EXHIBIT 4

MISSISSIPPI™ LIME

Discovering what's possible with calcium

Kimberly S. Lagomarsino, PhD - Director, Environmental Affairs
16147 U.S. Highway 61, Ste Genevieve, MO 63670
(573) 883-4046 Fax (573) 883-4363

June 11, 2010

Mr. Minesh Patel
Illinois Environmental Protection Agency
Bureau of Air
Permitting Section
1021 North Grand Ave East
Springfield, IL 62702
P.O. Box 19506
Springfield, IL 62794-9506

Subject: Additional Information
Mississippi Lime Company
Prairie du Rocher, Illinois Project
Construction Permit Application

Dear Mr. Patel:

As dialoged in electronic mail and telephone conversations, Mississippi Lime Company has prepared additional information to supplement the originally submitted PSD air permit application for the subject project. Information contained in the attached document includes, but is certainly not limited to:

- Beneficial uses of lime for Illinois and the Midwest,
- Clean fuels,
- Solid fuel vs. natural gas,
- BACT summaries for NO_x, SO_2, CO and $PM/PM_{10}/PM_{2.5}$, and
- Supplemental BACT analyses for NSR/PSD regulated pollutants.

Thank you so much for working closely with Mississippi Lime Company on this important project. Please contact me with questions or comments regarding this submittal.

Sincerely,

Kimberly S. Lagomarsino, Ph.D.
Director of Environmental Affairs

E-Cc:

Mr. Chris Romaine
Chief, Major Construction Unit & Permitting Section
Illinois Environmental Protection Agency – Bureau of Air

Mr. Matthew L. Will
Modeling Unit/Air Quality Planning Section
Illinois Environmental Protection Agency – Bureau of Air

K. E. Espelien, Vice President of Corporate Development & Technology, MLC
J. S. Castleberry, Environmental & Regulatory Affairs Manager, MLC-SG
J. M. Kennedy, Environmental Compliance Specialist, MLC-SG
J. P. Metziner, Project Manager, MLC-SG
D. A. Armbruster, Project Manager, MLC-SG

MISSISSIPPI™ LIME

Discovering what's possible with calcium

Mississippi Lime Company

Prairie du Rocher, IL Facility

ADDITIONAL INFORMATION

RECEIVED

JUN 16 2010

Illinois Environmental Protection Agency
BUREAU OF AIR
STATE OF ILLINOIS

TABLE OF CONTENTS

PURPOSE

The purpose of this document is to address potential questions and concerns that may be raised during the hearing and associated public comment period to be held concerning issuance of the proposed permit.

BACKGROUND

Mississippi Lime Company (Mississippi Lime) plans to construct a new facility (the facility) for converting limestone to lime. The limestone will be obtained from Mississippi Lime's underground mine located northeast of the facility. Mississippi Lime will purchase sized limestone or operate its own limestone preparation plant. Limestone obtained from the underground mine will be conveyed to above ground stockpiles located at the lime manufacturing plant site. An underground feed system beneath the stockpiles will then transfer the stone, via a system of chutes and conveyors, to a screen for final classification prior to supplying the lime manufacturing process.[1]

Limestone is converted to lime (also known as quicklime) inside a kiln heated with a solid fuel; the thermal reaction is called "calcination;" and occurs as follows:

$$CaCO_3 \text{ (limestone)} + \text{heat} \rightarrow CaO \text{ (lime)} + CO_2$$

Once lime is produced, hydrated lime, also known as calcium hydroxide, can then be created by mixing lime with water in a controlled process, as noted below.

$$CaO \text{ (lime)} + H_2O \text{ (water)} \rightarrow Ca(OH)_2 \text{ (hydrated lime)} + \text{heat}$$

The kilns at the plant will be equipped with energy efficient preheaters. As such, screened limestone will be transferred to, and pass through the preheater where it will be exposed to process gasses exiting the kiln. The preheated stone will then enter the rotary kiln where, due to gravity and the kiln's rotational motion, the stone migrates toward the burner end of the kiln, as hot combustion gases flow through the kiln in the opposite direction. Rotary kilns are built on a slight incline so that as the limestone tumbles toward the burner end (or lower end); the heat travels toward the feed end (or upper end) in the calcination process. After traveling the length of a kiln, the limestone has chemically changed into lime.

As lime exits the kiln, it enters a "lime cooler" where ambient air is used to lower the temperature of the product. The heated air is recycled and used to both dry and convey solid fuel through the burner into the kiln. The cooled lime is first screened and then transferred to storage silos.

[1] The terms "limestone" and "lime" in a general sense refer to, respectively, calcium carbonate- and calcium oxide-containing feed and product materials.

Silos will be used to load trucks or transfer product to rail loadout or barge loadout facilities. When loading, vehicles will be filled using telescoping, dust collected loadout spouts. Particulate emissions from these operations will be controlled by fabric filter baghouses and passive bin vent filters. When shipping by barge, product will be conveyed via an enclosed overland conveyor. Each conveyor transfer point will be controlled with a dust collection mechanism and barges will be loaded using telescoping spouts.

The calcination process will utilize either coal or a mixture of coal and petroleum coke as the source of calcination energy. Coal and coke will be obtained from southwest Illinois resources and delivered to the facility by truck. The solid fuel will then be unloaded to above ground storage piles. A front-end loader will move fuel from the piles to a hopper/belt conveyor system that, in turn, will convey the fuel to the fuel bin. Fuel from the bin will transfer to a grinding mill where it will be pulverized then blown into the kiln with heated air from the lime cooler for combustion.

BENEFICIAL USES OF LIME – ENVIRONMENTAL

Lime has a multitude of beneficial uses, including environmental remediation. Thus, information specific to the environmental benefits of lime utilization is included below, as compiled and published by the National Lime Association at www.lime.org. Although the below information discusses the use of various types of lime, Mississippi Lime Company's proposed facility will only produce high-calcium lime.

USING LIME FOR FLUE GAS TREATMENT

Lime plays a key role in many air pollution control applications in the State of Illinois and throughout the Midwest. Lime is used to scrub and remove acidic gases, particularly sulfur dioxide (SO2) and hydrogen chloride (HCl), from flue gases. Lime-based technology is also being further evaluated to reduce mercury emissions from power plants.

...SO2 removal efficiencies using lime scrubbers range from 95 to 99 percent (at electric generating plants). HCl removal efficiencies using lime range from 95 to 99 percent (at municipal waste-to-energy plants).

There are two main methods for the removal of acidic gases: dry scrubbing and wet scrubbing. Both methods are used for cleaning flue gases from the combustion of coal to produce electric power. Dry scrubbing is also used at municipal waste-to-energy plants and other industrial facilities, primarily for HCl control. Lime is used in both systems.

DRY LIME SCRUBBING: In dry scrubbing, lime is injected directly into flue gas to remove SO2 and HCl. There are two major dry processes: "dry injection" systems inject dry hydrated lime into the flue gas duct and "spray dryers" inject an

atomized lime slurry into a separate vessel.

A spray dryer is typically shaped like a silo, with a cylindrical top and a cone bottom. Hot flue gas flows into the top. Lime slurry is sprayed through an atomizer (e.g., nozzles) into the cylinder near the top, where it absorbs SO2 and HCl. The water in the lime slurry is then evaporated by the hot gas. The scrubbed flue gas flows from the bottom of the cylindrical section through a horizontal duct. A portion of the dried unreacted lime and its reaction products fall to the bottom of the cone and are removed. The flue gas then flows to a particulate control device (e.g., a baghouse) to remove the remainder of the lime and reaction products.

Both dry injection and spray dryers yield a dry final product, collected in particulate control devices. At electric generating plants, dry scrubbing is used primarily for low-sulfur fuels. At municipal waste-to-energy plants, dry scrubbing is used for removal of SO2 and HCl. Dry scrubbing is also used at other industrial facilities for HCl control. Dry scrubbing methods have improved significantly in recent years, resulting in excellent removal efficiencies.

WET LIME SCRUBBING:

In the wet scrubbing process, lime is mixed with water and the resulting reslurry sprayed into a flue gas scrubber. In a typical system, the gas enters the bottom of a cylinder-like tower and flows upward through a shower of lime slurry. Sulfur dioxide is absorbed into the spray and precipitated as wet calcium sulfite. The sulfite can be converted to gypsum (CaSO4), a salable by-product used to manufacture drywall board. Wet scrubbing is used primarily for high-sulfur fuels and some low-sulfur fuels where high-efficiency sulfur dioxide removal is required. Wet scrubbing is a primary use for magnesium-enhanced dolomitic lime (containing 3-8% magnesium oxide), which provides high alkalinity that increases SO2 removal capacity and reduces scaling potential.

COMPARING LIME AND LIMESTONE SO2 WET SCRUBBING PROCESSES:
Over ninety percent of U.S. flue gas desulphurization (FGD) system capacity uses lime or limestone. This trend will likely continue into the next phase of federally mandated SO2 reduction from coal burning power plants and 2010 rule establishing a new National Ambient Air Quality Standards.

In 2007, the National Lime Association sponsored a study by Sargent and Lundy to compare the costs of leading lime and limestone-based FGD processes utilized by power generating plants in the United States. The study included developing conceptual designs with capital and O&M cost requirements using up-to-date performance criteria for the processes. The results of the study are summarized in one report: FGD Technology Evaluation. The report presents the competitive position of wet limestone and dry lime-based processes relative to reagent cost, auxiliary power cost, coal sulfur content, dispatch, capital cost, and by-product production (gypsum and SO3 aerosol mitigation chemicals).

HCl REMOVAL: Because lime also reacts readily with other acid gases such as HCl, lime scrubbing is used to control HCl at other types of municipal and industrial facilities:

At municipal waste-to-energy plants, dry lime scrubbing is used to control emissions from about 70 percent of the total U.S. capacity (as of 1998). HCl removal efficiencies using lime range from 95 to 99 percent.

At secondary aluminum plants, for example, the U.S. Environmental Protection Agency identifies lime scrubbing as a maximum achievable control technology for HCl. EPA tests demonstrate removal efficiencies greater than 99 percent.

MERCURY REMOVAL: Many different methods for controlling mercury emissions are being evaluated in the U.S. One control technology being evaluated combines hydrated lime with activated carbon. The reagent, a registered product, consists of 95-97 percent lime and 3-5 percent activated carbon. Other calcium-based sorbents are also being evaluated as cost-effective alternatives for combined SO2 and mercury removal.

USING LIME TO TREAT BIOSOLIDS AND SLUDGES

Lime can be used for effective treatment of sewage biosolids, as well as industrial sludges, agricultural waste and petroleum wastes in the State of Illinois and therough out the Midwest.

Sewage Biosolids. Quicklime and calcium hydroxide (hydrated lime) have been used to treat biological organic wastes for more than 100 years. The treatment of human wastewater sludges (i.e., biosolids) by lime treatment is specifically prescribed in U.S. EPA regulations (40 C.F.R. 503). There are many examples of wastewater treatment systems using lime stabilization.

How Lime Treatment Works – Lime treatment controls the environment needed for the growth of pathogens in biosolids and converts sludge into a safe usable product. Lime stabilization is a cost-effective option that generally has lower capital costs than alternative thermal treatment options. The mechanism of lime treatment of biological wastes is based on several chemical reactions:

Calcium hydroxide (Ca(OH)2) is an alkaline compound that can create pH levels as high as 12.4. At pH levels greater than 12, the cell membranes of harmful pathogens are destroyed. The high pH also provides a vector attraction barrier, preventing flies and other insects from infecting the treated biological waste. Because lime has low solubility in water, lime molecules persist in biosolids. This helps to maintain the pH above 12 and prevent regrowth of pathogens.

When quicklime (CaO) is used, an exothermic reaction with water occurs. This heat release can increase the temperature of the biological waste to 70°C, which provides

effective pasteurization.

The high pH also will lock up and precipitate most trace metals that are present in the waste and reduces their solubility and mobility. Lime will also react with phosphorus compounds.

The solubility of calcium hydroxide also provides free calcium ions, which react and form complexes with odorous sulfur species such as hydrogen sulfide and organic mercaptans. Thus the biological waste odors are not covered over but actually destroyed.

The addition of lime also increases the solids content of the waste, making it easier to handle and store.

Lime use can help meet EPA's Part 503 Requirements – EPA has established federal requirements for the safe treatment, beneficial use, and disposal of biosolids (40 CFR Part 503). For biosolids that are to be beneficially used, lime stabilization is one of the technologies identified to meet the requirements to address pathogens.

The Part 503 regulations establish two classes – Class A and B – that specify performance goals and the degree of treatment biosolids must receive before beneficial use or disposal. Most municipal treatment plants in the Midwest use lime to treat biosolids.

Class B biosolids contain higher pathogen concentrations than Class A, but have levels low enough for some beneficial uses, such as land application with restrictions. To meet Class B requirements using lime stabilization, the pH of the biosolids must be elevated to more than 12 for 2 hours and subsequently maintained at more than 11.5 for 22 hours.

Class A biosolids contain extremely low pathogen concentrations and have few or no use restrictions. To meet Class A requirements using lime stabilization, the Class B elevated pH requirements are combined with elevated temperatures (70oC for 30 minutes) or other EPA-approved time/temperature processes.

In addition to regulating pathogen concentrations, the Part 503 regulations include requirements for reducing the tendency of biosolids to attract disease vectors such as rodents and insects. Lime treatment is one of the methods sanctioned in the regulations. To meet vector attraction reduction requirements using lime, the pH must be raised to 12 or higher for 2 hours and subsequently maintained above pH 11.5 for another 22 hours without further alkali addition. Most lime treatment facilities have the flexibility to produce either Class A or Class B biosolids, thus increasing disposal and recycling options.

Lime-treated biosolids can be safely re-used and recycled – Lime-treated biosolids are safe and promote recycling. As EPA notes, "properly prepared biosolids provide a rich source of the essential fertilizer elements needed by plants to produce food."

U.S. EPA, "Biosolids Recycling: Beneficial Technology for a Better Environment." (June 1994). Reuse of lime-stabilized biosolids is not limited to use on farmland. Biosolids have also been used as a soil substitute for landfill cover, and in reclamation of mining-disabled land. Exceptional quality biosolids can also be sold for public use as a commercial fertilizer or soil conditioner.

Lime use is cost-effective – Lime stabilization is generally more cost-effective than alternative biosolids options. A series of studies comparing lime stabilization to composting, thermal drying, and digestion technologies found that lime stabilization has unit costs as much as 60 percent lower than alternatives. Reduced capital cost requirements of lime stabilization are even more dramatic – particularly important for municipalities with limited capital budgets. In general, lime stabilization is a non-proprietary process, although patented processes are available.

Industrial Sludges and Petroleum. Quicklime and hydrated lime can be used in the treatment of many industrial sludges by correcting pH for further treatment, neutralizing acidic wastes, and removing or immobilizing contaminants. Specific examples include sulfite/sulfate sludges and petroleum waste.

Calcium sulfite/sulfate waste – Calcium sulfite and sulfate wastes from desulfurizing stack gases, lime neutralization of acid waste effluent, and waste accumulated in the manufacture of superphosphate fertilizers, when untreated, are lacking in bearing strength and are prone to leach objectionable amounts of the sulfate ion into the ground water. However, this material, when mixed with 2-3% lime and 15-30% pozzolan--such as fly ash, volcanic ash, pulverized slag, etc.--develops considerable bearing strength, erosion resistance and is non-leaching. The stabilized material can be used in constructing embankments and earth dams. In addition, a synthetic gypsum can be crystallized from sulfite sludges from wet scrubbers. The gypsum produced from hydrated lime in this manner is very white and is a saleable product.

Petroleum wastes – Restoration of waste oil ponds to environmentally safe land for beneficial uses has been achieved using either commercial lime (mainly quicklime) or lime kiln dust. Either material is used to dewater the oily waste to the extent that the dried sludge can be compacted and the pond area converted to useful land.

USING LIME TO TREAT ANIMAL WASTES

The Animal Waste Problem – An emerging issue in the Midwest, and indeed throughout the country, is the growing environmental threat caused by animal wastes. Current management practices have begun to create environmental problems because of the consolidation of the livestock industry into much larger facilities, and the resulting concentration of waste-producing activities. Concentrated animal feeding operations ("CAFOs") for beef cattle, swine, and poultry can create numerous problems, including excess nutrient loading of agricultural land, eutrophication of surface waters, groundwater contamination,

pathogen release, and offensive odors. There have been a number of incidents in which large numbers of people have been sickened by water or food contaminated by animal wastes. These problems are projected to only get worse — the amount of animal manure produced annually is estimated to be 10 times the amount of municipal sewage — and much of that manure currently receives little or no treatment. In addition to solid animal manure, there are large amounts of other animal wastes, such as poultry bedding, urine, and carcasses which also are environments problems and are estimated to total up to 100 times the amount of human wastewater biosolids.

EPA's CAFO rule — The Environmental Protection Agency is in the process of developing a new rule to regulate concentrated animal feeding operations. If the final rule resembles the proposed rule, many more of these 40,000 facilities will be required to institute effective treatment of animal wastes than presently do. When this happens, the need for cost-effective treatment methods will become acute.

Lime Treatment for Animal Wastes – Lime treatment is a multi-functional, cost-effective, politically acceptable option with respect to many of the challenges posed by animal wastes, just as it has played an important role in biosolids (sewage) treatment.

Lime Can Help Control Excess Nutrients — Animal wastes contain phosphorus and nitrogen, and these nutrients can be returned to the soil as fertilizer. However, the quantities of animal wastes produced means that there is an excess of these nutrients for the soil and crops to absorb, and runoff causes damaging eutrophication of surface waters. Lime will volatilize the nitrogen (and with the use of new technology, convert it into a usable concentrated fertilizer), and can precipitate the phosphorus to an insoluble form, reducing the excess nutrient problem. Lime can also be used to precipitate most metals that are present in the waste and reduce their mobility.

Lime Can Help Control Pathogens – Lime inhibits pathogens by controlling the environment required for bacterial growth. Calcium hydroxide (hydrated lime) is an alkaline compound that can create pH levels as high as 12.4. At pH levels greater than 12, the cell membranes of harmful pathogens are destroyed. The high pH also provides a vector attraction barrier (i.e., prevents flies and other insects from infecting the treated biological waste). Because lime has low solubility in water, lime molecules persist in biosolids. This helps to maintain the pH above12 and prevent regrowth of pathogens. In addition, when quicklime (calcium oxide, or CaO) is used, an exothermic reaction with water occurs. This heat release can increase the temperature of the biological waste to 70°C, which provides pasteurization and also helps dry out the solid waste.

Lime Can Help Control Odors – Lime treatment also reduces odors, particularly hydrogen sulfide, which is not only a nuance odor but also can be very dangerous if localized high concentrations build up. In addition to high pH, lime provides free calcium ions, which react and form complexes with odorous sulfur species such as

hydrogen sulfide and organic mercaptans. Thus the biological waste odors are not 'covered over' but actually destroyed.

Lime Treatment is Cost-Effective – Lime treatment of animal wastes is economically attractive. For biosolids, lime treatment is often a least cost alternative—for example, unit treatment costs of lime stabilization of biosolids have been estimated to be less than half the costs of aerobic and anaerobic digestion. There are a number of innovative technologies that use lime or lime-derived materials to treat animal wastes and generate a usable agricultural product. Because of the versatility of lime it can be used for the treatment of most animal wastes, including hogs, cattle, dairy, and poultry.

USING LIME TO TREAT WASTEWATER

Lime is extensively used in the treatment of municipal wastewaters, as well as the treatment of industrial liquid wastes.

Municipal Wastewater Treatment. In advanced wastewater treatment plants, lime precipitation is employed in tertiary processes in which phosphorus is precipitated as complex calcium phosphates along with other suspended and dissolved solids. Due to the high pH of 10.5-11.0 maintained by lime, the stripping of nitrogen, another nutrient, is facilitated. Thus, the removal of phosphorus and nitrogen helps prevent eutrophication (algae build-up) in surface waters.

When alum and ferric chloride are employed for coagulation, lime is used to counteract the low pH induced by these acid salts and to provide the necessary alkalinity for efficient nitrogen removal.

In sewage plants where sewage sludge is removed by vacuum or pressure filtration, lime and ferric chloride are employed as filter aids in the conditioning of the sludge and for final clarification of the effluent.

Industrial Wastewater. Lime has numerous applications in treating industrial wastewaters, especially where neutralization of acidic wastes is required. In steel plants, sulfuric acid-based waste pickle liquors are neutralized with lime in which the iron salts are precipitated. Lime is also a neutralizer and precipitant of chrome, copper, and heavy metals in processes for treating discharges from plating plants.

Lime is used to neutralize sulfuric acid wastes from rayon plants and to neutralize and precipitate dissolved solids from wastes of cotton textile finishing plants (dye works).

Vegetable and fruit canning wastes can be clarified with lime alone or with supporting coagulants as an alternate to lagooning of the liquid waste. In citrus canning, lime assists in clarifying wastewaters and in the processing of citrus pulp by-products.

