



1515 CLAY STREET, 20<sup>TH</sup> FLOOR  
OAKLAND, CA 94612-0550  
Telephone: 510-622-2145  
Facsimile: 510-622-2270  
E-Mail: [sandra.goldberg@doj.ca.gov](mailto:sandra.goldberg@doj.ca.gov)

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By Regular and Electronic Mail

(<http://ostseis.ani.gov/involve/comments/index.cfm>)

BLM Oil Shale and Tar Sands Draft Programmatic EIS  
Argonne National Laboratory  
9700 S. Cass Ave.  
Argonne IL 60439

**RE: Comments on the Oil Shale and Tar Sands Leasing Draft Programmatic  
Environmental Impact Statement**

The California Attorney General submits these comments pursuant to the National Environmental Policy Act (NEPA) on the Oil Shale and Tar Sands Leasing Draft Programmatic Environmental Impact Statement (PEIS).<sup>1</sup> The Bureau of Land Management (BLM)'s failure to consider, evaluate, and discuss the impacts of the leasing program on greenhouse gas (GHG) emissions and global climate change violates NEPA and the Energy Policy Act of 2005, and is inconsistent with the goals and policies of the Energy Independence Act of 2007. Because California is particularly vulnerable to climate change impacts, this matter is of particular interest to the State.

**1. Climate Change Background**

Before discussing the PEIS, it is important to understand why human-caused climate change is of particular concern to California.<sup>2</sup>

The impacts of climate change are not limited to remote parts of the world – they are being felt in California today. In California, global warming is causing damage to agriculture, losses to the Sierra snowpack, higher risks of fire, eroding coastlines, and habitat modification and destruction. Global warming affects public health directly, through heat-related illnesses and

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<sup>1</sup> The Attorney General provides these comments pursuant to his independent power and duty to protect the natural resources of the State from pollution, impairment, or destruction in furtherance of the public interest. (See Cal. Const., art. V, § 13; Cal. Govt. Code, §§ 12511, 12600-12; *D'Amico v. Board of Medical Examiners* (1974) 11 Cal.3d 1, 14-15.) These comments are made on behalf of the Attorney General and not on behalf of any other California agency or office.

<sup>2</sup>The physics of climate change are well described in the Intergovernmental Panel on Climate Change, Fourth Assessment Report, "Frequently Asked Questions" (at [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_FAQs.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_FAQs.pdf)) and need not be repeated here.

deaths caused by an increase in the number of hot days, and longer heat waves, and indirectly as higher temperatures favor the formation of ozone and particulate matter in areas that already have severe air pollution problems.<sup>3</sup>

According to a whitepaper from the California Climate Action Team on the impacts of climate change on agriculture, “California’s cornucopia is predicated on its current climate and its supply and distribution of irrigation water[.]”<sup>4</sup> Rising temperatures will cause crops growing in warmer climates to use more water and also may stimulate more weeds and insect pests. Pollination – essential to many California Central Valley crops – will be negatively affected if warming causes asynchronization between flowering and the life cycle of insect pollinators. And the occurrence of adequate winter chill, necessary for fruit trees to flower, may be lost for many fruit species.<sup>5</sup> Higher temperatures due to global warming also impact the dairy industry, which is a significant industry in California, by causing lower milk production and heat-related animal deaths.<sup>6</sup> The extended heat wave of 2006 caused the death of thousands of cows in California and created a backlog of carcasses for disposal.<sup>7</sup>

The health related impacts of climate change are of substantial importance to California. In recent testimony to Congress, Dr. Howard Frumkin, Director of the National Center for Environmental Health at the Centers for Disease Control and Prevention (CDC), identified the following major anticipated health impacts of climate change:

- Direct effects of heat;
- Health effects related to extreme weather events;
- Air pollution-related health effects;
- Water and food-borne infectious diseases;
- Vector-borne and zoonotic diseases; and
- Other pathogens sensitive to weather conditions.<sup>8</sup>

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<sup>3</sup>A summary of impacts to California, together with citations, is available on the Attorney Generals’ website at <http://ag.ca.gov/globalwarming/impact.php>.

<sup>4</sup>California Climate Change Center, *An Assessment of the Impacts of Future CO2 and Climate on Californian Agriculture* (March 2006) at p. 1, at <http://www.energy.ca.gov/2005publications/CEC-500-2005-187/CEC-500-2005-187-SF.PDF>.

<sup>5</sup>*Id.*, Abstract.

<sup>6</sup> Dairy is the top agricultural commodity in California, with \$4.1 billion of receipts in 1999. California Farm Bureau Federation at <http://www.cfbf.com/info/moca.cfm#facts>

<sup>7</sup>Williams, “Dairy producers regroup after cow deaths,” Bakersfield Californian (Aug. 5, 2006), at <http://www.bakersfield.com/102/story/66292.html>.

