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Testimony

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United States House of Representatives

Hearing on

EPA Approval of New Power Plants: Failure to Address Global Warming Pollutants

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Testimony

Thank you for the opportunity to testify today on the subject of EPA's failure to address global warming pollutants in the permitting of new power plants. My name is David Doniger. I am Policy Director of the Climate Center at the Natural Resources Defense Council (NRDC). NRDC is a national, nonprofit organization of scientists, lawyers and environmental specialists dedicated to protecting public health and the environment. Founded in 1970, NRDC has more than 1.2 million members and online activists nationwide, served from offices in New York, Washington, Los Angeles and San Francisco, Chicago and Beijing.

I have been asked to focus my remarks today on the EPA permitting of new coal fired power plants. EPA has recently made a decision to permit a new coal fired power plant in Utah, the Deseret/Bonanza facility, and has refused to consider the global warming effects of the plant or to require any measures to mitigate or eliminate greenhouse gas emissions from the plant. As I will explain below, this position is not consistent with either sound public policy or the existing Clean Air Act, as interpreted by the Supreme Court's in Massachusetts v. EPA, 127 S. Ct. 1438 (2007).

The Massachusetts decision confirmed that greenhouse gases, such as carbon dioxide (CO_2) emitted from powerplants, are "air pollutants" under the Clean Air Act. Since CO_2 is now unambiguously an air pollutant, and it is clearly "subject to regulation," Clean Air Act section 165 requires that EPA conduct an analysis of Best Available Control Technology and establish appropriate emissions limitations. Even where EPA

refuses to follow the law in this regard, the Agency must undertake other analyses related to the collateral environmental impacts of greenhouse gases and the availability of alternatives. If these analyses were properly performed, EPA would be forced to conclude that new coal-fired power plants pose a grave threat to public health and the environment, and that mitigation strategies, such as carbon capture and disposal, energy efficiency, renewable energy, alternative fuels, and other options must be adopted before any project can more forward.

EPA, however, continues to insist that it is powerless to consider greenhouse gas emissions in approving PSD permits under the Clean Air Act until the agency issues final standards limiting such pollutants from motor vehicles or some other source – something not likely to happen before the end of 2008. It would be an environmental tragedy, however, to let more conventional coal-fired power plants slip "under the wire" in the next 14 months.

EPA is now involved in the permit application process for at least three other proposed coal-fired power plants (in addition to the Bonanza facility): the Desert Rock facility on Navajo land in New Mexico; the White Pine facility in Nevada; and the Carlson coal plant in New York. Additionally, several other states with delegated Federal permit programs under the Clean Air Act, such as Illinois and Michigan, are currently considering permit applications for new coal fired power plants. The Desert Rock and White Pine plants would each have a generating capacity of approximately 1500

megawatts and would each produce ten times more global warming pollution than the Deseret/Bonanza facility.

There is a growing recognition that allowing another generation of new coal-fired power plants to be built without carbon capture and disposal (CCD) is utterly inconsistent with an effective strategy for combating global warming. As the reality of global warming sinks in, and as it becomes clearer that future legislation will significantly regulate such plants, more and more utilities and other companies are reconsidering plans to construct new coal plants. Indeed, as shown in the attached document prepared by NRDC, plans to construct new coal-fired plants without CCD are being scrapped at numerous sites throughout the United States.

The latest high-profile example comes from Kansas. On October 17, 2007, the Kansas Department of Health and Environment denied a permit to Sunflower Electric Power to construct two 700-megawatt, coal-fired plants in Holcomb, Kansas. Together the plants would have produced 11 million tons of carbon dioxide annually. That is almost equal to the total amount of CO_2 emissions that the states in the northeastern Regional Greenhouse Gas Initiative plan to save by 2020.

Roderick L. Bremby, secretary of the Kansas Department of Health and Environment, said that 'it would be irresponsible to ignore emerging information about the contribution of carbon dioxide and other greenhouse gases to climate change and the potential harm to our environment and health if we do nothing." Kansas' decision to deny a permit because of CO_2 emissions highlights the lack of EPA leadership on this issue.

Indeed, greater federal leadership is being shown by the National Park Service. In comments recently submitted to EPA regarding Duke Energy's proposed Cliffside power plant, the Park Service urged that consideration be given to Integrated Gasification Combined Cycle (IGCC) both as a means of controlling conventional pollutants, such as NOx, SOx and mercury, and as a mechanism for capturing CO_2 pursuant to future greenhouse gas legislation.

Businesses are also coming to terms with the need for and current availability of carbon capture and sequestration. Recently, several companies have announced plans to pursue projects that would include CO_2 capture, including IGCC-based projects such as BP's proposed project in Carson, CA. Additionally, just last week, NRG Energy and Powerspan, Inc., announced plans to capture the CO_2 from the flue gas at an existing coal fired plant at a scale equivalent to the operation of a 125 megawatt power plant. The CO_2 will be used for underground injection in connection with enhanced oil recovery in the Houston area. NRG expects that this project will be operational in 2012 and that it will capture approximately 90 percent of the incoming CO_2, marking an important step in the development of a new technology for capturing CO_2 emissions.

It is also worth noting that a recent filing by Idaho Power Co. (IPC) before the Securities and Exchange Commission indicates that "due to...continued uncertainty surrounding future GHG laws and regulations, IPC has determined that coal fired generation is not the best technology to meet its resource needs in 2013." The fact that businesses recognize that carbon controls will soon be an inevitable cost of doing business and are investing

their own financial resources in systems to capture carbon from coal belies EPA's claim that it is too early to take concrete action. The fact of the matter is, coal use and climate protection are on a collision course, and without rapid deployment of CCD systems, that collision will occur quickly and with spectacularly bad results.

How we use coal in the decades ahead will have an immense impact, for better or for worse, on our economy and our energy and environmental security. Coal is cheap and abundant compared to oil and natural gas. But the toll from coal as it is used today is enormous. From mining deaths and illness and devastated mountains and streams from practices like mountain top removal mining, to accidents at coal train crossings, to air emissions of acidic, toxic, and heat-trapping pollution from coal combustion, to water pollution from coal mining and combustion wastes, the conventional coal fuel cycle is among the most environmentally destructive activities on earth.

EPA's continued refusal to require analysis of BACT, environmental impacts, or alternatives regarding the CO_2 emissions from new coal power plants is both unlawful and irresponsible public policy. Allowing these new coal plants to be built without using available methods to control CO_2 will create a legacy of damage that will be difficult if not impossible to reverse.

The central challenge facing coal as an energy resource is its global warming emissions. Large amounts of coal are being used today because it is abundant and cheap. Coal today, however, is a bigger global warming polluter per unit of energy delivered than any other fuel: double that of natural gas; 50 per cent more than oil; and, of course,

enormously more polluting than renewable energy, energy efficiency, and, more controversially, nuclear power. To reduce coal's contribution to global warming, federal policy must focus on requiring systems that will keep the carbon in coal out of the atmosphere, specifically systems that capture CO_2 from coal plants and dispose of it in geologic formations.

My organization opposes new coal plants that do not capture their CO_2. Our first recourse must be to take advantage of the untapped energy efficiency resources of this economy, and of renewable energy. Recognizing that coal will continue to be a part of the energy landscape for decades, however, NRDC supports rapid deployment of carbon capture and disposal (CCD) systems for any new coal sources. Any significant additional use of coal without CCD is fundamentally in conflict with the need to keep atmospheric concentrations of CO_2 from rising to levels that will produce truly dangerous disruption of the climate system. Given that an immediate world-wide halt to coal use is not plausible, analysts and advocates with a broad range of views should be able to agree that, if it is safe and effective, CCD should be rapidly deployed to minimize CO_2 emissions from the coal that we do use. As discussed more fully in the attached Appendix prepared by my colleague, David Hawkins, the Director of NRDC's Climate Center, geologic disposal of large amounts of CO_2 is viable and we know enough today to conclude that it can be done safely and effectively.

Since the dawn of the industrial age, human use of coal has released about 150 billion metric tons of carbon into the atmosphere—about half the total carbon emissions due to

fossil fuel use in human history. But that contribution is the tip of the carbon iceberg. Another 4 *trillion* metric tons of carbon are contained in the remaining global coal resources. That is nearly seven times the carbon that resided in our atmosphere before the industrial revolution began. Using that coal without preventing the release of that carbon to the atmosphere means a climate catastrophe.

The die is being cast for that catastrophe today, not decades from now. Decisions being made today in corporate board rooms, at the EPA, and in congressional hearing rooms are determining whether the next generation of coal-fired power plants will be designed and operated to belch their CO_2 into the atmosphere, or to return it deep underground. Power plant investments are enormous in scale, more than $1 billion per plant, and plants built today will operate for 60 years or more. The International Energy Agency (IEA) forecasts that more than $5 trillion will be spent globally on new power plants in the next 25 years. Under IEA's forecasts, over 1800 gigawatts (GW) of new coal plants will be built between now and 2030—capacity equivalent to 3000 large coal plants, or an average of ten new coal plants every month for the next quarter century. This new capacity amounts to 1.5 times the total of all the coal plants operating in the world today. Over a projected 60-year life these plants would likely emit 750 billion tons of CO_2, a total, from just 25 years of investment decisions, that is 30% greater than the total CO_2 emissions from all previous human use of coal. Once emitted, this CO_2 pollution load remains in the atmosphere for centuries. Indeed, half of the CO_2 emitted during World War I remains in the atmosphere today.

The astounding fact is that under IEA's forecast, 7 out of every 10 coal plants that will be operating in 2030 don't exist today. That fact presents a huge opportunity—many of these coal plants will not need to be built if we invest more in efficiency; additional numbers of these coal plants can be replaced with clean, renewable alternative power sources; and for the remainder, we can build them to capture their CO_2, instead of building them the way our grandfathers built them.

If we decide to do it, the world could build and operate new coal plants so that their CO_2 is returned to the ground rather than polluting the atmosphere. But we are losing that opportunity with every month of delay—10 coal plants were built the old-fashioned way last month somewhere in the world and 10 more old-style plants will be built this month, and the next and the next. Worse still, with current policies in place, none of the 3000 new plants projected by IEA are likely to capture their CO_2.

If we build a new fleet of coal plants that vent their CO_2 emissions there is little reason to trust that these plants will someday be retrofit with CO_2 capture devices later in life. While commercial technologies exist for pre-combustion capture from gasification-based power plants, most new plants are not using gasification designs and the few that are, are not incorporating capture systems. Installing capture equipment at these new plants after the fact is currently implausible for traditional coal plant designs and expensive for gasification processes.

How can U.S. policy help avert this catastrophe? We should implement a national policy that new coal plants be required to employ CCD without delay. By taking action ourselves, we can speed the deployment of CCD here at home and set an example of leadership. That leadership will bring us economic rewards in the new business opportunities it creates here and abroad and it will speed engagement by critical countries like China and India.

While in the last several years there has been a surge of announcements for planned construction of new coal-fired power plants, and EIA's energy models forecast that as much as 160 GW of new coal capacity might be built in the U.S. between now and 2030 (with as much as 61 billion metric tons of CO_2), it is worth noting that the actual amount of new coal capacity that will be built, given the unsettled policy environment, is quite uncertain. NRDC and other organizations are successfully challenging new coal plants, and regulators and the financial community are increasingly questioning the wisdom of such projects. Nonetheless, we cannot assume that new CO_2-emitting coal plants will not be built in the U.S. in the years to come. In fact, the Department of Energy's National Energy Technology Laboratory's most recent report tracking new coal plants identifies 32 projects that are either "under construction" or "near construction" in the U.S., with a total capacity of more than 17,000 MW.

In face of this climate challenge, EPA should be taking advantage of every opportunity and authority to address CO_2 emissions from coal plants now, while both EPA and

Congress work towards the development of clear requirements that would ensure the rapid deployment of CCD systems.

My organization has joined with other environmental organizations in objecting to EPA permitting decisions that refuse to consider greenhouse gas impacts and mitigation measures for new coal fired plants. A copy of our latest set of comments to EPA regarding the upcoming permit for the Desert Rock facility is attached to this testimony. The principal legal basis for our objection is that such an analysis is required under the existing Clean Air Act, in light of the Supreme Court's decision in Massachusetts v. EPA, 127 S. Ct. 1438 (2007).

In the Massachusetts v. EPA case, the Supreme Court held that CO_2 and other greenhouse gases are air pollutants as defined in Clean Air Act § 302(g), 42 U.S.C. § 7602(g). The Court based its holding on the "unambiguous" language of the definition. Specifically, the Court held that "The Clean Air Act's sweeping definition of "air pollutant" includes "*any* air pollution agent or combination of such agents, including *any* physical, chemical....substance or matter which is emitted into or otherwise enters the ambient air .... Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt "physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air." 127 S. Ct. 1438, 1460 (2007). According to the Court, on this point "[t]he statute is unambiguous." Id. Thus, the Court in Massachusetts v. EPA clearly concluded that CO_2 is an "air pollutant" under the plain meaning of the Clean Air Act.

Section 165(a)(4) of the Clean Air Act requires that permits for proposed major sources include an emission limit reflecting the Best Available Control Technology (BACT) "for each pollutant subject to regulation" under the Act. In light of the Massachusetts v. EPA decision, CO_2 is plainly a pollutant "subject to regulation" under the Act. Indeed, following the Massachusetts v. EPA decision, President Bush issued an Executive Order on May 14, 2007, directing EPA to regulate greenhouse gases, including CO_2, from motor vehicles and fuels under the Clean Air Act. The President's action suggests that even the President is of the opinion that CO_2 is a "pollutant" and must be further regulated under the Clean Air Act.

