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UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

IN THE MATTER OF	**)**	
	)	**FE DOCKET NO. 11-128-LNG**
DOMINION COVE POINT LNG, LP	**)**	

SIERRA CLUB'S MOTION TO INTERVENE, PROTEST, AND COMMENTS

Dominion Cove Point ("DCP")'s request to export up 1 billion cubic feet per day (bcf/d) of natural gas as liquefied natural gas ("LNG") from its terminal in Cove Point, Maryland, is inconsistent with the public interest, and, in any event, cannot move forward without extensive environmental and economic analyses that DCP has not provided to the Department of Energy Office of Fossil Energy ("DOE/FE").

DCP argues that exports from Cove Point would be in the public interest in significant part because they would "support increased domestic production of natural gas," particularly in the Marcellus Shale play in the Northeast. *See* DCP Application at 5, 21-23, 35, 39-42. Perhaps so, but DCP offers no meaningful analysis of the significant environmental and economic dislocations associated with the shale gas boom that it claims its facility would enhance. DOE/FE cannot authorize exports without fairly weighing these impacts. *See, e.g.*, *Udall v. Federal Power Comm'n*, 387 U.S. 428, 450 (1967). If it did so, it would have to conclude that the export project should not be authorized.

Because Sierra Club's many thousands of members have a direct interest in ensuring that domestic natural gas production is conducted safely, and that any exports do not adversely affect domestic consumers, Sierra Club therefore moves to intervene in this proceeding and protests DCP's application.

I. Sierra Club Should be Granted Intervention

Sierra Club members live and work throughout the area that will be affected by the DCP export plan, including in the regions adjacent to the Cove Point facility and its shipping routes in Chesapeake Bay and in regions near the pipelines and gas fields necessary to supply the plant. Sierra Club members everywhere will also be affected by increased gas prices which would be caused by the plan. As of December 2011, Sierra Club had 13,443 members in Maryland, 1,561 members in Delaware, 23,289 members in Pennsylvania, 2,484 members in DC, 35,973 in New York, and 601,904 members in all. Declaration of

Yolanda Fortuna at ¶ 7.[1] To protect its members interests, Sierra Club therefore moves to intervene in this proceeding, pursuant to 10 C.F.R. § 590.303(b).
Consistent with that rule, Sierra Club states that its "asserted rights and interests," in this matter include, but are not limited to, its interests in the following:

- The economic impacts of any gas exports from the DCP facility, whether individually or in concert with exports from other such facilities, including the consequences of price changes upon its members' finances, consumer behavior generally, and industrial and electrical generating facilities whose fuel choices may be affected by price changes. Sierra Club, in particular, works to reduce U.S. and global dependence on fossil fuels, including coal, gas, and oil, and to promote clean energy and efficiency in order to protect public health and the environment. To the extent changes in gas prices increase the use and production of fossil fuels, Sierra Club's interests in this proceeding are directly implicated.
- The environmental consequences of any gas exports from the DCP facility, including emissions and other pollution associated with the gasification and liquefaction processes, environmental damage associated with pipeline, facility construction and operation, environmental impacts caused by shipping traffic, and the emissions associated with all phases of the process from production to combustion.
- The environmental and economic consequences of any expansion or change in natural gas production, especially in shale gas plays, as a result of increased gas exports, including damage to air, land, and water resources caused by the increasing development of these plays, and the public health risks caused by these harms.
- The environmental and economic consequences of the proposed DCP export facilities themselves, whether considered by FERC or by DOE/FE, and the implications of such facility construction on the communities and ecosystems surrounding those facilities.
- The public disclosure, in National Environmental Protection Act and other documents, of all environmental, cultural, social, and economic consequences of DCP's proposal, and of all alternatives to that proposal.

Sierra Club has demonstrated the vitality of these interests in many ways. Sierra Club runs national advocacy and organizing campaigns dedicated to reducing American dependence on fossil fuels, including natural gas, and to protecting public health. These campaigns, including its Beyond Coal campaign, and its Natural Gas Reform campaign, are dedicated towards promoting a swift transition away from fossil fuels and to reducing the impacts of any remaining natural gas extraction. Sierra Club members in and around the shale gas plays associated with the DCP proposal are particularly active: The Club's Pennsylvania and Maryland Chapters are focusing many of their advocacy

[1] Attached as Ex. 1.

efforts on gas issues, and are deeply engaged in permitting and regulatory processes in those states. *See* Fortuna Declaration.

Moreover, the Maryland Chapter has a long history of engagement with the Cove Point facility in particular. Its litigation and organizing efforts during earlier efforts to expand the site for import secured a settlement with DCP which limited the facility's expansion and channeled significant funds towards conservation goals. The Chapter remains focused on managing the environmental impacts of operations on the Cove Point site.

Finally, Sierra Club members will be directly affected by the export project in many ways. Members living in and around drilling sites in the Marcellus Shale and other shale plays, who will, according to DCP, see drilling activity continue and intensify in part due to the export project. Gas production brings major industrial activity to previously rural sites, fragmenting formerly intact forests and fields, and can and has caused serious air and water pollution problems, loud noises, foul odors, and crushing traffic on small roads, among many other harms, discussed below. Members living near the facility itself will have to contend with the pollution and nuisance caused by export operations. And members throughout the country will be burdened by higher gas prices and increased climate change harms caused by project. In short, Sierra Club's members have a vital economic, aesthetic, spiritual, personal, and professional in the project.

Thus, although 10 C.F.R. § 590.303 states no particular standard for intervention, Sierra Club's interests in this proceeding would be sufficient to support intervention on any standard. Its motion must be granted.[2]

II. Sierra Club Protests this Application Because It Is Not In the Public Interest and Is Not Supported by Adequate Environmental and Economic Analysis

DOE cannot approve this application under the Natural Gas Act for the reasons set out below. Sierra Club therefore files this protest pursuant to 10 C.F.R. § 590.304.

A. Legal Standard

DOE/FE has significant substantive and procedural obligations to fulfill before it can authorize DCP's export proposal. We discuss some of those obligations, those created by the Natural Gas Act, the National Environmental Policy Act, the Endangered Species Act, and the National Historic Preservation Act, here, before explaining why these obligations require DOE to deny export authorization in this case.

1. Natural Gas Act

Under the Natural Gas Act, and subsequent delegation orders, DOE/FE must determine whether DCP's proposal to export LNG to nations which have not signed a free trade

[2] If any other party opposes this motion, Sierra Club respectfully requests leave to reply. *Cf.* 10 C.F.R. § 590.302 (allowing for procedural motions and briefing in these cases).

agreement ("FTA") with the United States is in the public interest.[3] Section 3 of the Act provides:

> [N]o person shall export any natural gas from the United States to a foreign country or import any natural gas from a foreign country without first having secured an order of the [Federal Power Commission] authorizing it do so. The Commission shall issue such order upon application unless, after opportunity for hearing, it finds that the proposed exportation or importation will not be consistent with the public interest.

15 U.S.C. § 717b(a); *see also* Executive Orders 12038 & 10485 (vesting any executive authority to allow construction of export facility in the Federal Power Commission and its successors). DOE/FE has been delegated the former Federal Power Commission's authority to authorize natural gas exports while FERC has been delegated authority to authorize facility permitting and siting for such exports.[4] *See* Department of Energy Redelegation Order No. 00-002.04E (Apr. 29, 2011) (providing DOE/FE its authority); Department of Energy Delegation Order No. 00-004.00A (providing FERC its authority). As such, it is DOE/FE, not FERC, which must ultimately make this public interest determination.

The public interest determination is necessarily rooted in the Natural Gas Act's "fundamental purpose [of] assur[ing] the public a reliable supply of gas at reasonable prices." *See, e.g.*, *United Gas Pipe Line Co v. McCombs*, 442 U.S. 529 (1979). In addition to this consumer protection function, the Act also extends DOE/FE "the authority to consider conservation, environmental, and antitrust questions." *Nat'l Ass'n for the Advancement of Colored People v. Federal Power Commission*, 425 U.S. 662, 670 n.4 (citing 15 U.S.C. § 17b as an example of a public interest provision); n.6 (explaining that the public interest includes environmental considerations) (1976). As Deputy Assistant Secretary Smith has testified, "[a] wide range of criteria are considered as part of DOE's public interest review process, including… U.S. energy security… [i]mpact on the U.S. economy… [e]nvironmental considerations… [and] [o]ther issues raised by commenters and/or interveners deemed relevant to the proceeding." Testimony of Christopher Smith, Deputy Assistant Secretary of Oil and Gas Before the Senate Committee on Energy and Natural Resources (Nov. 8, 2011); *see also* 10 C.F.R. § 590.202(b)(7) (requiring export applicants to provide information documenting "[t]he potential environmental impact of the project").[5]

DOE has also promulgated "Policy Guidelines" discussing the public interest in the context of gas *imports* which it nonetheless has applied in the gas export context. 49

[3] The Natural Gas Act provides that DOE/FE will approve exports to nations which have signed a free trade agreement requiring national treatment for trade in natural gas "without modification or delay." 15 U.S.C. § 717b. DOE/FE has approved such an application from DCP. *See* DOE/FE Order No. 3019.

[4] DOE/FE may also *disapprove* export facilities.

[5] Attached as Ex.2.

Fed. Reg. 6,684 (Feb. 22, 1984); *see also* DOE/FE Order No. 2961, *Opinion and Order Conditionally Granting Long-Term Authorization to Export* [*LNG*] *from Sabine Pass LNG Terminal to Non-Free Trade Agreement Nations* ("*Sabine Pass*") (May 20, 2011) at 29-31.[6] Under these guidelines, DOE has focused its review "on the domestic need for the natural gas proposed to be exports; whether the proposed exports pose a threat to the security of natural gas supplies, and any other issue determined to be appropriate," including DOE/FE's general policy of promoting market competition *Sabine Pass* at 29. Although germane here, these Policy Guidelines are merely guidelines: they "cannot create a norm binding the promulgating agency." *Panhandle Producers and Royalty Owners Ass'n v. Economic Regulatory Administration*, 822 F.2d 1105, 1110-1111 (D.C. Cir. 1987).

DOE/FE imposes a rebuttable presumption that LNG export applications are consistent with the public interest, but this policy is "highly flexible, creating *only* rebuttable presumptions and leaving parties free to assert other factors." *Id.* (emphasis added, internal quotation marks omitted). Put differently, although DOE/FE may "presume" that an application should be granted, this presumption is not determinative, and DOE/FE retains an independent duty to determine that an application is, in fact, in the public interest. *See* 10 C.F.R. § 590.404.

DOE/FE may issue "a conditional order at any time during a proceeding." 10 C.F.R. § 590.402.

2. National Environmental Policy Act

The National Environmental Policy Act ("NEPA") provides that "all agencies of the Federal Government" must prepare an Environmental Impact Statement ("EIS") for every "major Federal actions significantly affecting the quality of the human environment," which describes:

> (i) the environmental impact of the proposed action,
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
> (iii) alternatives to the proposed action,
> (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

42 U.S.C. § 4332(C); *see also* 40 C.F.R. § 1508.27 (defining "significant" impacts as arising from both the context and the intensity of a given action).

[6] Attached as Ex. 3.

"NEPA procedures . . . insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. § 1500.1(b); *see also Dep't of Transp. v. Public Citizen*, 541 U.S. 752, 768 (2004) (explaining that NEPA requires agencies to "carefully consider [ ] detailed information concerning significant environmental impacts" and "guarantees that the relevant information will be made available to the larger" public) (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989)). If a project will have environmentally significant impacts, then the Corps must prepare a comprehensive environmental impact statement ("EIS"), rather than a more cursory environmental assessment ("EA"). *See* 33 C.F.R. §§ 230.6, 230.7. Indeed, if there is a "substantial question" as to the severity of impacts, an EIS must be prepared. *See Klamath Siskiyou Wildlands Center v. Boody*, 468 F.3d 549, 561-62 (9th Cir. 2006) (holding that the "substantial question" test sets a "low standard" for plaintiffs to meet).

"It is DOE's policy to follow the letter and spirit of NEPA; comply fully with the [Council on Environmental Quality ("CEQ")] Regulations and apply the NEPA review process early in the planning stages for DOE proposals." 10 C.F.R. § 1021.100. It has adopted CEQ's NEPA regulations in full. *Id.* § 1021.103. The NEPA rules apply to "any DOE action affecting the quality of the environment of the United States, its territories or possessions." *Id.* § 1021.102. CEQ directs that agencies must "integrate the NEPA process with other planning at the earliest possible time to insure that planning and decisions reflect environmental values." 40 C.F.R. § 1501.2.

DOE has determined that "[a]pprovals or disapprovals of authorizations to import or export natural gas… involving major operational changes (such as a major increase in the quantity of liquefied natural gas imported or exported" will "normally require [an] EIS." 10 C.F.R. Part 1021, Appendix D, D9; *see also* 40 C.F.R. § 1501.4 (discussing considerations relevant to whether to prepare an EIS). "The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in [NEPA] are infused into the ongoing programs and actions of the Federal government." 40 C.F.R. § 1502.1. As such, an EIS must provide a "full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." *Id.*

In particular, an EIS must fairly present all alternatives to the proposed action (here, to allow export of LNG from Cove Point); this analysis "is the heart of the environmental impact statement." 40 C.F.R. § 1502.14. DOE/FE must take care not to define the project purpose so narrowly as to prevent the consideration of a reasonable range of alternatives. *See, e.g.*, *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 666 (7th Cir. 1997). If it did otherwise, it would lack "a clear basis for choice among options by the decisionmaker and the public." *See* 40 C.F.R. § 1502.14.

An EIS must also describe the direct and indirect effects, and cumulative impacts of, a proposed action. 40 C.F.R §§ 1502.16, 1508.7, 1508.8; *Northern Plains Resource Council v. Surface Transportation Board*, - F.3d -, 2011 WL 6826409 at * 5(9th Cir. 2011). These terms are distinct from one another: Direct effects are "caused by the action and occur at the same time and place." 40 C.F.R. § 1508.8(a). Indirect effects are also "caused by the action" but:

> are later in time or father removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effect on air and water and other natural systems, including ecosystems.

40 C.F.R. § 1508.8(b). Cumulative impacts, finally, are not causally related to the action. Instead, they are:

> 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 (Federal or non-Federal) 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. The EIS must give each of these categories of effect fair emphasis.

Agencies may also prepare "programmatic" EISs, which address "a group of concerted actions to implement a specific policy or plan; [or] systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive." 40 C.F.R. § 1508.17(b)(3); *see also* 10 C.F.R. § 1021.330 (DOE regulations discussing this possibility. As we later discuss, such an EIS is appropriate here.

Finally, and critically, while an EIS is being prepared "DOE shall take no action concerning the proposal that is the subject of the EIS" until the EIS is complete and a formal Record of Decision has been issued. 10 C.F.R. § 1021.211. During this time, DOE may take no action which would tend to "limit the choice of reasonable alternatives," or "tend[] to determine subsequent development ." 40 C.F.R. § 1506.1.

The Natural Gas Act designated the old Federal Power Commission as the "lead agency" for NEPA purposes. 15 U.S.C. § 717n. FERC has since generally filled that role, preparing the NEPA documents for LNG export and import decisions, as it did in *Sabine Pass*. *See* 10 C.F.R. § 1021.342 *providing for interagency cooperation). Whether or not FERC takes a lead role, however, DOE's ultimate NEPA obligations are the same: It may not move forward until the full scope of the action *it* is considering – here the approval of LNG export – has been properly considered in a valid EIS. Thus DOE/FE cannot approve

DCP's project on the basis of an EIS, or other NEPA document, that considers only the impacts of facility siting which are in FERC's jurisdiction.

3. Endangered Species Act

Pursuant to the Endangered Species Act's (ESA) directive that all agencies "shall seek to conserve endangered species," 16 U.S.C. § 1531(c)(1), DOE/FE must ensure that the its approval of the DCP project "is not likely to jeopardize the continued existence of any endangered species . . . or result in the destruction or adverse modification of [critical] habitat of such species." 16 U.S.C. § 1536(a)(2). "Each Federal agency shall review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat." 50 C.F.R. § 402.14(a); *see also* 16 U.S.C. § 1536(a)(2).

This determination must be wide-ranging, because DCP's export proposal will increase gas production activities throughout the Northeast, and nationally. Thus, DOE/FE must consider not just the effects of the project at the Cove Point site (although it must at least do that, as endangered tiger beetles, among other species, inhabit the plant site), but the effects of increased gas production across the full region the plant affects.

To make this determination, DOE/FE should, first, conduct a biological assessment, including the "results of an on-site inspection of the area affected," "[t]he views of recognized experts on the species at issue," a review of relevant literature, "[a]n analysis of the effects of the action on the species and habitat, including consideration of cumulative effects, and the results of any related studies," and "[a]n analysis of alternate actions considered by the Federal agency for the proposed action." *See* 50 C.F.R. § 402.12(f). If that assessment determines that impacts are possible, DOE/FE must enter into formal consultation with the Fish and Wildlife Service and the National Marine and Fisheries Service, as appropriate, to avoid jeopardizing any endangered species or adversely modifying its habitat as a consequences of its approval of DCP's proposal. 16 U.S.C. § 1536(a), (b).