<sup>8</sup> Testimony to Select Committee on Energy Independence and Global Warming, United States House of Representatives, April 9, 2008, at <http://www.cdc.gov/print.do?url=http%3A//www.cdc.gov/washington/testimony/2008/t20080409.htm>

The 2006 heat wave caused over human 141 deaths in California.<sup>9</sup> A recent Stanford study details how for each increase in temperature of 1 degree Celsius (1.8 degrees Fahrenheit) caused by climate change, the resulting air pollution would lead annually to about a thousand additional deaths and many more cases of respiratory illness and asthma.<sup>10</sup> The study also finds that the effects of warming are most significant where the pollution is already severe. (supra, fn. 8). Given that California is home to six of the ten U.S. cities with the worst air quality, the State will bear a disproportionate effect from carbon-dioxide induced global warming compared with the rest of the United States. Id. The analysis finds that carbon dioxide increases air pollution-related mortality and other health problems in California at a rate at least 2.5 times that of the United States as a whole. Id.

Dr. Frumkin from the CDC also recognizes that “[t]he effects of climate change will likely vary by geographic area” and notes that “[t]he West coast of the United States is expected to experience significant strains on water supplies as regional precipitation declines and mountain snow packs are depleted.” (supra, fn. 7). This has great significance for California, which relies heavily on snow melt from the mountains for its water supply.

The atmospheric concentration of CO<sub>2</sub>, the leading GHG, is now 385 parts per million (ppm),<sup>11</sup> higher than any time in the last 650,000 years,<sup>12</sup> and rising at about 2 ppm per year. According to experts, an atmospheric concentration of CO<sub>2</sub> “exceeding 450 ppm is almost surely dangerous” to human life because of the climate changes it will cause.<sup>13</sup> Thus, we are fast approaching a “tipping point,” where the increase in temperature will create unstoppable, large-scale, disastrous impacts for all the inhabitants of the planet.<sup>14</sup> We must take prompt action and control of our future. In the words of Rajendra Pachauri, Chairman of the United Nations Intergovernmental Panel on Climate Change, “If there’s no action before 2012, that’s too late. What we do in the next two to three years will determine our future. This is the defining

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<sup>9</sup> Munoz, Olivia, “141 Deaths Later, Heat Wave Appears Over” Associated Press, July 28, 2006, at: [www.washingtonpost.com/wp-dyn/content/article/2006/07/28/AR2006072801304\\_pf.html](http://www.washingtonpost.com/wp-dyn/content/article/2006/07/28/AR2006072801304_pf.html).

<sup>10</sup> Jacobson, Mark Z., *On the causal link between carbon dioxide and air pollution mortality*, Geophysical Research Letters, Vol. 35 L03809 (2008), available at: [www.stanford.edu/group/efmh/jacobson/ve.html](http://www.stanford.edu/group/efmh/jacobson/ve.html); see also, Mark Z. Jacobson, Professor of Civil & Environmental Engineering, Stanford University, April 9, 2008, Testimony to Select Committee on Energy Independence and Global Warming, United States House of Representatives at: <http://globalwarming.house.gov/pubs/pubs?id=0036>

<sup>11</sup> <http://www.esrl.noaa.gov/gmd/ccgg/trends/>

<sup>12</sup> IPCC 4<sup>th</sup>, WGI, Frequently Asked Question 7.1, *Are Increases in Atmospheric Carbon Dioxide and Other Greenhouse Gases During the Industrial Era Caused by Human Activities?* (at [http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1\\_Print\\_FAQs.pdf](http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Print_FAQs.pdf))

<sup>13</sup> See [http://www.nasa.gov/centers/goddard/news/topstory/2007/danger\\_point.html](http://www.nasa.gov/centers/goddard/news/topstory/2007/danger_point.html).

<sup>14</sup> See *ibid.*

moment.”<sup>15</sup>

As the world’s climate experts have concluded, if we do not drastically reduce our greenhouse gas emissions, the climate impacts we are observing and experiencing are going to get worse, and, at some point, we may even lose the ability to control the problem. There is the risk that temperature increases will set in motion unstoppable “feedback loops” that cause rapid, non-linear impacts on climate. For example, the disintegration of large areas of snow and ice will expose darker surfaces that absorb more sunlight, raising temperatures and speeding up the further loss of snow and ice.<sup>16</sup> Higher temperatures will thaw the arctic tundra, causing organic materials in the permafrost to decompose, thereby releasing large amounts of methane. Id. Since methane is a powerful greenhouse gas (21 times more potent than carbon dioxide), atmospheric temperature is likely to increase in turn. Id. And warmer oceans will be less able to absorb carbon dioxide, leaving more carbon dioxide in the atmosphere.<sup>17</sup> The strength of this feedback effect varies considerably among models. Id. Uncertainty about these feedback loops results in uncertainty about the extent of climate change impacts under various emission scenarios and the trajectory required to stabilize atmospheric carbon concentrations. (Id., at pp.38 and 73).<sup>18</sup>

## **2. Description of the Project**

The Bureau of Land Management within the U.S. Department of Interior (DOI) (hereafter referred to jointly as “BLM”), prepared the PEIS to evaluate the environmental impacts of amending twelve Resource Management Plans (RMPs) -- adopted under the Federal Land Policy and Management Act -- to allow oil shale leasing on 1,991,222 acres of federal land (359,798 acres in Colorado, 1,000,453 acres in Wyoming and 630,971 acres in Utah), and to allow tar sands leasing on 431,224 acres in Utah. Oil extracted from these lands would be processed into transportation fuels.

