NEPA and Downstream Greenhouse Gas Emissions of U.S. Coal Exports

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Executive Summary

As U.S. coal exports increase and new infrastructure is proposed to improve access to burgeoning markets in Asia, controversy has arisen regarding the scope of environmental review that should be carried out by government. In particular, there is significant disagreement as to whether the end-use of exported coal and the emissions generated by its combustion fall within the scope of environmental review. The National Environmental Policy Act of 1969 (NEPA) sets out an assessment process that applies to many Federal agency actions relating to coal export, including the grant of leases for coal mines, approval for new railway construction and the grant of permits for coal export terminals.

Under NEPA, an environmental impact statement (EIS) must be prepared for any major Federal action significantly affecting the quality of the human environment. This includes direct, indirect and cumulative effects. The question of which indirect consequences of an action should be considered, and how far the review extends into upstream or downstream effects, is essentially a question of causation. Where a downstream event, such as the export and end-use of coal, is a reasonably foreseeable consequence of an action or there is a reasonably close causal relationship, then those downstream effects are within the scope of NEPA review.

Importantly, there is a distinction between control over actions and control over effects. A federal agency is not required by NEPA to consider impacts that would occur regardless of that agency's actions—in this case, there is not adequate "control or responsibility" over the relevant action. But where an agency's action or decision causes upstream or downstream effects these are relevant to NEPA review—even if the agency does not have direct control or responsibility over the effect. Accordingly, if a decision by the Army Corps of Engineers to approve a new coal export terminal leads to higher sales of U.S. coal in Asia, those increased sales are an effect of the Corps' decision—even though the Corps has no control over the sales themselves.

The greatest challenge in evaluating greenhouse gas (GHG) emissions under NEPA is determining when they are likely to have a "significant" impact on the environment. Climate change is a highly complex problem, and the GHGs emitted by any single project are unlikely to have a substantial impact on global atmospheric concentrations of carbon dioxide. Thus, agencies need to consider the cumulative impacts of these projects—as required by NEPA—and their relative contribution to climate change. Final guidance to assist agencies with making these determinations would be extremely valuable.

One currently proposed export terminal would have the capacity to handle as much coal as was consumed by the five largest coal-fired power plants, or over six per cent of the total amount of coal used for electricity generation, in the U.S. in 2012. The GHG emissions from burning this much coal would exceed any conceivable threshold of environmental significance.

Although agency practice in relation to the scope of NEPA review of coal export projects and similar energy developments varies, many relevant agencies are already including some upstream or downstream impacts within their environmental review of projects. This has occurred in relation to coal mining leases, railway approvals and the controversial Keystone XL Pipeline. Moreover, some agencies have shown great willingness to consider the avoidance of GHG emissions that can be achieved through actions that promote alternative sources of energy to fossil fuels, such as biomass. It is important to bear in mind that after an agency completes the necessary NEPA analysis, it retains the discretion to decide to go ahead with a project in spite of its potential environmental impacts. All that NEPA requires is that agencies follow the required procedures, take a "hard look" at the environmental effects of an action, and consider them in the decision-making process.

1. Introduction

In spite of diminishing domestic consumption in recent years, annual production of steam coal in the U.S. has steadily grown to meet international demand.[1] Coal exports in 2012 reached record levels, as depicted in the graph below (Figure 1). In its most recent International Energy Outlook report, the Energy Information Administration predicts that by 2040 total U.S. coal exports will reach 169 million short tons, compared with 107 million short tons in 2011.[2] Enabling such a significant increase in coal exports requires several steps—increasing coal production at new or existing mines; transporting the coal from mines to port; and shipping the coal out of the U.S. at an export terminal. Each of these stages in turn creates opportunities for government oversight and environmental review, for example, when leases are granted for coal mines, or when approvals are given for the construction of new railways or coal export terminals.[3]

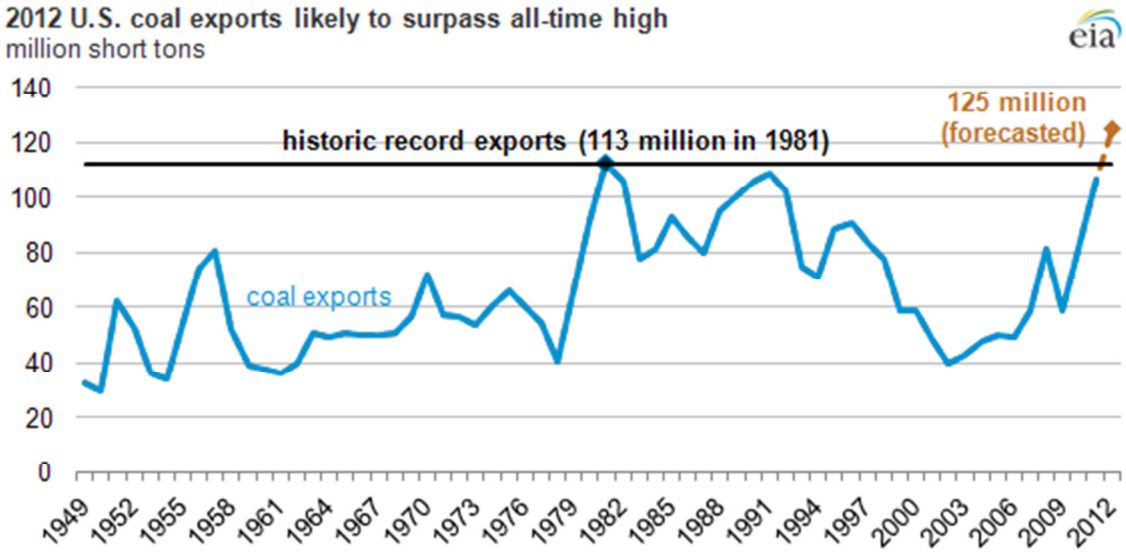

FIGURE 1: U.S. COAL EXPORTS (SOURCE: ENERGY INFORMATION ADMINISTRATION)[4]

Historically, the U.S. has undertaken significant levels of coal mining and has exported some of its production. Yet significant new infrastructure will be required if the U.S. is to start making large-scale exports, because the major markets for these exports are in the Asia-Pacific region. To date, the most significant markets for U.S. coal exports were Canada and Europe, and most coal was shipped from ports on the East Coast and Gulf Coast. High transportation costs from these ports to the Pacific meant that U.S. coal was relatively uncompetitive in the Asian region.[5] New export terminals on the West Coast are

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[1] ENERGY INFORMATION ADMINISTRATION (EIA), ANNUAL COAL REPORT 2011, p. vii (published November 2012).
[2] EIA, INTERNATIONAL ENERGY OUTLOOK 2013, pp. 83-84 (published July 2013).
[3] *See, generally,* COLUMBIA CENTER FOR CLIMATE CHANGE LAW, CARBON OFFSHORING: THE LEGAL AND REGULATORY FRAMEWORK FOR U.S. COAL EXPORTS (2011), http://www.law.columbia.edu/null/download?&exclusive=filemgr.download&file_id=59591
[4] *U.S. coal exports on record pace in 2012, fueled by steam coal growth*, EIA, http://www.eia.gov/todayinenergy/detail.cfm?id=8490 (Oct. 23, 2012).
[5] EIA, INTERNATIONAL ENERGY OUTLOOK 2011, p. 78 (published September 2011).

necessary to facilitate the cost-effective shipment of coal to burgeoning markets such as China and India. In addition to these port facilities, new and expanded railways will be needed to transport the coal to the West Coast from mines in regions such as the Powder River Basin.

Plans to construct three new coal export terminals on the West Coast have already encountered significant controversy. Two of these proposals are for terminals on the Columbia River—Coyote Island Terminal at Port of Morrow, Oregon and the Millennium Bulk Terminal at Longview, Washington—while the third is the Gateway Pacific Terminal, on the Puget Sound near Bellingham, Washington. As various government agencies consider whether or not to grant approval for these terminals, one recurring controversy has been the scope and extent of environmental review required. In particular, there has been fierce debate about whether review should be limited to the immediate, direct impacts of the ports, or whether it should also include indirect, upstream and downstream impacts – most notably, the emissions generated by the end-use of exported coal. [6]

In this context, this paper considers the requirement to prepare an environmental impact statement (EIS) in relation to projects that facilitate coal export—including mines, railways and ports—and whether review of these projects should incorporate a consideration of the greenhouse gas (GHG) emissions that will be generated when the coal is combusted downstream. The paper focuses in particular on review of federal agency actions in accordance with the National Environmental Policy Act of 1969 (NEPA). [7] Draft guidance on the consideration of GHG emissions during NEPA review was prepared by the Council on Environmental Quality (CEQ) in 2010; however a final guidance document has yet to be issued. This situation has left considerable uncertainty as to the scope of GHG emissions that have to be considered in NEPA review, leading to divergent practices among the relevant government agencies. This paper has two parts. First, it sets out the legal requirements imposed by NEPA, its regulations and related executive orders. Second, the paper provides an overview of the current practice of relevant federal agencies when considering GHG emissions in EISs.

It should be noted that this paper focuses on the end-use of exported coal in electricity production, rather than the use of coal in the production of steel or other industrial applications. Coal is frequently classified based on its physical properties and intended end-use. The four categories of coal based on physical properties are: anthracite, bituminous, subbituminous and lignite. Anthracite is the rarest and has the highest carbon content, bituminous is the most abundant variety of coal in the U.S. and has a relatively high carbon content and heating value, while sub-bituminous and lignite have lower carbon and energy contents.[8] Depending on its carbon and energy content, coal is primarily used for either electricity generation or as a raw material in industrial production. Coal used in the production of steel

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[6] For example, the Army Corps of Engineers and the Washington Department of Ecology have both set radically different scopes for the environmental impact statement that is to be prepared for the Gateway Pacific Terminal. *See* Whatcom County, Washington State Department of Ecology, U.S. Army Corps of Engineers, *Joint Press Release: Agencies set scope of environmental impact statement for proposed Cherry Point export project*, Jul. 31, 2013, *available at* http://www.eisgatewaypacificwa.gov/sites/default/files/content/files/EIS-PressRelease-73113.pdf#overlay-context=resources/press-room.

