

REQUEST FOR PROPOSALS (RFP)

RFP Number: DEV OCA 1801

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

2017 Ohio Coal Research Consortium (OCRC 2017)

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|-------------------------------------|--------------------------------------|
| 1. Posting Date | – July 27, 2017 |
| 2. Inquiry Period | – July 27, 2017 – September 12, 2017 |
| 3. Full Proposals Due | – September 18, 2017 |
| 4. Successful Projects Announced | – December 2017 |
| 5. Estimated Project Effective Date | – February 2018 |

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 nineteen (19) pages and six (6) attachments, totaling seventy-five (75) pages. Please verify that you have a complete copy.



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SECTION I. OVERVIEW

A. Background

The Ohio Coal Development Office (OCDO), within the Ohio Development Services Agency (ODSA), operates in accordance with state statute (Ohio Revised Code Chapter 1551 and 1555) and 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 a role or interest in the use, conversion, or study of Ohio coal. Current TAC members are listed in Attachment 4.

The Ohio Coal Research Consortium (OCRC) was created in 1988 to support college/university applied research and is directed to improve the science and technology of chemical and physical processes involved in coal use.

The majority of Ohio's coal is burned in electric generation plants that have been retrofitted to meet existing environmental standards. In recent years, coal burning power plants in Ohio and throughout the U.S. have been retired or generation has been reduced. This has been attributed to low natural gas fuel prices and the implementation of recent environmental regulations¹.

Principal Investigators (PI) are advised to keep current with the latest air, water, and solid waste regulations that impact electric generation, industrial coal users, or coal by-products, and the costs of meeting those regulations, so that the PI's research can remain relevant. The United States Environmental Protection Agency (U.S. EPA) has announced that it is reviewing and, if appropriate will initiate proceedings to suspend, revise or rescind the carbon dioxide (CO₂) standards for new, modified and reconstructed power plants and the CO₂ emission standards for existing power plants². The Supreme Court stayed implementation of U.S. EPA's CO₂ emission guidelines for existing stationary sources, pending judicial review in 2016. The standards for new, modified and reconstructed power plants were challenged in the U.S. Court of Appeals for the D.C. Circuit, but (as of May 2017) are being held in abeyance while the U.S. EPA reviews the rule³.

The U.S. EPA postponed (as of May 2017) certain compliance dates for a previously finalized rule that was challenged in the U.S. Court of Appeals for the Fifth Circuit that limited effluent limitations guidelines and standards for steam electric power generating units, pending judicial review⁴.

The Mercury and Air Toxics Standard (MATS) was challenged in court by multiple states, electric generators, and coal production companies. The U.S. EPA has asked the U.S. Court of Appeals for the D.C. Circuit Court to delay oral arguments on the case (as of May 2017), since "EPA officials appointed by the new Administration are closely reviewing the Supplemental Finding (that deemed the MATS necessary and appropriate) to determine whether the Agency (U.S. EPA) should reconsider the rule or some part of it"⁵

¹ Energy Information Administration, <https://www.eia.gov/electricity/monthly/update/archive/april2017/>

² Executive Order on Energy <https://www.epa.gov/Energy-Independence>

³ Columbia Law School, <http://columbiaclimatelaw.com/resources/climate-deregulation-tracker/database/egu-nsps/>

⁴ Steam Electric Power Generating Effluent Guidelines, <https://www.epa.gov/eg/steam-electric-power-generating-effluent-guidelines-2015-final-rule#pending>

⁵ <http://www.environmentallawandpolicy.com/wp-content/uploads/sites/186/2017/04/mats.pdf>

B. Purpose of the OCRC

In the light of the challenges facing the Ohio coal industry and Ohio coal being plentiful and an essential resource for our energy needs, ODSA invites interested and qualified Ohio colleges/universities to submit proposals for new and expanded research projects that reduce coal's impact on the environment and enhances it as an energy source by increasing economic competitiveness to generate electricity or be converted to other end products (hydrogen, methanol, etc.).

The multi-pronged purpose of the OCRC is:

- 1) To solve technical problems being experienced today by Ohio coal producers and end-users and/or lower the cost of these solutions that enable the continued or expanded use of Ohio coal in an environmentally acceptable cost-effective manner.
- 2) To drive new technologies/processes or improve the environmental performance of existing coal-based technologies or processes and/or lower their cost of operation that enables the continued or expanded use of Ohio coal in an environmentally acceptable cost-effective manner.
- 3) To generate innovative research that enables the continued or expanded use of Ohio coal in an environmentally acceptable cost-effective manner.
- 4) To train a future supply of Ohio-based scientists and technologists in coal and emission control technologies that enables the continued or expanded use of Ohio coal in an environmentally acceptable cost-effective manner.