Oil shale can be recovered by underground or surface mining of the rock, which is then retorted by heating to about 500 degrees Celsius. Another potential production method is in-situ retorting, which involves drilling numerous deep shafts into the rock and injecting heated water that, over time, converts the solid kerogen in the rock to liquid. The liquid is pumped out and

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<sup>15</sup> Rosenthal, *U.N. Chief Seeks More Leadership on Climate Change*, N.Y. Times (November 18, 2007).

<sup>16</sup> Historical Overview of Climatic Change Science, in *Climate Change 2007: The Physical Science Basis*, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007), p. 110, at: <http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter1.pdf>.

<sup>17</sup> *Climate Change 2007: Synthesis Report*, an Assessment of the Intergovernmental Panel on Climate Change, concerning the Fourth Assessment Report, p. 38, at: [http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4\\_syr.pdf](http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr.pdf).

<sup>18</sup> See also, James Hansen, et al., *Climate change and trace gases*, *Phil. Trans. R. Soc. A* (2007) 365, 1925-1954 (doi:10.1098/rsta.2007.2052), at <http://journals.royalsociety.org/content/13h462k7p4068780/>.

processed to remove impurities. Shell Oil is planning to test an in-situ retorting process that uses an ice wall, formed by injecting liquid ammonia into a system of pipes, as a barrier to keep groundwater out of the production area.

Tar sands are sandstone rocks consisting of a mixture of sand and clay, water, and heavy crude oil or bitumen. The PEIS states that U.S. tar sands are primarily found in Utah. It notes that they have different characteristics than Canadian tar sands, which makes recovery of oil more difficult and will require new technology.<sup>19</sup> The potential methods of tar sands development include surface mining and retorting or solvent extraction, or in-situ facilities using steam injection or combustion to liquify the oil that is extracted and processed on the surface.

The PEIS was prepared pursuant to the Energy Policy Act of 2005, which declares that oil shale and tar sands are “are strategically important domestic resources that should be developed to reduce the growing dependence of the United States on politically and economically unstable sources of foreign oil imports.” The Act provides that this development “*should be conducted in an environmentally sound manner, using practices that minimize impacts*” and “*should occur, with an emphasis on sustainability....*” (emphasis added.)

The Act directs the Secretary of the Interior to prepare a programmatic environmental impact statement for a commercial oil shale/tar sands leasing program in Colorado, Utah, and Wyoming within 18 months of the date of enactment. The Act directs DOI to adopt a regulation establishing the leasing program, within 6 months of completing the PEIS. The current PEIS only evaluates amendment of twelve RMPs to allow commercial oil shale and tar sands leasing. DOI has indicated that after the RMPs are amended, it will do a separate NEPA evaluation of the proposed leasing program regulation.

The Act does not require issuance of leases, but provides that “[i]f the Secretary finds sufficient support and interest exists in a State, the Secretary may conduct a lease sale in that State under the commercial leasing program.”

### **3. National Environmental Policy Act**

NEPA requires a federal agency “to the fullest extent possible,” to prepare “a detailed statement on . . . the environmental impact” of “major Federal actions significantly affecting the quality of the human environment.” 42 U.S.C. § 4332(2)(C)(i).

If there is a substantial question whether an action “may have a significant effect” on the environment, then the agency must evaluate that impact in an EIS. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998). An EIS should contain a discussion of significant environmental impacts, ways to minimize those impacts, and alternatives to the

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<sup>19</sup> It is widely recognized that Canadian tar sands production methods would not comply with U.S. environmental laws. Canadian tar sands are the fastest growing source of new GHG emissions in Canada -- currently estimated at 40 million tonnes per year (not including burning the oil) and predicted to almost double by 2020. See, Canada’s Toxic Tar Sands, The Most Destructive Project on Earth (Environmental/Defence, Feb. 2008), p. 16-17 at: <http://www.environmentaldefence.ca/reports/tarsands.htm>

proposed action. See 40 C.F.R. §§ 1502.1, 1502.14. Whether an action may “have a significant effect” on the environment requires consideration of “context” and “intensity.” *Id.* § 1508.27; see also *Nat’l Parks & Conservation Ass’n v. Babbitt*, 241 F.3d 722, 731 (9th Cir. 2001). This includes consideration of the “severity of impact,” “[t]he degree to which the effects on the quality of the human environment are likely to be highly controversial,” “[t]he degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks,” and “[w]hether the action is related to other actions with individually insignificant but cumulatively significant impacts.” 40 C.F.R. § 1508.27(b)(2), (4), (5), (7).

An EIS must address cumulative impacts, defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency . . . or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” 40 C.F.R. § 1508.7.