[7] National Environmental Policy Act of 1969, 42 U.S.C. §4321 *et seq.* (2006) [hereinafter NEPA].

[8] *Coal Explained*, EIA, http://www.eia.gov/energyexplained/index.cfm?page=coal_home (last updated June 4, 2013).

or other industrial processes is often referred to as coking (or metallurgical) coal, and typically anthracite or bituminous coal is used for this purpose. Any of the four categories of coal can be used in power generation, and when used for this purpose it is known as steam (or thermal) coal.

International demand for steam coal, particularly in the Asia-Pacific region, has growing rapidly in recent years, while growth in demand for coking coal has been more limited.[9] As a result, while coking coal represents the majority of U.S. coal exports to date, it is increasing sales of steam coal that are driving growth in U.S. exports.[10] Exports of coking coal are expected to remain relatively constant until 2040, while exports of steam coal are expected to almost triple in volume, from 37.7 million short tons in 2011 to 102.2 million short tons.[11] Figure 2, below, shows the increasing share of exports that is attributable to steam coal. Consequently, this paper focusses on the environmental impacts of combusting steam coal during power generation, rather than the impacts associated with the use of coking coal in steel production.

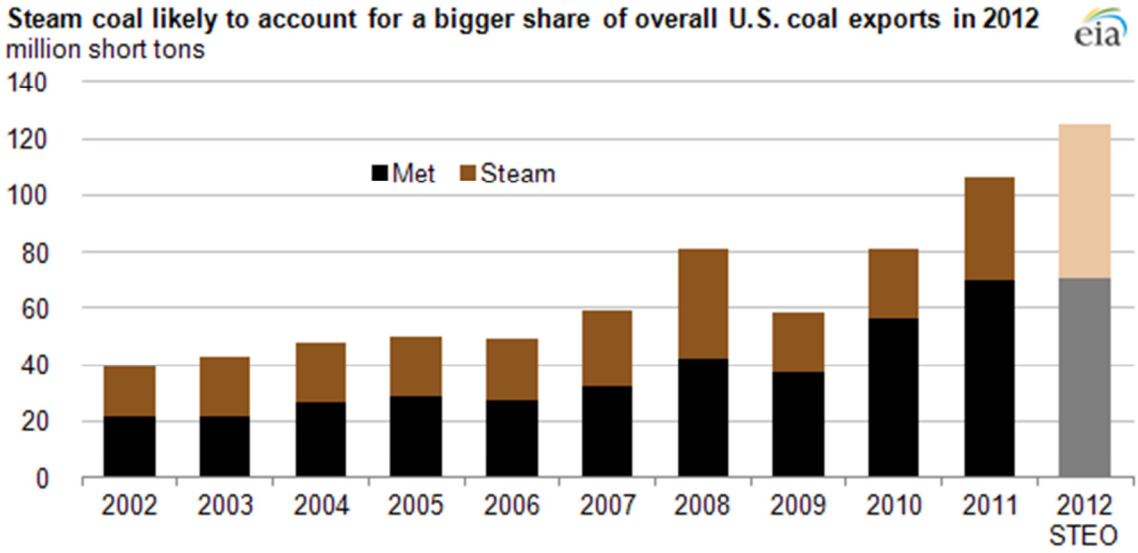

FIGURE 2: STEAM COAL AS SHARE OF COAL EXPORTS (SOURCE: ENERGY INFORMATION ADMINISTRATION)[12]

[9] Some analysts predict that the rate of growth in Asian markets for steam coal, particularly China, will decline in the near term. *Se, e.g.,* Goldman Sachs, "The window for thermal coal investment is closing," (July 24, 2013), *available at,* http://thinkprogress.org/wp-content/uploads/2013/08/GS_Rocks__Ores_-_Thermal_Coal_July_2013.pdf

[10] EIA, *supra* note 2, pp. 79, 83-84.

[11] *Id.* at p. 79.

[12] *U.S. coal exports on record pace in 2012, fueled by steam coal growth*, EIA, http://www.eia.gov/todayinenergy/detail.cfm?id=8490 (Oct. 23, 2012).

2. The law behind environmental impact assessment – NEPA and the CEQ Regulations

The core provision of NEPA is § 102(2)(C). It requires that federal agencies prepare a "detailed statement" for all "major Federal actions significantly affecting the quality of the human environment."[13] The statement must cover the following:

> (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.

Thus, § 102(2)(C) creates the duty for agencies to undertake an environmental review of any major Federal action significantly affecting the quality of the human environment.

a. The procedure for environmental review

The process and content required to be covered in NEPA review are elaborated upon in regulations issued by CEQ (CEQ Regulations).[14] Environmental review of an action under NEPA is a two-tiered process. Typically, an agency will begin its review by preparing an Environmental Assessment (EA), which is a relatively brief document used to determine whether an action is likely to have any "significant" impacts on the environment.[15] Whether an impact is "significant" requires consideration of both its context, meaning the environment or region impacted whether it is local, national or global, and the intensity or severity of the impact.[16] Agencies are required to consider both direct and indirect effects, as well as the cumulative impacts caused when a project is added to past, present or future developments.[17] After preparing an EA, the agency will either decide that it is necessary to prepare the more detailed EIS, or issue a Finding of No Significant Impact (FONSI).[18] If an agency finds that an action will have a significant impact on the environment, it will then proceed to the second-tier of review and prepare a full EIS. The scope and requirements for an adequate EIS are discussed in greater below.

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[13] NEPA § 102(2)(C), 42 U.S.C. §4332(2)(C). This provision was interpreted as mandating the environmental review process and creating judicially enforceable procedural duties in Calvert Cliffs' Coordinating Comm. V. Atomic Energy Comm'n, 449 F.2d 1109 (D.C. Cir. 1971).

[14] CEQ's authority to promulgate these regulations is drawn from NEPA, the Environmental Quality Improvement Act of 1970, as amended (42 U.S.C. § 4371 *et seq.*), § 309 of the Clean Air Act as amended (42 U.S.C. § 7609) and Executive Order 11514, Mar. 5, 1970, as amended by Executive Order 11991, May 24, 1977. *See* 40 C.F.R. § 1500.3. It has been held that CEQ's interpretation of NEPA "is entitled to substantial deference." Andrus v. Sierra Club, 442 U.S. 347, 358 (1979).

[15] 40 C.F.R. §§ 1501.4, 1508.9.

[16] *Id.* § 1508.27.

[17] *Id.* §§ 1508.7, 1508.8.

[18] *Id.* § 1501.4.

The environmental review process established by NEPA creates enforceable procedural duties that must be complied with in agency decision-making, but it does not mandate particular outcomes or decisions. NEPA does include substantive obligations to protect the environment, in § 101, however these provisions are inherently flexible.[19] For example, § 101(b) states that "it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to . . . fulfill the responsibilities of each generation as trustee of the environment for succeeding generations." This provision requires Federal agencies to protect the environment, with the qualification that it is subject to other "essential considerations," leaving considerable room for discretion in agency decision-making.[20] Moreover, the substantive provisions of NEPA have been held to be "goals for the nation," rather than enforceable duties imposed on agencies.[21]

Unlike this accommodating substantive obligation, the environmental review procedure set out in § 102 requires strict compliance.[22] Under §102, an agency must give consideration to the environmental impacts of a proposed action, and consider alternatives to it. This review must be more than a "*pro forma* ritual."[23] But once an agency has taken the "hard look" at an action and alternatives required by § 102, it is "not constrained by NEPA from deciding that other values outweigh the environmental costs."[24] NEPA requires that measures to mitigate environmental damage be considered, but it is not invalid for an agency to take the proposed action without adopting a mitigation plan.[25]

Of course there is an expectation that providing agencies with adequate information about the environmental consequences of actions will lead to better decision-making. It is important to distinguish, however, between the expectation or belief that information will improve agency decision-making, and imposing a legally enforceable duty on agencies to reach specified decisions or prioritize particular values.[26] Section 102 of NEPA employs the former of these techniques, but not the latter, in its pursuit of environmental protection. In the context of coal exports, this means that even if an agency is obliged to consider the environmental impacts of downstream combustion of the coal, it would still be within that agency's discretion to decide that other factors, such as the economic benefits of coal mining, outweigh any potential environmental harm.

