

TITLE:

PROJECT COAL TO ELECTICITY: TEACHING ENVIRONMENTAL ISSUES

PRINCIPAL INVESTIGATORS:

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Powell River Project Research & Education Center

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PROPOSAL SUMMARY:

Provide teachers a week long field experience to improve their understanding of a variety of environmental and economic issues relating to coal extraction, preparation, transportation, and utilization. Also, to acquaint them with the reclamation of surface mine sites for a variety of post-mining land use options. Presentations are directed toward the development of lesson plans encompassing the Virginia Standards of Learning for teachers whose responsibilities include Virginia Studies, natural resources in grades 3, 4, 5, and 6, Civics & Economics, or Earth Science.

FUNDING:

Requested from PRP: \$5,000

Matching/in-kind support (estimated): \$50,000

SCOPE OF WORK

INTRODUCTION: *Project Coal to Electricity: Teaching Environmental Issues* is a holistic approach to the environmental, economic and social issues surrounding coal mining, utilization, and reclamation. This fits well with the mission of the Powell River Project as an educational program to enhance the coalfield region from both a local and statewide viewpoint. As outlined in the schedule section below in this proposal, this program is designed to provide teachers with the most up-to-date information about the relationship between coal and electricity, the environment, and post-mining land use options. Participants in the 2007 session indicated a desire to participate because they teach natural resources without first hand knowledge about coal extraction, reclamation, utilization and associated environmental issues.

OBJECTIVES: To improve the teachers' ability, either through expanding existing lesson plans or creating new lesson plans, to inform students about coal as a resource and the issues associated with its utilization. Improvements in society's understanding about the impact of coal on Virginia's economy now and in the future, and the associated environmental issues, should result in more informed involvement in public debates about coal and electricity.

METHODS AND PROCEDURES: Provide participants with a combination of first-hand field trip experiences and informal discussion opportunities to gain an understanding of the complex issues involved with the process of the program theme, from coal to electricity.

BENEFITS: This program provides teachers an opportunity to experience the process of coal extraction, preparation and utilization in the production of electricity. Also, the reclamation of surface mines for a variety of post-mining land use options. Comments received from participants in last year's program indicated the program resulted in the following benefits:

- Will be able to show and describe the various techniques of coal production use.
- Present accurate content and be able to share information with my students, school and county teachers.
- I have a new found love for coal and its uses. I also have a new love for the southwest region of Virginia.
- New information. My perspective has changed regarding energy, production and jobs.
- I will incorporate more about coal in several different units, as SOLs will allow for time. My principal is really pushing for higher SOL scores.
- Better presentation of material due to increase in knowledge of coal and the energy process. Use hand-outs to supplement textbooks.
- Greater knowledge of topic for enrichment as well as stronger understanding of SOL material.
- I will be able to give my students accurate and an abundant amount of information that I previously was unaware. All participants indicated their ability

to implement grade level Standards of Learning with Southwest Virginia coalfield examples improved as a result of participating in the program. In addition, they believed this would result in students gaining a better understanding of the world around them than would be the case if this program were not offered for the following reasons:

- Better insight to the use of fossil fuels.
- I understand much better, so I would pass this new knowledge on to my students.
- This program will help my students to identify the location of coal in Virginia, its uses, processes, present day and future applications. Great for SOLs.
- This will help my students understand their state and a very important natural resource – coal.
- If I understand it better, then I can help the students understand the concepts better.
- Anytime a teacher is excited about a subject, he or she will pass that excitement onto their students.
- With all of the information I have collected the students will understand how coal in their area benefits everyone. It will also help them understand the new technologies and careers involved.
- There is no better experience then being in the field where it is happening and talking to the experts. This information & experience is invaluable to preparing to teach lessons in this subject area.
- I truly had no knowledge of the coalfields in SW VA. I almost had to just have students trust me in the little knowledge I had.

SCHEDULE: A draft of the program for the 2008 session, as of April 15, follows:

**Virginia Tech’s Powell River Project Research & Education Center
&
Eastern Coal Council
Present**

PROJECT COAL TO ELECTRICITY TEACHING ENVIRONMENTAL ISSUES
“Coal + Power Plants + Technologies = Clean, Dependable Power”
2008 SUMMER TEACHER ENERGY EDUCATION PROGRAM

SUNDAY-13th

2:p.m. to 5:30p.m.
6:00 p.m.

