

**OHIO COAL DEVELOPMENT OFFICE OF THE
OHIO AIR QUALITY DEVELOPMENT AUTHORITY**

**OHIO COAL RESEARCH CONSORTIUM (OCRC)
2009 PROPOSALS SOLICITATION**

Research Grant Process Schedule

1. **Wednesday March 25, 2009 – Pre-proposals due by 5:00 PM**
2. **Near Monday April 20, 2009 – Consortium Review Committee (CRC) Conference call to discuss Pre-proposals**
3. **Near Friday April 24, 2009 – Email selection notice to researchers**
4. **Wednesday May 13, 2009 – Pre-proposal addenda due by 5:00 PM**
5. **Thursday May 28, 2009 – PowerPoint presentations for the June meeting are due no later than 5:00 p.m.**
6. **Wednesday – Thursday June 3-4, 2009 the CRC meeting**
7. **Friday June 5, 2009 – Recommendation letters emailed to researchers including notice of redirection if any required by CRC**
8. **Wednesday June 10, 2009 – Revised statements of work for projects requiring redirection due by 5:00 PM**
9. **Thursday June 18, 2009 – OCDO Technical Advisory Committee (TAC) meeting**
10. **Tuesday July 14, 2009 – Ohio Air Quality Development Authority (OAQDA) meeting**
11. **Thursday July 31, 2009 – Prime grant between OCDO and the consortium administrator signed**
12. **Tuesday September 1, 2009 – Subcontracts between the consortium administrator and the universities of the consortium signed**

INTRODUCTION – The Ohio Coal Development Office (OCDO), a program of the Ohio Air Quality Development Authority (OAQDA), invites interested and qualified Ohio universities to submit pre-proposals for the Ohio Coal Research Consortium 2009 (OCRC 2009) that meet the Technical Goals and Objectives presented below. The projects will be for two years including the academic years 2009-2010 and 2010-2011. The Consortium title OCRC 2009 identifies the year that funding was awarded.

OHIO COAL RESEARCH CONSORTIUM (OCRC) BACKGROUND – The State of Ohio has long encouraged the economic and clean use of its vast reserves of coal and the jobs associated with its production and use. This support mainly is derived from OCDO. While primarily focused on larger-scale demonstration and deployment of near-to-term technologies, OCDO also supports university research directed to improve the science and technology of chemical and physical processes involved in coal use. The involvement of Ohio universities serves a four-fold purpose: 1) to address technical problems being experienced today by Ohio coal end-users and improve technologies that enable continued or expanded use of Ohio coal; 2) to improve the environmental performance of coal-based technologies; 3) to generate innovative research in the field of coal use; and 4) to train a future supply of Ohio-based scientists and technologists in clean coal and emission control technologies.

The Ohio Coal Research Consortium (OCRC) was created in 1990. The initial Consortium involved four Ohio universities and was a five-year effort. The goal was to develop a base of fundamental knowledge to complement practical field experience from demonstration projects presently underway. Sulfur control encompassed essentially all of Consortium-I focus. Following

the technical and academic success of Consortium-I, OCDO supported Consortia II, III, IV, AY07-08 and AY08-09 over a span of eighteen years. Consortia II, III, and IV were four year studies on selected topics; however, topics evolved and priorities changed on much shorter time frames to include such topics as NO_x control, toxic elements control, mercury control, CO₂ control, and more recently to hydrogen from coal, direct coal fuel cells, fuel cells for coal syngas, and production of chemicals from coal. Hence, in Consortium AY07-08, the four-year timeframe was dropped.

CONSORTIUM STRUCTURE

1) Ohio Coal Development Office – OCDO provides guidance, direction and funding to the OCRC and sets areas of research. It receives and reviews the quarterly and final project reports, arranges on-site tours, and status and other meetings for the Consortium. OCDO arranges the annual review meeting of the Consortium Review Committee (CRC) to evaluate the previous year's work and the next year's project proposals.