An EIS must include a “reasonably complete discussion of possible mitigation measures”, *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351, 109 S.Ct. 1835, 1846 (1989), citing, 40 C.F.R. 1508.25(b), 1502.14(f), 1502.16(h) and 1505.2(c), as well as discussion of the “environmental effects that cannot be avoided.” 42 U.S.C. § 4332(C)(ii)). Discussion of mitigation measures is recognized as an “important ingredient of an EIS... .” *Methow Valley Citizens Council*, 490 U.S. at 351.

#### **4. The PEIS Does Not Adequately Analyze GHG Emissions and Climate Change Impacts Under NEPA**

The PEIS improperly concludes that the GHG emissions from the oil shale and tar sands leasing program will not have a significant impact on the environment. The PEIS fails to comply with NEPA because it does not disclose, evaluate or estimate those GHG emissions or include a reasonable discussion of ways to minimize those emissions and the climate change impacts of the development. These are very serious omissions.

##### **a. Discussion of Climate Change in the PEIS**

The PEIS provides some basic information about global climate change and an estimate of annual carbon dioxide emissions in the affected areas.<sup>20</sup> It acknowledges that industrialization and burning fossil fuels “have caused CO<sub>2</sub> concentrations to increase dramatically and are likely to contribute to overall climatic changes.” (page 4-48; 5-40.) It highlights some uncertainties, but also acknowledges “increasing concentrations of GHG, however, are likely to accelerate the rate of climate change.” However, it concludes that “[t]he direct emissions of climate change air pollutants from oil shale development facilities are likely to be *a small fraction of global emissions.*” (Page 4-48, emphasis added.) The document contains an identical conclusion regarding tar sands. (Page 5-41.) While not expressly stating it, this represents a conclusion that

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<sup>20</sup> This number is 20.18 million tons per year. (page 3-99 - 3-100, Table 3.5.2-1.)

GHG emissions from the leasing program do not have a potential significant impact on climate change. In reliance on this conclusion, the PEIS does not attempt to estimate GHG emissions from development of the leases or to evaluate (either qualitatively or quantitatively) the impact on climate from those emissions.

BLM also fails to discuss the known information, published by the United Nations Intergovernmental Panel on Climate Change, National Academy of Sciences and other preeminent scientific bodies, about atmospheric carbon concentrations that may not be exceeded if we hope to avoid catastrophic climate change, which is relevant to evaluating the significance of impacts of this project.

**b. The PEIS Does Not Adequately Disclose and Analyze All of the Potential GHG Emissions that May Result from Offering Federal Lands for Leasing**

The PEIS entirely fails to quantify the GHG emissions that will result from the huge oil shale and tar sands commercial development program, and fails to evaluate the impact of those emissions on global climate change. Yet, at the same time, without quantifying or even estimating the project's GHG emissions, the PEIS concludes that the project would contribute only a small fraction of global GHG emissions, and will have an insignificant impact on climate change. BLM cannot reasonably make these conclusions without any quantification of the amount of direct and indirect GHG emissions that could result from the project. Moreover, because the PEIS refers to "direct" emissions, this finding was made without considering indirect emissions, which will be extensive.<sup>21</sup> For purposes of evaluating other environmental impacts of the leasing program, the PEIS assumes that the leasing program will result in construction of facilities that produce 50 bbl/day from oil shale surface mining, 200,000 bbl/day from oil shale in situ facilities, and 100,000 bbl/day of oil from tar sands facilities. (Page 4-2 and 5-2.). Yet, BLM made no attempt to evaluate the impact of GHG emissions using the same assumptions.

Moreover, with respect to all impacts, "BLM has determined that the amendment of land use plans to designate lands as available for application for commercial leasing would have *no impact* on the environment." (Page ES-5.) (emphasis added.) BLM bases this conclusion on the fact that the RMP amendments merely allow BLM to consider granting leases in the future, but do not commit BLM to a particular course of action, and future leasing and development will require site-specific NEPA evaluations. (Id.) This is contrary to NEPA, since the amendment of the RMPs is a necessary step that is part of a related course of actions that allows oil shale and tar sands development to proceed on federal lands, and that will result in significant cumulative

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<sup>21</sup> Indirect emissions would result from the large amounts of electricity needed for the production facilities and electricity needed to deliver the large amount of water the facilities would require. (PEIS, p. 4-13, 4-23, and 5-30 - 5-31.) Other indirect emissions would occur from transportation. In addition, because oil extracted from shale and tar sands may be heavier than conventional crude, refining the extracted material may require additional energy usage and GHG emissions as well.

environmental impacts.<sup>22</sup> This is particularly the case here, because the statute directs BLM to go forward with the leasing program by adopting regulations and then authorizes BLM to issue leases.