For a fact sheet on the use of lime to neutralize acidic wastewaters, see http://www.lime.org/ACIDNEUTfinal.pdf.

Acid Mine Drainage. Highly acidic drainage from active or abandoned mines in the State of Illinois is frequently neutralized with lime. Further clarification of the discharge is achieved by precipitation of iron contained in this pyritic leachate. Coal washing plants use lime to neutralize the sulfuric acid waste and process water to reduce corrosion on steel equipment and to recover the water for reuse.

USING LIME TO TREAT DRINKING WATER

In terms of annual tonnage, lime ranks first among chemicals used in the treatment of potable and industrial water supplies — in 2001, nearly a million metric tons. It is used by many municipalities to improve water quality, especially for water softening and arsenic removal. Indeed, the American Water Works Association (AWWA) has issued standards that provide for the use of lime in drinking water treatment.

Softening – In water softening hydrated lime is used to remove carbonate hardness (caused by bicarbonates and carbonates of calcium and magnesium) from the water. Hardness caused by other calcium and magnesium salts, called noncarbonate hardness, is generally treated by means of the lime-soda process, which entails the precipitation of magnesium by lime. The co-produced calcium salt reacts with the soda ash to form a calcium carbonate precipitate. Lime enhanced softening can also be used to remove arsenic from water. Recent changes to the national drinking water standard for arsenic have increased the need for this treatment. The U.S. EPA has issued new guidance on enhanced lime softening to remove arsenic, see http://www.epa.gov/safewater/mdbp/coaguide.pdf.

pH Adjustment/Coagulation – Hydrated lime is widely used to adjust the pH of water to prepare it for further treatment. Lime is also used to combat "red water" by neutralizing the acid water, thereby reducing corrosion of pipes and mains from acid waters. The corrosive waters contain excessive amounts of carbon dioxide (carbonic acid). Lime precipitates the CO2 to form calcium carbonate, which provides a protective coating on the inside of water mains.

Lime is used in conjunction with alum or iron salts for coagulating suspended solids incident to the removal of turbidity from "raw" water. It serves to maintain the proper pH for most satisfactory coagulation conditions. In some water treatment plants, alum sludge is treated with lime to facilitate sludge thickening on pressure filters.

Effect on Pathogen Growth – By raising the pH of water to 10.5-11 through the addition of lime and retaining the water in contact with lime for 24-72 hours, lime controls the environment required for the growth of bacteria and certain viruses. This application of lime is utilized where "phenolic water" exists, because chlorine

treatment tends to produce an unpalatable water due to the phenol present. This process, called "excess alkalinity treatment," also removes most heavy metals.

Removal of Impurities – One of the most common methods of removing silica from water is the use of dolomitic lime. The magnesium component of this lime is the active constituent in silica removal. Lime is also used to remove manganese, fluoride, organic tannins and iron from water supplies.

USING LIME TO TREAT HAZARDOUS WASTES

Lime is widely used to treat hazardous wastes both currently generated process wastes and previously disposed or abandoned materials. Lime stabilizes most metals by converting them to more chemical stable forms that are less likely to leach. In addition, lime can react with soils to solidify materials, further reducing the leaching of hazardous wastes. Lime can also be used to neutralize acidic materials. Numerous former coal gasification plants operated in Illinois at the turn of the century were abandoned, leaving toxic byproducts contaminating the ground; as such, lime has been used extensively to stabilize these wastes and prevent migration.

Under the U.S. EPA's land disposal restrictions regulations, currently generated hazardous wastes that are to be land disposed must be pretreated using the Abest demonstrated available technology. For hazardous wastes containing metals, metals stabilization or metals precipitation is frequently required, and lime is identified by EPA as suitable to treat these wastes (see 40 C.F.R. Part 268.42).

EPA also endorses lime stabilization as a key technology for hazardous waste site cleanups (see, e.g., Handbook for Stabilization/Solidification of Hazardous Wastes (EPA/540/2-86/001, June 1986). In 1997, for example, EPA announced a proposed cleanup plan as part of the Anaconda Regional Water, Waste, and Soils Project for 14,000 acres in Anaconda, Montana. A key element of the plan is to treat arsenic-containing soils with lime and organics. Copper mining created environmental contamination in the 300 square mile area and concern about potential human exposures. EPA recommended in-place lime treatment over the option of excavating and treating the tailings and contaminated groundwater. (Nearby, the Warm Springs Pond is already being used to capture and treat water contaminated with metals (copper, zinc, and arsenic) that threaten the Clark Fork River. The contaminated waters are treated with a lime solution.)

USING LIME TO MANUFACTURE STEEL

Lime is an essential ingredient in the manufacturing of steel in Illinois and throughout the Midwest. It is used to draw and remove impurities and sulfur from the molten steel, a critical step in the steel manufacturing process.

Mississippi Lime has compiled the below information based on comments and questions received by the Illinois EPA during hearings and public review phases of another, recently permitted lime manufacturing facility in the State of Illinois. It is anticipated that similar concerns regarding greenhouse gas emissions and other topics will be raised during the public comment period for the proposed Mississippi Lime facility. As such, information additional to the original PSD permit application is being provided.

Many issues and questions and associated responses included below are redundant. However, Mississippi Lime believes it imperative, and appropriate, to address similarly phrased comments to avoid misinterpretation of our position regarding noted topics.

General Topic: Clean Fuels

The use of "clean fuels" at proposed facilities as a means of reducing emissions of regulated pollutants is of concern to some individuals. Mississippi Lime has addressed the evaluation and use of clean fuels at the proposed facility in other areas of this document (see the *General Topic: Solid Fuel Versus Natural Gas* section, the *General Topic: Supplemental BACT Analysis for NSR/PSD Regulated Pollutants* section, and the *Specific Issues & Questions* section). Natural gas, diesel fuel, biomass, and landfill gas were reviewed for project feasibility, cost effectiveness (at fuel pricing in May 2010), and the relationship between liberated pollutants; fuels selected for the proposed facility were appropriate.

General Topic: Solid Fuel versus Natural Gas

Regardless of the project feasibility or cost effectiveness of using natural gas, it is put forth by concerned persons that the use of natural gas as a "clean fuel" for firing lime kilns, versus the use of solid fuel for kiln firing, results in reduced emissions of NO_x and SO_2. However, the use of natural gas for kiln firing would actually increase rather than reduce NO_x emissions.

Thermal NO_x formation is a more significant factor for NO_x emissions of a lime kiln than formation of NO_x from fuel nitrogen. As a result, the use of natural gas in the proposed kilns would act to increase thermal NO_x formation and increase the overall NO_x emissions of the kilns. This is because of the more intense flame that would be present with combustion of natural gas in the confined space of the refractory-lined kilns. Unlike solid fuel, the natural gas would all be immediately available for combustion since it would be in a gaseous state. This phenomenon is discussed by USEPA in its investigations into the control of NO_x emissions

from portland cement kilns.[2] And, while these investigations focused on cement kilns, the phenomenon would also occur for firing of natural gas in lime kilns.

In addition, USEPA provides information that is sufficient to assess the likely increase in NO_x emissions as related to the possible use of natural gas. That is, any reduction in SO_2 emissions from use of natural gas in the kilns would likely be accompanied by an equal or greater increase in its NO_x emissions. As such, the use of natural gas would increase emissions of NO_x, a pollutant that is of comparable concern for its environmental impacts as SO_2.[3, 4]

General Topic: BACT for NO_x Emissions

Most of the NO_x formed within a rotary lime kiln is classified as thermal NO_x. Thermal NO_x results when the heat from fuel combustion causes atmospheric nitrogen to combine with atmospheric oxygen. Virtually all thermal NO_x is formed in the region of the flame at the highest temperatures, approximately 3000 to 3600°F. A small proportion of NO_x emissions result from nitrogen that is liberated from the fuel and reacts with oxygen in the air.

Fuel costs are a major portion of the cost of lime production. Consequently, every effort is made to reduce fuel costs by conserving heat generated in the lime production process. Efforts to maximize fuel efficiency also serve to reduce pollutant emissions; increasing the amount of lime produced per unit of fuel decreases the amount of combustion-related pollutants emitted per unit of product. A major benefit of the preheater kiln design is the fuel efficiency gained by using hot kiln exhaust gases – gases that would otherwise be vented directly to atmosphere – to preheat the limestone and reduce heat requirements in the kiln itself.

In some cases, as with SO_x and NO_x detailed above, reducing emissions of a particular pollutant can cause an increase in emissions of another. This is especially true of the relationship between NO_x and CO. CO is generally produced as a result of incomplete combustion of organic materials in the fuel or stone supply. Attempts to achieve more complete combustion, however, typically

---

[2] In *NOx Control Techniques for Cement Kilns: Final Report*, (EPA-457/R-07-002), pages 32, USEPA indicate that use of natural gas in a cement kiln, rather than coal, could result in as much as a factor of three increase in the NOx emissions. (Also refer to *NOx Control Techniques Document*, (EPA-453/R-07-006) page 32.)

[3] Based on the information in the USEPA's evaluations of control of NOx emissions from cement kilns, it would not be unrealistic to expect that with use of natural gas the NOx emissions of the kilns would significantly increase. (USEPA states that use of natural gas in a cement kiln results in a 300 percent increase in NOx emissions.) Accordingly, the increase in NOx emissions that would accompany use of natural gas could be of the same magnitude or greater than any decrease in SO_2 emissions from use of natural gas.

[4] SO_2 is of concern due to its direct impact on human health as it is a respiratory irritant, as it is a precursor to formation of $PM_{2.5}$ and PM_{10} in the atmosphere, and as it contributes to acid rain. NOx is of concern for similar effects and because it is a precursor to formation of ozone in the atmosphere.

involve increasing oxygen concentration and flame temperatures, two factors that lead to increased NO_x production.

Modern lime kilns are designed to balance and optimize the above parameters for a specific set of external constraints such as feed quality, product quality requirements, pollutant emissions restrictions, and fuel availability. The design of such kilns includes monitoring and control systems that allow the maintenance of optimum operating conditions.

The BACT analysis for NO_x emissions considered a variety of control technologies including reduced peak flame zone temperatures, chemically reducing NO_x (including low-NO_x burner, SCR and SNCR), oxidation of NO_x with subsequent absorption, removal of nitrogen from the combustion process, and use of a sorbent. Ultimately, BACT was determined to be the use of proper kiln design and operation, including burner and combustion systems that operate at low excess air to minimize the formation of NO_x, combined with optimal fuel selection for minimal nitrogen. [5] [6]

General Topic: BACT for SO_2 Emissions

SO_2 forms during solid fuel combustion as sulfur in the fuel is liberated and subsequently oxidized by the oxygen present in the combustion air. Sulfur contained in the feed limestone can also contribute to a lime kiln's SO_2 emissions. SO_2 emissions can be reduced however by limiting or preventing its formation and by capturing and converting it once it has formed.

Therefore, it is possible to limit SO_2 formation both by limiting the amount of sulfur entering lime kiln systems and by controlling the conditions necessary to oxidize sulfur. Capture and conversion of SO_2 in the exhaust stream is generally

---

[5] The BACT determination would allow proper operation of the kiln to maintain the oxygen level in the discharge from the kiln to low levels. The use of low excess air or excess of oxygen to minimize NOx formation has been recognized for over 30 years. It is a well established NOx control technique for lime kilns.

[6] SCR uses a catalyst to react injected ammonia to chemically reduce NO_x. Relatively high concentrations of particulate and SO_2 in the kiln exhaust gas would require that the unit be located after the fabric filter baghouse. Otherwise, catalyst effectiveness and longevity would be severely limited due to poisoning and plugging. Because baghouse exhaust gas temperature is typically near 450°F – well below the optimum SCR inlet temperature range of approximately 575 to 800°F – the gas stream would require reheating. Such gas stream reheating for SCR purposes would not be cost effective, and indeed it would result in additional pollutant emissions due to the combustion of additional fuel. Therefore, SCR is technically infeasible for this process.
SNCR uses ammonia or urea injection to reduce NO_x. SNCR is known to be sensitive to exhaust gas temperatures, tolerating a relatively narrow operating range. When operated outside of this temperature "window," either more ammonia slips through or more NO_x is generated than is being chemically reduced. Lime kilns do not afford the necessary exhaust gas temperature required to utilize SNCR control technology. If the reagent was injected directly into the kiln, the temperature would be acceptable for the chemical reduction. However, these regions of the kiln contain large, tumbling chunks of stone that could damage the spray nozzle delivery system. Therefore, SNCR is technically infeasible for this process.

accomplished by mixing the exhaust gas stream with an alkaline reagent, chemically transforming SO_2 to a neutral salt. The salt is solid at system conditions and can be removed by physical means; the control equipment that accomplishes this is commonly referred to as a gas scrubber. And, because lime and limestone are the primary alkaline reagents used in gas scrubbers, lime kiln systems themselves (particularly the preheaters and fabric filter baghouses) inherently act as large gas scrubbers controlling SO_2 emissions. In fact, lime produced at the proposed Mississippi Lime facility will be marketed to Illinois utilities and other Midwest industries for flue gas desulphurization purposes.

Although the inherent SO_2 scrubbing of the proposed lime kiln and preheater systems will result in low SO_2 emissions, as explained above, SO_2 is further mitigated due to the fact that the limestone deposit intended as the stone source for the proposed facility is a high-calcium, low-sulfur deposit. And, while Mississippi Lime is not limited to utilizing limestone from its quarry located across Bluff Road; customer specifications as well as the overall project design (for making high-calcium lime) dictate that a low-sulfur feed stock be utilized to produce lime at the proposed facility.

There are also practical considerations that will limit the selection of fuel for the proposed facility, including fuel availability, cost, and combustion characteristics. Of the latter factor, ash content and fusion temperature are critical to lime kiln systems, as these two attributes affect product quality and kiln maintenance requirements. Additionally, a critical component of the project economic plan is to purchase coal from the southern Illinois coal fields.

Also, the proposed kiln designs include preheaters and high air-to-cloth ratio fabric filter baghouses that provide SO_2 control because the exhaust gases have greater opportunity to come in contact with the lime and limestone. Efficient sulfur removal for a preheater kiln, the type proposed for the facility, begins inside the preheater. Pre-calcination starts in the preheater at temperatures above 300°F, creating both free lime and calcium carbonate dust that assist in SO_2 removal. This sulfur removal continues throughout the calcination process and is greatly elevated inside the fabric filter baghouse. The baghouse works by collecting a cake of fine lime, limestone, and alkaline coal ash on the surface of its fabric filters. As the exhaust gas passes through this porous filter cake, it is exposed to a very high surface area of reactive substrate and sulfides are converted to sulfate particulate, which drop out of the exhaust stream.

Thus, a combination of proper kiln design and operation, which includes the inherent dry scrubbing effect of the kilns, the kiln preheaters, and the kiln baghouses, limestone feed selection, and optimal fuel selection will result in very low SO_2 emissions from the proposed facility and are considered BACT for the proposed kilns.

General Topic: BACT for CO Emissions

Two general and nonexclusive approaches are available for reducing CO emissions:

- Improve combustion conditions to facilitate complete combustion in the kiln system, and
- Complete oxidation of the exhaust stream after it leaves the kiln system.

The first of these can be affected by a combination of increasing system temperature, increasing oxygen concentration, and improving mixing of the fuel, exhaust gases, and combustion air (oxygen). Unfortunately, all of these techniques also generally increase NO_x emissions. Post-combustion CO control is accomplished in add-on equipment that creates an environment of high temperature and oxygen concentration to promote complete oxidation of the CO remaining in the exhaust. This can be facilitated at relatively lower temperatures by the use of certain catalyst materials.

EPA's AP-42 chapter on lime manufacturing (Chapter 11, Section 17) does not recognize any CO control as applicable to lime kilns. No BACT determination has required add-on CO controls for rotary lime kilns. Regardless, thermal oxidation, catalytic oxidation, and excess oxygen at the burner were considered in the top-down BACT analysis. Ultimately, proper kiln design and operation was determined as BACT for CO emission due to concerns about increases in emissions of other pollutants and the feasibility of actually achieving further reduction in CO emissions.

General Topic: BACT for $PM/PM_{10}/PM_{2.5}$ Emissions from Lime Kilns

Particulate matter as limestone and lime is produced in the rotating chambers of rotary lime kilns. Fabric filter baghouses, electrostatic precipitators, and wet scrubbers are all devices that can be employed to reduce such particulate matter emissions, and indeed were considered in the BACT analysis for $PM/PM_{10}/PM_{2.5}$ emissions.

$PM_{2.5}$ actually has two origins: primary and secondary. Primary $PM_{2.5}$ is the result of carbon and soil emitted into the air directly or generated by processes such as wind erosion, construction, or traffic on roadways. Secondary (or condensable) $PM_{2.5}$ is formed when sulfur dioxide and nitrogen oxides combine with ammonia in the atmosphere to form ammonium sulfate and ammonium nitrate. Clearly, the best way to control the formation of secondary $PM_{2.5}$ is to limit the precursors.[7] Therefore, BACT for secondary $PM_{2.5}$ is the same as BACT

[7] USEPA Guidance Document, "Stationary Source Control Techniques Document," for Fine Particulate Matter," EPA 452/R-97-001, October 1998, page 2-6.

for sulfur dioxide and nitrogen oxides: proper kiln design and operation, optimal fuel selection, and carefully selecting the limestone feed.

In addition to limiting $PM_{2.5}$ precursors as a means of reducing secondary $PM_{2.5}$ emissions, fabric filters provide the best control not only for $PM_{2.5}$ but also for PM_{10}.[8] Therefore, the use of fabric filter baghouses on the proposed lime kilns is selected as BACT, with an associated emission rate of 0.010 gr/dscf, which is equivalent to 0.18 lbs/ton of lime produced (or 0.09 lbs/ton of stone feed, the federal MACT limit).

In fabric filter baghouses, directed air flow passes through tightly woven or felted fabric, causing particulate matter in the flow to be collected on the fabric. The fabric is responsible for some filtration, but more significantly it acts as support for the dust layer that accumulates. The layer of dust, also known as "filter cake," is a highly efficient filter, even for submicrometer particles.[9] As particulate matter collects on the filter, collection efficiency increases while pressure drop through the system increases. Collection filters are intermittently cleaned by shaking the filter media, pulsing air through the filter media, or temporarily reversing the airflow direction through the filter media.

General Topic: BACT for PM/PM_{10}/$PM_{2.5}$ Emissions from Material Handling Systems

In addition to lime kilns, the proposed facility will include systems for sorting, transporting, transferring, and storing limestone, product lime, solid fuel, and lime kiln dust (LKD). Particulate emissions associated with these activities occur as a result of transferring the material from one system, or from one piece of equipment, to another. These transfers, referred to as "drop transfers," occur, for example, when material is transferred from one conveyor to another or from a chute to a load-out truck.

Available technologies for controlling particulate matter emissions from proposed material handling sources include enclosures, wet dust suppression, inherent moisture, electrostatic precipitators, and fabric filters. Given the variety of proposed sources at the facility, noted control technologies were considered in the BACT analysis for each type of source. The results include the use of fabric filter baghouse dust collectors (with an associated emission rate of 0.005 gr/dscf), enclosures, wet dust suppression, inherent moisture, and vehicle speed restrictions as BACT for particulate matter emissions from proposed material handling systems.

---

[8] PM_{10} control efficiency is 99.2%; $PM_{2.5}$ control efficiency is 98.3%.

[9] USEPA Guidance Document, "Stationary Source Control Techniques Document," for Fine Particulate Matter," EPA 452/R-97-001, October 1998, page 5.3-1.

General Topic: BACT Summary Table for NSR/PSD Regulated Pollutants

Summary of Emission Factors for Criteria Pollutants

NO_x	3.5	Lbs/ton of lime produced	175	Lbs/hr
SO_2	0.645	Lbs/ton of lime produced	32.25	Lbs/hr
CO	2.5	Lbs/ton of lime produced	125	Lbs/hr
PM_{10} (filterable)*	0.18	Lbs/ton of lime produced	8.75	Lbs/hr
PM_{10} (filterable)*	0.09	Lbs/ton of stone feed	8.75	Lbs/hr

* = equivalent to 0.010 gr/dscf

General Topic: Supplemental BACT Analyses for NSR/PSD Regulated Pollutants [Note: GREENHOUSE GASES ARE CURRENTLY NOT REGULATED UNDER THE NSR/PSD PROGRAM.]

As noted in Section 5, BACT Analyses of the original permit application, BACT is defined as:

> an emissions limitation, including a visible emissions standard, based on the maximum degree of reduction for each regulated NSR pollutant that would be emitted from any proposed major stationary source or major modification, that the commissioner, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for the source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of the pollutant.

The BACT analyses for this project follow the procedures outlined in the document *New Source Review Workshop Manual, Office of Air Quality Planning and Standards, U.S. EPA, Draft - October 1990* (NSR Manual). Although the NSR Manual is a draft document, the methods it describes are widely used and provide consistency in the approach to BACT decision-making.