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[19] Calvert Cliffs' Coordinating Comm., Inc. v. U. S. Atomic Energy Comm'n, 449 F.2d 1109, 1112 (D.C. Cir. 1971).
[20] *Id.* at 1114-1115.
[21] Strycker's Bay Neighborhood Council, Inc. v. Karlen, 444 U.S. 223, 227-228 (1980), *quoting* Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 558 (1978).
[22] Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 756-57 (2004), *quoting* Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349-350 (1989).
[23] Calvert Cliffs' Coordinating Comm., Inc. v. U. S. Atomic Energy Comm'n, 449 F.2d 1109, 1128 (1971).
[24] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350 (1989). *See also* Kleppe v. Sierra Club, 427 U.S. 390, 410 n.21 (1976).
[25] Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989).
[26] *See* Lynton K. Caldwell, *Beyond NEPA: Future Significance of the National Environmental Policy Act*, 22 HARV. ENVTL. L. REV. 203, 205 (1998); Sarah E. Light, *NEPA's Footprint: Information Disclosure as a Quasi-Carbon Tax on Agencies*, 87 TULANE L. REV. 511 (2013)

b. Actions subject to review under NEPA

Section 102 of NEPA applies to "major Federal actions," which includes the adoption of policies, plans, programs or rules by federal agencies, as well as the granting of approvals or permits for projects or actions.[27] Thus, NEPA review may be required not only for actions undertaken by a government agency itself, but also for private activities that are "potentially subject to Federal control and responsibility."[28] In relation to coal production and export there are several activities that could constitute "major Federal actions." These include the grant of a lease for coal mining on Federal lands by the Bureau of Land Management (BLM), an approval from the Surface Transportation Board (STB) to construct a new railway to transport coal, or a permit from the Army Corps of Engineers for the development or expansion of port facilities on navigable waters under the Rivers and Harbors Act (RHA) or the Clean Water Act (CWA).[29] Whether an action is "major" depends on the significance of its effects.[30]

NEPA does not necessarily require that an EIS be prepared for each individual action that may have significant impacts on the environment. In some cases it will be more appropriate to consider several actions in a single EIS, known as a "programmatic" impact statement. For example, a programmatic EIS may be prepared for a series of "concerted actions to implement a specific policy" or "systemic and connected agency decisions."[31] Actions that are connected because one will not proceed without another, or that are independent parts of a larger project may be sufficiently connected to warrant a programmatic EIS. Activities that have "similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography" may also warrant the preparation of a combined EIS.[32] For actions which are merely similar, rather than connected, a single EIS should be prepared if that is the best way to adequately assess the combined impacts of the actions.[33]

In the context of coal exports, there would seem to be several opportunities for programmatic or combined EISs. For example, if the BLM were to simultaneously consider several new or expanded leases for coal mining in the Powder River Basin, then it would be arguable that a single EIS for all of the leases should be prepared, which considers their combined impact. The BLM has previously prepared a single EIS to evaluate the effect of several mines in the region—for example, in 2010 it issued a Final EIS considering six coal lease applications in the Wright Area, Campbell County, Wyoming.[34] However, Federal agencies seem reluctant to prepare programmatic EISs for coal export projects. The Army Corps of Engineers, which is currently considering permit applications for the three proposed coal export

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[27] *See* 40 C.F.R. § 1508.18
[28] *Id.*
[29] For more detail, see: Columbia Center for Climate Change Law, *supra* note 3.
[30] 40 C.F.R. § 1508.18.
[31] *Id.* § 1508.18(b)(3).
[32] *Id.* § 1508.25(a)(3).
[33] *Id.*
[34] BUREAU OF LAND MANAGEMENT, WRIGHT AREA COAL LEASE APPLICATIONS FINAL ENVIRONMENTAL IMPACT STATEMENT (2010), *available at* http://www.blm.gov/wy/st/en/info/NEPA/documents/hpd/Wright-Coal.html. The BLM has also prepared programmatic EISs for renewable energy developments, *see, e.g.*, BUREAU OF LAND MANAGEMENT, FINAL SOLAR ENERGY DEVELOPMENT PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT (SOLAR PEIS) (July 2012) , *available at* http://solareis.anl.gov/documents/fpeis/index.cfm.

terminals on the West Coast, has decided not to prepare a programmatic EIS. In announcing this decision a representative of the Corps stated that "[a]lthough the proposed shipping facilities share a similar purpose, the facts and circumstances related to each differ substantially. Each of the three proposed facilities would cause very different types of impacts."[35] The Corps indicated that it considered many upstream and downstream effects of coal export, such as mining and end-use in power generation, as beyond the "control and responsibility" of the agency and therefore outside of the scope of the NEPA review.[36]

c. The adequacy of an EIS and the consideration of GHG emissions

Typically, federal actions relating to major infrastructure such as railways and ports would have a range of potentially significant environmental impacts that could require the preparation of an EIS. It is relatively well established that the contribution to climate change of GHG emissions is one of the "impacts" or "effects" that should be considered in NEPA review.[37] If a major federal action will have a significant impact on the environment as a result of climate change, then this would fall within the required scope of an EIS. In 1997, the CEQ prepared a handbook on the consideration of cumulative effects under NEPA, which "acknowledged" that climate change and GHG emissions were an appropriate topic for analysis under NEPA.[38] While it is generally accepted that climate change is an appropriate consideration in NEPA analysis, there are open questions as to what level of GHG emissions is "significant," and under current practice the range or scope of emissions that must be considered for a specific action.

This paper will consider three central questions regarding the scope of GHG emissions that should be considered in an EIS for a coal export project: (1) whether (and to what extent) upstream or downstream emissions fall within the scope of a NEPA review; (2) whether emissions that occur outside the territory of the U.S. can be considered in an EIS; and (3) how to address the relatively small impact of an individual project on global climate change.

i. Consideration of indirect emissions

As a starting point, the CEQ Regulations state that the relevant impacts include direct, indirect or cumulative effects.[39] Direct effects are those that are caused by the action itself, and "occur at the same time and place." An example of direct emissions from coal export projects would be GHG emissions

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[35] *U.S. Energy Abundance: Regulatory, Market and Legal Barriers to Export: Hearing Before the Subcomm. on Energy and Power of the H. Comm. on Energy and Commerce*, 113th Cong. p. 5 (June 18, 2013) (statement of Jennifer A. Moyer, Acting Chief, Regulatory Program, U.S. Army Corps of Engineers), *available at* http://docs.house.gov/meetings/IF/IF03/20130618/101000/HHRG-113-IF03-Wstate-MoyerJ-20130618.pdf.

[36] *Id.*

[37] *See, e.g.,* Ctr. for Biological Diversity v. National Highway Traffic Safety Admin., 538 F.3d 1172 (9th Cir. 2008); Mid States Coalition for Progress v. STB, 345 F.3d 520 (8th Cir. 2003); *but see* Sierra Club v. Fed. Highway Admin., 715 F. Supp. 2d 721, 741 (S.D. Tex. 2010) *aff'd*, 435 F. App'x 368 (5th Cir. 2011) (stating that the "plaintiffs have not, however, pointed to any law or regulation showing that defendants' failure to consider greenhouse gas emissions makes the [Final] EIS inadequate.")

[38] *See* CEQ, CONSIDERING ENVIRONMENTAL EFFECTS UNDER THE NEPA, pp. 7, 9 (1997) (citing climate change as an example of a cumulative effect).

[39] 40 C.F.R. § 1508.25(c).

from any vehicles operated on-site or from project construction. Indirect emissions are harder to define, but are those impacts "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." Indirect effects could include upstream and downstream impacts, such as emissions associated with the supply-chain upstream or downstream growth induced by the project. In this context, growth-induced by a project typically refers to industrial, commercial or residential development in an area that is facilitated or encouraged by the project , for example, a new highway improving access to an area may enable its development (known as "growth-inducing" impacts). In February 2010, the CEQ issued draft guidance for Federal agencies on how to determine whether "analysis of the direct and indirect GHG emissions from their proposed actions may provide meaningful information to decision makers and the public."[40] The draft guidance stated that analysis of indirect emissions "must be must be bounded by limits of feasibility in evaluating upstream and downstream effects of Federal agency actions."[41] The vague nature of this guideline has left considerable uncertainty as to which indirect emissions must be considered in the EIS for an action.

Taking the nomenclature of the Greenhouse Gas Protocol—a guide prepared through a partnership of the World Resources Institute and the World Business Council for Sustainable Development, which is now a widely used tool for calculating GHG emissions—there are three scopes or categories that may be relevant.[42] The first, Scope 1, is direct emissions, which are clearly within the scope of NEPA review. Scope 2 emissions are indirect emissions resulting from use of power generated off-site (typically this is purchased electricity). Scope 3 refers to all other indirect emissions. Scope 2 emissions are a much more narrowly limited category, and their estimation is quite "feasible." Consequently, the inclusion of Scope 2 emissions in NEPA review is less controversial than the inclusion of any Scope 3 emissions. In October 2009 President Obama issued an Executive Order on Environmental, Energy, and Economic Performance that, among other things, required agencies to consider Scope 2 emissions in any EA or EIS prepared for a new or expanded Federal facility.[43]

In the absence of final, detailed guidance from the CEQ to determine which indirect or Scope 3 emissions should be considered in an EIS, agencies must rely on the principles of causation as applied by the courts in NEPA cases. The Supreme Court has held and reaffirmed its view that only impacts which are "reasonably foreseeable" and have a "reasonably close causal relationship" are properly part of a NEPA review.[44] To determine when such a causal relationship exists, courts will "look to the underlying policies or legislative intent in order to draw a manageable line between those causal changes that may make an actor responsible for an effect and those that do not."[45] The Army Corps of Engineers has asserted that many of the upstream and downstream effects associated with proposed coal export

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[40] CEQ, DRAFT NEPA GUIDANCE ON CONSIDERATION OF THE EFFECTS OF CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS, p. 1 (2010).
[41] *Id.* at p. 3.
[42] WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT AND WORLD RESOURCES INSTITUTE, GREENHOUSE GAS PROTOCOL: A CORPORATE ACCOUNTING AND REPORTING STANDARD (Revised Ed.) (2004).
[43] Exec. Order No. 13,514, § 2(f)(iv), 74 Fed. Reg. 52,117, 52,119 (Oct. 8, 2009).
[44] Metropolitan Edison Co. v. People Against Nuclear Energy, 460 U.S. 766, 774 (1983); Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 767 (2004).
[45] Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 767 (2004).