4. National Historic Preservation Act

DOE/FE must also fulfill its obligations under the National Historic Preservation Act (NHPA) to "take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register." 16 U.S.C. § 470f; *see also Pit River Tribe v. U.S. Forest Serv.*, 469 F.3d 768, 787 (9th Cir. 2006) (discussing the requirements of the NHPA). Because "the preservation of this irreplaceable heritage is in the public interest," 16 U.S.C. § 470(b)(4), it behooves DOE/FE to proceed with caution.

DOE/FE must, therefore, initiate the NHPA section 106 consultation and analysis process in order to "identify historic properties potentially affected by the undertaking, assess its effects and seek ways to avoid, minimize or mitigate any adverse effects on historic

properties." 36 C.F.R. § 800.1(a). NHPA regulations make clear that the scope of a proper analysis is defined by the project's area of potential effects, *see* 36 C.F.R. § 800.4, which in turn is defined as "the geographic area . . . within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties," 36 C.F.R. § 800.16(d). This area is "influenced by the scale and nature of an undertaking," *Id.* The area of potential effects should sweep quite broadly here because, as in the ESA and NEPA contexts, the reach of DCP's proposal extends to the entire area in which it will increase gas production. Thus, to approve DCP's proposal, DOE/FE must first understand and mitigate its impacts on any historic properties which it may affect. *See also* DOE Policy P.141.1 (May 2001) (providing that DOE will fully comply with the NHPA and many other cultural resources preservation statutes).

The regulations governing this process provide that "[c]ertain individuals and organizations with a demonstrated interest in the undertaking may participate as consulting parties" either "due to the nature of their legal or economic relation to the undertaking or affected properties, or their concern with the undertaking's effects on historic properties." 36 C.F.R. § 800.2(c)(5). Sierra Club meets that test, because the Club and its members are interested in preserving intact historic landscapes, for their ecological and social value, and reside through the region affected by the DCP proposal. Its members have worked for years to protect and preserve the rich human and natural fabric of the region, and would be harmed by any damage to those resources. Sierra Club must therefore be given consulting party status under the NHPA for this application.

B. DOE Cannot Approve the Cove Point Project under the Natural Gas Act's Public Interest Standard

DCP's application is inconsistent with the public interest for many reasons. At core, DCP proposes to raise domestic gas prices, which, according to the EIA, will harm consumers and increase the use of highly polluting coal power, offering, in exchange, a limited number of localized, and questionable, economic benefits. This course is not in the public interest at the outset, as the fuller context of the application makes clear. DCP entirely fails to acknowledge the significant environmental harms associated with natural gas production and LNG export – harms which are more than substantial enough to outweigh any benefit of export. Moreover, DCP's proposal is the leading edge of a wave of export proposals which, considered cumulatively, will significantly exacerbate the harm DCP alone would cause.

If DOE does not deny this application, serious harm to the public interest will result.

1. DCP's Claimed Economic Benefits are Uncertain

DCP claims billions of dollars in benefits and tens of thousands of jobs will result from its export proposal, *see* DCP Proposal at 16-19 & ICF Study, but the vast majority of these

benefits are not directly associated with the construction or operation of the facility itself. That project will only result in several thousand construction-related job (defined quite broadly by DCP's consultant, ICF, to include "induced" jobs in sectors as far flung as the "food and beverage retail" industry) and several hundred jobs during operations, only 70 of which appear to be direct employees of the facility. *See* ICF Study at Table 2.

Instead, the bulk of the economic benefits DCP claims result from what DCP calls its "most basic benefit": its ability to "encourage and support increased domestic production of natural gas and [natural gas liquids]." DCP Application at 35. In DCP and ICF's view, this increased production will, directly and indirectly, pump money into the economy – to the tune of billions of dollars – and create jobs regionally and nationally. *See* DCP Application at 36-40. Undoubtedly, increasing gas production will increase employment in that sector by some amount, but a more careful look at the data demonstrates that booms in resource extraction industry are far more of a mixed blessing than DCP acknowledges.

DCP's optimistic projections are based on ICF's economic modeling, *see* ICF Report at 6, rather than on direct empirical research on the observed economic consequences of increased gas production in the shale gas plays. Such information is, however, available, and, in combination with academic papers describing recognized limitations in the model ICF used, casts significant doubt on DCP's benefits calculations.

ICF used the "IMPLAN" model to calculate benefits. IMPLAN, as ICF explains, is an "input-output" model: Users input a description of economic activity in a given set of economic sectors, and the model responds by tracing this spending throughout the economy, using economic "flow information" for many industries. *See* ICF Report at 43-44. It is, in other words, ultimately a fairly mechanical system: Given an initial expenditure, it uses "accounting tables" to predict how this expenditure will be allocated among sectors and then uses "local-level multipliers" to conjecture how this allocation will alter employment decisions, among other things. *See id.* Importantly, IMPLAN is not a continuous model: It gives results for individual years, but does not track jobs or expenditures from year-to-year, meaning that multi-year forecasts are simply a series of snapshots, and that a "job" in one year may not be the same job in the next year. ICF Report at 44.

Notably, IMPLAN does not consider counterfactuals and foregone opportunities. It maps the consequences of a particular expenditure, rather than asking how the economy might have grown had investors and regulators made different choices. Nor does it consider how the particular choice at issue might displace other economic activity.

A recent study by Amanda Weinstein and Dr. Mark Partridge, of Ohio State University, explains why these limitations, among others, matter in the shale gas context. *See* Amanda Weinstein and Mark D. Partridge, *The Economic Value of Shale Natural Gas in*

Ohio, ("*Ohio Study*) Ohio State University, Swank Program in Rural-Urban Policy Summary and Report (December 2010).[7] The absence of a counter-factual is at the core of their critique. *Id.* at 11. As they explain:

> Impact analysis [of the sort that IMPLAN conducts] is usually based on an old input-output technology that is typically not used today by economists to estimate actual economic effects. Impact studies do not include various displacement effects and do not reflect the true counterfactual of comparing what would have happened without natural gas drilling. For example, oil and natural gas drilling would lead to higher local wages and land costs, which reduce employment that would have occurred elsewhere in the economy. Likewise, the environmental effects may reduce activity in the tourism sector and other residents may not want to live near such degrading activity. Finally, greater natural gas employment means that there are fewer jobs in coal that would have occurred without the increase in natural gas employment.

Id.(emphasis in original). Thus, models like IMPLAN are not designed either to measure the full economic effects of resource extraction, and, critically, do not chart what the future would have looked like under different conditions. They also, as the Ohio Study next describes, produce a somewhat misleading picture of employment effects which they *do* describe, for three reasons: First, the model, again, is "static," as ICF puts it, ICF Report at 44, meaning that it does not track employment over time. Second, the model produces an analysis of jobs "supported" – *not* created – by the original input, which turns out to be an overly generous metric. Third, input-output models may fail to account for "leakage" – that is, that some money simply is not passed on through the system or is passed on in other states or regions – and so can overestimate jobs figures.

The first flaw, as the Ohio Study explains, means that the employment figures IMPLAN produces, measured in "job-years" are not equivalent to jobs held from year-to-year. As the study explains:

> One source of confusion is that impact studies do not produce continuous employment numbers. If an impact study says there are 200,000 jobs, this does not mean 200,000 workers are continuously employed on a permanent basis. For example, there are workers that do site preparation. Then there is another group who do the drilling followed by another group who maintains the well when it is in production. Finally, there is an entirely different group doing pipeline construction, and so on. So, while the public is likely more interested in continuous ongoing employment effects, impact studies are producing total numbers of supported jobs that occur in a more piecemeal fashion.

[7] Attached as Ex.4.

Id. So, when DCP claims that thousands of "job-years" will be driven by its project, this claim masks the inherent complexity of the labor market – some of these jobs may endure, others may only take place for a limited time even within the year-by-year accounting that ICF employs.

And, second, it is important to bear in mind that IMPLAN calculates jobs "supported" – not created. It asks whether a given expenditure might ultimately translate into a portion of someone's salary, but, because it lacks a counterfactual, it cannot demonstrate that that expenditure "created" those jobs, because it cannot show that they would not exist in a future without the expenditure. *Id.*

Third, as the Ohio Study explains, empirical analysis of spending patterns matters. *Id.* at 14-15. Landowners given gas production leases may choose to save their money, rather than to spend it. *Id.* Companies may bring in out-of-state workers, rather than hiring in-state. *Id.* And so on. Measuring these effects is important to accurately setting up an input-output model: One recent study, for instance, used estimates of landowner savings and employment choices to change IMPLAN's parameters appropriately, and discovered these results produced estimates quite close to Bureau of Labor Statistics data on actual direct employment. *See id.* at 12, 15. ICF does not appear to have taken this additional, important step.

The upshot is that IMPLAN model results should be seen as estimates of solely the effects of increased expenditures on a particular project (here, gas exports and production), and limited and overly-optimistic ones at that, rather than as a reliable comparison of how the economy would fare with and without gas exports – a real problem for DCP, as the "public interest" test requires that DOE/FE conclude that the country would be better off with DCP's proposal. DOE/FE cannot do so on the data DCP has presented, because that data does not speak to the economic possibilities the U.S. foregoes by embracing gas exports, or to the economic damage such exports could cause, directly or indirectly. Thus, DOE/FE lacks the information necessary to consider the public interest in a future with, or without, DCP exports, and therefore may not approve DCP's proposal.

Moreover, even if DOE/FE were to focus solely on the world *with* exports, available empirical data shows that the real economic effects of increasing gas production are far more limited and equivocal than DCP claims. The Ohio Study works to describe these effects by analyzing the counterfactual that IMPLAN results lack. It begins by noting that Pennsylvania, the center of the shale gas boom, does not appear to be creating nearly as many jobs as industry claims suggest. Bureau of Labor Statistics for 2004-2010 show that *all* oil and gas sector jobs (not just those in shale gas, or those drilling new wells), increased by only about 10,000 in the state over that period. *Id.* at 12.

The study went further, and, using Bureau of Economics Analysis statistics, directly compared employment and income in counties in Pennsylvania with significant

Marcellus drilling and without significant drilling, and before after the boom started. As Table 1, below, shows, counties in both areas *lost* jobs during the boom (after 2005)—and, though that result is reasonable considering the economic downturn in those years, it is striking that drilling counties declined at a slightly *faster* rate in that period, though per capita income also increased more quickly in those counties.

Table 1: Comparing Pennsylvania Counties, With and Without Drilling, Over Time[8]

	Employment Growth Rate 2001-2005	**Employment Growth Rate 2005-2009**	**Income Growth Rate 2001-2005**	**Income Growth Rate 2005-2009**
Drilling Counties	1.4%	-0.6%	12.8%	18.2%
Non-Drilling Counties	5.3%	-0.4%	12.6%	13.6%

The jobs effect, in either direction, turns out to be too small to be statistically significant. *Id.* at 16. This is not a surprising pattern: Incomes likely rise thanks to lease payments to some landowners, and some degree of hiring for high-income production decisions, but extraction displaces other workers, or jobs go to out-of-state workers rather than to residents who likely lack industry experience. *See id.*

A set of more detailed studies from Cornell University's Department of City and Regional Planning largely confirm this pattern. Those researchers spent more than a year studying the economic impacts of the gas boom on Pennsylvania and New York. Their core conclusion is that boom-bust cycle inherent in gas extraction makes employment benefits tenuous, and may leave some regions hurting if they are unable to convert the temporary boom into permanent growth. As the researchers put it:

> The extraction of non-renewable natural resources such as natural gas is characterized by a "boom-bust" cycle in which a rapid increase in economic activity is followed by a rapid decrease. The rapid increase occurs when drilling crews and other gas-related businesses move into a region to extract the resource. During this period, the local population grows and jobs in construction, retail and services increase, though because the natural gas extraction industry is capital rather than labor intensive, drilling activity itself will produce relatively few jobs for locals. Costs to communities also rise significantly, for everything from road maintenance and public safety to schools. When drilling ceases because the commercially recoverable resource is depleted, there is an economic "bust" – population and jobs depart the region, and fewer people are left to support the boomtown infrastructure.

[8] Adapted from Table 1 of the *Ohio Study* at 15.

Susan Cristopherson, CaRDI Reports, *The Economic Consequences of Marcellus Shale Gas Extraction: Key Issues* ("*Cornell Study*") (Sept. 2011) at 4.[9] This boom and bust cycle is exacerbated by the purportedly vast resources of the Marcellus play, because regional impacts will persist long after local benefits have dissipated, as the authors explain, and may be destructive if communities are not able to plan for, and capture, the benefits of industrialization:

> [B]ecause the Marcellus Play is large and geologically complex, the play as a whole is likely to have natural gas drilling and production over an extended period of time. While individual counties and municipalities within the region experience short-term booms and busts, the region as a whole will be industrialized to support drilling activity, and the storage and transportation of natural gas, for years to come. Counties where drilling-related revenues were never realized or could have ended may still be impacted by this regional industrialization: truck traffic, gas storage facilities, compressor plants, and pipelines. The cumulative effect of these seemingly contradictory impacts – a series of localized short-term boom-bust cycles coupled with regional long-term industrialization of life and landscape – needs to be taken into account when anticipating what shale gas extraction will do communities, their revenues, and the regional labor market, as well as to the environment.

Id. (emphasis in original). The benefits of gas development are, in other words, not smoothly distributed, in space or in time. Some people will prosper and some will not during the resultant disruption and, warn the Cornell researchers, the long-term effects may well not be positive, based upon years of research on the development of regions dependent on resource extraction:

> [T]he experience of many economies based on extractive industries warns us that short-term gains frequently fail to translate into lasting, community-wide economic development. *Most alarmingly, a growing body of credible research evidence in recent decades shows that resource dependent communities can and often do end up worse than they would have been without exploiting their extractive reserve.* When the economic waters recede, the flotsam left behind can look more like the aftermath of a flood than of a rising tide.

Id. at 6 (emphasis supplied).

The researchers also outline many of the challenges communities face as they attempt to benefit from natural gas development. Most obviously, it is difficult to convert technical natural gas field jobs directly into sustainable, well-paying local employment. *See* Jeffrey Jacquet, *Workforce Development Challenges in the Natural Gas Industry*

[9] Attached as Ex. 5.

(Feb. 2011).[10] This is in part because the industry's employment patterns are uneven: the researchers cite Pennsylvania employment data showing that "*the drilling phase accounted for over 98% of the natural gas industry workforce* engaged at the drilling site," and complementary Wyoming data showing a similar drop-off. *Id.* at 4 (emphasis in original). As a result, drilling jobs correspond to the boom and bust cycle inherent to resource extraction industries. *Id.* The remaining, small, percentage of production phase and office jobs are far more predictable, *id.* at 4-5, but need to filled with reasonably experienced workers, *id.* at 12-14. Although job training at the local level can help residents compete, the initial employment burst is usually made up for people from out of the region moving in and out of job sites; indeed, "[t]he gas industry consistently battles one of the highest employee turnover problems of any industrial sector." *Id.* at 13.

Meanwhile, communities also confront a panoply of development issues, ranging from coping with sudden population increases, major road damage from drilling operations, damage to the tourism industry, and a host of environmental risks (discussed in more detail below). *See, e.g.*, CJ Randall, *Hammer Down: A Guide to Protecting Local Roads Impacted by Shale Gas Drilling* (Dec. 2010)[11]; Susan Riha & Brian G. Rahm, *Framework for Assessing Water Resource Impacts from Shale Gas Drilling* (Dec. 2010)[12]; *Cornell Study* at 8).

These tourism threats are particularly concerning for many parts of the region, including New York's Southern Tier, because tourism is a major source of income and employer. In the Southern Tier, according to one recent study, the industry directly accounts for $66 million in direct labor income, and 4.7% of all jobs, and supports 6.7% of the region's employment. Andrew Rumbach, *Natural Gas Drilling in the Marcellus Shale: Potential Impacts on the Tourism Economy of the Southern Tier* (2011).[13] Although the study concludes that the near-term economic impact of gas drilling would likely be positive, it identifies two "major caveats" – that the monetary value of the gas industry underestimates its disruption to the region's stability and way of life, and that gas drilling benefits "will be relatively short-term and non-local." *Id.*at 9. Once again, simple arguments for the raw economic benefits of gas extraction's benefits turn out to be conceal complex social and economic consequences, and a complicated mix between benefits and costs in each particular place the industry affects.

The point of all this, of course, is that a simple economic model, like IMPLAN, cannot reliably capture the consequences of transforming an entire region of the country, converting it from a largely rural swath of small towns, farms, and forests into an industrial gas extraction zone. That transformation will benefit some discrete actors

[10] Attached as Ex. 6.
[11] Attached as Ex. 7.
[12] Attached as Ex. 8.
[13] Attached as Ex. 9.

considerably, and some communities, if they are able to navigate the durable challenges of boom and bust economics. But it will also harm people, by displacing existing businesses and lifeways, straining infrastructure, shifting populations, and, potentially, leading to devastating economic crashes in some areas.

