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RESPONSES TO QUESTIONS
OF THE SELECT COMMITTEE ON ENERGY INDEPENDENCE
AND GLOBAL WARMING

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**1) Would you agree that including the potentially hundreds of thousands of new sources under a GHG regulation could effectively kill economic growth?**

It could have a very significant retarding effect on economic growth.

***(a) Large increase in regulated sources.***

As stated in my testimony, regulating greenhouse gases (GHGs) under the Clean Air Act (CAA) will automatically trigger pre-construction permit requirements under the Prevention of Significant Deterioration (PSD) program for a very large number of buildings and facilities which emit GHGs and which have never before been regulated under this program. This is because many buildings and facilities emit at least 250 tons per year (tpy) of carbon dioxide (CO2), including many that do so simply because they are heated with natural gas or oil.

The U.S. Environmental Protection Agency (EPA) recognizes that regulating GHGs will make the PSD permit program applicable to a large number of sources that are not currently subject to that program. EPA recently issued an Advance Notice of Proposed Rulemaking entitled "Regulating Greenhouse Gas Emissions under the Clean Air Act," 73 Fed. Reg. 44,354 (July 30, 2008) (hereafter the "ANPR"), that analyzes GHG regulatory issues under the CAA, including the PSD program. According to the ANPR, the number of PSD permits required to be issued per year would likely, *at a minimum*, increase by an order of magnitude, from 200-300 permits per year to 2000-3000. *Id.* at 44,499.

The ANPR notes, however, that this 2000-3000 number is likely far too small because (a) it includes only permits for new major sources and not the likely much higher number of permits that will be required for modifications; (b) it is calculated based on a building or facility's actual emissions rather than its potential to emit (PTE) (this is an important distinction – for instance, given EPA's past interpretation of PTE, for purposes of determining whether a building heated with a fossil fuel-fired furnace produces emissions above the 250 tpy threshold, the building must assume that it runs its furnace at maximum capacity every hour of the year, even though it knows it will almost never do so, even during the winter); and (3) EPA's number only includes combustion sources, even though the agency knows that there are sources with significant amounts of GHG emissions from non-combustion sources. *Id.*

EPA's estimate that regulating GHGs would result in 2000-3000 PSD permit applications per year is based on a technical support document indicating that about 235,000 sources emit above the 250 tpy threshold. *See Estimates of Facilities that Emit CO2 in Excess of 100 and 250 tpy Thresholds*, EPA staff, May 2008. This document, however, concedes that this number is likely substantially understated for a number of reasons, included the reasons just stated above.

For instance, the document states that its 235,000 source estimate is based on the facilities' actual emissions rather than their PTE as required by the statute and "thus *excludes a potentially very large number of sources* that would be major if they operated at their full potential to emit (PTE)." *Id.* at 3 (emphasis supplied). The ANPR states that if PTE rather than actual emissions were used to determine the number of permit applications that would be received annually given GHG regulation, EPA's estimate of 2000-3000 permits per year "would likely be an order of magnitude higher." ANPR, 73 Fed. Reg. at 44,504.

The technical support document also states that EPA's estimate of the number of permits required given GHG regulation does not include permits resulting from modifications of existing sources which, if taken into account as required by the statute, "*could substantially increase the number of PSD permits*." *Id.* at 4 (emphasis supplied). Moreover, the document excludes agricultural sources of CO2 emissions, even though large numbers of such sources would become subject to PSD if CO2 is regulated.

Other estimates that are not as limited as EPA's indicate that more than a million sources emit more than 250 tpy of CO2. Any modification of these buildings or facilities that "significantly" increases CO2 emissions (currently defined under EPA regulations as "any" increase in emissions) would require a pre-construction PSD permit. Similarly, new construction of these types of buildings and facilities would require a pre-construction PSD permit.

***b. Impairment of new development.***

Requiring pre-construction permits for large numbers of sources will reduce economic development. Even under present conditions, where CO2 is not regulated, the permitting process is complicated, costly and lengthy. The attached schematic, taken from the Washington Department of Ecology website, shows how complex the PSD process is.

Significantly increasing the number of sources that must undertake this complicated PSD permit process is likely to lead to regulatory gridlock. State and federal permitting agencies will not have the resources to handle the volume of permit applications that will be received. Delays will also result from legal and regulatory uncertainty as to permit requirements. As discussed in my testimony, a PSD permit obligates the source to install Best Available Control Technology (BACT) controls. Since BACT requirements have never been applied to CO2-emitting sources, no one knows what those requirements will be. BACT requirements are determined on a case-by-case basis, CAA §§ 165(a)(4) and 169(3), and may vary from state-to-state. I provide more detail on the BACT process in response to question 3 below. Thus, it may take a considerable amount of time until sufficient BACT determinations have been made for a developer to have comfort that it knows, as it develops plans for its new buildings or facilities, what types of BACT controls it must install.

Apart from BACT uncertainties, state and federal regulators have no experience administering the PSD program for the many categories of small sources that will become subject to the program if EPA regulates GHGs. It will take time for the regulators to develop appropriate policies and procedures, and no doubt they will learn as they go. Similarly, because most of the small sources that will become subject to the program have never had to comply with CAA requirements, they will face their own steep learning curve and will need to hire lawyers

and consultants to advise them. Indeed, some kind of educational outreach will be needed to inform these many small sources that they cannot begin construction on a new building or modify an existing one without first undertaking a study of their CO2 emissions and, if the applicable thresholds are exceeded, obtaining a permit.

The regulatory gridlock that will result from GHG regulation under the CAA will substantially impair construction activity. Because PSD permits are required *before* construction can begin, new construction of sources that emit above the 250 tpy threshold, and modifications of existing sources emitting above that threshold that result in a "significant' increase in emissions, could face very lengthy delays.

The ANPR recognizes the serious consequences that could result under the PSD program if it proceeds with GHG regulation:

> Absent higher major source cutoffs and significance levels, it would be necessary to formulate a strategy for dealing with the tenfold increase in required permits that EPA projects permitting authorities will experience if GHGs become regulated for PSD purposes. *Even with advance notice, an increase of this magnitude over a very short time could overwhelm permitting authorities.* They would likely need to fund and hire new permit writers, and staff would need to develop expertise necessary to identify sources, review permits, assess control technology options for a new group of pollutants (and for a mix of familiar and unfamiliar source categories), and carry out the various procedural requirements necessary to issue permits. Sources would also face transition issues. Many new source owners and operators would need to become familiar with the PSD regulations, control technology options, and procedural requirements for many different types of equipment. *If the transition were not effectively managed, an overwhelmed permit system would not be able to keep up with the demand for pre-construction permits, and construction could be delayed on a large number of projects under this scenario.*

73 Fed. Reg. at 44,507.

Notwithstanding EPA's frank discussion of the potential permit problems, I believe EPA understates the matter. As stated above, regulation of GHGs is likely to increase the number of sources subject to the PSD program by a considerably larger number than an order of magnitude. Moreover, as discussed below, I have less confidence than EPA that, even with the best of intentions and effort, "the transition" can be "effectively managed," or that a "transition" to a streamlined system that eliminates or minimizes the permit burden on small sources is even possible given legal requirements.

In short, regulating GHGs will significantly complicate development activity in the United States. This may be particularly true given the tremendous pressure that has been put on

EPA to immediately regulate GHGs under the CAA before the agency or state permitting agencies are ready to handle the large number of permit applications that will ensue.[1]

**2) You use the term "catastrophic" for the PSD implication for small sources – who are those small sources?**

Many types of buildings and facilities will be potentially subject to the PSD program if EPA regulates GHGs. These include: office buildings, apartment buildings, warehouse and storage buildings, educational buildings, health care buildings such as hospitals and assisted living facilities, hotels, restaurants, religious worship buildings, public assembly buildings, supermarkets, retail malls and large retail stores, product pipelines, food processing facilities, large heated agricultural facilities, public order and safety buildings, soda manufacturers, bakers, breweries, wineries, and many others.