C. Areas of Interest

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

1. Mine Productivity – Research proposed in this area must demonstrate more economical methods to extract coal that reduce air emissions or reduce environmental impact during coal mining and/or during coal preparation plant operations. This research area also includes: projects that increases mine productivity, projects that reduce coal transportation costs, projects that reduce mine closure costs, research that finds ways to improve coal product quality, improves coal preparation plant efficiencies, or reduces coal preparation waste.
2. Coal End Uses – Research proposed in this area must significantly increases the economic competitiveness of using coal as a chemical feedstock. In addition to using coal to produce alternate fuels, the OCRC is seeking proposals that will produce other medium volume and high-volume products from Ohio coal. Proposals that significantly reduce the emission or costs to manufacture/convert coal to a useful product are sought. These products could include metallurgical grade coal or merchant coke, methanol hydrogen, carbon fibers, graphene and/or 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 – Research proposed in this area includes evaluation of the potential to improve power plant efficiency through reducing the fixed costs, and the variable operating costs (including using asset performance analytics), the maintenance costs, or other means for existing and new coal combustion technology

systems. Novel ways to reduce the parasitic energy demand or improve plant capacity factor are also sought.

4. CO₂ Control – Research proposed in this area includes projects that identify or advance more cost-effective technologies, materials, or processes which can meet pending CO₂ regulations for either existing power plants or for new power plants.
5. Sequestration of CO₂ – Research projects in this area includes sequestration of CO₂ that is pumped into saline water, deep geological domes, or other viable means. Any approach must insure that the CO₂ does not escape and pose a potential hazard. Proposals that identify risks and mitigate those risks are also sought. Research proposed in this area also includes projects that attempt to better understand the behavior of CO₂ when stored in Ohio's geologic formations.
6. Markets for CO₂ – Research projects proposed in this area includes those that use captured CO₂ for enhanced oil recovery. This includes research to determine new enhanced oil recovery applications in Ohio and novel ways to identify and reduce risks associated with this process. In addition to enhanced oil recovery, research projects in this area also includes those that demonstrate innovative ideas for new markets for CO₂ such as CO₂ as a chemical feedstock, non-geological storage of CO₂ that immobilizes CO₂ permanently, by producing a stable useful material, or other novel applications.
7. Environmental Issues – Research proposed in this area includes:
 - a) Projects involving water intake structures that reduce impacts on fish and wildlife, projects that increases the feasibility of using lower quality water, or other projects that reclaims fresh water from waste water at power plants.
 - b) Projects that evaluate innovative methods to economically use solid waste combustion by-products, including fly ash, bottom ash, scrubber by-products, etc. These projects must clearly show the economic and annual usage volume advantages that are proposed are superior to current end uses. Research topics could include the impact of mercury and other trace element controls on by-product utilization, including:
 - i. Flue-gas desulfurization (FGD) gypsum use in wall board,
 - ii. Fly ash in cement,
 - iii. Fly ash and scrubber by-products for soil amendments, etc.
 - c) Projects that demonstration more economic methods to reduce acid mine drainage mitigation/remediation for legacy and new mine acid drainage facilities.
 - d) Projects that treat flue gas to remove pollutants, including: sulfur dioxide (SO₂), sulfur trioxide (SO₃), mercury (Hg), nitrous oxides NO_x, particulate matter (PM₁₀), fine particulate matter (PM_{2.5}), and hydrogen chloride (HCl). These projects must allow coal to be competitive with the least cost electric generation fuel source, including:
 - i. Project that combine the removal of CO₂ and removal of one or more of the following: SO₂, SO₃, Hg, NO_x, PM₁₀, PM_{2.5}, and/or HCl.
 - ii. Projects that includes selective catalytic reduction (SCR) catalysts to achieve more cost-effective NO_x control while simultaneously oxidizing sufficient coal elemental mercury to meet MATS requirements.
 - iii. Projects that demonstrate/evaluate more wear-tolerant, low-pressure-drop, ultra-high-efficiency baghouses.
 - iv. Projects that improve the performance of electrostatic precipitator (ESP) for applications that are not suited to baghouses or amenable to

- v. upgrading in existing power plants.
 - v. Projects that test and model wet and dry scrubbers which can also be used to remove hazardous air pollutants.
8. Techno-economic Studies for Emerging Technologies – Research proposed in this area includes techno-economic studies of emerging technologies that show great promise. These 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 is titled: “Assessment of Hydrogen Production with CO₂ Capture Volume 1: Baseline State of the Art Plants DOE/NETL-2010/1434⁶”. All studies must be independently conducted. The PI and the independent organization performing the techno-economic study must execute Confidentiality Agreements and Non-Disclosure Agreements. In addition to techno-economic studies based upon U.S. DOE baseline reports, it is also appropriate to prepare techno-economic analysis based upon the most recent economic data available. For example, instead of considering only CO₂ systems that capture 90 percent of CO₂, it would be appropriate to consider additional economic analyses of systems that meet the pending CO₂ emission standards for new units.
9. Other – Research proposed in 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 OCDO. 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.

PIs should demonstrate an awareness of the anticipated capital costs of the proposed system, the proposed systems annual operating and maintenance costs, and the selling price of the product⁷. PIs are encouraged to present a process flow diagram showing the major components of the process, estimated capital and operating and maintenance costs, and the key research issues that need to be solved.