IMPLAN results do not paint a fair picture of this difficult set of changes. As one of the Cornell researchers explains, IMPLAN studies have some strengths in their "relative simplicity, familiarity, and widespread use," but have important constraints as well, which prevent them from giving a full answer to the difficult questions expanding gas exports – and, hence, production -- poses. *See* David Kay, *The Economic Impacts of Marcellus Shale Gas Drilling: What Have We Learned? What are the Limitations?* (Apr. 2011).[14] As a result of the model's limitations, explained above, it is not readily able to "evaluate economic circumstances in which the change in the economy has been or will be rapid and large," or to deal with the complicated series of individual choices and community disruptions (including the displacement of existing economic activity) occasioned by the boom. *See id.* at 5-6, 22-30. IMPLAN struggles, particularly, to map these distributional effects, where some prosper while others suffer, and, more generally, is not designed to chart the long-term effects of such major dislocations. *See id.* at 22-30.

In the end, DCP's analysis stands for far less than first appears. No doubt some degree of additional economic activity would result from its proposal;[15] but its results cannot demonstrate that those benefits would not arise from projects or industries which the gas export plan will foreclose. Nor can it show that further tethering an entire region of the United States to an unstable and disruptive natural gas boom, rather than strengthening regional sectors which are not driven by boom-bust cycles, is the better course. In essence, DCP is trying to answer a difficult policy question by presenting one, highly-simplified side of the story, rather than engaging in the difficult, place-specific and empirically-guided analysis required to fully consider, and weigh, the costs and benefits of gas exports and extraction.

Because IMPLAN results offer such a limited piece of a much larger picture, DOE/FE cannot approve DCP's application based upon these simplistic modeling figures. It must, instead, undertake its own independent inquiry into the costs and benefits of the

[14] Attached as Ex. 10.

[15] The large construction project itself will, for instance, no doubt hire people (who may or may not have been hired elsewhere). But even if the construction project itself produces some economic benefits, DOE/FE cannot afford these benefits much weight in its public interest determination because its concern is whether *exports* will be in the public interest, not whether facility construction would be so. Every LNG export proposal will involve construction activities; if these activities could suffice to demonstrate public benefits, every application would be approved, regardless of the merits of the exports which the construction would allow. That rubber-stamp result is not consistent with the letter, or the spirit, of the Natural Gas Act.

proposal, carefully testing DCP's proposal based upon empirical data on experiences of states and citizens confronting the difficult changes inherent in the shale gas boom.

2. DCP's Export Plans Will Cause Significant Economic Harm

Even if the simplistic modeling results in the ICF Report were sufficient to demonstrate that DCP's proposal will have substantial economic benefits, they are fatally one-sided, for several reasons. We begin with major economic costs which even DCP acknowledges (though equivocally): Its proposal will raise natural gas prices, with economy-wide consequences. These consequences become more serious when DCP's proposal is viewed in its context, as it must be, as one of a wave of gas export proposals that already collectively proposed to export over 15 bcf/d of natural gas.

The substantial negative consequences of the price increases associated with these exports are not in the public interest, and so further warrant denying DCP's application.

a. DCP's Proposal, On Its Own, Will Significantly Increase Natural Gas Prices

Exporting domestic natural gas will increase gas demand and so will increase domestic gas prices. Although DCP dismisses the impacts of its project as "minor," DCP Application at 27, even its own application shows significant price increases.

The Navigant Consulting report underlying DCP's application uses four cases: a "reference case" which already includes some exports, a "Cove Point export case" in which the facility begins export in 2016, an "aggregate export case" which assumes other facilities are also approved with 7.1 bcf/d in cumulative exports by 2019, and an "extreme demand" case in which demand for gas-powered vehicles and coal-to-gas switching in the power sector ramps up domestic demand. Navigant Report at 13. The cases are cumulative (that is, each case includes the assumptions of the prior case). Even using Navigant's own results (which are arguably too liberal, as we shortly discuss), it is clear that exports produce notable price increases in coming years, as the table below summarizes:

Table 2: Natural Gas Prices Under the Navigant Cases, Compared to the Energy Information Administration's Annual Energy Outlook 2012[16]

	AEO 2012	**Navigant Reference Case**	**Cove Point Export**	**Aggregate Export**	**Extreme Demand**
Henry Hub Gas Price ($2010/MMBtu)	$4.80	$4.98	$5.27	$5.85	$6.16

[16] Based upon Navigant Report at 42 (Appendix D) and the Energy Information Administration's Annual Energy Outlook 2012 Reference Case, Table A13, attached as Ex. 11.

in 2020					
...in 2030	$6.19	$6.35	$ 6.61	$6.84	$8.03
… **in 2035**	$7.35	$7.38	$7.77	$8.03	$9.45
…in 2040	[17]	$8.64	$9.16	$9.64	$11.20

A few points are worth highlighting. First, it is important to note that Navigant's reference case does *not* represent business as usual, because it assumes that both the Sabine Pass and Kitimat LNG export proposals go forward, even though neither proposal has been finally approved. *See* Navigant Report at 13. As such, it builds 2.7 bcf/d of exports into its reference case by 2017. *Id.* The Energy Information Administration (EIA), in contrast, includes only 2.2 bcf/d of exports in its reference case in the Annual Energy Outlook (AEO) for 2012, reaching this capacity in 2019. EIA, *AEO 2012 Early Release Overview* (Jan. 2012).[18] So, Navigant's reference case already includes more export capacity than the EIA's, coming online sooner. The EIA's reference case is therefore the more conservative baseline, and DOE/FE must use either it, or a "no exports" baseline, which most fairly captures the additional impacts of gas exports.

Cove Point would significantly increase gas prices, on either baseline. If Cove Point were to come online, but no other proposals other than Sabine Pass and Kitimat went forward, it would increase gas prices from the EIA's reference by just under 10% in 2020, just under 7% in 2030, and just under 6% in 2035. If more export terminals were approved (up to 7.1 bcf/d in Navigant's case), the increase in 2020 is 22% of the AEO 2012 reference case. If gas demand also increases in that year, the price increase is over 28%.

These are major increases in gas price, and will have substantial economic consequences. But even these increases, substantial though they are, are smaller than those which may well occur based only on the current raft of LNG export proposals, as next discuss.

b. The Cumulative Economic Harm Associated with DCP's Proposal and Other Export Applications Is Even Larger

DOE/FE and FERC are considering export proposals from many operators, which cumulatively propose to export 15.8 bcf/d of LNG when operating at maximum capacity, as the table below shows. This is the equivalent of roughly 22% of total domestic gas production. Energy Information Administration ("EIA"), Monthly Natural Gas Gross Production Report (Jan. 30, 2012)[19] (daily production is ~70 bcf). Notably, 13.73 bcf/d of exports have been requested to countries with which the United States has a free trade agreement; DOE/FE lacks discretion to deny those requests, meaning that this volume,

[17] AEO 2012 only projects prices to 2035.
[18] Attached as Ex. 12.
[19] Attached as Ex. 13.

at a minimum, is likely to be cleared for export. Both the 13.73 bcf/d and 15.8 bcf/d figures are far higher than the 7.1 bcf/d *maximum* export figure in DCP's application. Price impacts can reasonably be expected to be commensurately greater.

Table 3: Proposed LNG Export Projects[20]

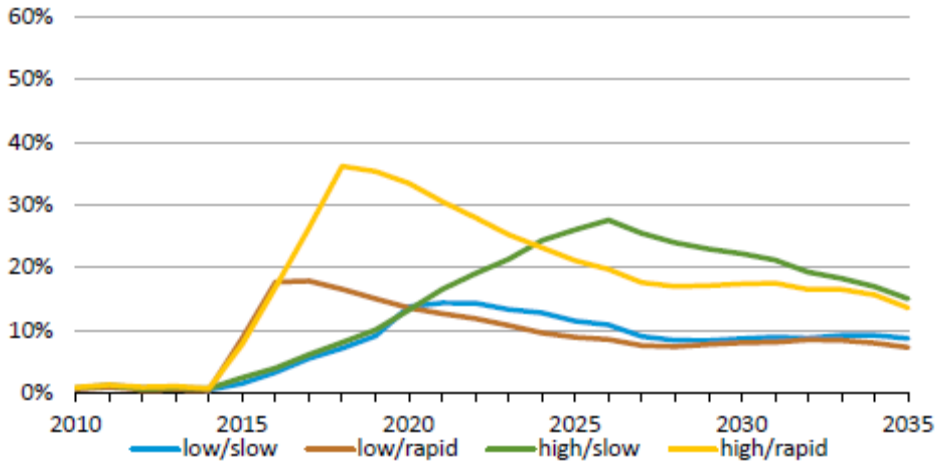
LNG Export Project	State	Proposed Export Capacity (Bcf/day)
Operating Terminals		
Sabine Pass	LA	2.2
Freeport (Phase 1)	TX	1.4
Freeport (Phase 2)	TX	1.4
Lake Charles	LA	2.0
Cove Point	MD	1.0
Cameron	LA	1.7
Subtotal		**9.7**
Other Projects		
Jordan Cove	OR	1.2
Gulf Coast LNG	TX	2.8
Corpus Christi	TX	2.1
Subtotal		**6.1**
Total		**15.8**

The EIA has recently released its analysis of the impacts high export volumes would have – though even the EIA report considers a maximum of 12 bcf/d in exports, which still falls short of the volume DOE/FE has been asked to approve. EIA, *Effect of Increased Natural Gas Exports on Domestic Energy Markets* ("*EIA Study*") (Jan. 2012).[21] Even at the EIA's maximum level, though, price increases are striking.

EIA considered several combinations of conditions, based on both shale gas export rates and economic circumstances. It considered a "low" export case of 6 bcf/d, phased in either quickly or slowly starting in 2015, and a "high" case of 12 bcf/d, again phased in quickly or slowly. EIA Study at 1. It considered the effects of these exports in the context of the EIA's AEO 2011 reference case, and in circumstances where shale recoveries were 50% higher or lower than in the reference case, and in a high economic growth reference case. *Id.* Generally, EIA's results are consistent with Navigant's, although higher export figures, and quicker export ramp-up corresponds with sharper price increases. EIA summarizes its results, for its four cases as follows:

Figure 1:[22] Natural Gas Wellhead[23] Price Percentage Increases from the AEO 2011 Baseline

[20] Summary: Long-Term Applications Received by DOE/FE to Export Domestically Produced LNG From the Lower-48 States (Jan. 17, 2012), attached as Ex. 14.
[21] Attached as Ex. 15.
[22] From the EIA Study, at 8.



The results are generally consistent with Navigant's figures: Lower exports (around 6 bcf/d – in the range of Navigant's "aggregate export" case) produce price increases of between 10-20% by 2020, while higher exports can push wellhead prices up by just under 40%. If shale gas supplies are more limited, the EIA projects sharper price increases – by over 50% in the high/rapid scenario. *EIA Study* at 9.

These wellhead price increases translate into marked increases in gas and electricity bills. EIA summarizes that:

> Even while consuming less, on average, consumers will see an increase in their natural gas and electricity expenditures. On average, from 2015 to 2035, natural gas bills paid by end-use consumers in the residential, commercial, and industrial sectors combined increase 3 to 9 percent over a comparable baseline case with no exports, depending on the export scenario and case, while increases in electricity bulls paid by end-use customers paid by end-use customers range from 1 to 3 percent. In the rapid growth cases, the increase is notably greater in the early years relative to the later years. The slower export growth cases tend to show natural gas bills increasing more towards the end of the projection period.

EIA Study at 6. These percentage increases are very large in absolute terms. In the low/slow scenario, gas and electricity bills increase by $9 billion *per year*, and this increase grows to $20 billion per year. *EIA Study* at 14.

In short, whatever economic benefits gas exports create also come with multi-billion dollar annual costs to U.S. consumers. These costs are large even with export levels of about 6 bcf/d, which is a level equivalent to just over half of the total volume of exports

[23] Note that Henry Hub prices are generally higher than wellhead prices, meaning that these increases will be more substantial in trading at the Henry Hub.

already proposed. So, even if not all export proposals are approved, consumers will bear massive costs. These costs will be nationally distributed, while the benefits of export, if any, will be more strongly localized in the hands of certain parties in gas-producing areas.

c. Gas and Electricity Price Increases Caused by Gas Exports Are Not In the Public Interest

Natural gas is used for home heating, industrial feedstocks, and electricity generation, among other purposes. Gas price increases are, as a result, felt across the economy, and in many different sectors. As power prices rise, so do the prices of consumer goods and other services, and employment may, in turn, fall as it becomes more expensive to run businesses.[24] DCP's proposal would benefit a small subset of citizens (mostly those in the oil and gas sector) while penalizing millions more. These cost increases appear even if only a few export terminals are permitted, and grow steadily more severe as more terminals are added. DOE/FE must consider the full range of possible increases, but even at low levels, these price increases are not consistent with the public interest, because they outweigh the limited, and uncertain, benefits of short-term increases in gas production. DOE/FE must, therefore, deny DCP's application for this reason as well.

d. The *Sabine Pass* Decision Is Not to the Contrary

It is true that DOE/FE conditionally approved up to 2.2 bcf/d of exports from the Sabine Pass facility last year, *see Sabine Pass* at 1-2, but that decision, even if correct, which Sierra Club does not concede, does not control here, for at least two independent reasons.

First, DOE/FE grounded its opinion on the lack of "factual studies or analyses" demonstrating that gas exports would raise domestic gas and electricity prices, or challenging the benefits IMPLAN modeling predicted. *Id.* at 30. Such evidence is amply supplied here. Sierra Club has demonstrated why IMPLAN modeling must not be seen as conclusive evidence of economic benefits, and has provided extensive data from the EIA itself showing that exports will trigger multi-billion dollar price increases.

Second, DOE/FE, at that time, was only considering Sabine Pass's own proposed exports. Now that it has conditionally approved those exports, they have become part of the new baseline, along with their price increases. Thus, DCP's price increases will drive prices still higher. The fact that DOE/FE was willing to conditionally approve an initial price increase does not mean that it must find that *another* price increase is also not

[24] One of the consequences of these increased costs may be a drop-off in U.S. exports, offsetting DCP's claimed improvements to the U.S. balance of trade. DOE/FE must investigate this possible harm to the public interest.

inconsistent with the public interest. On the contrary, the circumstances demonstrate that further increases are *not* in the public increase.

DOE/FE should therefore take the opportunity to reconsider the course it took in *Sabine Pass* and start afresh, now with the benefit of substantial empirical data which demonstrates that LNG export is not in the public interest.

3. DCP's Export Plans Will Cause Significant Environmental Harm

Even if DCP's claimed economic benefits were clear (which they are not) and even if gas exports did not impose billions of dollars in costs on the economy, as they do, DCP's proposal would still be contrary to the public interest because it will impose significant environmental costs. The increased gas production associated with gas exports – and, thanks to higher gas prices, increased coal use – will threaten many public resources. Gas production is a major air pollution source, including of climate-change causing greenhouse gases. It industrializes entire landscapes, disrupting ecosystems and watersheds. Gas production also poses a host of water and waste issues.

Each of these environmental harms translates into economic damage. If pollution sickens people, or restricts their travel, economic productivity will suffer – as it will, more directly, if clean air and water and adequate waste disposal capacity are not available. Similarly, as landscapes are industrialized, tourism, agricultural, forestry, hunting and angling, and other place-dependent industries will suffer. Thus, DOE/FE must both consider these environmental impacts in and of themselves *and* monetize them to weigh them against other economic harms in the public interest analysis.

Because the oil and gas industry is exempt, in whole or in part, from many federal environmental laws, gas production regulation has largely been left to the states. Neither state nor federal regulators have yet imposed regulations sufficient to manage the risks of gas extraction, nor demonstrated that they have adequate resources to enforce any regulations.

At the request of President Obama, DOE appointed a Subcommittee of the Secretary of Energy's Advisory Board to consider ways to address the environmental risks of gas production. The Subcommittee concluded, in two reports, that the environmental impact of gas extraction is now too high, and must be reduced through government and private sector initiatives. As the Subcommittee explained:

> The Subcommittee believes that if action is not taken to reduce the environmental impact accompanying the very considerable expansion of shale gas production expected across the country – perhaps as many as 100,000 wells over the next several decades – there is a real risk of serious environmental consequences causing a loss of public confidence that could delay or stop this activity.

DOE, Secretary of Energy's Advisory Board, *Shale Gas Production Subcommittee Second 90-Day Report* (Nov. 18, 2011) at 10.[25] To address these impacts, the Board recommended a wide range of actions, including finalizing comprehensive air pollution rules, *id.* at 5, launching a federal effort to fully understand greenhouse gas emissions from the industry, *id.* at 4, fully disclosing fracking fluid composition, *id.*, banning diesel fuel in fracking fluid, *id.*, tracking drilling waste with a manifest system, *id.* at 7, and adopting best practices in well casing and construction, *id.* Thus far, *none* of these recommendations have been fully implemented. As the Subcommittee stated:

> The Subcommittee has the impression that its initial report stimulated interest in taking action to reduce the environmental impact of shale gas production by the administration, state governments, industry, and public interest groups. However, the progress to date is less than the Subcommittee hoped and it is not clear how to catalyze action at a time when everyone's attention is focused on economic issues, the press of daily business, and an upcoming election. The Subcommittee cautions that whether its approach is followed or not, some concerted and sustained action is needed to avoid excessive environmental impacts of shale gas production and the consequent risk of public opposition to its continuation and expansion.