In my testimony, I stated that any building that is about 100,000 square feet and heated with gas or oil likely emits more than 250 tpy of CO2. I evidently overstated this square footage number. According to the EPA, a residential building that is only approximately 68,000 square feet emits at least 250 tpy of CO2. *See Estimates of Facilities that Emit CO2 in Excess of 100 and 250 tpy Thresholds*, EPA staff, May 2008, at 5. This is based on the building's actual emissions. *Id.* Using PTE rather than actual emissions results in an even lower square footage number and consequently a larger number of buildings potentially subject to PSD regulation.

**3) When you talk about these hundreds of thousands of new small stationary sources that could be named as major emitters for GHG, do you think that the people who own these sources would be at all prepared to deal with a GHG regulation? How would they be able to comply with such regulations and accompanying non-compliance penalties?**

Small sources will have great difficulty complying with PSD requirements. Just determining BACT requirements typically involves a complicated five-step process, with most of the work performed by the regulated source:

1. *Identification of available pollution control options*. Applicants must determine all "air pollution technologies or techniques with a practical potential for application to the emissions unit and the regulated pollutant under evaluation." The search for available pollution control options is broad, and can extend to: technology vendors; federal, state, and local NSR permits; technology or emissions control practices required under other CAA programs; environmental consultants; technical journals and reports; and air pollution control seminars.

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[1] I am potentially dramatically understating the effects of EPA GHG regulation on small sources. Although I focus on the PSD program, the ANPR discusses the possibility that sources could also be subject to GHG regulation under the Title V operating permit program and the Section 112 Hazardous Air Pollutants (HAPs) program. The statutory threshold for Title V regulation is 100 tpy and for HAPs regulation it is 10 tpy. Obviously, the number of affected sources if either of these programs is triggered will increase exponentially. The HAPs program also entails very stringent control requirements. Additionally, my answer to question 12 below touches on the issue of small source regulation if EPA establishes a GHG NAAQS and the entire nation is designated a nonattainment area. The effect of NAAQS nonattainment regulation on small sources and on economic development in general would be severe and warrants more detailed scrutiny than I have provided here.

2. *Elimination of technically infeasible options*. To determine whether a control technology is technically feasible, an evaluation must be made of its availability and applicability. A technology is "available" when it has been licensed and can be obtained through ordinary commercial channels, as opposed to a concept or experimental technology. A technology is "applicable" if its emissions control qualities or characteristics are physically or chemically compatible with the emissions stream being evaluated, taking into consideration the chemical and physical characteristics of the emissions stream.

3. *Ranking of remaining control technologies by control effectiveness*. Technologies not eliminated by Step 2 above are ranked, from best to worst, according to their emissions reduction potential. Manufacturing data, engineering estimates, and determinations for other permits should be considered in determining achievable emissions control. Data to be considered includes, but is not limited to: expected emission rate (e.g., tons per year); emissions performance level (e.g., pollutant removal efficiency); emissions per unit product (e.g., parts per million, lbs/mmBtu); expected emissions reduction (e.g., tons per year).

4. *Evaluation of the most effective controls (considering energy, environmental, and economic impacts) and documentation of the results*. The energy impact analysis is essentially a determination of the amount of energy that must be expended to obtain incremental emissions reductions. The economic analysis compares the costs of control options as an element of their efficiencies to various technologies. The environmental impact analysis includes consideration of secondary or collateral impacts from use of the technology (e.g., production of other pollutants; waste products or by-products that affect water or groundwater). Data to be considered here includes, but is not limited to, economic impacts of technology (e.g., total annualized costs, cost-effectiveness, incremental costs); environmental impacts resulting from application of technology (e.g., impacts on other media such as soil or water); and energy impacts (e.g., significant energy use or conservation).

5. *Making of the BACT selection*. The regulated source submits proposed BACT selections to the state permitting agency, which makes the final selection.

*See* EPA NEW SOURCE REVIEW WORKSHOP MANUAL (draft), at B.6 (1990). See also response to question 1 above.

Additionally, sources would face significant post-permit requirements, including monitoring, recordkeeping and reporting, to demonstrate continuous compliance with the permitted emission limits.

**4) In your opinion, would the EPA be able to handle the workload entailed if all of these new stationary sources were included in GHG regulation?**

As stated in my testimony, the PSD permit program is largely administered by state permitting agencies. The permit program is administered by EPA regional offices in some instances, most notably where a facility is located on Indian lands and there is no tribal permit

program. Indian country, like the rest of the nation, contains a much larger number of small sources compared to traditional major sources. Should those smaller sources in Indian country be subjected to PSD permitting for GHGs, EPA's regional offices could be inundated with permit applications. The regions are unequipped to handle this increased permit burden. See also answer to question 5 below.

**5) In your opinion, could states handle the influx of new stationary sources to be regulated?**

I don't believe that the states could handle the additional permitting burden. State permitting agencies, by and large, are underfunded and struggle to keep up with their current permitting burdens.

EPA is aware of the effect regulating GHGs would have on state PSD permitting authorities. As stated in the ANPR:

> The PSD program is designed to provide a detailed case-by-case review for the sources it covers, and that review is customized to account for the individual characteristics of each source and the air quality in the particular area where the source will be located. Although this case-by-case approach has effectively protected the environment from emissions increases of traditional criteria pollutants, *there have been significant and broad-based concerns about PSD implementation over the years due to the program's complexity and the costs, uncertainty, and construction delays that can sometimes result from the PSD permitting process*. Expanding the program by an order of magnitude through application of the 100/250-ton thresholds to GHGs, and requiring PSD permits for numerous smaller GHG sources and modifications not previously included in the program, would magnify these concerns. EPA is aware of *serious concerns being expressed by sources and permitting authorities* concerning the possible impacts of a PSD program for GHGs.

73 Fed. Reg. at 44,501 (emphasis supplied). Again, I think the ANPR understates the permitting difficulty by assuming that permit applications will increase only by an order of magnitude and not by an even higher number.

**6) On page 4 of your testimony, you state that the Supreme Court did not establish a deadline for EPA action or[sic: on] remand. Did the Supreme Court say anything at all about time for action?**

The Court said that "EPA no doubt has significant latitude as to the manner, timing, content, and coordination of its regulations with those of other agencies." *Massachusetts v. EPA*, 127 S. Ct. 1438, 1462 (2007). Additionally, the U.S. Court of Appeals for the D.C. Circuit recently refused to rule that EPA had inordinately delayed its response on remand and to compel EPA to issue an endangerment finding and regulate GHGs. *See Massachusetts v. EPA,* No. 03-

1361 (D.C. Cir. June 26, 2008). As a result, the agency is not under any kind of legal compulsion to act quickly on the matter before it.

**7) On page 8 of your testimony, you mention that the trade press has speculated on possible alternatives for preventing small sources from being subject to the PSD – can you tell us briefly what those might be and what their potential problems are?**

It is no longer necessary to speculate because, in the ANPR, EPA asks for comments on a number of scenarios under which it might circumvent the regulatory threshold and prevent at least some small sources from becoming subject to the PSD program. First, EPA suggests several standards under which EPA could set a potentially much higher threshold than 250 tpy, including: (a) using a cost-benefit analysis to determine the optimal threshold for regulatory purposes (the ANPR states, however, that EPA does not have the information to set the standard in this fashion); (b) an "emissions scaling approach," which would "compare the emissions of other existing NSR pollutants for sources that are major and would calculate the corresponding GHG emissions that the same source would emit;" and (c) setting the standard based on what is considered to be a *de minimis* amount of CO2 emissions in terms of environmental impact (noting certain federal and state CO2 emission reporting thresholds of 10,000, 25,000 and 100,000 tpy). 73 Fed. Reg. at 44,505.