terminals, such as "rail traffic, coal mining, shipping coal outside of U.S. territory, and the ultimate burning of coal overseas, are outside the Corps' control and responsibility," and on that basis are not within the scope of the NEPA review undertaken for the grant of permits under the RHA or the CWA.[46] In other words, the Corps appears to be suggesting that indirect emissions that occur upstream or downstream from the proposed ports are not causally related to its grant of approval. Interestingly, in relation to the proposed Gateway Pacific Terminal in Washington, the state authorities have taken a much broader view than the Corps of the appropriate scope for the environmental impact assessment. While the State and Federal agencies have entered into an agreement to prepare a joint EIS, each agency independently determined the scope of effects that it required to be considered in the document. Whatcom Country and the Washington Department of Ecology have required "[a]n evaluation and disclosure of greenhouse gas emissions of end-use coal combustion," while the Corps only required the joint EIS to evaluate "on-site and nearby impacts."[47]

The Supreme Court examined the scope and range of environmental effects that have to be considered as part of NEPA review in *Department of Transportation v. Public Citizen*. In that case, the Court had to consider whether an effect on the environment that could not have been prevented through any discretionary action of the agency should have been considered under NEPA. The particular question at issue was whether the Federal Motor Carrier Safety Administration (FMCSA) was required to consider the environmental effects of pollution emitted by the cross-border operation of Mexican-domiciled trucks when it promulgated regulations that allowed the cross-border operation to occur. Critically, while the FMCSA regulations were necessary for the cross-border operation of the trucks, the fact that the trucks were allowed to operate in the U.S. was the result of a decision by the President to lift an earlier moratorium.[48] In other words, the agency did not actually decide to allow the cross-border operation of the trucks, instead that decision had been made through Presidential authority. The Supreme Court held that the FMCSA did not have to consider the pollution caused by the entry into the U.S. of trucks from Mexico, because it had limited statutory authority over that action and could not have prevented the cross-border operation of the trucks.[49] The decision in *Public Citizen* echoes the limitation of NEPA review to actions which are potentially subject to the "control and responsibility" of a Federal agency. The reasoning in *Public Citizen* emphasized that environmental effects did not have to be included in an EIS where the agency had "limited statutory authority over the relevant actions" and therefore was not a "legally relevant 'cause' of the effect."[50] As a result of this reasoning, the Court concluded that the emission of air pollutants from the trucks was neither a direct or indirect effect of the FMCSA regulations.[51]

The decision in *Public Citizen* therefore does not provide guidance on how proximate the causal relationship between an action and effect must be to fall within the scope of NEPA review; instead, it held that where there an agency did not have the statutory authority to take action that would prevent

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[46] Statement of Jennifer A. Moyer, *supra* note 35, p. 5.
[47] Whatcom County, Washington State Department of Ecology, U.S. Army Corps of Engineers, *supra* note 6.
[48] Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 760-763 (2004).
[49] *Id.* at 769-770.
[50] *Id.* at 770.
[51] *Id.* at 772.

an effect, that there was no causal relationship at all for the purposes of NEPA. This is an important distinction when considering how NEPA may apply to the consideration of downstream emissions in the environmental review of coal export projects. If the Army Corps of Engineers grants approval for one or more new coal export terminals, and those terminals facilitate an increase in the amount of U.S. coal that is exported, that is an effect of the Corps' decision. While the Corps does not make the decision as to when or in what quantities coal is exported, their grant of a permit for the port may impact how others make those export decisions, establishing a causal relationship. This is different to the situation which arose in the *Public Citizen* case, where the cross-border operation of Mexican-domiciled trucks was permitted by Presidential order and could not have been prevented by the FMCSA. If an increase in coal exports is a reasonably foreseeable result of allowing the construction of new ports, then the emissions associated with that export may be indirect effects that are subject to NEPA review.

This distinction between control over actions and control over effects or impacts is a subtle but critically important feature of NEPA. If all effects of upstream or downstream activities were excluded from NEPA analysis because the relevant agency did not have direct control over those actions, then the specific inclusion of "indirect" effects in the CEQ Regulations would be largely meaningless. The Regulations themselves cite "growth inducing effects" and changes in the "pattern of land use, population density or growth rate" as indirect impacts that may be within the scope of NEPA review.[52] For example, when considering an EA prepared in relation to the construction of a causeway and port in Maine, the First Circuit held that the review had been inadequate because it did not take into account the industrial development that would be facilitated by the port.[53] When determining whether the environmental impacts of that industrial development should have been considered in NEPA review of the port, the court noted that the following questions should be considered:

> With what confidence can one say that the impacts are likely to occur? Can one describe them 'now' with sufficient specificity to make their consideration useful? If the decision-maker does not take them into account 'now,' will the decision-maker be able to take account of them before the agency is so firmly committed to the project that further environmental knowledge, as a practical matter, will prove irrelevant to the government's decision?[54]

Generally, it can be said with great confidence that new leases for mines, construction of new export terminals and railways will result in increased exports of coal. After all, the stated purpose of many of these projects is to increase U.S. commodity exports.[55] This is not to say that if a new port will ship ten million metric tons of coal per year that the environmental impacts of the combustion of all of that coal offshore is necessarily an effect of the port. A proper analysis of indirect effects in an EIS may also take

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[52] 40 C.F.R. § 1508.8(b).
[53] Sierra Club v. Marsh, 769 F.2d 868, 877-82 (1st Cir. 1985).
[54] *Id.* at 878.
[55] For example, increasing exports is the stated aim of proposed new export terminals on the West Coast. *See e.g., Economic Benefits – National*, GATEWAY PACIFIC TERMINAL, http://gatewaypacificterminal.com/economic-benefits/national/ (last accessed Aug. 14, 2013) (stating that the project will help to achieve an increase in U.S. exports); *Trade Tomorrow*, MILLENNIUM BULK TERMINALS-LONGVIEW, LLC, http://millenniumbulk.com/trade/tomorrow/ (last accessed Aug. 14, 2013) (stating that the project "will fuel economic progress throughout the region and expand access to critical international and domestic markets for generations").

into account whether the port is merely an alternative venue for shipment of coal would otherwise have been transported through another port (such as those on the Gulf Coast), or whether U.S. coal exports are displacing production from other nations, in order to determine the impact of the action as accurately as possible. Some have even suggested that increasing U.S. exports of coal may actually lead to a reduction in global GHG emissions, as it will result in higher domestic prices for coal, encouraging more U.S. utilities to switch to natural gas.[56] Were this effect of increasing coal exports to occur, then its environmental benefits would fall within the scope of NEPA review.[57] Others have taken the opposite view—that U.S. coal exports will increase global GHG emissions.[58]

There is precedent for requiring consideration of downstream emissions in the NEPA review of coal transport projects. In *Mid States Coalition for Progress v. Surface Transportation Board* the Eighth Circuit held that the STB had to examine the environmental effects of the reasonably foreseeable increased low-sulfur coal consumption when deciding whether or not to grant a permit for construction of a new railway servicing mines in the Powder River Basin region in Wyoming.[59] Public comments during the environmental review by STB had suggested that the projected availability of 100 million metric tons of coal at reduced rates, as a result of the railway, would increase consumption of coal vis-à-vis other fuels.[60] In spite of the STB's argument that demand for low-sulfur coal would be met through other means in the absence of the new railway, the Court held that it was "illogical at best" to suggest that an "increase in availability and a decrease in price" would not affect demand.[61] The Court found it was "almost certainly true that the proposed project will increase the long-term demand for coal and any adverse effects that result from burning coal."[62] Moreover, it was held that where the nature of an impact is reasonably foreseeable, but its exact extent is not known, the effect must still be considered in the environmental review.[63] In this situation, under the CEQ Regulation the agency must note that certain information is missing or incomplete, along with detail of any existing credible approaches to evaluating the impact and the agency's analysis of the potential impacts based on theoretical approaches or accepted scientific methods.[64]

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[56] *See* Frank Wolak & Richard Morse, "China's green gift to the world: Environmentalists who want to ban China's coal imports are 100% wrong; driving up the price of coal cuts carbon emissions," The Guardian, December 30, 2010, http://www.theguardian.com/commentisfree/cifamerica/2010/dec/30/coal-energy-industry (argues that increasing exports of coal will decrease global GHG emissions, because China would simply burn the same amount of domestic coal if it could not import coal, but purchases by China increase global coal prices and thereby make cleaner energy sources more competitive).

[57] For the purposes of NEPA, "effects" includes both the detrimental and beneficial environmental impacts of a project: 40 C.F.R. § 1508.8.

[58] Thomas Power, *The Greenhouse Gas Impact of Exporting Coal from the West Coast* (Sightline Institute, July 2011), *available at* http://www.sightline.org/research/greenhouse-gas-impact-of-exporting-coal/ .

[59] Mid States Coal. for Progress v. Surface Transp. Bd., 345 F.3d 520, 549-50 (8th Cir. 2003).

[60] *Id.* at 548.

[61] *Id.* at 549.

[62] *Id.*

[63] *Id.* at 549-550.

[64] 40 C.F.R. § 1502.22.

On remand the STB complied with the Eighth Circuit's decision, and analyzed the impacts of increased coal consumption using the EIA's National Energy Modeling System (NEMS).[65] Using the NEMS, the STB concluded that the increase in coal consumption would cause only a small increase (less than 1%) in relevant air pollutants such as carbon dioxide, carbon monoxide, sulfur dioxide and nitrous oxides, on a national and regional level.[66] NEMS did not allow modeling of impacts at a local level, so the STB instead followed the procedure set out in the CEQ Regulations for when critical information is unavailable. In a subsequent challenge by the Sierra Club, the Eighth Circuit held that this analysis by STB was adequate.[67]

While they did not concern export infrastructure, the STB cases demonstrate that the environmental effects of increased coal consumption resulting from infrastructure projects such as railways can fall within the scope of NEPA review. This paper will now turn to consider whether the fact that coal is being shipped for export and will be burnt offshore, rather than being consumed domestically, would change this conclusion.

ii. Consideration of emissions discharged outside of the U.S.