In fact, not only is CO_2 subject to imminent regulation under the Clean Air Act, it is actually a "regulated" pollutant under the Clean Air Act Amendments of 1990 already. Pursuant to existing regulations, promulgated under section 821 of the Clean Air Act Amendments of 1990, EPA requires utilities to monitor CO_2 emissions, keep records of such emissions, and report those emissions to the Agency. Given the status of CO_2 as a pollutant that is already "regulated," and as a pollutant that is subject to further regulation under the Clean Air Act Amendments, Section 165 requires that an emission limitation be established for CO_2 at new coal fired power plants, reflecting Best Available Control Technology. Indeed, emission limits for CO_2 are already effective in states such as California, Washington and Wyoming, requiring substantial carbon capture and geologic disposal for coal fired power plants (or the use of energy sources other than coal).

In the absence of a BACT emission limitation for CO_2, Clean Air Act sections 165(a)(4) and 169(3) also require that EPA consider other environmental effects as it conducts its

BACT analysis for conventional pollutants. These requirements obligate EPA to consider the impact of greenhouse gases, including CO_2, as it determines what is BACT for conventional pollutants (such as sulfur oxides and nitrogen oxides). Although few other environmental considerations could be as important, EPA has refused to undertake even this critical analysis in connection with issuing air permits for new coal plants. The result is to give the green light to huge, long-lived new sources of global warming pollution without any meaningful assessment of the human health or environmental consequences.

Finally, under Clean Air Act 165(a)(2), EPA must consider comments that are raised during the comment process regarding, among other things, "the air quality impacts of such source, alternatives thereto, control technology requirements, and other appropriate considerations," and the Agency may establish additional requirements for a source based on these considerations. EPA may also consider these factors even if they are not raised in public comments. If such analysis were properly conducted, taking into account greenhouse gas emissions and global warming, EPA would find in many, if not all cases, that available alternatives to permitting new conventional coal plants would include energy efficiency improvements, renewable energy alternatives, CCD systems, smaller power facilities, alternative fuel choices, and other options. As others will testify today, the range of such alternatives is large and increases with each passing year. Yet EPA refuses to conduct any such analysis, thereby failing to fulfill both its duty under the law and its professed desire to act now to reduce greenhouse gas emissions. In light of the very long lifetimes of coal fired power plants, the consequences of this failure, if

EPA's policy continues to be pursued at more plants, could haunt us for many decades to come.

Conclusions

We have no time to lose to begin cutting global warming emissions. Fortunately, we have technologies ready for use today that can get us started. We need to use the authorities that already exist under the law today to require the use of such technologies and we need to enact comprehensive federal global warming legislation that provides a science based limit on U.S. greenhouse gas emissions.

Because we will almost certainly continue using coal in the U.S. and globally in the coming decades, it is imperative that we act now to deploy Carbon Capture and Disposal (CCD) systems on all new coal fired power plants. EPA has had the legal authority to require this under the existing Clean Air Act for many years, but even now refuses to exercise that authority. We cannot afford to lose any more time or allow permitting of any more coal fired power plants without CO_2 controls. Commercially demonstrated CO_2 capture systems exist today and competing systems are being researched. Improvements in current systems and emergence of new approaches will be accelerated by requirements to limit CO_2 emissions.

The challenge is daunting, but it can be done. But to be successful we must begin immediately, and the most immediately available tool to address the core issues of CO_2 emissions is the existing Clean Air Act permitting process.

Mr. Chairman, that completes my testimony, I will be happy to take any questions you or other committee members may have.

APPENDIX A:

Is CCD Ready for Broad Deployment?

David Hawkins,

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Natural Resources Defense Council

Is CCD Ready for Broad Deployment?

Key Questions about CCD

I started studying CCD in detail ten years ago and the questions I had then are those asked today by people new to the subject. Do reliable systems exist to capture CO_2 from power plants and other industrial sources? Where can we put CO_2 after we have captured it? Will the CO_2 stay where we put it or will it leak? How much disposal capacity is there? Are CCD systems "affordable"? To answer these questions, the Intergovernmental Panel on Climate Change (IPCC) decided four years ago to prepare a special report on the subject. That report was issued in September, 2005 as the IPCC Special Report on Carbon Dioxide Capture and Storage. I was privileged to serve as a review editor for the report's chapter on geologic storage of CO_2.

CO_2 Capture

The IPCC special report groups capture or separation of CO_2 from industrial gases into four categories: post-combustion; pre-combustion; oxyfuel combustion; and industrial separation. I will say a few words about the basics and status of each of these approaches. In a conventional pulverized coal power plant, the coal is combusted using normal air at atmospheric pressures. This combustion process produces a large volume of exhaust gas that contains CO_2 in large amounts but in low concentrations and low pressures. Commercial post-combustion systems exist to capture CO_2 from such exhaust gases using chemical "stripping" compounds and they have been applied to very small

portions of flue gases (tens of thousands of tons from plants that emit several million tons of CO_2 annually) from a few coal-fired power plants in the U.S. that sell the captured CO_2 to the food and beverage industry. However, industry analysts state that today's systems, based on publicly available information, involve much higher costs and energy penalties than the principal demonstrated alternative, pre-combustion capture.

New and potentially less expensive post-combustion concepts have been evaluated in laboratory tests and some, like ammonia-based capture systems, are scheduled for small pilot-scale tests in the next few years. Under normal industrial development scenarios, if successful such pilot tests would be followed by larger demonstration tests and then by commercial-scale tests. These and other approaches should continue to be explored. However, unless accelerated by a combination of policies, subsidies, and willingness to take increased technical risks, such a development program could take one or two decades before post-combustion systems would be accepted for broad commercial application.

Pre-combustion capture is applied to coal conversion processes that gasify coal rather than combust it in air. In the oxygen-blown gasification process coal is heated under pressure with a mixture of pure oxygen, producing an energy-rich gas stream consisting mostly of hydrogen and carbon monoxide. Coal gasification is widely used in industrial processes, such as ammonia and fertilizer production around the world. Hundreds of such industrial gasifiers are in operation today. In power generation applications as practiced today this "syngas" stream is cleaned of impurities and then burned in a combustion turbine to make electricity in a process known as Integrated Gasification

Combined Cycle or IGCC. In the power generation business, IGCC is a relatively recent development—about two decades old and is still not widely deployed. There are two IGCC power-only plants operating in the U.S. today and about 14 commercial IGCC plants are operating globally, with most of the capacity in Europe. In early years of operation for power applications a number of IGCC projects encountered availability problems but those issues appear to be resolved today, with Tampa Electric Company reporting that its IGCC plant in Florida is the most dispatched and most economic unit in its generating system.

Commercially demonstrated systems for pre-combustion capture from the coal gasification process involve treating the syngas to form a mixture of hydrogen and CO_2 and then separating the CO_2, primarily through the use of solvents. These same techniques are used in industrial plants to separate CO_2 from natural gas and to make chemicals such as ammonia out of gasified coal. However, because CO_2 can be released to the air in unlimited amounts under today's laws, except in niche applications, even plants that separate CO_2 do not capture it; rather they release it to the atmosphere. Notable exceptions include the Dakota Gasification Company plant in Beulah, North Dakota, which captures and pipelines more than one million tons of CO_2 per year from its lignite gasification plant to an oil field in Saskatchewan, and ExxonMobil's Shute Creek natural gas processing plant in Wyoming, which strips CO_2 from sour gas and pipelines several million tons per year to oil fields in Colorado and Wyoming.

Today's pre-combustion capture approach is not applicable to the installed base of conventional pulverized coal in the U.S. and elsewhere. However, it is ready today for use with IGCC power plants. The oil giant BP has announced an IGCC project with pre-combustion CO_2 capture at its refinery in Carson, California. When operational the project will gasify petroleum coke, a solid fuel that resembles coal more than petroleum to make electricity for sale to the grid. The captured CO_2 will be sold to an oil field operator in California to enhance oil recovery. The principal obstacle for broad application of pre-combustion capture to new power plants is not technical, it is economic: under today's laws it is cheaper to release CO_2 to the air rather than capturing it. Enacting laws to limit CO_2 can change this situation, as discussed in my testimony.

While pre-combustion capture from IGCC plants is the approach that is ready today for commercial application, it is not the only method for CO_2 capture that may emerge if laws creating a market for CO_2 capture are adopted. I have previously mentioned post-combustion techniques now being explored. Another approach, known as oxyfuel combustion, is also in the early stages of research and development. In the oxyfuel process, coal is burned in oxygen rather than air and the exhaust gases are recycled to build up CO_2 concentrations to a point where separation at reasonable cost and energy penalties may be feasible. Small scale pilot studies for oxyfuel processes have been announced. As with post-combustion processes, absent an accelerated effort to leapfrog the normal commercialization process, it could be one or two decades before such systems might begin to be deployed broadly in commercial application.

Given, the massive amount of new coal capacity scheduled for construction in the next two decades, we cannot afford to wait and see whether these alternative capture systems prove out, nor do we need to. Coal plants in the design process today can employ proven IGCC and pre-combustion capture systems to reduce their CO_2 emissions by about 90 percent. Adoption of policies that set a CO_2 performance standard now for such new plants will not anoint IGCC as the technological winner since alternative approaches can be employed when they are ready. If the alternatives prove superior to IGCC and pre-combustion capture, the market will reward them accordingly. As discussed in my testimony, adoption of CO_2 performance standards is a critical step to improve today's capture methods and to stimulate development of competing systems.

I would like to say a few words about so-called "capture-ready" or "capture-capable" coal plants. Some years ago I was under the impression that some technologies like IGCC, initially built without capture equipment could be properly called "capture-ready." However, the implications of the rapid build-out of new coal plants for global warming and many conversations with engineers since then have educated me to a different view. An IGCC unit built without capture equipment can be equipped later with such equipment and at much lower cost than attempting to retrofit a conventional pulverized coal plant with today's demonstrated post-combustion systems. However, the costs and engineering reconfigurations of such an approach are substantial. More importantly, we need to begin capturing CO_2 from new coal plants without delay in order to keep global warming from becoming a potentially runaway problem. Given the pace of new coal

investments in the U.S. and globally, we simply do not have the time to build a coal plant today and think about capturing its CO_2 down the road.

Implementation of the Energy Policy Act of 2005 approach to this topic needs a review in my opinion. The Act provides significant subsidies for coal plants that do not actually capture their CO_2 but rather merely have carbon "capture capability." While the Act limits this term to plants using gasification processes, it is not being implemented in a manner that provides a meaningful substantive difference between an ordinary IGCC unit and one that genuinely has been designed with early integration of CO_2 capture in mind. Further, in its FY2008 budget request, the administration seeks appropriations allowing it to provide $9 billion in loan guarantees under Title XVII of the Act, including as much as $4 billion in loans for "carbon sequestration optimized coal power plants." The administration request does not define a "carbon sequestration optimized" coal power plant and it could mean almost anything, including, according to some industry representatives, a plant that simply leaves physical space for an unidentified black box. If that makes a power plant "capture-ready" Mr. Chairman, then my driveway is "Ferrari-ready." We should not be investing today in coal plants at more than a billion dollars apiece with nothing more than a hope that some kind of capture system will turn up. We would not get on a plane to a destination if the pilot told us there was no landing site but options were being researched.

Geologic Disposal

We have a significant experience base for injecting large amounts of CO_2 into geologic formations. For several decades oil field operators have received high pressure CO_2 for injection into fields to enhance oil recovery, delivered by pipelines spanning as much as several hundred miles. Today in the U.S. a total of more than 35 million tons of CO_2 are injected annually in more than 70 projects. (Unfortunately, due to the lack of any controls on CO_2 emissions, about 80 per cent of that CO_2 is sources from natural CO_2 formations rather than captured from industrial sources. Historians will marvel that we persisted so long in pulling CO_2 out of holes in the ground in order to move it hundreds of miles and stick in back in holes at the same time we were recognizing the harm being caused by emissions of the same molecule from nearby large industrial sources.) In addition to this enhanced oil recovery experience, there are several other large injection projects in operation or announced. The longest running of these, the Sleipner project, began in 1996.

But the largest of these projects injects on the order of one million tons per year of CO_2, while a single large coal power plant can produce about five million tons per year. And of course, our experience with man-made injection projects does not extend for the thousand year or more period that we would need to keep CO_2 in place underground for it to be effective in helping to avoid dangerous global warming. Accordingly, the public and interested members of the environmental, industry and policy communities rightly ask whether we can carry out a large scale injection program safely and assure that the injected CO_2 will stay where we put it.

Let me summarize the findings of the IPCC on the safety and efficacy of geologic disposal. In its 2005 report the IPCC concluded the following with respect to the question of whether we can safely carry out carbon injection operations on the required scale:

"With appropriate site selection based on available subsurface information, a monitoring programme to detect problems, a regulatory system and the appropriate use of remediation methods to stop or control CO2 releases if they arise, the local health, safety and environment risks of geological storage would be comparable to the risks of current activities such as natural gas storage, EOR and deep underground disposal of acid gas."

The knowledge exists to fulfill all of the conditions the IPCC identifies as needed to assure safety. While EPA has authority regulate large scale CO_2 injection projects its current underground injection control regulations are not designed to require the appropriate showings for permitting a facility intended for long-term retention of large amounts of CO_2. With adequate resources applied, EPA should be able to make the necessary revisions to its rules in two to three years. We urge the members of this Committee to support legislation to require EPA to undertake this effort this year.

Do we have a basis today for concluding that injected CO_2 will stay in place for the long periods required to prevent its contributing to global warming? The IPCC report concluded that we do, stating:

"Observations from engineered and natural analogues as well as models suggest that the fraction retained in appropriately selected and managed geological reservoirs is very likely to exceed 99% over 100 years and is likely to exceed 99% over 1,000 years."

Despite this conclusion by recognized experts there is still reason to ask about the implications of imperfect execution of large scale injection projects, especially in the early years before we have amassed more experience. Is the possibility of imperfect

execution reason enough to delay application of CO_2 capture systems to new power plants until we gain such experience from an initial round of multi-million ton "demonstration" projects? To sketch an answer to this question, my colleague Stefan Bachu, a geologist with the Alberta Energy and Utilities Board, and I wrote a paper for the Eighth International Conference on Greenhouse Gas Control Technologies in June 2006. The obvious and fundamental point we made is that without CO_2 capture, new coal plants built during any "delay and research" period will put 100 per cent of their CO_2 into the air and may do so for their operating life if they were "grandfathered" from retrofit requirements. Those releases need to be compared to hypothetical leaks from early injection sites.

