Presented:
2011 Carbon & Climate Change Conference

February 9-10, 2011
Austin, Texas

BACT Guidance: Summary & Reference Guide

Lisa Montgomery Shelton

ANDREWS ATTORNEYS KURTH LLP
STRAIGHT TALK IS GOOD BUSINESS.®

Lisa Montgomery Shelton
Andrews Kurth LLP
Austin, Texas 78701
lisashelton@andrewskurth.com
512.320.9222

The stated purpose of the Prevention of Significant Deterioration (PSD) and Title V Permitting Guidance (BACT Guidance) for Greenhouse Gases (GHGs) is to:

> 1) describe in general terms and through examples, the requirements of the PSD and Title V permit regulations and (2) reiterate and emphasize relevant past EPA guidance on PSD and Title V review processes for other regulated air pollutants and (3) provide additional recommendations and suggested methods for meeting the permitting requirements for GHGs, which are illustrated in many cases by examples.[1]

The real question is: "How will these permitting programs (e.g. PSD and Title V) apply to GHG emissions?". The simple answer is: just like they apply to all other covered pollutants. However, that is not a simple answer. EPA, regulated entities and environmental activists have been arguing about most aspects of applicability of these programs since their inception, which, in the case of Best Available Control Technology (BACT) for prevention of serious deterioration (PSD) permits, is the last 30 years. In addition, on many levels, GHGs are not like other covered pollutants. This paper will summarize the aspects of the BACT Guidance, that relate to GHG permitting and discuss potential economic impacts.

I. Tailoring Rule Steps

Beginning January 2, 2011, GHGs are a regulated new source review (NSR) pollutant under the PSD major source permitting program.[2] In order to determine when a permit is required for GHG emissions, the so-called Tailoring Rule must be followed.[3] The Tailoring Rule outlines a phased approach to implement the permitting of GHGs, called the "Tailoring Rule Steps." The first step began on January 2, 2011, and ends on June 30, 2011. It covers sources that emit GHGs in at least specified threshold amounts (75,000 TPY CO_2e) that are also subject to PSD due to the emission of another regulated NSR pollutant. Since these sources are subject to PSD review anyway, they are known as "anyway sources." Similarly, when an existing major source proposes a physical or operational change that would be subject to PSD due to the emission of another regulated NSR pollutant and increases its emission of GHGs by at least the specified threshold amounts (75,000 TPY CO_2e) the GHGs are included in the PSD review. These modifications are also known as "anyway modifications." In sum, if the source is otherwise subject to PSD and the source has the potential to emit (PTE)[4] GHGs equal to or greater than 75,000 TPY carbon dioxide equivalent (CO_2e), then GHGs must be included in the PSD application.

---

[1] PSD and Title V Permitting Guidance for Greenhouse Gases (Nov. 2010), EPA-HQ-OAR-2010-0841-0001 at 1.

[2] BACT Guidance at 7.

[3] See EPA Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule; Final Rule, 75 Fed. Reg. 31,514 (June 3, 2010).

[4] Potential to emit or PTE is defined under the PSD program as the "maximum capacity of a stationary source to emit a pollutant under its physical and operational design. 40 CFR 51. 165(a)(1)(iii). A permit limitation is considered part of the design and may be used to limit emissions such that PSD no longer applies.

The next step in the Tailoring Rule Steps begins on July 1, 2011. Following that date, all "anyway sources" and "anyway modifications" must include GHGs in the PSD review along with any new sources or modifications that emit GHGs in at least the specified amount. In the case of non-anyway sources the threshold amount is met if the source has the potential to emit GHGs equal to or greater than 100,000 tons per year (TPY) on a CO_2e basis and 100/250 TPY on a mass basis. These calculations will be further explained below.

EPA has committed to a third step, to implement a process to apply the permitting programs to additional sources, but has not promulgated additional rules. EPA is to solicit comments upon which to base a third step by July 1, 2012. EPA did not discuss future steps in the BACT Guidance.