The PEIS also states, without adequate explanation, “[t]he magnitude of impacts and the applicability and effectiveness of mitigation measures cannot be assessed at the programmatic level and will need to be evaluated on a project-by-project basis....” (Page ES-7.) This is in direct contrast to the U.S. Department of Energy’s Clean Coal Technology Final Programmatic Environmental Impact Statement (DOE-EIS-0146), that estimates incremental and cumulative CO<sub>2</sub> emissions expected from commercialization of various clean coal technologies.<sup>23</sup> BLM is avoiding its obligation under NEPA to evaluate the overall climate change (and other) impacts of the proposed leasing program and identify measures that could reduce or avoid environmental harm before the agency takes action to amend the RMPs. BLM has significant discretion in determining how much land should be offered for leases at this time, and what conditions must be satisfied before leasing occurs, and those decisions are directly relevant to the magnitude of the climate change impacts from the leasing program. Postponing consideration of those impacts undermines the purpose of doing a programmatic environmental review. It is also contrary to NEPA, which requires an agency to evaluate environmental impacts before it makes decisions about how to proceed.<sup>24</sup>

In concluding that the project will not have a significant impact on climate change, the PEIS ignores research indicating that producing fuel from oil shale and tar sands will result in significantly greater GHG emissions than producing fuel from conventional petroleum, including information from the U.S. Department of Energy.<sup>25</sup> The oil shale and tar sands production

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<sup>22</sup> See *Kleppe v. Sierra Club*, 96 S.Ct. 2718 at 2726, 2730, 427 U.S. 390 at 401, 410 (1976) (when actions pending before agency are integrated into a coherent plan or otherwise interrelated, their impacts must be considered together); *National Wildlife Federation v. Appalachian Regional Commission*, 677 F.2d 883, 888-889 (D.C. Cir. 1981) (environmental effects should be considered jointly where federal action consists of related enterprises associated within a single program and planned together; agency may not “segment” an overall program thereby unreasonably constricting the scope of environmental evaluation).

<sup>23</sup> National Environmental Policy Act, Lessons Learned, U.S. Department of Energy, Quarterly Report, December 3, 2007, Issue No. 53, p. 1 at <http://www.eh.doe.gov/nepa/lessons.html>.

<sup>24</sup> *Robertson v. Methow Valley Citizens Council*, 109 S.Ct. 1835, 1846, 490 U.S. 332, 349 (1989) (NEPA requires that an agency has available and carefully considers information about environmental impacts before making its decision).

<sup>25</sup> See, *Oil Shale Development in the United States* (2005 RAND Corporation) pp. 21 and 40, at <http://rand.org/pubs/monographs/MG414>; *Strategic Significance of America’s Oil Shale Resource*, Vol. II, *Oil Shale Resources Technology and Economics*, U.S. Department of Energy (March 2004), p. 25 at [www.fossil.energy.gov/programs/reserves/npr/publications/npr\\_strategic\\_significancev2.pdf](http://www.fossil.energy.gov/programs/reserves/npr/publications/npr_strategic_significancev2.pdf);

processes will be extremely energy-intensive, will require new electricity generating capacity which will likely use coal, will require large amounts of water (which uses electricity to transport), and will also require large amounts of natural gas and/or diesel fuel. The U.S. Department of Energy recognizes that “[p]roduction of unconventional fuels (oil shale, coal to liquids, heavy oil) produces more CO<sub>2</sub> than is produced when using conventional petroleum.”<sup>26</sup> The high temperatures associated with surface retorting also release CO<sub>2</sub> from mineral carbonates, contained in oil shale and produce methane, a GHG that is 21 times as potent as CO<sub>2</sub>.<sup>27</sup>

The PEIS recognizes that large amounts of electricity will be needed for the production facilities, and to deliver the large amount of water the facilities would require. (PEIS, p. 4-13, 4-23, and 5-30 - 5-31.) Although climate change is not specifically mentioned, in the section

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Converting Green River oil shale to liquid fuels with ATP and ICP technologies, 27<sup>th</sup> Oil Shale Symposium, Colorado School of Mines, Adam R. Brandt, October 17, 2007 at [abrandt.berkeley.edu/shale/Brandt\\_Converting\\_Green\\_River\\_oil\\_shale\\_to\\_liquid\\_fuels.pdf](http://abrandt.berkeley.edu/shale/Brandt_Converting_Green_River_oil_shale_to_liquid_fuels.pdf); A Study on the EU oil shale industry (2007 European Academies Science Advisory Council), p.28, at [www.easac.org/displaypagedoc.asp?id=78](http://www.easac.org/displaypagedoc.asp?id=78); Farrell, A.E. and A.R. Brandt, Risks of the oil transition, *Environmental Research Letters*, 1 (2006) 014004, at <http://www.iop.org/EJ/abstract/1748-9326/1/1/014004/>; Brandt, A.R. and A.E. Farrell, Scraping the bottom of the barrel: greenhouse gas emission consequences of a transition to low-quality and synthetic petroleum resources, 84 *Climatic Change*, 241-263 (October 2007) at <http://www.springerlink.com/content/y283j2220jj365g4/>; Bartis, J., Unconventional Liquid Fuels Overview, 2006 Boston World Oil Conference, p.20, at [www.aspo-usa.com/fall2006/presentations/pdf/Bartis\\_J\\_Boston\\_2006.pdf](http://www.aspo-usa.com/fall2006/presentations/pdf/Bartis_J_Boston_2006.pdf); Kolbert, *Unconventional Crude*, *The New Yorker*, November 12, 2007, p. 50.