Second, EPA suggests that it might make the threshold applicable to the Carbon Equivalent (CE) of each GHG rather than to the GHG itself.

Third, it examines the possibility that it might redefine PTE for small GHG-emitting sources to limit the number of such sources subject to the PSD program.

I will examine each of these potential regulatory approaches below. Each is likely to raise legal questions.

***a. Increasing the 250 tpy threshold may be difficult to justify legally.***

The ANPR's suggestion that EPA could increase the 250 tpy threshold is the most problematic of all the strategies examined by the ANPR for limiting small source exposure to the PSD program. The threshold is statutory. *See* CAA § 169(1). The statutory language is mandatory and does not leave any room for EPA to exercise discretion or create exceptions. It is axiomatic that an agency does not have authority to substitute its own judgment for explicit requirements set forth by Congress. A court is unlikely to look favorably on an argument by EPA that the agency may, based on its own view of the appropriate regulatory threshold, transform the statutory 250 tpy threshold into a threshold of 10,000, 25,000 or 100,000 tpy (or, for that matter, any threshold above 250 tpy).

The ANPR suggests that EPA may have authority to increase the PSD threshold because the threshold may represent one of the "rare cases" in which the plain meaning of statutory language should not be conclusive and legislative history should control instead. 73 Fed. Reg. at 44,503, 506. The ANPR also suggests that EPA may have authority to increase the thresholds based on "administrative necessity." *Id.* at 44,503.

EPA's legal arguments would face difficulty. The most basic rule of statutory construction is that the language of the statute is the most persuasive indicator of congressional intent. In the very recent case of *Sierra Club v. EPA*, No. 07-1039 (D.C. Cir. August 19, 2008), both the majority and the dissent cite, as the majority said, "Justice Frankfurter's timeless advice on statutory interpretation: '"(1) Read the statute; (2) read the statute; (3) read the statute!"' *In re England*, 375 F.3d 1169, 1182 (D.C. Cir. 2004 (Roberts, J.) (quoting Henry J. Friendly, Benchmarks 2002 (1967))." Contrary to the ANPR discussion, legislative history never trumps statutory language; the "rare" doctrine that EPA cites applies only where the statutory term in question had a special meaning to Congress that differs from literal meaning but can be discerned from legislative history. That doctrine is unlikely to apply to the pre-construction permit program numerical threshold. What possible meaning could Congress have had for the number 250 other than 250?

The ANPR also appears to misinterpret the extent to which courts will allow an agency to depart from statutory requirements as a result of administrative necessity. In fact, the discussion from *Alabama Power Co. v. Costle*, 636 F.2d 323, 357-60 (D.C. Cir. 1979), that the ANPR cites would seem to contradict rather than support the ANPR's suggestion that EPA could increase the regulatory threshold based on administrative necessity. In *Alabama Power*, EPA adopted a rule similar to its suggestion here and based on the same rationale. It attempted to categorically exclude numerous small emitting sources from pre-construction permitting requirements based on EPA's judgment that "application to such sources of the full preconstruction review and permit process would not be cost-effective and would strain to the limits the agency's resources." *Alabama Power,* 636 F.2d at 356. According to EPA, "the costs to industry and permitting authorities entailed in reviewing" numerous small source PSD permit applications "would far outweigh the benefit of the 'relatively insignificant' reduction in emissions that would result." *Id.* The Court, however, *rejected* EPA's approach, holding that it "falls well beyond the agency's exemption authority." *Id.* The Court further noted that exemptions based on administrative necessity "are not favored" and that the "broad principle that frowns upon categorical administrative exemptions is strict." *Id.* at 358.

**b. Applying the threshold to Carbon Equivalent raises a significant legal question.**

EPA also examines the possibility that the 250 tpy statutory threshold could be circumvented by defining that threshold as applying to Carbon Equivalent, or CE, rather than to individual GHGs such as CO2. Under this approach, the threshold for CO2 would be 917 tpy, which the ANPR says is the CE of 250 tpy of CO2. The ANPR states that this approach would reduce the threshold for other GHGs that have higher radiative forcing properties; for instance, the threshold for methane would be 44 tpy. 73 Fed. Reg. at 44,505.

The ANPR is unclear about the legal rationale for its suggestion that it could substitute CE for CO2 or the other GHGs in determining the regulatory threshold. The threshold applies to "air pollutants," CAA § 169(1). That term is defined in CAA § 302(g) to mean "any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material which is emitted into or otherwise enters the ambient air." In determining in *Massachusetts v. EPA*, 127 S.Ct. at 1460, that GHGs meet the CAA definition of "air pollutant," the Supreme Court relied

on the fact that "[c]arbon dioxide, methane, nitrous oxide, and hydrofluorocarbons are without a doubt 'physical [and] chemical' substance[s] which [are] emitted into…the ambient air." CE would not appear to meet the CAA "air pollutant" definition – unlike actual GHGs, CE is not a physical, chemical, biological or radioactive substance that is actually emitted into the ambient air. As a result, questions exist as to the validity of EPA's rationale as to why 250 tpy of CO2 can be transformed into 917 tpy for purposes of triggering the NSR pre-construction permit threshold.

**c. Redefining PTE may not be workable and doesn't solve the problem.**

The ANPR recognizes that, under EPA's current application of the PSD program, for purposes of determining whether a facility's emissions exceed the 250 tpy threshold, the facility must assume that it operates at maximum capacity every hour of the year (its potential to emit, or PTE). Thus, if CO2 is regulated under the CAA, a building heated with fossil fuels must calculate its emissions based on the assumption that the building will run its furnace and produce CO2 emissions all day year-round even though it is known that the furnace will only run during the winter and even then not all day. EPA suggests that this makes little sense and therefore suggests ways around its typical interpretation of a facility's PTE. 73 Fed. Reg. at 44,504.

One of EPA's suggested approaches is that the building could voluntarily limit the amount of time it operates its furnace or other GHG-producing equipment through a federally-enforceable permit limit. As the ANPR appears to recognize, however, this suggestion is unworkable and possibly illegal. Although sources would not be required to obtain major source PSD permits, they would be required to obtain "minor source" permits, and "the sheer volume of [such] permits and the process required for each one would severely strain permitting authority resources … [and] some state and local agencies may lack the authority to establish minor source permit limits for non-NAAQS pollutants." *Id.*

Another approach suggested by the ANPR is that EPA could by rule limit PTE for various categories of small sources of GHG emissions. *Id.* This suggestion may have some promise, although there is only very limited precedent for adoption of such categorical limits on PTE. As with many of EPA's other proposals to avoid the 250 tpy threshold, the legal validity of EPA's PTE suggestion has not been tested in court and is therefore uncertain.

Most importantly, whatever success EPA might have in limiting PTE for small sources, limiting PTE will not prevent PSD regulatory gridlock. As stated above, EPA's estimate of 235,000 sources that would exceed the 250 tpy threshold was calculated based on these sources' actual emissions, not their PTE. EPA's estimate of an order of magnitude increase in the number of PSD permit applications – an increase that EPA said could result in extreme permitting problems absent some other way to limit the number of PSD permits or simplify the PSD process – similarly assumed the use of actual emissions rather than PTE. As also stated above, EPA's estimate of the number of new permit applications is low for a number of reasons, not just because of EPA's use of actual emissions rather than PTE. Thus, limiting PTE, if possible, is important, but it does not solve the problem created by regulating GHGs under the CAA.