II. PSD Applicability

The evaluation of PSD applicability for a new source is relatively straight forward. If it has the potential to emit pollutants above the threshold, it is subject to PSD permitting. By definition, PSD applies to a "major emitting facility" which is then defined as a source that emits 100 tons per year (TPY) if it is one of 28 listed source categories or at least 250 TPY of any air pollutant for sources that are not listed.[5] In other words, for new sources, the modification must result in a 100/250 TPY increase of GHG on a mass basis. Applying this calculation to GHGs is further described below.

A determination as to whether a modification is subject to PSD permitting is more complex as modification includes any physical change or change in the method of operation of a stationary source "which increases the amount of any air pollutant emitted by that source or which results in the emission of any air pollutant not previously emitted."[6] To evaluate PSD applicability for the modification of an existing source, a two step process is used. Step 1 considers all creditable increases from the proposed modification itself. Step 2 or "contemporaneous netting" considers all creditable increases and decreases occurring at the source in the period beginning five years before the proposed modification through the date that the increase from the modification occurs. Since GHGs were not previously regulated, these calculations will necessarily reference GHG emissions in time frames before they were subject to PSD.

III. Calculating GHG mass emissions and CO_2e emissions

To determine whether GHG emissions exceed an applicability threshold using both the Tailoring Rule Steps and PSD applicability, the CO_2e as well as the GHG mass emissions must be calculated. GHG emissions are considered a single air pollutant defined as the aggregate group of six gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocabons and sulfur hexafluoride. The amount of GHG emissions calculated for the PSD applicability analysis is the sum of the compounds emitted at the emissions unit.

[5] 42 USC 7479(1)

[6] 42 USC 7411(a)(4)

For the mass-based emissions, the tons per year (TPY)[7] for each of the GHG compound are added together. The standard PSD threshold of 100 or 250 TPY is then applied. The EPA example is a useful illustration.[8]

To calculate CO_2e, the "global warming potential" (GWP) is used to calculate the equivalent CO_2 emissions for each gas which are then added together. EPA recommends that applicants use the GWP values in Table A-1 of the Greenhouse Gase Reporting Program.[9] The EPA example is a useful illustration[10]:

A proposed emissions unit emits five of the six GHG compounds in the following amounts:

50,000 TPY of CO_2
60 TPY of methane
1 TPY of nitrous oxide
5 TPY of HFC-32 (a hydrofluorocarbon)
3 TPY of PFC-14 (a perfluorocarbon)

The GWP for the GHG compounds are as follows:

GHG	GWP[11]
Carbon Dioxide	1
Nitrous Oxide	310
Methane	21
HFC-32	650
PFC-14	6,500

The ***GHGs mass-based emissions*** of the unit are calculated as follows:

50,000 TPY + 60 TPY + 1 TPY + 5 TPY + 3TPY = 50,069 TPY of GHGs

The ***CO_2e-based emissions*** of the unit are calculated as follows:(50,000 TPY x 1) + (60 TPY x 21) + (1 TPY x 310) + (5 TPY x 650) + (3 TPY x 6,500) = 50,000 + 1,260 + 310 + 3,250 + 19,500 = 74,320 TPY CO_2e

[7] Note short tons (2000 lbs) are used for PSD calculations and metric tones (1000 kg) are used under the GHG Mandatory Reporting Rule.

[8] BACT Guidance at 11.

[9] 40 CFR Part 98, Subart A, Table A-1.

[10] BACT Guidance at 11.

[11] This example is from the BACT Guidance and uses the GWP recommend by EPA in 40 CFR Part 98, Subpart A, Table A-1)

IV. Bioenergy

EPA has indicated that it is still evaluating how to assess bioenergy and biogenic sources. Given the potential to view the biomass used to produce bioenergy feedstocks as a carbon sink, EPA has stated in the BACT Guidance that it would issue guidance on how to evaluate this sector.[12]

V. BACT

Under the Clean Air Act (CAA), a PSD permit must contain limitations and requirements based on the application of best available control technology or BACT to each regulated NSR pollutant. BACT is defined as:

> An emissions limitation (including a visible emission standard) based on the maximum degree of reduction of each pollutant subject to regulation under the Clean Air 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 facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant…"[13]

EPA recommends that the "top down" BACT analysis be followed, though EPA also states that this approach has not been promulgated in a rule and is therefore not required. "[P]ermitting authorities have discretion to apply alternative approaches that comply with state and/or local laws and the requirements of the CAA and approved state, local or tribal programs."[14] According to the Clean Air Act Advisory Committee, the top down BACT analysis is the predominant method.[15] That does not make the method simple or straightforward. The top down process has been broken down into five steps which are as follows[16]:

Step 1: Identify all available control technologies.

