	$0.00
4. Grant Balance Remaining:	$0.00

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.

Printed Name: _____

Signature: _____

Date: _____

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: _____

Signature: _____

Date: _____

Form G-1 Estimated vs. Actual OCDO Quarterly Cash Draw Grant			
Grant #			
Request #	Invoice Periord (Date-Date)	Estimated Draw Amount ($)	Actual Request Amount ($)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
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21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
	Total	$0.00	$0.00

EXHIBIT H TO GRANT AGREEMENT
ROYALTY/PAYMENT AGREEMENT

This Royalty/Payment Agreement (the "Agreement") is entered between the State of Ohio, 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 Ohio University 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 Ohio University 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 recognize that the Grantor's contribution of funds to the development of the Demonstration Technology, Equipment, and/or Process is the aggregate sum of the grants from Grantor for related Ohio Coal Consortium (OCRC) projects, including previously funded Project Numbers(s) _____ sub-totaling $____. This amount, plus the current investment of $____, combines for a total investment of $____. The parties agree that the total payments to Grantor by the Company and/or its Licenses, in the event the Technology, Equipment, and/or Process is commercialized or otherwise generates revenues, will be at most equal to Grantor's total investment.

E. The parties to this agreement recognize there may be more than one commercial application resulting from the funding of prior projects and the current projects as identified in paragraph D above. In the event of more than one commercial application of this Technology, Equipment, and/or Process the aggregate repayment to Grantor resulting from all commercial applications will not exceed the Grantor's total investment in the Technology, Equipment and/or Process.

F. 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. <u>Definitions</u>. 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 its total Investment in the Demonstration Technology, Equipment and/or Process as defined in Paragraph D of this 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
Columbus, OH 43215

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.

Signature: Each of the parties has caused this Royalty/Payment 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:	**Grantor:**
	State of Ohio **Development Services Agency**
	David Goodman Director Ohio Development Services Agency
By:_____	By:_____
Printed Name: _____	Printed Name: _____
Title: _____	Title: _____
Date:_____	Date:_____

Exhibit I

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.

EXHIBIT J

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.

Exhibit K

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 ___

EXHIBIT L

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:

CO-SPONSOR'S NAME	**COST-SHARE**
_____	$_____
_____	$_____
_____	$_____
_____	$_____
_____	$_____

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:

EXHIBIT M

OHIO RESEARCH AND DEVELOPMENT ALIGNMENT PROGRAMS

Technology Transfer and Commercialization
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Chairman
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Fax: 614-466-5866
vgupta@hotmail.com
https://www.ohiohighered.org/commercialization

Ohio Agriculture Research & Development Center
Dr. Steve Slack
Director
Ohio State University
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Wooster, Ohio 44691
Ph: 330-263-3701
Fax: 330-263-3688
oardc@osu.edu
http://www.oardc.ohio-state.edu

Wright State Research Institute
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pshah@oar.net
http://www.oar.net & https://www.osc.edu/
OARnet & Ohio Supercomputer Center

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http://www.ybi.org

Ohio Third Frontier
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Fax: 614-644-5758
Norm.Chagnon@development.ohio.gov
http://thirdfrontier.com

Ohio Coal Development Office
Karen Fabiano
Director
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Columbus, Ohio 43216-1001
Ph: 614-752-9227
Fax: 614-466-1864
Karen.Fabiano@development.ohio.gov
http://development.ohio.gov/bs/bs_ohiocoaldev.htm

Updated: 8/19/2014

EXHIBIT N

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 2. 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.