<sup>26</sup> Fact Sheet: Carbon Management for Strategic Unconventional Resources, DOE Office of Petroleum Reserves at [www.fossil.energy.gov/programs/reserves/npr/Carbon\\_Management\\_Fact.pdf](http://www.fossil.energy.gov/programs/reserves/npr/Carbon_Management_Fact.pdf); also see, Fact Sheet: Oil Shale and the Environment, DOE Office of Petroleum Reserves, stating that in oil shale development “[c]arbon dioxide (CO<sub>2</sub>) will be produced in large quantities and may need to be captured... .” and Fact Sheet: Energy Efficiency of Strategic Unconventional Resources, DOE Office of Petroleum Reserves, stating “[u]nconventional fuels require additional processing steps ... to recover and convert these resources to fuels. These steps consume energy and lower the energy efficiency relative to conventional oil.” Available at [www.fossil.energy.gov/programs/reserves/npr/Oil\\_Shale\\_Environmental\\_Fact\\_Sheet.pdf](http://www.fossil.energy.gov/programs/reserves/npr/Oil_Shale_Environmental_Fact_Sheet.pdf) and [www.fossil.energy.gov/programs/reserves/npr/Energy\\_Efficiency\\_Fact\\_Sheet.pdf](http://www.fossil.energy.gov/programs/reserves/npr/Energy_Efficiency_Fact_Sheet.pdf)

<sup>27</sup> Oil Shale Development in the United States (2005 RAND Corporation), p.40 at <http://rand.org/pubs/monographs/MG414>; A Study on the EU oil shale industry (2007 European Academies Science Advisory Council), p.27 at [www.easac.org/displaypagedoc.asp?id=78](http://www.easac.org/displaypagedoc.asp?id=78); and Fact Sheet: Oil Shale and the Environment, DOE Office of Petroleum Reserves (explaining that in addition to releasing kerogen oil from oil shale, heating carbonate rock to 450 - 500 degrees centigrade also releases other gases, including carbon dioxide) at [www.fossil.energy.gov/programs/reserves/npr/Oil\\_Shale\\_Environmental\\_Fact\\_Sheet.pdf](http://www.fossil.energy.gov/programs/reserves/npr/Oil_Shale_Environmental_Fact_Sheet.pdf).

discussing “Air Quality” impacts, the PEIS indicates that oil shale development on these lands would likely require additional electric power capacity that, in the near term, would be generated from low-sulfur Wyoming coal. (Page 6-112). The PEIS estimates that CO<sub>2</sub> emissions from a new 360 megawatt coal power plant to serve the development would be 890 kg/GWh. (Page 6-113). It concludes that construction of new power plants for this development “would [also] have longer-term impacts on regional air quality.” (Page 6-45.) However, none of this information was used to estimate or evaluate GHG emissions from the proposed leasing program.

It is also unreasonable for BLM to dismiss out-of-hand the environmental impacts (including GHG emissions) from tar sands development in Canada as not relevant to the U.S., because the resources in Utah will be more difficult to recover. If anything, this indicates that tar sands development in the U.S. will be more energy intensive, and therefore, the GHG emissions from Canadian tar sands development would appear to provide a minimum level of emissions that could be expected from tar sands development in the U.S.

Finally, the PEIS must disclose and consider *all* of the potential GHG emissions from build-out of the oil shale and tar sands development facilities allowed by the RMP amendments, and cannot “assume” that only a limited portion of the lands open to leasing will be developed. The PEIS, without adequate explanation, limits its consideration of other environmental impacts to impacts associated with oil shale and tar sands development on only a limited portion of the lands where leasing would be allowed.<sup>28</sup> This approach fails to disclose the true potential impacts of the proposed action.

In sum, the GHG emissions from oil shale and tar sands leasing on almost 2.5 million acres of federal land constitutes a significant cumulative impact on the environment. The available data (which was ignored by BLM) does not support the agency’s conclusion that the project will *not* have a significant impact on climate change. To the contrary, the information discussed above demonstrates that the leasing program will result in significant increases in emissions of GHG and significant impacts on climate. This is especially the case in light of the “intensity” factor for determining significance of impacts under NEPA (40 C.F.R. 1508.27(b)) due to the potential serious effects on public health, the high level of uncertainty regarding feedback mechanisms that could lead to rapid, non-linear climate change impacts, and the fact that the impacts of climate change are unique, involve unknown risks, and are controversial. See *Center for Biological Diversity v. NHTSA*, 508 F.3d 508, 553-556 (9<sup>th</sup> Cir. 2007).

**c. The PEIS Ignores Recent Cases Addressing the Significance of GHG Emissions from Transportation Fuels**

The characterization of GHG emissions from the project as only a “small fraction” of global emissions and the conclusion that the project does not have a significant impact on climate change, ignores the significance of emissions from the transportation sector. In *Massachusetts v.*

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<sup>28</sup> For purposes of its evaluation of environmental impacts of the project, the PEIS assumes facilities that produce: 50 bbl/day from oil shale surface mining, 200,000 bbl/day from oil shale in situ facilities, and 100,000 bbl/day of oil from tar sands facilities. (Page 4-2 and 5-2.)