Step 2: Eliminate technically infeasible options.

Step 3: Rank remaining control technologies.

---

[12] On January 12, 2011, EPA announced its plan to defer, for three years, greenhouse gas (GHG) permitting requirements for carbon dioxide (CO_2) emissions from biomass-fired and other biogenic sources.

[13] 42 USC 7479(3).

[14] BACT Guidance at 4.

[15] Id. at 18.

[16] BACT Guidance at 19; See also 1990 Workshop Manual

Step 4 Evaluate most effective controls and document results.

Step 5: Select BACT and devise permit limitations.[17]

EPA initially recognizes that techniques for GHG emission reduction may be limited. In fact EPA notes that it has not evaluated New Source Performance Standards (NSPS) for GHG, though EPA reminds readers that any future NSPS documentation will need to be considered in BACT analyses.

EPA also supports the idea that "overall energy efficiency" is an important option to consider for GHG BACT determinations. In other words, the operation as a whole should be reviewed, not just the individual source. As such, EPA recognized that the traditional focus on a specific unit might not be the most representative "scope" to use when evaluating GHG. Given that the initial focus is likely to be on energy efficiency, the consideration of facility-wide evaluations is recommended. EPA has determined that BACT allows for such reviews.[18]

One suggested method to evaluate energy efficiency is through performance benchmarking. EPA recommends several resources, including the Energy Star Program, DOE Industrial Technologies Program, Lawrence Berkeley National Laboratory Industrial Energy Analysis Program and European Union Energy Efficiency Benchmarks, particularly until such time as case specific information is available.[19]

A. Step 1: Identify All Available Control Options

All control options should be listed including those determined through "technology transfer." Technology transfer is the review of a different operation with comparable production processes to determine if technologies available in a different industry might be feasible. Options considered in an NSPS review should also be considered. For purposes of the BACT Guidance, EPA described three categories of applicable control techniques: 1) Inherently Lower-Emitting Process/Practices/Designs; 2) Add-on Controls and 3) Combinations of the two. In Step 1, all options are considered; later steps consider feasibility as well as economic and other impacts. However, as will be discussed later, EPA recognized that lower polluting processes that would fundamentally redefine the nature of the source need not be included.

EPA determined that lower-polluting processes should be evaluated based on demonstrations of the manufacture of similar products from similar raw materials and fuels. Add-on controls should be evaluated based on physical and chemical characteristics of the

[17] Throughout the BACT Guidance, EPA references the 1990 Workshop Manual along with many cases and documents issued over the course of 30 years.

[18] BACT Guidance at 25

[19] BACT Guidance at 23

emission stream.[20] As technologies are developed, EPA will add information to the GHG Mitigation Measures Database.[21]

1. *Redefining the Source*

In determining whether lower-polluting processes should be considered, the EPA referenced the analytical framework articulated by the Environmental Appeals Board, later described as *redefining the source*.[22] The permitting authority is instructed to "take a 'hard look' at the applicant's proposed design in order to discern which design elements are inherent for the applicant's purpose and which design elements may be changed to achieve pollutant emissions reductions without disrupting the applicant's basic business purpose for the proposed facility."[23] The initial burden is on the applicant to describe why certain configurations are necessary to the design of the project to meet the fundamental business objective. The permitting authority must then examine the business purpose and determine if clean fuels or other lower polluting process will *redefine the source* or whether they should be listed as BACT under Step 1 and reconsidered in later steps. The *redefine the source* concept is illustrated by examples given by EPA from Environmental Appeals Board cases. Compare one case where it was reasonable to consider burning natural gas instead of coal, or in combination with coal, where the plant was already equipped to burn coal, with another case where the permitting authority properly excluded consideration of lower sulfur coal as *redefining the source* since the power plant was co-located with a mine and designed to burn coal from the mine. The focus in Step 1 must be the fundamental business objective rather than economic impacts or feasibility issues which are properly considered in later steps. Eliminating a lower-polluting process in Step 1 will save the significant time and effort that will be required to justify eliminating an option under later steps. Therefore, it is important to properly describe how fuels and other lower polluting processes factor into the business purpose of the proposed facility.