Our conclusions were that even with extreme, unrealistically high hypothetical leakage rates from early injection sites (10% per year), a long period to leak detection (5 years) and a prolonged period to correct the leak (1 year), a policy that delayed installation of CO_2 capture at new coal plants to await further research would result in cumulative CO_2 releases twenty times greater than from the hypothetical faulty injection sites, if power plants built during the research period were "grandfathered" from retrofit requirements. If this wave of new coal plants were all required to retrofit CO_2 capture by no later than 2030, the cumulative emissions would still be four times greater than under the no delay scenario. I believe that any objective assessment will conclude that allowing new coal plants to be built without CO_2 capture equipment on the ground that we need more large scale injection experience will always result in significantly greater CO_2 releases than starting CO_2 capture without delay for new coal plants now being designed.

The IPCC also made estimates about global storage capacity for CO_2 in geologic formations. It concluded as follows:

"Available evidence suggests that, worldwide, it is likely that there is a technical potential of at least about 2,000 GtCO2 (545 GtC) of storage capacity in geological formations. There could be a much larger potential for geological storage in saline formations, but the upper limit estimates are uncertain due to lack of information and an agreed methodology."

Current CO_2 emissions from the world's power plants are about 10 Gt (billion metric tons) per year, so the IPCC estimate indicates 200 years of capacity if power plant emissions did not increase and 100 years capacity if annual emissions doubled.

APPENDIX B:

The Growing Trend Against Coal-Fired Power Plants

Natural Resources Defense Council

The Growing Trend Against Coal-Fired Power Plants

The past year has witnessed a remarkable and growing rejection of efforts to increase our nation's reliance on coal as a source for power. Just a few years ago a new coal rush was widely predicted. Today communities throughout the country are rejecting this 19th century approach, due to concerns about escalating construction costs, uncertainty regarding the cost of future carbon dioxide ("CO2") regulations, and the economic and environmental benefits of cleaner energy sources. As the investment company Citigroup stated in its recent decision to downgrade coal stocks, "prophesies of a new wave of Coal-fired generation have vaporized" and the industry is "likely to be structurally impaired by new regulatory mandates applied to a group perceived as landscape-disfiguring global warming bad guys."[1]

Following are 18 of the coal plant proposals that have been scrapped since September 2006:

1. Sunflower Electric Power Corporation (Kansas) – proposed 1,400 megawatt ("MW") coal plant denied air permit by Kansas Department of Health and Environment ("KDHE") due to concerns about global warming. The Director of KDHE stated that it would be "irresponsible" to ignore global warming concerns when evaluating whether to build a new plant. October 2007.[2]

2. Southwestern Power Group's Bowie Power Station (Arizona) - proposed 600 MW IGCC coal plant cancelled by company in favor of pursuing a natural gas fired plant, in part because of market economics and regulatory uncertainty. September 2007.[3]

3. Florida Power & Light's Glades Power Plant - Proposed 1,960 MW power plant rejected by Florida Public Service Commission due, in part, to the uncertainty over the cost of future carbon regulations. July 2007.[4]

4. American Electric Power and Oklahoma Gas & Electric's Red Rock Generating Station (Oklahoma) - proposed 950 MW plant rejected by the Oklahoma Corporation Commission for failure to evaluate alternatives such as natural gas. September 2007.[5]

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[1] Citigroup Global Markets, *COAL: Missing the Window* (July 18, 2007), at p. 3.
[2] KDHE Denies Sunflower Electric Air Quality Permit, http://www.kdheks.gov/news/web_archives/2007/10182007a.htm.
[3] Bob Christie, Facing Criticism, Power Firm Drops Plan to Burn Coal at Proposed Plant, Arizona Daily Star (Sept. 3, 2007), available at http://www.azstarnet.com/sn/printDS/199452.
[4] Steve Bousquet and Craig Pittman, Fla. Utilities Dump coal-fired power plant, St. Petersburg Times (July 4, 2007), available at http://www.sptimes.com/2007/07/04/State/Fla_utilities_dump_co.shtml.

[5] AEP News Release, OCC Denies Application for Red Rock Power Plant (Sept. 10, 2007), available at http://www.aep.com/investors/newsreleases/print.asp?ID=1396.

5. Tenaska's Sallisaw Electric Generating Plant (Oklahoma) - Company cancelled its plans to build a 660-880 MW plant on the grounds that it is not economically viable. July 2007.[6]

6. Peabody Coal Company's Thoroughbred Generating Station (Kentucky) - air permit for 1500 MW plant reversed by Franklin Circuit Court due to inadequate air pollution control analysis. August 2007.[7]

7. Seminole Electric Power Cooperative's Seminole 3 Generating Station (Florida) - proposed 750 MW plant rejected by Florida Department of Environmental Protection on the grounds that the plant would not minimize environmental and public health impacts, and would not serve the public interest. August 2007.[8]

8. Great Northern Power Development's South Heart Power Project (North Dakota) - applicant withdrew air permit application for 500 MW plant. August 2007.[9]

9. Florida Municipal Power Agency's Taylor Energy Center (Florida) - proposed 800 MW plant withdrawn by applicant shortly after Florida PSC denied application for Glades Power Plant. July 2007.[10]

10. TXU Corporation (March 2007) – As part of a buyout of TXU Corporation by private equity firms, TXU announced that it would abandon plans for eight out of eleven proposed plants in Texas.[11]

11. Indeck Energy Service's Elwood Energy Center (Illinois) - US EPA's Environmental Appeals Board reversed the air permit for a proposed 660 MW plant. Sept. 2006.[12]

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[6] Lareign Ward, Tenaska Blames Costs, Fort Smith Times Record (July 9, 2007), available at http://www.swtimes.com/articles/2007/07/09/news/news02.txt.

[7] *Sierra Club v. Environmental and Public Protection Cabinet*, Civ. Action No. 06-CI-00640 (Franklin County Circuit Court Aug. 6, 2007).

[8] Marcia Lane, Seminole Electric Plans to Appeal Rejection of Coal-Burning Unit, St. Augustine Record (Aug. 22, 2007), available at http://staugustine.com/stories/082207/news_4789614.shtml.

[9] Dakota Council, South Heart on Life Support (Aug. 2007), available at http://www.drcinfo.com/documents/DRC%20newsletterAug07.pdf.

[10] Steve Bousquet and Craig Pittman, Fla. Utilities Dump coal-fired power plant, St. Petersburg Times (July 4, 2007), available at http://www.sptimes.com/2007/07/04/State/Fla_utilities_dump_co.shtml.

[11] MarketWatch, TXU's Emissions U-Turn Shocks Power Industry (Feb. 26, 2007).

[12] Alison Carney Brown, EPA Denies Permit for Coal Plant Near Midewin, Chicago Wilderness (Winter 2007), available at http://chicagowildernessmag.org/issues/winter2007/news/midewin.html.

APPENDIX C:

RE: Comments on EPA's Proposed Construction Permit for Sithe Global Power to Construct the Desert Rock Energy Facility

DINE' CITIZENS AGAINST RUINING OUR ENVIRONMENT*
SAN JUAN CITIZENS ALLIANCE*
ENVIRONMENTAL DEFENSE*WESTERN RESOURCE ADVOCATES*NATURAL RESOURCES DEFENSE COUNCIL*
SIERRA CLUB*FOREST GUARDIANS*
ENVIRONMENT COLORADO*CLEAN AIR TASK FORCE*
GRAND CANYON TRUST

October 4, 2007

By email (desertrockairpermit@epa.gov and Lapka.joseph@epa.gov) and Fed. Ex.

Joseph Lapka
U.S. Environmental Protection Agency
Region 9
Air Permits Office (AIR-3)
EPA Region IX
75 Hawthorne Street
San Francisco, CA 94105

RE: Comments on EPA's Proposed Construction Permit for Sithe Global Power to Construct the Desert Rock Energy Facility

Dear Mr. Lapka:

We are writing to supplement the administrative record in this matter based on recent developments that directly relate to our previously submitted comments.[1] In our November 13, 2006 comments we expressed grave concerns about the estimated 13.7 million tons of carbon dioxide that the plant will emit to the air each year. We asserted that the proposed permit is deficient because it does not address emissions of carbon dioxide and other greenhouse gases. Specifically, we asserted that EPA is required to regulate carbon dioxide and other greenhouse gases as pollutants under the Clean Air Act, and that EPA had no lawful basis for declining to limit the plant's emissions of those pollutants. Comment 23, at 4-6[2]. We further asserted that even if EPA had a lawful basis to refuse to limit the plant's carbon dioxide emissions, it must consider the collateral environmental impacts of those emissions and the collateral costs of future regulation of those emissions in its BACT analysis. Id. 6-12. Numerous other members of the public also commented on the plant's greenhouse gas emissions. See, egs., Comment Nos. 1 (City of Aspen), 8 (Interfaith Alliance for Environmental Stewardship), 60, 88, and 93.

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[1] We are emailing a copy of this letter only, without exhibits. Included in the package that we are submitting by Fed Ex are a hard copy of this letter and all exhibits, with the exception of attachments to Exhibit 11. Also, included in the Fed Ex package are a cd containing a copy of this letter and all exhibits. The letter and all exhibits with the exception of attachments to Exhibit 11 are in the folder entitled October 4 Comment Letter and Exhibits. Attachments to Exhibit 11 are located elsewhere on the cd.

[2] References to Comments in this letter are to the Comments at http://www.epa.gov/region09/air/permit/desertrock/index.html#pub-comments.

We write to advise you of two major, recent developments that directly relate to these issues and compel EPA to prevent or limit the plant's carbon dioxide emissions. First, the Intergovernmental Panel on Climate Change ("IPCC") has issued an authoritative series of summary reports on the "unequivocal" warming of the climate system resulting from increased atmospheric carbon dioxide concentrations primarily attributable to the burning of fossil fuels. Second, the United States Supreme Court in Massachusetts v. EPA, ___ U.S. ___, 127 S. Ct. 1438 (2007) squarely held that carbon dioxide is an "air pollutant" under the Clean Air Act. These developments require EPA to deny the proposed permit. If EPA proceeds to issue a final PSD permit, a best available control technology ("BACT") analysis for carbon dioxide must be conducted and BACT emission limitations for carbon dioxide must be included in the permit. Even if EPA could lawfully issue a final permit without BACT limitations for CO_2, in light of recent events it would be arbitrary, capricious and unreasonable for the Agency to do so without reopening the permitting process and exercising its discretionary authority to specifically evaluate and address greenhouse gas emissions from the proposed Desert Rock Energy Facility.

We also write to advise you of information and analyses set forth in comments on the Bureau of Indian Affairs' Draft Environmental Impact Statement for the Desert Rock Energy Facility that are directly relevant to the PSD permitting issues now before EPA. EPA is required to consider all such information and analysis in its PSD permit proceedings and must either deny the proposed permit or make changes to the proposed permit compelled by such information and analyses.

Finally, we write to advise you of the Governor of New Mexico's recent request for consultation with the Navajo Nation on the Desert Rock Energy Facility. EPA should not issue a PSD permit for the facility before this consultation has been completed. Furthermore, EPA should consider any information and analyses developed in connection with the consultation in taking further action on the proposed PSD permit.

I. EPA SHOULD DENY THE PROPOSED PERMIT BECAUSE IT DOES NOT ADDRESS THE CONTRIBUTION OF THE PLANT'S CARBON DIOXIDE EMISSIONS TO GLOBAL WARMING AND ITS IMPACTS DESCRIBED IN THE IPCC'S FOURTH ASSESSMENT REPORT.

The Intergovernmental Panel on Climate Change ("IPCC") was established by the World Meteorological Organization ("WMO") and the United Nations Environment Programme ("UNEP") in 1988. The IPCC's mission is 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. See http://www.ipcc.ch/about/about.htm. The IPCC completed its First Assessment Report in 1990, its Second Assessment Report in 1995, and its Third Assessment Report in 2001. Id. The IPCC is currently finalizing its Fourth Assessment Report, "Climate Change 2007." Id. In advance of public release of the finalized Fourth Assessment Report, the IPCC has recently released summaries of its three working groups that are contributing to the Fourth Assessment Report.

In February 2007, the IPCC released a summary of the contribution of Working Group I to its Fourth Assessment Report. Working Group I is responsible for assessing the scientific aspects of the climate system and climate change. http://www.ipcc.ch/about/about.htm. The

Working Group I Summary, a copy of which is attached as Exhibit 1, concludes, among other things:

- The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005;

- The atmospheric concentration of carbon dioxide in 2005 exceeds by far the natural range over the last 650,000 years;

- The primary source of the increased atmospheric concentration of carbon dioxide since the pre-industrial period results from fossil fuel use;

- There is at least a 9 out of 10 chance that the global average net effect of human activities since 1750 has been one of warming;

- Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level;

- At continental, regional and ocean basin scales, numerous long term changes have been observed. These include changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones;

- There is greater than a 90% likelihood that most of the observed increases in global average temperatures since the mid-20th century are due to the observed increases in anthropogenic greenhouse gas emissions;

- For the next two decades, warming of about 0.2 Degrees Celsius per decade is projected for a range of emission scenarios;

- There is greater than a 90% likelihood that hot extremes, heat waves and heavy precipitation events will continue to become more frequent; and

- Anthropogenic warming and sea level rise would continue for centuries due to the time scales associated with climate processes and feedbacks, even if greenhouse gas concentrations were to be stabilized.

