February 25, 2008

Mr. Brad Musick
Air Quality Specialist
New Mexico Environmental Department, Air Quality Bureau
1301 Siler Road, Building B
Santa Fe, NM 87507

Re: **Comments on NMED Final Report on Oil and Gas Greenhouse Emission Reductions – December 31, 2007**

Dear Mr. Musick:

On behalf of ConocoPhillips Company, I am pleased to provide our attached comments and suggested changes to the above referenced report.

As the largest oil and gas producer in the state of New Mexico, ConocoPhillips has a substantial economic interest in this state, so the actions anticipated and proposed in this report as wells as other pending greenhouse gas (GHG) actions have the potential to significantly impact our business endeavors. Notwithstanding our business interests, ConocoPhillips is committed to conducting our operations in a safe and environmentally responsible manner, so we are equally concerned about the issues of climate change and doing our part towards protecting and improving the environment in the State of New Mexico.

We recognize that the above referenced report was conducted under a considerable time constraint and was specifically targeted to " conduct a study of the voluntary and mandatory mechanisms for reducing greenhouse gas emissions from oil and gas processes "by January 1, 2008 as outlined in the Governor's Executive Order 2006-069. The NMED report has framed the relevant issues and made recommendations towards fulfilling this executive order criterion of 20% methane emissions reductions by 2020 and reducing carbon dioxide emissions from fuel combustion. However, some of the information in the report is factually incorrect and in some instances, the implied supposition in key areas is not supported by the facts provided.

Given our considerable experience in the area of oil and gas operations as well as emissions reductions, ConocoPhillips has a number or comments and suggestions on issues raised in this report. We have carefully reviewed the report and our comments are offered in the spirit of improving both the information in the report and the process for achieving meaningful GHG emissions reductions in a balanced manner.

ConocoPhillips would like to thank you and the NMED for this opportunity to review the report and provide our comments and suggestions. If you have any questions about this submittal, please contact me at (505) 326-9842.

Sincerely,

Bruce A. Gantner, PE
Regulatory Liaison/Energy Efficiency Engineer

Cc: John Zent, Sharon Zubrod, Rick Wiederstein

ConocoPhillips Comments on NMED's Final Report Entitled Oil and Gas Greenhouse Gas Emission Reductions-December 31, 2007

The following sections provide ConocoPhillips comments and suggested changes on various issues and statements addressed in the NMED report referenced above. Our comments are organized into the four general areas, each of which has a separate section.

I. Process for Accomplishing Executive Order

ConocoPhillips supports the State of New Mexico in your effort to advance the goal of environmentally effective and economically efficient greenhouse gas management. We are aware of parallel actions that the State of New Mexico is taking with respect to the Western Climate Initiative (WCI) and The Climate Registry (TCR). These initiatives are moving in the direction towards establishing a regional "cap and trade" approach in which certain industries will be issued a cap in GHG emissions which will be established through some process yet to be determined but almost certainly through the TCR. Consistent with ConocoPhillips comments submitted on the WCI process, ConocoPhillips supports a mandatory national framework to address GHG emissions which would include national legislation to require significant reductions of GHG emissions. ConocoPhillips believes that a national framework including national legislation to require significant GHG emission reductions is best suited for achieving mandatory emissions reduction in an economic and equitable manner while being the least disruptive to the national and state economy. For this to occur, we feel it is imperative that such a national program is not encumbered by competing state or regional initiatives. This does not preclude the right of the State of New Mexico to develop climate-related goals and measuring progress towards those goals.

The NMED report, "the report", makes considerable reference to another report prepared by the Climate Change Advisory Group (CCAG) which was commissioned by Governor Richardson in January 2003 to study the broad issue of climate change and make recommendations for the State of New Mexico. ConocoPhillips was represented on that work group and was specifically involved in the Energy Supply committee which prepared both the ES-12 and ES-13 goals referenced in the report above.

The CCAG report recommends implementation of programs such as the EPA Natural Gas STAR and the New Mexico San Juan VISTAS programs, both of which are designed as voluntary emissions reduction initiatives. The CCAG

report also emphasizes that the NMED should actively promote participation in these programs. ConocoPhillips is an active participant in both programs, believes in the value of such measures to promote greenhouse gas reduction and would urge continued support for such programs as a national framework is being developed.

II. Tracking of Progress in GHG Emission Reductions

"The report" recommends that the highest [priority] be given to creation of metrics for tracking progress in achieving the emission reduction goals set forth in the executive order and that this process should be undertaken jointly with the NMOCD, with stakeholder input, and should identify appropriate metrics by January 1, 2008. "The report" goes further to state that NMED should evaluate progress annually.