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 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. CRC member(s) can serve in an advisory capacity to the project team for the duration of the study.

⁶ http://www.netl.doe.gov/File%20Library/Research/Energy%20Analysis/Publications/H2_Prod_Vol1_2010.pdf

⁷ Please use the most recently available fuel price from EIA found in the latest available Annual Energy Outlook, <http://www.eia.gov/forecasts/aeo/>

SECTION II. AWARD INFORMATION

A. Estimated Funding

Approximately \$1.6 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 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.

Cost share should be provided throughout the project term in proportion to the release of ODSA funds. 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 (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 provide.
- 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.
- 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 ten awards under this RFP.

E. Period of Performance

Grants will cover project activities performed for a period of one or two years. For projects that cover two years, a review of status reports (described in Section VI, part B of this RFP), an

onsite visit or a conference call during the first year of the project may be made to confirm the project statement of work and other requirements have been followed. If technical concerns arise about a project, ODSA, technical advisors and the project mentor from the CRC will discuss the situation with the PI to attempt resolution. If resolution 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 scope of work. In such cases, ODSA staff and the CRC project mentors may work with the PI to adjust the program and amend the scope of work accordingly. Such adjustments of direction, when done in consultation with ODSA staff and the CRC project mentors, will not jeopardize continuation of a project for the full two years of the grant. Grantees and subgrantees are still subject to Section 12- Default and Remedies, of their grant agreements and may have their grant canceled for violating those or other terms of their respective grant agreements.

F. Estimated Award Date

Funding is expected to be announced in December 2017.

G. Funding Details and Restrictions

Restrictions include, but are not limited to the following:

1. Equipment is defined as tangible non-expendable personal property purchased directly by the college/university that is necessary to complete the project that has a useful life of more than one year OR that has an acquisition cost of more than \$1,000 per unit. ODSA will fund up to 80 percent of necessary equipment acquisition costs. 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. Personnel expenses are limited to:
 - a) Faculty compensation at the college/university's regular rates for the appropriate level of the faculty for those who are employees of the college/university.
 - b) Graduate student direct compensation shall be at the college/university's regular rates for the appropriate level of the student who are employees of the university.
3. Travel in project budgets is limited to cost share and will not be eligible for reimbursement from ODSA. All cost share travel must be directly necessary to complete the project, such as travel to the project site, or travel to a collaborator. Travel for conferences will not be eligible to be counted as cost share. Travel expenses shall be counted as cost share for permissible travel expenses in amounts in accordance with Ohio Administrative Code 126-1-02, as updated from time to time (the "Expense Rule") and subgrantee agrees that travel expenses shall not be counted as cost share for any items that are deemed to be "non-reimbursable travel expenses" under the Expense Rule. International travel will not be eligible for counting as cost share.
4. Supply costs in the project budget is limited to cost share and will not be eligible for reimbursement from ODSA funds. All supply cost share is defined as: tangible expendable personal property that is purchased directly by the college/university that is necessary to complete the project with a per unit acquisition cost of less than \$1,000 AND that has a useful life of less than one year.
5. Tuition waivers and tuition support must be necessary to complete the work and shall be for students who are currently or will be enrolled at the college/university during the

project period.

6. Other charges, such as postage, gases, phone, lab fees, rental fees, etc. are limited to cost share and will not be eligible for reimbursement from ODSA. These charges must be necessary to complete the project.
7. Contractual expense must be necessary to complete the project, and are defined as any service agreement or contract that is made between an outside entity and the college/university that completes any portion of the project. Copies of executed contracts/service agreements must be either submitted with the application or prior to reimbursement of any contractual expense billed to ODSA.
8. Indirect charges cannot exceed the college/university's most recent federally approved indirect rate for research and must only be charged on direct expenses billed to ODSA. Indirect charges on cost share will not be eligible for reimbursement by ODSA. Indirect charges on cost share can only be eligible for counting as cost share.
9. All ODSA grant agreements include clauses that make grant awards and continuations contingent upon both availability of funds and appropriation authority.
10. Applicants may not submit the same project to ODSA more than once per funding cycle. This includes submitting the same project to both the OCRC and the Demonstration and Pilot Program RFP. Whichever application is received later will be rejected and returned to the applicant.

H. 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. The 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.
4. Proposal does not contain Attachment 2 or an original signature by a sponsoring college/university authorized individual.
5. Proposed work is outside the topic area of this solicitation.
6. Proposed work is too broad and not focused.
7. Proposal fails to meet the solicitation format requirements
8. Proposal duplicates other work previously completed or currently underway by another organization (EPRI, U.S. DOE, U.S. EPA or others).
9. Proposals for continuation of active projects did not demonstrate progress in the prior year.
10. Proposed work and associated budget is not feasible or reasonable.
11. Proposed budget does not meet the required cost share.
12. Budget otherwise fails to conform to requirements set forth in this solicitation.

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.