NEPA does not specifically require Federal agencies to consider the environmental impact of actions taken outside of U.S. territory. There is a presumption against extraterritorial application of domestic laws, unless there is clear evidence of Congressional intent to the contrary.[68] Yet it does not necessarily follow that extraterritorial effects of domestic actions, or even actions that are carried out offshore, are outside of the scope of NEPA.

As a starting point, it can be convincingly argued that NEPA does not raise any issue of extraterritoriality, as it is a procedural statute that only applies to Federal agencies. While the impact or activity may occur in a geographical region that is outside of the U.S., the hook that brings NEPA into play is carrying out a major Federal action—a policy, program or approval of a Federal agency. In a case considering U.S. activities in Antarctica, the D.C. Circuit held that the procedural provisions of NEPA are "a legitimate exercise of Congress' territoriality-based jurisdiction, and [do] not raise extraterritoriality concerns," as they only concern U.S. federal agencies and their decision-making processes.[69] Decisions made by U.S. Federal agencies are most properly considered as "conduct occurring within the territory of the United States," and do not impose any substantive requirements that would govern conduct abroad.[70] Thus, NEPA covers decisions of Federal agencies, which are considered to be domestic actions, even if their impacts are mostly or entirely in other countries. There are, however, cases which have held that NEPA review does not apply to environmental effects that occur entirely within other sovereign nations,

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[65] Mayo Found. v. STB, 472 F.3d 545, 555 (8th Cir. 2006).
[66] *Id.* Note that it the baseline used to calculate this percentage was not clarified in the decision.
[67] *Id.* at 556.
[68] Kiobel v. Royal Dutch Petroleum Co., 133 S. Ct. 1659, 1664, 185 L. Ed. 2d 671 (2013) (citing the presumption and earlier Supreme Court opinions that considered and applied it).
[69] Envtl. Def. Fund, Inc. v. Massey, 986 F.2d 528, 532 (D.C. Cir. 1993) (the Court further went on to hold that Antarctica had a unique status under international law which was similar to the high seas or outer space, and that the US had some level of "legislative control" over Antarctica). *See also* Natural Res. Def. Council Inc. v. U.S. Dep't of Navy, CV-01-07781 CAS(RZX), 2002 WL 32095131 (C.D. Cal. Sept. 17, 2002) (holding that NEPA applied to effects of actions by the Navy within the U.S. Exclusive Economic Zone).
[70] Envtl. Def. Fund, Inc. v. Massey, 986 F.2d 528, 533 (D.C. Cir. 1993).

where such review may have implications for foreign policy or national security.[71] Importantly though, these cases often distinguish between impacts within the territory of other sovereign states on the one hand, and global impacts or impacts on areas of the global commons on the other hand—noting that NEPA consideration of the latter does not raise the same foreign policy concerns.[72]

The specific issue of whether NEPA review may include offshore GHG emissions was raised in litigation brought by Friends of the Earth and others against the Export-Import Bank of the United States (Ex-Im) and the Overseas Private Investment Corporation (OPIC).[73] The plaintiffs alleged that both government agencies had supported fossil fuel projects overseas without properly reviewing the impact of those projects on climate change, as required by NEPA. After motions to dismiss the claims were denied the disputes were settled out of court, with OPIC agreeing to consider the GHG emissions from projects that met a threshold of 100,000 tons or more of CO2 equivalent.[74] While this settlement does not have any binding precedential value, it does demonstrate that at least some Federal agencies consider emissions that occur overseas within their NEPA analyses.[75]

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[71] NEPA Coal. of Japan v. Aspin, 837 F. Supp. 466, 467 (D.D.C. 1993) (considering application of NEPA to environmental impacts from U.S. military bases in Japan, holding that the plaintiffs were "unable to show that Congress intended NEPA to apply in situations where there is a substantial likelihood that treaty relations will be affected."); Natural Res. Def. Council, Inc. v. Nuclear Regulatory Comm'n, 647 F.2d 1345, 1366 (D.C. Cir. 1981) (regarding a federal decision to export a nuclear reactor to the Philippines, and holding that consideration of impacts occurring exclusively in the Philippines was not required by NEPA, as such consideration may be inconsistent with U.S. foreign policy interests); Greenpeace USA v. Stone, 748 F. Supp. 749, 761 (D. Haw. 1990) (noting that NEPA did not apply to impacts within Germany of the movement of chemical munitions by the U.S. Army).

[72] *See* Greenpeace USA v. Stone, 748 F. Supp. 749, 761 (D. Haw. 1990) (noting that "the foreign policy considerations which were critical to the preceding analysis of extraterritorial NEPA application [to effects within Germany] are not implicated to the same extent by the transoceanic shipment of the European stockpile from West Germany to Johnston Atoll. The global commons portion of the Army's action does not take place within the sovereign borders of a foreign nation or in concert with that foreign nation. Accordingly, the question of NEPA application to the transoceanic shipment of the chemical munitions presents a different question."); Natural Res. Def. Council, Inc. v. Nuclear Regulatory Comm'n, 647 F.2d 1345, 1366 (D.C. Cir. 1981) (stating that the question at issue was whether an action that would cause "*no significant American or global impacts*, nevertheless triggers the requirement of a site-specific environmental impact statement, solely because of effects occurring in a foreign jurisdiction" (emphasis added).)

[73] *See* Friends of Earth, Inc. v. Watson, C 02-4106 JSW, 2005 WL 2035596 (N.D. Cal. Aug. 23, 2005); Friends of Earth, Inc. v. Mosbacher, 488 F. Supp. 2d 889 (N.D. Cal. 2007).

[74] Settlement Agreement with the Overseas Private Investment Corporation (OPIC), Friends of the Earth, Inc., et al. v. Spinelli, et al. (Civ. No. 02-4106, N.D. Cal.), *available from* http://www.climatelaw.org/cases/case-documents/us/opic.pdf. In July 2013 Friends of the Earth and other environmental groups initiated another lawsuit against Ex-Im alleging a failure to comply with NEPA when providing a loan guarantee for a U.S. company to support coal export activities, although the complaint only refers to local impacts of the coal mining and transport, with no mention of global impacts such as climate change. *See* Complaint, Chesapeake Climate Action Network et. al., v. Export-Import Bank of the United States and Fred. P. Hochberg, CV-13-3532 (N.D. Cal.).

[75] Ex-Im and OPIC are not the only agencies that review environmental effects that occur outside of U.S. territory. For example, the Department of the Navy frequently prepares Overseas EISs to assess impacts of their actions outside of U.S. territory, as required by Executive Order No. 12,114 (this order is considered in greater detail below). *See, e.g.,* DEPARTMENT OF THE NAVY, DRAFT ENVIRONMENTAL IMPACT STATEMENT / OVERSEAS ENVIRONMENTAL IMPACT STATEMENT FOR ATLANTIC FLEET TRAINING AND TESTING (May 2012), *available at* http://aftteis.com/Home.aspx

It is important to note that the view that offshore GHG emissions could fall within the scope of NEPA review is not uncontested. In March 2013 the Senate unanimously passed an amendment to a proposed budget resolution for fiscal year 2014, which would exclude from NEPA analysis GHG emissions produced outside of the U.S. by exported products.[76] The proponent of the amendment suggested that the Environmental Protection Agency (EPA) had been blocking exports on "account of the [GHG] emissions those exports would produce outside of the U.S.; that is after they leave our shores."[77] No specific examples of instances where the EPA had blocked exports in this way were mentioned in the Congressional testimony, and the basis for the statement is unclear. The amendment was passed unanimously and with little comment after Democratic Senators expressed their view that this was the current law.[78] The Senators who proposed the amendment later wrote a letter to the CEQ urging that any future guidance on the consideration of climate change under NEPA exclude any GHGs emitted by exported products once outside the U.S.[79]

The budget resolution (including this amendment) has not yet passed the House of Representatives, and is therefore not binding on Federal agencies. However, it is worth considering whether the Senators are correct in their view that the amendment merely reaffirmed the current law. As noted above, the basis for the suggestion that EPA has been blocking exports on account of their GHG emissions is unclear. Senator Barrasso, the proponent of the amendment, suggested that EPA's actions to date were a "dangerous precedent" that would hurt exports of automobiles, aircraft, tractors and other heavy equipment.[80] Contrary to what was suggested by the Senators, the current law actually requires environmental impact assessment to consider effects of an action on the territory of other countries or the global commons. While this is not compelled by NEPA or the CEQ Regulations, an Executive Order issued in 1979 requires that an EIS (or equivalent document) be prepared for any major Federal action that is likely to have significant environmental effects abroad.[81] That Executive Order specifically requires NEPA consideration of, *inter alia,* "major Federal actions outside the United States, its territories and possessions which significantly affect natural or ecological resources of global importance," if those resources are "protected by international agreement binding on the United States" and the Secretary of State has designated them for protection under the relevant section of the Executive Order.[82] The Executive Order also covers "major Federal actions significantly affecting the environment of the global commons outside the jurisdiction of any nation (e.g., the oceans or Antarctica)." Notably, this Executive Order extends review by Federal agencies of the environmental effects of their actions to impacts that occur exclusively outside of the U.S..

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[76] S.Con.Res.8, S.Amdt 184, 113th Cong. (as passed by the Senate, Mar. 22, 2013).
[77] 159 CONG. REC. S2,314 (daily ed. Mar. 22, 2013) (statement of Sen. Barrasso).
[78] *Id.* (statement of Sen. Murray).
[79] Letter from Sens. Barrasso, Hatch and Inhofe, to Nancy Sutley, Chairwoman of CEQ (Apr. 4, 2013), *available at* http://barrasso.senate.gov/public/_files/CEQ_Letter_4_4_13.pdf.
[80] 159 CONG. REC. S2,314 (daily ed. Mar. 22, 2013) (statement of Sen. Barrasso).
[81] Exec. Order No. 12,114—Environmental effects abroad of major Federal actions (Jan. 4, 1979).
[82] *Id.* at ¶ 2-3(c)(1). While the U.S. has ratified and is therefore bound by the United Nations Framework Convention on Climate Change, no record can be found of the Secretary of State designating the climate as a resource that is protected under this section of the Executive Order.

