FINDING OF NO SIGNIFICANT IMPACT
FOR THE PROPOSED
DEMONSTRATION OF AN INTEGRATED POWER GENERATION SYSTEM
FOR COAL MINE WASTE METHANE UTILIZATION

AGENCY: U.S. Department of Energy (DOE)

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: DOE has prepared an Environmental Assessment (EA), DOE/EA-1416, to analyze the potential environmental consequences of participating in a project for installation and operation of a power generation system that uses coal mine waste methane to generate electricity. The system would be located in western Monongalia County, West Virginia. The new system, if successfully demonstrated, could provide an economically viable means to reduce emissions of methane, a significant greenhouse gas. If approved, DOE would provide approximately 35% of the funding required to design, construct, and initiate operation of the integrated power generation system.

Based on the analysis in the EA, DOE has determined that the proposed action is not a major Federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act (NEPA) of 1969, 42 United States Code 4321 *et seq.* Therefore, preparation of an Environmental Impact Statement is not required, and DOE is issuing this FONSI.

COPIES OF THE EA ARE AVAILABLE FROM:

Mr. Lloyd Lorenzi, Jr.
National Energy Technology Laboratory
U.S. Department of Energy
P.O. Box 10940
Pittsburgh, PA 15236-0940
(412) 386-6159

FOR FURTHER INFORMATION ON THE DOE NEPA PROCESS, CONTACT:

Ms. Carol M. Borgstrom, Director
Office of NEPA Policy and Compliance
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585
(202) 586-4600 or (800) 472-2756

BACKGROUND: As part of its mission, DOE's National Energy Technology Laboratory (NETL) provides science, technology, and policy options to resolve environmental, supply, and reliability issues associated with the use of fossil energy. Consistent with this mission and in partnership with stakeholders, NETL supports efforts by industry to increase energy efficiency, minimize waste, reduce environmental impacts, and increase the availability of domestic energy production through productivity and operational enhancements and improvements.

FINDING OF NO SIGNIFICANT IMPACT
FOR THE PROPOSED
DEMONSTRATION OF AN INTEGRATED POWER GENERATION SYSTEM
FOR COAL MINE WASTE METHANE UTILIZATION

Coal mine methane (methane that is released from coal seams during the mining process) is one source of natural gas that NETL is investigating as a potential resource for energy production. Methane is removed from coal seams either in advance of mining operations using conventional drilling techniques or by mine ventilation systems during active mining operations. Once a coal seam is mined out using longwall mining systems, the surrounding strata, or rock layers, can collapse and fill the void left from mining. This collapsed area, referred to as "gob," can contain recoverable methane, which is sometimes referred to as "gob gas," a mixture of air and methane.

The majority of coal mine methane is simply released to the atmosphere, thus contributing to the "greenhouse effect," which describes the buildup of heat on the earth's surface due, in part, to thermal radiation from the atmosphere. Energy from the sun enters and passes through the atmosphere, heats the earth's surface, and is radiated back into the atmosphere. Atmospheric gases absorb some of this outgoing energy. The atmosphere, in turn, radiates energy in all directions - including back toward the earth's surface. Because the earth's surface is heated to a greater degree than would occur in the absence of atmospheric radiation, the result is a "greenhouse effect," similar to the effect resulting from use of glass panels in a garden greenhouse to retain heat from the sun.

To examine technology opportunities for using gob gas and reducing greenhouse effects, NETL released solicitation number DE-PS26-00NT40767, entitled Recovery and Utilization of Coal Mine Methane: Pilot-Scale Demonstration Phase, on March 10, 2000. The objective of the solicitation was to demonstrate state-of-the-art approaches for methane gas recovery and beneficial use. The resulting demonstrations would provide coal and energy companies with cost-effective, commercial technology systems to reduce methane releases from underground coal mining operations, thus reducing methane contributions to the greenhouse effect.

DESCRIPTION OF THE PROPOSED ACTION: The proposed action is for the United States DOE to provide, through a 3-year cooperative agreement resulting from a proposal submitted under the referenced solicitation by Northwest Fuel Development, Inc., of Oswego, OR, cost-shared financial support for design, construction, and operation of an integrated power generation system using waste methane. The proposed system would be located at the Eastern Associated Coal Corporation's (EACC's) Federal Number 2 Mine, near the unincorporated town of Crossroads in rural western Monongalia County, WV.