In April 2007, the IPCC released a summary of the Contribution of Working Group II to its Fourth Assessment Report. Working Group II is responsible for assessing the vulnerability of socio-economic and natural systems to climate change, the consequences of climate change, and the options for adapting to it. http://www.ipcc.ch/about/about.htm The Working Group II Summary, a copy of which is attached as Exhibit 2, concludes, among other things:

- By mid-century, annual average river runoff and water availability are projected to decrease by 10-30% over some dry regions at mid-latitudes and in the dry tropics, some of which are presently water stressed areas;

- In the course of the century, water supplies stored in glaciers and snow cover are projected to decline, reducing water availability in regions supplied by meltwater from major mountain ranges, where more than one-sixth of the world population currently lives;

- Warming in the mountains of western North America is projected to cause decreased snowpack, more winter flooding, and reduced summer flows, exacerbating competition for over-allocated water resources;

- Drought-affected areas will likely increase in extent. Heavy precipitation events which are very likely to increase in frequency, will augment flood risk;

- Increases in the frequency of droughts and floods are projected to affect local crop production, especially in subsistence sectors at low latitudes;

- Poor communities can be especially vulnerable, in particular those concentrated in high-risk areas. They tend to have more limited adaptive capacities, and are more dependent on climate-sensitive resources such as local food and water supply;

- Disturbances from pests, disease and fire are projected to have increasing impacts on North American forests, with an extended period of high fire risk and large increases in area burned;

- In North America, major challenges are projected for crops that are near the warm end of their suitable range or depend on highly utilized water resources;

- The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances (e.g., flooding, drought, wildfire, insects, ocean acidification), and other global change drivers (e.g., land use change, pollution, over-exploitation of resources);

- Approximately 20-30% of plant and animal species assessed so far are likely to be at increased risk of extinction if increases in global average temperatures exceed 1.5-2.5 Degrees Celsius;

- For increases in global average temperature exceeding 1.5-2.5 Degrees Celsius and in concomitant atmospheric carbon dioxide concentrations, there are projected to be major changes in ecosystem structure and function, species' ecological interactions, and species' geographic ranges, with predominantly negative consequences for biodiversity, and ecosystem goods and service, e.g., water and food supply;

- Projected climate change-related exposures are likely to affect the health status of millions of people, particularly those with low adaptive capacity; and

- Even the most stringent mitigation efforts cannot avoid further impacts of climate change in the next few decades, which make adaptation essential, particularly in addressing near-term impacts. Unmitigated climate would, in the long term, be likely to exceed the capacity of natural, managed and human systems to adapt.

On or about May 4, 2007, the IPCC released a summary of the contribution of Working Group III to its Fourth Assessment Report. Working Group III is responsible for assessing options for limiting greenhouse gas emissions and otherwise mitigating climate change. http://www.ipcc.ch/about/about.htm The Working Group III Summary, a copy of which is attached hereto as Exhibit 3, concludes, among other things:

- Global greenhouse gas (GHG) emissions have grown since preindustrial times, with an increase of 70% between 1970 and 2004;

- The largest growth in global GHG emissions between 1970 and 2004 has come from the energy supply sector (an increase of 145%);

- With current global climate change mitigation policies and related sustainable development practices, global GHG emissions will continue to grow over the next few decades;

- There is substantial economic potential for the mitigation of global GHG emissions over the coming decades, that could offset the projected growth of global emissions or reduce emissions below current levels;

- There are mitigation opportunities with net negative costs, in other words, for which the benefits such as reduced energy costs and reduced emissions of pollutants equal or exceed their costs to society, excluding the benefits of avoided climate change;

- Fuel switching from coal to gas, renewable heat and power (hydropower, solar, wind, geothermal and bioenergy), and early applications of carbon capture and storage (e.g. storage of removed carbon dioxide from natural gas) are key mitigation technologies and practices currently commercially available;

- Near-term health co-benefits from reduced air pollution as a result of actions to reduce GHG emissions can be substantial and may offset a substantial fraction of mitigation costs;

- It is often more cost-effective to invest in end-use energy efficiency improvement than in increasing energy supply to satisfy demand for energy services. Efficiency improvement has a positive effect on energy security, local and regional air pollution abatement and employment;

- Renewable energy generally has a positive effect on energy security, employment and on air quality; and

- In order to stabilize the concentrations of GHGs in the atmosphere, emissions would need to peak and decline thereafter.

EPA should consider the entire Fourth Assessment Report and make it part of the administrative record for the proposed permit.[3] The Report authoritatively documents the

[3] The IPCC recently made the full reports of Working Groups I and II, and a "pre-copy edit version" of the full report of Working Group III available on-line at http://www.ipcc.ch/.

adverse environmental and socio-economic impacts of global warming at local, regional, national and global scales, and the primary role of the burning of fossil fuels, including coal, in causing global warming.

The serious harms attributable to global warming were also recently acknowledged by the United States Supreme Court. On April 2, 2007, the Supreme Court issued a seminal ruling on EPA's authority and obligations under the Clean Air Act to regulate greenhouse gas emissions. Massachusetts v. EPA, 127 S. Ct. 1438 (2007). In its decision, which is discussed more fully below, the Court resoundingly rejected the core claims upon which EPA has relied to avoid regulating global warming pollutants under the Clean Air Act's provisions addressing emissions from mobile sources.

In so doing, the Court, even without the benefit of the most recent IPCC Summary Reports, noted that the "[t]he harms associated with climate change are serious and well recognized." 127 S. Ct. at 1455. The Supreme Court also acknowledged "the enormity of the potential consequences associated with man-made climate change," and the contribution of carbon dioxide emissions to global warming. Id. at 1457 - 58[4]. As we noted in our November 13, 2006 comments (Comment 23, at 8), reducing carbon dioxide emissions, especially emissions from coal-fired power plants, is the single most important strategy to fight the adverse consequences of global warming. Because the proposed permit altogether fails to address the Desert Rock Energy Facility's carbon dioxide emissions, EPA should deny the proposed permit.

II. IF EPA PROCEEDS TO PROCESS THE PERMIT IT MUST CONDUCT A CASE SPECIFIC BACT ANALYSIS FOR CARBON DIOXIDE AND SIGNIFICANTLY REVISE THE PROPOSED PERMIT TO INCLUDE BACT EMISSION LIMITATIONS FOR CARBON DIOXIDE.

If EPA proceeds to process the requested permit, it is clear following the Supreme Court's decision in Massachusetts v. EPA, 127 S. Ct. 1438 (2007), a copy of which is attached as Exhibit 4, that EPA must conduct a BACT analysis and set BACT emission limitations for carbon dioxide in any permit that it issues for the Desert Rock Energy Facility. In Massachusetts v. EPA, the Supreme Court squarely rejected the two primary rationales offered by EPA for refusing to regulate greenhouse gas emissions under the Clean Air Act's provisions addressing emissions from mobile sources—that EPA lacked legal authority under the CAA to regulate global warming pollutants, and that even if it had authority to regulate it could decline to regulate

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[4]As we discussed at length in our November 13, 2006 comments, many other entities have also recognized the potential for devastating consequences from global warming. A number of relevant reports, including the 2006 "Stern Report" are already included in the record. See Stern Review on the Economics of Climate Change, available at: http://www.hm-treasury.gov.uk/Independent_Reviews/stern_review_economics_climate_change/sternreview_index.cfm. (incorporated by reference here). Moreover, EPA itself has acknowledged the tremendous potential for global warming-related harms, including direct heat-related effects, extreme weather events, climate-sensitive disease impacts, air quality effects, agricultural effects (and related impacts on nutrition), wildlife and habitat impacts, biodiversity impacts, impacts on marine life, economic effects, and social disruption (such as population displacement) (see http://www.epa.gov/climatechange/effects/index.html (last visited 9/05/07). See also Section II.B.2.b.ii, below.

based entirely on non-statutory policy considerations. The Court held that EPA has authority to regulate emissions of greenhouse gases under the Act because greenhouse gases are pollutants under the Act, and that EPA must regulate greenhouse gas emissions if they endanger public health, welfare or the environment—which they undeniably do. Carbon dioxide is the most prevalent greenhouse gas contributing to global warming and its devastating environmental impacts. Because carbon dioxide is a "pollutant subject to regulation under [the Clean Air Act]," EPA must conduct a BACT analysis and include BACT emissions limitations in any permit that it issues for the Desert Rock Energy Facility.

A. THE CAA REQUIRES A BACT ANALYSIS AND BACT EMISSION LIMITATIONS FOR EACH POLLUTANT SUBJECT TO REGULATION UNDER THE ACT EMITTED IN EXCESS OF SPECIFIED SIGNIFICANCE LEVELS.

1. BACT Requirements Apply to Each Pollutant Subject to Regulation Under the CAA Emitted In Excess of Specified Significance Levels.

The federal Clean Air Act and Prevention of Significant Deterioration ("PSD") Regulations[5] prohibit the construction of a new major stationary source of air pollutants at the Desert Rock site except in accordance with a PSD construction permit issued by EPA. Clean Air Act § 165(a), 42 U.S.C. § 7475(a); 40 C.F.R. § 52.21(a)(2)(iii). EPA must conduct a BACT analysis and include in the construction permit BACT emission limitations "for each pollutant subject to regulation under [the Clean Air Act]" for which emissions exceed specified significance levels. Clean Air Act, §§ 165(a), 169, 42 U.S.C. §§ 7475(a), 7479; 40 C.F.R. §§ 52.21(b)(1), (b)(2), (b)(12), (b)(50), (j)(2)). The federal PSD Regulations provide that "[a] new major stationary source shall apply best available control technology for each regulated NSR pollutant that it would have the potential to emit in significant amounts." 40 C.F.R. § 52.21(j)(1)(emphasis added). Section 52.21(b)(50) defines "regulated NSR pollutant" as including "any pollutant . . . subject to regulation under the Act." Specifically, the regulation provides:

> Regulated NSR pollutant, for purposes of this section, means the following:
>
> (i) Any pollutant for which a national ambient air quality standard has been promulgated and any constituents or precursors for such pollutants identified by the Administrator (e.g., volatile organic compounds are precursors for ozone);
>
> (ii) Any pollutant that is subject to any standard promulgated under Section 111 of the Act;
>
> (iii) Any Class I or Class II substance subject to a standard promulgated under or established by title VI of the Act; or

[5] Pursuant to 40 C.F.R. § 52.1634(b), the provisions of the federal PSD regulations set forth at 40 C.F.R. § 52.21(b) – (w) are applicable to sources on land in New Mexico under the control of Indian governing bodies, such as the Navajo Reservation where the Desert Rock Energy Facility is to be located.

(iv) Any pollutant that otherwise is subject to regulation under the Act; except that any or all hazardous air pollutants either listed in section 112 of the Act or added to the list pursuant to section 112(b)(2) of the Act, which have not been delisted pursuant to section 112(b)(3) of the Act, are not regulated NSR pollutants unless the listed hazardous air pollutant is also regulated as a constituent or precursor of a general pollutant listed under section 108 of the Act.

40 C.F.R. § 52.21(b)(50)(emphasis added). Section 52.21(b)(12), which defines BACT, also makes clear that BACT requirements apply to all air pollutants subject to regulation under the Clean Air Act. The regulation states:

> Best available control technology means an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such 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 such pollutant.

40 C.F.R. § 52.21(b)(12)(emphasis added); see also 42 U.S.C. 7479(3).

2. Pollutants Subject to Regulation Under the CAA Include Both Currently Regulated Pollutants and Pollutants for Which EPA and the States Possess But Have Not Yet Exercised Authority to Regulate.

Notably, emissions of a pollutant need not be limited by existing emissions regulations for the pollutant to be "subject to" regulation under the Clean Air Act. "Subject to regulation" means "capable of being regulated" and is not limited to pollutants that are "currently regulated." The plain meaning of Section 165(a)(4) of the Clean Air Act's mandate that BACT applies to "each pollutant subject to regulation under [the Clean Air Act]" extends not only to air pollutants for which the Act itself or EPA or the States by regulation have imposed requirements, but also to air pollutants for which EPA and the States possess but have not exercised authority to impose such requirements.

While the plain, unambiguous language of the statute is dispositive, EPA's PSD regulations cited above echo the mandate of Section 165(c)(4). The regulations provide that BACT applies not only to air pollutants for which there are national ambient air quality standards 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 to "[a]ny pollutant that is otherwise subject to regulation under the Act." 40 C.F.R. § 52.21(b)(50).

Further, EPA has recognized the general principle that "[t]echnically, a pollutant is considered regulated once it is *subject to regulation* under the Act. A pollutant *need not be specifically regulated* by a section 111 or 112 standard to be considered regulated. (See 61 FR 38250, 38309, July 23, 1996.)" *See* RULES and REGULATIONS, ENVIRONMENTAL

PROTECTION AGENCY, 40 CFR Part 70, Change to Definition of Major Source Tuesday, 66 Fed. Reg. 59161 (Nov. 27, 2001) (emphasis added).[6]

EPA has also previously interpreted the phrase "subject to" in the context of the Resource Conservation and Recovery Act (RCRA) and Clean Water Act as meaning "should" be regulated, as opposed to currently regulated:

> RCRA section 1004(27) excludes from the definition of solid waste "solid or dissolved materials in … industrial discharges which are point sources subject to permits under [section 402 of the Clean Water Act]." For the purposes of the RCRA program, EPA has consistently interpreted the language "point sources *subject to permits* under [section 402 of the Clean Water Act]" to mean point sources that *should have* a NPDES permit in place, whether in fact they do or not. Under EPA's interpretation of the "subject to" language, a facility that should, but does not, have the proper NPDES permit is in violation of the CWA, not RCRA.

Memo from Michael Shapiro and Lisa Friedman (OGC) to Waste Management Division Directors, Interpretation of Industrial Wastewater Discharge Exclusion from the Definition of Solid Waste at 2, (Feb. 17, 1995) (emphasis added).[7]

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[6] Indeed, this principle only makes sense. For example, section 112(b)(1) of the Act specifically lists more than 180 chemicals which it defines as "hazardous air pollutants" from stationary sources for purposes of section 112. However, whether or not EPA ever adopts any stationary source rule with actual emission limitations for an individual hazardous chemical, all of these chemicals are "subject to regulation" under the Act . The hazardous air pollutants listed in Section 112(b)(1), are, however, expressly excluded from prevention of significant deterioration requirements, including BACT emissions limitations, by Section 112(b)(6). Section 112(b)(6) provides that "[t]he provisions of part C of this subchapter (prevention of significant deterioration) shall not apply to pollutants under this section." The fact that Congress specifically exempted these pollutants from prevention of significant deterioration requirements, while not exempting carbon dioxide or other greenhouse gases is yet another indication that carbon dioxide is subject to Prevention of Significant Deterioration requirements, including BACT emission limitations. Congress clearly recognized that any substance or matter emitted into the air that effects "weather" or "climate" is a pollutant subject to regulation under the Act (see Sections 302(g), (h), 111(b)(1)(A), 202(a)(1)), yet did not exempt such substances or matter (including carbon dioxide) from the CAA's prevention of significant deterioration requirements. In the wake of the Supreme Court's recent decision, CO_2 must be understood as "subject to regulation."