*EPA*, the Supreme Court said: “[e]ven leaving aside the other greenhouse gases, the United States transportation sector emits an enormous quantity of carbon dioxide into the atmosphere... more than 6% of worldwide carbon dioxide emissions. . . . To put this in perspective: Considering just emissions from the transportation sector, . . . the United States would still rank as the third-largest emitter of carbon dioxide in the world . . . . Judged by any standard, U.S. motor-vehicle emissions make a meaningful contribution to greenhouse gas concentrations and hence, . . . to global warming.” 127 S.Ct. 1438 at 1457-58 (2007). Given the huge extent of the proposed leasing program, an increase in lifecycle GHG emissions from fuels produced from oil shale and tar sands, when compared to conventional petroleum sources, must be considered a potential significant environmental impact.

BLM’s position is also contrary to the Ninth Circuit’s decision in *Center for Biological Diversity v. NHTSA*, 508 F.3d 508 (9<sup>th</sup> Cir. 2007). There, the Court noted that “the fact that climate change is largely a global phenomenon that includes actions that are outside of [the agency’s] control . . . does not release the agency from the duty of assessing the effects of *its* actions on global warming within the context of other actions that also affect global warming.” 508 F.3d at 550. The Court further found that “[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct.” 508 F.3d at 550.

**d. The PEIS Does Not Adequately Discuss or Evaluate Feasible Measures to Mitigate GHG Emissions**

The PEIS fails to identify and evaluate potential mitigation measures that could reduce or avoid GHG emissions from oil shale and tar sands development, such as requiring that the electricity needed is generated from new renewable energy sources; requiring offsite mitigation for the natural gas and/or diesel fuel that will be used; or specifying that no leases will be granted until techniques for sequestering carbon emitted at the facilities are perfected. Instead, BLM entirely abdicates its responsibility to discuss how to minimize climate change impacts as part of the leasing program. BLM notes that it is required by law to adopt a leasing program at this time. However, this does not eliminate its obligation under NEPA to provide full disclosure of the potential environmental impacts and ways to minimize those impacts. In addition, as noted above, BLM has discretion to determine how much land to offer for leasing, and what requirements to impose on the leases.

Nevertheless, BLM proposes to go forward with the RMP amendments without a reasonable discussion of potential climate change impacts and mitigation measures. As noted above, the PEIS states, without adequate explanation, “[t]he magnitude of impacts and the applicability and effectiveness of mitigation measures cannot be assessed at the programmatic level and will need to be evaluated on a project-by-project basis....” (Page ES-7.) However, when evaluating the impacts of an individual oil shale or tar sands development project, the impacts may be considered insignificant and therefore not warranting mitigation. For example, with respect to air quality impacts, the PEIS is noncommittal regarding future mitigation, stating “... on a case-by-case basis, future individual leases and use authorizations *could* include specific measures to minimize potential air quality impacts.” (Page 4-50).

The PEIS only briefly mentions potential mitigation of climate change impacts, stating:

“[p]otential global warming impacts could be reduced if oil shale substitutes for the use of other fossil carbon-based energy sources, or if atmospheric loadings are reduced by emission controls or sequestration methods.” (Id.) There is no explanation of what other carbon-based energy sources would be replaced, or a comparison of GHG emissions from those sources and oil shale or tar sands. The PEIS does not discuss what emission controls are available, or the applicability or status of various types of sequestration methods, the amount of GHG emissions that could be captured, and the amount of emissions that would remain. U.S. DOE has identified carbon sequestration as a mitigation measure that likely is necessary for development of oil shale in this country, noting “CO<sub>2</sub> may need to be captured, used in other commercial applications ..., or otherwise sequestered.” (Fact Sheet: Oil Shale and the Environment, DOE Office of Petroleum Reserves). The PEIS fails to discuss the methods, availability, cost, and/or effectiveness of any of these mitigation options.

BLM also fails to discuss an approach that was suggested by the State of Wyoming during the EIS process, that would impose the following requirements: “CO<sub>2</sub> and other greenhouse gases will be contained and may be used to enhance production in conventional nearly oil and gas fields if feasible. Where it is not feasible to use CO<sub>2</sub> to enhance oil recovery or in other production processes it must be sequestered in some other location. A performance standard for greenhouse gases must be developed and implemented.” (Wyoming Governor’s Office, Oil Shale and Tar Sands PEIS Performance Standards Policy, August 2006, p.10.). Instead, the PEIS flatly rejects a suggestion to evaluate technologies that incorporate carbon sequestration, stating this “would be best examined in detail at the time of site-specific NEPA analysis of a specific plan of development.” (Page 2-52.) Accordingly, BLM has improperly postponed consideration of ways to minimize or avoid climate impacts until *after* it has already made the decision regarding the extent of lands to open to leasing.