Following the prescribed BACT process, fuel selection to reduce emissions is technically feasible within certain practical consideration including fuel supply, availability, cost, and combustion characteristics. Therefore, the original BACT analyses have been supplemented with the below information to further outline these considerations.

Kiln Start-up Fuel

While in the original permit application it was anticipated that kiln start-up activities would utilize either natural gas or diesel fuel, there is no direct natural gas service to the proposed facility location. It has been estimated that tapping in to the nearest natural gas line and installing all necessary distribution equipment (e.g., piping, regulators, meters, etc.) to service the proposed kilns will cost upward of $1.75 million.[10] As such, although natural gas is a technically feasible fuel for lime kiln firing, the use of this fuel as BACT was rejected because it is not commercially feasible.

Due to the lack of direct natural gas service to the proposed facilty location, diesel fuel will be utilized for kiln start-up purposes. As further outlined below, however, the use of diesel fuel for on-going kiln operations was rejected as an alternative fuel control option for emissions of pollutants that are currently regulated under the PSD program. This is because the cost-effectiveness and the cost impacts of the use of diesel fuel would be much higher than those that were the basis for rejecting the use of natural gas

Supplemental BACT Analyses – Clean Fuels

Introduction

The Mississippi Lime Company has submitted an application to the Illinois Environmental Protection Agency (IEPA) for a construction permit. Mississippi Lime proposes to construct a new facility that will convert limestone into lime. The plant is expected to be a new major stationary source of regulated pollutants under both the New Source Review (NSR) and Title V programs.

This supplement to the original application is provided at the request of IEPA to address the option of burning natural gas instead of coal. Please refer to the original permit application for more information about the proposed project.

About the BACT Review

According to EPA's New Source Review Workshop Manual, EPA has not considered the BACT requirement as a means to redefine the design of a source when considering

[10] Mississippi Lime worked with Mississippi River Transmission (owned by CenterPoint Energy) regarding estimates to extend natural gas service to the proposed site location.

available control alternatives.[11] In fact, the manual specifically lists the example of a proposed coal-fired turbine:

> "For example, applicants proposing to construct a coal-firedelectric generator, have not been required by EPA as part of a BACT analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting per unit product (in this case electricity). However, this is an aspect of the PSD permitting process in which states have the discretion to engage in a broader analysis if they so desire. Thus, a gas turbine normally would not be included in the list of control alternatives for a coal-fired boiler. However, there may be instances where, in the permit authority's judgment, the consideration of alternative production processes is warranted and appropriate for consideration in the BACT analysis."

Given the growing interest in "clean fuels," natural gas and, when appropriate, diesel fuel, will be considered as possible fuels even though the project is defined as a coal-fired lime plant.

BACT for NO_x Emissions from Lime Kilns

Most of the nitrogen oxides (NO_x) formed within a rotary lime kiln is classified as thermal NO_x. Thermal NO_x results when the heat from fuel combustion causes atmospheric nitrogen to combine with atmospheric oxygen. Virtually all thermal NO_x is formed in the region of the flame at the highest temperatures, approximately 3000 to 3600°F. A small proportion of NO_x emissions results from nitrogen that is liberated from the fuel and reacts with oxygen in the air.

Fuel costs are a major portion of the cost of lime production. Consequently, every effort is made to conserve heat and thereby reduce costs. Efforts to maximize fuel efficiency also serve to reduce pollutant emissions; increasing the amount of lime produced per unit of fuel decreases the amount of combustion-related pollutants emitted per unit of product. One of the major benefits of a preheater kiln design is the fuel efficiency gained by using hot kiln exhaust gases – gases that would otherwise be vented directly to atmosphere – to preheat the limestone and reduce heat requirements in the kiln itself.

In some cases, reducing emissions of a particular pollutant can cause an increase in emissions of another. This is especially true of the relationship between NO_x and carbon monoxide (CO). CO is generally produced as a result of incomplete combustion of organic materials. Attempts to achieve more complete combustion, however, typically involve increasing oxygen concentration and flame temperatures, two factors that lead to increased NO_x production.

Modern lime kilns are designed to balance and optimize the above parameters for a specific set of external constraints such as feed quality, product quality requirements, pollutant emissions restrictions, and fuel availability. The design of such kilns includes

[11] USEPA "Draft New Source Review Workshop Manual." Section IV.A.3. 1990.

monitoring and control systems that allow the maintenance of optimum operating conditions.

Identify Available NO_x Control Technologies

The following principles or methods can be employed to reduce nitrogen oxide emissions[12]:

- Reduce peak flame zone temperatures,
- Chemically reduce NO_x,
- Oxidation of NO_x with subsequent absorption,
- Remove nitrogen from the process, or
- Use of a sorbent.

These methods are explained in the original permit application.

Eliminate Technically Infeasible Options

The NSR Manual describes two key criteria for determining whether an alternative control technology is technically feasible. According to the NSR Manual, a technology must be "available" and "applicable" in order to be considered technically feasible. A technology is available "if it has reached the licensing and commercial sales stage of development." An identified alternative control technique may be considered applicable if "it has been or is soon to be deployed (e.g., is specified in a permit) on the same or similar source type." The following paragraphs evaluate the technical feasibility of the alternative control technologies identified above by applying these criteria of availability and applicability.

Reduce Peak Flame Zone Temperatures

The methods that employ reducing kiln temperatures below 2000°F are technically infeasible. Please refer to the original application for the complete discussion.

However, proper design and operation of new preheater kilns is clearly feasible for this project. Primary and secondary combustion air flow rates and velocities can be readily controlled while the required temperatures are maintained. Operators can optimize fuel and air mixing and ratios for minimal NO_x formation.

Chemical Reduction of NO_x

SCR and SNCR are technically infeasible for this process. Please refer to the original application for more information.

---

[12] USEPA Technical Bulletin "Nitrogen Oxides (NOx), Why and How They Are Controlled," EPA 456/F-99-006R, Office of Air Quality Planning and Standards, November 1999, page 9.

Oxidation of NO_x

This technology is still in the early developmental stage and has not been tested on lime kilns[13]. Therefore, it is technically infeasible because it is neither available nor applicable. Please refer to the original application for more information.

Removal of Nitrogen from Combustion

It is technically infeasible to use oxygen instead of air in this process. Please refer to the original application for more information.

However, an ultra-low-nitrogen fuel is coke (the quenched char from coal), due to nitrogen in the volatile fraction of the coal being removed in making coke. The use of ultra-low nitrogen fuels is feasible at Mississippi Lime.

Sorption, Both Adsorption and Absorption

Adsorption and absorption are technically infeasible for this process. Please refer to the original application for more information.

Rank Remaining Technologies by Control Effectiveness

Of the alternative NO_x control technologies identified above, reducing peak flame zone temperature (within kiln operating parameters) and removal of nitrogen from combustion remain as technically feasible options.

Natural gas is not currently available at the proposed site. The estimated capital costs of establishing a natural gas line to the site is approximately $ 1.8 million.

The fuel costs, emission rates, and cost-per-ton of NO_x removed are shown in Table 2.3-1. Diesel fuel oil has not been displayed because its use would result in an increase of NO_x emissions.

The fuel costs, emission rates, and cost-per-ton of NO_x removed are shown in Table 2.3-1. Diesel fuel oil has not been displayed because it is not considered a low-nitrogen fuel.

Table 2.3-1: NO_x Economic Impact Evaluation

	Diesel Fuel Oil 1000 Gallons	Natural Gas MMCFMMCFM MCF	Coke/Coal Blend Tons
MMBtu/Unit of Fuel	140	1,050	23.4
MMBtu per Hour	220	220	220
Annual Cost of Fuel[a]	$33,037,714	$8,375,615	$3,468,960

[13] USEPA "Using Non-Thermal Plasma to Control Air Pollutants," EPA-456/R-05-001, Office of Air Quality Planning and Standards, February 2005.

Tons of NO_x Emitted per Year[b]	165	767	767
Difference in Emissions	601	0	
Cost per Ton of NO_x Controlled[b]	$49,173		

[a]The cost takes into account the annualized capital cost of installing a natural gas pipeline and the current price of the fuel. It does not take into account operating cost or fluctuations in price.
[b]Data is provided per kiln.

From the standpoint of reducing NO_x emissions, the economic impact associated with using natural gas as the primary fuel for this proposed lime plant is considered unreasonable. However, blending the ultra-low-nitrogen fuel, coke, with coal is considered reasonable.

Select BACT

Mississippi Lime proposes to use a mixture of coke and coal, as product quality specifications allow, as well as reduce peak flame zone temperature within kiln operating parameters to control NO_x emissions.

BACT for SO_2 Emissions from Lime Kilns

SO_2 forms during coal combustion as sulfur in the coal is liberated and subsequently oxidized by the oxygen present in the combustion air. Sulfur in the feed limestone can also contribute to the kiln's SO_2 emissions. SO_2 emissions can be reduced by limiting or preventing its formation and by capturing and converting it once it has formed.

It is possible to limit SO_2 formation both by limiting the amount of sulfur entering the kiln system and by controlling the conditions necessary to oxidize sulfur. Capture and conversion of SO_2 in the exhaust stream is generally accomplished by mixing the exhaust gas stream with an alkaline reagent, chemically transforming SO_2 to a neutral salt. The salt is solid at system conditions and can be removed by physical means. The control equipment that accomplishes this is commonly referred to as a gas scrubber. Because lime and limestone are the primary alkaline reagents used in gas scrubbers, lime kiln systems inherently act as large gas scrubbers with varying degrees of effectiveness.

Identify Available SO_2 Control Technologies

EPA's RBLC describes several permitted lime kiln installations and lists their pollutant emission limits and the control technologies approved to achieve those limits. See Appendix D for a summary of RBLC data related to SO_2 emission limits and control requirements for coal-fired lime kilns. Another source of information regarding potentially applicable SO_2 control technology for lime kilns is the U.S. EPA's AP-42 document. The document's chapter on lime manufacturing (Chapter 11, Section 17) does not recognize any SO_2 control applicable to lime kilns. Nevertheless, the following technologies were identified as potentially applicable for controlling SO_2 from industrial combustion processes:

- Proper kiln design and operation (including inherent scrubbing from kiln, preheater, and fabric filter baghouse),
- Fuel selection,
- Limestone feed selection,
- Supplemental scrubbing, and

- Chemical absorption.

These methods are explained in the original permit application.

Eliminate Technically Infeasible Options

The NSR Manual describes two key criteria for determining whether an alternative control technology is technically feasible. According to the NSR Manual, a technology must be "available" and "applicable" in order to be considered technically feasible. A technology is available "if it has reached the licensing and commercial sales stage of development." An identified alternative control technique may be considered applicable if "it has been or is soon to be deployed (e.g., is specified in a permit) on the same or similar source type." The following paragraphs evaluate the technical feasibility of the alternative control technologies identified above by applying these criteria of availability and applicability.

Proper Kiln Design and Operation

Proper design and operation of new preheater kilns is clearly feasible and serves as the baseline case.

Fuel Selection

In many cases, the fuel used to fire kilns is the primary source of sulfur, and ultimately, of SO_2. Natural gas and diesel fuel contain very little sulfur. Coal may contain as little as 0.5% to over 5% sulfur. Petroleum coke typically contains significantly more sulfur than coal, with a possible range of about 2% to 7%. Besides selecting fuel for its effect on SO_2 emissions, other factors must be balanced such as heat content, ash content and characteristics, price, and availability.

Although the project is defined as a solid fuel-fired, preheater rotary kiln operation, it is technically feasible to fire natural gas or diesel fuel.

There are several sources of solid fuels available that are feasible at the Mississippi Lime plant. Please refer to the original application for a thorough discussion and comparison of these solid fuels.

Limestone Feed Selection

Mississippi Lime plans to primarily use limestone from the nearby mine. While this arrangement is an integral part of the initial business plan and project design, Mississippi Lime is not restricted from obtaining stone from alternate sources. Consequently, it is technically feasible to purchase limestone from another source. It should be noted that limestone will be procured based on quality requirements.

Supplemental Scrubbing

Supplemental scrubbing is technically infeasible for this process. Please refer to the original application for more information.

Aqueous Chemical Absorption

Aqueous chemical absorption is technically infeasible for this process. Please refer to the original application for more information.

Rank Remaining Technologies by Control Effectiveness

Of the alternative SO_2 control technologies identified above, proper kiln design and operation, fuel selection, and limestone feed selection remain as technically feasible alternative control technologies.

As previously noted, natural gas is not currently available at the proposed site. The estimated capital costs of establishing a natural gas line to the site is $ 1.8 million.

The fuel costs, emission rates, and cost-per-ton of SO_2 removed are shown in Table 3.3-1.

Table 3.3-1: SO_2 Economic Impact Evaluation

	Diesel Fuel Oil 1000 Gallons	Natural Gas MMCF	Coke/Coal Blend Tons
MMBtu/Unit of Fuel	140	1,050	23.4
MMBtu per Hour	220	220	220
Annual Cost of Fuel[a]	$33,037,714	$8,375,615	$3,468,960
Tons of SO_2 Emitted per Year[b]	0	1.5	141
Difference in Emissions	141	140	0
Cost per Ton of SO_2 Controlled[b]	$34,740	$211,524	

[a]The cost takes into account the annualized capital cost of installing a natural gas pipeline and the current price of the fuel. It does not take into account operating cost or fluctuations in price.
[b]Data is provided per kiln.

From the standpoint of reducing SO_2 emissions, the economic impact associated with using either diesel or natural gas as the primary fuel for this proposed lime plant is considered unreasonable. The cost of using natural gas or diesel as the primary fuel is considered unreasonable.

Select BACT

Mississippi Lime intends to employ all three remaining methods to reduce SO_2 emissions from the lime kilns. Therefore, no further analysis is required.

An SO_2 emission rate of 0.645 lb per ton of lime, achieved through the use of proper kiln design and operation (which include the inherent dry scrubbing affect of the preheater and baghouse), optimal fuel selection, and limestone feed selection is BACT for this application.

BACT for CO Emissions from Lime Kilns

Emissions of CO from a lime kiln are caused by incomplete combustion of organic constituents within the system. CO originates both from incomplete combustion of fuel and from volatilization and incomplete combustion of organic impurities in the feed stone. Complete combustion, or oxidation, of organics results in the emission of water and carbon dioxide (CO_2). When organic compounds do not oxidize completely, the result is CO.

Identify Available CO Control Technologies

Two general and nonexclusive approaches are available for reducing CO emissions:

Improve combustion conditions to facilitate complete combustion in the kiln system, and

Complete oxidation of the exhaust stream after it leaves the kiln system.

The first of these can be affected by a combination of increasing system temperature, increasing oxygen concentration, and improving mixing of the fuel, exhaust gases, and combustion air (oxygen). Unfortunately, all of these techniques also generally increase NO_x emissions. Post-combustion CO control is accomplished in add-on equipment that creates an environment of high temperature and oxygen concentration to promote complete oxidation of the CO remaining in the exhaust. This can be facilitated at relatively lower temperatures by the use of certain catalyst materials.

EPA's AP-42 chapter on lime manufacturing (Chapter 11, Section 17) does not recognize any CO control as applicable to lime kilns. No BACT determination has required add-on CO controls for rotary lime kilns. (See Appendix D for a summary of RBLC data related to CO emission limits and control requirements for coal-fired lime kilns.) The following technologies were identified for the purpose of this analysis as potentially applicable for controlling CO from kilns and other combustion processes:

- Proper kiln design and operation with no add-on controls (base case),

- Thermal oxidation,
- Catalytic oxidation,
- Excess oxygen at the burner, and
- Fuel selection.

These methods are explained in the original permit application.

Eliminate Technically Infeasible Options

The NSR Manual describes two key criteria for determining whether an alternative control technology is technically feasible. According to the NSR Manual, a technology must be "available" and "applicable" in order to be considered technically feasible. A technology is available "if it has reached the licensing and commercial sales stage of development." An identified alternative control technique may be considered applicable if "it has been or is soon to be deployed (e.g., is specified in a permit) on the same or similar source type." The following paragraphs evaluate the technical feasibility of the alternative control technologies identified above by applying these criteria of availability and applicability.

Proper Kiln Design and Operation

Proper design and operation of new preheater kilns is clearly feasible and serves as the baseline case. Mississippi Lime's kiln design will include mechanisms and controls for balancing primary and secondary combustion air flow rates and velocities. This will enable operators to optimize fuel-air mixing and balancing for optimal CO oxidation.

Thermal Oxidation

Thermal oxidation is technically infeasible for this process. Please refer to the original application for more information.

Catalytic Oxidation

Catalytic oxidation is technically infeasible for this process. Please refer to the original application for more information.

Excess Oxygen at the Burner

Introducing excess air in the kiln burner's combustion zone is technically infeasible for this process. Please refer to the original application for more information.

Fuel Selection

The amount of carbon in the fuel and the degree of oxidation in the combustion process makes a difference in the amount of CO produced.

Although the project is defined as a solid fuel-fired, preheater rotary kiln operation, it is technically feasible to fire natural gas or diesel fuel.

Rank Remaining Technologies by Control Effectiveness

Of the CO control technologies identified above, proper kiln design and operation and fuel selection remain as technically feasible control options.

As previously noted, natural gas is not currently available at the proposed site. The estimated capital costs of establishing a natural gas line to the site is $ 1.8 million.

The fuel costs, emission rates, and cost-per-ton of CO reduced are shown in Table 4.3-1.

Table 4.3-1: CO Economic Impact Evaluation

	Natural Gas MMCF	Diesel Fuel Oil 1000 Gallons	Coke/Coal Blend Tons
MMBtu/Unit of Fuel	1,050	140	23.4
MMBtu per Hour	220	220	220
Annual Cost of Fuel[a]	$8,375,615	$33,037,714	$3,468,960
Tons of CO Emitted per Year[b]	482	34	548
Difference in Emissions	66	513	0
Cost per Ton of CO Controlled[b]	$74,682	$57,629	

[a]The cost takes into account the annualized capital cost of installing a natural gas pipeline and the current price of the fuel. It does not take into account operating cost or fluctuations in price.
[b]Data is provided per kiln.

From the standpoint of reducing CO emissions, the economic impact associated with using either diesel or natural gas as the primary fuel for this proposed lime plant is considered unreasonable. The cost of using natural gas or diesel as the primary fuel is considered unreasonable.

Select BACT

Mississippi Lime will employ proper kiln design and operation as BACT with the emission rate of 2.50 pounds of CO per ton of lime produced.

BACT for PM Emissions from Lime Kilns

The proposed emission rate of particulate matter is dependent on the baghouse outlet. Therefore, a change in fuel will not affect the emission rate of particulate matter from the kilns and no additional analysis is necessary.

Please refer to the original application for more information.

General Topic: Ambient Air Quality Monitoring

Although on-site preconstruction ambient air quality monitoring is required in certain instances for PSD permitting purposes, such monitoring is often not required if sufficient ambient air monitoring stations (and corresponding data) are available in the local of a proposed facility. Such sufficient ambient air monitoring stations and corresponding data were available, and were appropriately utilized for background concentrations in the air quality analyses for the proposed facility.

As Illinois EPA noted in the *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois* the belief that ambient monitoring data must be collected specifically for the purpose of a proposed facility is not supported by relevant rules, USEPA guidance, long-standing practice in PSD permitting, and decisions of the EAB.[14]

14 For example, refer to the recent decision of the EAB in the case of Northern Michigan University, "At the outset, we reject Sierra Club's contention that the plain language of the CAA and implementing regulations mandate the use of site-specific, sole-purpose preconstruction ambient air quality data. See Pet'n at 46-48 (quoting CAA § 165(a)(7), (e)(1)-(2), 42 U.S.C. § 7475(a)(7), (e)(1)-(2); 40 C.F.R. § 52.21(m)(1)(i), (iii)-(iv)); Reply to MDEQ at 25-26. In so arguing, Sierra Club overlooks statements of congressional intent to the contrary. H.R. Rep. No. 95-294, at 171 (1977) ("preconstruction, onsite air quality monitoring may be for less than a year if the basic necessary information can be provided in less time, or it may be waived entirely if the necessary data [are] already available"); H.R. Rep. No. 95-564, at 152 (1977) (Conf. Rep.) (one-year monitoring requirement "may be waived by the [s]tate"). EPA has long implemented the PSD program pursuant to the understanding that representative data may be substituted where circumstances warrant, see, e.g., NSR Manual at C.18-.19; Ambient Monitoring Guidelines § 2.4, at 6-9, and the Board and its predecessors have long upheld the Agency's guidance to that effect. E.g., Knauf, 8 E.A.D. at 145-48; Haw. Elec., 8 E.A.D. at 97-105; Hibbing, 2 E.A.D. at 850-52. Sierra Club has failed to persuade us to deviate from these precedents here." See Northern Michigan University Ripley Heating Plant, agency's 14 E.A.D. __, Slip Op. at 62-63 (EAB Feb. 18, 2009), pages 62 and 63.