Under the proposed action, DOE would provide $600,000 (approximately 35% of the total cost) of a cooperative agreement with Northwest Fuel Development for testing the commercial viability of capturing low quality coal mine methane and processing the gas on-site into two streams - a pipeline quality gas for sale, and a lower quality gas for combustion in a series of modular reciprocating internal combustion engines that would drive generators to produce electricity for the mine.

ENVIRONMENTAL CONSEQUENCES: The environmental consequences of the proposed project included consideration of potential effects on the following environmental resources: air quality, water quality, socioeconomic resources, safety and health, floodplains and wetlands, flora and

fauna, cultural and historic resources, soils and geology, noise, environmental justice, and aesthetics. The environmental analysis identified that the most notable changes to result from the proposed action would occur in the areas of air emissions, noise levels during operations, and aesthetics. No substantive adverse impacts or environmental concerns were identified from analyzing the effects of these changes.

Air Quality: The proposed project would combust coal mine waste methane and produce criteria pollutants regulated by National Ambient Air Quality Standards (NAAQS) under the Clean Air Act. The proposed project is permitted as a synthetic minor source by the West Virginia Department of Environmental Protection - Office of Air Quality. Under the synthetic minor source permit for the proposed project, annual emissions would be limited to 249.1 tons of nitrogen oxides, 17.84 tons of carbon monoxide, 12.24 tons of sulfur dioxide, 0.8 tons of particulate matter less than or equal to 10 microns, and 6.47 tons of volatile organic compounds. Results from screening/modeling conducted as part of the State permitting process indicate that emissions at these levels would not exceed NAAQS for any criteria pollutant. The proposed project would also emit small quantities (less than 3.5 tons/year) of hazardous air pollutants.

Water Quality: Water requirements for the project would be delivered to the site by truck. No on-site water source would be needed. The proposed project would generate a small amount of wastewater (40 gallons per day) due to condensation from the compressors and associated equipment. The wastewater would be collected, pumped to a storage tank, and trucked off-site for disposal in accordance with applicable environmental regulations. Due to the small amount of generated wastewater and the plan for proper off-site disposal, no impacts to water quality at the site would be expected.

Socioeconomic Resources: The proposed project would not require a permanent on-site workforce, and the number of workers employed during the construction phase of the project would be small in comparison with the total non-farm employment base in Monongalia County. Thus, the proposed project would not increase school-aged population or have any adverse impacts to local educational or recreational resources. Some minor increase to the tax base due to construction and operation of the new power generation system may occur.

Safety and Health: Construction activities at the proposed site would involve several Occupational Safety and Health Administration (OSHA) standards - including excavations, electrical utilization systems, hoisting and rigging, hazard communication, and hearing conservation. Construction activities would be covered by regulations at Title 29, Code of Federal Regulations (CFR), Part 1926, "Safety and Health Regulations for Construction." Conformance to applicable OSHA standards would provide adequate protection to workers during the construction phase of the project. Operational activities may involve workplace exposure to noise and electrical systems. Conformance to applicable OSHA requirements (29 CFR 1910, "Occupational Safety and Health Standards") would provide adequate protection to workers during the operations phase of the project. The potential for combustion or explosion due to accidental release of methane is remote, since any accidental release would require the

simultaneous occurrence of two or more failures and the amount of methane that could be released would not be expected to result in an explosive atmosphere.

Floodplains and Wetlands: The power generation facilities would be constructed approximately 1,060 feet above sea level. Based on the Federal Emergency Management Agency's Flood Insurance Rate Map (Community Panel Number 540139 0050 B; dated May 1, 1984) covering the project area, the proposed location would be above the 100-year flood elevation.

No documented wetlands exist in the immediate area of the proposed site, based on U.S. Fish and Wildlife Service National Wetland Inventory maps (1987) and confirmation during a site visit. A small wetland area located approximately 2,000 feet downstream of the proposed project site would not be affected by either construction or operation of the power generation system.

Flora and Fauna: The proposed project would be located on a previously disturbed site, where adverse impacts to fish, plant, or wildlife species from construction or operation activities would be minimal. Some native fauna may avoid the immediate project area due to increased levels of human activity and associated noise, but this effect would be localized and would diminish with time, as animals acclimate to the project. No Federally listed threatened or endangered (T&E) species are known to occur in the area. Consultation with the U.S. Fish and Wildlife Service confirmed that the project area does not support any T&E species or critical habitat.