[7] The EPA memo is available at: http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc6214725285256bf00063269d/C8FA9634A91B9FE08525670F006BF1ED/$file/11895.pdf (last visited July 6, 2007).

3. The Required BACT Analysis and Emission Limitations Must Be Based on a Case Specific Review of Relevant Energy, Environmental and Economic Considerations.

The BACT analysis that EPA must conduct for each pollutant subject to regulation under the Clean Air Act, and emitted in excess of the relevant significance level, must include a case specific review of relevant energy, environmental and economic considerations that is informed by detailed information submitted by the applicant. See 42 U.S.C. § 7479(3); 40 C.F.R. 52.21(b)(12), (n). Based on its BACT analysis, EPA must set emission limitations in its permit. See 42 U.S.C. § 7479(3) (BACT means "an emission limitation"); 40 C.F.R. 52.21(b)(12)(same).

B. CARBON DIOXIDE IS A POLLUTANT SUBJECT TO REGULATION UNDER THE CAA FOR WHICH EPA MUST CONDUCT A BACT ANALYSIS AND ESTABLISH BACT EMISSION LIMITATIONS.

The plain language of the CAA, EPA's regulations, the Supreme Court's decision in Massachusetts v. EPA, and a recent executive order make clear that CO_2 is a pollutant "subject to regulation" under the CAA.

1. Carbon Dioxide is a "Pollutant."

Section 302(g) of the Clean Air Act defines "air pollutant" expansively to include "any physical, chemical, biological, radioactive . . . substance or matter which is emitted into or otherwise enters into the ambient air." 42 U.S.C. § 7602(g)(emphasis added). In Massachusetts v. EPA, 127 S. Ct. 1438 (2007), the Supreme Court held that carbon dioxide and other greenhouse gases are air pollutants as defined in § 302(g), 42 U.S.C. § 7602(g). The Court based its holding on the "unambiguous" language of the definition. Id. at 1460. Specifically, the Court held:

> The Clean Air Act's sweeping definition of "air pollutant" includes "*any* air pollution agent or combination of such agents, including *any* physical, chemical . . . substance or matter which is emitted into or otherwise enters the ambient air . . . ." §7602(g) (emphasis added). On its face, the definition embraces all airborne compounds of whatever stripe, and underscores that intent through the repeated use of the word "any". . . Carbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt "physical [and] chemical . . . substance[s] which [are] emitted into . . . the ambient air." The statute is unambiguous.

127 U.S. at 1460 (footnotes omitted). Thus, the Court in Massachusetts v. EPA dispensed with any uncertainty whether carbon dioxide is an "air pollutant" under the Clean Air Act.[8]

[8] EPA's then general counsel, Jonathan Z. Cannon, opined in 1998 that carbon dioxide is within the Clean Air Act's definition of "air pollutant" and that EPA has the authority to regulate carbon dioxide. More recently, however, EPA had advanced an interpretation that is contrary to the plain language of Section 302(g), an interpretation that the court in Massachusetts v. EPA rejected.

2. Carbon Dioxide is Subject to Regulation Under the CAA.

As it happens, carbon dioxide is an "air pollutant" that is not only "subject" to regulation under the Act, but is currently regulated under the Act.

a. Carbon Dioxide is Currently Regulated Under Section 821 of the Clean Air Act Amendments of 1990.

Section 821 of the Clean Air Act Amendments of 1990 required EPA to promulgate, within 18 months after enactment of the Amendments, regulations to require certain sources, including coal-fired electric generating stations, to monitor carbon dioxide emissions and report monitoring data to EPA. 42 U.S.C. § 7651k note. In 1993, EPA promulgated such regulations, which are set forth at 40 C.F.R. Part 75. The regulations generally require monitoring of carbon dioxide emissions through installation, certification, operation and maintenance of a continuous emission monitoring system or an alternative method (40 C.F.R. §§ 75.1(b), 75.10(a)(3)); preparation and maintenance of a monitoring plan (40 C.F.R. § 75.33); maintenance of certain records (40 C.F.R. § 75.57); and reporting of certain information to EPA, including electronic quarterly reports of carbon dioxide emissions data (40 C.F.R. §§ 75.60 – 64). Section 75.5, 40 C.F.R., prohibits operation of an affected source in the absence of compliance with the substantive requirements of Part 75, and provides that a violation of any requirement of Part 75 is a violation of the Clean Air Act. Given this regulatory scheme and the Supreme Court's determination that EPA is authorized to regulate CO_2 as a "pollutant" under the Act, the status of CO_2 is absolutely unambiguous – it is a CAA regulated pollutant.

b. Carbon Dioxide is Also Subject to Regulation Under Sections 111 and 202 of the CAA.

In addition, to being currently regulated under Section 821 of the 1990 Clean Air Act Amendments, carbon dioxide is also subject to regulation under a number of the Clean Air Act's other provisions, including Sections 111 and 202.

i. Sections 111 and 202 of the CAA Require EPA to Promulgate Regulations Limiting Emissions of Pollutants from New Stationary Sources and Motor Vehicles.

Section 111 of the Act requires EPA to promulgate regulations establishing standards of performance for emissions of "air pollutants" from new stationary sources. 42 U.S.C. § 7411. Section 202 requires EPA to promulgate regulations establishing standards applicable to emissions of "any air pollutant" from motor vehicles. 42 U.S.C. § 7521. Regulation under Sections 111 and 202 is required where air pollution "may reasonably be anticipated to endanger public health or welfare." 42 U.S.C. § 7411(b)(1)(A); 42 U.S.C. § 7521(a)(1).[9] In

[9] The Massachusetts v. EPA case specifically involved a challenge to EPA's failure to prescribe regulations on carbon dioxide emissions from motor vehicles under Section 202 of the Clean Air Act. The Court held that EPA has the authority to issue such regulations, and rejected the excuses advanced by EPA for failing to do so. 127 S. Ct. at 1459-63. A challenge to EPA's failure to establish emission limits for carbon dioxide emissions from power plants under Section 111 of the Clean Air Act is pending before the United States Court of Appeals for the District of

Massachusetts v. EPA, the Court held that if EPA makes an endangerment finding for a pollutant, it must regulate emissions of the pollutant from new motor vehicles. 127 S. Ct. at 1462. The same analysis applies with equal force to Section 111.

ii. EPA Must Regulate Carbon Dioxide Emissions Under Sections 111 and 202 Because Such Emissions May Reasonably Be Anticipated to Endanger the Public Health and Welfare.

EPA is not only authorized to regulate carbon dioxide emissions under Sections 202 and 111, but is required to do so because there is no question that emissions of carbon dioxide from motor vehicles, power plants and other sources "may reasonably be anticipated to endanger the public health and welfare." [10] As an initial matter, this standard, reflecting the precautionary nature of the Clean Air Act, does not require proof of actual harm. Congress directed that regulatory action taken pursuant to an endangerment finding would be designed to "precede, and, optimally, prevent, the perceived threat." Ethyl Corp. v. EPA, 541 F.2d 1, 13 (D.C. Cir. 1976). EPA is not required to document "proof of actual harm" as a prerequisite to regulation; rather, EPA is supposed to act where there is "a significant risk of harm." Id. at 12-13. In Ethyl Corp. v. EPA, noting the novelty of many human alterations of the environment, the Court of Appeals for the District of Columbia Circuit found:

> Sometimes, of course, relatively certain proof of danger or harm from such modifications can be readily found. But, more commonly, 'reasonable medical concerns' and theory long precede certainty. Yet the statutes and common sense demand regulatory action to prevent harm, even if the regulator is less than certain that harm is otherwise inevitable. Id. at 25.[11]

The 1977 Clean Air Act Amendments confirmed and adopted the precautionary interpretation enunciated in Ethyl, enacting special provisions, Pub. L. No. 95-95, § 401, 91 Stat. 790-91

Columbia Circuit. State of New York, et al. v. EPA, No. 06-1322. EPA refused to establish such emission limits solely on the ground that EPA lacked the authority to regulate carbon dioxide under the Clean Air Act. Based on Massachusetts v. EPA, petitioners, on May 2, 2007, asked the Court of Appeals to vacate EPA's determination that it lacks authority to regulate carbon dioxide emissions under Section 111, and to remand the matter to EPA for further proceedings consistent with the Massachusetts v. EPA decision.

[10] In Green Mountain Plymouth Dodge Jeep v. Crombie, the United States District Court for the District of Vermont, relying on Massachusetts v. EPA, stressed the importance of controlling emissions of greenhouse gasees, even where the sources at issue make only a relatively small contribution to the very large global problems presented by global warming. Case Nos. 2:05-cv-320 and 304, slip op. at 46-47, 93-94 and 234 (September 12, 2007). The court rejected an automobile industry challenge to Vermont regulations establishing greenhouse gas emission standards for automobiles.

[11] Accord, Industrial Union Dep't v. American Petroleum Institute, 448 U.S. 607, 656 (1980) (plurality) (agency need not support finding of significant risk "with anything approaching scientific certainty," but rather must have "some leeway where its findings must be made on the frontiers of scientific knowledge," and "is free to use conservative assumptions in interpreting the data," "risking error on the side of overprotection rather than underprotection").

(August 7, 1977), designed to "apply this interpretation to all other sections of the act relating to public health protection." H.R. Rep. No. 294, 95th Cong., 1st Sess. 49 (1977); Accord, id. at 51 (amendments are designed inter alia to "emphasize the precautionary or preventive purpose of the act (and, therefore, the Administrator's duty to assess risks rather than wait for proof of actual harm)"). Congress rejected the argument that, "unless conclusive proof of actual harm can be found based on the past occurrence of adverse effects, then the standards should remain unchanged," finding that this approach "ignores the commonsense reality that 'an ounce of prevention is worth a pound of cure.'" Id. at 127.

While the precautionary nature of the Clean Air Act creates a low threshold for findings relating to the negative consequences of air pollution, here there is ample evidence that global climate change is endangering and will continue to endanger public health and welfare. Evidence of dramatic changes in Earth's climatic system abounds. Changes in climatically sensitive indicators support the inference that the average temperature in the Northern Hemisphere over the last half-century is likely higher than at any time in the previous 1,300 years, while ice core records indicate that the polar regions have not experienced an extended period of temperatures significantly warmer than today's in about 125,000 years. IPCC Working Group I Summary, Ex. 1, at 9. Meanwhile, the IPCC reports "numerous long-term changes in climate" observed at "continental, regional and ocean basin scales," including "changes in arctic temperatures and ice, widespread changes in precipitation amounts, ocean salinity, wind patterns and aspects of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones." Id. at 7. As demonstrated below, such changes will have pronounced adverse impacts on public health and welfare.

a. Public Health Impacts

Global climate change is expected to have significant impacts on human health in numerous ways, including increased heat-related mortalities, the spread of infectious disease vectors, greater air and water pollution, an increase in malnutrition, and greater casualties from fires, storms, and floods. EPA has already recognized that climate plays a significant role in public health:

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

EPA, Climate Change, Health and Environmental Effects [hereinafter EPA Report].[12] Given the ample evidence linking climate change to adverse public health impacts, there is no rational basis for EPA to conclude that climate change could not be reasonably anticipated to endanger public health.

Perhaps the most direct impact of climate change on human health will occur through increased heat-related mortalities. Heat waves already pose a serious threat to public health, and

[12] Available at http://www.epa.gov/climatechange/effects/index.html (last updated Apr. 6, 2007).

climate change is predicted to increase the magnitude, frequency, and duration of heat waves in the United States. See IPCC Working Group II Summary, Ex. 2, at 10-11. Thus, the U.S. Department of State's, U.S. Climate Action Report 2002, indicated that rising temperatures will likely produce dramatic increases in summer heat index values in the Northeast, Southeast, and Midwest. U.S. Department of State, U.S. Climate Action Report 2002 at 110. (2002) [hereinafter CAR 2002]. By the end of the century, cities such as Hartford and Philadelphia could average nearly 30 days with high temperatures above 100°F each year. Peter C. Frumhoff, et al., Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions at x (July 2007) [hereinafter Northeast Report].[13] Segments of the population that are particularly vulnerable, such as those with heart problems, asthma, the elderly and very young, and the homeless, are especially at risk to extreme heat. EPA Report.

Climate change is also expected to play a role in worsening air quality problems that already impact human health. For example, EPA has recognized that the higher temperatures that result from climate change may result in increased concentrations of ground-level ozone. EPA Report. Breathing ozone can trigger a variety of health problems, including chest pain, coughing, throat irritation, and congestion, and repeated exposure can lead to bronchitis, emphysema, asthma, and permanent scarring of lung tissue. EPA, Ground-Level Ozone: Health and Environment (2007).[14] Moreover, climate change may also indirectly affect the concentration of PM in the air by increasing sources such as wildfires and dust from dry soils. EPA Report. Exposure to such particles can affect both the lungs and heart and has been linked to a variety of problems, including increased respiratory symptoms such as irritation of the airways, coughing or difficulty breathing, decreased lung function, aggravated asthma, development of chronic bronchitis, irregular heartbeat, nonfatal heart attacks, and premature death in people with heart or lung disease. EPA, Particulate Matter: Health and Environment (2007).[15] As with other forms of air pollution, certain vulnerable segments of the population, such as children with asthma and the elderly, are the most likely to be affected. Id.