2. *Innovative Technologies*

The applicant may apply for coverage under the innovative technology waiver. The provisions of 40 CFR 52.21(b)(19) must be met.

3. *Identifying All Available GHG Control Options*

EPA focused its discussion of GHG control options on energy efficiency and carbon capture and storage "because these control approaches may be applicable to a wide range of facilities that emit large amounts of CO_2."[24] EPA recommends that permitting authorities use

[20] BACT Guidance at 27.

[21] http://www.epa.gov/nsr/ghgpermitting.html.

[22] BACT Guidance at 27

[23] Id.

[24] BACT Guidance at 30.

the discretion available under BACT analysis to include the most energy efficient options for both GHG and non-GHG NSR pollutants.[25]

4. *Energy Efficiency*

The BACT Guidance underscores that the primary consideration for GHG-emissions is energy efficiency stating that energy efficiency, is a "particularly important consideration for GHGs since the use of add-on controls to reduce GHG-emissions is not as well-advanced as it is for most combustion-derived pollutants."[26] The *redefining the source* concept is critical to the proper development of energy efficient options.

EPA suggests looking at two categories of energy improvement options: (1) technologies or processes that maximize the efficiency of the individual unit and (2) options that could reduce emissions from a new facility by improving overall utilization of thermal energy and electricity at a site. EPA did admit that the second category should not be taken down to the lowest possible level quoting in a footnote, "One federal court has recognized the undesirability of making the BACT analysis into a 'Sisyphean labor where there was always one more option to consider.'"[27] Even without considering the smallest energy efficiencies, a BACT review that considers all options to reconfigure for energy efficiency will be a heavy burden to bear.

EPA also discusses the fact that it is sometimes difficult to accurately predict energy efficiency particularly for cutting edge technologies. One option is to request the vendor to provide expected results and guaranteed results. In addition, the permit can be written to acknowledge uncertainty and set BACT limits based on operational experience.

5. *CCS*

EPA determined that carbon capture and storage (CCS) "is an add-on pollution control technology that is "available" for large CO_2-emitting facilities including fossil fuel-fired power plants and industrial facilities with high-purity CO_2 streams." For fossil fuel fired power plants, hydrogen production, ammonia production, natural gas processing, ethanol production, ethylene oxide production, cement production and iron and steel manufacturing, EPA states that CCS should be listed in Step 1.[28] This determination was made despite the fact that EPA cites that the Interagency Task Force on Carbon Capture and Storage determined that CCS technologies are not ready for widespread implementation primarily because they have not been demonstrated at the scale necessary for commercial use.[29]

---

[25] Id.

[26] Id.

[27] BACT Guidance at 32 quoting *Sierra Club v. EPA*, 499 F.3d. 653, 655 (7th Cir. 2007).

[28] BACT Guidance at 34.

[29] See Report of the Interagency Task Force on Carbon Capture and Storage p. 50 (http://www.epa.gov/climatechange/policy/ccs_task_force.html).

B. Step 2: Eliminate the Technically Infeasible Options

Technical infeasibility should be based on physical, chemical or engineering principles that show that the option will not be successful. An option is considered technically feasible if it is available and applicable to the source under review. EPA also suggests that it is important to consider whether a technology has been "demonstrated," that is, whether it has been successfully installed on the type of source under review. The BACT Guidance indicates that information regarding vendor guarantees can be used to help demonstrate technical feasibility.