Id. at 10.

Although the U.S. Environmental Protection Agency (EPA), like some other federal agencies, is moving forward on rulemakings to address some of the many environmental risks inherent to gas extraction, its work is far from done, and EPA will not have the capacity to comprehensively oversee the industry in the foreseeable future. Administrator Lisa Jackson recently explained as much, as InsideEPA reported:

> EPA Administrator Lisa Jackson says the agency's limited resources make it impossible for federal regulators to be able to broadly oversee hydraulic fracturing operations -- even if Congress were to restore EPA's legal authority to regulate the injection process once officials complete their pending study on whether the process impacts drinking water.
>
> "Let me speak really plainly," Jackson told a Jan. 31 teleconference hosted by the American Sustainable Business Council (ASBC). *"There is no EPA setup that allows us to oversee each and every well that's drilled."*

InsideEPA, "Jackson Downplays Concern Over Broad EPA Oversight of Fracking Wells" (Feb. 1, 2012) (emphasis added).[26] As a result, oversight will fall to state regulators. Although some states are more prepared than others, there is no evidence in the record that *any* state has yet been able to fully update its regulations to address the particular

[25] Attached as Ex. 16. The Board's First 90-Day Report is attached as Ex. 17.
[26] Attached as Ex. 18.

issues associated with shale gas extraction, or that any state has the resources to oversee each gas well sufficiently to reduce significant environmental risks to an acceptable level.

In these circumstances, it is not in the public interest to press ahead with export plans which will increase gas production, and so exacerbate the pace and severity of the environmental damage about which the Subcommittee has warned. DOE/FE must not do so until the Subcommittee's recommendations have been carried out, or equivalent steps have been taken to reduce the industry's environmental impacts.

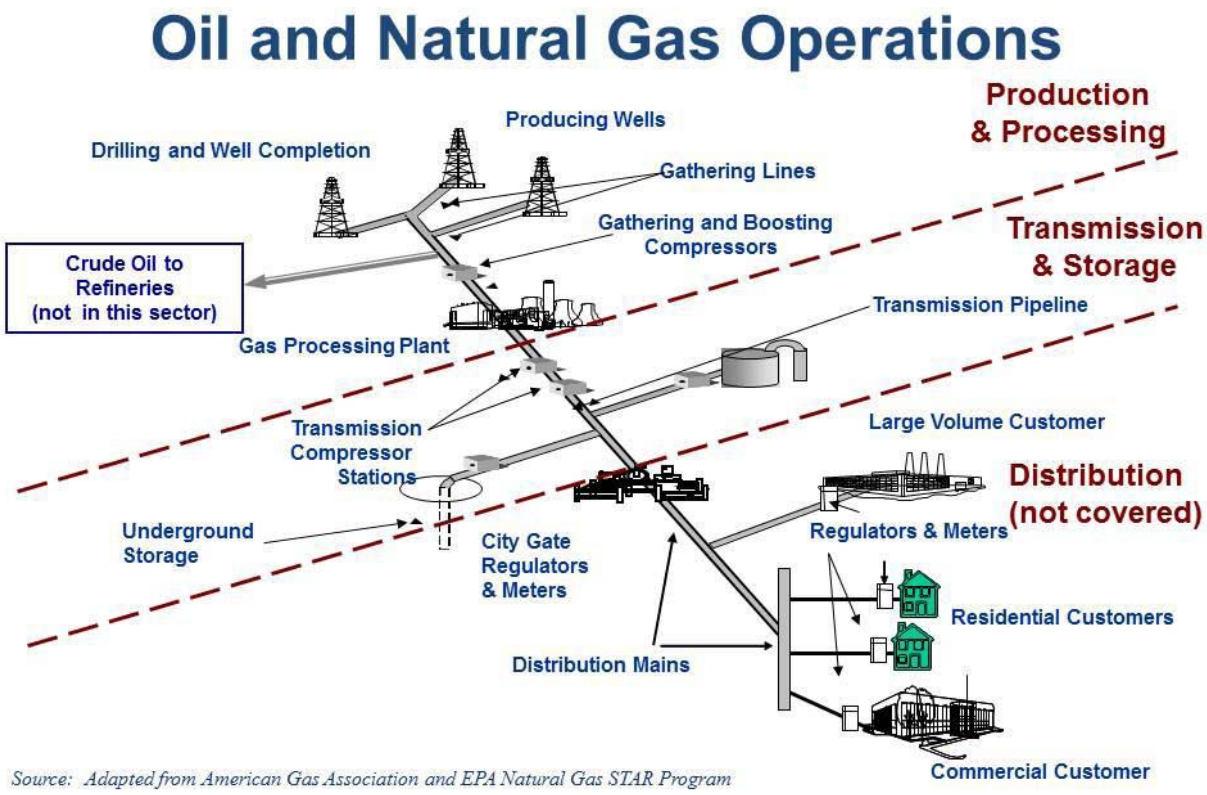
Below, we describe these impacts in more detail. Notably, DCP has failed even to *acknowledge* any of these impacts, much less explain whether or how it could reduce them. Although DCP premises its application on its project's ability to "encourage and support increased domestic production of natural gas," DCP Application at 35, it nowhere acknowledges that this increased production even has environmental impacts. In the scanty two paragraphs DCP devotes to the impacts of its plans, it offers only a vague discussion of the "facilities" it intends to construct at the Cove Point site. *Id.* at 45. Yet, the environmental impacts of increased gas production are very large, and demonstrate that, for this reason as well, DCP's proposal is not in the public interest.

a. Natural Gas Production Is a Major Source of Air Pollution

Oil and gas development includes numerous stages and facilities, all of which contribute to substantial amounts of air emissions and resultant dangerous air pollution. As depicted below, the sector includes four stages: (1) oil and natural gas production, (2) natural gas processing, (3) natural gas transmission, and (4) natural gas distribution.[27]

Figure 2: The Oil and Natural Gas Sector

[27] EPA, *Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution, Background Technical Support Document for the Proposed Rules* ("TSD") at 2-4 (July 2011), attached as Ex. 19.



Within these development stages, the major sources of air pollution include wells, compressors, pipelines, pneumatic devices, dehydrators, storage tanks, pits and ponds, natural gas processing plants, and trucks and construction equipment. Major air pollutants of concern from these operations include methane (CH_4), volatile organic compounds (VOCs), nitrogen oxides (NO_x), sulfur dioxide (SO_2), hydrogen sulfide (H_2S), and particulate matter (PM_{10} and $PM_{2.5}$). Oil and natural gas operations also emit listed hazardous air pollutants (HAPs) in significant quantities, and so contribute to cancer risks and other acute public health problems.

Below, we briefly describe some of the primary air pollution problems caused by the industry. These issues include direct emissions from production equipment and indirect emissions, caused by natural gas replacing cleaner energy sources. EPA is moving to correct some of these problems with new air regulations, to be finalized this April but, as we later discuss, these standards, though important, will not fully address the problem, meaning that DOE/FE must still consider it, even if the rules are, indeed, finalized.

i. Air Pollution Problems from Natural Gas

Oil and gas operations emit methane, volatile organic compounds, nitrogen oxides, sulfur dioxide, and particulate matter, amongst other pollutants. Each of these pollutants is a threat to public health and welfare, and any increase in the emissions of those pollutants is, all else being equal, contrary to the public interest.

Methane and Other Climate-Change-Causing Pollutants: Methane is the dominant pollutant from the oil and gas sector. Emissions occur as result of intentional venting or unintentional leaks during drilling, production, processing, transmission and storage, and distribution. For example, methane is emitted when wells are completed and vented, as part of operation of pneumatic devices and compressors, and as a result of leaks (fugitive emissions) in pipelines, valves, and other equipment. EPA has identified natural gas systems as the "single largest contributor to United States anthropogenic methane emissions."[28] The industry is responsible for over 40% of total U.S. methane emissions, which amounts to 5% of all carbon dioxide equivalent (CO_2e) emissions in the country.[29]

Methane is a potent greenhouse gas that contributes substantially to global climate change. Methane has at least 25 times the global warming potential of carbon dioxide over a 100 year time frame and at least 72 times the global warming potential of carbon dioxide over a 20-year time frame.[30]

Because of methane's effects on climate, EPA has found that methane, along with five other well-mixed greenhouse gases, endanger public health and welfare within the meaning of the Clean Air Act.[31] The impacts of climate change caused by methane and other greenhouse gases include "increased air and ocean temperatures, changes in precipitation patterns, melting and thawing of global glaciers and ice, increasingly severe weather events, such as hurricanes of greater intensity and sea level rise."[32] A warming climate will also lead to loss of coastal land in densely populated areas, shrinking snowpack in Western states, increased wildfires, and reduced crop yields.[33] More frequent heat waves as a result of global warming have already affected public health, leading to premature deaths. And threats to public health are only expected to increase as global warming intensifies. For example, a warming climate will lead to

[28] 76 Fed. Reg. 52,738, 52,792 (Aug. 23, 2011) (EPA proposed air rules for oil and gas production sector), attached as Ex 20.
[29] *Id.* at 52,791–92.
[30] *IPCC 2007—The Physical Science Basi*s, Section 2.10.2, attached as Exhibit 21; *see also IPCC 2007-Summary for Policymakers*, attached as Ex. 22. We note that these global warming potential figures may be revised upward in the next IPCC report. A more recent study by Shindell *et al.* estimates methane's 100-year GWP at 33; this same source estimates methane's 20-year GWP at 105.
[31] EPA, Endangerment and Cause or Contribute Findings for Greenhouse Gases, 74 Fed. Reg. 66,496, 66,516 (Dec. 15, 2009) ("Endangerment Finding"), attached as Exhibit 23.
[32] 76 Fed. Reg. at 52,791-22 (citing U.S. EPA, 2011 U.S. GREENHOUSE GAS INVENTORY REPORT EXECUTIVE SUMMARY (2011), http://www.epa.gov/climateexchange/emissions/downloads11/US-GHGInventory-2011-Executive Summary.pdf) attached as Exhibit 24).
[33] *Id.* at 66,532–33.

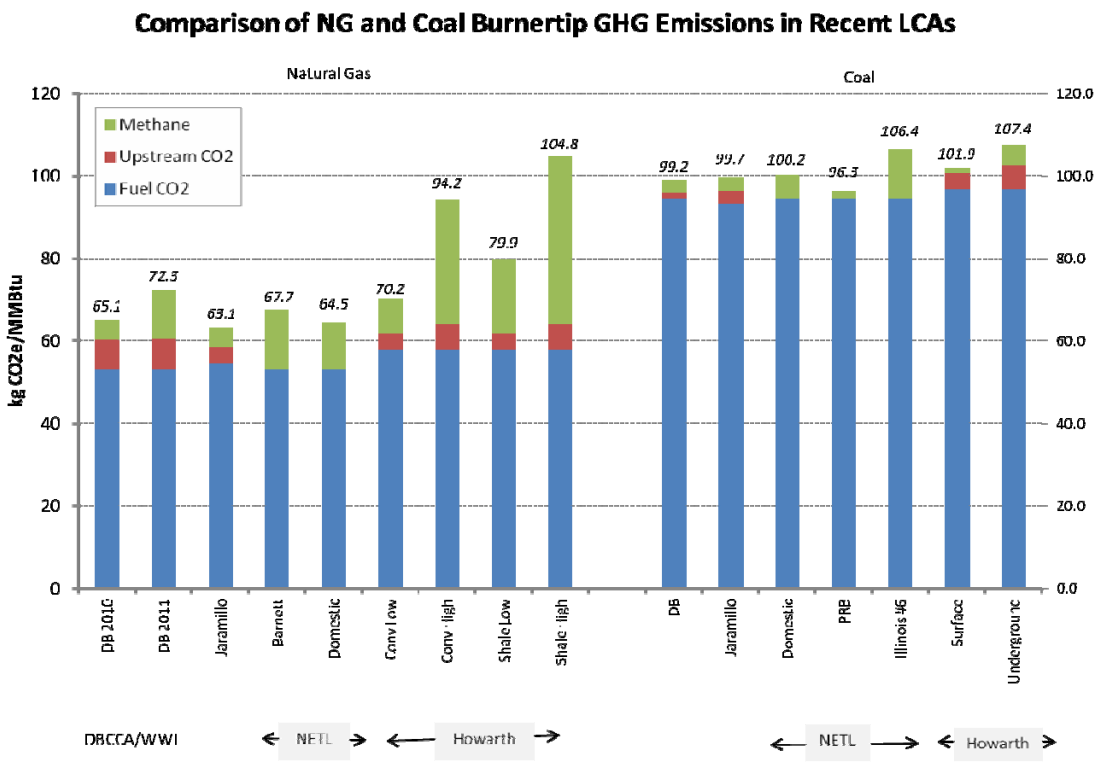
increased incidence of respiratory and infectious disease, greater air and water pollution, increased malnutrition, and greater casualties from fire, storms, and floods.[34] Vulnerable populations—such as children, the elderly, and those with existing health problems—are the most at risk from these threats.

Further, though natural gas, when burned, produces less greenhouse gas pollution than other fuels, like coal and oil, these benefits are offset by the production sector's status as the largest domestic methane source. These emissions emerge from all facilities in the sector, but well completions are among the largest single sources. EPA recently estimated methane emissions from a conventional well completion at only 0.76 tons, while an unconventional well completion yielded 150.6 tons of methane.[35] Conventional wells remain the largest *overall* source, however, as unconventional wells still constitute a minority of all wells. Thus, whether Cove Point would stimulate unconventional production (as it claims) or conventional production, it will accelerate greenhouse gas emissions from the industry.

Numerous studies have attempted to calculate just how much these upstream methane emissions degrade natural gas's combustion advantage over coal. Although most studies find that natural gas retains *some* advantage, that advantage is clearly diminished. The one of the most recent of these studies, a report from the Worldwatch Institute and Deutsche Bank,[36] synthesizes three other reports, which were prepared by Dr. Robert Howarth et al., of Cornell,[37] Mohan Jiang et al. of Carnegie-Mellon,[38] and Timothy Skone of NETL.[39] As the figure below shows, whether viewed in absolute terms as a very large methane source, on in relative terms in the context of energy production, increased gas extraction is accompanied by increased greenhouse gas emissions.

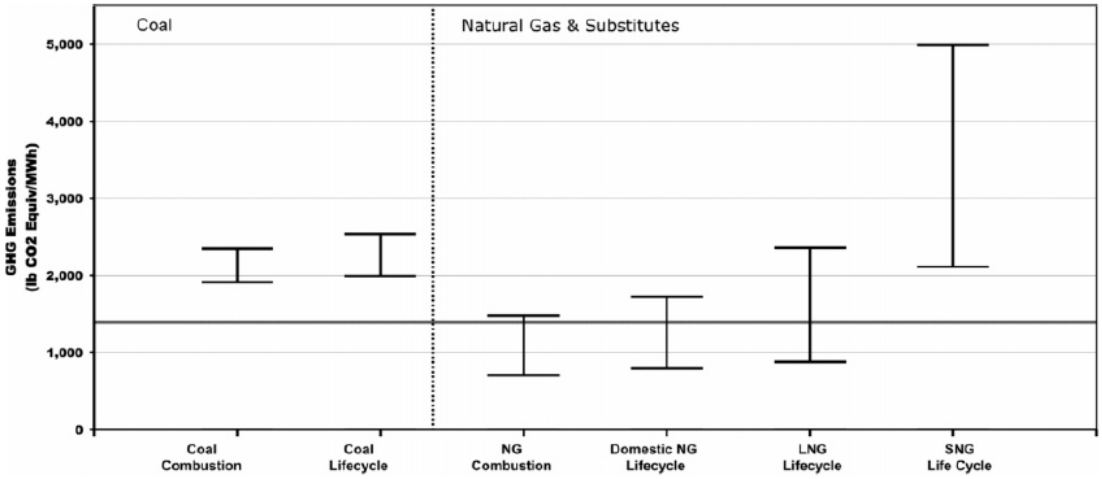
Figure 3:

[34] EPA, *Climate Change, Health and Environmental Effects*, *available at* http://epa.gov/climatechange/effects/health.html, attached hereto as Exhibit 25.
[35] EPA, *Oil and Natural Gas Sector: Standards of Performance for Crude Oil and Natural Gas Production, Transmission, and Distribution; Background Technical Support Document for Proposed Standards* (July 2011) at Table 4-6, attached as Exhibit 26.
[36] Mark Fulton *et al.*, *Comparing Life-Cycle Greenhouse Gas Emissions from Natural Gas and Coal* (Aug. 25, 2011), attached as Ex. 27.
[37] Robert W. Howarth *et al.*, *Methane and the greenhouse-gas footprint of natural gas from shale formations*, Climactic Change (Mar. 2011), attached as Ex. 28.
[38] Mohan Jiang *et al.*, *Life cycle greenhouse gas emissions of Marcellus shale gas*, Environ. Res. Letters 6 (Aug. 2011), attached as Ex. 29.
[39] Timothy J. Skone, *Life Cycle Greenhouse Gas Analysis of Natural Gas Extraction and Delivery in the United States*, Presentation to Cornell (May 12, 2011), attached as Ex. 30.. NETL has also put out a fuller version of this analysis. *See* Timothy J. Skone, *Life Cycle Greenhouse Gas Inventory of Natural Gas Extraction, Delivery and Electricity Production* (Oct. 24, 2011), attached as Ex. 31..