2) Consortium Administrator – The Ohio Coal Research Consortium is funded and overseen by the OCDO, with one member university acting as the Consortium Administrator (CA). The CA contracts with OCDO for the "prime" grant agreement and then subcontracts with each of the other universities involved in the Consortium; receives and reviews invoices from all Consortium members and sends them as a package to OCDO. Funds for payment of the invoices are transferred from OCDO to the CA, who then pays the subcontractors invoices. The CA also assists the OCDO in planning of review meetings, site visits and other Consortium meetings.

3) Steering Committee – Each participating school often has several professors involved in the OCRC. Each school selects, from among its number, one person to serve on a Steering Committee. Meetings or communications of the committee are generally initiated by the OCDO or CA, although the Steering Committee members may request a coordination meeting/conference call with the OCDO and the CA.

4) Consortium Review Committee (CRC) – The CRC is a group of individuals drawn from various fields of coal expertise. Among these are: electric utilities, coal producers, federal and state government, private research entities, private coal consultants and scientists. Each project is assigned two or three members from the CRC to act as mentors to the project, review it throughout the year and offer observations and advice.

The CRC and OCDO staff will conduct reviews of pre-proposals in April and of full proposals at **the June 3-4, 2009 CRC meeting**. Pre-proposals for projects new to the Ohio Coal Research Consortium as well as pre-proposals on projects, which are a continuation from Consortium AY08-09 are **due to OCDO no later than 5:00 p.m., Wednesday March 25, 2009**. No amendments to the pre-proposals will be accepted after the deadline. Consortium AY07-08 projects that must submit a pre-proposal to be considered for additional funding in Consortium 2009 include A3 by Drs. Pinto and Thiel of UC, B2 by Drs. Nestic and Bayless of OU, C6 by Dr. Guliants of UC, C7 by Dr. Coleman of UT, C9 by Dr. Guliants of UC and Dr. Verweij of OSU, C16 by Dr. Chuang of UA and Dr. Fan of OSU, and C17 by Dr. Fan of OSU. Then in mid April in a conference call, OCDO staff and the CRC will discuss and select pre-proposals of interest. OCDO will notify all researchers of the selection near April 24, 2009 by email. Proposers of projects that are of interest to OCDO and the CRC will be invited to submit addenda to their pre-proposals, which will be **due at OCDO no later than Wednesday May 13, 2009 by 5:00 pm**. No addenda or changes to the pre-proposals will be accepted after the deadline. During the June CRC meeting, proposers will make an **oral presentation to the CRC on the proposed**

work on June 3, 2009. On June 4, 2009, OCDO staff and the CRC will prepare a recommendation for funding, which will be presented to the OCDO Technical Advisory Committee at its June 18, 2009 meeting.

5) The CRC June meeting – Proposers will present to the CRC on **Wednesday June 3, 2009** in Columbus. (Proposers and CRC members will be notified of final details and a venue later.) Presentations should be brief (approximately 10-12 minutes). Handouts of PowerPoint presentations for the CRC are required. Presentations will be in closed sessions.

The PowerPoint presentations should be mailed or delivered to OCDO on a CD by **Thursday, May 28, 2009 no later than 5:00 p.m.** so that they can be forwarded to the CRC prior to the June 3rd meeting. Also, the presentations will be loaded on the OCDO computer prior to the meeting. Only the OCDO computer will be used in the projection of the presentations during the meeting.

The oral presentation is to provide the CRC an opportunity to raise questions regarding points of concern or clarification that might come to mind during review of the written proposal. The oral presentation should be limited to topics and data presented in the written proposal. New concepts and data presented for the first time in the oral presentation are not appropriate. The written full-proposal has priority in importance in the selection of projects.