Climate change is also expected to increase the risk from certain infectious diseases, especially vector-born diseases spread by mosquitoes or other insects. EPA Report. Thus, vector-born diseases like malaria and dengue fever may expand their ranges in the United States. Id. Moreover, hotter, longer, and drier summers punctuated by heavy rainstorms may also create more favorable conditions for outbreaks of West Nile Virus in the Northeast. Northeast Report at xi.

Climate change's role in increasing the frequency and severity of extreme weather events, such as hurricanes, droughts, and floods, may also adversely impact public health. For example, in delta regions, coastal areas, and small islands, sea level rise is anticipated to threaten human populations by exacerbating flooding and increasing the size of storm surges. Ex. 2, at 8-11. The Atlantic coast of the Southeast is likely to see such effects and suffer the loss of important buffers against storm damage. CAR 2002 at 110. In Appalachia, the increase in intense rainfall events is likely to result in more dangerous flash floods. Id. Meanwhile, warming in the West is projected to decrease mountain snowpack and cause more winter

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[13] Available at http://www.climatechoices.org/ne/resources_ne/nereport.html (last visited Aug. 27, 2007)

[14] Available at http://www.epa.gov/air/ozonepollution/health.html (last visited Aug. 26, 2007).

[15] Available at http://www.epa.gov/air/particlepollution/health.html (last visited Aug. 26, 2007)

flooding with reduced summer flows. Ex. 2, at 10. Finally, rising sea levels are expected to increase the salinity of surface and ground water through salt water intrusion, threatening drinking water supplies in places like New York City, Philadelphia, southern Florida, and California's Central Valley. EPA Report.

b. Public Welfare Impacts

The Clean Air Act provides a broad definition of "welfare," that encompasses a host of environmental ills:

> All language referring to effects on welfare includes, but is not limited to, effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate, damage to and deterioration of property, and hazards to transportation, as well as effects on economic values and on personal comfort and well-being, whether caused by transformation, conversion, or combination with other air pollutants.

42 U.S.C. § 7602(h). Of particular importance here, "welfare" refers to "effects on . . . weather . . . and climate." Thus, the most basic effect of global climate change – that the Earth's average mean temperature will increase – is directly implicated as an effect on public welfare under the Act. As discussed above, global climate change is already resulting in well documented impacts on climate and weather, including air and ocean temperature increases, widespread melting of snow and ice, changes in precipitation amounts and wind patterns, and more frequent extreme weather events such as hurricanes, heat waves, floods, and droughts. Ex. 1, at 5-9. However, aside from direct impacts on weather and climate, there are numerous other ways in which global climate change may be reasonably anticipated to endanger public welfare.

In its recent assessment of the impacts of climate change, the IPCC concluded that "[o]bservational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases." Ex. 2, at 1. In the U.S., the impacts vary by region, but climate change will have significant consequences for ecosystems in many areas. For example, CAR 2002 reports that each of the following are likely climate change outcomes: (1) water quantity and quality in the Great Lakes will decrease; (2) prairie potholes, an important migratory bird habitat in the Great Plains, will become drier; (3) river temperatures in the Northwest will increase, placing additional stress on migrating fish; and (4) melting of sea ice and permafrost in Alaska will harm ecosystems and infrastructure.[16] CAR 2002 at 110. Climate change is also likely to pose problems for many forested areas in the U.S. by extending and increasing the intensity of fire seasons and fostering insect outbreaks. EPA Report.

Some habitats that are already imperiled by other forces will be particularly susceptible to damage from climate change. For example, sea level rise driven by climate change will contribute to the loss of coastal wetlands. Ex. 2, at 3. In addition to their role in protecting against floods and storm surges, such wetlands provide habitat for many species, enable recreational opportunities, and play a key role in both nutrient uptake and the economy of

[16] This is especially true for species like the polar bear, which is evolutionarily adapted to life on the sea ice and spends only short periods on land. See 72 Fed, Reg. 1064 (Jan. 9, 2007)(Proposed Rule to List the Polar Bear as Threatened Under the Endangered Species Act).

the surrounding area. EPA Report. However, because they are generally located within a few feet of sea level, coastal marshes and swamps are particularly vulnerable to rising sea levels. Id. Thus, sea level rise could eliminate up to 22% of the world's coastal wetlands by the end of this century. Id. EPA has estimated that a two foot rise in sea level, a figure that is within range of the IPCC's modeling for sea level rise during the 21st Century, could eliminate between 17 and 43 percent of U.S. wetlands. See id.; Ex. 1, at 13, Table SPM.3.

Moreover, changes in the Earth's climate are already having an impact on marine and freshwater biological systems. For example, the ranges of algae, plankton, and fish have shifted in many water bodies in response to changes in water temperature, ice cover, oxygen content, salinity, and circulation. Ex. 2, at 2. However, corals are particularly vulnerable to thermal stress and have a limited ability to adapt to changes in their ecosystem. Id. at 6. Thus, the IPCC projects that an increase in sea surface temperature of approximately 1 to 3°C (1.8-5.4°F) will result in widespread coral mortality. Id.[17] Finally, the increasing absorption of CO_2 has already decreased ocean pH by 0.1 units on average, id. at 2, and the IPCC predicts that further acidification will have negative impacts on corals and other shell forming organisms. Id. at 6.

The welfare impacts of climate change are not limited to impacts on natural systems. For example, climate change will also adversely affect agriculture. EPA has recognized that, "[a]griculture is highly sensitive to climate variability and weather extremes, such as droughts, floods and severe storms," and that climate change can adversely affect crop yields in regions where summer heat already limits production, increase the likelihood of severe droughts, and increase the rate of evaporation of moisture from topsoil. EPA Report. Moreover, the increase in heavy precipitation events to which climate change contributes is projected to lead to increased soil erosion. Ex. 2, at 14.

Global warming's far reaching and grave public health and welfare impacts, which are in large part attributable to carbon dioxide emissions from power plants, automobiles and other sources, compel EPA to exercise its authority under Sections 111 and 202 of the Clean Air act to regulate carbon dioxide emissions. Carbon dioxide is "subject to regulation under the Clean Air Act."

c. The President's Recent Executive Order Confirms EPA's Authority to Regulate Carbon Dioxide Emissions and Directs EPA to Exercise That Authority.

If there were any doubt that carbon dioxide is subject to regulation under the Clean Air Act following Massachusetts v. EPA, 127 S. Ct. at 1459-63, the President's May 14, 2007 Executive Order laid that to rest.[18] The Executive Order reconfirms that EPA can regulate greenhouse gases, including carbon dioxide, from motor vehicles, nonroad vehicles and nonroad

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[17] The National Marine Fisheries Service has found that shallow reef habitats are especially vulnerable to increases in global air and sea temperatures due to coral bleaching. 71 Fed. Reg. 26,852, 26,858 (May 9, 2006)(Final Rule to List Elkhorn (*Acropora palmata)* and Staghorn (*A. cervicornis)* Corals as Threatened Under the Endangered Species Act).

[18] The Executive Order is available at www.whitehouse.gov/news/releases/200705/20070514 2.html.

engines under the Clean Air Act. It then directs EPA to coordinate with other federal agencies in undertaking precisely such regulatory action. The President's action indicates clearly that even the Chief Executive is of the opinion that carbon dioxide is a "pollutant" and must be further regulated under the Clean Air Act.[19]

For all of the above reasons, carbon dioxide is an air pollutant subject to regulation under the Clean Air Act for which EPA must comply with BACT requirements.[20]

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[19] Indeed, in other contexts EPA has specifically acknowledged that the impact of global warming pollutants is an important consideration for potential new sources. *See* Letter from EPA Region 8 to Charles Richmond, Forest Supervisor Gunnison National Forest (June 1, 2007), attached as Ex. 5. This letter relates to an Environmental Impact Statement regarding a proposal to drill 168 methane drainage wells at the West Elk Mine in Gunnison County, CO. In this letter, the Deputy Regional Administrator explains:

> The draft EIS does not present information on the amount of methane that is expected to be released from the proposed action . . . As indicated on EPA's website, methane is a greenhouse gas that remains in the atmosphere for approximately 9-15 years and is over 20 time more effective in trapping heat in the atmosphere than carbon dioxide (CO_2) over a 100-year period. Methane's relatively short atmospheric lifetime, coupled with its potency as a greenhouse gas, makes it a candidate for mitigation global warming over the near-term (i.e., next 25 years or so). . . . Given the project's release of significant quantities of methane, there is an important economic and environmental opportunity here to capture and utilize the methane resource. . . . [W]e recommend that the final EIS analyze measures for capturing all or part of the methane to be vented from the mine. . . . Methane capture and reuse is a reasonable alternative to the proposal of venting the methane to the atmosphere, and thus, we recommend that it be analyzed. . . . EPA believes that the information in the DEIS is insufficient and the missing information and analyses are substantial issues which must be resolved and disclosed in the Final Environmental Impact Statement.

[20] While the issue of EPA's obligation to establish CO_2 limits in connection with PSD permits is currently before the Environmental Appeals Board (In re Christian County Generation, PSD Appeal 07-001), and EPA has recently addressed this issue in connection with a PSD permit for a 110MW waste coal plant in Utah (see http://www.epa.gov/region8/air/permitting/deseret.html (Response to Comments)), EPA's arguments to date for not addressing CO_2 in the context of BACT are far from compelling. While not entirely clear, EPA appears to offer two main arguments for its failure to regulate CO_2. First EPA argues that it is well established that "subject to regulation" means subject to existing regulations that actually limit emissions (this argument is simply false – EPA has never expressed this opinion in the past, in fact is it contrary to prior Agency statements and flies in the face of both the statute and the regulations). Second, EPA appears to argue that CO_2 is not even a "pollutant" until EPA takes action to regulate it (this again impermissibly turns the analysis on its head).

C. EPA MUST CONDUCT A BACT ANALYSIS AND SET BACT EMISISON LIMITATIONS IN ANY PERMIT THAT IT ISSUES FOR THE DESERT ROCK ENERGY FACILITY.

EPA cannot lawfully issue a permit for the Desert Rock Energy Facility until it conducts a BACT analysis for the proposed plant's carbon dioxide emissions and, based on the BACT analysis, proposes BACT emission limitations for those carbon dioxide emissions.
It is undisputed that the proposed Desert Rock Energy Facility is subject to BACT requirements for a number of air pollutants for which emissions will exceed specified significance levels. The significance level, which triggers the obligation for a BACT emission limitation for any NSR pollutant that is not listed in the table at 40 C.F.R. § 52.21(b)(23)(i), is "any net emission increase." 40 C.F.R. § 52.21(b)(23)(ii). There is no significance level for CO_2 listed in the table at 40 C.F.R. § 52.21(b)(23)(i). Thus, the obligation to adopt a BACT emission limitation for CO_2 is triggered by *any increase* in emissions of CO_2. 42 U.S.C. §§ 7475(a)(1), (4), 7479(3); 40 C.F.R. § 52.21(j)(2); 40 C.F.R. § 52.21(b)(23)(ii). There is no dispute that the Desert Rock Energy Project would emit significant quantities of CO_2; in fact, the facility is expected to emit almost 14 million tons of CO_2 for each year of operation (totaling some 700 millions tons over its 50-year operational life). The Desert Rock Energy Facility must comply with BACT requirements for carbon dioxide.

Contrary to EPA's boasts in this case that "the emission limits required by EPA's proposed permit for the Desert Rock power plant . . . are some of the most stringent in the country and would set a new level of performance for coal-fired plants in the United States,"[21] the proposed permit does not contain a BACT emission limitation for carbon dioxide. EPA has not conducted a BACT analysis for carbon dioxide. EPA has made no effort to identify or evaluate available "production processes or available methods, systems and techniques," for control of carbon dioxide emissions. See 40 C.F.R. § 52.21(b)(12).

The required BACT analysis for carbon dioxide should consider, among other things, use of cleaner fuels and available, demonstrated Integrated Gasification Combined Cycle coal combustion technology, for the reasons described in our November 13, 2006 comments (PP. 12-38). While it is not sufficient to simply select an emission limitation used elsewhere without conducting the required analysis, EPA's BACT analysis may also be informed by the carbon dioxide emission limitations that states have placed on new coal-fired power plants. California and Washington have both adopted carbon dioxide emission limitations of 1100 pounds per MW-hr. Montana recently adopted a minimum sequestration mandate, providing that new coal plants must capture and sequester a minimum of 50% of the carbon dioxide produced.

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[21] Press Release, July 19, 2006
http://yosemite.epa.gov/opa/admpress.nsf/9e50770d29adb32685257018004d06fd/f21cb782482e8379852571b000772708!OpenDocument

The table below summarizes the carbon dioxide emission standards and limits adopted by other western states.

Table 1: Western State Carbon Dioxide Emission Limitations (as of July 2007)

STATE LAW	STANDARD	APPLICABILITY	EFFECTIVE DATE
State of Montana, HB 0025, signed into law by Gov. Schweitzer on May 14, 2007	Mandate for the facility to capture and sequester a minimum of 50% of the carbon dioxide produced.	Applies to new electric generating units "primarily fueled by coal."	January 1, 2007
State of Washington, SB 6001, signed into law by Gov. Gregoire on May 3, 2007	The lower of 1100 pounds of greenhouse gases per megawatt-hour or the average available GHG emission output of new combined cycle natural gas thermal electric generation turbines commercially available and offered for sale.	Triggered upon long-term financial commitments: (1) new ownership interest or upgrade to baseline power plant, or (2) new/renewed contract with a term or five years or more.	Standard takes effect on July 1, 2008
State of California, SB 1368, signed into law by Governor Schwarzenegger on Sept. 29, 2006	Greenhouse gas emissions performance standard shall be established by administrative agency at a rate that is no higher than the rate of emissions of greenhouse gases for combined-cycle natural gas baseload generation; CPUC recently established 1100 pounds of CO2 per MW-hour as the operative standard	Applies to long-term contracts for baseload power of five years or longer	CPUC rules for IOUs take effect February 1, 2007

EPA's failure to conduct a searching BACT analysis and establish emission limitations for carbon dioxide must be rectified before EPA may lawfully issue a PSD construction permit for the Desert Rock Energy Facility. It appears that Sithe Global Power has not provided EPA as part of its permit application relevant information sufficient to allow EPA to conduct the required BACT analysis. See November 13, 2006 Comments 17 & n.46, 23-24. If EPA does not categorically deny the requested permit at this time, EPA should request Sithe to provide it with

all information necessary to conduct a BACT analysis, conduct the BACT analysis, and issue a revised proposed permit containing the required carbon dioxide emission limitations. Further, the public must be provided notice and an opportunity to comment and request a hearing on the revised proposed permit.