ConocoPhillips agrees that a tracking process at the state level is both necessary and appropriate. In our opinion the process should be simple to implement and the least disruptive of both business and government .The NMED has proposed four alternative methods for tracking progress towards GHG emission reduction. ConocoPhillips does not support any of these alternatives and instead proposes mandatory reporting of actual methane emission reductions as the metric used to track progress. The basis of our objections and the reasoning behind our proposal is in the following sub-sections.

a. Voluntary Reporting of state level Gas STAR reductions

In this proposal, the NMED would request partners within the EPA Natural Gas STAR program to separately calculate and report the NM portion of their Gas STAR emission reductions to the NMED. Although ConocoPhillips agrees with the concept of reporting emissions reductions for monitoring progress towards the attainment of the Executive Order goal, , we do not support a system that does not apply across the entire industry in NM and that singles out EPA Natural Gas STAR partners for reporting.

Firstly, the focus of the EPA Natural Gas STAR program is methane emissions only and does not account for reductions made in other GHGs. This would mean a dual reporting system in which operators would calculate and report the NM portion of their Gas STAR emission reductions (i.e., methane) and separately report emission reductions for other gases.

A second key issue, as was noted in "the report" is that not all companies are Natural Gas STAR partners so this would have the effect of focusing only on larger companies who voluntarily enrolled in the Gas STAR program...

Additionally, despite the design to capture all emissions reductions annually, not all reductions are necessarily captured each year in the EPA Natural Gas STAR database. This database merely reflects the voluntary reporting of methane emission reductions that a partner desires to report.

As a final point, the company-specific reductions reported by companies into the EPA Natural Gas STAR database are confidential and the agreement signed by companies in becoming partners specifically specifies this confidentiality agreement.

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b. Mandatory emissions reporting (NMED Air Quality Bureau and Albuquerque/Bernalillo County Air Quality Divisions

In this proposal, the NMED references the recently passed regulation in the State of New Mexico in which certain facilities are required to begin annual reporting of GHG emissions, the first reporting year being 2008 by some time in 2009. As the rule currently stands, only CO_2 must be reported for calendar year 2008 for Title V facilities only, methane is added for calendar year 2009 reporting for these same facilities, and for calendar year 2010 reporting of both CO_2 and methane would be required by all permitted and registered facilities beginning in 2011. ConocoPhillips does not support this mandatory reporting framework as an acceptable means for measuring progress against the executive order goals for several reasons.

Firstly, ConocoPhillips supports a process of measuring emission reduction and not actual emissions since this will be the most reliable means to show progress towards the desired goal An inventory obtained sometime in 2011 for all permitted and registered sources will not correlate in a meaningful way with the inventory prepared for the CCAG, which is where the goal of 20% reductions was obtained. The CCAG inventory was admittedly less rigorous than a bottom up inventory, but it was sufficient for the purpose of establishing a rough target of the GHG emissions in NM and in determining the relative areas of significance. (i.e., power plants, energy supply, transportation). Although NMED has set a methane emissions reduction target of 1.3 mmtCO2e based upon the CCAG inventory, it seems more relevant to ConocoPhillips that a more accurate, bottom-up, industry-wide inventory be developed and delay any actual target until that inventory is completed. Hence, ConocoPhillips is more favorably inclined towards measuring emissions reductions as a viable metric which, on an interim basis, provides the state with some measure or progress until a more reliable target is determined.

Beyond this basic issue, the NMED mandatory inventory will not apply to the great majority of oil and gas facilities, even in the 2011 submittal. As indicated in “the report” the reporting of methane emissions by smaller facilities will only

occur for permitted or registered units. ConocoPhillips would point out that the vast majority of 40,000+ well facilities in NM are neither permitted or registered with the NMED as their respective emissions fall below both permitting or registration thresholds for criteria pollutants.

c. Surveys

Under this proposal, the use of survey data for obtaining GHG emissions from "area sources" would be inventoried to add to emissions inventory data from permitted sources to obtain the absolute emissions from all sources during a given year. Reference was made to a similar survey done for the NMED in the Four Corners Area of NW New Mexico in which a consultant solicited and quality checked this data for use in an ozone modeling effort. Although this approach worked well for the ozone issue, ConocoPhillips does not support this approach for several reasons.