Two 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 2017 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 $\frac{3}{4}$ of an inch on all sides.
- Font must be 11 point or larger with no more than six lines per inch.
- All pages must be numbered consecutively using the format - Page [#] of [total number of pages] (e.g., Page 2 of 25).
- The proposal title, PI name, must appear at the bottom of each page.
- Proposals should not include color figures that cannot be understood when photocopied in black and white.
- Proposals must be stapled once in the upper left-hand corner and must not be bound.
- ODSA is not responsible for proposals not received.

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. 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.

- Adjust the dates for whatever reason it deems appropriate.
- Request additional information/clarification from the PI to assist in the review process.

Prospective applicants may make inquiries or seek clarifications regarding this RFP at any time during the inquiry period listed in the RFP Calendar of Events. To make an inquiry, prospective applicants must use the following process:

1. Access the State Procurement web site at <http://www.ohio.gov/procure>.
2. From the Navigation Bar at the top, select “for Suppliers”.
3. Under the title “Bid Opportunities”, select “All Opportunities”.
4. Enter the RFP Number found on Page 1 of this document as the “Document/Bid Number”.
5. Click the “Search” button.
6. Select this RFP.
7. On the document information page, click the “Submit Inquiry” button.
8. On the document inquiry page, complete the required “Personal Information” section by providing the following:
 - a. First and last name of the prospective applicant’s representative who is responsible for the inquiry.
 - b. Name/Company/Business of the prospective applicant.
 - c. Representative’s business phone number.
 - d. Representative’s e-mail address.
9. Type the inquiry in the space provided, making certain to include the following:
 - a. A reference to the relevant part of this RFP.
 - b. The heading for the provision under question.
 - c. The page number of the RFP where the provision can be found.
 - d. Enter the Security Number.
10. Click the “Submit” button.

Prospective applicants submitting inquiries will receive an immediate acknowledgement by email that their inquiry has been received. **The prospective applicant who submitted the inquiry will not receive an email response to the question, but will need to view the response on the State Procurement web site where it will be posted for viewing by all prospective applicants.**

Prospective applicants may view inquiries using the following process:

1. Access the State Procurement web site at <http://www.ohio.gov/procure>.
2. From the Navigation Bar at the top, select “for Suppliers”.
3. Under the title “Bid Opportunities”, select “All Opportunities”.
4. Enter the RFP Number found on Page 1 of this document as the “Document/Bid Number”.
5. Click the “Search” button.
6. Select this RFP.
7. On the document information page, click the “View Q & A” button to display all inquiries with responses submitted to-date.

ODSA will try to respond to all properly posed inquiries within 48 hours, excluding weekends and state holidays. ODSA will not respond to any inquiries outside the Inquiry Period listed in the RFP Calendar of Events. Prospective applicants who attempt to seek information or clarifications verbally will be directed to submit their questions to writing in

accordance with the terms of this RFP and state purchasing policy. No other form of communication is acceptable, and use of any other form of communication or any attempt to communicate with ODSA staff or any other agency of the state to discuss this RFP may result in the applicant being deemed ineligible.

B. Financial and Trade Secret/Confidential Information

Any information submitted with the proposal, which the PI feels is a trade secret/confidential 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 and may be treated accordingly.

ODSA has the authority and responsibility to protect and keep confidential trade secrets and other financial or commercial information. In the event that the materials or data submitted are deemed by ODSA to consist of trade secrets or other financial or commercial information, as defined by the Ohio Revised Code, § 1333.61 and as set forth in Ohio Revised Code, §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.

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.

1. Respond positively to Question Number 7 on the Proposal Summary Sheet and Application, disclosing that the proposal contains trade secret or commercial or financial information.
2. Include a page immediately after the Proposal Summary Sheet and Application 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. 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 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.
2. 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 third and subsequent proposals removed from consideration.

D. 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. These collaborations can also result in more accurate price assumptions/data. International collaboration may be counted as match, but ODSA funds must be used to support only domestic work.

SECTION IV. PROPOSAL CONTENT

The total length of the proposal should not exceed **ten pages**.

The sections of the proposal must include the following:

1. Cover Page and Letter – complete all sections of Attachment 1: Proposal Summary Sheet and Application and attach it as the top page of the proposal. Attachment 1 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 1 must bear the original signature of an authorized authority of the school. Attachment 1 and the cover letter does not count toward the ten-page text limit.
2. The Objective – present a brief statement of the specific goals for a one-year project, or 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. The economic justification should support the proposed research, including how it compares economically to other existing technologies/processes that address the same issue(s). This should also include a specific 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 during a one-year or two-year project. The information for two-year projects should be clearly divided into two sections, one for each project year (no more than two pages) and include methodologies, designs, and techniques proposed to be used by the PI. The information for one-year projects should also 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 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 ten-page limit, CVs exceeding one page are discouraged – include what is appropriate to this proposal.
8. Publications and Patent Applications – attach abstracts of published, peer-reviewed papers and abstracts of patent applications filed, based upon past consortium projects, or relevant to the new proposal. These attachments will not count toward the ten-page limit. The proposal patent applications will be protected if noted.
9. Project Budget – a budget specifying ODSA funding 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 1 of the proposal). In addition, a budget narrative/justification section should be included describing the following:
 - a. Personnel costs from the PI, Co-PI, and student paid-time charged to ODSA and/or provided as cost share;
 - b. Fringe benefit rates and what all it includes and who it is applied to;
 - c. Equipment list and justification for each piece of equipment to be purchased;
 - d. Description of the expected supplies required to complete the project that will be counted as cost share;
 - e. Contractual expenses explaining the services/companies involved in the project;
 - f. Travel charges that are going to be counted as cost share, including the number of expected trips, the purpose of those trips and the basis for the travel budget;
 - g. Tuition waivers/tuition support that includes a brief description of the students and their expected tasks;
 - h. All other costs that are going to be counted as cost share be clearly defined and listed up front (postage, lab fees, liquids & gases, phone, rental fees, etc.);
 - i. Indirect rates: including the indirect rate percentage(s) and which budget categories the indirect rate applies to and which budget categories are excluded for indirect charges, and a copy of the latest approved indirect rate from a federal agency.

Additional sheets may be included to clarify the budget if necessary. Attachment 3 and the budget justification will not count toward the ten-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 ten-page limit.
11. Leveraging of ODSA Funds and Collaboration – describe any opportunities to find synergy among potential sponsors and collaborations. 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 and seek out collaborations with industry and end-user partners. Preferably with partners that are located and operate in communities that

have been negatively impacted by the closure of either a coal-fired electric generating unit or the closure of an Ohio coal mine. 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 ten-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 pending litigation that your institution is involved in (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 previously completed or currently underway by another organization (EPRI, U.S. DOE, U.S. EPA or others).
14. Operating Ranges – (if applicable) Attachment 2 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 if 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: Overall merit

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 improvement from state-of-the-art approaches to the described problem and has the potential to significantly increase the use of Ohio coal while reducing environmental impact and increasing cost effectiveness. The proposal demonstrates an awareness of the current state-of-the-art in related areas of coal research and current environmental demands placed on the Ohio coal industry.

Criterion 2: Capital and total annual cost analysis

The proposal contains a preliminary capital and total annual cost analysis of the process as currently configured (0 to 5 points). The basis shall be 7,446 hours of operation per year, 500 MW net 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: Objective feasibility

The clarity in stated objectives and feasibility of achieving those objectives (0 to 5 points). The application clearly addresses a problem, concept or question described within one or more of the areas of interest. 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).

Criterion 4: Leveraging

Leveraging of cost sharing funds from industry or government sources (0 to 4 points). One goal of the OCDO is that OCRC funds 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. Scores will be assigned using the following criterion:

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 direct funding from other government sources
4	Project has received direct funding from industry

Criterion 5: Equipment and techniques availability

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 and patent applications

Publication of relevant research in peer-reviewed journals and applications for relevant patents (0 to 2 points). Reviewers will assign scores on this criterion as follows: one for the filing of a relevant patent application; one for peer-reviewed relevant paper submissions for publication; and two for filing both a relevant patent application and submitting a relevant peer-reviewed paper.

Criterion 7: Relevance

Relevance (0 to 5 points). The project demonstrates a high transferability to consumers of Ohio coal, which will lead to increases in the use of Ohio coal in an environmentally acceptable manner and be economically competitive with either existing technology or preferably competitive with natural gas combined cycle plants and has the potential to improve Ohio's economy.

Criterion 8: Collaboration

Collaboration (0 to 4 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.

Points	Criteria Description
0	No effort was made to collaborate
2	Project demonstrates existence of a strategic partnership with industry/end-user partners that provides an advisory role for the project
3	Project demonstrates existence of a financial partnership with industry/end-user partners that provides use of their facilities, direct cash support, or other signs of significant collaboration
+1	Project demonstrates existence of a partnership with industry/end-user partners that are located and operate in communities that have experienced the closure of an Ohio electric coal-fired generation unit, or closure of an Ohio coal mine within the past ten years

Final Scoring

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 4 Points)
5. Equipment and techniques availability	___ (0 to 2 Points)
6. Publication and patent applications	___ (0 to 2 Points)
7. Relevance	___ (0 to 5 Points)
8. Collaboration	___ (0 to 4 Points)
Total Score	___ (0 to 32 Points)

Please note: Future OCRC solicitations will require an advisory role from industry/end-user partners that utilize or plan to utilize Ohio coal. Future OCRC solicitations will also prefer projects that have industry/end-user partners that utilize Ohio coal, that will provide use of their facilities, direct cash support, or other signs of significant collaboration.

SECTION VI. FUNDING AGREEMENT REQUIREMENTS

A. ODSA Funding Limitations

Awards are dependent upon the issuance of General Obligation bonds by the state of Ohio. ODSA can only make awards when the Treasurer of the state of Ohio has deposited sufficient monies in the Coal Research and Development Fund from those general obligation bond proceeds and when the Ohio Controlling Board has approved release of the funding to execute the agreement. Monies expended or costs incurred prior to ODSA award, including costs of the preparation of the proposal, shall not be charged to ODSA, nor count toward the applicant/co-sponsor cost-share.