Cultural and Historic Resources: The proposed project, including the proposed pipeline route, would be located on previously disturbed property or on property that would be used in a manner similar to current use. Thus, the proposed project would not be expected to adversely affect existing properties. As part of the scoping process and to comply with Section 106 of the National Historic Preservation Act, DOE consulted with the West Virginia Historic Preservation Office, which confirmed that no properties of historic significance exist within the project area.

Soils and Geology: Soils at the proposed site have been previously disturbed, and the proposed project would not alter the current use. Installation of the gathering lines would result in a temporary disturbance to surface soils, including soil erosion and runoff. Standard construction practices, including control of runoff and re-seeding of disturbed areas, would be used. No long-term impacts to soils or the local geology would be expected as a result of the proposed action.

Noise: An increase in community noise was identified during the scoping process as a potential environmental concern, and this concern was emphasized during public participation by some local residents. A baseline noise survey, conducted at the fenceline between the nearest residence and the site of the proposed project, determined that the baseline day-night noise level was 48.5 dBA. Based on noise conditions produced by similar equipment at Cadiz, OH, attenuation at the proposed site would be expected to reduce fenceline noise to a level similar to baseline conditions. Northwest Fuel Development plans to install a stack silencer on the combustion engines to reduce their noise levels. DOE would conduct follow-up surveys to ensure that project noise does not exceed 3 dBA over baseline or 55dBA for greater than a 15

minute period every 24 hours. With these measures, the project would not be expected to create an adverse noise impact on the local community.

Environmental Justice: The population potentially affected by the proposed project would not be classified as an environmental justice community. In addition, the proposed Federal action would not be expected to result in either an adverse impact on the environment or a disparate application of environmental laws or policies.

Aesthetics: The exhaust stack for the project would be 90 feet in height and visible to some nearby residences to the north and south of the proposed site. Although higher than any man-made structures in the vicinity, the stack would have little impact on the viewshed. The view from residences to the south would be partially obstructed by trees and topography and naturally mitigated by the distance to the site (approximately ½ mile). The view from residences north of the site would be partially obstructed by trees and topography. No adverse impacts to visual aesthetics would be expected.

ALTERNATIVES CONSIDERED: In addition to the proposed action, DOE considered the No Action Alternative, whereby DOE would not provide cost-shared funding to the project. Without DOE participation, Northwest Fuel Development potentially could continue the project with private funding, in which case the environmental consequences would be similar to those expected from the proposed action. More likely, the No Action Alternative would result in termination of plans for the project. If the project does not proceed, the addition of up to 286.45 tons/year of criteria pollutants would not occur, but the mine would continue to vent waste methane to the atmosphere.

DOE analyzed the alternative of using a gas turbine to replace half of the planned number of reciprocating internal combustion engines. A gas turbine would produce fewer criteria pollutants but would be expected to increase the community noise level by 7.5 dBA, which would be noticeable for most people.

DOE also analyzed use of alternative vent holes as sources of the waste methane. Due to the location and elevation of suitable alternative vent holes, either on-going drainage of the pipeline to remove collected water, or installation of a gas dryer at the vent hole would be required to maintain a dry gas for introduction into a pipeline. Either option would be expected to increase land disturbance around the pipeline or the vent hole.

PUBLIC AVAILABILITY: The draft EA was distributed for review and comment to Federal and state agencies and to the public and posted on the NETL website. Copies were made available for review in the City-County Public Library at Moundsville, WV. No adverse comments regarding the proposed action or the environmental analysis were received. One commenter thanked DOE for the opportunity to review the EA. The commenter also reiterated an initial concern about noise but did not oppose the analysis or the expected impacts. DOE discussed the noise concern with the commenter and reinforced a commitment to plans for conducting additional noise surveys subsequent to project operation, to ensure that project-related noise

would not exceed levels of concern. The proposed project would not be expected to create adverse noise levels in nearby communities.

DETERMINATION: Based on the information and analyses in the EA, DOE has determined that the proposed Federal action, to provide cost-shared financial support for the design, construction, and initial operation of an integrated power generation system that uses coal mine waste methane, does not constitute a major Federal action that would significantly affect the quality of the human environment, within the meaning of the NEPA. Therefore, an Environmental Impact Statement is not required, and DOE is issuing this FONSI.

Issued in Pittsburgh, PA this 28th day of June, 2002.

Rita A. Bajura
Director
National Energy Technology Laboratory