**8) At pages 8-9 of his testimony, Mr. Bookbinder presents two possible arguments as to why a CO2 NAAQS might be, in his words, "both unnecessary and not required by the Act." Do you agree?**

I would note first that this is more than a theoretical question. Apart from the fact that the ANPR explores potential NAAQS regulation in depth, three northeastern states filed a lawsuit several years ago seeking to compel EPA to establish GHG NAAQS. The lawsuit was filed when the original rulemaking petition that led to the *Massachusetts v. EPA* court decision was still being considered by EPA, and it was withdrawn after EPA denied the rulemaking petition and the legal focus shifted to an appeal of that denial. In light of that lawsuit, the possibility cannot be discounted that, if EPA makes an endangerment finding, a party or parties (not necessarily these states) will seek to compel NAAQS regulation.

I do not agree with Mr. Bookbinder's analysis. Mr. Bookbinder first states that a CO2 NAAQS would be unnecessary because (a) the NAAQS would need to be set at a level below current atmospheric levels "given the significant climatic effects we are already experiencing" even though (b) international efforts are seeking to stabilize atmospheric levels at 450-550 ppm. He concludes from this that regulating GHGs under the NAAQS program would be an exercise in futility. While I agree that attempting to regulate GHGs under the NAAQS program would be pointless, that does not necessarily mean that NAAQS regulation would not be legally required if, as Mr. Bookbinder strenuously advocates, EPA makes an endangerment finding. Indeed, as I discuss below, if an endangerment finding is made, EPA may face substantial legal arguments that it is required under existing law to implement NAAQS regulation.

Second, Mr. Bookbinder suggests that NAAQS regulation may not be required under Section 108(a)(1)(c), even if EPA makes an endangerment finding. Some brief background is required on this point.

The process of establishing a NAAQS begins under CAA § 108 with EPA's publication of a "Criteria Document" describing the public health and welfare effects of the pollutant at issue. Section 108(a) obligates the EPA Administrator to issue such a document for pollutants (a) which may reasonably be anticipated to cause or contribute to air pollution that endangers public health or welfare; (b) which are emitted by "numerous or diverse mobile or stationary sources"; and (c) for which EPA "plans" to issue a Criteria Document after the date of enactment of the 1970 CAA. If EPA issues a Criteria Document, it is then obligated to issue a NAAQS and NAAQS regulation is triggered.

CO2 is unquestionably emitted by numerous or diverse mobile or stationary sources. Hence, if EPA makes an Endangerment Finding, it may only avoid issuing a Criteria Document and then a NAAQS if it has discretion to do so under the third § 108(a) criterion. Mr. Bookbinder suggests that EPA might be able to avoid issuing a CO2 Criteria Document and hence a CO2 NAAQS under this third criterion – in Mr. Bookbinder's view, EPA could simply not plan to issue a Criteria Document.

Mr. Bookbinder failed to point out, however, that in *NRDC v. Train*, 545 F.2d 320 (2d Cir. 1976), NRDC successfully advocated the exact opposite position that he posits now. In *Train*, EPA had conceded that lead endangers public health and welfare and is emitted by numerous or diverse sources, but EPA contended that it had discretion under the third § 108(a) factor not to issue a Criteria Document. The Court rejected EPA's statutory interpretation, ruling that the third factor applied only to pollutants included on the initial list of pollutants to be regulated under the NAAQS program, which EPA was required to promulgate within thirty days after December 31, 1970. According to the Court, the third factor does not apply to revisions of the initial list. For such revisions, the Court ruled that EPA's duty to establish a NAAQS is mandatory if the first two § 108(a) factors are met. Thus, under the reasoning of *Train*, CO2, which of course was not on the initial list, must be regulated under the NAAQS program if EPA makes an endangerment finding.

The ANPR also suggested the possibility that the third § 108(a) factor might provide discretion to EPA not to issue a CO2 NAAQS if EPA makes an endangerment finding. The ANPR suggested that *Train* might no longer be good law because it was decided before *Chevron U.S.A. v. NRDC*, 467 U.S. 837 (1984), which is the seminal modern case setting forth the standards for judicial review of agency action. *Chevron*, however, has never been interpreted as automatically invalidating cases decided before it. Indeed, in another section of the ANPR, EPA relies heavily on *Alabama Power v. EPA*, 636 F.2d 323 (D.C. Cir. 1979), which was also decided before *Chevron*. Interestingly, Professor Heinzerling's testimony before this committee cited *Train* on another point, suggesting that she considers it to remain good law, *Chevron* notwithstanding.

If EPA were to decline to establish a CO2 NAAQS on the basis of the third factor of § 108(a), that decision would likely be reviewed in the D.C. Circuit. The D.C. Circuit is not bound by Second Circuit precedent, although Circuit Courts generally give weight to the decisions of other Circuit Courts. In any event, the fact that a federal court of appeals has considered and rejected the argument that Mr. Bookbinder put forth in his testimony means that the argument can't be conclusively relied on. If EPA makes an endangerment finding for CO2, a significant risk exists that it will face arguments that it is obligated to issue a CO2 Criteria Document and a CO2 NAAQS and that CO2 NAAQS regulation must be implemented.

**9) At page 9 of his testimony, Mr. Bookbinder presents a possible way that EPA motor vehicle regulation would not have serious PSD impacts on numerous small stationary sources. Could you respond?**

The first idea offered by Mr. Bookbinder is that Congress could amend CAA § 169. Congress, of course, is free to amend the law. My own view is that Congress should adopt legislation completely preventing regulation of GHGs under the CAA. The statute is wholly unsuited to the issue of GHGs and climate change.

The second idea offered by Mr. Bookbinder, which he credits to Professor Heinzerling, is that the PSD program should be implemented for small sources through a general permit program. This approach raises a number of legal issues and may not be possible at all.

First, general permitting has never been tested in court in a PSD context, and as the ANPR states, no explicit statutory authority exists for general PSD permits. 73 Fed. Reg. at 44,509. Thus, sources may have difficulty relying on general permitting absent judicial confirmation. Moreover, PSD permits may not be issued without a hearing. *See* CAA § 165(a)(2). Perhaps, a hearing in connection with adoption of the general permit program would satisfy this hearing requirement (*see* ANPR, 73 Fed. Reg. at 44,509-10), but again this would generate legal uncertainty.

Second, as stated above, PSD permits require sources to install BACT controls. The statutory definition of BACT requires that BACT be determined on a "case-by-case" basis, CAA §§ 165(a)(4) and 169(3), which facially would seem to argue against the general permitting approach. I don't know if the Heinzerling-Bookbinder proposal for general permits assumes a predetermination that small sources would not have to meet the BACT requirement. Obviously, the statute cannot simply be ignored. Perhaps the proposal assumes predetermined "presumptive" BACT requirements, which presumably would be different for different categories of small sources. As set forth in the ANPR, there is some very limited administrative precedent for presumptive BACT (73 Fed. Reg. at 44,508 n.278), but, again, this concept has not been tested in court and would entail significant legal risk. Moreover, determining presumptive BACT requirements for different categories of sources will generate controversy and consume time.

Third, if GHGs are regulated under the NAAQS program, the Bookbinder/Heinzerling proposal to simplify PSD permitting through a general permit program would face heightened, perhaps fatal, legal difficulties. One of the primary issues in GHG NAAQS regulation is the level at which to set the NAAQS. As stated above, Mr. Bookbinder testified to this Committee that the GHG NAAQS would have to be set at a level below current atmospheric concentrations, since, in his view, current concentrations are causing serious climatic impacts. If the NAAQS were set at a level below current atmospheric concentrations, the entire country would be in "nonattainment" of the NAAQS. In that event, the PSD program would no longer apply; instead major emitting sources of GHGs would be required to obtain Nonattainment New Source Review (NNSR) permits. CAA §§ 172(b)(6), 173.