For these reasons and for the reasons described in the comments previously submitted by the undersigned and others, EPA should deny the requested PSD construction permit for the Desert Rock Energy Facility. Alternatively, EPA must conduct a BACT analysis for carbon dioxide, revise the proposed permit to include a carbon dioxide emission limitation selected through the BACT analysis, and provide public notice and an opportunity to comment and request a hearing on the revised proposed permit.

III. EVEN IF EPA IS NOT OBLIGATED TO ESTABLISH EMISSION LIMITATIONS FOR CO_2 IT SHOULD CONDUCT A ROBUST ALTERNATIVES ANALYSIS REGARDING CO_2 IMPACTS

EPA's Office of Air and Radiation, Office of General Counsel, and the Environmental Appeals Board have expressed the opinion that permitting authorities (including EPA when it acts as the permitting authority) have broad discretion to consider alternatives, conduct or require analyses, and impose permit conditions to address issues under CAA section 165(a)(2) beyond the required BACT analysis. *See* In re Prairies State, PSD Appeal 05-05, 12 E.A.D. __ (Aug. 24, 2006); In re Knauf Fiber Glass, 8 E.A.D. 1212, (EAB 1999); In re Hillman Power, 10 E.A.D. 673, 692 (EAB 2002).[22] In this case, given the Supreme Court's decision, the latest IPCC reports, the President's Executive Order which will result in imminent further regulation of CO_2 (undeniably making it "subject to regulation" even under EPA's twisted reading of the Act), Congressional efforts to establish global warming legislation, EPA's recognition of "the importance of addressing the global challenge of climate change,"[23] and the Agency's "diligent" work to "develop an overall strategy for addressing the emissions of CO_2 and other [greenhouse gases],"[24] it would be an astoundingly negligent policy decision for EPA to ignore possible options and alternatives that might eliminate or mitigate the impacts of a huge new source of CO_2. Accordingly, even assuming that EPA could lawfully issue a PSD permit for the proposed Desert Rock plant without establishing a BACT limit for CO_2, EPA has a duty to responsibly exercise its broad discretion under CAA section 165(a)(2) to consider all alternatives and options available to address the greenhouse gas emissions from the proposed Facility. Indeed, this authority gives EPA an important opportunity to implement stop-gap measures to help evaluate and address CO_2 and other greenhouse gases on a case-by-case basis as other policy, regulatory,

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[22] This discretion even extends to requiring specific additional BACT analysis. In Knauf, the Board explained that although "[s]ubstitution of a gas-fired power plant for a planned coal-fired plant would amount to redefining the source . . . redefinition of the source is not always prohibited. This is a matter for the *permitting authority's discretion. The permitting authority may require consideration of alternative production processes in the BACT analysis when appropriate. See* NSR Manual at B.13-B.14; Old Dominion, 3 E.A.D. at 793 (permit issuer has discretion "to consider clean fuels other than those proposed by the permit applicant.")." Knauf, 8 E.A.D. at 136 (emphasis added).

[23] See Deseret Response to Comment Document at 5, available at http://www.epa.gov/region8/air/permitting/deseret.html.

[24] Id.

and legislative efforts mature. The alternative approach followed by EPA in issuing the proposed permit for Desert Rock is a "head-in-the-sand" approach that will allow the problem to worsen unnecessarily without specific scrutiny or deliberation.[25]

A. EPA HAS THE AUTHORITY TO CONSIDER CO_2 EMISSIONS AND ESTABLISH APPROPRIATE PERMIT CONDITIONS.

Regardless of whether CO_2 is currently a pollutant subject to regulation under the Act, EPA as the permitting authority for Desert Rock has the authority to require evaluation of CO_2 emissions and establish appropriate permit conditions or otherwise address these emissions. Permitting authorities may exercise broad discretion under BACT requirements and CAA § 165(a)(2) to consider alternatives. See In re Prairies State, PSD Appeal 05-05, 12 E.A.D. __ (Aug. 24, 2006); In re Knauf Fiber Glass, 8 E.A.D. 1212 (EAB 1999); In re Hillman Power, 10 E.A.D. 673, 692 (EAB 2002). EAB has consistently held that states have broad discretion to consider various options (even under EPA's interpretation of the Act before Massachusetts v. EPA), including, among other things, broad discretion to independently evaluate options and alternatives, and to adopt conditions or requirements that they deem appropriate. For example, the Board has held that a permitting authority may require "redefinition of the source," including requiring or restricting certain fuels. Hillman Power, 10 E.A.D. at 692.

While EPA does not believe that Section 165 "include[s] a comparable requirement to that contained in section 173(a)(5) of the CAA [nonattainment NSR], which requires that New Source Review in non-attainment areas include an analysis of alternative sites, sizes, production processes, and environmental control techniques to demonstrate that the benefits of the source outweigh its costs," the agency has recognized that "a PSD permitting authority still has an obligation under section 165(a)(2) to consider and respond to relevant public comments on alternatives to the source," and 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 EPA Office of Air and Radiation and Region V, In re Prairie State, PSD Appeal 05-05, 12 E.A.D. __ (EAB, Aug. 24, 2006). Moreover, the EAB has made clear that a permitting authority has discretion to modify a permit based on consideration of "alternatives" whether or not the issues are raised by commenters:

> Indeed, the permit issuer is not required to wait until an "alternative" is suggested in the public comments before the permit issuer may exercise the discretion to consider the alternative. Instead, the permit issuer *may identify an alternative on its own.* This interpretation of the authority conferred by CAA section 165(a)(2)'s reference to "alternatives" is consistent with the Agency'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 Prairies State, PSD Appeal 05-05 (Aug. 24, 2006) (quoting the NSR Workshop Manual at B.13).[26]

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[25] In addition to being, so obviously, reprehensible policy, a decision not to exercise its discretion here would be arbitrary, capricious and unreasonable.

[26] One version of the NSR Workshop Manual is available at: http://www.epa.gov/Region7/programs/artd/air/nsr/nsrmemos/1990wman.pdf.

In fact, under this authority, a permitting authority can engage in a wide ranging exploration of options, including fuel switching, and other generation and non-generation alternatives. Under this authority EPA clearly 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 is a material breach of the Agency's obligations to the people of the Navajo Nation, the State of New Mexico and the United States.

B. THERE ARE STEPS THAT CAN BE TAKEN TO REDUCE THE GLOBAL WARMING IMPACT OF THE DESERT ROCK ENERGY FACILITY.

EPA could require any number of possible actions to address the CO_2 footprint of the proposed Desert Rock Energy Facility. Options include requiring specific energy efficiency, conservation or demand-side-management activities to reduce energy consumption, requiring development of renewable energy sources, requiring a change to a less CO_2-intensive fuel (like natural gas or biomass co-firing), requiring construction of a smaller source, imposing limits on hours of operation, requiring the capture and sequestration of CO_2, requiring construction of a more efficient facility, requiring the purchase of CO_2 offsets, or some combination of these approaches or others. Indeed, in its comments on the proposed Draft Environmental Impact Statement for White Pine Energy Station near Ely, Nevada, EPA Region 9 recently recommended that "carbon capture and sequestration and other means of capture and storage of carbon" be evaluated as a means of mitigating emissions from the proposed coal plant. See, EPA comments on White Pine DEIS at p. 14 attached hereto as Ex. 6. Thus, EPA agrees that control technology for reducing emissions of CO2 should be evaluated at new coal plants. Additionally, EPA may also consider a no-build option under CAA § 165(a)(2), which gives EPA the authority to deny a PSD permit based on policy considerations related to CO_2.[27]

The consideration of such options should be subject to a process of public discussion. Therefore, EPA should conduct a searching alternatives analysis and make that analysis available to the pubic for comment and input. To date, there has been no specific assessment of measures, alternatives, or options to address greenhouse gas emissions at the proposed Desert Rock plant.

Under no circumstance should EPA issue a final permit for the Desert Rock facility prior to its development of "an overall strategy for addressing the emissions of CO_2 and other [greenhouse gases] under the Clean Air Act]," and without itself conducting a thorough CO_2-related alternatives analysis, identifying all available options for addressing the proposed plant's

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[27] The Board has said:

> We are unable to reconcile the view that consideration of need for a facility is outside the scope of section 165(a)(2) of the Clean Air Act with the text of the statute and prior decisions. The statutory text's plain meaning does not lend itself to excluding public comments that request consideration of the "no build" alternative to address air quality concerns. Moreover, the Board's and Administrator's prior decisions would appear to recognize that consideration of "need" is an appropriate topic under section 165(a)(2). See In re EcoEléctrica, LP, 7 E.A.D. 56, 74 (EAB 1997)

In re Prairie State, PSD Appeal 05-05, 12 E.A.D. __ (EAB Aug. 24 2005).

global warming impacts, and adopting appropriate permit conditions or other requirements or restrictions. Indeed, the best course of action is for EPA to decline to approve major new CO_2 sources like Desert Rock[28] until an "overall policy" is in place – otherwise EPA dangerously puts the cart before the horse.

IV. THE COMMENTS OF EPA, NMED AND OTHERS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE DESERT ROCK ENERGY FACILITY COMPEL EPA TO REOPEN THE PERMIT PROCEEDINGS AND DENY OR MODIFY THE PROPOSED PERMIT.

A. EPA'S MANDATORY DUTY TO COORDINATE THE PSD PERMITTING PROCEEDINGS WITH NATIONAL ENVIRONMENTAL POLCY ACT PROCEEDINGS REQUIRES EPA TO CONSIDER INFORMATION AND ANALYSES DEVELOPED IN CONNECTION WITH THE ENVIRONMENTAL IMPACT STATEMENT, INCLUDING THE COMMENTS OF EPA, NMED, AND OTHERS.

In our initial comments, we asserted that EPA must coordinate its PSD permit review with the Bureau of Indian Affairs' required development of an environmental impact statement ("EIS") for the Desert Rock Energy Facility under the National Environmental Policy Act, and EPA's review of and comment on the EIS under Section 309 of the CAA. Comment 23, at 93. Section 52.21(s), 40 C.F.R., specifically requires EPA to coordinate its proceedings on a proposed PSD permit for a facility with both the development of an EIS for the facility, and with EPA's own review of and comments on the EIS under Section 309[29] "to the maximum extent feasible and reasonable." Section 52.21(s), 40 C.F.R., provides:

> (s) *Environmental impact statements.*
> Whenever any proposed source or modification is subject to action by a Federal Agency which might necessitate preparation of an environmental impact statement pursuant to the National Environmental Policy Act (42 U.S.C. § 4321), review by the Administrator conducted pursuant to this section shall be conducted with the broad environmental reviews under that Act and under section 309 to the maximum extent feasible and reasonable.

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[28] In fact, as a "merchant" plant the need for Desert Rock has never even been established – it is little more than a "power prospecting" project, that threatens to compromise U.S. efforts to affirmatively deal with climate change. There is no ready market of consumers waiting for the power that Desert Rock would produce, and there has been little if any scrutiny of the appropriateness of this project from an energy planning perspective (or of alternative measures – such as energy efficiency projects – that might reduce or eliminate the need for the power to the extent it even exists).

[29] Section 309 of the Clean Air Act requires EPA to "review and comment in writing on the environmental impact of any matter related to duties and responsibilities granted pursuant to this chapter [The CAA] or other provisions of the authority of the Administrator, contained in any . . . newly authorized Federal projects for construction" or other major federal agency action requiring an environmental impact statement.

There do not appear to be any circumstances that render full coordination of the PSD permitting and NEPA proceedings for the Desert Rock Energy Facility unfeasible or unreasonable. As we noted in our initial comment letter, EPA, should have, but has failed to conduct its PSD proceedings in parallel with the Bureau of Indian Affairs' development of an EIS for the facility. Comment 23, at 93. In view of the numerous deficiencies in the proposed PSD permit pointed out in the public comments, EPA must reopen the PSD permitting proceedings.[30] When it does so, the comment period on the draft Environmental Impact statement should also be reopened so that the two sets of proceedings can proceed in parallel.

At a minimum, EPA must consider in the PSD proceedings all information and analyses developed in connection with the EIS that are relevant to the proposed PSD permit, including the comments submitted by EPA on the DEIS under CAA Section 309, and the comments submitted by the New Mexico Environment Department ("NMED") and others. EPA, NMED, and others have submitted comments on the DEIS that point to a number of glaring deficiencies in the analyses supporting and the terms of the proposed PSD permit. It would be arbitrary, capricious, and a violation of EPA's mandatory coordination duty, to fail to consider and to take any action with respect to the PSD permit compelled by those comments, or other information or analyses developed in connection with the EIS.

B. THE COMMENTS OF EPA, NMED AND OTHERS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT REQUIRE EPA TO DENY OR SUBSTANTIALLY MODIFY THE PROPOSED PSD PERMIT.