1. *CCS*

EPA discusses at length how CCS might be eliminated in Step 2. The main components of CCS are CO_2 capture and/or compression, transport and storage. If any component is not feasible for the source under review, it can be argued that the technology is infeasible. EPA notes that CCS may not be feasible in all cases and goes on to note that the level of detail supporting a justification will vary. According to the BACT Guidance, at the level of Step 2 only technical arguments should be made. Other issues such as economics are addressed in later steps.

C. Step 3: Ranking of Controls

Under Step 3, the options are ranked based upon the overall effectiveness for the NSR pollutant under review. The BACT Guidance notes that control options traditionally have been ranked according to "input-based metrics" but that it may be more appropriate for GHG control options to be based on "out-put based metrics" (e.g. pounds per ton of cement) as such metrics should better reflect energy efficiency.[30] In addition, EPA notes where plant-wide measures to reduce emissions are being considered, the concept of "overall control effectiveness" will need to be refined to ensure that the suite of measures with the lowest net emissions from the facility is the top ranked measure.[31] In other words, the ranking will need to include sets of options rather than, simply, individual measures. Finally, to best reflect the impact on the environment, the BACT Guidance states that the ranking should be based on total CO_2e rather than mass or mass for individual GHGs.[32]

D. Step 4: Economic, Energy and Environmental Impacts

Under Step 4, the economic, energy and environmental impacts of each option are considered by the permitting authority. "The top control option should be established as BACT unless the applicant demonstrates and the permitting authority agrees, that the energy, environmental or economic impacts justify a conclusion that the most stringent technology is not achievable' in that case."[33] If the conclusion is that the top option is not "achievable," the next

[30] BACT Guidance at 38.

[31] BACT Guidance at 39.

[32] Id.

[33] Id.

ranked option is assessed on the same basis. Though EPA has referred to Step 4 as the "collateral impact analysis" and, as such. requires a consideration of both direct and indirect impacts, the BACT Guidance suggests that indirect considerations are only appropriate when considering environmental impacts. Repeated throughout Step 4 are admonishments to the permitting authority to create a well-documented record. Perhaps EPA is suggesting that these decisions will be ripe for litigation.

The focus of the economic analysis is cost effectiveness. The BACT Guidance states that the applicant must demonstrate that the costs of pollutant removal for a particular option are disproportionately high.[34] For GHG control strategies, a less detailed quantitative analysis or even qualitative analysis, may be sufficient. For example, if a new pipeline is required for CCS, then that very fact might be sufficient to justify that it is not achievable.

According to the BACT Guidance, the energy impacts analysis should focus on direct energy consumption, such as consumption of fuel, electricity or thermal energy. Indirect impacts such as the energy to produce the raw materials needed to make the control equipment are not traditionally considered, according to EPA.[35]

The environmental analysis primarily focuses on indirect impacts, including waste generation, water use and the emission of other pollutants. The trade-offs should also be assessed. These types of considerations are often hard to balance and EPA notes that there are few cases where the indirect impacts were a deciding factor in selecting BACT.[36]

The BACT Guidance reiterates the impacts cited by EPA in making its final determination that emissions of GHGs endanger both public health and welfare. These impacts include increases in ambient ozone and related health effects, increased likelihood of heat waves affecting mortality and morbidity, risk of increased intensity of hurricanes and floods, increased severity of coastal storms due to rising sea levels, weather related risks to food production, agriculture, water resources, coastal areas, energy and infrastructure, as well as extreme events such as wildfires, flooding and drought. Though not stated, by listing these impacts, EPA could be suggesting that all of these impacts should be considered in a GHG BACT review.

EPA places emphasis on the fact that the permitting authority has "a great deal of discretion in deciding the specific form of the BACT analysis and the weight to be given particular impacts under consideration." Further, EPA states that the permitting authority can assess the impacts of all technologies under consideration. The BACT Guidance goes on to note that the trade-off between increasing one pollutant to control another can be considered though energy efficiency options should generally result in the decrease of all pollutants. When considering tradeoffs, the BACT Guidance instructs permitting authorities to focus on relative levels of emissions rather than endpoints. This is due to the fact that GHG emissions result in

[34] Id.