The NNSR program would apply to the same universe of GHG sources as the PSD program but is considerably more restrictive. For instance, sources are required to obtain emission offsets, meaning that the many small sources that will be required to obtain pre-construction permits if GHGs are regulated will need to purchase offsets from third parties and/or create offsets by shutting down existing sources before commencing construction. The NNSR program also requires sources to undertake stringent Lowest Achievable Emission Rate (LAER) controls which, unlike BACT controls, are set without consideration of economic costs. It is difficult to envision how the general permitting process could accommodate the requirement that sources obtain offsets and that regulators confirm that they have done so. Indeed, it is very difficult to understand how application of offset and LAER requirements to numerous small sources could possibly be justified under any rational public policy.

Fourth, the timing of adoption of a general permit program would be critical. Unless the program is in place at the time that EPA first regulates GHGs under any CAA program, small sources, at that time, will be forced to comply with the full panoply of pre-construction permit

requirements. Easy adoption of a general permit program should not be assumed, given that it has not been done before in a PSD context and the controversy that will arise in attempting to define "presumptive BACT" limits for different categories of small sources. Thus, establishing a general PSD permitting program could take a great deal of time, particularly if, as expected, EPA and the public were simultaneously addressing a host of other GHG regulatory initiatives. Yet advocates of CAA regulation of GHGs demand immediate action, raising the prospect that EPA will proceed with GHG regulation before an effective general permitting program is in place.

Moreover, presumptive BACT and general permit requirements established by EPA would not be self-executing in most states. States acting under their own, "non-delegated" permit authority would have to adopt these new provisions into law, probably through rulemakings, possibly through legislation. This significantly raises the difficulty of having an effective general permitting program in place at the time that EPA proceeds with GHG regulation.

Finally, whatever success might be achieved through general permitting in streamlining the permit process, a very large number of small sources will still be subject to some permitting burden to which they are not currently subject. At a minimum, these sources will be required to retain lawyers and possibly consultants to help them understand the new requirements and file whatever paperwork is necessary to comply. This burden is not justified by any regulatory benefit, as I assume the Bookbinder/Heinzerling proposal would not require small sources to comply with BACT, LAER or other controls and therefore the program will not result in a reduction of GHG emissions. Even if some emission reductions were achieved through some kind of "presumptive BACT" requirements, the resulting benefit would be hard to justify in light of the regulatory inefficiencies. As the ANPR recognizes:

> Regarding the potentially large universe of smaller sources and modifications that could become newly subject to BACT, as described above, *there are large uncertainties about the potential benefits of applying BACT requirements to GHG emissions from such sources*. Individual emission reduction benefits from such sources would be smaller; however, the cumulative effect could theoretically be large because the requirement would cover many more sources. *However, unless there are ways to effectively streamline BACT determinations and permitting for smaller sources (as discussed below), BACT would not appear to be an efficient regulatory approach for many other types of sources*.
>
> * * *
>
> While the program would provide a process for reviewing and potentially reducing GHG emissions through the BACT requirement as it has done for other pollutants, we are concerned that without significant tailoring (and possibly even with significant tailoring), application of the existing PSD permitting program to these new smaller sources would be a very inefficient way to address the challenges of climate change.

73 Fed. Reg. at 44,501 (emphasis supplied).

**10) On pages 5-8 of her testimony, Professor Heinzerling presents an argument that EPA has already made a formal endangerment finding? Do you agree?**

No. The matter is obviously before EPA on remand of *Massachusetts v. EPA* and in the context of a number of regulatory petitions and other requests that have been made to EPA to regulate GHGs. The ANPR initiated EPA action in response to the court decision and those petitions and requests. EPA will make – or not make – an endangerment finding in the context of the various regulatory programs that the agency has been asked to initiate, assuming it moves into rulemaking.

I would also note in this regard that, as stated above, a number of states, cities and environmental organizations (including NRDC and the Sierra Club) recently filed a mandamus action with the U.S. Court of Appeals for the D.C. Circuit in the *Massachusetts v. EPA* docket seeking to compel EPA to issue an endangerment finding. The Court declined to do so.

**11) On pages 4-5 of her testimony, Professor Heinzerling argues that the EISA does not change EPA's obligations on remand of the *Massachusetts* case. Do you agree?**

Although EISA does not affect EPA's legal obligation to respond to the Supreme Court remand, it unquestionably affects the character of what that response will be. The two principal ways of reducing motor vehicle GHG emissions are improved fuel economy and renewable fuels (depending on the renewable fuel used). EISA adopted significant new requirements in both areas. As a result, EISA is likely to affect considerably the type of response that EPA makes to the *Massachusetts* case.

**12) On pages 8-9 of your testimony, you present two possible arguments as to why a CO2 NAAQS might be, in your words, "both unnecessary and not required by the Act." Do you agree?**

I believe this question means to refer to pages 8-9 of Mr. Bookbinder's testimony. See my response to question 8 above.

**13) At page 9 of his testimony, Mr. Bookbinder presents a possible way that EPA motor vehicle regulation would not have serious PSD impacts on numerous small stationary sources. Could you respond?**

See my answer to question 9 above.

**14) On pages 5-8 of her testimony, Professor Heinzerling presents an argument that EPA has already made a formal endangerment finding? Do you agree?**

See my answer to question 10 above.

**15) On pages 4-5 of her testimony, Professor Heinzerling argues that the EISA does not change EPA's obligations on remand of the *Massachusetts* case. Do you agree?**

See my answer to question 11 above.

**16) Do you know why utilities such as Sunflower Electric are pursuing coal-fueled electric generating stations?**

All regions of the country face a critical need for new electric generation resources. Without significant new electric generation additions, insufficient resources will exist to meet minimum reserve requirements. If minimum reserve requirements are not met, failure of a power plant or transmission line or a surge in customer demand during a hot summer day could result in a blackout or brownout.

Many utilities need "baseload" electric generating resources, resources that are available around-the-clock every day. There are limited types of resources that provide baseload capacity. Coal and nuclear are the typical baseload capacity resources. Wind is not a baseload resource. Wind operates intermittently – when the wind blows. New wind generation using the latest wind technologies that are located in high-wind areas are expected to operate at a capacity factor of about 40 percent (or perhaps more in very windy areas), but wind will never be a baseload resource.

Natural gas has increasingly been looked to as a source of fuel for electric generation because natural gas plants can be built more quickly and have lower capital costs (but much higher fuel costs) than coal or nuclear power plants. A great deal of natural gas electric generation has been built in this country in the relatively recent past. Natural gas prices, however, have proven to be highly volatile and recently spiked to around $14.00/MMBtu. While natural gas prices have since retreated, they are still far higher than their historical range and subject to further spikes.

Reliance on natural gas for electric generation also creates issues in terms of energy independence policy. Until very recently, North American natural gas production had been flat or declining. While domestic natural gas drilling has recently risen, the increase results from the ability to access unconventional supplies, such as oil shale, given high prices. Whether this will be sustained if natural gas prices come down further may be debated. Longer term, the fact remains that the United States has only 3 percent of the world's proven natural gas reserves – with the Middle East and Russia holding by far the largest reserves. Attached is a figure that displays relative U.S. and world gas reserves. There is a great deal of activity underway domestically to build Liquefied Natural Gas (LNG) terminals in the U.S. in order to increase our ability to access the world LNG market. Competition in this market is fierce; the U.S. competes with the EU, Japan, China and India, all of which are significant importers of LNG, as well as other countries. Moreover, whether U.S. imports of overseas natural gas significantly increase or not, concerns exist that domestic natural gas pricing appears to be increasingly linked to world natural gas pricing, which in turn is increasingly linked to world oil pricing.