And there is still another wrinkle in the context of LNG. Because LNG requires additional energy to liquefy, transport, and then regasify, its energy and emissions lifecycle releases substantially more greenhouse pollution than that of gas generally, whether conventionally or unconventionally sourced. In fact, according to the only published lifecycle study of LNG used for electricity generation of which we are aware, these upstream emissions are sufficient to push LNG lifecycle emissiosn well above those of natural gas generally, and into the range of coal emissions.

Figure 4: Life-Cycle Emissions of LNG, Natural Gas, and Coal in Electricity Generation[40]



Notably, this study was conducted before EPA raised its emissions estimates for natural gas, and before unconventional gas plays boomed. Because unconventional gas already ahs higher emissions than conventional gas, *liquefied* unconventional gas will have higher emissions still, further erasing any daylight between LNG and coal emissions in electric power. Thus, DCP's claim that natural gas "significantly reduces total greenhouse gas emissions," which it offers as a justification for export, *see* DCP Application at 19, is plainly unsupported.

Finally, natural gas use, and LNG export in particular, can increase greenhouse gas pollution by displacing other fuels and renewable energy. This can happen in two ways: Cheap gas may outcompete renewable energy in some markets. Second, perversely, more expensive gas may actually drive some utilities towards coal, rather than renewables, if renewables are deemed more expensive than available coal resources. This is precisely what the EIA projects will happen if LNG exports go forward, raising gas prices. According to the EIA, LNG exports would benefit renewable power somewhat (by raising gas prices) but would benefit coal power more (because coal appears cheaper than renewables in some markets). The result is yet more greenhouse gas pollution, in each of the EIA's cases, as the table below demonstrates:

[40] From Jaramillo et al., *Comparative Life-Cycle Air Emissions of Coal, Domestic Natural Gas, LNG, and SNG for Electricity Generation*, 41 Environ. Sci. Technol. 6,290, 6,295 (2007), attached as Ex. 32. "SNG," in the figure, refers to synthetic natural gas made from coal.

Table 4: Cumulative CO_2 Emissions from 2015 to 2035 With Various Export Scenarios[41]

Case	no added exports	low/slow	low/rapid	high/slow	high/rapid
Reference					
Cumulative carbon dioxide emissions	125,056	125,699	125,707	126,038	126,283
Change from baseline		643	651	982	1,227
Percentage change from baseline		0.5%	0.5%	0.8%	1.0%
High Shale EUR					
Cumulative carbon dioxide emissions	124,230	124,888	124,883	125,531	125,817
Change from baseline		658	653	1,301	1,587
Percentage change from baseline		0.5%	0.5%	1.0%	1.3%
Low Shale EUR					
Cumulative carbon dioxide emissions	125,162	125,606	125,556	125,497	125,670
Change from baseline		444	394	335	508
Percentage change from baseline		0.4%	0.3%	0.3%	0.4%
High Economic Growth					
Cumulative carbon dioxide emissions	131,675	131,862	132,016	131,957	132,095
Change from baseline		187	341	282	420
Percentage change from baseline		0.1%	0.3%	0.2%	0.3%

Source: U.S. Energy Information Administration, National Energy Modeling System, with emissions related to natural gas assumed to be consumed in the liquefaction process included.

In short: exports will drive increased natural gas production, which will increase absolute methane emissions. This gas will be converted to LNG, emitting so much carbon dioxide in the process that, when burned, the fuel is roughly equivalent to coal. Meanwhile, higher prices at home will increase the use of coal power, all else being equal, adding yet another increment of emissions. The conclusion is quite clear: LNG export is disastrously bad climate policy.

Finally, we note that methane also reacts in the atmosphere to form ozone.[42] As we discuss below, ozone is a major public health threat, linked to a wide range of maladies. Ozone can also damage vegetation, agricultural productivity, and cultural resources. Ozone is also a significant greenhouse gas in its own right, meaning that methane is doubly damaging to climate – first in its own right, and then as an ozone precursor.

Volatile Organic Compounds (VOCs) and NO_x: VOCs and NO_x contribute to the formation of ground-level ozone (also referred to as smog). Smog pollution harms the

[41] From the *EIA Study* at 19.
[42] 76 Fed. Reg. at 52,791..

respiratory system and has been linked to premature death, heart failure, chronic respiratory damage, and premature aging of the lungs.[43] Smog may also exacerbate existing respiratory illnesses, such as asthma and emphysema, or cause chest pain, coughing, throat irritation and congestion. Children, the elderly, and people with existing respiratory conditions are the most at risk from ozone pollution.[44]

Significant ozone pollution also damages plants and ecosystems.[45] Ozone also contributes substantially to global climate change over the short term. According to a recent study by the United Nations Environment Program (UNEP), behind carbon dioxide and methane, ozone is now the third most significant contributor to human-caused climate change.[46]

The gas industry is a major source of the ozone precursors VOCs and NO_x.[47] VOCs are emitted from well drilling and completions, compressors, pneumatic devices, storage tanks, processing plants, and fugitives from production and transmission.[48] The primary sources of NO_x are compressor engines, turbines, and other engines used in drilling and hydraulic fracturing.[49] NO_x is also produced when gas is flared or used for heating.[50]

As a result of significant VOC and NO_x emissions associated with oil and gas development, numerous areas of the country with heavy concentrations of drilling are now suffering from serious ozone problems. For example, the Dallas Fort Worth area in Texas is home to substantial oil and gas development. Within the Barnett shale region, as of September 2011, there were more than 15,306 gas wells and another 3,212 wells

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[43] RIA at 4-25; Jerrett *et al.*, *Long-Term Ozone Exposure and Mortality*, New England Journal of Medicine (Mar. 12, 2009), *available at* http://www.nejm.org/doi/full/10.1056/NEJMoa0803894#t=articleTop, attached as Exhibit 33.

[44] *See* EPA, *Ground-Level Ozone, Health Effects*, *available at* http://www.epa.gov/glo/health.html attached hereto as Exhibit 23. EPA, Nitrogen Dioxide, Health, available at http://www.epa.gov/air/nitrogenoxides/health.html, attached hereto as Exhibit 34.

[45] RIA at 4-26.

[46] *Id. See also* United Nations Environment Programme and World Meteorological Organization, (2011): *Integrated Assessment of Black Carbon and Tropospheric Ozone: Summary for Decision Makers* (hereinafter "UNEP Report," available at http:// www.unep.org/dewa/Portals/67/pdf/Black_Carbon.pdf), at 7, attached hereto as Exhibit 35.

[47] *See, e.g.,* EPA Fact Sheet at 3; Al Armendariz, *Emissions from Natural Gas Production in the Barnett Shale Area and Opportunities for Cost-Effective Improvements* (Jan. 26, 2009), *available at* http://www.edf.org/documents/9235_Barnett_Shale_Report.pdf (hereinafter "Barnett Shale Report") at 24, attached hereto as Exhibit 35.

[48] *See, e.g.,* TSD at 4-7, 5-6, 6-5, 7-9, 8-1; *see also* Barnett Shale Report at 24.

[49] *See, e.g.,* TSD at 3-6; *See also* Barnett Shale Report at 24. *Air Quality Impact Analysis Technical Support Document for the Revised Draft Supplemental Environmental Impact Statement for the Pinedale Anticline Oil and Gas Exploration and Development Project* at 11 (Table 2.1).

[50] TSD at 3-6; Colorado Department of Public Health and Environment, *Colorado Visibility and Regional Haze State Implementation Plan for the Twelve Mandatory Class I Federal Areas in Colorado*, Appendix D at 1 (2011), available at http://www.cdphe.state.co.us/ap/RegionalHaze/AppendixD/4-FactorHeaterTreaters07JAN2011FINAL.pdf..

permitted.[51] Of the nine counties surrounding the Dallas Forth Worth area that EPA has designated as "nonattainment" for ozone, five contain significant oil and gas development.[52] A 2009 study found that summertime emissions of smog-forming pollutants from these counties were roughly comparable to emissions from motor vehicles in those areas.[53]

Oil and gas development has also brought serious ozone pollution problems to rural areas, such as western Wyoming.[54] On March 12, 2009, the governor of Wyoming recommended that the state designate Wyoming's Upper Green River Basin as an ozone nonattainment area.[55] The Wyoming Department of Environmental Quality conducted an extended assessment of the ozone pollution problem and found that it was "primarily due to local emissions from oil and gas . . . development activities: drilling, production, storage, transport, and treating."[56] Last winter alone, the residents of Sublette County suffered thirteen days with ozone concentrations considered "unhealthy" under EPA's current air-quality index, including days when the ozone pollution levels exceeded the worst days of smog pollution in Los Angeles.[57] Residents have faced repeated warnings regarding elevated ozone levels and the resulting risks of going outside.[58]

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[51] Texas Railroad Commission, http://www.rrc.state.tx.us/data/fielddata/barnettshale.pdf (Accessed Nov. 21, 2011), attached hereto as Exhibit 37.
[52] Barnett Shale Report at 1, 3.
[53] *Id.* at 1, 25-26.
[54] Schnell, R.C, et al. (2009), "Rapid photochemical production of ozone at high concentrations in a rural site during winter," *Nature Geosci.* 2 (120 – 122). DOI: 10.1038/NGEO415, attached hereto as Exhibit 38.
[55] *See* Letter from Wyoming Governor Dave Freudenthal to Carol Rushin, Acting Regional Administrator, USEPA Region 8, (Mar. 12, 2009) ("Wyoming 8-Hour Ozone Designation Recommendations"), *available at* http://deq.state.wy.us/out/downloads/Rushin%20Ozone.pdf, attached hereto as Exhibit 39; Wyoming Department of Environmental Quality, Technical Support Document I for Recommended 8-hour Ozone Designation of the Upper Green River Basin (March 26, 2009) ("Wyoming Nonattainment Analysis"), at vi-viii, 23-26, 94-05, *available at* http://deq.state.wy.us/out/downloads/Ozone%20TSD_final_rev%203-30-09_jl.pdf, attached hereto as Exhibit 40.
[56] Wyoming Nonattainment Analysis at viii.
[57] EPA, *Daily Ozone AQI Levels in 2011 for Sublette County, Wyoming*, *available at* http://www.epa.gov/cgi-bin/broker?msaorcountyName=countycode&msaorcountyValue=56035&poll=44201&county=56035&msa=-1&sy=2011&flag=Y&_debug=2&_service=data&_program=dataprog.trend_tile_dm.sas, attached hereto as Exhibit 41.; *see also* Wendy Koch, *Wyoming's Smog Exceeds Los Angeles' Due to Gas Drilling*, USA Today, *available at* http://content.usatoday.com/communities/greenhouse/post/2011/03/wyomings-smog-exceeds-los-angeles-due-to-gas-drilling/1, attached hereto as Exhibit 42.
[58] *See, e.g., 2011 DEQ Ozone Advisories*, Pinedale Online! (Mar. 17, 2011) (documenting ten ozone advisories in February and March 2011), *available at* http://www.pinedaleonline.com/news/2011/03/OzoneCalendar.htm, attached hereto as Exhibit 33; Wyoming Department of Environmental Quality, Ozone Advisory for Monday, Feb. 28, Pinedale Online! (Feb. 27, 2011), *available at* http://www.pinedaleonline.com/news/2011/02/OzoneAdvisoryforMond.htm, attached hereto as Exhibit 43

Ozone problems are mounting in other Rocky Mountain states as well. Northeastern Utah recorded unprecedented ozone levels in the Uintah Basin in 2010 and 2011. In the first three months of 2010—which was the first time that winter ozone was monitored in the region—air quality monitors measured more than 68 exceedances of the federal health standard. On three of these days, the levels were almost twice the federal standard.[59] Between January and March 2011, there were 24 days where the National Ambient Air Quality Standard (NAAQS) for ozone were exceeded in the area. Again, ozone pollution levels climbed to nearly twice the federal standard.[60] The Bureau of Land Management (BLM) has identified the multitude of oil and gas wells in the region as the primary cause of the ozone pollution.[61]

Rampant oil and gas development in Colorado and New Mexico is also leading to high levels of VOCs and NO_x. In 2008, the Colorado Department of Public Health and Environment concluded that the smog-forming emissions from oil and gas operations exceed vehicle emissions for the entire state.[62] Moreover, significant additional drilling has occurred since 2008. Colorado is now home to more than 46,000 wells.[63] There is also significant development in the San Juan Basin in southeastern Colorado and northwestern New Mexico, with approximately 35,000 wells in the Basin. As a result of this development and several coal-fired power plants in the vicinity, the Basin suffers from serious ozone pollution.[64] This pollution is taking a toll on residents of San Juan County. The New Mexico Department of Public Health has documented increased emergency room visits associated with high ozone levels in the County.[65]

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[59] Scott Streater, *Air Quality Concerns May Dictate Uintah Basin's Natural Gas Drilling Future*, N.Y. TIMES, Oct. 1, 2010, *available at* http://www.nytimes.com/gwire/2010/10/01/01greenwire-air-quality-concerns-may-dictate-uintah-basins-30342.html?pagewanted=1 (last visited Sept. 28, 2011), attached hereto as Exhibit 44.

[60] *See* EPA, AirExplorer, Query Concentrations (Ozone, Uintah County, 2011), available at http://www.epa.gov/cgi-bin/htmSQL/mxplorer/query_daily.hsql?msaorcountyName=countycode&msaorcountyValue=49047&poll=44201&county=49047&site=-1&msa=-1&state=-1&sy=2011&flag=Y&query=download&_debug=2&_service=data&_program=dataprog.query_daily3P_dm.sas, attached hereto as Exhibit 45.

[61] BLM, *GASCO Energy Inc. Uinta Basin Natural Gas Development Draft Environmental Impact State*ment ("GASCO DEIS"), at 3-13, *available at* http://www.blm.gov/ut/st/en/fo/vernal/planning/nepa_/gasco_energy_eis.html, attached hereto as Exhibit 46.

[62] Colo. Dept. of Public Health & Env't, Air Pollution Control Division, Oil and Gas Emission Sources, *Presentation for the Air Quality Control Commission Retreat*, at 3-4 (May 15, 2008), attached hereto as Exhibit 47.

[63] Colorado Oil & Gas Conservation Commission, *Colorado Weekly & Monthly Oil and Gas Statistics*, at 12 (Nov. 7, 2011), available at http://cogcc.state.co.us/ (library—statistics—weekly/monthly well activity), attached hereto as Exhibit 48.

[64] *See Four Corners Air Quality Task Force Report of Mitigation Options*, at vii (Nov. 1, 2007), *available at* http://www.nmenv.state.nm.us/aqb/4C/TaskForceReport.html, attached hereto as Exhibit 49.

[65] Myers *et al.*, *The Association Between Ambient Air Quality Ozone Levels and Medical Visits for Asthma in San Juan County* (Aug. 2007), *available at*

Air quality in national parks and wilderness areas is also suffering as a result of oil and gas development. Researchers have determined that numerous "Class I areas" – a designation reserved for national parks, wilderness areas, and other such lands[66] – are likely to be impacted by increased ozone pollution as a result of oil and gas development in the Rocky Mountain region, including Mesa Verde National Park and Weminuche Wilderness Area in Colorado and San Pedro Parks Wilderness Area, Bandelier Wilderness Area, Pecos Wilderness Area, and Wheeler Peak Wilderness Area in New Mexico.[67] These areas are all near concentrated oil and gas development in the San Juan Basin.[68]

As oil and gas development moves into new areas, particularly as a result of the boom in development of shale resources, ozone problems are likely to follow. For example, regional air quality models predict that gas development in the Haynesville shale will increase ozone pollution in northeast Texas and northwest Louisiana and may lead to violations of ozone NAAQS.[69] Experts also anticipate air quality problems associated with development of the Marcellus shale in the Mid-Atlantic region.[70] In particular, the state of Delaware has conducted an extensive analysis of NOx pollution from the oil and gas sector, in part because Delaware is downwind from the gas plays which projects like Cove Point would support.[71] It demonstrates that Delaware and other downwind states will experience significant NOx pollution if production increases without appropriate controls.

Sulfur dioxide: Sulfur dioxide causes respiratory problems, including increased asthma symptoms. Short-term exposure to sulfur dioxide has been linked to increased emergency room visits and hospital admissions. Sulfur dioxide reacts in the atmosphere to form particulate matter (PM), an air pollutant which causes a great deal of harm to human health.[72] PM is discussed separately below.

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http://www.nmenv.state.nm.us/aqb/4c/Documents/SanJuanAsthmaDocBW.pdf, attached hereto as Exhibit 50.

[66] *See* 42 U.S.C. § 7472(a).