Further, during its deliberations at the June meeting, the CRC has the authority to mandate modifications/alterations to a proposed project and its budget. The proposer will receive a notification by email on **June 5, 2009** of the CRC recommendations including notice of redirection if any is required. The proposer must make any required **revisions and return its modified proposal by Wednesday June 10, 2009 no later than 5:00 p.m.** This tight time frame is required in order to get the request for funding on the agenda of the June 18 meeting of OCDO's Technical Advisory Committee (TAC). If a proposer declines to make the required modifications to the proposed project or its budget, the CRC recommendation for funding will be withdrawn.

The CRC and OCDO staff will evaluate and recommend projects on a merit and priority basis. After the June CRC meeting, the CRC Chair prepares a report for the TAC recording the CRC's review and recommendations on each project proposal.

6) The OCDO Technical Advisory Committee (TAC) & The Ohio Air Quality Development Authority (OAQDA) -- In accordance with OCDO's statute, every project proposed for funding must first be reviewed in a public meeting by OCDO's TAC. A member of the CRC will present the recommendations of the CRC to the TAC. The TAC must vote whether or not to recommend funding of a program or project to OCDO, which in turn recommends funding to the Ohio Air Quality Development Authority (Authority), which has final approval. Once the approval of the Authority is received, OCDO enters into grant negotiations with the CA. These are usually completed by the end of July; therefore, it is incumbent upon the CA to negotiate concurrently the subcontracts with the other OCRC members along with the prime grant in order to meet the start of the new school year (September 1, 2009).

In any event, OCDO/OAQDA reserves the right to accept or reject in whole or in part or seek modifications to any or all proposals if it is determined to be in the best interests of the State of Ohio to do so.

PROJECT QUALITY SAFE GUARDS IN A TWO-YEAR FUNDING CYCLE -- Though it is the intention of OCDO that every project which receives a two year grant would complete two full years of productive work, there will be one condition for continuation of a project from year one to year two. During the first year of the project, OCDO staff will visit the project in May of 2009 and again in July of 2009 to confirm that the project statement of work and the Gantt chart have been followed. It is anticipated that the great majority of projects will satisfy this condition. For projects that have satisfied this requirement, OCDO staff will email the CA and the PI by August 31, 2009 a confirmation that the project has followed the statement of work and the Gantt chart and that the grant is to remain open as anticipated. If OCDO staff finds significant problems regarding these criteria, OCDO staff and the project mentors will discuss the situation with the PI by August 1, 2009 to attempt a resolution. If a resolution of concerns is not possible by August 31, 2009, the project funding will be discontinued on August 31, 2009. Again, it is anticipated that a decision to discontinue the project after year one will be a rare event.

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

RESTRICTIONS ON NUMBERS OF PRE-PROPOSALS A PI MAY SUBMIT – In order to reduce the work load of the PIs in preparing proposals and the CRC in review of proposals, the RFP calls for submittal of pre-proposals in March for an initial screening review and pre-proposal addenda in May for the final round of review. It is also the goal of the RFP that PIs only submit their best concepts for consideration. The submittal of numerous proposals by one PI in the hopes that the CRC would select one proposal is not acceptable and therefore, the following restrictions will be placed on the number of pre-proposals a PI can submit.

- 1) A PI must be a Professor, Associate Professor, or an Assistant Professor. Post Doctoral students and administrators of laboratories can serve as Co-PIs but they cannot submit pre-proposals nor serve as PIs on a project.
- 2) A PI of a project of Consortium AY07-08 may submit pre-proposals for continuation of all his/her current projects. Current projects due for review and possible renewal of funding were listed above in paragraph 4 of the section entitled "Consortium Structure".
- 3) In addition to submittal of pre-proposals for continuation of projects of Consortium AY07-08, any PI may submit one pre-proposal for a new project.

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

OCRC 2009 TECHNICAL GOALS & OBJECTIVES -- The technical goals and objectives of OCRC 2009 are set forth below. Proposers are advised to keep current with the latest air

emissions restrictions enacted or proposed by the US Environmental Protection Agency so that proposers' research and work will remain relevant to the ultimate end user. Proposers should exhibit an awareness of the anticipated environmental restrictions end users will have to meet and the cost of meeting environmental restrictions.