B. Award Deliverables

Basic requirements of the grant agreement are:

1. Quarterly status reports, describing technical progress, must be prepared covering each of quarter that the project is active. A final project report will also be required, which summarizes accomplishments over the full term 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, according to the format specified in the grant agreement, must be submitted summarizing the project financial status, including actual project expenditures to date, and subgrantee 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 cost share expended.
3. PIs should plan to attend 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.
4. Each college/university shall execute a royalty 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"). Included among the exhibits is Exhibit H, "Royalty/Payment Agreement." Any PI is advised to review these documents prior to preparing a proposal to ODSA.

Proposal Summary Sheet and Application

OCRC ID # 2017

(Leave Blank)

1. Project Title

2. Sponsoring College/University

Address		
City/State/Zip		
Authorized Signature	Title	

Co-sponsoring Entity

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. Proposed Start Date

	Duration (months)
--	----------------------

5. Project Location(s)

--

6. Continuation Work?

	If yes, indicate Year 3 Project Number	
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7. Does the proposal contain proprietary or trade secret information? If Yes, list pages where it is located.

Budget Summary

Contributor	Dollar Contribution	Percentage of Total
ODSA		
Total Project Cost		

Common Operating Ranges in Large-Scale Coal Fired Power Plants

Boiler Conditions

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

Economizer

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

SCR (Selective Catalytic Reduction)

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

Air Heaters

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

Precipitators

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

Wet scrubbers

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

Typical flue gas volume

- 3500-4500 acfm at 325° F per megawatt

Project Budget Summary¹

Budget Category	Contributor	Phase 1	Phase 2	Phase 3	Phase 4	Total
Total Personnel						
	ODSA					

Total Fringe						
	ODSA					

Total Equipment						
	ODSA					

Total Supplies						

Total Contractual						
	ODSA					

Total Travel						

Total Other (postage, gases, phone, lab fees, rental fees, etc.)						

Total Tuition/Tuition Waivers						
	ODSA					

Total Indirect Cost						
	ODSA					

Total Project Cost						
	ODSA					

¹ Add pages as necessary to fully disclose the budget.

List of Current Coal Technical Advisory Committee Members

NAME	ORGANIZATION	REPRESENTING
Joseph Shields	Ohio University	University R&D
Alternate: Mo Valentine	Ohio University	University R&D
Michael Carey	Ohio Coal Association	Coal production companies
Babe Erdos	United Mine Workers of America	United Mine Workers of America
Alternate: Jay Grear	United Mine Workers of America	United Mine Workers of America
Representative Al Landis	Ohio House of Representatives	Ohio House Majority
Alternate: Misty Nichols	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 Minority
Craig Butler	Ohio EPA	EPA, Ex Officio
Alternate: Bob Hodanbosi	Ohio EPA	EPA, Ex Officio
Senator Troy Balderson	Ohio Senate	Ohio Senate Majority
Alternate: Rachael Mains	Ohio Senate	Ohio Senate Majority
Vacant	Ohio Senate	Ohio Senate Minority
James J. Reuther	Battelle	Non-university R&D
Alternate: Duncan Langlois	Battelle	Non-university R&D
Timothy Riordan	American Electric Power Company	Utilities
Alternate: John M. McManus	American Electric Power Company	Utilities
Commissioner Thomas Johnson	Public Utilities Commission of Ohio	PUCO

List of Current Consortium Review Committee Representatives

Company Represented	Individual
Babcock and Wilcox	Tom Flynn
U.S. EPA	John Chang
U.S. DOE	Lynn Brickett
Ohio EPA	Dana Thompson
Consultant	Robert Brown
Consultant	Robert Statnick
CONSOL Energy	Dan Connell

As of: 7/7/2017

Required Form and Questions

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:

Please complete the following Ohio EPA Information Form for locations where ODSA funded-work will be conducted. If multiple project addresses are involved with the project, please complete a new row for each separate project address location.

Applicant	Applicant Address (Street, City, State, Zip)	Applicant County	Project Address (Street, City, State, Zip) *Only if Different from Applicant Address	Project County

Ohio Coal Research Consortium Grant Agreement Template (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 2017 Ohio Coal Research Consortium (OCRC) 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 amount 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 Subgrantees’ 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 2017 covers Grantee's costs from the Effective Date listed on page 1 of this agreement until the Project Completion Date listed on page 1 of this agreement. The Research Projects with OCRC ID#s, __, and __ are funded for no longer than two years and covers costs after the Effective Date listed on page 1 of this agreement. The Research Projects with OCRC ID#s, __, and __ are funded for no longer than one year and covers costs after the Effective Date listed on page 1 of this agreement. 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. International travel is prohibited and will not be eligible for reimbursement. 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 its 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

Job Creation. 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 or 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: one bound copy, one loose-leafed single sided copy; one copy on CD in Adobe, portable document format (pdf).