It is not necessary, however, to rely on this Executive Order when considering climate change and offshore GHG emissions. Environmental impacts of GHG emissions from exported products are not limited to the local area that the product is used. No matter where GHG emissions are released—whether in the U.S., China or any other country—they contribute to climate change, a phenomenon that impacts the U.S. and the world. Thus, if increased exports boost global coal consumption and GHG emissions, this will have domestic impacts in the U.S. There seems, therefore, to be little basis for the assertion that the current law does not allow NEPA analysis to extend to GHG emissions that occur outside of the U.S., where those emissions can be tied to a major Federal action.

iii. Methodologies for assessing the "significance" of GHG emissions

Of course even if agencies accept that downstream GHG emissions from coal exports should be part of NEPA review for mines, railways or ports, they then face the problem of how to determine what level of emissions will have a "significant" environmental effect. This problem, often known as the "1% problem," arises because any single project is unlikely to make a sizeable contribution to global atmospheric concentrations of carbon dioxide or other GHGs.[83] In its draft guidance in 2010, the CEQ proposed a reference point of 25,000 metric tons of CO2 equivalent for direct emissions.[84] This is the same threshold that triggers the application of the EPA's GHG Reporting Rule.[85] The CEQ's draft guidance noted that:

> CEQ does not propose this as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs . . . However, it is not currently useful for the NEPA analysis to attempt to link specific climatological changes, or the environmental impacts thereof, to the particular project or emissions, as such direct linkage is difficult to isolate and to understand.[86]

The difficulty of trying to analyze the impact of GHG emissions from a single action on global climate change has been borne out in several cases. For example, the Ninth Circuit upheld an EA prepared by the Forest Service for a project that included controlled logging and burning in a national forest in order to reduce the risk of wildfire. Guidance on the consideration of climate change in NEPA review, issued by the Deputy Chief for the National Forest System, had noted that "proposals require no discussion if they are of a 'minor scale [so] that the direct effects would be meaningless.'" The Court held that given the small scale of the logging and burning, the EA had "adequately considered the Project's impact on global warming in proportion to its significance" (the EA had failed to discuss global warming).[87] Even

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[83] Michael P. Vandenbergh and Kevin Stack, *The One Percent Problem*, 111 COLUMBIA L. REV. 1385 (2011).
[84] CEQ, *supra* note 40, p. 2.
[85] 40 C.F.R. § 98.2
[86] CEQ, *supra* note 40, p. 2. Note that for policies or actions that may have a substantial impact on GHG emissions, EISs have carried out an analysis of how the action may contribute to changes such as global temperature and sea level rise. *See* NHTSA, CORPORATE AVERAGE FUEL ECONOMY STANDARDS PASSENGER CARS AND LIGHT TRUCKS MODEL YEARS 2017-2025 FINAL ENVIRONMENTAL IMPACT STATEMENT (July 2012, Docket No. NHTSA-2011-0056), pp. 5-63 to 5-97.
[87] Hapner v. Tidwell, 621 F.3d 1239, 1245 (9th Cir. 2010). *See also* Earth Island Inst. v. Gibson, 834 F. Supp. 2d 979, 990 (E.D. Cal. 2011); League of Wilderness Defenders v. Martin, No. 2:10-CV-1346-BR, 2011 WL 2493765, at *8 (D. Or. June 23, 2011); Conservation Nw. v. Rey, 674 E Supp. 2d 1232, 1253 (WD. Wash. 2009).

where a project is likely to have relatively large downstream impacts on climate change courts have held that a cursory analysis may be adequate under NEPA. In *Barnes v. U.S. Dep't of Transportation* the Ninth Circuit held that when considering the construction of a new runway at Hillsboro Airport the Federal Aviation Administration (FAA) was required to "analyze the impacts of the increased demand attributable to [an] additional runway as growth-inducing effects falling under the purview" of NEPA.[88] The Court went on to hold, however, that the following analysis of GHG emissions contained in the EA was adequate:

> . . . the EA includes estimates that global aircraft emissions account for about 3.5 percent of the total quantity of greenhouse gas from human activities and that U.S. aviation accounts for about 3 percent of total U.S. green-house gas emissions from human sources. Because [Hillsboro Airport] represents less than 1 percent of U.S. aviation activity, greenhouse emissions associated with existing and future aviation activity at [Hillsboro Airport] are expected to represent less than 0.03 percent of U.S.-based greenhouse gases. Because this percentage does not translate into locally-quantifiable environmental impacts given the global nature of climate change, the EA's discussion of the project's in terms of percentages is adequate. [89]

The U.S. District Court for the District of Alaska upheld leases issued by the Minerals Management Service (MMS) for oil and gas development in the Beaufort Sea that were based on an EIS undertaken in 2003.[90] Before the leases were issued in 2007 the MMS undertook an EA to investigate whether there were new circumstances or information that had arisen to warrant a new EIS being prepared. The MMS had concluded that information about changing oil prices and cumulative climate change impacts on subsistence in local communities in Alaska did not warrant the preparation of a new EIS. Specifically, the Court upheld MMS's finding that "the rate and impact of climate change are largely independent of whether [the leases] are permitted to stand."[91] In a similar case, the District Court for the Western District of Kentucky had to consider the Federal Highway Administration's involvement in the Louisville–Southern Indiana Ohio River Bridges Project. Plaintiffs alleged that the NEPA process had been inadequate because it did not properly analyze the GHG emissions of the transport project or its alternatives. The Court held that "[a]lthough consideration of greenhouse gas emissions is patently important, the Court agrees that Project-specific quantification of greenhouse gas emissions, and their effect on climate change, would be largely uninformative and speculative."[92] In addition to these cases, courts have on several occasions dismissed challenges to Federal agency decisions in spite of potential impacts on climate change on the grounds that the plaintiffs lacked standing. In these cases, standing has been denied on the basis that the GHG emissions associated with the particular Federal action at

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[88] Barnes v. U.S. Dep't of Transp., 655 F.3d 1124, 1139 (9th Cir. 2011).
[89] *Id.* at 1140.
[90] N. Slope Borough v. Minerals Mgmt. Serv., 3:07-CV-0045-RRB, 2008 WL 110889 (D. Alaska Jan. 8, 2008) *aff'd,* 343 F. App'x 272 (9th Cir. 2009).
[91] *Id.* at *3.
[92] Coal. for Advancement of Reg'l Transp. v. Fed. Highway Admin., 3:10-CV-7-H, 2013 WL 3776492, at *21(W.D. Ky. July 17, 2013).

issue cannot be tied to any direct harm to local communities, and thus the plaintiffs lack an actionable injury.[93]

As demonstrated by these cases, it is all too easy for courts to determine that any individual project is unlikely to have a noticeable impact on climate change, and as such, that their GHG emissions do not need to be considered in detail during NEPA review. However, the scale of climate change and global GHG emissions does not mean that the impacts of these projects should simply be dismissed; rather, a different approach is needed to assessing "significance" and ensuring that the cumulative impacts of GHG emissions are properly accounted for. NEPA requires that the significance of an effect be considered in light of both its context and intensity.[94] In light of the potentially catastrophic impacts of global climate change, a numerically small contribution to atmospheric concentrations of GHGs could still be considered significant.

In two prominent cases concerning climate change and emissions from motor vehicles, courts have held that the impact of an action may be significant. While the case did not concern NEPA, in *Massachusetts v. EPA* the Supreme Court held that standing could be established in relation to a regulation which was "a small incremental step," but which made a "meaningful contribution to greenhouse gas concentrations."[95] In a case concerning NEPA review of agency action, the Ninth Circuit held that the National Highway Traffic Safety Administration (NHTSA) had prepared an inadequate EA in relation to its Corporate Average Fuel Economy (CAFE) standard, because it had done nothing more than quantify the amount of carbon dioxide that trucks subject to the rule were likely to emit over the life of the regulation.[96] The Court noted that:

> The impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct. Any given rule setting a CAFE standard might have an "individually minor" effect on the environment, but these rules are "collectively significant actions taking place over a period of time" (quoting 40 C.F.R. § 1508.7).[97]

Both *Massachusetts v. EPA* and *Center for Biological Diversity v. NHTSA* concerned motor vehicle regulations which would have a large effect on GHG emissions, relative to other policy decisions. However, the reasoning in these two cases can be extended to other agency actions which have a smaller, but not trivial, impact on global atmospheric concentrations of GHGs. CEQ guidance would be extremely valuable to ensuring that agencies are able to adequately address the significance and cumulative impacts of GHG emissions in NEPA review. But even in the absence of such guidance, agencies can assess the GHG emissions associated with their actions relative to reasonable numerical thresholds or other appropriate points of comparison. EISs that have undertaken a comprehensive

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[93] *See e.g.,* Sierra Club v. U.S Def. Energy Support Ctr., 01:11-CV-41, 2011 WL 3321296 (E.D. Va. July 29, 2011); Amigos Bravos v. U.S. Bureau of Land Mgmt., 816 F. Supp. 2d 1118 (D.N.M. 2011); Montana Environmental Information Center et. al., v. U.S. Bureau of Land Management, et. al., No. CV-11-15-GF-SHE (D. Mon. Jun. 14, 2013).

[94] 40 C.F.R. § 1508.27.

[95] Massachusetts v. E.P.A., 549 U.S. 497, 525 (2007).

[96] Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1216 (9th Cir. 2008).