If the project addresses emission control for a PC power plant or an IGCC power plant, the proposer must clearly demonstrate that the technology being studied can be practically applied and must supply some rudimentary estimates as to the economic cost and viability of the concept or process. These pre-proposals and full-proposals must identify application details for the process being investigated with respect to a common, large scale (600+ MW), coal-fired power plant. **Attachment 1** contains typical operating ranges for a large-scale PC fired power plant. Specifically, for the process being investigated, describe the anticipated location in the gas train and the appropriate range of temperatures, gas composition, residence times, pressure drop, etc. Proposals should contain citations and specific information from accepted industry standards, such as those found in Babcock & Wilcox's **STEAM**, to corroborate the proposal's assumed operating conditions of the proposed process or concept. It is acceptable for the technology to be aimed at a smaller scale plant as long as the proposal cites typical operating conditions found in such units.

In the area of air toxics, mercury is the air toxic of primary concern. However, for PC fired boilers in Ohio, which in most cases will soon be equipped with SCR for NO_x control and FDG scrubbers, mercury control is not as pressing an issue today. Therefore, new projects for mercury control in PC fired boilers will only be considered if the concept has the potential to dramatically reduce the cost of mercury capture to the range of \$1000 per pound. Control of mercury emissions in IGCC plants or coal gasification systems at higher temperatures is still a priority topic.

With international concern regarding the issue of global warming, carbon management – also referred to as the management of CO₂ and methane emissions – is receiving considerable attention from research groups worldwide. Clearly, coal is at the center of this discussion and it is consequently of special concern to OCDO. Carbon management poses special challenges to the power production industry. In line with these concerns and this challenge, OCDO is including carbon management as a significant effort in the OCRC. Questions to consider include the suitability of depleted oil and gas fields, unminable coal seams, and deep sandstone formations in Ohio for sequestration of CO₂; more economical processes for separation of CO₂ from flue gases; chemical processes, which yield hydrogen-rich fuels from Ohio coal and nearly pure streams of CO₂; and the impact of impurities in compressed CO₂ (such as SO₂, O₂, H₂O, NO_x, and air toxics) on its suitability for pipeline transportation to a disposal well and disposal in geologic formations of Ohio. Specifically there is interest in developing details of systems suited for movement of CO₂ contaminated with SO₂ and air toxics short distances from power plants burning Ohio high sulfur coal to near by deep disposal wells in Ohio.

OCDO is also interested in developing or advancing technologies related to the use of coal syn-gas in processes for: 1) production of hydrogen for fuel or chemical applications and CO₂ streams suitable for sequestration; 2) production of feed streams from coal suitable for use in processes that yield chemicals and liquid fuels; and 3) development of fuel cells that use coal syn-gas or streams derived from coal syn-gas as fuel. In addition, OCDO is interested in direct coal fuel cells and chemical looping processes that convert coal directly into hydrogen for fuel or chemical applications and CO₂ streams suitable for sequestration or lead to other methods for conversion of coal into usable energy.

OCDO is also interested in retro-fitting the existing PC fired fleet of power plants for oxy-fired combustion as a possible method of generating a CO₂ stream suitable for sequestration. There is also interest in oxygen blown gasification as an approach to obtain CO₂ streams suitable for sequestration. In either of these applications, the cost of oxygen separation from air is a major factor in the overall economics of the processes. Therefore, the CRC is interested in projects on oxygen separation from air. This is a very active research area in industry, yet one often hears that a breakthrough may be a decade or more away. OCDO's goal will be to seek new and novel methods to achieve this separation that have a potential to greatly reduce the cost in \$/ton of oxygen produced.