[67] Rodriguez et al., *Regional Impacts of Oil and Gas Development on Ozone Formation in the Western United States*, 59 Journal of the Air and Waste Management Association 111 (Sept. 2009), available at http://www.wrapair.org/forums/amc/meetings/091111_Nox/Rodriguez_et_al_OandG_Impacts_JAWMA9_09.pdf, attached hereto as Exhibit 51.

[68] *Id.* at 1112.

[69] *See* Kemball-Cook et al., *Ozone Impacts of Natural Gas development in the Haynesville Shale* 44 Environ. Sci. Technol. 9357, 9362 (Nov. 18, 2010), attached hereto as Exhibit 52.

[70] Elizabeth Shogren, *Air Quality Concerns Threaten Natural Gas's Image*, National Public Radio (June 21, 2011), *available at* http://www.npr.org/2011/06/21/137197991/air-quality-concerns-threaten-natural-gas-image, attached hereto as Exhibit 53.

[71] *See* Delaware Department of Natural Resources and Environmental Quality, *Background Information Oil and Gas Sector Significant Sources of NOx Emissions* (2011) attached as Exhibit 54.

[72] EPA, Sulfur Dioxide, Health, *available at* http://www.epa.gov/air/sulfurdioxide/health.html, attached hereto as Exhibit 55.

The primary source of sulfur dioxide from the oil and gas industry is natural gas processing plants.[73] Sulfur dioxide is released as part of the sweetening process, which removes hydrogen sulfide from the gas.[74] Sulfur dioxide is also created when gas containing hydrogen sulfide (discussed below) is combusted in boilers or heaters.[75]

Hydrogen sulfide: Hydrogen sulfide is an air pollutant with toxic properties that smells like rotten eggs and can lead to neurological impairment or death. Long-term exposure to hydrogen sulfide is linked to respiratory infections, eye, nose, and throat irritation, breathlessness, nausea, dizziness, confusion, and headaches.[76] Although hydrogen sulfide was originally included in the Clean Air Act's list of hazardous air pollutants, it was removed with industry support.[77]

Some natural gas contains hydrogen sulfide. When hydrogen sulfide levels are above a specific threshold, gas is classified as "sour gas."[78] According to EPA, there are 14 major areas in the U.S., found in 20 different states, where natural gas tends to be sour.[79] All told, between 15 and 20% of the natural gas in the U.S. may contain hydrogen sulfide.[80]

Given the large amount of drilling in areas with sour gas, EPA has concluded that the potential for hydrogen sulfide emissions from the oil and gas industry is "significant."[81] Hydrogen sulfide may be emitted during all stages of development, including exploration, extraction, treatment and storage, transportation, and refining.[82] For

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[73] 76 Fed. Reg. at 52,756.
[74] TSD 3-3 to 3-5.
[75] 76 Fed. Reg. at 52,756.
[76] EPA, Office of Air Quality Planning and Standards, *Report to Congress on Hydrogen Sulfide Air Emissions Associated with the Extraction of Oil and Natural Gas* (EPA-453/R-93-045), at i (Oct. 1993) (hereinafter "EPA Hydrogen Sulfide Report"); *available at* http://nepis.epa.gov/Exe/ZyNET.exe/00002WG3.TXT?ZyActionD=ZyDocument&Client=EPA&Index=1991+Thru+1994&Docs=&Query=&Time=&EndTime=&SearchMethod=1&TocRestrict=n&Toc=&TocEntry=&QField=&QFieldYear=&QFieldMonth=&QFieldDay=&IntQFieldOp=0&ExtQFieldOp=0&XmlQuery=&File=D%3A%5Czyfiles%5CIndex%20Data%5C91thru94%5CTxt%5C00000006%5C00002WG3.txt&User=ANONYMOUS&Password=anonymous&SortMethod=h%7C-&MaximumDocuments=1&FuzzyDegree=0&ImageQuality=r75g8/r75g8/x150y150g16/i425&Display=p%7Cf&DefSeekPage=x&SearchBack=ZyActionL&Back=ZyActionS&BackDesc=Results%20page&MaximumPages=1&ZyEntry=1&SeekPage=x&ZyPURL, attached hereto as Exhibit 56.
[77] *See* Pub. L. 102-187 (Dec. 4, 1991). We do not concede that this approval was appropriate. Hydrogen sulfide meets section 112 of the Clean Air Act's standards for listing as a hazardous air pollutant, and should be so regulated.
[78] 76 Fed. Reg. at 52,756. Gas is considered "sour" of hydrogen sulfide concentration is greater than 0.25 grain per 100 standard cubic feet, along with the presence of carbon dioxide. *Id.*
[79] *EPA Hydrogen Sulfide Report* at ii.
[80] Lana Skrtic, *Hydrogen Sulfide, Oil and Gas, and People's Health* ("Skrtic Report"), at 6 (May 2006), *available at* http://www.earthworksaction.org/pubs/hydrogensulfide_oilgas_health.pdf, attached hereto as Exhibit 57.
[81] *EPA Hydrogen Sulfide R*eport at III-35.
[82] *Id.* at ii.

example, hydrogen sulfide is emitted as a result of leaks from processing systems and from wellheads in sour gas fields.[83]

Hydrogen sulfide emissions from the oil and gas industry are concerning because this pollutant may be harmful even at low concentrations.[84] Although direct monitoring of hydrogen sulfide around oil and gas sources is limited, there is evidence that these emissions may be substantial, and have a serious impact on people's health. For example, North Dakota reported 3,300 violations of an odor-based hydrogen sulfide standard around drilling wells.[85] People in northwest New Mexico and western Colorado living near gas wells have long complained of strong odors, including but not limited to hydrogen sulfide's distinctive rotten egg smell. Residents have also experienced nose, throat and eye irritation, headaches, nose bleeds, and dizziness.[86] An air sample taken by a community monitor at one family's home in western Colorado in January 2011 contained levels of hydrogen sulfide concentrations 185 times higher than safe levels.[87]

Particulate Matter (PM): PM consists of tiny particles of a range of sizes suspended in air. Small particles pose the greatest health risk. These small particles include "inhalable coarse particles," which are smaller than 10 micrometers in diameter (PM_{10}), and "fine particles" which are less than 2.5 micrometers in diameter ($PM_{2.5}$). PM_{10} is primarily formed from crushing, grinding or abrasion of surfaces. $PM_{2.5}$ is primarily formed by incomplete combustion of fuels or through secondary formation in the atmosphere.[88]

PM causes a wide variety of health and environmental impacts. PM has been linked to respiratory and cardiovascular problems, including coughing, painful breathing, aggravated asthma attacks, chronic bronchitis, decreased lung function, heart attacks, and premature death. Sensitive populations, include the elderly, children, and people with existing heart or lung problems, are most at risk from PM pollution.[89] PM also reduces visibility,[90] and may damage important cultural resources.[91] Black carbon, a

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[83] TSD at 2-3.

[84] *See* James Collins & David Lewis, *Report to CARB, Hydrogen Sulfide: Evaluation of Current California Air Quality Standards with Respect to Protections of Children* (Sept. 1, 2000), *available at* http://oehha.ca.gov/air/pdf/oehhah2s.pdf, attached hereto as Exhibit 58.

[85] EPA Hydrogen Sulfide Report at III-35.

[86] *See* Global Community Monitor, *Gassed! Citizen Investigation of Toxic Air Pollution from Natural Gas Development*, at 11-14 (July 2011), attached hereto as Exhibit 59.

[87] *Id.* at 21.

[88] *See* EPA, Particulate Matter, Health, *available at* http://www.epa.gov/pm/health.html, attached hereto as Exhibit 60; BLM, *West Tavaputs Plateau Natural Gas Full Field Development Plan Final Environmental Impact Statement* ("West Tavaputs FEIS"), at 3-19 (July 2010), *available at* http://www.blm.gov/ut/st/en/fo/price/energy/Oil_Gas/wtp_final_eis.html..

[89] RIA at 4-19; EPA, Particulate Matter, Health, *available at* http://www.epa.gov/pm/health.html

[90] EPA "Visibility – Basic Information" http://www.epa.gov/visibility/what.html, attached hereto as Exhibit 61.

[91] *See* EPA, Particulate Matter, Health West Tavaputs EIS, at 3-19; RIA at 4-24.

component of PM emitted by combustion sources such as flares and older diesel engines, also warms the climate and thus contributes to climate change.[92]

The oil and gas industry is a major source of PM pollution. This pollution is generated by heavy equipment used to move and level earth during well pad and road construction. Vehicles also generate fugitive dust by traveling on access roads during drilling, completion, and production activities.[93] Diesel engines used in drilling rigs and at compressor stations are also large sources of fine PM/diesel soot emissions. VOCs are also a precursor to formation of $PM_{2.5}$.[94]

PM emissions from the oil and gas industry are leading to significant pollution problems. For example, monitors in Uintah County and Duchesne County, Utah have repeatedly measured wintertime $PM_{2.5}$ concentrations above federal standards.[95] These elevated levels of $PM_{2.}$ have been linked to oil and gas activities in the Uinta Basin.[96] West Tavaputs FEIS at 3-20. Modeling also shows that road traffic associated with energy development is pushing PM_{10} levels very close to violating NAAQS standards.[97]

ii. EPA's Air Rules Will Not Fully Address These Air Pollution Problems

Although EPA's proposed new source performance standards and standards for hazardous air pollutants should, if finalized, reduce some of these pollution problems, they will not solve them. The rules, first, do not even address some pollutants, including NOx, methane, and hydrogen sulfide. Second, the rules do not control existing sources of air pollution (though, as proposed, they do require emissions controls at well completions of existing unconventional wells), meaning that increased use of existing infrastructure will produce emissions uncontrolled by the rules. Third, without full enforcement, the rules will not reduce emissions completely. Fourth, the rules will not address important emissions effects of LNG in particular, including LNG exports' tendency to increase the use of coal power. Thus, though DOE/FE might work with EPA to fully understand the emissions levels likely after the rules are fully implemented, it may not rely upon the EPA rules to avoid weighing and disclosing these impacts.

b. Land Use Impacts of Gas Production

Increased oil and gas production will transform the landscape of regions overlying shale gas plays, bringing industrialization to previously rural landscapes. These impacts are large, and difficult to manage.

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[92] UNEP Report at 6; IPCC (2007) at Section 2.4.4.3.
[93] *See* BLM, GASCO Energy Inc. Uinta Basin Natural Gas Development Project Draft Environmental Impact Statement, at App. J at 2 (Oct. 2010) ("GASCO DEIS")
[94] RIA at 4-18.
[95] GASCO DEIS at 3-12.
[96] West Tavaputs FEIS, at 3-20 (July 2010).
[97] *See* GASCO DEIS at 4-27.

Landscape impacts occur through direct habitat loss, where land is cleared for gas uses, and indirect loss, where land adjacent to direct losses loses some of its important characteristics.

Regarding direct losses, land is lost through development of well pads, roads, pipeline corridors, corridors for seismic testing, and other infrastructure. The Nature Conservancy (TNC) estimated that in Pennsylvania, "Well pads occupy 3.1 acres on average while the associated infrastructure (roads, water impoundments, pipelines) takes up an additional 5.7 acres, or a total of nearly 9 acres per well pad." TNC, Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind (2010) at 10, *see also id.* at 18.[98] New York's Department of Environmental Conservation reached similar estimates. New York Department of Environmental Conservation's Revised Draft Supplemental General Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program, 5-5 (Sept. 2011) (hereinafter "NY RDSGEIS").[99] After initial drilling is completed the well pad is partially restored, but 1 to 3 acres of the well pad will remain disturbed through the life of the wells, estimated to be 20 to 40 years. *Id.* at 6-13. Associated infrastructure such as roads and corridors will likewise remain disturbed. Because these disturbances involve clearing and grading of the land, directly disturbed land is no longer suitable as habitat. *Id.* at 6-68.

Indirect losses occur on land that is not directly disturbed, but where habitat characteristics are affected by direct disturbances. "Adjacent lands can also be impacted, even if they are not directly cleared. This is most notable in forest settings where clearings fragment contiguous forest patches, create new edges, and change habitat conditions for sensitive wildlife and plant species that depend on "interior" forest conditions." TNC, *Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind* at 10. "Research has shown measureable impacts often extend at least 330 feet (100 meters) into forest adjacent to an edge." NY RDSGEIS 6-75.

TNC's study study of the impacts of gas extraction in Pennsylvania is particularly telling. TNC mapped projected wells across the state, considering how the wells and their associated infrastructure, including roads and pipelines, interacted with the landscape. TNC's conclusions make for grim reading. It concluded:

> · About 60,000 new Marcellus wells are projected by 2030 in Pennsylvania with a range of 6,000 to 15,000 well pads, depending on the number of wells per pad;
>
> · Wells are likely to be developed in at least 30 counties, with the greatest number concentrated in 15 southwestern, north central, and northeastern counties;
>
> · Nearly two thirds of well pads are projected to be in forest areas, with forest clearing projected to range between 34,000 and 83,000 acres depending on the number of number of well pads that are

[98] Attached as Ex. 62

[99] Available at http://www.dec.ny.gov/energy/75370.html

developed. An additional range of 80,000 to 200,000 acres of forest interior habitat impacts are projected due to new forest edges created by well pads and associated infrastructure (roads, water impoundments);

· On a statewide basis, the projected forest clearing from well pad development would affect less than one percent of the state's forests, but forest clearing and fragmentation could be much more pronounced in areas with intensive Marcellus development;

· Approximately one third of Pennsylvania's largest forest patches (>5,000 acres) are projected to have a range of between 1 and 17 well pads in the medium scenario;

· Impacts on forest interior breeding bird habitats vary with the range and population densities of the species. The widely-distributed scarlet tanager would see relatively modest impacts to its statewide population while black-throated blue warblers, with a Pennsylvania range that largely overlaps with Marcellus development area, could see more significant population impacts;

· Watersheds with healthy eastern brook trout populations substantially overlap with projected Marcellus development sites. The state's watersheds ranked as "intact" by the Eastern Brook Trout Joint Venture are concentrated in north central Pennsylvania, where most of these small watersheds are projected to have between two and three dozen well pads;

· Nearly a third of the species tracked by the Pennsylvania Natural Heritage Program are found in areas projected to have a high probability of Marcellus well development, with 132 considered to be globally rare or critically endangered or imperiled in Pennsylvania. Several of these species have all or most of their known populations in Pennsylvania in high probability Marcellus gas development areas.

· Marcellus gas development is projected to be extensive across Pennsylvania's 4.5 million acres of public lands, including State Parks, State Forests, and State Game Lands. Just over 10 percent of these lands are legally protected from surface development.

TNC, *Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind* (2010) at 29.[100] Increased gas production will exacerbate these problems, which is bad news for the state's lands and wildlife, and the hunting, angling, tourism, and forestry industries which depend upon them. Although TNC adds that impacts could be reduced with proper planning, *id.*, more development makes mitigation more difficult. Indeed, the Pennsylvania Department of Conservation and Natural Resources recently concluded that "zero" remaining acres of the state forests are suitable for leasing with surface disturbing activities, or the forests will be significantly degraded. PA DCNR, *Impacts of Leasing Additional State Forest for Natural Gas Development* (2011).[101] These costs are not in the public interest.

These effects will harm rural economies and decrease property values, as major gas infrastructure transforms and distorts the existing landscape. They will also harm endangered species in Pennsylvania, Maryland, and other states where production would increase in response to DCP's exports. Dozens of endangered and threatened

[100] Attached as Ex. 63.
[101] Attached as Ex. 64.

species inhabit the region, including in forests, streams, and coastal areas which will be affected by gas development.[102] Harm to these species and their habitat is, too, against the profound public interest in species conservation, as expressed in the Endangered Species Act and similar statutes.

c. Water Impacts of Gas Production

Hydraulic fracturing involves injecting water,[103] sand or other proppant, and various fracturing chemicals into the gas-bearing formation at high pressures to fracture the rock and release additional gas. Each step of this process presents a risk to water resources. Withdrawal of the water may overtax the water source. Fracking itself may contaminate groundwater with either chemicals added to the fracturing fluid or with naturally occurring chemicals mobilized by fracking. After the well is fracked, some water will return to the surface, composed of both fracturing fluid and naturally occurring "formation" water. This water, together with drilling muds and drill cuttings, must be disposed of without further endangering water resources.

i. Water Withdrawals

The first step is the procurement of water. Fracking a Marcellus Shale well requires between 4 and 5 million gallons of water. TNC, *Pennsylvania Energy Impacts Assessment, Report 1: Marcellus Shale Natural Gas and Wind*, 5.[104] Even where operators recycle "flowback" water from the fracking of one well for use in fracking

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[102] *See* Maryland DNR, *Rare, Threatened & Endangered Animals* & *Rare, Threatened & Endangered Plants* (2012), attached as Ex 65; Pennsylvania Game Commission, *Threatened and Endangered Species* (2012), attached as Ex 66. Indeed, according to FERC, seven endangered and threatened species use areas in the vicinity of Cove Point itself, including the Northeastern beech beetle, the puritan tiger beetle, the shortnose sturgeon, Kemp's Ridley sea turtle, green sea turtle, leatherback sea turtle, and loggerhead sea turtle. FERC, EA for the Cove Point LNG Project (2001). If DCP's proposal harms any of these species, or their habitat, directly or indirectly, it will be against the public interest. DOE/FE must consider harms to all endangered and threatened species in its public interest analysis.