For the proposed Mississippi Lime facility, the ambient monitoring data used to determine background concentrations for the air quality analysis satisfies this requirement. And, according to the Illinois EPA, the ambient monitoring stations have been operated for many years;[15] as such, this provides greater information on background ambient air quality than would be provided by project-specific monitoring conducted for only a single year.

Illinois EPA also noted in the *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois* that USEPA guidance provides that project-specific ambient monitoring is not needed when other acceptable ambient data is available. In particular, the NSR Manual, page C-19, states "If existing data are not available, or they are judged not to be representative, then the applicant must proceed to establish a site specific monitoring network."[16]

As mentioned above, Illinois EPA was confident that the available ambient air monitoring data, as collected at the existing ambient monitoring stations, was representative so that site-specific ambient monitoring was not required for the proposed facility. Therefore, air quality data from these monitoring stations were appropriately utilized in the air quality analyses.

General Topic: NAAQS Compliance

Modeling results, reflective of conservative evaluation of the impacts of the proposed facility, consistent with standard practices in modeling, indicate that all PSD pollutant concentrations, except NO_2 Annual, PM_{10} Annual, and PM_{10} 24-hour, are below the respective Significant Impact Levels, as reported in micrograms per cubic meter. Correspondingly, the PSD Increment Analysis for these three pollutants results in all concentrations below the Class 2 Increment Thresholds. Additionally, the NAAQS Analysis results in concentrations below the associated NAAQS Thresholds.

The approach taken in the modeling of the proposed facility was consistent with well-established methodology for modeling, and was approved by Illinois EPA personnel. Receptor grids were developed to identify areas of maximum impacts. Receptors were then located closer together in areas where high concentrations

15 The ambient monitoring stations in the Illinois EPA's monitoring network are operated at the same locations for many years. This is done to collect data from fixed locations year after year to be able track trends in air quality. It is also necessary to evaluate air quality in the terms of the certain NAAQS that apply over a period of three years.

16 The NSR Manual also explains "...if the location of the proposed source or modification is not affected by other major stationary point sources, the assessment of existing ambient concentrations may be done by evaluating available monitoring data. It is generally preferable to use data collected within the area of concern; however, the possibility of using measured concentrations from representative 'regional' sites may be discussed with the permitting agency. The PSD Monitoring Guideline provides additional guidance on the use of such regional sites." NSR Manual, page C.18.

were likely. Additional receptors were added to the receptor grids as needed to confirm identified maximum impacts.

General Topic: Petroleum-Based Material Storage and Handling, and Water Runoff Matters

As noted in the original PSD application, Mississippi Lime proposed the potential use of diesel fuel for kiln startup activities. The use of this petroleum-based material would necessitate installation of an above ground fuel storage tank. Such a tank would be equipped with secondary containment to mitigate the migration of any leaks or spills into the environment.

Additionally, Mississippi Lime will comply with the requirements of the federal Oil Pollution Prevention regulations, as applicable to the storage and handling of petroleum-based materials. So too will Mississippi Lime comply with the requirements of our National Pollutant Discharge Elimination System (NPDES) water permit issued by Illinois EPA to ensure the protection of waters of the state.

Specific Issues & Questions: Greenhouse Gas Emissions

The below issues and questions, and attendant responses (noted in **bold** font), have been drawn from the *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*. While the *Responsiveness Summary* contained many comments and attendant responses, select information has been included below. Such selected information has been included here with slight modification applicable to the proposed Mississippi Lime Company facility, as it is anticipated that similar, if not exact, comments will be received during the public comment period for the subject proposed permit. Correspondingly, if similar/exact comments are received, it is anticipated that similar, if not exact, responses will be provided.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 4, *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

4. The proposed plant will emit significant quantities of the greenhouse gases (GHG) that are causing a climate crisis. Large amounts of carbon dioxide (CO_2) will be emitted from the proposed lime plant.[17] Additionally, it should be assumed that the kiln would have significant emissions of N_2O. The draft permit would not satisfy the requirements of the Clean Air Act because it does not reflect a "best available control technology" (BACT) analysis or BACT limits for emissions of CO_2.

[17] The application for the proposed plant does not include data for its emissions of CO_2 and other GHG. This data should have been included in the application....

The emissions of GHG from stationary sources, like the proposed plant, will be regulated in the future when appropriate rules or laws are in place addressing them. At the present time, GHG emissions of the proposed plant are not regulated under the federal PSD program pursuant to the Clean Air Act, so that the permit should not include provisions addressing GHG emissions. The fact that GHG are a pollutant and USEPA intends to regulate GHG emissions of in the future does not alter the current "unregulated" status of GHG emissions.[18]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 5; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

5. The Intergovernmental Panel on Climate Change (IPCC)[19] has found that warming of the climate is "unequivocal," that emissions of CO_2 and other greenhouse gases (GHG) alter the energy balance of the planet's climate system, that global concentrations of CO_2 in the atmosphere currently exceed the natural range over the last 650,000 years, and that continued CO_2 emissions will lead to continued warming and possibly irreversible impacts. Therefore, the IPCC recommends switching from coal. Other highly-respected scientific authorities

---

18 In a letter dated February 22, 2010, addressed to United State Senator Jay Rockefeller, the current Administrator of USEPA, Lisa Jackson, confirmed that USEPA is proceeding with rulemaking under the Clean Air Act that would result in GHG emissions from significant stationary sources being subject to permit requirements and regulation. USEPA expects to begin phasing-in these requirements beginning in calendar year 2011. This timing will enable necessary evaluation to occur on how the BACT requirement of the PSD program should be applied to GHG. As explained in this letter, "EPA continues to review and analyze options for defining Best Available Control Technology (BACT) for green-house-gas emissions. The additional time that EPA will have before permitting requirements will take effect will enable the agency and stakeholders to consider this issue carefully and thoughtfully. The EPA's goal will be to identify practical, achievable, and cost-effective strategies for minimizing emissions increases from new facilities and major modification, recognizing the importance of these projects to the economy and job creation. The agency would of course apply the well-developed framework that exists for determining BACT for non-greenhouse gas pollutants. One of the factors that is applied under that framework is the commercial availability of a given control technology."

19 The Intergovernmental Panel on Climate Change (IPCC) is a leading source of research and data regarding climate change, its causes, and its impacts. The IPCC is charged with comprehensively and objectively assessing the scientific, technical and socioeconomic information relevant to human-induced climate change, its potential impacts, and options for adaptation and mitigation. To date, the IPCC has released four assessments—in 1990, 1995, 2001, and 2007, each one stating with greater confidence than the one before that the climate change situation has become increasingly dire.

The IPCC was established by the World Meteorological Organization and the United Nations Environment Programme in 1988 to comprehensively and objectively assess the scientific, technical, and socio-economic information relevant to human-induced climate change, its potential impacts, and options for adaptation and mitigation.

More information about the IPCC is available at http://www.ipcc.ch/about/index.htm. IPCC reports are available at available at http://www.ipcc.ch/ipccreports/assessmentsreports.htm.

have also concluded that solving the climate crisis is possible only if plants control their GHG emissions.[20]

...the scientific findings of the IPCC, which is an international scientific body engaged in collection of information, and of other scientists, do not provide a legal basis for the permit for the proposed plant to address emissions of CO_2 or other GHG.[21]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 6; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

6. Global warming is a threat to public health, welfare, and the environment. USEPA has confirmed this in its Proposed Endangerment Findings for emissions of GHG,[22] in which it has stated that:

Scientific evidence ineluctably shows that climatic changes are occurring as a result of anthropomorphic GHG emissions, that such climatic changes are already harming health and welfare and the natural environment, and that the effects will worsen over time in the absence of regulatory action. The effects of climate change on public health include sickness and death. The effects on welfare embrace every category of effect described in the Clean Air Act's definition of "welfare" and, more broadly, virtually every facet of the living world around us ... In both magnitude and probability, climate change is an enormous problem.

USEPA's Proposed Endangerment Findings are based on well-established facts that the scientific community have known for several decades. This includes significant impacts on Illinois due to global warming and climate change. Global warming exacerbates the problem of ground-level ozone ("smog"), intensifying the public health dangers associated with air quality violations.[23] Unless emissions of GHG are curbed and then greatly decreased, GHG will continue to pose a significant threat to the health, welfare, and economy of Illinois.

---

[20] The American Geophysical Union has stated that a prompt moratorium on new coal power plants that do not capture CO_2 and a phase-out of existing coal power plants by 2030 are critical to solving climate change. The Pew Center on Global Climate Change has also concluded that reductions in coal-based CO_2 emissions will be critical for solving the climate crisis.

21 Recommendations by the IPCC do not carry the force of law. Moreover, it is not appropriate to expect that new sources should comply with these recommendations when existing sources are unaffected, particularly as meaningful reductions in GHG emissions will necessitate comprehensive action to lower energy consumption and develop alternative energy systems.

[22] USEPA, "Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act; Proposed Rule," 74 FR 18,886, 18904 (April 24, 2009).

[23] Illinois agriculture is also sensitive to warming because of the existing threats of heat waves, flooding and drought.
See National Wildlife Federation, Global Warming and Illinois, available at http://www.nwf.org/GlobalWarming/pdfs/Illinois.pdf

...the Proposed Endangerment Findings, by themselves, do not provide a legal basis for the permit for the proposed plant to address emissions of CO_2 or other GHG. Rather, they represented an initial step by USEPA to begin the orderly process of regulating or controlling emissions of GHG under the Clean Air Act.

This conclusion is confirmed by the Final Endangerment Findings made by USEPA Administrator Lisa Jackson on December 7, 2009. [24, 25] When making the Final Endangerment Findings, Administrator Jackson also observed that this action did not by itself impose any requirements on sources or other entities. Rather, it was a prerequisite to finalizing the USEPA's proposed standards for GHG emission from light-duty vehicles, which were jointly proposed by USEPA and the US Department of Transportation, National Highway Safety Administration, on September 15, 2009.[26]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 7; *Vulcan Responsiveness Summary for the Public Comment Period*

[24] On December 7, 2009, USEPA Administrator Lisa Jackson proceeded with Final Endangerment Findings, in which she actually signed two distinct findings regarding GHG under Section 202(a) of the Clean Air Act. First, Administrator Jackson found that the current and projected concentrations of the six GHG compounds--CO_2, methane, nitrous oxide (N_2O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (SF_6) in the atmosphere threaten the public health and welfare of current and future generations. Second, Administrator Jackson found that the combined emissions of these GHG compounds from new motor vehicles and new motor vehicle engines contribute to GHG pollution, which threatens public health and welfare. *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 FR 66,496 (December 15, 2009).

When adopting the Final Endangerment Findings, Administrator Jackson also made clear that this action did not result in GHG becoming regulated pollutants for purposes of PSD. "Footnote 17: Note that it is EPA's current position that these Final Findings do not make well-mixed greenhouse gases 'subject to regulation' for purposes of the CAA's Prevention of Significant Deterioration (PSD) and title V programs. *See, e.g.*, memorandum entitled 'EPA's Interpretation of Regulations that Determine Pollutants Covered By Federal Prevention of Significant Deterioration (PSD) Permit Program' (Dec. 18, 2008). While EPA is reconsidering this memorandum and is seeking public comment on the issues raised in it generally, including whether a final endangerment finding should trigger PSD, the effectiveness of the positions provided in the memorandum was not stayed pending that reconsideration. Prevention of Significant Deterioration (PSD): Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by the Federal PSD Permit Program, 74 FR 515135, 51543–44 (Oct. 7, 2009). In addition, EPA has proposed new temporary thresholds for greenhouse gas emissions that define when PSD and title V permits are required for new or existing facilities. Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule (74 FR 55292, October 27, 2009). The proposed thresholds would 'tailor' the permit programs to limit which facilities would be required to obtain PSD and title V permits."

[25] A number of industry groups that have petitioned the court to review USEPA's Final Endangerment Findings, including the American Iron and Steel Institute, the American Farm Bureau Federation, the American Petroleum Institute, the Corn Refiners Association, the National Association of Home Builders, the National Association of Manufacturers, the National Mining Association, the National Oilseed Processors Association, the National Petrochemical and Refiners Association, the Portland Cement Association, the U.S. Chamber of Commerce, and the Utility Air Regulatory Group. On February 16, 2010, three states, Alabama, Texas and Virginia, also filed lawsuits challenging USEPA's Findings.

[26] "Proposed Rulemaking To Establish Light-Duty Vehicle Greenhouse Gas Emission Standards and Corporate Average Fuel Economy Standards," 74 FR 49,454 (September 28, 2009)

on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.

7. Other states have shown the path to a clean energy future. For example, in Kansas, Governor Sebelius rejected two proposed 700 MW coal-fired generating units because of concerns over CO_2 emissions and the potential costs of federal regulations for CO_2 emissions. She said "We must move forward strategically—steering our state clear of the environmental, health and economic risks of massive new carbon emissions."[27] Such progress in the fight against global warming would be wiped out if Illinois were to ignore the impacts from the proposed plant

The permitting of the proposed [Mississippi Lime Company] plant is in accordance with the express federal and state laws and rules that currently apply and govern the permitting of the proposed plant. While different requirements may govern in other jurisdictions, those requirements are not applicable to the application or permit for the proposed plant, as the plant would be located in Illinois. Likewise, actions taken on projects proposed in other jurisdictions cannot be directly transferred to and applied to this project. This is because of the differences in the projects, their circumstances, and the legal nature of the decisions that were actually being made on those projects in those other jurisdictions. For example, in the case cited in this comment, both environmental impacts of CO_2 and the costs for future control of CO_2 were considerations.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 8; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

8. Options exist to reduce the GHG emissions from the proposed plant that could be included in a BACT analysis. These include: 1) Increased efficiency; 2) Controls options and work practice standards; and 3) Co-firing the kiln with lower carbon fuels, including biomass or natural gas, instead of solid fossil fuels.

Due to the fact that GHG are not yet regulated under the PSD program, the BACT analysis for the proposed plant does not and should not consider control options for GHG emissions....

However, we at Mississippi Lime Company will operate the proposed lime manufacturing facility in a fashion to maximize fuel efficiency and thereby, correspondingly, reduce GHG emissions. As an example, the preheaters on the

---

[27] Kansas Department of Health and the Environment, Press Release: KDHE Electric Denies Sunflower Electric Air Quality Permit (October 18, 2007).
"When denying a permit to Sunflower Electric, the Director of the Kansas Department of Health and the Environment stated that 'it would be irresponsible to ignore emerging information about the contribution of CO_2 and other greenhouse gases to climate change and the potential harm to our environment and health.'"

proposed rotary kilns maximize kiln energy efficiency by preheating the limestone feed material. This results in the need to burn less fuel that would otherwise be needed to calcine the limestone in the kiln.

Additionally, Mississippi Lime Company, through the National Lime Association (NLA) responded to President Bush's challenge to the business community in 2002 to voluntarily contribute to the goal of reducing the intensity of greenhouse gas emissions of the American economy by 18% by 2012.[28]

Therefore, as voluntary participants of Climate VISION (Voluntary Innovative Sector Initiative: Opportunities Now), members of the National Lime Association, including Mississippi Lime Company, have established and are committed to reaching a goal of reducing the intensity of greenhouse gas emissions from energy use in the lime industry. Mississippi Lime Company is actively pursuing this goal by, on an NLA aggregate basis, striving to reduce greenhouse gas emissions from fuel combustion per ton of production by 8% between 2002 and 2012, through a variety of strategies.[29]

Further, lime is a basic chemical commodity and is used in many processes, including pollution reduction applications such as flue gas desulphurization. As such, Mississippi Lime products further aid in the reduction of emissions of the American economy.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 9; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

9. Global warming will have a significant impact on the human environment. [Mississippi Lime Company] must include in the application and the Illinois EPA must review an analysis of technically feasible control options for minimizing emissions of CO_2 and other GHG during startup of the proposed plant and during any other time during which the sale of CO_2 is not feasible. In other words, a CO_2 BACT analysis should be prepared for all operation of the plant, including startup, shutdown, and malfunction.

As discussed, GHG are not yet regulated under the PSD program. Accordingly, as a legal matter, the BACT analysis for the proposed plant

[28] In February 2002, President Bush committed to reducing America's greenhouse gas intensity (the ratio of emissions to economic output) by 18% during the coming decade, and challenged American businesses and industries to undertake broader efforts to help meet that goal. As such, in February 2003 the Department of Energy, on behalf of the Administration, launched the President's *Climate VISION* (Voluntary Innovative Sector Initiative: Opportunities Now) – a voluntary, public-private partnership to pursue cost-effective initiatives that will reduce the projected growth in America's greenhouse gas emissions. Climate VISION is administered through the Department of Energy's policy and international program.

[29] "...between 2002 and 2008, the energy-related CO_2 intensity of lime products produced by NLA member companies has been reduced by an aggregate 5%." Letter to The Honorable Samuel W. Bodman, Secretary of Energy, U. S. Department of Energy, June 23, 2008.

should not consider control options for the GHG emissions for any portion of the operations of the proposed plant....

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 10; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

10. Consistent with the statutory definition of BACT at Section 169(3) of the Clean Air Act, historic practice, and recent determinations of the EAB,[30] a BACT determination must include consideration of "clean fuels." For this plant, this may include the use of natural gas and biomass in place of some or all of the solid fossil fuel, or a combination of any of these, as readily available methods to reduce CO_2 emissions.

...the Illinois EPA has appropriately considered the use of various "clean fuels" by the proposed plant, as an alternative to the use of coal and coke as planned by [Mississippi Lime Company], as a means to reduce the plant's emissions of regulated pollutants that are subject to PSD. However, under the current regulations, it was not appropriate for this consideration to extend to CO_2 as it is not yet a regulated pollutants for purposes of the PSD program.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 11; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

11. Biomass fuel is readily available in the Midwest and both processed biomass fuel and fuel crops are available. The issues involving acquisition and transport of biomass, if any, involve costs. Biomass cannot be rejected as technologically infeasible. For example, the Department of Energy's website notes that in 2002 there were about 9,733 MW of installed biomass capacity in the United States, the largest source of renewable electricity other than hydroelectricity.[31]

This comment does not demonstrate that biomass fuel is readily available, much less an appropriate and available fuel, for the proposed lime plant. The use of biomass as the fuel for the proposed plant can be readily considered and rejected as an option for the plant. The fact that biomass fuel is used at certain facilities to produce steam and electricity does not show that biomass fuel is a fuel that should be required to be used at the proposed plant.

---

[30] For example, refer to pages 17 and 18 of the EAB's ruling in the case of: In re Northern Michigan University Ripley Heating Plant, Slip. Op., PSD Appeal No. 08-02 (E.A.B. 2009) "Congressional direction to permitting applicants and public officials is emphatic. In making determinations, they are to give prominent consideration to fuels."

[31] See http://www1.eere.energy.gov/biomass/index.html.

Biomass fuel is not consistent with the nature of the plant, which would produce lime, a physical product, for sale. To effectively convert limestone into lime, the kiln needs fuel with consistent heat content and other physical properties. This objective is inconsistent with both the nature and the quantity of biomass that would potentially be available for the plant. As a general matter, the composition and properties of biomass fuels are significantly different than those of coal and coke,[32] which results in biomass not being a suitable fuel for a calcination process designed for fuels with a high-heat content.[33, 34] In addition, as [Mississippi Lime Company's] objective is to manufacture lime, this necessitates use of commercial fuels for which a reliable supply will be available during the life of the plant.

Moreover, even if biomass fuels could be used in the kiln, there is not an established supply of biomass fuels in the area surrounding the plant.[35] Farming to produce low quality biomass fuels, of the type that would potentially be available for use at the proposed plant, is in its infancy. Biomass fuels cannot yet generally be considered a commercial fuel. The continuing availability of such fuel and the future cost of such fuel cannot be determined or predicted in a way that would allow them to be considered available fuels.... In this regard, key factors are the nature of government programs that accelerate the development of commercial biomass fuels and the extent to which regulations are adopted and programs implemented that increase competition for those resources, such as federal regulations supporting use of renewable fuels. This situation with the proposed plant is

---

[32] Biomass is not a friable material and cannot be pulverized like coal. This means that biomass would have to be prepared for use as fuel separately from other solid fuel. As compared to coal and coke, this would also make it would be more difficult to maintain consistent sizing of the biomass fed to the kiln, which is desirable to maintain consistent combustion and operation of the kiln. In addition, as compared to coal and coke, more of the carbon in biomass is in a volatile form and less is present as fixed carbon. As such, use of biomass fuel could also negatively affect the temperature profile in the kiln as its higher volatile carbon content made combustion occur more rapidly.