## **5. The PEIS Fails to Evaluate Whether the Large-Scale Commercial Oil Shale and Tar Sands Leasing Program is Consistent With the Goals and Policies of the Energy Independence Act of 2007**

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The Energy Independence and Security Act of 2007 seeks to reduce GHG emissions, including emissions from transportation fuels. The Act contains findings that: “accelerated development and use of renewable energy technologies provide numerous benefits to the United States, including .... improved environmental quality ...” (42 U.S.C. § 17285(a)(3); and: “the production of transportation fuels from renewable energy would help the United States meet rapidly growing domestic and global energy demands, .... .” (42 U.S.C. § 17285(a)(4).) It establishes a “renewable fuel standard” requiring that transportation fuels sold in the U.S. must include at least 20% renewable fuels (i.e., fuel made from renewable biomass and used to replace fossil fuel) by 2015, increasing to 36% in 2022. (42 U.S.C. § 7545(o)(2).) New renewable fuel facilities must produce fuel with 20% lower lifecycle GHG emissions than the average emissions of transportation fuels sold in 2005. (Id.) The Act also prohibits federal agencies from purchasing any transportation fuel from nonconventional petroleum sources (which includes oil shale and tar sands), if the lifecycle GHG emissions exceed those of fuel produced from conventional petroleum sources. (42 U.S.C. § 17142.) This provision could prohibit federal agencies (including the Department of Defense, the nation’s largest consumer of gasoline) from

purchasing transportation fuel produced from oil shale and tar sands.<sup>29</sup> California has an Executive Order that also establishes a low carbon fuel standard for the state and likely would result in similar restrictions .<sup>30</sup>

The PEIS should discuss the significance of opening vast areas to oil shale and tar sands development on Congress' recent effort in the Energy Independence and Security Act to limit climate change impacts by reducing GHG emissions from transportation fuels. Production of transportation fuels from the nonconventional petroleum sources on these federal lands could negate all the reductions in GHG emissions achieved through the measures in the Energy Independence and Security Act that require greater use of low-carbon biofuels.

## **6. BLM Has Failed to Comply With the Energy Policy Act of 2005**

BLM has failed to comply with the requirements of the Energy Policy Act of 2005 in two ways. First, BLM has limited the scope of the PEIS to amendments to the RMPs, and failed to include impacts from the regulation that will govern issuance of oil shale and tar sands leases. This is contrary to the Act, which directs the Secretary to prepare a programmatic EIS on the entire commercial leasing program. (42 U.S.C. § 15927.) This is also contrary to NEPA, which requires evaluation of the impacts of a project as a whole, and does not permit segmentation of a project which results in piecemeal evaluation of impacts.<sup>31</sup>

Second, as explained above, the PEIS does not set forth adequate information to support the determinations required by the Energy Policy Act that the proposed leasing of almost 2 million acres for oil shale development and over 430,000 acres for tar sands development will be "conducted in an environmentally sound manner, using practices that minimize impacts" or that the development will occur "with an emphasis on sustainability . . . ." As explained above, in fact, the opening these lands to oil shale and tar sands leasing will result in significant emissions of GHG and have significant impacts on climate change that have not been minimized.

## **Conclusion**

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<sup>29</sup> See Letter from Henry A. Waxman, Chairman, Committee on Oversight and Government Reform, U.S. House of Representatives, to Honorable Jeff Bingaman, Chairman, Senate Committee on Energy and Natural Resources, dated March 17, 2008, stating that Section 526 of the Energy Independence and Security Act "ensures that federal agencies are not spending taxpayer dollars on new fuel sources that will exacerbate global warming."

<sup>30</sup> It is unlikely that fuel produced from oil shale and tar sands will comply with California's Low Carbon Fuel Standard, established by the Governor in Executive Order S-01-07 (unless, perhaps, carbon sequestration can be used successfully *and* new renewable energy sources are constructed to provide power for the production process). See <http://gov.ca.gov//executive-order/5172/>

<sup>31</sup> See *Save Barton Creek Ass'n v. Fed. Highway Admin.*, 950 F.2d 1129, 1139) (5<sup>th</sup> Cir. 1992) (agency acted improperly when segmented project has no life of its own, or is illogical when viewed in isolation).

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Scientists acknowledge that global warming is real. Unless we depart from the “business as usual” paradigm and embrace the need to limit GHG emissions, we risk pushing the environment past the “tipping point” into cataclysmic climate change. The stakes are too high for BLM to abdicate its responsibility to fully disclose and evaluate the GHG emissions associated with its decision to lease almost 2.5 million acres of federal land for oil shale and tar sands development. The GHG emissions from the proposed leasing program could be very substantial and should be fully disclosed and evaluated in the PEIS. Moreover, the Energy Act of 2005 requires that commercial oil shale and tar sands development shall occur in an environmentally sound and sustainable manner, using practices that minimize impacts. The PEIS should fully discuss the actions that BLM will take to comply with these requirements.

Thank you for your consideration of these comments.

Sincerely,

/Sandra Goldberg/

SANDRA GOLDBERG  
Deputy Attorney General

For EDMUND G. BROWN JR.  
Attorney General