[103] The majority of hydraulic fracturing operations are conducted with a water based fracturing fluid. Fracking may also be conducted with an oil or synthetic-oil based fluid, with foam, or with gas.

[104] Accord New York Department of Environmental Conservation's *Revised Draft Supplemental General Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program*, (September 2011) ("Between July 2008 and February 2011, average water usage for high-volume hydraulic fracturing within the Susquehanna River Basin in Pennsylvania was 4.2 million gallons per well, based on data for 553 wells."), *available at* http://www.dec.ny.gov/data/dmn/rdsgeisfull0911.pdf. Other estimates are that as much as 7.2 million gallons of frack fluid may be used in a 4000 foot well bore. NRDC, *et al.*, *Comment on NY RDSGEIS on the Oil, Gas and Solution Mining Regulatory Program* (Jan. 11, 2012) (Attachment 2, Report of Tom Myers, at 10), attached as exhibit 67 (hereafter *Comment on NY RDSGEIS*).

Water needs in other geological formations vary. Ex. ????, DOE, Secretary of Energy's Advisory Board, *Shale Gas Production Subcommittee First 90-Day Report* (August. 18, 2011) at 19 (estimating that nationwide, fracking an individual well requires between 1 and 5 million gallons of water).

another well, recycled water constitutes only a minority of the water used, with fresh water constituting 80% to 90% of the water used in the second fracking job. New York Department of Environmental Conservation's *Revised Draft Supplemental General Environmental Impact Statement on the Oil, Gas and Solution Mining Regulatory Program*, 6-13 (Sept. 2011) (hereinafter "NY RDSGEIS").[105]

Water withdrawals can drastically impact aquatic ecosystems and human communities. Reductions in instream flow negatively affect aquatic species by changing flow depth and velocity, raising water temperature, changing oxygen content, and altering streambed morphology. *Id.* 6-3 to 6-4. Even when flow reductions are not themselves problematic, the intake structures can harm aquatic organisms. *Id.* at 6-4. Where water is withdrawn from aquifers, rather than surface sources, withdrawal risks permanent depletion. This risk is even more prevalent with withdrawals for fracking than it is for other withdrawal, because fracking is a consumptive use. Fluid injected during the fracking process is (barring accident) deposited below freshwater aquifers and into sealed formations. *Id.* 6-5; DOE Subcommittee First 90 day report at 19 ("in some regions and localities there are significant concerns about consumptive water use for shale gas development.").

ii. Fracturing

Fracturing poses a serious risk of groundwater contamination. Contaminants include chemicals added to the fracturing fluid and naturally occurring chemicals that are mobilized from deeper formations to groundwater by the fracking process. Contamination may occur through several methods, including where the well casing fails or where the created fractures intersect an existing a poorly sealed well. Although information on groundwater contamination is incomplete, the available research indicates that contamination has already occurred on multiple occasions.

One category of potential contaminants includes chemicals added to the drilling mud and fracturing fluid. The fluid used for slickwater fracturing is typically comprised of more than 98% fresh water and sand, with chemical additives comprising 2% or less of the fluid. NY RDSGEIS 5-40. Chemicals are added as solvents, surfactants, friction reducers, gelling agents, bactericides, and for other purposes. *Id.* 5-49. New York recently identified 322 unique ingredients used in fluid additives, recognizing that this constituted a partial list. *Id.* 5-41. These chemicals include petroleum distillates; aromatic hydrocarbons; glycols; glycol ethers; alcohols and aldehydes; amides; amines; organic acids, salts, esters and related chemicals; microbicides; and others. *Id.* 5-75 to 5-78. Many of these chemicals present health risks. *Id.* Of particular note is the use of diesel, which the DOE Subcommittee has singled out for its harmful effects and

[105] Attached as exhibit 68.

recommended be banned from use as a fracturing fluid additive. DOE Subcommittee First 90-Day Report, 25. The minority staff of the House Committee on Energy and Commerce determined that despite diesel's risks, between 2005 and 2009 "oil and gas service companies injected 32.2 million gallons of diesel fuel or hydraulic fracturing fluids containing diesel fuel in wells in 19 states." Natural Resources Defense Council, Earthjustice, and Sierra Club, *Comments [to EPA] on Permitting Guidance for Oil and Gas Hydraulic Fracturing Activities Using Diesel Fuels* (June 29, 2011) at 3 (quoting Letter from Reps. Waxman, Markey, and DeGette to EPA Administrator Lisa Jackson (Jan. 31, 2001) at 1) (hereafter Comment on Diesel Guidance).[106]

Contamination may also result from chemicals naturally occurring in the formation. Flowback and produced water "may include brine, gases (e.g. methane, ethane), trace metals, naturally occurring radioactive elements (e.g. radium, uranium) and organic compounds."DOE Subcommittee first 90 day report at 21; *see also* Comment on NY RDSGEIS (attachment 3, Report of Glen Miller, at 2). For example, mercury naturally occurring in the formation becomes mixed in with water-based drilling muds, resulting in up to 5 pounds of mercury in the mud per well drilled in the Marcellus region. Comment on NY RDSGEIS (attachment 1, Report of Susan Harvey, at 92).

There are several vectors by which these chemicals can reach groundwater supplies. Perhaps the most common or significant are inadequacies in the casing of the vertical well bore. DOE Subcommittee First 90 Day Report, 20. The well bore inevitably passes through geological strata containing groundwater, and therefore provides a conduit by which chemicals injected into the well or traveling from the target formation to the surface may reach groundwater. The well casing isolates the groundwater from intermediate strata and the target formation. This casing must be strong enough to withstand the pressures of the fracturing process--the very purpose of which is to shatter rock. Multiple layers of steel casing must be used, each pressure tested before use, then centered within the well bore. Each layer of casing must be cemented, with careful testing to ensure the integrity of the cementing. Comment on Diesel Guidance, 5-9. Proper casing construction is an elaborate engineering effort, with multiple layers of steel casing (that have been pressure tested), centralizers to center the casing in the well bore, careful cementing of the casing strings (together with testing to ensure the integrity of this cementing). *Id.*

Separate from casing failure, contamination may occur when the zone of fractured rock intersects an abandoned and poorly-sealed well or natural conduit in the rock. Comment on NY RDSGEIS (Attachment 3, Report of Tom Myers, 12 - 15).

[106] Attached as Ex. 69.

Available data indicates that fracking has resulting in groundwater contamination in at least five documented instances. One study "documented the higher concentration of methane originating in shale gas deposits . . . into wells surrounding a producing shale production site in northern Pennsylvania." DOE Subcommittee first 90 day report at 20 (citing Stephen G. Osborn, Avner Vengosh, Nathaniel R. Warner, and Robert B. Jackson, *Methane contamination of drinking water accompanying gas-well drilling and hydraulic fracturing*, Proceedings of the National Academy of Science, 108, 8172-8176, (2011)). By looking at particular isotopes of methane, this study was able to determine that the methane originated in the shale deposit, rather than from a shallower source. *Id.* The DOE Subcommittee referred to this as "a recent, credible, peer-reviewed study." *Id.* Two other reports "have documented or suggested the movement of fracking fluid from the target formation to water wells linked to fracking in wells." Comment on NY RDSGEIS (Attachment 2, Report of Tom Meyers, 13). "Thyne (2008)[107] had found bromide in wells 100s of feet above the fracked zone." *Id.* "The EPA (1987)[108] documented fracking fluid moving into a 416- foot deep water well in West Virginia; the gas well was less than 1000 feet horizontally from the water well, but the report does not indicate the gas-bearing formation." *Id.*

More recently, EPA has investigated groundwater contamination in Pavillion, Wyoming and Dimock, Pennsylvania. In Pavillion, EPA's draft report concludes that "when considered together with other lines of evidence, the data indicates likely impact to ground water that can be explained by hydraulic fracturing." EPA, Draft Investigation of Ground Water Contamination near Pavillion, Wyoming (Dec. 2011), at xiii.[109] EPA tested water from wells extending to various depths within the range of local groundwater. At the deeper tested wells, EPA discovered inorganics (potassium, chloride), synthetic organic (isopropanol, glycols, and tert-butyl alcohol), and organics (BTEX, gasoline and diesel range organics) at levels higher than expected. *Id.* at xii. At shallower levels, EPA detected "high concentrations of benzene, xylenes, gasoline range organics, diesel range organics, and total purgeable hydrocarbons." *Id.* at xi. EPA determined that surface pits previously used for storage of drilling wastes and produced/flowback waters were a likely source of contamination for the shallower waters, and that fracturing likely

[107] Dr. Meyers relied on Thyne, G. 2008. *Review of Phase II Hydrogeologic Study.* Prepared for Garfield County, Colorado.

[108] Environmental Protection Agency. 1987. *Report to Congress, Management of Wastes from the Exploration, Development, and Production of Crude Oil, Natural Gas, and Geothermal Energy, Volume 1 of 3, Oil and Gas.* Washington, D.C.

[109] Attached as exhibit 70, available at http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf

explained the deeper contamination. *Id.* at xi, xiii. Although this is a draft report in an ongoing investigation, it demonstrates a possibility of contamination that DOE must consider in its public interest evaluation.

EPA is also investigating groundwater contamination in Dimock, Pennsylvania. EPA Region III, *Action Memorandum - Request for Funding for a Removal Action at the Dimock Residential Groundwater Site* (Jan. 19, 2012).[110] In Dimock, EPA has determined that "a number of home wells in the Dimock area contain hazardous substances, some of which are not naturally found in the environment." *Id.* at 1. Specifically, wells are contaminated with arsenic, barium, bis(2(ethylhexyl)phthalate, glycol compounds, manganese, phenol, and sodium. *Id.* at 3-4. Many of these chemicals are hazardous substances as defined under CERCLA section 101(14); *see also* 40 C.F.R. § 302.4. EPA's determination is based on "Pennsylvania Department of Environmental Protection (PADEP) and Cabot Oil and Gas Corporation (Cabot) sampling information, consultation with an EPA toxicologist, the Agency for Toxic Substances and Disease Registry (ATSDR) Record of Activity (AROA), issued, 12/28/11, and [a] recent EPA well survey effort." *Id.* The PADEP information provided reason to believe that drilling activities in the area led to contamination of these water supplies. Drilling in the area began in 2008, and was conducted using the hazardous substances that have since been discovered in well water. *Id.* at 1, 2. Shortly thereafter methane contamination was detected in private well water. *Id.* at 2. In addition, there were several surface spills in connection with the drilling operation. *Id.* at 1. After the contamination was detected, PADEP entered a consent decree with Cabot which required permanent restoration or replacement of the water supply. *Id.* at 2. Cabot has installed or is installing a "gas mitigation" system for the affected wells. *Id., see also* Agency for Toxic Substances and Disease Registry, *Record of Activity/Technical Assist* (Dec. 28, 2011) at 2 (hereafter ATSDR).[111]

Pursuant to the consent decree, Cabot was providing replacement water to all 18 homes until November 30, 2011, at which point Cabot halted deliver with PADEP's consent. ATSDR at 2. EPA has intervened because "EPA does not know what, if any, hazardous substances these 'gas mitigation' systems, originally designed to address methane, are removing." EPA Action Memorandum at 2. EPA plans to sample water from approximately 61 home wells, and to provide alternative drinking water supplies to the four homes with the most contaminated wells in the interim. *Id.* at 6.

[110] Attached as exhibit 71, available at http://www.epaosc.org/sites/7555/files/Dimock%20Action%20Memo%2001-19-12.PDF

[111] Attached as exhibit 72, available at http://www.epa.gov/aboutepa/states/dimock.pdf.

iii. Waste Management

Fracturing produces a variety of liquid and solid wastes that must be managed and disposed of. These include the drilling mud used to lubricate the drilling process, the drill cuttings removed from the well bore, the "flowback" of fracturing fluid that returns to the surface in the days after fracking, and produced water that is produced over the life of the well (a mixture of water naturally occurring in the shale formation and lingering fracturing fluid). These wastes contain the same contaminants described in the preceding section. They present environmental hazards with regard to their onsite management and with their eventual disposal.

On site, drilling mud, drill cuttings, flowback and produced water are often stored in pits. Such open pits can have harmful air emissions, can leach into shallow groundwater water, and can fail and result in surface discharges. Many of these harms can be minimized by the use of seal tanks in a "closed loop" system. *See, e.g.*, NY RDSGEIS at 1-12. Presently, only New Mexico mandates the use of closed loop waste management systems, and pits remain in use elsewhere.

Flowback and produced water must ultimately be disposed of off site. Some of these fluids may be recycled and used in further fracturing operations, but even where a fluid recycling program is used, recycling leaves concentrated contaminants that must be disposed of. The most common methods of disposal are disposal in underground injection wells or through water treatment facilities leading to eventual surface discharge.

Underground injection wells present risks of groundwater contamination similar to those identified above for fracking itself. Gas production wastes are not categorized as hazardous under the Safe Drinking Water Act, 42 U.S.C. § 300f *et seq.*, and may be disposed of in Class II injection wells. Class II wells are brine wells, and the standards and safeguards in place for these wells were not designed with the contaminants found in fracking wastes in mind. *See also* NRDC *et al.*, Petition for Rulemaking Pursuant to Section 6974(a) of the Resource Conservation and Recovery Act Concerning the Regulation of Wastes Associated with the Exploration, Development, or Production of Crude Oil or Natural Gas or Geothermal Energy (Sept. 8, 2010).[112]

Additionally, underground injection of fracking wastes appears to have induced earthquakes in several regions. Underground injection of fracking waste in Ohio has been correlated with earthquakes as high as 4.0 on the Richter scale. Columbia University, Lamont-Doherty Earth Observatory, *Ohio Quakes Probably Triggered by*

[112] Attached as exhibit 73, available at http://docs.nrdc.org/energy/files/ene_10091301a.pdf

Waste Disposal Well, Say Seismologists (Jan. 6, 2012).[113] Underground injection may cause earthquakes by causing movement on existing fault lines: "Once fluid enters a preexisting fault, it can pressurize the rocks enough to move; the more stress placed on the rock formation, the more powerful the earthquake." *Id.* Underground injection is more likely than fracking to trigger large earthquakes via this mechanism, "because more fluid is usually being pumped underground at a site for longer periods." *Id.* In light of the apparent induced seismicity, Ohio has put a moratorium on injection in the affected region. *Id.* Similar associations between earthquakes and injection have occurred in Arkansas, Texas, Oklahoma and the United Kingdom. *Id*., Alexis Flynn, *Study Ties Fracking to Quakes in England*, Wall Street Journal (Nov. 3, 2011).[114] In light of these effects, Ohio and Arkansas have placed moratoriums on injection in the affected areas. Lamont-Doherty Earth Observatory; Arkansas Oil and Gas Commission, *Class II Commercial Disposal Well or Class II Disposal Well Moratorium* (Aug. 2, 2011).[115]

As an alternative to underground injection, flowback and produced water is also sent to water treatment facilities, leading to eventual surface discharge. This presents a separate set of environmental hazards, because these facilities (particularly publicly owned treatment works) are not designed to handle the nontraditional pollutants found in fracking wastes. For example:

> One serious problem with the proposed discharge (dilution) of fracture treatment wastewater via a municipal or privately owned treatment plant is the observed increases in trihalomethane (THM) concentrations in drinking water reported in the public media (Frazier and Murray, 2011), due to the presence of increased bromide concentrations. Bromide is more reactive than chloride in formation of trihalomethanes, and even though bromide concentrations are generally lower than chloride concentrations, the increased reactivity of bromide generates increased amounts of bromodichloromethane and dibromochloromethane (Chowdhury, et al., 2010). Continued violations of an 80microgram/L THM standard may ultimately require a drinking water treatment plant to

[113] Attached as exhibit 74, available at http://www.ldeo.columbia.edu/news-events/seismologists-link-ohio-earthquakes-waste-disposal-wells

[114] Attached as exhibit 75, available at http://online.wsj.com/article/SB10001424052970203804204577013771109580352.html

[115] Attached as exhibit 76, available at http://www.aogc.state.ar.us/Hearing%20Orders/2011/July/180A-2-2011-07.pdf

> convert from a standard and cost effective chlorination disinfection treatment to a more expensive chloramines process for water treatment. Although there are many factors affecting THM production in a specific water, simple (and cheap) dilution of fracture treatment water in a stream can result in a more expensive treatment for disinfection of drinking water. This transfer of costs to the public should not be permitted.