[33] At the present time, certain types of "high-quality" biomass are used for production of chemicals, e.g., ethanol from corn and biodiesel from vegetable oil. These processes generally involve "high quality" forms of biomass and specific conversion processes and equipment that have been developed for the processing of particular feedstocks. This does not show that biomass is generally suitable as a fuel. It instead shows the specialized nature of chemical processes. To the extent that waste or low-quality biomass is currently being used, it is generally to produce a fuel that is then burned for its heat energy, not as a chemical feedstock. The use of biomass as a fuel or to produce fuel that is immediately burned at the source for conversion into thermal does not demonstrate that biomass is a suitable fuel for the proposed plant. Combustion of a material to produce heat energy as steam is more tolerant of variation in fuel composition that combustion in a lime kiln.

[34] The United States Energy Information Agency (EIA) indicates "The U.S. economy uses biomass-based materials as a source of energy in many ways. Wood and agricultural residues are burned as a fuel for cogeneration of steam and electricity in the industrial sector. Biomass is used for power generation in the electricity sector and for space heating in residential and commercial buildings. Biomass can be converted to a liquid form for use as a transportation fuel, and research is being conducted on the production of fuels and chemicals from biomass." *See* Energy Information Agency, *Biomass for Electricity Generation*, EIA-Biomass Gasification http://www.eia.doe.gov/oiaf/analysispaper/biomass.

[35] As described by USDOE's Office of Energy Efficiency and Renewable Energy, in its State Assessment for Biomass Resources: Illinois Potential for Biofuel Production (available at http://www.afdc.energy.gov/afdc/sabre/sabre.php), there are very limited supplies of forest and primary mill residues in Illinois, as would be used by the Bay Front project. Other than in the Chicago Area, where urban wood residues are available, the potential for generation of biomass in Illinois is primarily with crops and crop residues, which are lower quality biomass than wood.

different from projects in which the developers propose to utilize or develop certain biomass resources. In those cases, the developers are voluntarily accepting the uncertainty in the future availability and cost of material from the selected resource. Likewise, the circumstances are different from those of individuals who propose to utilize waste as a source of energy and voluntarily accept both the uncertainty associated with use of such material and the accompanying regulatory burden.

These considerations, which preclude use of biomass as the required fuel for the proposed plant, also preclude use of a blend of biomass and coal and coke and as the fuel for the plant. In addition, use of a blended fuel, even if feasible and otherwise appropriate, would act to negatively affect the operation of the plant. The increase in the complexity of the kiln operation, which would be inherent in using a blend of coal, coke and biomass, would be contrary to consistent and reliable operation, such that an increase in process upsets and production of off-specification lime should be contemplated. [36]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 12; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

12. Xcel Energy has proposed to build a biomass gasification plant, which would use 200,000 to 250,000 tons of biomass annually, at the site of its existing Bay Front Generating Station in Ashland, Wisconsin.[37] Publicly-available information for this project shows that use of biomass is cost-effective. The Xcel Bay Front facility is currently paying between $25.00 and $29.00 per ton of wood waste ($3.85 to $5.27/mmBtu, based on 6,000 Btu/pound).[38] Therefore, biomass is a transferable emission control option.

The Xcel project cited by this comment does not demonstrate that biomass, i.e., wood waste, is an available fuel for the proposed plant. Indeed, given the circumstances of the Xcel project,[39] it serves to show that wood fuel is not available for the proposed lime plant. The proposed kiln would be located at a site [near Praire du Rocher, IL], over [700] miles away from the Xcel

---

[36] **The use of fuels derived from biomass by the proposed lime kiln is also rejected. The conversion of biomass into a biomass-derived fuel adds significantly to the costs of such a fuel compared to conventional fuels. Thus biomass derived fuels are readily rejected for purposes of BACT as their emission characteristic would be no better than those of natural gas but they would be several times more expensive, with higher cost impacts than those of natural gas.**

[37] See Application of Northern States Power Company, a Wisconsin Corporation, for a Certificate of Authority and Any Other Authorizations Needed to Construct and Place Into Operation a Biomass Gasifier at Its BayFront Generating Facility, Docket No. 4220-CE-169, PSC Ref # 108437.

[38] See "Assessment of Biomass Resources for Energy Generation at Xcel Energy's Bay Front Generating Station at Ashland," Wisconsin, Energy Center of Wisconsin. 2007.

[39] **The Xcel project would involve use of wood fuel at a facility in Northern Wisconsin, on the shore of Lake Superior. The project would be near the Chequamegon National Forest, in an area with substantial forest land within 50 miles of the project site. This is the reason that wood has historically been used as a fuel at the existing Bay Front power plant.**

project in Ashland, Wisconsin. [Prairie du Rocher] is not in a forested area, but in an area in which grain farming predominates. Facilities like Xcel Energy's Bay Front power plant are developed in the vicinity of areas in which biomass fuels are already available. As those facilities are developed in the vicinity of supplies of biomass fuel and are sized to utilize those supplies of fuels, they consume the available supply of biomass fuel. As such, the Illinois EPA cannot assume that there will be unused biomass material available for the proposed lime plant. It would be located far from the supply of biomass fuel and its fuel transportation costs will be much more than for local facilities located "on top" of the fuel supply.[40]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 13; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

13. For a lime kiln, clean fuels may also include the use of a landfill gas as a readily available method to reduce CO_2 emissions.

Use of landfill gas is rejected on several grounds. It is a low-quality fuel posing similar technical issues as those associated with use of biomass in the kiln. In addition, like biomass fuel, use of landfill gas is rejected because it cannot be considered an available fuel....

As previously discussed, emissions of CO_2 are currently not subject to BACT pursuant to the PSD program. Accordingly, as this comment indicates that land fill gas must be considered in the BACT determination for the proposed plant as a "clean fuel" control option to reduce emissions of CO_2, such consideration is not justified as CO_2 is not currently a regulated pollutant for purposes of the PSD program.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 14; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

14. For a lime kiln, clean fuels may also include the use of fuel oil as a readily available method to reduce CO_2 emissions.

The use of fuel oil can be readily rejected as a "clean fuel" control option for emissions of pollutants that are currently regulated under the PSD program. This is because the use of natural gas has been rejected as a control option. The sulfur content of distillate oil is higher than that of natural gas.

[40] Given that transportation costs are a factor in fuel costs, the costs of wood fuel released by Xcel should not be applied to wood fuel for the proposed lime plant. Using a nominal transportation cost of $0.15 per ton-mile for long-distance truck transport, the cost for transportation of wood fuel for [700] additional miles from Northern Wisconsin to [Prairie du Rocher] could by itself cost [$8.75] per mmBtu, doubling the cost of fuel. ([700] miles x $0.15/ton-mile ÷ 12.0 mmBtu/ton = $5.00/mmBtu)

Distillate oil would also be over two and a half times more expensive than natural gas.[41] Accordingly, the cost-effectiveness and the cost impacts of use of fuel oil would be much higher than those that were the basis for rejecting use of natural gas.

As already discussed, emissions of CO_2 are not currently subject to the PSD program.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 16; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

16. The draft permit would not satisfy the PSD requirements of the Clean Air Act because it does not reflect a BACT analysis and would not set limits or other requirements for the plant's emissions of CO_2, N_2O, or methane. In light of the USEPA's proposed endangerment findings for GHG and the EAB's recent decisions related to CO2 and other GHG,[42] the Illinois EPA must either reissue a draft permit that would set BACT for emissions of GHG from the proposed plant and hold a new public comment period, or suspend processing of the application until USEPA completes its reconsideration and rulemaking for GHG emissions.

CO_2 and other GHG are not currently regulated pollutants under the federal PSD program, and therefore are not subject to the requirement for BACT under the PSD program. This has recently been clarified in a number of formal actions by USEPA, including actions by the EAB. It is also indirectly acknowledged by this comment as it requests that the Illinois EPA defer action on the application until USEPA completes action to actually regulates emissions of GHG. The Illinois EPA was legally bound when processing the permit application for the proposed plant to follow USEPA's current guidance with respect to the pollutants that qualify as regulated pollutants under the PSD program.[43] In addition, given the timing of rulemakings by USEPA to regulate GHG under federal law and the likelihood of legal challenges that might delay the effectiveness of rules that are adopted, it is

---

[41] Distillate oil would cost an industrial source in Illinois almost three times as much per Btu as natural gas based on information compiled by the federal Energy Information Administration (EIA).

[42] The PSD program requires that each "new major stationary source shall apply BACT for each regulated NSR pollutant that it would have the potential to emit in significant amounts." 40 CFR 52.21(j). In addition to pollutants for which there are national ambient air quality standard or emission standards promulgated under Section 111 of the Act, regulated NSR pollutants include "...any pollutant that otherwise is subject to regulation under the Act." 40 CFR 52.21(b)(50)(iv). The Clean Air Act makes clear that the BACT requirements extend to "each pollutant subject to regulation under the Act."

[43] Section 9.1(a) of Illinois' Environmental Protection Act also specifically states that the PSD program be developed and implemented in Illinois "...to avoid duplicative, overlapping or conflicting State and federal regulatory systems."

The Illinois EPA administers the PSD program for sources in Illinois through a formal delegation agreement with USEPA, rather than under a USEPA-approved state PSD program. By virtue of implementing a federally delegated program, the Illinois EPA is obliged to adhere to the same policies and interpretations as a regional Administrator of USEPA.

not appropriate to delay action on the application for the proposed plant pending completion of such rulemakings by USEPA.[44]

The Johnson Memorandum

USEPA does not consider that the monitoring and reporting of CO_2 emissions pursuant to Section 821 of the Clean Air Act Amendments of 1990 and certain provisions under 40 CFR Part 75 is sufficient for CO_2 to be considered a regulated pollutant under the PSD program. This position is memorialized in a memorandum by Stephen Johnson, Administrator of the USEPA, dated December 18, 2008.[45] Notice of this determination was subsequently provided by a notice in the Federal Register.[46] As explained in the memorandum, for a pollutant to be considered subject to regulation under the Clean Air Act, a pollutant must be subject to requirements that control or limit emissions of the pollutant, not simply requirements related to the monitoring or reporting of emissions. The memorandum finds that the data gathering requirements for CO_2 emissions promulgated under Title IV of the Clean Air Act does not compel the conclusion that Congress meant for CO_2 to become a regulated pollutant under the PSD program. USEPA identified several policy concerns with construing the Clean Air Act in this manner, including the undesirable effects such an interpretation would pose for information gathering activities and the administration of the PSD program. The applicability of the Johnson Memorandum is broad and unambiguous, as it also indicates that it applies to "... all PSD permitting actions by EPA regions (and delegated States that issue permits on behalf of EPA Regions)." As such, the Illinois EPA, as a permit authority that administers the federal PSD program in a delegated capacity, is obliged to implement USEPA's interpretation.

While the current USEPA Administrator, Lisa Jackson, announced on February 18, 2009, that USEPA had granted a petition for reconsideration of the Johnson Memorandum by USEPA, she did not stay its effect or validity.[47] On March 29, 2010, USEPA completed its reconsideration of the Johnson Memorandum, confirming the principles set forth in the Johnson Memorandum. In addition, USEPA addressed the timing of a pollutant's transition from not being a regulated pollutant to being a regulated

---

[44] As already discussed, the permit also requires use of a preheater tower on the kiln. This would likely also have been the control technology specified as BACT for the kiln's emissions of GHG, which are primarily CO_2, if BACT were applicable to the proposed plant for its emissions of GHG.

[45] Memorandum, December 18, 2008, by Stephen L. Johnson, Administrator of the USEPA, entitled *EPA's Interpretation of Regulations that Determine Pollutants Covered By Federal Prevention of Significant Deterioration (PSD) Permit Program* (Johnson Memorandum).

[46] Notice of the Johnson Memorandum was published in the Federal Register on December 31, 2008, i.e., Notice of issuance of the Administrator's Interpretation. 73 FR 80,300 (December 31, 2008).

[47] As discussed elsewhere, on April 17, 2009, subsequent to announcing reconsideration of the Johnson Memorandum, USEPA Administrator Jackson announced that USEPA would be proposing to issue findings that GHG are pollutants that are present in the atmosphere at levels that threatens public health and welfare. Adoption of these findings by USEPA would set in motion a process whereby GHG would begin to be regulated under various provisions of the Clean Air Act.

pollutant, as will be relevant in the future for GHG. A pollutant becomes a regulated pollutant when control requirements under the Clean Air Act "take effect" for the pollutant, rather than on the date that control requirements are adopted for the pollutant. Accordingly, USEPA expects GHG to become regulated pollutants on January 2, 2011, the earliest possible date that companies will have to comply with the proposed standards for GHG emissions from light duty vehicles. [48]

Section 821 Argument.

The interpretation put forth in the Johnson Memorandum is consistent with Section 821 of the Clean Air Act Amendments of 1990. Section 821 is entitled "Information Gathering on Greenhouse Gases Contributing to Global Climate Change." The regulations adopted by USEPA pursuant to Section 821 of the Clean Air Act Amendments of 1990, which require collection of data for CO_2 emissions from power plants, do not evidence an intent by USEPA to regulate CO_2 under the PSD program. They merely reflect compliance with the explicit statutory directive of Congress that USEPA adopt rules requiring certain sources to begin collecting data for CO_2 emissions and reporting that data to USEPA. If Congress had intended that CO_2 be treated as a pollutant subject to the PSD program, it would have certainly indicated that in Section 821. Instead, Congress only provided that certain provisions of the Clean Air Act related to enforcement were to apply to the required collection and submittal of emission data for CO_2. [49] Congress did not specify that the provisions of the Clean Air Act for PSD were to also be applicable.

Delaware SIP Argument.

In the Johnson Memorandum and its subsequent reconsideration of the Johnson Memorandum, USEPA also responded to the contention that USEPA's approval of a Delaware SIP addressing CO_2 emissions was tantamount to USEPA regulation of CO_2 under the Clean Air Act. The USEPA recognizes the difference between SIP regulations under the Clean Air Act, which derive from principles of cooperative federalism, and national regulations, which generally apply in all states and are developed through

[48] *See* "Fact Sheet: Reconsideration of Interpretation of Regulations that Determine Pollutant Covered by Clean Air Act Prevention of Significant Deterioration Program," March 29, 2010, and the prepublication version of the associated Federal Register Notice.

[49] Section 821 of the Clean Air Act Amendments provides that "the provisions of section 511(e) of title V of the Clean Air Act shall apply for purposes of this section in the same manner and to the same extent as such provision applies to the monitoring and data referred to in section 511." As there is no Section 511 in Section V of the Clean Air Act, this reference is reasonably considered to refer to Section 412(e) in Title IV of the Clean Air Act. (Section 412(e) makes it unlawful to operate a subject source without monitoring and reporting of its emissions of SO_2 and NO_x (and opacity) in accordance with applicable USEPA regulations.) This further action in Section 821 providing for enforceability of the data gathering requirements for CO_2 emissions would not have been necessary if Congress had been establishing emission limitations or emissions standards for CO_2.

USEPA rulemaking.[50] Based on this distinction, USEPA does not consider pollutants that are only regulated by individual state SIPs to be pollutants subject to regulation under the Clean Air Act for purposes of the PSD program. There is an obvious difference in the nature of SIP revisions and emission standards adopted by USEPA and coincidental action by USEPA in approving a SIP submittal for a particular state is insufficient to create a "regulated air pollutant" as a matter of national law.[51]

USEPA's Endangerment Findings

In addition, the USEPA, under the leadership of Administrator Jackson, is expeditiously undertaking specific rulemaking whereby emissions of CO_2 would be regulated under the Clean Air Act. It has done this by formally making findings under Section 202 of the Clean Air Act that emissions of six GHG, including CO_2, threaten the public health and welfare of both current and future generations.[52] In the Federal Register notices for these findings, USEPA also explained that these Findings do not in themselves trigger PSD permitting requirements. In addition, the USEPA affirmed the interpretation taken in Johnson Memorandum, indicating that even though it is engaged in reconsideration of the Johnson Memorandum, the Memorandum still is currently applicable USEPA policy.[53]

---

[50] In general, USEPA's approval of provisions in State SIPs is a different legal process from the direct adoption of standards by USEPA under its independent authority under the Clean Air Act. The USEPA's approval of the provisions in State SIPs is a mechanism whereby USEPA formally reviews the adequacy of state rules and other measures that have been adopted by individual states to fulfill their obligations under the Clean Air Act. As particular state provisions are found adequate, they are approved by USEPA. If the approved state measure is one that is appropriate for enforcement, such as an emission standard, USEPA's approval of the measure as part of the state's SIP also allows for enforcement of the measure by USEPA under federal law. This is different from the regulatory process whereby USEPA unilaterally adopts National Ambient Air Quality Standards or federal New Source Performance Standards for various pollutants under its direct authority under the Clean Air Act. It is this latter form of regulation that creates or defines the scope of pollutants that are considered "subject to regulation" for purposes of PSD.

[51] Also, as stated in the USEPA's documentation for the cited Delaware SIP revision, USEPA approved this SIP revision as it would assist in achieving compliance with the 8-hour ozone NAAQS. There is no evidence that USEPA approved this SIP revision as a means to address GHG emissions. This action also was not accompanied by a reasonable opportunity for the public to comment on whether it was appropriate for these rules to be approved as part of Delaware's SIP as a means to control emissions of greenhouse gases.[51] Moreover, Delaware has a "SIP approved" PSD program. As such, actions to include additional pollutants under its state-based PSD programs would necessitate rulemaking by Delaware to revise its state PSD program and SIP for the PSD Program, which has not occurred. (Incidentally, these actions would trigger thoughtful action by USEPA to consider whether to approve such provisions as part of a SIP revision.)

[52] *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) the Clean Air Act,* 74 FR 18,886 (April 24, 2009). *Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 FR 66,496 (December 15, 2009)

[53] As explained in Footnote 29 of the Proposed Endangerment Findings, "At this time, a final positive endangerment finding would not make the air pollutant found to cause or contribute to air pollution that endangers a regulated pollutant under the PSD program. See memorandum entitled "EPA's Interpretation of Regulations that Determine Pollutants Covered By Federal Prevention of Significant Deterioration (PSD) Permit Program" (Johnson Memorandum, December 18, 2008).

USEPA is reconsidering this memorandum and will be seeking public comment on the issues raised in it. That proceeding, not this rulemaking, would be the appropriate venue for submitting comments on the issue of whether a final, positive endangerment finding under section 202(a) of the Clean Air Act should trigger the PSD program, and the implications of the definition of air pollutant in that endangerment finding on the PSD program."

The Deseret Power Decision

Various arguments relating to the premise of this comment, i.e., that CO_2 is a regulated pollutant subject to the PSD program, were also considered by the EAB in an appeal by the Sierra Club of a PSD Permit issued by USEPA, Region 8, to the Deseret Power Electric Cooperative for a new generating unit. In its ruling in Deseret Power on November 13, 2008,[54] the EAB rejected the petitioner's contention that the statutory phrase "subject to regulation" was sufficiently clear and unambiguous as to compel USEPA to impose a CO_2 BACT limit under the PSD program. However, the EAB also rejected USEPA's position that it could not impose a CO_2 BACT limit because its historical interpretation of this phrase "subject to regulation" precluded a limit for CO_2. The EAB remanded the permit back to USEPA Region 8 with instructions to further consider the question whether a CO_2 BACT limit should be developed "in light of the Agency's discretion to interpret, consistent with the CAA [Clean Air Act], what constitutes a 'pollutant subject to regulation under the Act'." [PSD Appeal No. 07-03, slip opinion, page 64]. The issuance of the Johnson Memorandum on December 18, 2008, as previously discussed, a formal action that was nationwide in scope interpreting the key phrase "pollutant subject to regulation under the Act," was directly responsive to the EAB's ruling in the Deseret Case.[55]

USEPA's Proposed Rules to Set Applicability Thresholds for GHG in the PSD Program

USEPA has also undertaken rulemakings that made it clear that GHGs are not currently regulated under the Clean Air Act and that it is taking steps to carefully approach possible future applicability of the PSD rules to GHG. In particular, on September 30, 2009, in a proposed "GHG Tailoring Rule,"[56] USEPA announced its intent to propose rules establishing applicability thresholds for emissions of GHG under the PSD program. USEPA took this action because it planned to adopt regulations under the Clean Air Act to control GHG emissions from light duty motor vehicles, pursuant to a rulemaking proposal signed on September 15, 2009. USEPA recognized that,

[54] In re Deseret Power Electric Cooperative, PSD Permit No. PSD-OU-0002-04.00, PSD Appeal No. 07-03, Order Denying Review in Part and Remanding in Part, issued November 13, 2008

[55] In two other cases following its decision on Deseret Power the November 13, 2008, the EAB has remanded PSD permits to also address the interpretational issues raised in Deseret Power. (In the case of Northern Michigan University Ripley Heating Plant, PSD Appeal No. 08-02, Feb. 18, 2009, the EAB remanded the permit to allow the Michigan Department of Natural Resources (MDNR) to address these issues. In the case of Desert Rock Energy Company, PSD Appeal No. 08-03, 08-04,08-05 & 08-06), the EAB allowed USEPA Region 8, the permitting authority in the case, to voluntarily withdraw the GHG BACT portion of its permit record to address these issues on the record.) However, both these cases involved permits that were issued before USEPA's historic interpretation of the phrase "pollutant subject to regulation under the Act" was questioned by the EAB in Deseret Power and before the Johnson Memorandum firmly established USEPA's interpretation. The EAB has not ruled on this subject in any PSD permit appeal questioning the status of GHG where the record demonstrates consistency with fully established and documented USEPA interpretation, as has since been provided, in the Johnson Memorandum and confirmed by current Administrator Jackson.