(c) 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.

(d) 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.

(e) Remedy. 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 with 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 8 (c) shall be for obligations incurred in the performance of this Agreement after the Project Effective Date, and shall be supported by contracts, invoices, vouchers, and other data, as appropriate, evidencing such disbursements. Grantor will review and consider accepting federal audits in lieu of requiring a state audit where applicable.

10. Publicity.

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

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

(c) Technical Forums. For all projects, 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 withholding, and any and all other taxes or payroll deductions required for all employees engaged by Grantee regarding 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 during the term 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 be ineligible for any future economic development assistance from the State of Ohio, any state agency or a political subdivision. In addition, any person who provides a false statement to secure economic development assistance may be guilty of falsification, a misdemeanor of the first degree, pursuant to Ohio Revised Code §2921.13 (F) (1).

(f) 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 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 Effective 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

If to Grantee:

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

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

16. Miscellaneous.

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

(b) Forum and Venue. 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.

(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. 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.

- (f) 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.
- (g) 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 for the project 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 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.
- (k) Liability. Nothing stated in this Agreement shall be construed to create a joint venture, partnership, or agency 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 Grantee, its successors and permitted assigns.
- (m) Survival. Any provision of this Agreement which, by its nature, is intended to survive the expiration or other termination of this Agreement, including, without limitation, any indemnification obligation, shall so survive and shall benefit the parties and their respective successors and permitted assigns.
- (n) Grantor's Authorized Representative. Grantor's Authorized Representative shall be the Director of the Ohio Development Services Agency (the "Director"), or such individual authorized by the Director in writing.
- (o) Counterparts: PDF Accepted. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Copies of signatures sent by facsimile transmission or provided electronically in portable document format ("PDF") shall be deemed to be originals for purposes of execution and proof of this Agreement.

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:

**State of Ohio
Development Services Agency**

David Goodman
Director
Ohio Development Services Agency

By: _____

By: _____

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Exhibits:

- 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 A-SUB: Subgrantee Scope of Work and Reporting Requirements
- Exhibit G: Request for Payment
- Exhibit H: Royalty/Payment Agreement
- Exhibit I: Project Quarterly Status Report Format
- Exhibit J: Final Report Format
- Exhibit K: Annual Project Abstract
- Exhibit L: Ohio Research and Development Alignment Programs
- Exhibit M: Patent and Commercialization Update

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, “Areas of Interest,” 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.

Administrative Budget

Consortium Project Proposals and Budgets

#	PI	Title	ODSA	University
Consortium Projects				

Areas of Interest

1. Mine Productivity
2. Coal End Uses
3. Improving Power Plant Efficiency
4. CO₂ Control
5. Sequestration of CO₂
6. Markets for CO₂
7. Environmental Issues
8. Techno-economic Studies for Emerging Technologies
9. Other

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 D). 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 participants 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 (CWRU), Ohio University (OU), The Ohio State University (OSU), the University of Cincinnati (UC), and the University of Akron (UA). Members may leave the Consortium and new members may join the Consortium (through the 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, the CPM shall negotiate subcontracts for the Ohio Coal Development Office’s grant agreement and each approved project’s 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, 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 ODSA 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 is 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 CPM with input and recommendation from the Ohio Coal Development Office. 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 meeting as needed (via web or in person) of the CRC. 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 CRC 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 TAC. All funding recommendations by the CRC must be put before the Grantor's TAC 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, Subgrantees 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.

Subgrant Agreement Template

Subgrantee:		Subgrantee Control No.	
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 Subgrantee (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 Subgrantee’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 L, 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 L.

(d) Tax Consequences. Subgrantee acknowledges that the Grant Funds may be subject to taxation. Subgrantee 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 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 with OCRC ID#, ___ 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. The Research Projects with OCRC ID#s, ___, and ___ are funded for no longer than one year and covers costs after the Effective Date listed on page 1 of the Consortium agreement.

(c) Permissible Expenses. Reimbursement of travel expenses is limited to certain transportation and lodging. 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. International travel is prohibited and will not be eligible for reimbursement. 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 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 (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.

(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. 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 or further explanation after Grantor has reviewed it, Subgrantee must modify, correct, supplement, or explain such questioned portions of the Final Report and submit it to the Grantor prior to the Project Completion Date. Subgrantee shall submit to Grantee copies of the comprehensive Final Report as follows: two bound copies, one loose-lead single sided copy; one copy on CD in Adobe, portable document format (pdf).

(c) 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 K. 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.

(d) 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 M. 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.

(e) 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.

(f) 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.

(g) Remedy. 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 with 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 © shall be for obligations incurred in the performance of this Agreement after the Project Effective Date, and shall be supported by contracts, invoices, vouchers, and other data, as appropriate, evidencing such disbursements. Grantor will review and consider accepting federal audits in lieu of requiring a state audit where applicable.