Given these factors, many utilities fear becoming overly reliant on natural gas for electric generation. Nuclear power is attracting renewed interest, but presents its own set of challenges and, for the time being, likely remains out-of-reach for smaller and mid-sized utilities.

As a result, in recent years, in order to meet looming electric generation capacity deficits, utilities have proposed to build a large number of new coal-fueled electric generating stations. While coal prices have risen along with other energy prices, coal remains much lower priced than natural gas. Moreover, the U.S. holds the largest coal reserves in the world; we have often been referred to as the Saudi Arabia of coal. Attached is a figure that displays relative U.S. and world coal reserves.

Sunflower Electric Power Corporation is an example of why many power generators have turned to coal. Some background on Sunflower may be useful in this regard.

Sunflower is not owned by investors. It is a company formed as a cooperative that has members rather than shareholders. Its members are companies that provide electricity to a combined 400,000 people in rural central and western Kansas. These six companies, in turn, are cooperatives owned by the 400,000 people to whom they supply electricity. Sunflower's role is to acquire the "bulk" electric generation and transmission resources needed by its six member cooperatives so that these member-cooperatives can supply electricity to their 400,000 member-customers. Sunflower's board of directors consists of representatives of its six owners, and those six owners' boards of directors are chosen by their owner-customers. There is no separate stockholder interest in Sunflower; under its democratic structure, it exists solely to provide reliable, low-cost electricity to consumers.

The electric consumers who purchase electricity from Sunflower's member-cooperatives suffer from the twin problem of relatively high retail electric rates and below-average incomes. The relatively high electric rates result from the very low population density in central and western Kansas and the corresponding large number of miles of transmission and distribution lines necessary to serve a low number of people. The retail rates are also relatively high because Sunflower owns natural gas generation. The recent spike in natural gas prices has significantly increased the cost of operating this generation. Unfortunately, income levels in rural areas tend to be below the national average, and this is true in the areas served by Sunflower's member-cooperatives. About 10.7 percent of the people served by Sunflower's members are below the federal poverty levels, and 16.5 percent are over 65 and therefore likely living on fixed incomes.

Given these factors, price became a significant driving force in Sunflower's decision of how best to continue to meet the electric needs of its members' customers. Sunflower had no pre-disposition towards building the coal-fueled Holcomb Expansion Project. The determination to build coal was based on the economic judgment that coal-fueled electricity would provide the lowest cost to the ultimate consumer.

**17) Can utilities rely exclusively on wind and other renewables to meet their future electric expansion?**

For the foreseeable future, utilities cannot rely exclusively on wind and other renewable resources to meet their future electric expansion needs.

As stated above, wind generation, which is the furthest developed renewable technology, is only an intermittent resource. Moreover, wind tends to be least available when electricity is needed most: during the hottest and coldest parts of the day and year. All utilities are required to have a certain amount of "dependable capacity" to meet reserve margin requirements. Because wind tends to be least available during periods of peak electricity usage, utilities are allowed to count only a fraction of a wind unit's actual operating capability in determining the extent to which the unit can be counted on in meeting reserve requirements. For instance, a 100 MW wind farm, even though it operates at a 40 percent capacity factor annually, might only be counted on to supply 10 or 15 MW of dependable capacity during the hottest summer months when electric usage is highest. Moreover, because of topography, wind and wind unit siting conditions are less favorable in some areas of the country, particularly in the East and Southeast, than others. As a result, while wind is undoubtedly an important part of the country's future electric generation portfolio, it cannot be relied on exclusively.

Hydroelectricity is another renewable resource. It presently supplies much more electricity in the United States than wind. No one, however, expects hydroelectric generation to expand significantly in the future. Indeed, many think a number of hydroelectric dams should be removed.

Other renewable resources show promise, particularly geothermal, biomass and solar. Like wind, these resources tend to be more available in some areas of the country than others. Moreover, the cost of these resources remains high, and other factors have limited their availability. Use of these resources will undoubtedly expand over time.

None of these resources are mutually exclusive of coal. Given rising electric demand, fossil resources, nuclear power and renewable resources must all be considered.

**18) Do you know whether Sunflower Electric and Kansas in general are pursuing wind resources?**

My understanding is that Kansas energy companies have come a long way in a relatively short period of time to utilize wind energy in their portfolios. Kansas energy companies are pursuing wind resources to the degree that such resources can be reliably and affordably incorporated into their individual electricity systems. Informal agreements exist between the Governor of Kansas and the individual CEOs of many of the electricity generators in Kansas. The Governor has asked that each Kansas electric company commit to own or acquire through a Power Purchase Agreement (PPA) wind resources in the amount of 10 percent by 2010 and 20 percent by 2020.

Sunflower and Midwest Energy, two Kansas participants in the Holcomb Expansion Project, are already committed through PPAs to the largest percentages of wind resources of any companies in Kansas. Midwest Energy receives energy amounting to 16 percent of its peak capacity requirements and Sunflower is at a 10 percent level now, with 12.5 percent by the end of 2008. Few utilities in the country actually possess such a large percentage of wind resources.

Sunflower participates through a 50-MW PPA in the Gray County Wind Farm, operated by FPL, and through a 75-MW PPA in the Smoky Hill Wind Farm, located in Lincoln County, Kansas. Midwest Energy likewise participates in the Smoky Hill wind farm. These large percentages of wind resources are particularly difficult to manage in the case of small companies that operate relatively small numbers of generating resources.

**19) Is developing coal-fueled electricity incompatible with developing wind resources?**

No. In fact, it would not surprise me if most utilities that are proposing coal projects are simultaneously proposing wind projects. Given critical needs for new electric resources, no one resource can be depended on to the exclusion of others.

In fact, coal and wind are highly compatible with each other because both tend to be located in rural areas at a distance from load centers. As a result, both depend on the availability of new transmission lines to bring the power to the customers. Coal projects that include the construction of transmission lines can therefore enable the construction of wind projects which might otherwise be stranded. According to the U.S. Department of Energy, the availability of transmission is the "number one barrier to expanded renewable energy development in the U.S."

The Holcomb Expansion Project is a case in point. The Project includes construction of high voltage transmission lines that can be accessed by wind projects. Wind-only transmission projects could be built (subject to Federal Energy Regulatory Commission legal requirements). But since wind projects will only put electricity into a transmission line for a relatively limited number of hours in the year, the cost of the transmission line per increment of energy transmitted through it will be relatively high. In the end, the long-desired interstate network system of transmission lines, similar to the interstate highway system, awaits the right mix of investment and users. The Holcomb Expansion Project fills a large part of the justification for much needed transmission lines to go forward.

**20) Is it reasonable for Sunflower Electric to sell electricity from the proposed project out-of-state?**

This question should not require a response. The electric system in the contiguous United States is built on three interstate grids: the Western Interconnect, the Eastern Interconnect, and the Electric Reliability Council of Texas. Power within the Western and Eastern Interconnects flows freely across state lines, as utilities frequently buy and sell power among themselves to strengthen the overall reliability of the system and to lower costs. A system of fifty individual and unconnected state systems would be unthinkable.

The Holcomb Expansion Project is an example of interstate operations benefiting multiple utilities in multiple states. The Project is sponsored not just by Sunflower but by two other generation and transmission cooperative companies which voluntarily chose to combine their resources and build a modern, affordable, and reliable electricity source. The project will serve the needs of consumer-owners of 67 different retail electric cooperatives located in parts of 8 states, including Texas, Colorado, Oklahoma, and Kansas. This pooling of resources and sharing of facilities is the backbone of the electricity system in most states. Economies of scale and the savings from sharing resources is the most economical way of providing electricity to consumers.