[56] USEPA, Announcement of Proposed Rule, "Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule," Docket No. EPA-HQ-OAR-2009-0517.

absent any intervening changes to federal law by Congress, completion of that rulemaking for motor vehicles would also act to trigger Clean Air Act permitting requirements under the PSD program for GHG emissions. [57] **Conversely, absent completion of that rulemaking related to emissions of GHG from motor vehicles or other comparable rulemaking that would actually entail control of emissions of GHG, emissions of GHG would not be regulated under the Clean Air Act.**

Conclusion

USEPA's actions, including issuance and reconsideration of the Johnson Memorandum, its endangerment findings, its proposed federal rules for GHG emissions from certain motor vehicles, and its proposed GHG tailoring rule, which would set emissions thresholds for applicability of PSD for GHG, all indicate the USEPA's willingness to proceed in an orderly fashion to address GHG under the federal PSD program in the future. At the same time, these actions also show that GHG are not currently subject to the federal PSD program. Moreover, in conjunction with legislation to address emissions of GHG, Congress is also considering whether it should expressly prohibit regulation of GHG emissions under the PSD provisions of the Clean Air Act.[58] **In this regard, USEPA Administrator Jackson stated in her confirmation hearings that it would be preferable that GHG be regulated under a new comprehensive climate bill, rather than under the Clean Air Act. In any event, until relevant national legislation is adopted or appropriate regulatory action is taken by USEPA, the Illinois EPA is bound to follow existing law and established USEPA policy on the status of GHG under the federal PSD program.**

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 17; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

17. Given the threat posed by global warming and climate change, it is now more important than ever for new coal-fired facilities to implement the federal Clean Air Act's requirement to impose stringent BACT limits on GHG emissions.

The threat posed by global warming and climate change does not provide a legal basis to set BACT limits on the GHG emissions of the proposed plant. This is because GHG are not currently regulated pollutants for purposes of the federal PSD program. In addition, the threat posed by global warming and climate is not a direct and immediate result of the GHG emissions of the

[57] In the preamble to this proposal, USEPA states "This proposal is necessary because EPA expects soon to promulgate regulations under the Clean Air Act to control GHG emissions from light-duty motor vehicles and, as a result, trigger PSD and title V applicability requirements for GHG emissions." Pre-publication Proposal, p. 15.

[58] *See* the proposed American Clean Energy and Security Act of 2009 (Waxman-Markey Bill) and the proposed Clean Energy Jobs And American Power Act (Boxer-Kerry Bill).

proposed plant. Rather, the threat is the secondary result of national and global emissions of GHG in total. As such, absent a legal requirement that GHG emissions of the proposed plant be addressed during permitting, the threat from global warming and climate change is appropriately addressed by comprehensive laws or regulations for GHG emissions, not with case-by-case action in the permitting of a proposed project....

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 18; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

18. The EAB has repeatedly rejected refusals by USEPA and delegated states to apply BACT requirements to GHG emissions under the Clean Air Act as unsupported by any existing law or policy. In re Deseret Power Electric Coop., PSD Appeal No. 07-03, slip op. at 25 (Nov. 13, 2008); and In re Northern Michigan University Ripley Heating Plant, Slip. Op., PSD Appeal No. 08-02 (2009). The only possible conclusion is that CO2 is subject to regulation and that BACT limits are required for CO2. Illinois EPA cannot ignore these clear directives from the EAB.

This comment misrepresents the rulings of the EAB. As already discussed, the EAB has never found that GHG are "regulated pollutants" for purposes of the federal PSD program. Rather, the EAB found that the USEPA and, in the case of Northern Michigan University, the MDNR, had not adequately supported their position that GHG were not currently regulated pollutants. The necessary support for this position was subsequently provided by the Johnson Memorandum and thereafter confirmed by other proposed USEPA rulemakings that would involve emissions of GHG.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 19; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

19. The USEPA is reassessing whether GHG are regulated under the Clean Air Act. On February 16, 2009, less than two months after the issuance of the Johnson Memorandum, the USEPA granted a petition for reconsideration of this Memorandum. (See Letter from Administrator Lisa Jackson to David Bookbinder (February 16, 2009.) [59] In agreeing to revisit this Memorandum, Administrator Jackson, the current USEPA administrator, warned that PSD permitting authorities "...should not assume that the memorandum is the final word on the appropriate interpretation of Clean Air Act requirements." Instead, USEPA

[59] Even before Administrator Jackson agreed to reconsider the Johnson Memorandum on February 16, 2009, USEPA Region 9 petitioned the EAB for a voluntary remand of a PSD permit previously issued for the Desert Rock plant in New Mexico based on the EAB's decision in Deseret. See Notice of Partial Withdrawal of Permit, In re Desert Rock Energy Company LLC, PSD Appeal Nos. 08-03, 08-04, 08-05 and 08-06, Docket Entry No. 60 (Jan. 8, 2009)

intends to begin rule-making in order to establish USEPA's official interpretation in the "near future." The result of that USEPA rulemaking will have a direct impact on the permit for the proposed plant. However, as shown in other comments, that rulemaking is not necessary as GHG are already subject to regulation under the Clean Air Act.

As already discussed, the "future" USEPA rulemaking addressed by this comment, has now been completed.[60] The status of GHG under the federal PSD program is unchanged. GHG are not currently regulated pollutants for purposes of PSD. Some final action by USEPA through rulemaking to control emissions of GHG would be necessary for GHG to become regulated pollutants for purposes of PSD. Moreover, contrary to the suggestion made in this comment, even in its preamble for its formal notice of reconsideration of the Johnson Memorandum, the USEPA explained that its preferred interpretation would continue be that in the Johnson Memorandum.[61]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 20; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

20. Certain other permit applicants have begun to submit CO_2 BACT analyses.[62] Other permitting authorities have also issued draft permits with CO_2 BACT limits.[63] While these CO_2 analyses suffer their own flaws, they demonstrate that certain permit applicants and permitting authorities have now concluded that CO_2 BACT limits are a requirement of the Clean Air Act.

The cited actions do not demonstrate that it is necessary or appropriate to set BACT for the CO_2 emissions of the proposed lime plant. In particular, the cited actions do not include applications submitted to or reviewed by USEPA. As the Illinois EPA is acting as an agent of USEPA to administer PSD permitting in Illinois, the Illinois EPA is bound by federal law and

---

[60] USEPA, Proposed Rulemaking, *Prevention of Significant Deterioration (PSD): Reconsideration of Interpretation of Regulations That Determine Pollutants Covered by the Federal PSD Permit Program*, 74 FR 51,535 (October 7, 2009).

[61] **"Of the five interpretations described in this reconsideration, the EPA continues to favor the 'actual control interpretation,' which remains in effect at this time. As explained in the following section, the actual control interpretation best reflects our past policy and practice, is in keeping with the structure and language of the statute and regulations, and best allows for the necessary coordination of approaches to controlling emissions of newly identified pollutants. While the other interpretations described herein may represent alternatives for interpreting 'subject to regulation,' no particular one is compelled by the statute, nor did the EAB determine that any one of them was so compelled. Because we have overarching concerns over the policy and practical application of each of the other interpretations, as discussed in more detail later in this notice, we are inclined to adopt the actual control interpretation as our final interpretation." 74 FR 51,539**

[62] See Addendum #2, CO2 BACT Analysis for Cash Creek Generating Station, dated December 2008; Hyperion Energy Center, Best Available Control Technology (BACT) Analysis for Emissions of Carbon Dioxide, March 2009.

[63] See Draft Statement of Basis, Russell City Energy Center (June 23, 2009), available at http://www.baaqmd.gov/Divisions/Engineering/Public-Notices-on-Permits/2009/062309-15487/Russell-City-Energy-Center/Draft-Statement-of-Basis/15487-Draft-Statement-of-Basis.aspx

regulation. These currently do not provide a legal basis for permitting of CO2 emissions.

In addition, the actions cited by this comment do not show meaningful action by certain state permitting authorities to control emissions of CO_2. Rather, the cited actions propose and/or accept levels of CO_2 emissions that reflect the applicants' engineering plans for proposed projects as being BACT. In this regard, it is significant that this comment suggests that the cited actions in other jurisdictions are flawed and would not necessarily fulfill applicable requirements for proper determinations of BACT.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 21; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

21. With its release of proposed endangerment findings for GHG, including CO_2, which will trigger regulation of GHG emissions from certain motor vehicles under the Clean Air Act,[64] USEPA has now officially declared that GHG are air pollutants that "may be reasonably anticipated to endanger public health and welfare" for purposes of regulation under the Clean Air Act. This irrefutably shows that GHG emissions are subject to regulation under the Clean Air Act.

The USEPA's endangerment findings,[65] as generally addressed by this comment, did not result in CO_2 or other GHG becoming regulated pollutants under the Clean Air Act. Rather, the USEPA's issuance of endangerment findings for GHG are actions by USEPA that show that GHG are not yet regulated under the Clean Air Act. The USEPA would not have to make such findings to make GHG subject to PSD if emissions of GHG were already being controlled pursuant to the Clean Air Act.

More importantly, the USEPA's endangerment findings for GHG do not constitute regulation of GHG under the Clean Air Act. Rather, they merely reflect formal findings by USEPA that GHG are appropriate for regulation under Title II of the Clean Air Act, which deal with control of emissions from mobile sources. To actually regulate GHG emissions, separate, further rulemaking action by USEPA pursuant to the Clean Air Act is needed to adopt rules that actually have requirements that control or "regulate" emissions of GHG from certain categories of sources.[66]

---

[64] USEPA, *Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases Under Section 202(a) of the Clean Air Act*, 74 FR 18,886 (April 24, 2009).

[65] As already discussed, USEPA Administrator Lisa Jackson has now made Final Endangerment Findings, which were issued on December 7, 2009. Challenges to these findings have been filed with the federal courts. However, to date, the USEPA's endangerment findings have not been stayed pending resolution of the appeals.

[66] In anticipation of completion of such rulemaking controlling emissions of CO_2 from certain new motor vehicles, USEPA has proposed certain revisions to the PSD program to appropriately address emissions of CO_2 and GHG. The proposed revisions are intended to set appropriate applicability criteria for applicability of the PSD program to proposed projects based on their potential GHG emissions or the increase in GHG emissions accompanying a proposed modification.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 22; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

22. CO_2 is a regulated pollutant under the Clean Air Act because it is actually regulated under the Act. In particular, Section 821 of the Clean Air Act Amendments of 1990 required USEPA to adopt regulations requiring certain sources, including coal-fired electric generating stations, to monitor CO_2 emissions and report monitored data to USEPA.[67] By requiring "regulation" of CO2 in Section 821 of the Act, Congress clearly made CO2 "subject to regulation" under the PSD program under Section 165 of the Act. Enforcement of Section 821 is accomplished through the various enforcement mechanisms in the Act, including Sections 113(a)(4) and (b)(2), 304(a)(1), and 414. USEPA subsequently adopted the required regulations.[68, 69]

While collection of emission data may constitute a certain form of regulation of a pollutant, it does not make CO_2 a regulated pollutant for purposes of the PSD program. This was addressed by the Johnson Memorandum and is confirmed by subsequent actions by the USEPA, including the Proposed Endangerment Finding and the Tailoring Rule.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 23; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

23. By adopting regulations in 1993 at 40 CFR Part 75 that require monitoring of CO_2 emissions, USEPA made CO_2 further subject to regulation under the Clean Air Act. These regulations are located in Title 40, Chapter I, Subchapter C, which makes them "regulation[s] under the Act," according to USEPA's only official interpretation. See 43 FR 26,388, 26,397 (June 19, 1978); Deseret, Slip

[67] The United States Supreme Court has found recordkeeping and reporting requirements to constitute regulation in other contexts. Buckley v. Am. Constitutional Law Found., Inc., 525 U.S. 182, 204 (1999) (holding that compelled reporting of ballot initiative petition circulators' names was impermissible regulation of speech and association rights); Riley v. Nat'l Fed'n of the Blind, Inc., 487 U.S. 781, 798-99 (1988) (compelled reporting of professional fundraiser status is impermissible regulation of speech); Buckley v. Valeo, 424 U.S.1. 66-68 (1976) (evaluating recordkeeping, reporting, and disclosure requirements as regulation of political speech). Therefore, by requiring "regulation" of CO_2 in Section 821, Congress clearly made CO_2 "subject to regulation" for purposes of the BACT requirement of the PSD program.

[68] In 1993, USEPA adopted regulations requiring monitoring of the CO_2 emissions of subject sources with installation, certification, operation, and maintenance of continuous emission monitoring systems or alternative methods (40 CFR 75.1(b) and 75.10(a)(3)) preparation and maintenance of monitoring plans (40 CFR 75.33), maintenance of certain records (40 CFR.75.57), and reporting of certain data to USEPA (40 CFR 75.60 – 64). Additionally, 40 CFR 75.5 requires operators of subject sources to comply with these regulations, providing that a violation of applicable requirement is a violation of the Clean Air Act.

[69] Numerous states, including Illinois, Wisconsin, Indiana, and Michigan have included CO_2 monitoring, record keeping, and reporting requirements in Title V permits. USEPA has also enforced these CO_2 monitoring regulations under the Clean Air Act on a number of occasions. It is, therefore, clear that CO_2 is subject to regulation under the Clean Air Act.

Op. at 41 (holding that the fact that CO_2 is regulated by rules contained in 40 CFR Subchapter C "augurs in favor" of a conclusion that CO_2 is "subject to regulation under the Act," based on USEPA's official interpretation in its 1978 rulemaking).

The provisions of 40 CFR Part 75 for monitoring and reporting of CO_2 emissions do not support the proposition that CO_2 is "regulated" under the Clean Air Act. 40 CFR Part 75 imposes certain monitoring and reporting requirements; it does not establish emission limitations. As explained in the Johnson Memorandum, for a pollutant to be considered subject to regulation for purposes of the PSD Program under the Clean Air Act, a pollutant must be subject to requirements that control or limit emissions of the pollutant. The Johnson Memorandum was issued after the EAB's decision in the Deseret case. It responded to and resolved the uncertainty that the EAB found in Deseret with respect to the USEPA's historic statements and actions with respect to the status of CO_2 under the PSD program.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 24; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois*.

24. USEPA has designated the monitoring, recordkeeping, and reporting requirements in 40 CFR Part 75 for CO_2 emissions as applicable Clean Air Act requirements that must be incorporated into Title V operating permits. [40 CFR 70.2.] Various states, including Illinois, have included these requirements related to CO_2 emissions in Title V permits. USEPA has also enforced these CO_2 requirements under the Clean Air Act on a number of occasions.[70] Accordingly, CO_2 is currently subject to regulation under the Clean Air Act.

As already discussed, the fact that certain sources are required to track and report their emissions of CO_2 to the USEPA does not mean that CO_2 emissions from those sources are "regulated," i.e., subject to requirements to control or limit their emissions of CO_2. This distinction between tracking of emissions of emissions and control of emissions is reasonable. Requiring the gathering of data for emissions of a pollutant is different from adoption of emission standards and control requirements for the pollutant. The former only entails consideration of appropriate methodology to track emissions. The latter necessitates consideration of the feasibility, reasonableness, and impacts of the emission standards or control requirements that would be adopted for the pollutant.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 25; *Vulcan Responsiveness Summary for the Public Comment*

[70] See, e.g., In re City of Detroit, Dept. of Public Lighting, Mistersky Power Station, Docket No. Clean Air Act_05-2004-0027, Consent Agreement and Final Order ¶ 7 (May 10, 2004) and In re Indiana Mun. Power Agency, Docket No. Clean Air Act 05-2000-0016, Compl. ¶¶ 5, 14-15, 34-37.

Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.

25. Two GHG, CO_2 and methane, are also regulated as components of landfill gas. USEPA has adopted standards for municipal solid waste (MSW) landfill emissions at 40 CFR 60.33c and 60.752. "MSW landfill emissions" are defined as "gas generated by the decomposition of organic waste deposited in an MSW landfill or derived from the evolution of organic compounds in the waste." 40 CFR 60.751. USEPA has identified CO_2 as one of the components of the regulated "MSW landfill emissions." [71] Thus, CO_2 is regulated through the federal rules at 40 CFR 60 Subparts Cc and WWW. See also 56 FR 24,468 (May 30, 1991) ("Today's notice designates air emissions from MSW landfills, hereafter referred to as 'MSW landfill emissions,' as the air pollutant to be controlled").

This comment does not demonstrate that emissions of CO_2 and methane have been regulated by USEPA under the Clean Air Act. In particular, in the cited federal rules for MSW landfills, USEPA has not adopted provisions that limit the amount or rate of CO_2 or methane emissions from MSW landfills. In these rules, the USEPA has set emission standards and control requirements for the emissions of organic compounds and hazardous air pollutants from MSW landfills. The fact that other pollutants, i.e., CO_2 and methane may also be present in the emissions of landfills does not mean that the emissions of those other pollutants have been regulated. Indeed, USEPA was very artful in its development of these rules to not directly regulate emissions of CO_2 or methane.

Moreover, as indicated by this comment, USEPA used a specific term, "MSW landfill emissions," to generally describe and define the pollutant that is addressed by the cited rules. Lime kilns are not MSW landfills and cannot emit MSW landfill emissions.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 26; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

26. Emissions of CO_2 and methane were central to USEPA's adoption of NSPS and Emission Guidelines for MSW landfills. In part, these rules were designed to control emissions of the trace amounts of non-methane organic compounds (NMOC) in landfill gas. When the USEPA adopted rules for control of landfill gas emissions, it was doing so based on its determination that the emissions contribute to global climate change. In fact, given the composition of MSW landfill emissions, these rules can best be described as limits on methane

[71] See *Air Emissions from Municipal Solid Waste Landfills – Background Information for Final Standards and Guidelines*, USEPA, EPA-453/R-94-021, December 1995 (explaining "...MSW landfill emissions, or [landfill gas], is composed of methane, CO_2, and NMOC.").

and CO_2 and secondarily limits on other constituents of landfill gas. (Landfill gas consists almost entirely of methane and CO_2, containing about 50 percent of these two GHG, and only traces of other compounds, including less than 1 percent NMOC.) In 1991, in its background technical document for these rules, USEPA observed that emissions of GHG, including methane and CO_2, contribute to global warming.[72] These rules include numerous measures that reduce emissions of methane and CO_2. As the impacts of landfill gas emissions on global warming were central to these rules, emissions of methane and CO_2 are regulated under the Clean Air Act. Thus BACT limits are required for the GHG emissions of the proposed lime plant.

While emissions of methane and CO_2 and their role in global warming were factors considered by USEPA in the adoption of the cited rules, the USEPA did not adopt emission standards for either methane or CO_2. Given that USEPA considered global warming during the adoption of these rules but did not adopt emission standards for either methane or CO_2, the cited rules confirm that USEPA has historically proceeded with specific intent not to regulate emissions of either methane or CO_2.[73]

Moreover, global warming impacts were not "central" to the adoption of the cited rules. The USEPA considered a number of aspects of MSW landfill emissions when proposing to adopt the cited rules. Most significantly, USEPA recognized the potential presence of various organic compounds with adverse effects on human health and welfare in the non-methane organic compounds emitted by landfills.[74] It also recognized the potential for odor nuisances from MSW landfill emissions.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 27; *Vulcan Responsiveness Summary for the Public Comment*

[72] One of the specific justifications that USEPA articulated for adopting this NSPS (particularly at the chosen level of stringency) was to limit emissions of methane to avoid global warming impacts. See 56 FR 24468, 24481 (March 12, 1996) ("[i]n considering which alternative to propose as BDT, USEPA decided to consider both NMOC's and methane reductions"); 61 FR 9905 ("Briefly, specific health and welfare effects from [landfill gas] emissions are as follows...methane emissions...contribute to global climate change as a major greenhouse gas"); id. At 9914 (anticipated "methane reductions ... are also an important part of the total carbon reductions identified under the Administration's 1993 Climate Change Action Plan). USEPA further noted in the preamble to the final rule that "[c]arbon dioxide is also an important greenhouse gas contributing to climate change," and quantified the benefits of the rule based on "equivalent reduction in CO_2." 56 FR 24,472 (stating that "1.1 to 2.0 billion trees would need to be planted...to achieve an equivalent reduction in CO_2 as achieved by today's proposal").