For the same reasons given in item b above, ConocoPhillips supports the metric of emission reductions instead of this method which will provide an absolute level for total methane emissions from the oil and gas industry segment. An absolute methane emissions number for a given year will have little bearing to the estimates provided for methane emissions calculated for the CCAG inventory since the former was a top down inventory and the new inventory done by survey would be a bottom-up inventory. Although NMED has set a methane emissions reduction target of 1.3 mmtCO2e based upon the CCAG inventory, it seems more relevant to ConocoPhillips that a more accurate, bottom-up, industry-wide inventory be developed and delay any actual target until that inventory is completed. Hence, ConocoPhillips is more favorably inclined towards measuring emissions reductions as a viable metric which, on an interim basis, provides the state with some measure or progress until a more reliable target is determined.

d. Voluntary Emissions Reporting [e.g., The Climate Registry (TCR)]

This proposal certainly has some appeal as TCR will probably be the source of reporting under a federal "cap and trade" program. Under this proposal, entities would voluntarily report their GHG emissions to TCR annually. As acknowledged by NMED in "the report", mostly larger companies that produce, process, transmit, or distribute natural gas and/or crude oil would report their emissions and then NMED would extrapolate this data for the state as a whole based upon the volumes of those companies who reported to the volumes in the state as a whole. Although ConocoPhillips accepts TCR as a viable entity for tracking GHGs as part of measuring progress towards nationwide and statewide goals, it seems inappropriate for tracking industry sector performance with respect to methane emission reductions stated in the Governor's Executive Order.

For the same reasons given in items b and c above, ConocoPhillips supports the metric of emission reductions instead of this method which will provide an

absolute level for total methane emissions from a portion of the oil and gas industry segment with subsequent extrapolation to estimate the methane emissions from the industry as a whole. An absolute methane emissions number for a given year will have little bearing to the estimates provided for methane emissions calculated for the CCAG inventory since the former was a top down inventory and the new inventory done through TCR would be a bottom-up inventory. Although NMED has set a methane emissions reduction target of 1.3 mmtCO2e based upon the CCAG inventory, it seems more relevant to ConocoPhillips that a more accurate, bottom-up, industry-wide inventory be developed and delay any actual target until that inventory is completed. Hence, ConocoPhillips is more favorably inclined towards measuring emissions reductions as a viable metric which, on an interim basis, provides the state with some measure or progress until a more reliable target is determined.

e. ConocoPhillips proposal for tracking progress towards the Executive Order Goal

ConocoPhillips would propose that a simple measure be adopted in which companies would internally document reductions in both methane and CO_2 emissions and report these biennially through either the San Juan VISTAS program or its equivalent. Since the desired goal is a 20% reduction in methane emissions based upon some future bottom-up, industry-wide inventory, then measuring emissions reductions as a viable metric on an interim basis and provides the state with some measure or progress until a more reliable target is determined. The progress measurement then is to assess the quantity of annual reductions made by 2020 to add up to this future target. A simplified reporting format for this approach is shown below:

2007-2008 Methane Emission Reductions
Company XYZ

Project Category	2007 Reductions (New)	2008 Reductions(New)
1. Insulated Vessels		
2. Pneumatic Devices		
3. Compressor Seals		
4. Enhanced Controllers		
5. PW Tank Centralization		
6. Other		

NMED mentioned in “the report” some concern with validating the data used to measure progress against the Executive Order goal. ConocoPhillips would advocate that each company must retain back-up data to corroborate with their biennial submittal of aggregated methane emissions. NMED could either conduct its own audit or contract with a third party to survey this data to validate it as necessary. ConocoPhillips does not support the submittal of project level data to NMED nor does it support the need to have this data verified and audited prior

to submittal to the agency as would be necessary under a “cap and trade” program.

III. Methane Emission in Relation to Prohibition of Waste

“The report” raises the issue that the NMOCD through the NM Oil and Gas Act enforces the prohibition on “waste” of oil and gas resources and possibly this “waste” prohibition should be expanded to some or all of the current practice of releasing methane to the atmosphere. “The report” contends that the concept of waste is now broader than the original interpretation of subsurface practices that leave the hydrocarbon resource in an unrecoverable state. It claims that the term “waste” embraces the unnecessary or excessive loss or destruction without beneficial use of natural gas or crude oil resulting from evaporation, seepage, leakage, or fire. It also references verbiage in the NM oil and gas regulations that prohibit the venting of natural gas except in certain specified circumstances.

ConocoPhillips strongly opposes any proposal to interpret existing, legitimate oil and gas industry practices used to recover natural gas and crude oil as “wasteful” and to prohibit or penalize companies from using these practices. Both the technology and operating practices for extracting, producing, processing, refining, and delivering crude oil and natural gas have advanced considerably over the 130+ years since the first oil was drilled in this country and present day practices are certainly more efficient than in the past. This does not mean that past practices were “wasteful” in the context of the technology and operating practices in the past nor are current technology and operating practices “wasteful”.