**21) Is building new coal-fueled electric generation compatible with a carbon-constrained future?**

Yes. A typical new coal-fueled electric generator is likely about 20 percent more efficient than the average existing coal generator, meaning it emits 20 percent less carbon dioxide per unit of electricity generated. Because of its improved efficiency, the new unit will have a lower operating cost than existing units. As a result, it will tend to displace existing units during non-peak periods when a surplus of generation will exist, resulting in lower carbon dioxide emissions. Additionally, over time, building new coal units will allow existing coal units to close at the end of their useful lives, again lowering carbon dioxide emissions. Moreover, coal units can be retrofitted with carbon capture technology when that technology becomes commercially viable.

This Committee should be especially sensitive to achieving the twin goals of energy independence and reduced carbon emissions. We are unlikely as a country to achieve energy independence if we foreclose usage of our most abundant domestic energy resource. But with new technology, coal can be a key component of both energy independence and reduced carbon emissions.

**22) Do you know whether Sunflower Electric intends to include carbon-reducing measures as part of its project?**

Yes. The Project will lower carbon dioxide emissions in a number of ways.

- As a new unit, it will be more efficient than existing units and, by displacing less efficient existing generation, it will lower overall system emissions. At the time the construction permit for the Project was rejected by the Kansas Department of Health and Environment, it was the third most efficient power plant proposed in the country.

- Part of the need for the project is to meet new electric demand resulting from new ethanol plants being located in western and central Kansas. One of the justifications for ethanol plants is lowering carbon dioxide emissions from transportation fuels. Similarly, the Sunflower Project will meet new electricity needs resulting from the electrification of manufacturing facilities previously powered by natural gas. Electrification often results in more efficient and therefore less carbon intensive utilization of energy.

- Sunflower has undertaken a first pilot phase of evaluating a process where exhaust gas from the existing Holcomb I plant is introduced into a specially designed chamber to allow single-cell algae to grow from the exposure to the moderately-rich $CO_2$ concentration in the gas stream. The commencement of the second (demonstration) phase of this project was to have proceeded from development fees arising from the issuance of a permit to construct the Holcomb Expansion Project. Given the denial of the permit, funds do not exist to proceed with the second phase.

- The Project's proposed transmission lines, as discussed earlier, will enable the transfer of wind energy from wind resource sites to load centers.

- In addition to algae production as a sink for CO2, Sunflower has sought to successfully integrate more efficient ethanol production, more efficient bio-diesel production, and other energy-conserving industrial applications on land nearby the power plant. Such integration will result in better use of precious water resources, better utilization of methane for a fuel, and improved process efficiencies that can arise from the integration of these processes at the design level.

**23) What alternatives do utilities have for meeting electric demand if they cannot pursue coal-fueled electric generation?**

See response to questions 16 and 17 above.

**24) Is preventing the construction of coal-fueled resources compatible with the goal of energy independence?**

See response to question 17 above. In particular, see the two attached figures, one showing proven world coal reserves by region and one showing proven natural gas reserves by region. The conclusion to be drawn from these figures for energy independence should be obvious.

**25) Does the *Massachusetts v. EPA* case constitute authority for the denial of Sunflower Electric's air quality permit by the Kansas Department of Health and the Environment (KDHE)?**

No. *Massachusetts v. EPA* held that, under the federal CAA, greenhouse gases are "air pollutants" which EPA must regulate *if* it finds that they endanger public health or welfare. As discussed above, EPA is currently considering whether it will make such endangerment finding and regulate.

KDHE denied Sunflower's air quality permit not under federal law but under state law. KDHE ruled that state law provided authority for the agency to deny the permit. The issue is now before the Kansas state courts. *Massachusetts v. EPA* did not interpret Kansas law and cannot be relied on to say that KDHE's action was authorized under the law of that state.

Version 1.2, 04/18/2005
Reviewed 9/27/2006

# Prevention of Significant Deterioration Air Quality (PSD) Permit

Environmental Permitting Services

**Applicant** | **Washington Department of Ecology (Ecology)** | **Public or Other Interested Party**

## Application Phase

**Start**

**Applicant** reviews activities requiring PSD permit (triggering mechanisms) (A)

- not required → **No Permit Required** Exempt from PSD permit → Other air quality permits may be required
- required →

**Applicant** requests pre-application consultation to review permit needs (B)

- Applicant initiates the **State Environmental Policy Act (SEPA) process.** *Please note: This process is conducted outside of the PSD process, but must be complete before permit issuance.*
- Applicant initiates **Endangered Species Act (ESA) consultation with the Environmental Protection Agency (EPA).** *Please note: This process is conducted outside of the PSD process, but must be complete before permit issuance. Please see page 10 of the document found through the hyperlink for details.*

**Ecology, Applicant, and Federal Land Managers** conduct Pre-Application Conference to discuss information to be included in Applicant's PSD application ← **Federal Land Managers and EPA** provide input pre-application consultation

**Ecology** reviews existing site meteorological data

- Not Available → **Applicant** may be required to conduct on-site meteorological monitoring (C) — 1 Year
- Available

**Applicant** conducts preliminary dispersion modeling to determine need (if any) for ambient air quality monitoring (D)

**Applicant** submits preliminary dispersion modeling results to Ecology → **Ecology** issues decision on need for local ambient air quality monitoring

- Needed → **Applicant** may be required to conduct on-site ambient air quality monitoring (E)
- Not Needed

**Applicant** submits PSD application to Ecology (F)

## Review and Decision Phase

**Ecology** reviews application for completeness and notifies US Fish and Wildlife and National Marine Fisheries that permit development is in progress.

- Complete → **Ecology** issues Notification of Completeness — 30 Days (T1)
- Incomplete → **Ecology** issues Notification of Incompleteness — 30 Days (T1)

**Ecology** issues Draft PSD Permit, and Technical Analysis Document and distributes for public comment — 60 Days (T2)

**Ecology** drafts legal notice, sends to applicant for publication → **Applicant** publishes legal notice in newspaper — 8 Days

**Ecology** reviews public comments and determines need for public hearings

- **Applicant** submits written comments to Draft PSD Permit (G) — 30-45 Days
- **Public** and **Federal Land Manager** may submit written comments to Draft PSD Permit (G) — 30-45 Days

- Hearings Not Held
- Hearings To Be Held

**Ecology** conducts public hearings

- **Applicant** testimony (G)
- **Public** and **Agency** testimony (G)

**Ecology** issues decision on Final PSD Permit

Goal is to issue final determination within 120 Days after the public comment period is closed (T3)

- Approve
- Permit Denied (H)