[97] *Id.* at 1217.

examination of GHG emissions have typically evaluated their significance by reference to climate policy goals, or by comparison to the overall emissions of the sector or analogous projects. For example, in the EIS prepared in relation to the most recent CAFE standard, the NHTSA compared the GHG emissions reductions that would be achieved by the standard against the U.S. target under the Copenhagen Accord (to achieve emissions 17 percent below 2005 levels by 2020), and as a percent of annual emissions from cars and light trucks, among other reference points.[98] Similarly, a recent Consultant Administrative Draft EIS prepared in relation to the Bay Delta Conservation Plan examined the GHG emissions from the operation of the plan relative to California's state emission reduction targets.[99] These comparisons provide a means by which agencies can assess the "significance" of GHG emissions without undertaking the difficult task of tying a particular action to specific climatic changes.

Turning to coal exports, the three proposed coal export terminals in the Northwest could each transport a substantial quantity of coal. In total, the maximum capacity of the three ports would be approximately 110 million short tons of coal annually, while the largest, Gateway Pacific Terminal, could transport up to 53 million short tons.[100] To put these figures in perspective, 53 million short tons of coal is roughly equivalent to the amount of coal consumed in 2012 by the five largest coal-fired power plants in the U.S. combined,[101] over six per cent of the total amount of coal used for electricity generation in the U.S. in 2012,[102] and is greater than the amount of coal consumed by Illinois for electricity generation in 2012 (the only state which used more coal than this was Texas).[103] As noted above, not all of the emissions from the end-use of exported coal can necessarily be attributed to actions such as the construction of a new port or railway—it may be that the port will be used to transport coal that would

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[98] NHTSA, *supra* note 86, pp. 5-52 to 5-60.

[99] ICF INTERNATIONAL, ADMINISTRATIVE DRAFT ENVIRONMENTAL IMPACT REPORT / ENVIRONMENTAL IMPACT STATEMENT FOR THE BAY DELTA CONSERVATION PLAN (March 2013), Section 22.3.2.3, *available at* http://baydeltaconservationplan.com/Library/DocumentsLandingPage/EIREISDocuments.aspx.

[100] *See* Whatcom County, Washington State Department of Ecology, U.S. Army Corps of Engineers, *supra* note 6 (stating the maximum annual capacity for coal shipment through the Gateway Pacific Terminal is 48 million metric tons, which is equivalent to 52.9 million short tons); U.S. Army Corps of Engineers, Public Notice for Permit Application for Coyote Island Terminals (NWP-2012-56, Mar. 6, 2012), *available at* http://www.nwp.usace.army.mil/Portals/24/docs/regulatory/publicnotices/NWP-2012-56.pdf (stating that the maximum annual capacity of the port would be 8.8 million short tons of coal annually); Washington State Department of Ecology, *Environmental Review Millennium Bulk Terminals Longview proposal,* http://www.ecy.wa.gov/geographic/millennium/ (stating that the terminal could transport up to 48.5 million short tons of coal per year).

[101] These are the Scherer, Martin Lake, James H. Miller Jr., Rockport and Labadie power stations, which consumed a combined total of 53.6 million short tons of coal in 2012 (most of which was subbituminous, but also includes smaller quantities of lignite and bituminous coal). Data available from: EIA, Electricity Data Browser, http://www.eia.gov/electricity/data/browser/ (data set showing consumption for electricity generation for all sectors, annual) (data set showing plant level data) (last accessed Aug. 20, 2013).

[102] The total amount of coal consumed in the U.S. for electricity generation was 826.7 million short tons. *See* EIA, Electricity Data Browser, http://www.eia.gov/electricity/data/browser/ (data set showing consumption for electricity generation for all sectors, annual) (last accessed Aug. 20, 2013). 53 million short tons is approximately 6.4% of 826.7 million short tons.

[103] A total of 49.148 million short tons of coal was used for electricity generation in Illinois in 2012. Texas was the only state to consume more coal than this, with 97.59 million tons. *See* EIA, Electricity Data Browser, http://www.eia.gov/electricity/data/browser/ (data set showing consumption for electricity generation for all sectors, annual) (last accessed Aug. 20, 2013).

otherwise have been shipped via a different route, or U.S. exports may displace those from another coal producing nation. However, even if only a portion of the emissions generated by the combustion of exported coal are reasonably connected to a particular action, those emissions may well be "significant" relative to other sources of GHGs.

It is also worth noting that the question of whether an action's contribution to climate change is "significant" enough to warrant detailed consideration under NEPA could be raised in relation to both direct and indirect emissions. In the context of coal export projects, the downstream indirect emissions of the project are considerably more likely to make a substantial contribution to global atmospheric concentrations of GHGs, because they are more sizeable than direct emissions from the construction or operation of infrastructure such as mines, railways and ports. Notably, many fossil fuel production or transport projects currently consider their direct GHG emissions in NEPA review, but resist public comments suggesting that they should also consider their downstream impacts—even though these indirect impacts are considerably larger.[104] As NEPA is concerned with direct, indirect and cumulative impacts that are of environmental significance, it is arguable that for coal export projects disclosure and analysis of downstream emissions is more critical than for the smaller, direct, emissions of an action.

3. Current Agency Practice in NEPA Review

The previous section of this paper considered the legal rationale for including downstream GHG emissions in environmental review of coal export projects. However, as a result of uncertainties in the law and the lack of final guidance from the CEQ, the practice of different government agencies has been divergent. In this section, the paper considers agency guidance documents regarding measuring greenhouse gas emissions for NEPA compliance as well as a sampling of recent EISs for projects with significant GHG emissions from upstream or downstream activities.

The following categories of projects were considered within the scope of this analysis: the leasing or lease extension of federal lands for coal mining, the extension or creation of coal carrying railroads, coal fired electricity generation plants, and electricity generation plants fired by other fuels such as biomass. Generally speaking, the preparation of EISs for projects within these categories was led by the federal agencies that are responsible for energy, transportation, and leasing of federal land. These agencies include the Bureau of Land Management (BLM), Department of Energy (DOE) and the Surface Transportation Board (STB). A case study on the Keystone XL Pipeline, one of the most significant fossil fuel related projects currently under consideration by the Federal government, is also included.

Measurement of GHG emissions from the construction and operation of the proposed projects is a clear NEPA requirement met by all agencies considered in this report. However, there is great diversity in the extent to which these agencies attempt to quantify the effects of upstream and downstream activities.

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[104] For example, the initial EIS for the Keystone XL Pipeline did not into account emissions from the production of tar sands crude, or the combustion of oil downstream, but did include an analysis of the emissions from machinery necessary to construct and operate the pipeline. *See* DEPARTMENT OF STATE, DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE KEYSTONE XL OIL PIPELINE PROJECT, Sec. 3.14.3.14 (Apr. 2010) (discussing emissions associated with the construction, operation and downstream refining of the crude, but not those from extraction or end-use). As discussed below, the final EIS did quantify GHG emissions from extraction and end use.

Variation begins with each agency's interpretation of which types of activities count as "indirect effects" of the project for purposes of NEPA analysis.[105] For example, this variation is reflected in agency guidance documents as well as the EISs themselves. It is not uncommon to find divergence in how a single agency considers two projects within the same category of development. Each category of project is considered in turn.

a. Coal mining and electric fired coal production: Bureau of Land Management & Department of Energy

Coal mining is far and away the largest upstream contributor to GHG emissions. As such the Bureau of Land Management's leasing of federal lands for coal mining stands as a critical link in GHG emissions from coal burning. BLM's EISs shifted after 2009 to a more inclusive analysis of greenhouse gas emissions. [106] This shift seems to track the release of the United States Geological Survey's series of reports projecting coal production from all coal mines in the Powder River Basin (PRB) until 2020.[107] In considering the leasing of tracts of land adjacent to the Buckskin Coal Mine and the Wright Area Mine, BLM was able to refer to USGS reports to determine where the coal would be burned and in what capacity. In the case of the 2011 Buckskin Coal Mine extension the EIS states, "[t]his analysis assumes…that the coal would be sold in response to national and international demand. Historically, these users have been coal-fired power plants that generate electricity in the United States, although there are recent efforts towards sales outside the country; coal from the Buckskin Mine is not sold internationally." [108] The EIS goes on to discuss analysis used to quantify emissions:

> Assuming that all coal produced would be burned to generate electricity, GHG emissions that could be attributed to coal production resulting from mining the proposed tract or an alternative tract configuration, as well as from the forecast coal production from all coal mines in the Wyoming PRB, were estimated. This was done by relating the portion of coal mined to the total emission of GHG from all coal mined in the United States. Assuming that all PRB coal would be used for coal-fired electric generation as part of the total U.S. use of coal for that purpose, gives an upper estimate of the GHG expected to result from coal recovered for the proposed

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[105] 40 C.F.R. § 1508.8.

[106] *See* BUREAU OF LAND MANAGEMENT, BUCKSKIN MINE HAYCREEK II COAL LEASE EIS (2011), *available at* (http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/cfodocs/haycreekii/feis.Par.89003.File.dat/07chap4.pdf; WRIGHT AREA COAL LEASE APPLICATIONS FINAL EIS, *supra* note 34; *cf* BUREAU OF LAND MANAGEMENT, FINAL EIS FOR THE SOUTH GILLETTE AREA COAL LEASE APPLICATIONS (2009), *available at* http://www.blm.gov/pgdata/etc/medialib/blm/wy/information/NEPA/hpdo/south_gillette/feis.Par.83753.File.dat/10_chap4.pdf.

[107] *See* David C. Scott, Jon E. Haacke, Lee M. Osmonson, James A. Luppens, Paul E. Pierce, and Timothy J. Rohrbacher, *Assessment of Coal Geology, Resources, and Resource Base in the Powder River Basin, Wyoming, and Montana* (2013), series of reports *available at:* http://energy.usgs.gov/Miscellaneous/Articles/tabid/98/ID/233/New-Powder-River-Basin-Wide-Coal-Assessment-of-Recoverable-Resources-and-Reserves.aspx.