Goal A: Improve or reduce environmental emissions from coal combustion

- Development or advancement of low cost, high temperature H₂S clean-up from coal gas streams
- Development or advancement of systems or sorbents for capture of mercury and other air toxics at high temperatures for advanced coal-based power generating technologies such as gasification, which have the potential to reduce the cost of mercury capture to near \$1000 per pound
- Address procedures to prevent or control primary and secondary PM_{2.5} emissions

Goal B: Evaluate CO₂ control methods which can be applied in Ohio

- Characterization of the physical and chemical reactions between CO₂ and minerals found in depleted oil and gas fields, unminable coal seams, and/or deep sandstone formations in Ohio – Determination of the impacts of impurities in the CO₂ such as SO₂, O₂, H₂O, NO_x, N₂ and air toxics on such reactions – Determination of the tendency for the long-term loss of CO₂ from such geologic formations in Ohio
- Development of novel and less costly methods for separation of CO₂ from flue gas
- Investigate ways to increase the efficiency of coal based power systems
- Determine the impact of impurities in compressed CO₂ such as SO₂, O₂, H₂O, NO_x, N₂ and air toxics on its corrosive properties and its suitability for compression in commercial compressors and for transportation in commonly available gas pipelines – Will these compressed CO₂ gases require treatments to alleviate corrosive properties – If such impurities must be removed from the compressed CO₂ is it best to remove them before or after compression – If the distance from power plants burning Ohio high sulfur coal to deep wells for disposal in Ohio is only a few miles, is it practical to develop new materials for compressors and pipelines specifically for this application in Ohio

Goal C: Coal to hydrogen and chemicals and coal based fuel cells

- Develop processes for producing hydrogen rich fuels from Ohio coals and aim toward zero emissions of CO₂ and pollutants

- Development of processes that convert coal into feedstocks for chemical or liquid fuel production
- Development of membranes or chemical processes to produce from Ohio coal a hydrogen rich stream for fuel or chemical applications and CO₂ streams suitable for sequestration
- Development of direct coal fuel cells and fuel cells that use coal derived gases
- Development of new and less costly methods for separation of oxygen from air for use in oxy-fired PC boilers and gas blown coal gasifiers.

ELIGIBILITY – This solicitation is limited to universities located within the state of Ohio. Causes for rejection of a pre-proposal or pre-proposal addendum without detailed review (in no particular order) include, but are not limited to:

- applicant is not of an Ohio university
- pre-proposal is not received by the 5:00 PM Wednesday, March 25, 2009, submission deadline
- pre-proposal addendum is not received by the 5:00 PM Wednesday, May 13, 2009 submission deadline
- pre-proposal does not contain Attachment 2 and an original signature by an authorized school authority
- pre-proposal addendum does not contain Attachments 2 and 3, and an original signature by an authorized school authority
- proposed work is outside the topic area of this solicitation
- proposed work is too broad and not focused
- pre-proposal or pre-proposal addendum fails to meet the solicitation format requirements
- proposal duplicates other work by EPRI, US DOE, US EPA or others
- proposals for continuation of active projects that did not demonstrate progress in the prior year
- proposed work and associated budget is not feasible or reasonable
- proposed budget does not meet the required cost share
- budget otherwise fails to conform to requirements set forth in this solicitation
- OCDO does not fund black boxes – the pre-proposal and pre-proposal addendum must identify clearly chemical reactions, compounds, processes and other details that are core to the proposed research. If the information is considered to be a trade secret as defined by Section 1333.61 of the Ohio Revised Code it shall be treated accordingly. **However, it is solely the proposer's responsibility to conspicuously identify and mark only those lines, diagrams, etc. or portions of the document containing trade secret information. Entire proposals or entire pages so marked cannot be deemed as confidential**

PRE-PROPOSAL FORMAT – The total length of the pre-proposal should not exceed **five pages plus attachment 2**, in size 10 Arial font, with one-inch margins on all sides. The sections of the proposal must include the following:

1. **Cover Page** -- Complete all sections of **Attachment 2** and attach it as the top page of the pre-proposal. This attachment does not count toward the five-page text limit.
2. **The Objective** – a brief statement should be presented of the specific goals for each year of a two-year project (approx. 1/3 page). It is essential that the pre-proposal clearly state the objectives and the basis of the proposed work.
3. **Background and literature review** – this discussion should define the state of the art of the proposed concept, process, etc, covering only the most important points and showing how the proposed work is a logical next step forward. This discussion should include key chemical reactions, or process concepts to be studied (approx. 1.5 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. **Presentation of key data** – key data from the previous year's work or preliminary data for new projects should be presented with discussions supporting the tasks proposed in the statement of work for this year's solicitation (approx. 2/3 page).
5. **Statement of work** – A detailed discussion should be presented on tasks to be completed in a two-year project. The presentation should be clearly divided into two sections, one for year one and a second for year two. (approx. 2.0 pages).
6. **Reference List** – brief (approx. ½ pages).

Space should not be used in the pre-proposal explaining how the proposal is related to the research topics listed above in this solicitation nor to the question of how the proposal will advance usage of Ohio coal. If these points are not self evident in the pre-proposal, it will be dropped from consideration.

ADDENDUM TO THE PRE-PROPOSAL FORMAT – The full proposal will consist of the pre-proposal and an addendum to the pre-proposal. The pre-proposal addendum will only include additional paragraphs as listed below. Reviewers will then refer to both the pre-proposal and the pre-proposal addendum. This will save the PIs time in drafting of the full proposal and enable a more efficient review. The total length of the pre-proposal addendum should not exceed five pages, in size 10 Arial font, with one-inch margins on all sides. The following sections should be prepared:

1. **Cover Page** – A copy of the **Attachment 2** of the pre-proposal. This attachment does not count toward the five-page text limit.
2. **Executive Summary** – Following the cover page will be an executive summary which must summarize the specific work to be accomplished in a two-year project beginning on September 1, 2009 and ending on August 31, 2011, The executive summary should present project goals and anticipated achievements, and a justification for the work. The

executive summary must **not** contain any trade secret information, as it may be released to the public. **This section should not exceed one page.**

3. **Expanded discussion on key points** – this could be used by the PI to highlight points or address concerns raised by reviewers of the pre-proposal. This should not be a repetition of information provided in the pre-proposal though reference can be made to figures, tables, pages, sections, etc. of the pre-proposal. **This section should not exceed two pages.**
4. **Expanded details on the SOW – this is not to be a repetition of the SOW of the pre-proposal.** Instead, this would follow the same outline of the pre-proposal statement of work in terms of tasks and subtasks to be completed. The reviewer will have the SOW of the pre-proposal and the additional detail of the pre-proposal addendum to refer to at one time. For example, a reviewer may refresh his memory of the SOW Task 1 of the pre-proposal and then turn to the SOW Task 1 of the pre-proposal addendum to see if any additional information has been provided. **This section should not exceed two pages.** Specifics to be included in the SOW of the pre-proposal addendum are:
 - a) For proposals with more than one PI, the PI responsible for a given task should be identified if that was not done in the pre-proposal;
 - b) There should be a statement of the hypothesis to be tested in each task or an expanded explanation of why the task or subtask is necessary and how the information obtained will be used; and
 - c) There should be expanded discussion of experimental design with the anticipation that the CRC members may want to discuss this in detail at the June CRC meeting.
5. **Project Personnel and Responsibilities** – Identify the Principal Investigator (PI) and Co-PI, if any, who will be the person directly responsible for the completion of the project within the grant agreement's parameters, including adherence to the SOW and project budget. Provide *curriculum vitae (CV)* of the PI and Co-PI and other major project personnel as an appendix to the proposal. While the CVs will not count toward the five-page limit, CVs exceeding three pages are discouraged—include what is appropriate to this proposal.
6. **Publications and Patent Applications** – Attach abstracts of published, peer-reviewed papers and abstracts of patent applications filed, based upon projects of Consortium IV Year 3, Consortium AY07-08, and Consortium AY08-09. These attachments will not count toward the 5-page limit or the proposal.
7. **Project Budget** – A budget specifying OCDO and the proposers cost share must be presented by line item using **Attachment 3** (the total OCDO funds and university cost share should be the same as on the attachment 2 of the pre-proposal). In addition, a budget justification section should be presented defining the following: **a)** all PI, Co-PI, and student time charged to the OCDO and/or provided as cost share; and **b)** an Equipment List and justification for each piece of equipment to be purchased. Additional sheets may be included in order to clarify the budget if necessary. Refer to the Consortium AY08-09 RFP for more details on the budget requirements. Attachment 3 and the budget justification will not count toward the five-page text limit.