## Appeal Phase

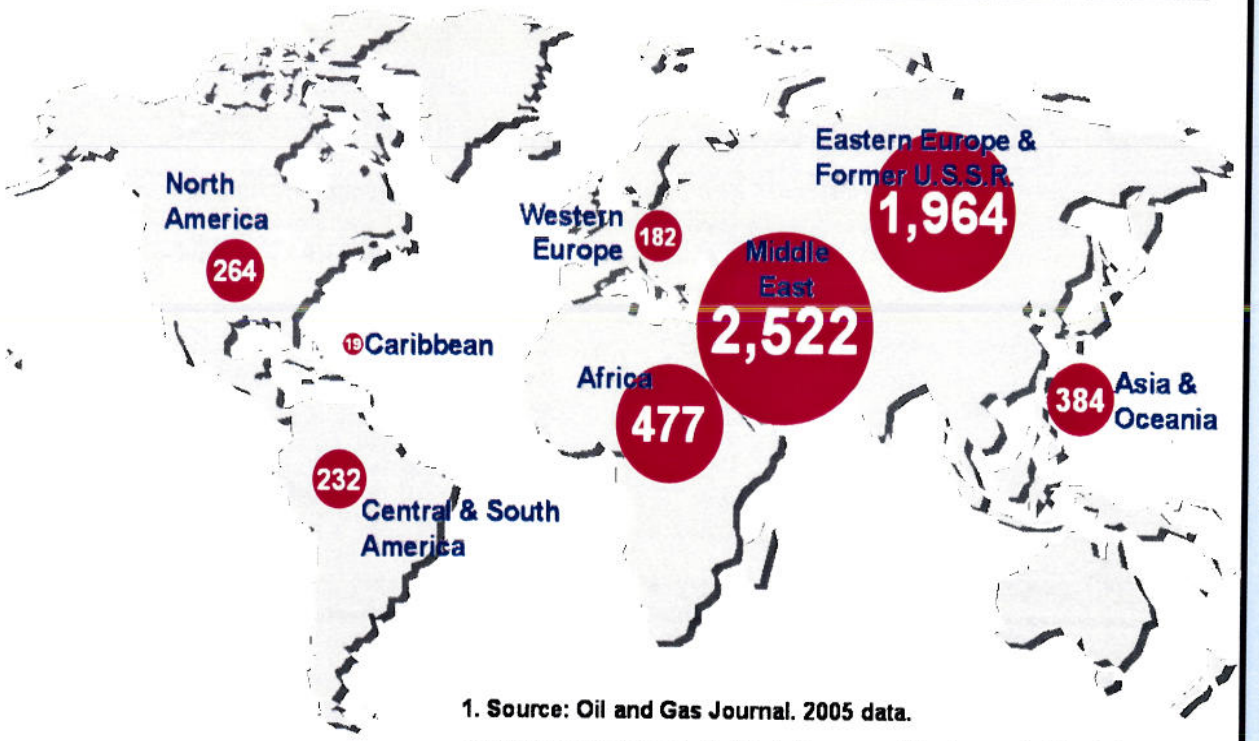
- **Applicant** can appeal Final PSD Permit to EPA Environmental Appeals Board (EAB) — 30 Days
- **Applicant** can appeal Final PSD Permit to Washington Pollution Control Hearing Board (PCHB)
- **Public** can appeal Final PSD Permit to EPA Environmental Appeals Board (EAB) — 30 Days
- **Public** can appeal Final PSD Permit to Washington Pollution Control Hearing Board (PCHB)

**Ecology** issues **Final PSD Permit** and Public Comment Responsiveness Summary

**Legend:** (A) =Hyperlink (T) =Timeliness Target → =Progression ⟶ =Revision ⋯▶ =Optional

For more information on this or any permitting process visit http://www.ora.wa.gov or call the Washington State Office of Regulatory Assistance at (800) 917-0043.

# Proven World Gas Reserves: 6,044 Trillion Cubic Feet




1. Source: Oil and Gas Journal. 2005 data.

Map adapted from Kevin R. Petak, Energy and Environmental Analysis, Inc., *Oil and Gas Prices: Will They Stay Linked?*, presented at 2006 EIA Energy Outlook and Modeling Conference, Washington DC, March 27, 2006, http://www.eia.doe.gov/oiaf/aeo/conf/pdf/petak.pdf.

## *Reserves: Top 10*

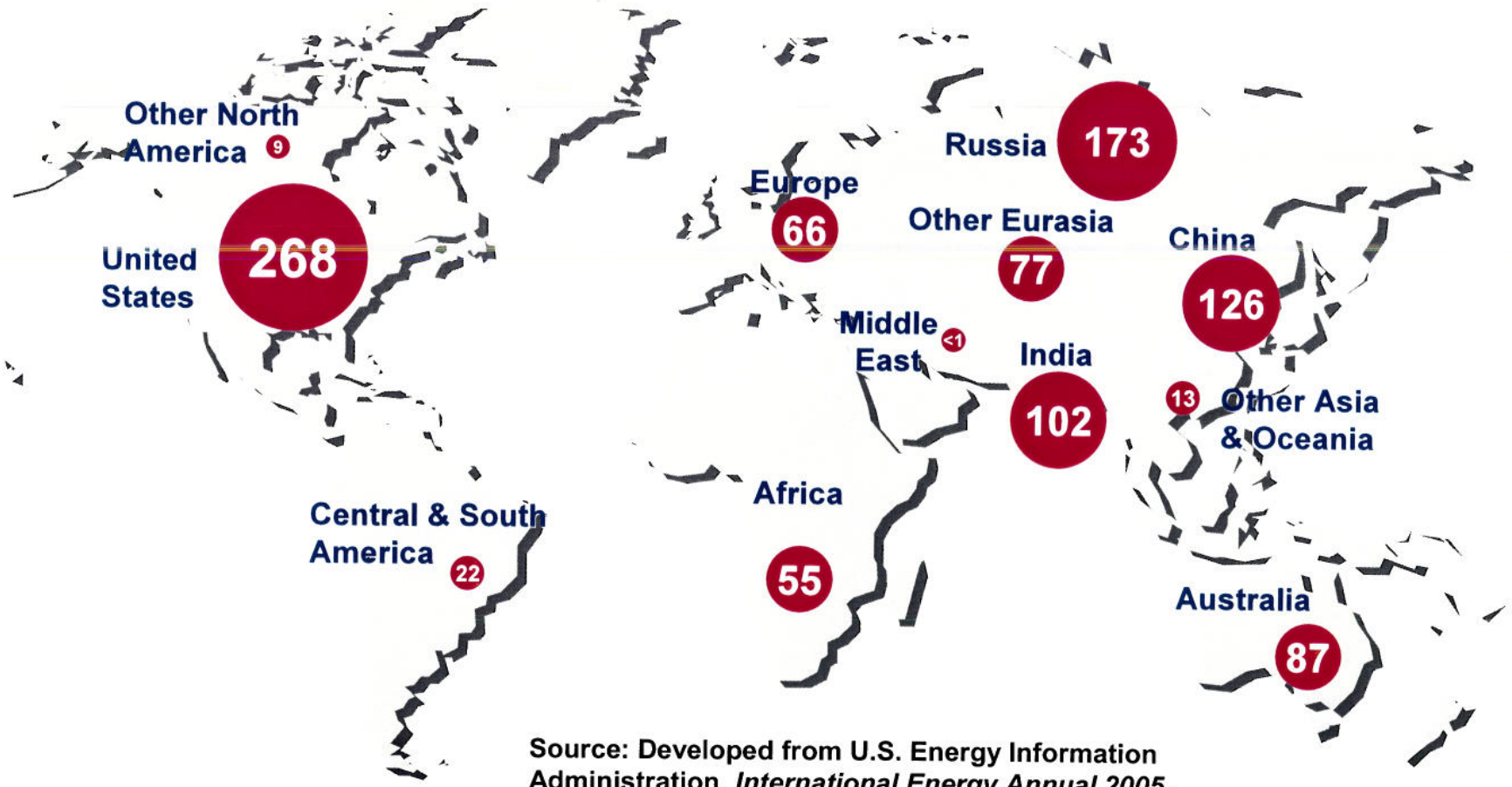
1. Russia
2. Iran
3. Qatar
4. Saudi Arabia
5. Abu Dhabi/UAE
6. *United States*
7. Nigeria
8. Algeria
9. Venezuela
10. Iraq

***U.S. Share: 3.2%***

***Rest of Top 10: 75.4%***

*(Oil & Gas Journal, 2006 data)*

# World Estimated Recoverable Coal: 998 Billion Tons




Source: Developed from U.S. Energy Information Administration, *International Energy Annual 2005*, Table 8.2, http://www.eia.doe.gov/pub/international/iea2005/table82.xls