“The report” appears to justify this “wasteful” context by referencing a legal case in which a producer brought forth a legal claim against a midstream company for not meeting contractual conditions. The claim concerned interpretation of contractual language between the producer and the gas processor regarding reductions in gas volumes allowed for fuel, flaring, and forced majeure. It was quoted that and audit of the processors records found that a total of 22 bcf of natural gas could not be accounted for over a four period. “The report” then went on to say:

This is a significant quantity of gas relative to New Mexico’s estimated emissions. For comparison, the CCAG reports estimated annual methane emissions from all oil and gas operations was about 15 bcf. What actually happened to the unaccounted for gas was never determined in the court case.

ConocoPhillips objects to the implied message and bias of this entire section in “the report” which appears to assume that the unaccounted for gas was released to the environment and infers that industry practices, in this instance and others, are “wasteful”. ConocoPhillips, for one, is proud of our history in the State of New Mexico which in 2006 produced 575 bcf of natural gas and 4.54 million

barrels of crude oil in a safe, efficient, and environmentally responsible manner. In producing these volumes, it is a matter of fact that some volume of natural gas is consumed or released for legitimate practices such as flaring, fuels for heaters, and unloading wells. Estimates of gas used on lease or consumed in the process of producing natural gas and crude oil are reported annually to both the federal government and the State of New Mexico.

Although we acknowledge that NMED is within its right to publish factual data that provides statewide reported losses of natural gas used for fuel, flaring, and forced majeure and to bring forth these volumes as opportunities for improved energy efficiency and reduced GHG emissions, the manner in which this information is presented plus referencing an isolated case where a producer and gas processor are engaged in litigation over contractual issues as being evidence of "wasteful" practices is both unfair and biased.

IV. Emissions Reductions Strategies - Feasibility

"The report" lists a number of strategies for reducing both methane and CO_2 emissions within the oil and gas industry sector. The majority of these strategies come from two sources – the CCAG report mentioned previously and the EPA Natural Gas STAR website. In both sources, it is important to note that they state that *the technical and economic feasibility of these strategies as well as the emission reduction potential must be evaluated by the operator to determine the acceptability of a strategy on a case by case basis*.

The NMED commissioned a study by Dr. David S. Dixon, Department of Economics, University of New Mexico, to conduct an economic assessment of these various emissions reductions strategies. His report is logically economic focused and concluded that the key strategies for the respective sectors (i.e., production, transmission, and distribution) were very much economic under current gas prices for the commodities. For his economic assessment, he drew his cost and operational information from the EPA Natural Gas STAR work cases on their website and evaluated the most significant emissions source quoted for each segment. He also referenced in his report an EPA conclusion that methane emissions from completions were insignificant.

From ConocoPhillips experience, vented emissions represent the largest potential source of methane emissions for the production segment of the oil and gas industry. Pneumatic devices, which is the case reviewed by Dr. Dixon, is a subset of the vented emissions category and these devices do not represent the most significant source of methane emissions for our company based upon preliminary analysis. Besides economic feasibility, operational feasibility and field acceptance are very important matters to ConocoPhillips before we implement an emissions reduction strategy basin-wide. No technology solution will be acceptable in the field unless it provides minimal disruption to production

and is understood and accepted by those who maintain our wells on a daily basis.

Based upon ConocoPhillips experience at this stage of our efforts to reduce both methane and CO_2 emissions in the State of New Mexico, the following list represents the options that are either in the process of being implemented or evaluated for potential adoption.

Methane

Venting

- Plunger lift optimization
- Green completions
- Pneumatic Devices
- Flash gas from tanks

Carbon Dioxide

Insulation of Vessels w/heaters

- Separators
- Tanks
- Other vessels

Dehydrators

- Glycol recirculation rate
- Electrical glycol pumps
- Vapor recovery from still vents

Internal Combustion Engines

- optimization of horsepower
- fuel/air ratio controllers

Fugitives

- FLIR camera inspections/maintenance

The overall feasibility (i.e., economic, technical, operational) of any one or multiple of these options needs to be evaluated on a case by case basis for specific application in the field. For example, the GRI-EPA/ORD paper referenced in Mr. Dixon's report says that venting during completions emissions is negligible and has little impact. ConocoPhillips is just in the beginning phases of evaluating the potential of this technology in our completions and has so far found the volumes of gas significant enough in some circumstances to warrant evaluating Green Completions technology. Although we have only recovered gas from four wells to date, the net gas recovered was approximately 11,900 mcf of gas and the methane equivalent reduction from these two wells would be 177 metric tons. Successful application of this technology to our future well count could result in significant emissions reductions.