8. **Gantt chart** – a detailed Gantt chart with a time line for each task and subtask of the SOW should follow the SOW. This chart will not count toward the five-page limit.
9. **Leveraging of OCDO Funds** – Proposers should attempt to use grants from OCDO in leveraging co-funding from other sources such as federal funds or other state or private funds for the project. An executive summary of any companion proposal(s) submitted to US DOE, other federal, state or private entity or funding program should be attached as an appendix to the pre-proposal addendum. The anticipated decision date and funding timeframe of companion proposals should be included. This will not count toward the five-page limit of the full proposal addendum.

FUNDING: Funding for two-year projects that start on September 1, 2009 and end on August 31, 2011, will be up to \$160,000 for two years with expenditure limits of up to \$80,000 of the OCDO grant per project year. Proposer cost share for the two years would be 25% or more of the of OCDO's grant. For example, an OCDO grant of \$160,000 would require minimum proposer cost share of \$40,000. Proposer cost share should be provided throughout the two years in proportion to the release of OCDO funds. Special consideration will be given to projects that use OCDO funding to leverage federal or other third-party matching funds. The proposal should specifically state if third party funding is included in the proposed project, and include a copy of executive summaries of proposals made to third parties in an appendix to the pre-proposal addendum. Other details and restrictions on funding are as follows:

1. OCDO will fund equipment necessary to complete the work up to 50 percent of its actual cost. Upon successful completion of the project, title to the equipment will be granted to the school. The proposer may count the other 50 percent of the equipment's cost toward cost share.
2. During summer months, OCDO shall fund up to a total of two months faculty time. The two months can be divided between the PI and Co-PIs as appropriate for the project. Actual charges will be based upon 1/9 of the academic year base salary of the PI and Co-PIs and their portion of the two-month limit. Faculty compensation during the academic year is not an allowable cost. Otherwise, unlimited additional faculty time may be funded by the participating school and/or by a third-party funder and counted toward the required cost share.
3. Graduate student costs shall be at school's regular rates for the appropriate level of the student.
4. Travel in the project budget (as opposed to the CA budget) should be limited to actual travel necessary to complete the project (example: a car trip between one school and another in order to collaborate on research or a trip to a "Consortium" meeting. Do not include travel to conferences to present papers, as that is included in the CA Administration budget. (However, please note in your proposal if you intend to present at a conference, as it will help in the preparation of the Administration budget.) With the possible exception of Canada (with strong justification), no international travel will be reimbursed by OCDO.
5. Overhead charges shall be kept to a minimum. However, overhead charges may be used as part of an institution's cost share commitment, provided that federally approved,

auditable overhead rates are used. Overhead charges, if any, to OCDO cannot – in any case – exceed the university’s federally negotiated rate for research.

6. All OCDO grant agreements include clauses that make grant awards and continuations contingent upon both availability of funds and appropriation authority.