[35] BACT Guidance at 40.

[36] BACT Guidance at 41.

impacts on a global scale and modeling is not available to quantify impacts attributable to a specific project. Thus EPA suggests the focus should be "on the GHG emissions that might be gained or lost by employing a particular control strategy and how that compares to the level of collateral increase for other regulated NSR pollutants."[37] Recognizing that this could be an endless task, the BACT Guidance further instructs permitting authorities that they need not consider every possible environmental endpoint impact of every conceivable technology.[38] They may also limit the analysis to only those control alternatives that remain under consideration.

Since there is little history of BACT GHG analyses, there is little data for a permitting authority to rely upon in making its decisions on the reasonableness of cost effectiveness values. That uncertainty is exacerbated by the fact that the cost effectiveness of historically regulated pollutants is based on a significantly lower volume of emissions which suggests that the cost effectiveness numbers for GHGs will be significantly lower making evaluations more difficult.

The BACT Guidance recognizes that permitting authorities have a great deal of flexibility in analyzing economic, energy and environmental impacts. Applicants will find little solace in the fact that "[t]here are no 'right' answers to these permitting decisions that can be described in this general guidance, because permitting authorities have a wide range of discretion in consideration of the various direct and indirect economic, energy and environmental impacts that might be informative to the top-down BACT analysis for GHG emissions."[39] EPA does offer some standards to abide by, instructing permitting authorities to "continue to focus on significant or unusual environmental impacts that have the potential to affect the selection or elimination of a control alternative."[40]

E. Step 5: BACT Selection and Permit Limitations

The most effective control option not eliminated in Step 4 should be selected as BACT. The previous steps, particularly Step 3, should provide an analysis of the range of effectiveness which can be used to develop a permit limit.[41] Consideration should be given to adopting achievable limits and in certain cases BACT limits that can be adjusted or optimized might be used.[42] The BACT Guidance suggests that the proper focus for GHGs limits is on long-term metrics such as monthly or yearly averages rather than hourly or daily metrics.[43] Out-put metrics are recommended and EPA suggests that the permitting authority will find the metrics developed in the draft handbook entitled *Output-based Regulations: A Handbook for Air*

[37] BACT Guidance at 43.

[38] Id.

[39] BACT Guidance at 45.

[40] BACT Guidance at 43.

[41] Id at 45.

[42] BACT Guidance at 46.

[43] BACT Guidance at 47.

Regulators (August 2004) useful.[44] Work practices such as an Environmental Management System focused on energy efficiency might also be included especially in cases where specific metrics are unavailable.[45]

VI. Other PSD Requirements

Since there are currently no NAAQS or PSD increments established for GHG, EPA concluded in the Tailoring Rule that these PSD requirements do not apply to GHG.[46] However, if PSD is triggered for a GHG source, all regulated NSR pollutants, which the new source emits in significant amounts, would be subject to PSD requirements. EPA also states that applicants should not be required to model or conduct ambient air monitoring for GHG or to assess impacts to Class I areas as GHG impacts are more global in nature.[47]

VII. Title V Considerations

Based on the Tailoring Rule, no source will be required to obtain Title V permits solely as a result of their GHG emissions between January 2, 2011 and June 30, 2011. Under the second step of the Tailoring Rule, starting on July 1, 2011, those sources that meet both of the following conditions will need to address initial requirements for GHG in the Title V permit:

> An existing or newly constructed source emits or has the PTE GHGs in amounts that equal or exceed 100 TPY on a mass basis (no GWPs applied); and
>
> An existing or newly constructed source emits or has the PTE GHGs in amounts that equal or exceed 100,000 TPY on a CO_2e basis (GWPs applied).

It is interesting to note that Mandatory Greenhouse Gas Reporting rules are not considered applicable requirements under the Title V regulations and need not be included.[48] Title V permits must contain any GHG requirements from the PSD review process (e.g. GHG BACT requirements). It is possible that sources may need to address GHG related information in their Title V applications even if they do not have GHG BACT requirements, as the permitting authority must have enough information to determine if a requirement (e.g. PSD) is applicable. The information would generally need to support why the project does not trigger BACT for GHG emissions.