1. EPA's Comments on the DEIS Require Further Modeling and Analysis of PM-10 Emissions.

EPA cannot issue a PSD permit unless the permit applicant demonstrates that emissions from construction or operation of the facility will not cause or contribute to violation of any national ambient air quality standard ("NAAQS"). CAA § 165(a)(3), 42 U.S.C. § 7475(a)(3). In our initial comments, we asserted that the modeling that Sithe relies on to show that the facility will not cause or contribute to violation of the NAAQS for PM-10 is flawed for a number of reasons. Comment 23, at 57-58. Specifically, we asserted that the modeling failed to model PM-10 emissions from all nearby sources, including the Four Corners Power Plant, and relied on incorrect background concentrations. Id. In its comments on the DEIS, a copy of which are attached as Exhibit 8, EPA is highly critical of Sithe's PM-10 modeling—the very modeling submitted by Sithe in support of its PSD permit application. EPA notes that the modeling is based on PM-10 emissions of 1,100 tons per year from the Desert Rock plant site, and does not include emissions attributable to employees commuting to and from their jobs on paved and unpaved roads, which the DEIS estimates will result in peak PM-10 emissions of more than 14,300 tons per year during construction, and more than 6,100 tons per year during operation. Ex. 8, at 4-6. EPA notes that even these higher figures that Sithe failed to model are based on

[30] We note that EPA, in response to a request to extend the public comment period on the proposed PSD permit, stated that "when the draft EIS for the Desert Rock Energy Facility is released, EPA will consider any requests to reopen the public comment period if we have not yet issued our Response to Comments and reached a final PSD permit decision." Ex. 7. EPA thereby acknowledged that information relevant to the proposed PSD permit may be developed in connection with the DEIS.

questionable assumptions that 75% of employees would rely on ridesharing and that 80% of travel would be on paved roads. Id. EPA recommends substantiation and/or mitigation measures to ensure that these assumptions are realized, and modeling of the PM-10 emissions from employee commuting travel to determine compliance with the NAAQS.

Particulate matter emissions from other sources in the area are already causing serious health problems for local residents. In its comments on the DEIS, EPA notes that a study by the United States Geological Survey determined that due to atmospheric thermal inversions and existing sources of particulate matter, residents of Shiprock are more than five times as likely to seek assistance for respiratory ailments from the local Indian Health Services Clinic as residents of other nearby communities.[31] Ex. 8, at 7-8.

If EPA proceeds to process the proposed PSD permit for the Desert Rock Energy Facility, EPA must require additional modeling and analysis of PM-10 emissions that address the deficiencies identified by EPA in its comments on the DEIS, as well as the deficiencies identified in comments on the proposed PSD permit. EPA may not issue the permit if such modeling and analysis indicate that the facility will cause or contribute to violation of the PM-10 NAAQS.

2. NMED's Comments on the DEIS Require Modeling of PM 2.5 Emissions.

In our initial comments, we asserted that EPA has failed to require Sithe to model PM 2.5 emissions to ensure that the facility's emissions of PM 2.5 will not cause or contribute to violations of the NAAQS for PM 2.5. Comment No. 23, at 55. Instead, EPA treated PM-10 as a surrogate for PM 2.5. Id. Even if this were permissible, which it is not, the PM-10 modeling and analysis is flawed for the reasons discussed above, and, therefore, the assessment of PM 2.5 emissions that relies on the assessment of PM-10 emissions as a surrogate is also flawed.

In its comments on the DEIS, NMED asserts that "[t]he PM 2.5 emissions that would be directly and indirectly emitted by the proposed power plant should be modeled to determine if the proposed plant's emissions will meet federal and state ambient air quality standards." Ex. 9, at 2. The State bases this statement on the fact that PM 2.5 emissions would comprise approximately 78 percent of the plant's PM-10 emissions, and on the significant health problems and impacts to visibility attributable to small particles. Id. NMED notes that "[e]xposure to particle pollution is linked to a variety of significant health problems, ranging from aggravated asthma to premature death in people with heart and lung disease." Id. The State also notes that "[p]article pollution is the main cause of visibility impairment in the nation's cities and national parks." Id.

If EPA proceeds to process the proposed PSD permit for the Desert Rock Energy Facility, it must require modeling and analysis of PM 2.5 emissions. If the modeling and analysis shows that the facility will cause or contribute to violation of the NAAQS for PM 2.5, EPA cannot issue the permit.

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[31] A fact sheet is available at http://pubs.usgs.gov/fs/2006/3094/fs2006-3094_eng.pdf.

3. EPA's and NMED's Comments on the DEIS Require Analysis of Impacts to Ozone Levels.

In our initial comments, we asserted that EPA has failed to require an analysis of the impacts of the Desert Rock Energy Facility on already high ozone levels in the area. Ex. 23, at 52-54 and accompanying expert reports of Khanh Tran and Jana Milford. Despite the fact that the facility has the potential to emit 3,491 tons per year of the ozone precursors nitrogen oxides and volatile organic compounds, EPA did not require Sithe to conduct modeling and analysis to determine whether the facility will cause of contribute to violation of the 8-hour NAAQS for ozone. Instead, EPA has permitted Sithe to rely on inadequate, flawed, and now outdated modeling conducted by NMED in connection with efforts to address high ozone levels in the Farmington, New Mexico area. Ozone levels in the Farmington area have been bumping up against the current ozone NAAQS for years even without Desert Rock's massive anticipated emissions of ozone precursors. In its comments on the DEIS, EPA takes issue with the DEIS' astonishing and unsupportable conclusion that "plant emissions of 3,325 tpy of nitrogen oxides (NOx) and 166 tpy of volatile organic compounds (VOCs) would not cause or contribute to significant ozone formation in the region." Ex. 8, at 7 (citations omitted). EPA notes that the conclusion, which appears to be based on the analysis relied on in support of the proposed PSD permit, does not consider emissions from vehicles estimated at 199 tpy of VOCs and 1,314 tpy of NOx. Id. NMED is also critical of the DEIS' assessment of the plant's impacts to ozone levels. Ex. 9, at 1-2. NMED notes that the DEIS reports an incorrectly high value for the ozone NAAQS. The effect of this error is that the DEIS reports ozone concentrations recorded in Shiprock as falling below the standard, when in fact, they exceed the standard. See Ex. 9, at 2 and DEIS at 3-10.

High ozone levels are already having serious adverse effects on the health of area residents. A recent New Mexico Department of Health Study concludes that asthma-related emergency room visits in San Juan County, New Mexico, increase when the area's ozone concentrations are high. Myers, Orrin, et al., The Association between Ambient Air Quality Ozone Levels and Medical Visits for Asthma in San Juan County (August 2007), attached as Ex. 10.

If EPA proceeds to process the proposed PSD permit for the Desert Rock Energy Facility, it must require modeling and analysis of the project's impacts to ozone levels in the area. If the modeling and analysis shows that the project will cause or contribute to violation of the ozone NAAQS, EPA cannot issue the permit.

4. The State's Comments on the DEIS Require A Full Accounting for Oil and Gas Emissions.

In our initial comments, we asserted that the analysis conducted in support of the proposed permit fails in a number of ways to account for the very significant emissions of nitrogen oxides and other pollutants from the extensive and increasing oil and gas operations in the area. We asserted that these emissions must be fully accounted for not only in cumulative PSD NO2 increment consumption analysis (Comment 23,at 58-63), but also in regional haze modeling. Id. at 74-78. In its comments on the DEIS, NMED repeatedly notes that the DEIS "consistently minimizes oil and gas source emissions." NMED's comments are not surprising given that the DEIS relies in large part on the flawed analyses conducted for the proposed PSD

permit. NMED notes that emissions from oil and gas sources must be considered when analyzing potential ozone and visibility impacts. Ex. 9, at 2-4. According to NMED, recent estimates indicate that area oil and gas sources emit an estimated 35,000 tons of NOx and 100,000 tons of VOCs each year, and that new oil and gas sources are expected to come on line over the next 20 years. Ex. 9, at 2, 4. "Modeling and impact assessments are incomplete without accounting for these existing and new sources." Id. at 2, 5. If EPA proceeds to process the proposed permit for the Desert Rock Energy Facility it must require Sithe to incorporate into its modeling and analyses in support of the proposed PSD permit all of the emissions from the area's extensive oil and gas operations. If the modeling shows violation of an applicable increment consumption level or other requirement, EPA cannot issue the proposed permit.

5. EPA's and the State's Comments on the DEIS Require Limitations on the Facility's Emissions of Mercury and Other Hazardous Air Pollutants.

In our initial comments, we asserted that the proposed PSD permit fails to include any emissions limitation for mercury, and that the facility will emit mercury in excess of the Navajo Nation's cap for mercury emissions. Comment 23, at 50-52. We noted that fish consumption advisories due to mercury contamination are already in effect in a number of area waters, and that EPA must require state-of–the-art controls that achieve mercury removal of up to 90%. Id. Although Sithe has proposed, subject to certain conditions, to reduce mercury emissions by 80%, this proposal is set forth in a mitigation agreement that is not included in the proposed permit, and, therefore, would not be enforceable by citizens as part of the permit.

In its comments on the DEIS, EPA questions how the vague provisions of the mitigation agreement would result in attainment of the promised 80% reduction in mercury emissions. EPA notes that "[i]t is not clear how the air mitigation agreement will apply if the 80% mercury removal is not achievable using the control technologies in the air permit application [which do not include carbon injection], nor is it clear whether the not-to-exceed cost of $ 13,000/lb mercury removal applies if carbon injection is being used to achieve the minimum 80% removal." Ex. 8, at 6.

In its comments on the DEIS, NMED encourages the use of activated carbon injection to obtain mercury removal of 90% of more. Ex. 9, at 3. NMED also notes that other hazardous air pollutants emitted from the Desert Rock Energy Facility "have the potential to cause serious health effects and adverse environmental and ecological effects." NMED notes that this is a "serious concern" given the area's exiting power plants that are a major source of hazardous air pollutants. The impacts of mercury and other hazardous air pollutants have been documented and are well-known to EPA. The comments of Dine Care and others on the DEIS discuss at length the devastating impacts of mercury to humans, wildlife and plants. Ex. 11, at 55-63. EPA cannot lawfully issue a PSD permit for the Desert Rock Energy Facility without minimizing the emissions of mercury and other hazardous air pollutants.

6. Other comments on the DEIS, Including the Comments Submitted by Dine Care, Require Additional Analysis In Connection With the PSD Permit, Including Compliance With the Endangered Species Act.

We reiterate that given its mandatory duty to coordinate its PSD permit proceedings with BIA's development of the EIS, EPA must consider in its proceedings on the proposed PSD permit all information and analysis developed in connection with the EIS that relate to the proposed PSD permit, including all relevant comments submitted on the DEIS. It is not the undersigned's responsibility to bring specific points raised in the comments on the DEIS to the attention of EPA for consideration in connection with the proposed PSD permit Rather, it is EPA's duty to consider any pertinent comments. We further note that BIA has extended the comment deadline until October 9, 2007, so all comments on the DEIS relevant to the PSD permit cannot be identified at this time. Nevertheless, in addition to the comments of EPA and NMED on the DEIS described above, we specifically submit the comments of Dine Care et al. on the DEIS, attached as Exhibit 11, for consideration in connection with the proposed PSD permit. We note that portions of these comments are directly relevant to, among other things, EPA's failure in its consideration of the proposed PSD permit to limit PM 2.5 emissions (Ex. 11, at 22); limit mercury emissions (id., at 23); limit carbon dioxide emissions and consider alternatives to dirty pulverized coal technology (id., at 31 -41, 44- 49, 72-78); assess fugitive dust from coal combustion waste (id., at 86-88); address environmental justice requirements (id., at 17-28); and comply with the Endangered Species Act (id., at 49-68).

While these comments speak for themselves, we feel compelled to further discuss EPA's failure to comply with the Endangered Species Act. We asserted in our initial comments on the proposed PSD permit that EPA is responsible for complying with the Endangered Species Act before approving a PSD permit for the Desert Rock Energy Facility. Comment 23, at 83-85. Rather than conduct the consultation required by Section 7 of the Act, EPA has indicated that it will rely on the consultation conducted by BIA in connection with the EIS. Id. Even assuming that EPA could lawfully dispense with the consultation requirements and rely on BIA's consultation, which it cannot, BIA's consultation is flawed for the reasons set forth in our comments on the DEIS. Ex. 11, at 49-68. If EPA proceeds to process the proposed PSD permit for the Desert Rock Energy Facility it must first conduct the consultation required by Section 7 of the Endangered Species Act.

V. EPA MUST CONSIDER ANY INFORMATION OR ANALYSES PRESENTED IN CONNECTION WITH THE STATE OF NEW MEXICO'S CONSULTATION WITH THE NAVAJO NATION ON THE PROPOSED DESERT ROCK ENERGY FACILITY.

One of the Desert Rock Energy Facility's proponents is the Dine Power Authority, an enterprise of the Navajo Nation. On August 20, 2007, the Governor of New Mexico requested formal government- to- government consultation between the State of New Mexico and the Navajo Nation regarding the proposed Desert Rock Energy Facility. Ex. 12. The request was made pursuant to a Statement of Policy and Process between the State of New Mexico and the Navajo Nation that allows either sovereign to request consultation with the other to discuss maters of concern before implementation of final action. Id. (emphasis added). The Desert Rock Energy Facility is of special concern to the State, which has undertaken efforts to reduce

emissions of greenhouse gases. Carbon dioxide emissions from Desert Rock would make it difficult to meet Governor Richardson's greenhouse gas reduction goals. Ex. 9, at 4.

Under no circumstances should EPA issue a final PSD permit for the Desert Rock Energy Facility before the requested consultation between the State of New Mexico and the Navajo Nation is completed. Further, if EPA proceeds to process the proposed permit for the Desert Rock Energy Facility, it must consider any information, analyses or alternatives[32] developed in connection with the consultation

CONCLUSION

For these reasons, and for the reasons stated in our initial comments, EPA should deny the proposed PSD permit for the Desert Rock Energy Facility. If EPA proceeds to process the proposed permit, it should reopen and supplement the administrative record, make significant changes to the proposed permit to address its numerous deficiencies, and request public notice and comment on the modified proposed permit.

[32] NMED in its comments on the DEIS noted: "If the Desert Rock Energy Facility employed Integrated Gasification Combined Cycle Technology, CO2 emissions (as well as emissions of other pollutants such as mercury) would be minimized. The conventional coal combustion technology being used at Desert Rock makes CO2 capture and storage (control) less feasible technically and economically. Ex. 9, at 4.

Sincerely,

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