Comment on NY RDSGEIS (attachment 3, Report of Glen Miller, at 13). Similarly, municipal treatment works typically to not treat for radioactivity, whereas produced water can have high levels of naturally occurring radioactive materials. In one examination of three samples of produced water, radioactivity (measured as gross alpha radiation) were found ranging from 18,000 pCi / L to 123,000 pCi/L, whereas the safe drinking water standard is 15 pCi/L. *Id.* (Miller Report at 4).

d. Summary of Environmental Impacts

In short, DOE/FE's proposal would have major environmental effects through the country, and, especially, in the Northeast, where it will intensify Marcellus Shale extraction activities. DOE/FE must consider all of these impacts in its public interest determination. Cumulatively, as the Secretary's Subcommittee on Shale Gas explained, the impacts are severe, and are not yet adequately controlled. Until they are, export is not in the public interest: The domestic impacts are substantial enough without adding to them to supply foreign markets.

4. DOE/FE Must Not Approve DCP's Export Plan Without Considering the Cumulative Impact of All Reasonably Foreseeable Projects

We have demonstrated that gas exports produce substantial economic and environmental costs. It is also clear on the record that DOE/FE will face many export applications: already over 20% of domestic production has been slated for export. As it considers these applications, including DCP's application, it would be arbitrary and capricious, an abuse of discretion, and otherwise not in accordance with law, *see* 5 U.S.C. § 706, for DOE/FE to fail to consider the cumulative impacts of these proposals.

It is true that DOE/FE must consider each application on its own merits: Some proposals may be more compelling than others, after all. But this requirement does not mean that DOE/FE may decline to consider the context in which it is working, or the record before it. The public, after all, will not experience each proposed terminal as an individual project: It will experience them cumulatively, through the gas and electricity prices that they will rise and the environmental damage that they will cause.

Therefore, to determine whether any one export proposal is consistent with the public interest, DOE/FE must consider whether a given proposal will harm the public in concert with (a) all proposals which have already been approved and (b) whether it will cause harm if all reasonably foreseeable proposals were approved. If the answer to this second question is yes, DOE/FE must be able to justify why it is still in the public interest to approve the project before it.

5. DOE/FE Cannot Rationally Approve DCP's Export Plan On the Record Before It

The Natural Gas Act, and subsequent DOE delegation orders and regulations, charge DOE/FE with determining whether or not a gas export application is in the public interest. *See, e.g.* 15 U.S.C. § 717b(a). DOE/FE must make this decision on the record before it. This means that, regardless of DOE/FE's decision to presume, initially, that an application should be granted, this presumption does not, and cannot, absolve DOE/FE of its duty to make its *own* determination. *Panhandle Producers and Royalty Owners Ass'n*, 822 F.2d at 1110-1111. Simply put, "the *agency* must examine the relevant data and articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made." *Motor Vehicle Mfrs. Ass'n of the United States v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (emphasis supplied). DOE/FE cannot rationally find for DCP on the record in this case.

As we have demonstrated, record support for DCP's claimed benefits is extraordinarily thin. DCP has submitted IMPLAN-based model results to support its economic benefit claims, but this model does not show whether the economy would benefit *more* without DCP's proposal, nor address the many costs and displacement effects associated with natural gas booms. Beyond this scanty evidence, DCP can point only to a Navigant report which, in fact, shows that its export plans will raise gas prices.

Sierra Club, on the other hand, has shown that the gas and electricity price increases associated with exports (which have already been proposed in volumes more than double the quantity Navigant assessed) will add billions of dollars in costs to the consumers. These costs will propagate through the economy, retarding growth. Sierra Club has also shown that the economic benefits, if any, associated with gas production increases may actually do long-term damage to the U.S. economy by plunging large regions of the country into a boom-and-bust extractive cycle. Further, Sierra Club has shown that gas extraction and export have major environmental (and, hence, additional economic) costs, which DCP has failed even to address.

On this record, DOE/FE cannot approve export. Were it do so, it would be violating basic norms of agency record rulemaking, as well as its own rules. *See, e.g.*, 5 U.S.C. § 706; 10 C.F.R. § 590.404 (requiring DOE/FE to base its final opinion "solely on the official record of the proceeding" and to impose terms "as may be required by the public interest" after record review).

In this case, this record review data requires that DOE/FE play particularly close regard to both the positive and negative impacts of gas export and extraction. DCP's application discusses only the purported benefits of its proposal; as in the case of upstream environmental impacts, DCP often fails to even acknowledge the costs of its actions. It is, plainly, irrational and arbitrary to deem a proposal in the public interest upon consideration of only its benefits. Were DOE/FE to do so – by, for instance, deciding that increased gas production was in the public interest, without acknowledging the economic disruption and environmental harm that will accompany that disruption, it would have "entirely failed to consider an important aspect of the problem, [or] offered an explanation for its decision that runs counter to the evidence before the agency. *State Farm*, 463 U.S. at 43. It must not do so.

At bottom, the decision to export U.S. gas resources is a major public policy decision and must, by law, be made with extraordinary care. DOE/FE cannot justify moving forward on the scanty and incomplete record before it.

C. DOE/FE Must Not Approve DCP's Export Plan Without a Proper NEPA Analysis

As we have demonstrated, DOE/FE can – and indeed must – ground its decision upon a full consideration of the environmental impacts of gas export and extraction. The NEPA process must be "coordinate[d] with its decisionmaking," 10C.F.R. § 1021.210, and can usefully inform it. Indeed, because approval of a gas export application is a major federal action which may significantly affect the environment, DOE/FE is barred from moving forward without a full EIS. Sierra Club therefore protests this application to the extent that DOE/FE grants either a conditional or a full approval without the completion of a full and legal EIS and Record of Decision which support its decision.

1. DOE/FE Must Fully Analyze the Direct, Indirect, and Cumulative Impacts of Increased Gas Production Linked to Gas Exports from Cove Point

As we have explained, DCP rests its public interest claims on its claimed ability to stimulate enhanced natural gas production, especially in the Marcellus Shale upstream of its facility. DCP Application at 35, ICF Study at 20-37. Environmental impacts of this increased production, including "growth inducing effects," are thus manifestly "reasonably foreseeable" indirect effects of DCP's proposal. *See* 40 C.F.R. § 1508.8. These effects will be added to the effects of gas production (and other environmental burdens from other industries) already present in the gas plays which DCP affects, along with any induced production associated with other export proposals. DOE/FE must fully describe all of these effects and develop alternatives which would avoid them, including

the alternative of denying DCP's application, limiting exports to a smaller quantity, or imposing environmental controls on gas produced for export.[116]

Although this requirement is clear on the face of the statute and binding regulations, it is also clear on the NEPA case law. As the Ninth Circuit Court of Appeals recently explained:

> Because "NEPA places upon an agency the obligation to consider every significant aspect of the environmental impact of a proposed action," *Vt. Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 553, 98 S.Ct. 1197, 55 L.Ed.2d 460 (1978), the considerations made relevant by the substantive statute driving the proposed action must be addressed in NEPA analysis.

Oregon Natural Desert Ass'n v. Bureau of Land Management, 625 F.3d 1092, 1109 (9th Cir. 2010). DOE/FE is determining whether or not gas exports are in the "public interest," a term which the Supreme Court has repeatedly held includes consideration of environmental impacts. *Nat'l Ass'n for the Advancement of Colored People v. Federal Power Commission*, 425 U.S.at 670 n.4; *Udall v. Federal Power Comm'n*, 387 U.S. at 450. Thus, just as DOE/FE must consider upstream environmental impacts in its Natural Gas Act determination, so, too, it must analyze and disclose these impacts in the NEPA analysis that will support its final determination.

Thus, infrastructure projects, like DCP's proposal, that enable resource extraction activities to expand upstream naturally must fully analyze those impacts in the NEPA framework. In *Northern Plains Resource Council v. Surface Transportation Board*, - F.3d - , 2011 WL 6826409, for instance, the Court considered a railway line which was developed in order to expand coal production at several mines. *Id.* at *10. It held that the Surface Transportation Board's NEPA analysis for the line was illegal because the Board had refused to consider the mines' impacts. The Court held that such impacts were plainly "reasonably foreseeable" – and, indeed, were the premise for the construction project in the first place. *Id.* They therefore had to be considered in the NEPA analysis.

The same analysis applies here. Upstream gas production provides the justification for DCP's proposal – because gas is being produced in historically large quantities, DCP argues that export is appropriate, and important to stabilize and enhance gas production – and is a reasonably foreseeable result of DCP's exports. Indeed, DCP has been at pains to demonstrate that such production will occur. DOE/FE must therefore fully account for this production in an EIS for its decision.

[116] Thus, the EIS must address each of the many impacts we have discussed above. Likewise, appropriate ESA and NHPA analysis must address these impacts as they bear upon ESA- and NHPA-protected resources.

Notably, DOE/FE has failed to do so in the past. As we observed in our comments on the Sabine Pass facility's Environmental Assessment (EA),[117] FERC, the lead agency on that EA, failed even to acknowledge the upstream impacts of the facility. Although DOE/FE may again allow FERC to take lead agency status, it may not move forward unless either it or FERC completes an adequate EIS that *does* cover all upstream impacts of DOE/FE's decision. Because FERC is, instead, focused on the environmental consequences of facility siting, DOE/FE make clear to FERC that this upstream consideration *must* be included in a full EIS for the Cove Point project.

2. DOE/FE May Not Conditionally Approve DCP's Proposal Without a Full EIS

It is true that, as a general matter, DOE/FE may issue "conditional" orders, *see*10 C.F.R. § 590.402, but this general authority cannot trump DOE's specific rules barring the agency from taking any "action concerning [a] proposal" that is the subject of an EIS, 10 C.F.R. § 1021.211, if that action tends to "limit the choice of reasonable alternatives," or "tend[] to determine subsequent development ." 40 C.F.R. § 1506.1. A conditional approval limits alternatives, and determines subsequent choices, in precisely this forbidden way.

The Sabine Pass EA and DOE/FE conditional approval in that case provide a good example of this problem. In *Sabine Pass*, DOE/FE expressed its "conditional" view that the project was in the public interest, conditioned on "the satisfactory completion of the environmental review process [by FERC] and on issuance by DOE/FE of a finding of no significant impact or a record of decision pursuant to NEPA." *Sabine Pass* at 41.

This decision was, first, irrational: As we have discussed at length above, DOE/FE cannot complete a public interest determination without weighing environmental factors. Because these factors are integral to DOE/FE's decision, and NEPA is purely procedural statute, DOE/FE must weigh environmental interests at the same time that weighs all other interests. It may not parcel them into a separate process without irrationally ignoring required statutory factors and important aspects of the problem before it on the record.

Second, DOE/FE's approval, even if nominally "conditional," plainly influenced the NEPA process. In the Sabine Pass EA, although FERC acknowledged that DOE/FE was making a broad public interest determination, it functionally treated that decision as already made. As such, in its alternatives analysis, FERC summarily rejected the "no-action" alternative because "the no-action alternative could not meet the purpose and need for the Project." Sabine Pass EA at 3-1. This statement is incoherent, if FERC truly understood DOE/FE not to have made a decision. DOE/FE is, after all, considering *whether* to allow gas exports. Because that decision has *not* been made, it is wholly appropriate to selected a "no-action" alternative (including, for FERC, a decision not site a facility whose exports have not been permitted). The fact that FERC felt that it was

[117] Attached as Ex. 77. We incorporate those comments in full by reference.

not free to do so indicates that conditional approvals in fact tend to limit alternatives and steer the development decisionmaking process.

To avoid this illegal effect, DOE/FE therefore may not approve the DCP export proposal, conditionally or not, until it has considered all alternatives to doing so through the NEPA and Natural Gas Act processes.

3. A Programmatic EIS is Appropriate

Finally, we again emphasize that the DCP proposal is only one of many before DOE/FE. Because the effects of these projects are cumulative, and because each approval alters the price and production effects of exports on the economy, DOE/FE must consider these projects' interactions.

It can best do so by conducting a programmatic EIS considering the impacts of *all* gas export proposals at once. DOE/FE has the discretion to do so, even if it determines that it does not have the duty to do so. *See* 40 C.F.R. § 1508.17(b)(3); *see also* 10 C.F.R. § 1021.330. Such a programmatic EIS would allow DOE/FE, and the public, to understand the impacts of all of these proposals, their interactions, and their cumulative environmental and economic impacts. That understanding would serve improved decisionmaking, and allow DOE/FE, the public, and industry, to identify prudent alternatives to serve the public interest and minimize environmental impacts.

Programmatic EISs are designed to serve precisely this purpose. Rather than proceeding in a piecemeal fashion, DOE/FE must recognize that it is making what is, functionally, a programmatic decision to radically alter the U.S. market and production system by allowing for large-scale LNG export, and conduct an EIS commensurate with the decision it is making, rather than piece-mealing that decision from application to application.

D. If DOE/FE Does Move Forward, It Must Impose Rigorous Monitoring Conditions

If DOE/FE nonetheless approves DCP's application, it must recognize its continuing duty to protect the public interest, as it explained in its *Sabine Pass* decision. This duty is of crucial importance in the context of LNG export, where circumstances are rapidly changing. DOE/FE therefore announced its intention to monitor environmental, economic, and other relevant considerations. *Sabine Pass* at 31-33. Such a monitoring provision must be imposed here, as well, but must be significantly expanded.

Specifically, although *Sabine Pass* announces an intention to monitor many different considerations, it most clearly states that the agency will act if there is a "reduction in the supply of natural gas needed to meet essential domestic needs." *Id.* at 32. This consideration is undoubtedly of great importance, but it is not the only way in which changing circumstances could imperil the public interest.

On the contrary, as we have demonstrated at length in these comments, there is strong evidence that the public interest will be impaired by gas exports. These impairments include (1) regional and national economic dislocations and disruptions caused by natural gas extraction, including by the industry's boom-and-bust cycle, (2) national increases in gas and electricity prices and resulting shifts to more polluting fuels, (3) and environmental impacts of many sorts. Any one of these categories of interests could be impaired by gas export. DOE/FE must therefore state that it will monitor each of these areas, providing specific monitoring terms and thresholds which will trigger agency actions of various types, ranging from further study through reductions in export volume or changes in timing to a revocation of DOE/FE's approval.[118]

If DOE/FE fails to include such provisions in any final approval, it will fail to fulfill its "continuing duty to protect the public interest," *id.* at 31, and so violate the Natural Gas Act. Because neither DCP nor DOE/FE have described or proposed such terms, Sierra Club also protests this application to the extent that DOE/FE fails to develop adequate monitoring terms of the sort we have described.

III. Conclusion

Sierra Club therefore moves to intervene, offers the above comments, and protests DCP's export proposal for the reasons described above. DCP's application is not consistent with the public interest and must be denied.

Respectfully submitted,

Craig Holt Segall
Nathan Matthews
Sierra Club Environmental Law Program
50 F St NW, Eighth Floor
Washington, DC, 20001

[118] Providing a clear monitoring plan of this sort will also benefit DCP, which will be better able to determine when and how DOE/FE may act, improving the company's ability to plan its actions and investments.

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

IN THE MATTER OF	)	
	)	**FE DOCKET NO. 11-128-LNG**
DOMINION COVE POINT LNG, LP	)	

CERTIFICATE OF SERVICE

I hereby certify that I caused the above documents to be served on the applicant and all other parties in this docket, in accordance with 10 C.F.R. § 590.107, on February 6, 2012.

Dated at Washington, D.C., this 6th of February, 2012.

Craig Holt Segall
Associate Attorney
Sierra Club Environmental Law Program
50 F St NW, Eighth Floor
Washington, DC 20001
Telephone: (202)-548-4597
Fax: (202)-547-6009
Email: Craig.Segall@sierraclub.org

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

IN THE MATTER OF	)	
	)	**FE DOCKET NO. 11-128-LNG**
DOMINION COVE POINT LNG, LP	)	

CERTIFIED STATEMENT OF AUTHORIZED REPRESENTATIVE

Pursuant to C.F.R. §590.103(b), I, Craig Holt Segall, hereby certify that I am a duly authorized representative of the Sierra Club, and that I am authorized to sign and file with the Department of Energy, Office of Fossil Energy, on behalf of the Sierra Club, the foregoing document and in the above captioned proceeding.

Dated at Washington, D.C., this 6th of February, 2012.

Craig Holt Segall
Associate Attorney
Sierra Club Environmental Law Program
50 F St NW, Eighth Floor
Washington, DC 20001
Telephone: (202)-548-4597
Fax: (202)-547-6009
Email: Craig.Segall@sierraclub.org

UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY

IN THE MATTER OF	)	
	)	**FE DOCKET NO. 11-128-LNG**
DOMINION COVE POINT LNG, LP	)	

VERIFICATION

WASHINGTON	§
	§
DISTRICT OF COLUBIA	§

Pursuant to C.F.R. §590.103(b), Craig Holt Segall, being duly sworn, affirms that he is authorized to execute this verification, that he has read the foregoing document, and that facts stated herein are true and correct to the best of his knowledge, information, and belief.

Craig Holt Segall
Associate Attorney
Sierra Club Environmental Law Program
50 F St NW, Eighth Floor
Washington, DC 20001
Telephone: (202)-548-4597
Fax: (202)-547-6009
Email: Craig.Segall@sierraclub.org

Subscribed and sworn to before me this 6 day of February, 2012.

Mary F. Vincent
Notary Public

My commission expires: March 31, 2013

MARY F. VINCENT
Notary Public, District of Columbia
My Commission Expires March 31, 2013