If a source becomes subject to Title V on July 1, 2011, it will need to apply for a Title V permit within 12 months of July 1, 2011. If BACT for GHG has not been established, the source will need to include a description of the emission sources at the facility that cause it to exceed the

[44] BACT Guidance at 46.

[45] BACT Guidance at 47.

[46] BACT Guidance at 48.

[47] Id.

[48] BACT Guidance at 53.

applicability trigger for GHG emission sources.[49] Other applicable requirements must also be included. Flexible Air Permits (FAP), which authorize certain types or categories of physical and/or operational changes are encouraged.[50] Federal FAPs include preapproved changes and can be distinguished from the Texas flexible permit program that has not been approved by EPA.

VIII. Economic Impacts

Simply put, the process described in the BACT Guidance will most likely require significant time and money. The BACT Guidance is replete with inherent uncertainties. Furthermore, throughout the BACT Guidance, permit authorities are instructed to create a detailed record, another indication that these reviews will require considerable time at substantial expense. Finally, the top-down review process itself is very time consuming and expensive. Given the number of facilities impacted, even after applying the "common sense approach" outlined in the Tailoring Rule, the resources of the permitting authorities are likely to be overwhelmed resulting in delay which could impact business opportunities and innovation.

A. Inherent Uncertainties

In general, technologies for control of GHGs are currently not available, particularly if CO_2 storage is required, resulting in a focus on energy efficiency. Energy efficiency, by its nature, will make it difficult to focus the BACT review on a specific unit and may result in a review of the entire operation. Coupled with the fact that the nature of GHG impacts listed in the BACT Guidance are inherently uncertain and large in scale, the scope of the BACT review recommended in the BACT Guidance is uncertain.

There are even uncertainties in some of the basic concepts that will be used in the GHG BACT review such as CO_2e and the associated GWP, as well as out-put based metrics. CO_2e and GWPare not battle tested concepts, which may result in disagreements even before reaching the uncertainties related to the feasibility of a given BACT option.

Moreover, EPA promotes a "wide range of discretion" on the part of the permitting authority for each case-by--case review. Very little is offered in the way of limitation other than the permitting authority need not consider every possible impact or permutation and should focus on the significant or unusual environmental impacts with the understanding that there is no right answer.

B. Record

EPA notes that reference data, models and tools for the evaluation of GHGs are not readily available to perform a GHG BACT review. If that is the case, there will be very little available data on which a permitting authority can base its decisions, even for the more concrete

[49] BACT Guidance at 55.

[50] BACT Guidance at 56.

issues such as cost efficiencies. As a result, the applicant will carry a heavy burden in developing applications that will withstand GHG BACT review.

In addition, throughout the BACT Guidance, the detail of the record supporting the decision of the permitting authority is discussed. The direction given in the BACT Guidance is that the level of detail required in the record is variable. Applicants may need to err on the side of providing substantial detail since the BACT Guidance suggests that an expansive review may be appropriate. It may even be prudent for applicants to develop the record with an eye toward litigation or administrative challenges, which generally results in additional expense.

C. How Much Process Is Due?

The BACT Guidance instructs permit authorities that they have broad discretion with regard to not only the scope but also the process used for the review. Within the top-down process are many areas where boundaries will need to be established.

For example, several of the concepts discussed in the BACT Guidance including *redefining the source* and *overall efficiency,* may broaden the scope of the BACT review which in turn will expand the process needed to perform the review. In addition, EPA seems to suggest that it is better to list as many options as possible in Step 1 and then go through the process of justifying why each option should be removed before a decision can be reached as to BACT. In particular, EPA has suggested that CCS should be listed as BACT for several industries requiring the applicant and permitting authority to go through a lengthy process to rationalize why it is not feasible for a given project. Going through this type of exercise for less concrete options such as those based on energy efficiency is likely to require an even more burdensome process to develop a record that will support the permitting authorities findings. In conclusion, top-down BACT is a resource intensive process that may not be the best fit for decisions where there "is no right answer."