Another facet of Dr. Dixon's report that we question is the concept of old well attrition. Mr. Dixon's report quotes an emission reduction potential of older wells at 286 mcf of methane emissions per year and that newer wells would emit only 38 mcf of methane emissions per year. The basis for this quotation was from a CCAG-H7 paper which quotes an equivalent 1.325 high bleed control systems per well. Our analysis does not validate this estimate.

If one looks at pneumatic devices alone, the resulting analysis is shown in Figure 1. Using a mean vent rate of 7.6 scfh/device (total gas of which 80% is methane, two devices per well and one-half of all wells equipped with high bleed devices

(reference Marathon Oil study of 2006 found on EPA Natural Gas STAR website), we arrive at net methane emissions reductions approximately 20% of those quoted in Dr. Dixon's report. This ignores any reductions from well unloading but given that older wells are plugged due to low production volumes, we would assume negligible to low reductions in well venting volumes. Newer wells, on the other hand, would certainly be equipped with low/no bleed pneumatic devices and more up to date flow controllers that minimize venting.

Figure 1 – Calculated methane emission reductions from wells plugged and abandoned (assuming ½ of all wells are equipped with high bleed devices)

Year	No. of Pre-2008 wells shut in	Pneumatic methane emissions reductions	If ½ of pre-2008 wells are equipped with hi bleed pneumatics
2008	267	28,408	14,204
2009	263	27,983	13,992
2010	263	27,983	13,992
2011	263	27,983	13,992
2012	263	27,983	13,992
2013	263	27,983	13,992
2014	261	27,770	13,885
2015	259	27,558	13,779
2016	253	26,919	13,459
2017	248	26,387	13,199
2018	247	26,281	13,141
2019	245	26,068	13,034
Total	3095	329,208	164,654

V. Improving the Efficiency of Compressors

As a final issue for comment, reference is made to the comments on page 33 of "the report" in which air/fuel ratio controllers were suggested as a best management practice in the San Juan Basin. Figures of 230.9 tons/year of CO_2 reductions, 78 mcf/day of reduced fuel usage, increased production rates from 1-6%, and as much as $14,235/year on payback potential were quoted in this section. ConocoPhillips questions the information provided in this section as well as the implied benefit that all engines in the San Juan Basin would benefit by this technology.

Firstly, "the report" fails to provide the full context of the PRO Fact Sheet No. 111 located at the EPA Natural Gas STAR website. The following quotes are provided:

Applicability: The greatest opportunities for system and efficiency improvements are on rich burn, high-speed, turbocharged engines (1,000 hp to 3,000 hp). (Note: Few engines in the SJB are in this size category)

Technology: One partner has achieved a fuel savings of 18 percent to 24 percent and reduced associated emissions by installing an automated AFR control system called REMVue. REMVue monitors several engine parameters to correct imbalances. The system, marketed by REM Technology Inc., achieves the reported results through a combination of electronic control, use of a high-energy long duration spark to ensure reliable ignition, and other mechanical modifications to the engine. (Note: This is a specialized version of AFR and not the conventional type. The specific engine modifications made are not noted)

Emission Reductions: Payout economics are based solely on the value of the fuel reduction and capital cost to install the system on the 51 engines. The emissions reduction results showed that unburned hydrocarbons were down 3,549 tons per year, CO_2 emissions were down 2,309 tons per year, and CO emissions were down 83,300 tons per year. (Note: The CO_2 figures are for 51 engines so reductions per engine are 45.27 tpy and not 230.9)

ConocoPhillips brought these figures to the attention to two of our leading suppliers of rental compression units and both indicated there would need to be a much more comprehensive study to evaluate the benefits and liabilities from applying AFRs across the board and support the figures stated above. Both companies supply approximately 10% of their units with AFRs and the purpose is for application to rich burn engines to achieve emissions reduction in priority pollutants (i.e., NO_x). Lean burn engines rarely use AFRs because they achieve the desired emission factors by their design. Neither company indicated any noticeable benefit in fuel usage from those units with AFRs and those without.

Of particular concern to both companies were operational issues of engines with AFRs in the reduced ability to troubleshoot engine problems. Both companies informed ConocoPhillips that a maintenance technician's first choice on an engine experiencing problems with an AFR is to disconnect the AFR to allow focus on traditional issues such as spark plug gaps, timing, ignition coils, etc. Furthermore, the air-fuel adjustments required obtaining proper emissions and also getting the desired horsepower using AFRs is very much a balancing act and take a great amount of time according to the maintenance technicians. Hence, more time spent on maintenance seems to be the rule when AFRs are involved.