AWARD DELIVERABLES – Following approvals and execution of legal agreements as noted above, some of the basic requirements of the grant and subcontracts are as follows:

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

TRADE SECRET INFORMATION – All information submitted in response to this RFP shall be public information unless it is determined to be "trade secret," as it is defined by Section 1333.61 of the Ohio Revised Code. Any information submitted with the proposal, which the proposer deems a trade secret shall be treated accordingly, if the information is determined to be a trade secret under the laws of the State of Ohio. In the event the proposer submits trade secret information, **it is solely the proposer's responsibility to conspicuously identify and mark only those lines, diagrams, etc. or portions of the document containing such information.** Entire proposals or entire pages so marked cannot be deemed as confidential.

PRE-PROPOSAL and PRE-PROPOSAL ADDENDUM SUBMISSION REQUIREMENTS – Six (6) paper copies of the pre-proposal and the pre-proposal addendum and one Adobe Acrobat PDF copy on a CD (**zip drives are no longer acceptable**) shall be submitted to:

Mr. Bob Brown
Ohio Coal Development Office
Ohio Air Quality Development Authority
50 West Broad St.
Suite 1718 Leveque Tower
Columbus, OH 43215-5910

Phone: 614/466-6538
Email: bbrown@aqda.state.oh.us

Pre-proposals must be **received** by or before **5:00 pm** Wednesday, March 25, 2009. Pre-proposal addenda must be **received** by or before **5:00 pm** Wednesday, May 13, 2009. **THERE WILL BE NO TIME EXTENSIONS.** Faxes and emails will not be accepted. No alterations or addenda to a pre-proposal or pre-proposal addenda shall be permitted after the deadlines. OCDO is not responsible for proposals not received.

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

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

All pre-proposal addenda 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, levies, lawsuits or investigations of any type pending against their organization. If such an acknowledgment cannot be provided, the proposer must provide detailed information explaining such lien, levy, lawsuit, or investigation. *The proposer shall state in the cover letter that it will comply with all applicable federal, and State laws regarding equal employment opportunity, and anti discrimination and intimidation laws on account of race, religion, sex, disability, national origin or ancestry.* The cover letter and Attachment 2 must bear the original signature of an authorized authority of the school.

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

Criterion 1: The overall merit of the proposed project (0 to 5 points) – The research represents a significant contribution to expanding the base of knowledge in the defined focus area. The proposed approach is innovative and represents a significant departure from state-of-the-art approaches to the described problem. An awareness of the state-of-the-art in related areas of coal research is demonstrated.

Criterion 2: The stated objectives and probability of achieving those objectives (0 to 5 points) – The application clearly addresses a problem, concept or question described within the research areas A, B, and C defined above. A well-defined, logical statement of work is provided to effectively address the technical issues. An approach is described that is **scientifically sound**, well planned and uses current methods (or methods adequate to solve the problem) in the investigation.

Criterion 3: The facilities or specialized equipment and techniques available to the applicants to meet the project objectives (0 to minus 2 points) – Points will be deducted from the proposal if key equipment or techniques are not available or not included in the list of equipment to be purchased by the project.

Criterion 4: Leveraging of cost sharing funds from industry or government sources (-1 to 2 points) – One goal of the OCRC program is that OCRC support will be used as cost share in proposals submitted to other sources of government and industrial funding. The university would be expected to maintain its cost share at 25% (or greater) of OCDO's contribution to the project. The outside funds would be used to either expand the program or reduce OCDO'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. OCDO staff will assign scores on this criterion as follows:

- -1 if no effort was made to obtain outside funding
- 0 if projects have tried but were declined outside funding
- 0 if projects have tried for outside funding but have not received a decision
- 2 if projects have received outside funding

Criterion 5: Publication of research in peer-reviewed journals and applications for patents (-3 to a maximum of +3 points) – For projects that have received OCRC funding for a number of years, it is expected that by the end of the third year that a paper has been submitted to a peer-reviewed journal for publication and/or a patent application has been filed. OCDO staff will assign scores on this criterion as follows: +2 for the filing of a patent application; +1 for each peer-reviewed paper submitted for publication; and -3 if after completion of three years of work, both a patent application has not been filed and a peer-reviewed paper has not been submitted for publication.