10. Publicity.

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

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

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

11. Adherence to State and Federal Laws and Regulations.

(a) General. Subgrantee shall comply with all applicable federal, state, and local laws in the performance of Subgrantee's obligations under this Agreement, the completion of the Project and the operation of the Project as long as Subgrantee has any obligation to Grantee under this Agreement.

Without limiting the generality of such obligation, Subgrantee shall pay or cause to be paid all unemployment compensation, insurance premiums, workers' compensation premiums, income tax withholding, social security withholding, 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 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 during the term 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) Prevailing Wage. [Reserved, but not applicable to this Agreement.]

(g) Public Records. Subgrantee acknowledges that this Agreement and other records in the possession or control of Subgrantee regarding the Project are public records under Ohio Revised Code §149.43 and are open to public inspection unless a legal exemption applies. Subgrantee's non-public financial information provided in connection with the application for and award of Grant Funds made pursuant to this Agreement is exempt from disclosure under a specific exception to the public records law

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

12. Default and Remedies.

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

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

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

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

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

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

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

If to Subgrantee:

To the attention of the Subgrantee 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. 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 for the project 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 between the parties hereto; nor constitute a commitment or guarantee on the part of either party to discharge, assume or bear any responsibility, guarantee or liability for acts or omissions of any other person or entity, except where expressly set forth under the Ohio Revised Code or Federal Law; nor its officers, employees or agents of any party hereto. Neither is any party hereto authorized to transact any business or undertake any agreement, contract, representation or warranty in the name of or on behalf of the other.
- (l) Binding Effect. Each and all of the terms and conditions of this Agreement shall extend to and bind and inure to the benefit of Subgrantee, its successors and permitted assigns.
- (m) Survival. Any provision of this Agreement which, by its nature, is intended to survive the expiration or other termination of this Agreement, including, without limitation, any indemnification obligation, shall so survive and shall benefit the parties and their respective successors and permitted assigns.
- (n) Grantor's Authorized Representative. Grantor's Authorized Representative shall be the Director of the Ohio Development Services Agency (the "Director"), or such individual authorized by the Director in writing.
- (o) Counterparts: PDF Accepted. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Copies of signatures sent by facsimile transmission or provided electronically in portable document format ("PDF") shall be deemed to be originals for purposes of execution and proof of this Agreement.

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

Subgrantee:

Grantee:

By: _____

By: _____

Printed Name: _____

Printed Name: _____

Title: _____

Title: _____

Date: _____

Date: _____

Exhibits:

- Exhibit A-SUB: Subgrantee Scope of Work and Reporting Requirements
- Exhibit G: Request for Payment
- Exhibit H: Royalty/Payment Agreement
- Exhibit I: Project Quarterly Status Report Format
- Exhibit J: Final Report Format
- Exhibit K: Annual Project Abstract
- Exhibit L: Ohio Research and Development Alignment Programs
- Exhibit M: Patent and Commercialization Update

Subgrantee 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 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.

Request for Payment

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

A. Budget Category	B. Grant Award Amount	C. Previous Grant Expenditures From: _____ To: _____	D. Current Grant Expenditures From: _____ To: _____	E. Grant Balance	F. Previous Non-OCDO Funds Expended From: _____ To: _____	G. Current Non-OCDO Funds Expended From: _____ To: _____	H. Total Project Cost
Personnel							
Fringe							
Equipment							
Supplies							
Contractual							
Travel							
Tuition							
Indirect							
TOTAL:							

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

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

GRANTEE CERTIFICATION:

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

Date: _____

Signature: _____

Name: _____

Title: _____

PLEASE RETURN TO:

Ohio Development Services Agency
 Office of Community Assistance
 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 ODSA Quarterly Cash Draw Grant

Subgrant #			
Request #	Invoice Period (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			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
	Total		

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

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

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

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

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

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

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

Alternatively, the Company may buy out this royalty obligation by reimbursing to the Grantor 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 any time 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.

j. Counterparts: PDF Accepted. This Agreement may be executed in any number of counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Copies of signatures sent by facsimile transmission or provided electronically in portable document format ("PDF") shall be deemed to be originals for purposes of execution and proof of this Agreement.

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: _____

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.

Final Report Format

Final Report

Project Final Reports 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 follow. Additionally, to further ODO'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.

Trade Secrets

The Grantee must fully describe all aspects of the project such that they can be followed and verified by the Grantor. However, 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 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.

Annual Project Abstract

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

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

ABSTRACT

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

Ohio Research and Development Alignment Programs

Technology Transfer and Commercialization

Vinny Gupta
Chairman
Ohio Board of Regents
25 South Front Street
Columbus, Ohio 43215
Ph: 614-466-6000
Fax: 614-466-5866
vgupta@hotmail.com
<https://www.ohiohighered.org/commercialization>

Ohio Agriculture Research & Development Center

Dr. Steve Slack
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Updated: 8/1/2016

Patent and Commercialization Update

This will be a one page document submitted to ODSA initially at the end of a project and annually thereafter on September 30th for a period of ten years. 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. The discussion following the table would address commercialization of the body of work rather than specific projects of the table.

2) Waiver 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.