[73] **It is also unclear what measures in the cited rules would act to directly reduce emissions of CO_2. Indeed, as the rules require that landfill gas be captured and processed or burned to control emissions of NMOC, the cited rules do not appear to include any measures whose effect would be to reduce a landfill's emissions of CO_2. The rules would appear to only indirectly act reduce emissions of CO_2 as landfill gas would have to be collected and might productively be used as a fuel, thereby acting to displace use of fossil fuels at other sources.**

[74] **In responding to comments on the proposed rules, USEPA explained "The pollutant to be regulated, MSW landfill emissions, or LFG, is composed of methane, CO2, and NMOC. The EPA selected NMOC as a surrogate for determination of control because NMOC includes those LFG constituents of most concern. The nature of the individual compounds commonly found in LFG and the health concerns they present are discussed in chapter 2 of the proposal BID. By controlling NMOC emissions, the non-NMOC constituents in LFG would also be controlled. By basing control on NMOC emission rates, the EPA is controlling the subset of landfills having MSW landfill emissions of greater concern. The EPA. therefore, considers the use of NMOC as a surrogate for MSW landfill emissions to be effective and appropriate."**

Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.

27. CO_2 is also subject to regulation under the Clean Air Act through USEPA's approval of revisions to the SIP for the State of Delaware that added various CO_2 regulations. 73 FR 23,101 (April 29, 2008); 40 CFR 52.420(c). This revision approved CO_2 emission limits and operating requirements, recordkeeping and reporting requirements, and CO_2 emissions certification, compliance, and enforcement obligations for new and existing stationary electric generators. Del. Admin. Code 7 1000 1144.[75] USEPA's approval was made "in accordance with the Clean Air Act," 73 FR 23,101, and by approving these provisions as part of Delaware's SIP, the USEPA made CO_2 "subject to regulation" under the Act, as SIPs are developed pursuant to Sections 110 and 113 of the Act and become federally enforceable upon USEPA approval. As such, the Delaware SIP approval also demonstrates that CO_2 is subject to regulation under the Clean Air Act for purposes of triggering the BACT requirements.

This comment does not demonstrate that CO_2 is a regulated pollutant for purposes of the PSD program in Illinois, much less in Delaware. In particular, the Johnson Memorandum rejects the position put forth in this comment. It recognizes differences between SIP regulations under the Clean Air Act, which derive from principles of cooperative federalism, and national regulations, which generally apply in all states and are developed through USEPA rulemaking.[76] Based on this distinction, USEPA does not consider pollutants that are only regulated by individual state SIPs to be pollutants subject to regulation under the Clean Air Act for purposes of the PSD program.[77] This comment does not address this obvious difference in the nature of SIP revisions and emission standards adopted by USEPA, much less support its proposition that coincidental action by USEPA in approving a SIP submittal is sufficient to create a "regulated air pollutant" as a matter of national law.

---

[75] In the appeal proceeding for Deseret Power, USEPA informed the EAB of this SIP action, thereby acknowledging its potential significance. This occurred in a letter date September 9, 2008 from Brian Doster. USEPA Office of General Counsel, to Erika Durr, EAB. "...Office of General Counsel... believe that it is incumbent on them, in recognition of a duty of candor, to inform the Board of a recent action by the Agency ... EPA Region 3 issued a final approval of a Delaware State Implementation Plan (SIP) revision incorporating state regulations which include specific limitations on the rate of several pollutants, including CO2..."

[76] **In general, USEPA's approval of provisions in State SIPs is a different legal process from the direct adoption of standards by USEPA under its independent authority under the Clean Air Act. The USEPA's approval of the provisions in State SIPs is a mechanism whereby USEPA formally reviews the adequacy of state rules and other measures that have been adopted by individual states to fulfill their obligations under the Clean Air Act. As particular state provisions are found adequate, they are approved by USEPA. If the approved state measure is one that is appropriate for enforcement, such as an emission standard, USEPA's approval of the measure as part of the state's SIP also allows for enforcement of the measure by USEPA under federal law. This is different from the regulatory process whereby USEPA unilaterally adopts National Ambient Air Quality Standards or federal New Source Performance Standards for various pollutants under its direct authority under the Clean Air Act. It is this latter form of regulation that creates or defines the scope of pollutants that are "subject to regulation" for purposes of the PSD program.**

[77] **USEPA confirmed its position on this matter through the Administrator's decision in Louisville Gas & Electric, on August 12, 2009. That decision also rejected the proposition in this comment that USEPA action on a state's SIP is sufficient to make a pollutant into a regulated pollutant for purposes of the federal PSD program.**

The actions by USEPA cited in these comments also do not demonstrate thoughtful action by USEPA to treat CO_2 as a regulated pollutant for purposes of PSD, so as to rebut the recent direct action by Administrator Johnson of the USEPA. As stated in the USEPA's documentation for the cited Delaware SIP revision, USEPA approved this SIP revision as it would assist in achieving compliance with the 8-hour ozone NAAQS. There is no evidence that USEPA approved this SIP revision as a means to address emissions of greenhouse gases. This action also was not accompanied by a reasonable opportunity for the public to comment on whether it was appropriate for these rules to be approved as part of Delaware's SIP as a means to control emissions of greenhouse gases.[78] Moreover, Delaware has a "SIP approved" PSD program. As such, actions to include additional pollutants under its state-based PSD programs would necessitate rulemaking by Delaware to revise its state PSD program and SIP for the PSD Program, which has not occurred. (Incidentally, these actions would trigger thoughtful action by USEPA to consider whether to approve such provisions as part of a SIP revision.) Finally, even if USEPA inadvertently created a pollutant for purposes of PSD, this action would be restricted to the State of Delaware, as it occurred in the context of approval of Delaware's SIP.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 28; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

28. Current USEPA Administrator Lisa Jackson has warned that "PSD permitting authorities should not assume that the Johnson Memorandum is the final word on the appropriate interpretation of Clean Air Act requirements." Instead, USEPA intends to begin notice-and-comment rule-making in order to establish USEPA's official interpretation in the "near future."

While the Johnson Memorandum may not have been the final interpretation of the term "regulated pollutant" while this Memorandum was being reconsidered by USEPA, it was nevertheless the governing interpretation of the term "regulated pollutant." As such, the Illinois EPA had to carry out the permitting of the proposed plant based on that interpretation. This is because the Illinois EPA administers the federal PSD program in Illinois in a delegated capacity, effectively standing in the shoes of USEPA.

[78] The notice for the USEPA's proposed approval of Delaware Regulation No. 1144 makes no mention, and thus did not provide any notice that certain emission standards for CO_2 were included in Regulation No. 1144. The notice for this approval (73 FR 11845, March 5, 2008) indicates that the subject of the regulations is emissions that contribute to ambient levels of ozone and particulate matter. "EPA is proposing to approve the Delaware SIP revision for Regulation No. 1144—Control of Stationary Generator Emissions submitted on November 1, 2007. This regulation will help ensure that the air emissions from new and existing stationary generators do not cause or contribute to the existing air quality problems with regard to ground-level ozone and fine particulate matter, thereby adversely impacting public health, safety and welfare. EPA is soliciting public comments on the issues discussed in this document. These comments will be considered before taking final action."

Moreover, contrary to the suggestion in this comment, reconsideration of the Johnson Memorandum, did not act to directly stay or reverse the Johnson Memorandum. Indeed, on February 18, 2009, when announcing that she had granted a petition for reconsideration of the Johnson Memorandum, Administrator Jackson expressly declined to stay the effect or validity of the Memorandum. Therefore, during the period in which the USEPA was reconsidering the Johnson Memorandum, the Memorandum was controlling and USEPA and states continued to apply it.[79, 80]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 29; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

29. The Johnson Memorandum will almost certainly be reversed by the courts or withdrawn by the USEPA under the leadership of Administrator Jackson. The Illinois EPA should not and cannot rely upon this Memorandum.

...the Illinois EPA must carry out the permitting of the proposed plant based on the USEPA's current interpretation of the term "regulated pollutant," as was set forth in the Johnson Memorandum. As a legal matter, the Illinois EPA cannot rely on predictions or assumptions about future USEPA actions that would change this interpretation. And, in fact, in its reconsideration of the Johnson Memorandum, the USEPA confirmed the principles originally laid out by Administrator Johnson.

Moreover, this comment does not include any factual support for the claim that the Johnson Memorandum will be overturned by the courts. The actions of USEPA, under the leadership of Administrator Jackson, demonstrate the intent to commence regulation of CO_2 under the Clean Air Act in the future in an orderly and intentional manner, in a way that is legally sound and defensible, by adoption of regulations for CO_2 emissions.

---

[79] In the Administrator's decision in the case of *In re Louisville Gas & Electric*, Pet. No. IV-2008-3 (Administrator, August 12, 2009), the Johnson Memorandum was cited as a basis for refusing a request that the permit for a proposed new facility be remanded to include BACT limits for CO_2. The case involves a combined construction and operating permit for a proposed 750 MW coal fired generating unit. Administrator Jackson refused to review the permit with respect to CO_2 citing the Johnson Memorandum, as well as the EAB decision in *In re: Deseret Power Cooperative*, 14 E.A.D.___, PSD Appeal No. 07-03 (EAB, Nov. 13, 2008), finding that CO_2 was not currently regulated under the Clean Air Act.

[80] On July 7, 2009, in *Longleaf Energy v. Friends of the Chattahoochee*, the Georgia Court of Appeals held that neither the Clean Air Act nor Georgia State law "regulate" CO_2 such that a CO_2 emission limitation was required in the permit. Ga. Ct. App., No. A09A0387. In reaching its decision, the Georgia Court considered the USEPA's proposed endangerment findings and that Congress is considering CO_2 emission caps as part of the American Clean Energy and Security Act. Therefore, the court stated that to require emission limits for CO_2 in a PSD permit now "would preempt ongoing Congressional and EPA efforts to formulate a CO_2 emissions policy for all the states, and require the [Georgia Environmental Protection Division] to invent in a vacuum CO_2 emission controls for permits." According to the Court, this would result "in a flood of litigation over permits, and impose far-reaching economic hardship on the State."

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 30; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

30. Congress' 2008 appropriations legislation demonstrates that CO_2 is currently regulated under the Clean Air Act. In its Fiscal Year 2008 Consolidated Appropriations Act, Congress specifically required USEPA to undertake rulemaking to establish monitoring and reporting requirements for all GHG (including CO2), economy wide. H.R. 2764; Public Law 110–161, at 285 (enacted Dec. 26, 2007). Congress made clear that USEPA is "to use its existing authority under the Clean Air Act" including "existing reporting requirements for electric generating units under section 821 of the Clean Air Act" in adopting these regulations.[81] This action by Congress not only confirms that Section 821 is part of the Clean Air Act, but also establishes a separate and distinct statutory obligation to regulate CO_2 through mandatory emission monitoring requirements under the Act. In fact, the USEPA's regulatory obligations under the Appropriations Act are much broader than its duties under Section 821 as the Appropriations Act requires economy wide reporting.

The action by Congress cited in this comment does not demonstrate that emissions of CO_2 are currently regulated pollutants for purposes of the Clean Air Act and the federal PSD program. Collection of CO_2 emission data from certain sources was already occurring pursuant to Section 821 of the Clean Air Act.... In addition, if CO_2 were already being regulated, as also argued by this commenter, the cited action by Congress would have been unnecessary. Sources of CO_2 emission would already be subject to permitting and requirements for reporting of emission data under the Clean Air Act. Congress would merely have had to instruct USEPA to carry out the current Clean Air Act, without instructing it to adopt additional regulations for collections of CO_2 emission data.[82]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 31; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

31. On July 8, 2009, USEPA issued its acceptance pursuant to Section 209(b) of the Clean Air Act of the adoption by numerous states and air quality districts of

---

[81] Conference Report for the Consolidated Appropriations Act, at 1254. available at http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

[82] **As the GHG Reporting Rule will require operators of lime manufacturing plants to submit data for GHG emissions, which they are not currently required to do, this rule will collect information that may be useful in regulating emissions of GHG from lime plants. It will also assemble information on actual GHG emissions, which is not currently available, that could be useful in the future in setting numerical limits for the GHG emissions from proposed major projects at lime plants.**

the "California Standards" for certain motor vehicles.[83, 84] The California Standards include limits for four GHG (CO_2, N_2O, methane, and hydrofluorocarbons). While USEPA elected not to address whether its decision resulted in these GHG being "subject to regulation" under the Act for purposes of PSD and left that decision to another forum (see 74 FR 32,783), this is that other forum. There is no other interpretation of USEPA's decision but that it resulted in the four subject GHG being regulated under the Act and subject to PSD permitting. Therefore, emissions of each of these four GHG, in any amount, from the proposed plant requires a BACT limit.

This comment does not show that certain GHG are regulated under the Clean Air Act. It presumes an action by USEPA has occurred with respect to emissions of GHG that USEPA explicitly states in the cited rulemaking on the California Standards did not occur. The comment does not provide any further insight on this matter. Certainly, it does not show that the permitting of the Vulcan lime plant is that "other forum" referred to by USEPA. Such a position is not supportable as this action involves permitting of a particular project, not general rulemaking by USEPA directly addressing the status of GHG under the PSD program. Moreover, there are "other forums" involving general rulemaking by USEPA, notably the proposed Tailoring Rule and the Reconsideration of the Johnson Memorandum, in which the status of GHG under the PSD program is being directly addressed by USEPA. As such, USEPA's action by with respect to the California Standards, as cited by this comment, serves to further confirm that emissions of GHG are not currently regulated pollutants for purposes of the PSD program under the Clean Air Act.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 32; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

---

[83] 74 FR 32,744 (July 8, 2009); http://yosemite.epa.gov/opa/admpress.nsf/bd4379a92ceceeac8525735900400c27/5e448236de5fb369852575e500568e1b%21OpenDocument;http://www.arb.ca.gov/cc/ccms/ccms.htm; http://www.ensnewswire.com/ens/jun2009/2009-06-30-01.asp

[84] Section 209(b) of the Clean Air Act:

"(b)(1) The Administrator shall, after notice and opportunity for public hearing, waive application of this section to any State which has adopted standards (other than crankcase emission standards) for the control of emissions from new motor vehicles or new motor vehicle engines prior to March 30, 1966, if the State determines that the State standards will be, in the aggregate, at least as protective of public health and welfare as applicable Federal standards. No such waiver shall be granted if the Administrator finds that—

(A) the determination of the State is arbitrary and capricious,

(B) such State does not need such State standards to meet compelling and extraordinary conditions, or

(C) such State standards and accompanying enforcement procedures are not consistent with section 202(a) of this part.

(2) If each State standard is at least as stringent as the comparable applicable Federal standard, such State standard shall be deemed to be at least as protective of health and welfare as such Federal standards for purposes of paragraph (1).

(3) In the case of any new motor vehicle or new motor vehicle engine to which State standards apply pursuant to a waiver granted under paragraph (1), compliance with such State standards shall be treated as compliance with applicable Federal standards for purposes of this title."

32. CO_2 and other GHG are also subject to regulation under the Clean Air Act because "subject to regulation" means "capable of being regulated" and is not limited to pollutants that are "currently regulated." Federal regulations define "regulated NSR pollutants" to include not only air pollutants for which there are NAAQS under Section 109 of the Act, standards of performance for new sources under Section 111 of the Act, or standards under or established by Title VI of the Act (relating to acid deposition control), but also "[a]ny pollutant that is otherwise subject to regulation under the Act." 40 CFR 52.21(b)(50).

The term "subject to regulation" does not mean "capable of being regulated." This would be a ridiculous interpretation of the term "subject to regulation" This is because all manner of substances are capable of being regulated, i.e., being made subject to limits. It also lacks any linkage to the potential occurrence of deleterious or polluting effects from the emissions of a substance. As is clear from the cited definition of regulated NSR pollutant, the term "regulated" means actually subject to requirement that limit or control emissions of a pollutant, not the hypothetical possibility of regulation.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 33; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

33. Because BACT requirements extend to pollutants that are "subject to regulation under the Act" rather than to only those that are actually regulated, the Illinois EPA need not and, in fact, cannot wait until the USEPA actually adopts further regulations. Instead, the Illinois EPA must include GHG BACT limits for the proposed plant. Given the adverse impacts of GHG emissions, and the widely acknowledged need to reduce and control GHG emissions, it would be nonsensical to let a major new source of GHGs to slip in under the wire and avoid regulation.

This comment does not provide a legal basis...to establish BACT for the GHG emissions of the plant. If GHG are not currently regulated pollutants for purposes of the PSD program, as this comment implicitly acknowledges, there is not a legal basis to treat GHG as regulated pollutants in the permit being issued for the proposed plant.

At the same time, this does not mean that the GHG emissions of the proposed plant will be shielded from and avoid such regulations. When regulations are adopted that address the GHG emissions of lime manufacturing plants, the proposed plant will be subject to the requirements of those regulations like other lime plants.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 34; *Vulcan Responsiveness Summary for the Public Comment*

Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.

34. The USEPA's Proposed Endangerment Findings irrefutably shows that GHG are subject to regulation under the Clean Air Act. The Proposed Endangerment Findings conclude that GHG in the atmosphere threaten public health and welfare of current and future generations and that GHG emissions from motor vehicles contribute to the atmospheric concentrations of GHG and hence to the threat of climate change. Once these findings are finalized, the USEPA is legally required to regulate GHG emissions from motor vehicles pursuant to Section 202 of the Clean Air Act, which requires the USEPA to adopt standards for motor vehicles for emissions of pollutants that endanger public health or welfare. The USEPA is also engaged in rulemaking to adopt such standards for GHG emissions from motor vehicles. Thus, not only are GHG clearly subject to regulation, the regulatory process is in motion to further regulate GHG under the Clean Air Act.

The comment again points to USEPA's Endangerment Findings to argue that GHG are currently regulated pollutants under the Clean Air Act. However, as also observed by the comment, Endangerment Findings by themselves do not make regulated pollutants for purposes of the PSD program. In its preamble to this proposed rulemaking, USEPA specifically explained that Final Endangerment Findings, if adopted, would not mean that GHG are "regulated pollutants" under the PSD Program. Instead USEPA pointed to its reconsideration of the Johnson Memorandum as the regulatory forum in which the applicability of the PSD program to GHG was specifically being considered.[85]

Accordingly, this comment merely confirms that certain USEPA rulemakings are underway that, if adopted as proposed, would result in GHG becoming a regulated pollutant for purposes of the PSD program in the future. While the USEPA's Endangerment Findings indicate that GHG should be regulated, they do not result in GHG being regulated. An effective Final Endangerment Finding is only a prerequisite to adoption of standards for GHG emissions from motor vehicles under Title II of the Clean Air Act. It is the future adoption and effectiveness of those standards for GHG emissions from motor vehicles that is expected to result in emissions of GHG being regulated under the federal PSD program.

---

[85] "At this time, a final positive endangerment finding would not make the air pollutant found to cause or contribute to air pollution that endangers a regulated pollutant under the Clean Air Act's Prevention of Significant Deterioration (PSD)
program. See memorandum entitled 'EPA's Interpretation of Regulations that Determine Pollutants Covered By Federal Prevention of Significant Deterioration (PSD) Permit Program' (Dec. 18, 2008). EPA is reconsidering this Memorandum and will be seeking public comment on the issues raised in it. That proceeding, not this rulemaking, would be the appropriate venue for submitting comments on the issue of whether a final, positive endangerment finding under section 202(a) of the Act should trigger the PSD program, and the implications of the definition of air pollutant in that endangerment finding on the PSD program." 74 FR 18,905.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 35; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

35. In addition to being required to set BACT limits for GHG emissions from the proposed plant, the Illinois EPA is authorized to take steps to avoid or minimize such emissions, including the authority to set limits for GHG emissions and/or require offsets for GHG emissions. One source of such authority is Section 165(a) (2) of the Clean Air Act. It gives a PSD permitting authority broad discretion to impose permit conditions that go beyond the basic requirements of BACT in order to protect air quality.[86] Under this authority, the Illinois EPA should consider such additional permit conditions on its own initiative.

This comment does not demonstrate that the permit for the proposed plant should address GHG emissions. While a PSD permitting authority may have authority to impose conditions in a PSD permit to protect air quality, that authority is used to address emissions of regulated pollutants for which air quality standards have been set or regulations have been adopted requiring control of emissions. Moreover, that authority is used in circumstances where there is a more direct linkage between the emissions of a pollutant and air quality than is currently present with GHG emissions. Comments have not been submitted that show that the presence in the atmosphere of GHG emissions from the proposed plant directly constitutes a threat to air quality. Rather the plant's emissions of GHG would be an indirect threat to the environment, as they contribute to global warming and climate change. In this regard, emissions of GHG are similar to the emissions of the acidic precursors that contribute to acid rain and the emissions of ozone depleting substances that contribute to depletion of stratospheric ozone. In both cases, the environmental problem posed by emissions of these pollutants were addressed by comprehensive regulations for control of the precursor pollutants, not by case-by-case actions on permit applications, independent of other authority to regulate emissions of the relevant precursor pollutant.