Check-In: Martha Randolph Hall, UVA-Wise
Dinner: Cantrell Hall
Guest Speaker:

MONDAY-14th

7:00 a.m.
7:45 a.m.
8:00 a.m.
8:00 a.m.

Breakfast: Cantrell Hall
TRANSPORATION BUS Will Arrive In Front Of Martha Randolph Hall
Depart for Field Trip (Bus provided Monday – Thursday for all trips)
Tony Scales, Geologist, Virginia DMME
Local geologic structure and its impact on history & coal mining
Jon Rockett, Powell River Project Research & Education Center
Post-mining land use opportunities for economic development
Lunch: PRP-R&EC
Mike Thomas, Red River Coal Co, coal surface mining operations

12 Noon
1:30 p.m.

5:30 p.m. Dinner: (cook out) at PRP-R&EC
Guest Speaker: **Mike Abbott**, Virginia Department Mines Minerals & Energy

TUESDAY-15th

7:00 a.m. Breakfast: Cantrell Hall
7:45 a.m. TRANSPORTATION BUS Will Arrive In Front Of Martha Randolph Hall
8:00 a.m. Depart for Field Trip
8:00 a.m. Underground Coal Mine – Paramount Coal Corp VA LLC
12 Noon Lunch at Mine Site
1:30 p.m. Toms Creek Preparation Plant and Coal Laboratory
6:15 p.m. Wine Tasting & Dinner, MountainRose Vineyard (Reclaimed Mine Site)
7:30 p.m. Guest Speaker: **Tom Rappold**, Norfolk Southern Corporation

WEDNESDAY-16th

6:30 a.m. Breakfast: Cantrell Hall
7:15 a.m. TRANSPORTATION BUS Will Arrive In Front Of Martha Randolph Hall
7:30 a.m. Depart for Buchanan County
9:00 a.m. **Mike Onifer**, CNX Gas Tour (Coalbed Methane Gas), Claypool Hill, VA
11:00 a.m. Consol Energy Buchanan Mine (longwall operation)
1:30 p.m. Lunch: Buchanan Mine office
2:30 p.m. **Dallas Sizemore**, Virginia Department Environmental Quality - Air Quality Standards
Jewell Resources Training Center
3:30 p.m. **Richard Waddell**, Jewell Smokeless Coke Ovens
7:00 p.m. Dinner: Breaks Interstate Park
Guest Speaker: **The Honorable Phillip Puckett**, Virginia Senate

THURSDAY-17th

7:00 a.m. Breakfast: Cantrell Hall
7:45 a.m. TRANSPORTATION BUS Will Arrive In Front Of Martha Randolph Hall
8:00 a.m. Depart for Field Trip
8:30 a.m. Appalachian Power, Carbo Plant (coal-fired electricity generation)
12 Noon Lunch
1:00 p.m. Appalachian Power Waste Water Treatment and Ash Fill
5:30 p.m. Social & Dinner, John Fox Jr. House, Big Stone Gap
Guest Speaker: **Herbert Wheary**, Dominion Energy
Outdoor Drama -- Trail of the Lonesome Pine

FRIDAY-18th

7:00 a.m. Breakfast: Cantrell Hall
8:00 a.m. Depart for Field Trip (will take personal vehicles)
8:45 a.m. Joy Mining Machinery Re-build Facility, Duffield, VA
11:00 a.m. Natural Tunnel Tour and Lunch
1:30 p.m. Eastman Chemical Company's Coal Gasification Plant, Kingsport, TN
3:00 p.m. Discussion/evaluation of program with teachers
Professional Development Certificates presented

Depart for home no later than 3:30 p.m.

DELIVERABLES: A post evaluation of the program by the participants will be conducted and a summary will be submitted for inclusion in the Powell River Project Reports 2008.

FUNDING:

Powell River Project funds - \$5,000 approximately to cover participating teacher's expensive incurred at UVA-Wise and transportation for field trips as noted in the above schedule.

Matching/in-kind support (estimated):

Alpha Natural Resources - \$5,000

Appalachian Power - \$5,000

Consol Energy - \$10,000

DMME - \$1,000

Dominion Energy - \$1,000

Eastman Chemical Company - \$7,500

Eastern Coal Council - \$3,500

Jewell Smokeless - \$10,000

Joy Mining Machinery - \$1,000

Norfolk Southern Corp - \$2,000

Oliver Coal Sales - \$1000

Paramont Coal Corp VA LLC - \$10,000

Red River Coal - \$10,000