Incidentally, Section 165(a)(2) of the Clean Air Act does not actually provide the authority or act in the manner indicated by this comment. This provision of the Clean Air Act addresses the procedural steps that must take place before a PSD permit may be issued. The ability of permitting authorities to include conditions in federal PSD permits and the nature and extent of such authority has been established through USEPA policy and review of permits by the EAB upon appeal. As related to alternatives to a proposed project, Section 165(a)(2) only provides that a permitting authority must accept public comments that address alternatives to the proposed project and, presumably, appropriately respond to those comments.

[86] Refer to In re Prairie State Generating Co., PSD Appeal No. 05-05, slip op. at 40 (EAB. 2006), quoting NSR Manual at page B.13.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 36; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

36. Section 169(3) of the Clean Air Act authorizes a permitting authority to take steps to protect air quality that go beyond the requirements of BACT. A PSD permitting authority also has the obligation under Section 165(a)(2) to consider and respond to relevant public comments on alternatives to the proposed source. ," The USEPA has also found that a "PSD permitting authority has discretion under the Clean Air Act to modify the PSD permit based on comments raising alternatives or other appropriate considerations." Brief of the USEPA, Office of Air and Radiation and Region V, In re Prairie State, PSD Appeal 05-05, 12 E.A.D. 176 (EAB, Aug. 24, 2006). Here, these comments expressly require Illinois EPA to fulfill this duty. Moreover, the EAB has made clear that a permitting authority has discretion to modify a permit based on consideration of "alternatives," whether or not commenters raise the issues

Indeed, the permit authority is not required to wait until an "alternative" is suggested in the public comments before it may exercise the discretion to consider the alternative. Instead, the permitting authority may identify an alternative on its own. This interpretation of the authority conferred by Clean Air Act Section 165(a)(2)'s reference to "alternatives" is consistent with the USEPA's longstanding policy that "...this is an aspect of the PSD permitting process in which states have the discretion to engage in a broader analysis if they so desire."

See In re Prairie State, PSD Appeal 05-05 (Aug. 24, 2006) (quoting the NSR Manual at B.13).

Accordingly, the Illinois EPA can engage in a wide-ranging exploration of options. It also has the discretion to require specific evaluation and control of CO_2 emissions, and/or to require other action to mitigate potential global warming impacts. Failure to do so in this case would be a material breach of the Illinois EPAs obligations.

To date, there has been no specific assessment of available measures or options to reduce the expected GHG emissions from the proposed plant. The Illinois EPA must consider and could require any number of possible actions to address the CO_2 footprint of the proposed plant. Options include requiring construction of a more efficient plant, use of biomass fuel, use of a less polluting fuel to run plant processes, and requiring the purchase of CO2 offsets, or some combination of these approaches or others. Offsets can be an essential component of reducing CO_2 emissions because they can be implemented quickly for a relatively low cost, such as programs to increase the energy efficiency in buildings, factories or transportation, generating electricity from renewable energy sources like wind or solar, shutting down older and less efficient power plants, and capturing CO_2 in forests and agricultural soils. An advantage of offsets is that they often result in

other environmental, social, and economic co-benefits such as reductions in emissions of other pollutants, restoration of degraded lands, improvement in watersheds and water quality, and creation of jobs and lower prices for electricity and gasoline.

The Illinois EPA has appropriately considered the "new" suggestions made by this comment as suggested alternatives for the proposed plant. Further consideration of the use biomass fuel is not needed, as it has already been considered in response to a comment suggesting that biomass fuel should be required as BACT. It was determined to be infeasible given the size and circumstances of the proposed plant. Use of lower emitting fuels has also already been considered in response to a comment related to the BACT analysis.

With regard to the efficiency of the plant, it should be assumed that the plant will be designed with equipment and features that can be safely operated and provide an appropriate balance of capital cost, operating cost, reliability, and efficiency, as would be present with the design of a major new manufacturing plant. As the plant would have multiple systems that must operate together in an integrated manner and efficiency would only be one factor in the design of the plant, it should not be expected that an independent evaluation of the design of the plant would be able to identify a more efficient design that would satisfy other needs that must be met by the design of the plant.[87]

With regard to purchase of CO_2 offsets, given that CO_2 is not currently a regulated pollutant for purposes of the federal PSD program, it would not be appropriate to impose a requirement on the proposed plant whose principal justification would be to control emissions of CO_2. In addition, requiring CO_2 offsets would be contrary to the "rule-of-law." The mechanisms and institutions that might be used to obtain CO_2 offsets are in their infancy. It is also only possible to speculate on the cost of such offsets over time, particularly as control programs are adopted for CO_2 emissions that could compete for such offsets. Lastly, if CO_2 offsets are required of the proposed plant, considerations of equity under the rule of law would argue that existing sources with similar levels of CO_2 emissions should also be required to provide CO_2 offsets to mitigate the effects of their emissions. However, this cannot occur without regulatory adoption of a control program for CO_2 emissions.[88]

---

[87] In this regard, the design of the proposed plant should not be compared to the selection process that might be followed by an individual for purchase of a new refrigerator or other appliance. That is a far simpler process as that individual is picking from a limited number of models of a particular type of unit that generally meet his or her needs. Considering the suitable units, the individual must then only make a decision balancing initial cost against energy efficiency and future operating costs. Moreover, the relevant information to make this evaluation is readily available from the price tag and the energy information posted on the unit. The individual is not seeking bids from multiple potential suppliers for multiple pieces of equipment to design and fabricate the various units that would be part of an integrated chemical processing facility, like the proposed plant.

[88] The Illinois Public Utilities Act may also be relevant as it provides a statement of the State of Illinois' policy with respect to requirements for CO_2 offsets. That is, these measures should be encouraged by the State of Illinois but should not be mandated at this time. This is a sound approach to the proposed plant until a

The "combination" of the options suggested by this comment would not avoid the difficulties posed by the individual options, and could act to compound them. As such, combinations of options also cannot be justified.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 37; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

37. Under Section 165(a)(2) of the Clean Air Act, the Illinois EPA must consider the "no-build" option, where the permit would be denied based on considerations related to emissions of CO_2 and other pollutants.

In response to this comment, which succinctly observes that one alternative to the proposed plant is not building a plant at all, the Illinois EPA has considered the "no-build" option. The Illinois EPA can readily respond to and reject this alternative. The potential benefits for Illinois from the plant would be blocked if the permit were denied, as it would effectively block further effort to develop the plant. If the plant is built, it would support the economy of [Randolph] County and Illinois generally, as it would provide jobs, purchase equipment and services, and pay taxes. The plant would produce [high-calcium] lime, adding to Illinois' local supply of this useful commodity. It would produce this lime from Illinois limestone, taking advantage of a mineral resource in the state. Reliable and affordable supplies of [high-calcium] lime are important to the economic well-being of industry...in Illinois and neighboring [states].[89] As a practical matter, it also should be assumed that the proposed kiln[s] would only [operate] if there is a reasonable expectation that there would actually be a market or demand for the lime produced by the plant.

As related to its environmental impacts, the proposed plant must be constructed and operated to comply with all applicable environmental regulations. This would include any changes to the operation of the plant as needed to comply with future laws and rules that are adopted that address emissions of CO_2 and other GHG....

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 38; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

38. Even assuming that Illinois EPA could lawfully issue a PSD permit for the proposed plant without setting BACT limits for GHG, the Illinois EPA has the

---

regulatory program is appropriately adopted that would address the plant's CO_2 emissions as well as the CO_2 emissions of other similar plants.

[89] According to Mississippi Lime Company, major industries/markets that utilize high-calcium lime include steel manufacturing, paper production, water treatment, soil stabilization, and flue gas desulphurization.

authority and duty under Section 165 of the Clean Air Act to limit GHG emissions of the proposed plant, and require all available measures and technologies to reduce its GHG emissions, measures to offset its GHG emissions, and any other appropriate alternatives and options in order to minimize the plant's GHG emissions.

This comment does not demonstrate that the federal PSD program, as established in part pursuant to Section 165 of the Clean Air Act, currently provides any legal basis or authority to set any requirements in a PSD permit for emissions of GHG. As already discussed, GHG are not currently regulated pollutants for purposes of the federal PSD program.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 39; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

39. CO_2 is currently subject to regulation under the Clean Air Act because 35 IAC 201.141 prohibits emissions that cause "air pollution."[90] Anthropomorphic emissions of CO_2 are causing global warming, a form of air pollution, and will continue to do so until abated. 35 IAC 201.141 is directly enforceable and does not require pollutant-specific standards or rules to be adopted first. See e.g., Fleishmann Malting Co. v. Ill. Pollution Control Bd., 329 N.E.2d 282, 285 (Ct. App. 5th Dist. 1975) (and collected cases). As uncontrolled CO_2 emissions cause air pollution, they are prohibited by 35 IAC 201.141, to the extent they contribute to air pollution through global warming. This rule is included in Illinois' SIP (40 CFR Part 52, Subpart O). Accordingly, CO_2 is subject to regulation under the Clean Air Act and a BACT limit is required before a PSD permit can be issued for the proposed plant.

The proposition argued in the comment is flawed. 35 IAC 201.141 does not impose an independent obligation under state law to address CO_2 emissions under the PSD program. Rather, this rule is a general prohibition. It prohibits certain actions by sources but it does not require control of or set emission standards for any particular pollutants. It does not provide legal authority for the Illinois EPA to control or restrict CO_2 emissions of the proposed plant during permitting.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 40; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

[90] As defined by 35 IAC 201.102, "Air pollution" is "the presence in the atmosphere of one or more air contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant, or animal life, to health."

40. The Illinois EPA cannot issue this permit without requiring mitigation of the emissions of GHG because it would allow the proposed plant to emit CO_2, N_2O and other GHG in such quantities that would cause or tend to cause air pollution. This would be contrary to 35 IAC 201.141, which provides that "[N]o person shall cause or threaten or allow the discharge or emission of any contaminant into the environment in any State so as, either alone or in combination with other sources, to cause or tend to cause air pollution in Illinois."

This comment does not show that a permit should not be issued for the proposed plant without mitigating its GHG emissions. The proposition put forth in this comment is flawed in several respects. First, the statutory framework for "air pollution," as cited by the comment, is geared towards enforcement, not regulation.[91] The language of both the statute and regulation is that of prohibition, whose redress would normally be found in an injunction or other equitable remedy before a court. It is not language that creates enabling authority through which the Illinois EPA could lawfully seek to "mitigate" or regulate the impacts of CO_2 emissions during permitting....

The argument advanced by the comment also fails to satisfy principles of "fundamental proof." A complainant seeking to enforce a right conferred by statute is generally required to prove both causation and injury. In the scientific community, as well as among public policy-makers, the notion of cause and effect is relative. However, in a courtroom, causation takes on a rigorous meaning, that is both highly demanding and structured. Generally speaking, factual causation is shown when a reasonable certainty exists that the alleged conduct caused an injury. Mere conjecture or speculation of causation is not enough. Similarly, the alleged injury must be amenable to proof, not merely contingent, remote or prospective. A speculative possibility of an injury does not satisfy this element. Given the difficulties in assessing the extent of global warming, not to mention assigning responsibility for harm to individual sources of CO_2 emission, the enforcement approach to regulating CO_2 emissions recommended by the commenter is clearly ill-advised.

Finally...CO_2 is a compound that is present in the earth's atmosphere, occurring both naturally and as a product of fossil fuel combustion. CO_2 in the atmosphere has not been commonly regarded as an air "pollutant." Indeed, the ecosphere depends upon the presence of CO_2 emissions to support green plants. Historically, CO_2 in the ambient atmosphere has not

---

[91] "Air pollution" is defined by Illinois law, in Section 3.115 of Illinois' Environmental Protection Act, is the "presence in the atmosphere of one or more contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human health, plant, or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property." As with nuisance law, the statutory definition contemplates an activity that creates such injury or unreasonable consequences that the law will presume damage and provide redress. Notably, the statute refers to the definition in the general air pollution prohibition that is found in Section 9(a) of the Act. The definition of air pollution adopted by the Pollution Control Board at 35 IAC 201.102, which this commenter cites, is nearly identical.

been considered harmful to humans or the environment. While the statutory definition of air contaminant in Section 3.165 of the Environmental Protection Act is broad, citing to "any solid, liquid, or gaseous matter... or form of energy, from whatever source..." and CO_2 would seem to fall within the meaning of the term, it should not be presumed that courts would conclude that CO_2 emitted by any given source would constitute air pollution. Courts are reluctant to construe language literally when it would defeat the purpose or intent of the law, leading to an outcome that was not contemplated by the legislature.[92]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 41; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

41. The GHG emissions from the proposed plant will cause air pollution as defined by Illinois' rule.[93] Accordingly, because 35 IAC 201.141 is part of Illinois' State Implementation Plan (SIP), Section 165(a)(3)(C) of the Clean Air Act provide that a PSD permit cannot be issued for the plant unless and until Vulcan demonstrates that emissions from the plant will not cause or contribute to air pollution in violation of 35 IAC 201.141.

The nature and effect of 35 IAC 201.141, as discussed above, is not changed by the fact that this state rule is part of Illinois' SIP. At a minimum, this is because 35 IAC 201.141 is neither an applicable emission standard nor a standard of performance for purposes of the Clean Air Act, as are specifically addressed by Section 165(a)(3)(C) of the Act.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 42; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

42. The Intergovernmental Panel on Climate Change (IPCC) has found that due to emissions of GHG, principally CO_2, from human activity, the concentrations of GHG in the atmosphere are at unprecedented levels.[35] The global concentration of CO_2 has increased from a pre-industrial value of about 280 to about 380 ppm in 2005. This exceeds by far the historical range over the last 650,000 years (180 to 300 ppm CO_2).[94] In the absence of corrective action,

---

[92] **Interestingly, Professor Currie, widely known as the principal draftsman of Illinois' Environmental Protection Act, expressed concerns about reading too much into certain elements of the definition of air pollution. In a 1976 law review article, Professor Currie remarked: "To seize upon broad definitional language of modest purpose to expand state regulation into areas not traditionally thought of as pollution smacks too much of invading the province of the legislature." See Enforcement Under the Illinois Pollution Law, Northwestern University Law Review, Vol. 70, No. 3 (July-August 1976).**

[93] **As defined by 35 IAC 201.102, air pollution means "the presence in the atmosphere of one or more air contaminants in sufficient quantities and of such characteristics and duration as to be injurious to human, plant or animal life, to health, or to property, or to unreasonably interfere with the enjoyment of life or property."**

[94] IPCC Working Group I, Climate Change 2007: The Physical Science Basis, Summary for Policymakers at ES-2.

the rates of CO_2 emissions continue to rise. [95] According to a prominent expert, "The world is already at or above the worst case scenarios.... In terms of emissions, the earth is moving past the most pessimistic estimates of the IPCC and by some assessments is above that red line."[96] In light of these findings, climate experts urge immediate action to curtail emissions of CO_2 and other GHG.[97] Rajendra Pachauri of the IPCC asserts "If there is no action before 2012, that's too late.... What we do in the next two to three years will determine our future. This is the defining moment."[98]

While these comments [may] describe the serious nature of global warming and climate change as caused by anthropogenic GHG emissions, global warming and climate change do not provide a legal basis to address GHG emissions in the permit for the proposed plant. This is because GHG are not currently regulated pollutants under the Clean Air Act, as previously discussed. Moreover, these general concerns about global warming and climate change do not translate into specific effects for which the proposed plant can or should be held accountable as a legal matter. This is because global warming and associated climate change are the result of the overall anthropogenic GHG emissions. As such, the identification of mandatory actions to address GHG emissions should be determined by law or

---

[95] The amount of CO_2 now in the atmosphere also diminishes the earth's ability to continue to remove or assimilate the amount of CO_2 that is emitted into the atmosphere. Through the carbon cycle, the earth is able to remove CO_2 from the atmosphere, with oceans and forests acting as "carbon sinks" absorbing CO_2 from the atmosphere, but only at certain rates and to a certain point. The increasing levels of anthropogenic emissions of CO_2, such as power plant emissions, have exceeded the capacity and disrupted the carbon cycle. For example, the ocean's uptake of further CO_2 is slowing as CO_2 concentrations increase. In some areas, oceans are reaching their CO_2 saturation points. (Refer to C. Le Quere and others, "Saturation of the Southern Ocean CO2 sink due to recent climate change," Science, 316 (5832), 1735-1738, 2007.) In addition, once the saturation point is reached, when a carbon sink is no longer able to absorb CO_2, it may actually begin releasing accumulated CO_2 into the atmosphere. As a consequence, small temperature changes can have large impacts on climate. (Testimony of James Hansen, Director of NASA's Goddard Institute for Space Studies.) The inevitable result of the disruption of the carbon cycle is increasing concentrations of CO_2 in the atmosphere, which leads to global warming with the potential for catastrophic consequences for humans and other species. As explained in the IPCC Working Group I Report: Climate Chance 2007, rising atmospheric CO2 concentrations are the leading cause of and most influential factor in global warming. Based on the observed data from 75 studies, the IPCC has concluded that "Warming of the climate system is unequivocal." The IPCC reports the temperature increase since the 1950s is very likely due to the increase in human caused GHG emissions and cannot be due to natural causes alone. The IPCC considered direct indicators of climate change, including global average air and ocean temperatures, ice and snow melt patterns, rising sea levels, changes in arctic temperatures, ocean salinity, wind patterns, and incidence of extreme weather events.

[96] 41 E. Rosenthal, "U.N. Report Describes Risks of Inaction on Climate Changes," New York Times, November 17, 2007.

[97] The IPCC in its Working Group I Report: Climate Chance 2007, also finds that increasing emissions of CO2 and other GHG are triggering climactic feedback that likely will exacerbate climate change. For example, the melting and shrinking of the extent of Arctic ice, which occurs as the atmosphere warms, can itself trigger additional warming. This is because the open ocean and ice-free land are less reflective than the ice and more of the sun's heat is absorbed rather being reflected back out into space. Given these types of feedback that exacerbate warming, it is difficult for scientific models to accurately predict the full extent of climate change that will occur if emissions of GHG continue unabated.

[98] The International Energy Agency (IEA) has warned that "[u]rgent action is needed if greenhouse-gas concentrations are to be stabilised at a level that would prevent dangerous interference with the climate system." The IEA specifically focused on the threat posed by the increased construction of coal-fired power plants. According to the IEA, "...government action must focus on curbing the rapid growth in CO emissions from coal-fired power stations – the primary cause of the surge in global emissions in the last few years." IEA World Energy Outlook 2007, Executive Summary, page 12.

regulation, rather than case-by-case action on individual permit application. In this regard, Congress has begun discussing the actions that should be taken at the national level to comprehensively and responsibly address GHG emissions in the United States.[99]

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 43; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

43. Numerous scientific studies directly link climate change with significant public health, environmental, economic, and ecological impacts. Such impacts include direct heat-related effects, extreme weather events, climate-sensitive disease impacts, air quality effects, agricultural effects (and related impacts on nutrition), population displacement and social disruption, and property damage. Ecological impacts include effects on marine life, wildlife habitat, and biodiversity. These effects are in addition to the melting of ice sheets, which would significantly raise the sea level by levels that are measured in tens of meters. Climate changes associated with global warming, such as increases in average temperature and increased incidences of extreme heat, droughts, and other extreme weather events will be experienced in and affect Illinois.

As already discussed,...in the absence of appropriate laws or regulations, global warming and climate change do not provide a legal basis to further address GHG emissions in the permit for the proposed plant since GHG are not currently regulated pollutants under the Clean Air Act.

- QUESTIONS AND COMMENTS WITH RESPONSES BY THE ILLINOIS EPA, No. 44; *Vulcan Responsiveness Summary for the Public Comment Period on a Revision to the Construction Permit/PSD Approval for Vulcan Construction Materials, LP for its Lime Kiln in Manteno, Illinois.*

44. Certain aspects of public health are closely linked to climate and global warming is expected to have numerous significant impacts on human health. The only reasonable way to address these threats to human health is to address the underlying problem, global warming, as the U.S. and international public health communities are not prepared for multiple large scale disasters, induced by global warming. The USEPA warns:

Throughout the world, the prevalence of some diseases and other threats to human health directly relate to local climate. Extreme temperatures can lead directly to loss of life, while climate-related disturbances in ecological systems, such as

[99] **Discussions have also taken place in Illinois concerning the appropriate actions that should be taken at the state level to address GHG emissions. Most recently, in 2006, Governor Blagojevich created the Illinois Climate Change Advisory Group to investigate this subject. While this group came forward with a number of recommendations, the downturn in the economy as well other events have interfered with implementation of those recommendations.**

changes in the range of infective parasites, can indirectly impact the incidence of serious infectious diseases. In addition, warm temperatures can increase air and water pollution, which in turn threaten human health.[100]

...as already discussed, in the absence of appropriate laws or regulations, global warming and climate change do not provide a legal basis to address GHG emissions in the permit for the proposed plant since GHG are not currently regulated pollutants for purposes of the PSD program.

[100] USEPA, Climate Change, Health and Environmental Effects. http://www.epa.gov/climatechange/effects/health.html