[108] BUCKSKIN MINE HAYCREEK II COAL LEASE EIS, *supra* note 106, at p. 4-121.

> tract or alternative tract configuration and for total coal production forecast for the entire PRB.[109]

The 2010 Wright Area Coal Mine extension EIS similarly discusses the role of domestic electricity producers as the traditional purchasers of coal purchased at the site as well as the production of coal at the Wright Area Mine relative to other portions of the PRB. [110] While conceding the speculative nature of coal sales, stating "[c]oal sales are made on short term contracts, generally to individual power generators, or coal is sold on a spot market…During the coal leasing EIS process, it is uncertain and speculative to predict who might purchase future PRB coal, how it would be used, and where the coal might be transported to," BLM identifies GHG emission ranges based on Wright Area Coal production relative to PRB coal production and coal fired electric generation in the US. [111] The approach adopted in the Wright Area and Buckskin Coal Mine lease extensions EISs stands in contrast to the 2009 South Gillette Coal Area Lease Application. The EIS for South Gillette states, "[i]t is not possible to project the level of CO2 emissions that burning the coal in SGAC LBA tracts would produce due to the uncertainties about what emission limits will be in place at that time or where and how the coal in the SGAC LBA tracts would be used after it is mined. It is not likely that selection of the No Action alternatives would result in a decrease of U.S. CO2 emissions attributable to coal-burning power plants in the longer term."[112]

b. Energy Generation: Department of Energy

The DOE's NEPA documents include consideration of the following elements: discussion of global climate change, the quantification of greenhouse gases, consideration of cumulative impacts, exploration of reasonable alternatives, and consideration of potential mitigation. [113] Lifecycle analysis is one of the elements considered under cumulative impacts. A more complete understanding of how cumulative impacts are assessed follows:

> The extent of cumulative impacts generally depends on the type of proposal and amount of potential GHG emissions. Some of the elements include the following: (1) total emissions over the project lifetime, (2) life cycle analyses, (3) incremental emissions to existing similar source base (i.e., proposed plant emissions addition to emissions from all fossil plants), and (4) potential to induce other actions.[114]

This synopsis provides a snapshot of overall structure of DOE efforts to capture information regarding greenhouse gas emissions. Cumulative analysis of the nature discussed above is undertaken in response to both traditional energy generation projects, such as the 2009 proposal for the Big Stone Power Plant, and alternative fuel projects such as the 2010 Abengoa Biofuels Refinery.

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[109] *Id.* at p. 4-122.
[110] WRIGHT AREA COAL LEASE APPLICATIONS FINAL EIS, *supra* note 34, at p. 4-135.
[111] *Id.*
[112] FINAL EIS FOR THE SOUTH GILLETTE AREA COAL LEASE APPLICATIONS, *supra* note 106, at p. 4-120.
[113] WESTERN AREA POWER ADMINISTRATION, FINAL ENVIRONMENTAL IMPACT STATEMENT BIG STONE II POWER PLANT AND TRANSMISSION PROJECT, Vol.I, p.4-8 (June 2009), *available at* http://energy.gov/sites/prod/files/EIS-0377-FEIS-01-2009.pdf.
[114] *Id.*

The Department of Energy's Final EIS for the 2009 Big Stone Power Plant project performs a complete lifecycle analysis of the proposed coal fired power plant for both CO_2 and sulfur hexafluoride.[115] However, the discussion of greenhouse gas emissions for the 600-megawatt plant was completed in accordance with the requirements of 40 C.F.R. § 1502.22 for "Incomplete or Unavailable Information."[116]

In contrast to the net emissions increases from the proposed Big Stone Power Plant, the Albengoa biofuel refinery was analyzed for its net reduction in GHG emissions. The Greenhouse gases Regulatory Emissions and Energy use in Transportation (GREET) model, prepared by the Argonne National Laboratory working with the DOE, was used to measure overall greenhouse gas reductions from the project in addition to measuring the CO_2, methane, and nitrous oxide emissions from the refinery.[117] The GREET model performs "well-to-wheel" lifecycle analysis which takes into consideration emissions from raw materials for fuels, refining of raw materials, and use of the fuel in vehicles.[118] The FEIS explains: "[t]he Abengoa Biorefinery Project would reduce greenhouse gas emissions not only by producing a fuel [that] displaces gasoline, but also by producing power that displaces electricity from other electricity generating sources. The GREET model combines these reductions and other factors into a single metric to express the net effect on greenhouse gas emissions on a lifecycle basis relative to a baseline scenario in which the biorefinery is not built."[119]

c. Coal Transportation: Surface Transportation Board

Coal transportation within the United States is largely accomplished by means of railway. The Surface Transportation Board (STB) is the federal agency responsible for approving new railroads as well as extensions to existing railway lines. STB decisions regarding the calculation of greenhouse gas emissions from proposed transportation projects were challenged in *Mid States Coalition for Progress vs. STB*, discussed earlier in this paper. The 8th Circuit Court of Appeals rejected the Board's argument that it was not required to quantify emissions of noxious pollutants such as nitrous oxide, carbon dioxide, and mercury generated when coal is combusted.[120] The 2005 DEIS[121] issued in response to the court case examines "the potential indirect air quality impacts of increased coal consumption that might result from lower transportation rates as a result of this project." As noted above, the STB decided to use the NEMS created by the Energy Information Administration.[122] The NEMS analysis showed that both

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[115] *Id.*, at p. 4-21 to 4-26.
[116] *Id.* at p.4-5 and 4-7.
[117] DOE, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED ABENGOA BIOREFINERY PROJECT, p. 4-28 (August 2010), *available at* http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/EIS-0407-FEIS-01-2010.pdf.
[118] *Id.*
[119] *Id.* at p. 4-30.
[120] Mid States Coalition for Progress v. STB, 345 F.3d 520, 549 (8th Cir. 2003).
[121] SURFACE TRANSPORTATION BOARD, DRAFT SUPPLEMENTAL EIS POWDER RIVER BASIN EXPANSION PROJECT (April 2005), *available at* http://www.stb.dot.gov/decisions/readingroom.nsf/51d7c65c6f78e79385256541007f0580/704822c12d0f05e585256fe30054447d?OpenDocument.
[122] NEMS is described as "a national coal supply and demand forecasting model, which also quantifies any associated environmental impacts." Specifically, NEMS is a forecasting and predicting model which provides information on future energy-related issues by looking at the entire breadth of the national energy market place,

regionally and nationally the impact of the project on air emissions would be nearly unchanged, although the modeling system did not allow any impact on local air emissions to be determined. Thus, in relation to local impacts on air quality the procedures set forth by CEQ for addressing impacts where critical information is incomplete or unavailable were followed. [123]

d. The Keystone XL Pipeline: Department of State

The proposed Keystone XL Pipeline would transport Western Canadian Sedimentary Basin (WCSB) crude oil, often known as oil sands or tar sands crude, from a supply hub near Hardisty, Alberta to Steele City, Nebraska, where it could connect to existing pipelines allowing it to be transported to the Gulf Coast. As the project will cross an international boundary its proponent, TransCanada, requires a Presidential Permit for its construction. It applied for this permit in May 2012, and the proposal is currently under review by the Department of State, which issued a draft Supplementary Environmental Impact (SEIS) in March 2013.

The current proposal by TransCanada is the second iteration of the Keystone XL Pipeline. TransCanada had submitted an application in 2008 for a larger pipeline project that would be in two segments—the first from Alberta to Nebraska, and a second from Cushing, Oklahoma to the Gulf Coast of Texas. (The hubs in Steele City, Nebraska and Cushing, Oklahoma are connected by an existing pipeline). A Final EIS for this proposal was issued in August 2011, but President Obama rejected that particular application. In March 2012 the President announced his support for the second stage of the pipeline – which would run between Oklahoma and Texas – going ahead without further delay.[124] Thus, the current proposal for the pipeline runs only from Alberta to Nebraska (although the route of this section of the pipeline has also been modified since the earlier proposal).

While taking the differences in the project into account, the Draft SEIS for Keystone XL issued in March 2013 builds on the findings of the final EIS for the earlier proposal that was prepared in August 2011. The initial draft EIS prepared for Keystone XL in 2010 only considered the GHG emissions that would result from construction and operation of the pipeline, and not the upstream emissions from the

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simulating energy demand, growth, new generation (by fuel type and amount), and cost (including fuel cost). Part of NEMS is the Coal market Module (CMM) that provides a forecast of U.S. coal production, consumption, exports, imports, distribution, and prices. Coal supply and demand is forecasted 20 years into the future, which allows the effects over time to be quantified. NEMS calculates air emissions associated with projected future electricity generation from criteria pollutants- SO2, NOx- as well as carbon dioxide and mercury. NEMS also has the benefit of considering price and availability of other fuels and inter-regional effects of changes in transportation costs on a national basis. *Id.*, at p. 4-6.

[123] *Id.* at p. 4-43 (detailing why the local impact could not be known).

[124] As this section of pipeline would not cross any international boundaries, it did not require the approval of the Department of State. The necessary state and federal approvals for this segment of the pipeline, now known as the "Gulf Coast Pipeline Project," were issued by the end of July, 2012. Construction of the Gulf Coast Pipeline is expected to be complete in mid-2013. *See* TransCanada, *Press Release: TransCanada Receives Final Key Gulf Coast Project Permit Construction Set to Begin this Summer*, Jul. 27, 2012, *available at* http://www.transcanada.com/6074.html.

extraction of the crude oil or downstream emissions from its end-use.[125] The EPA, among many others, commented on the insufficiency of these GHG disclosures:

> In order to fully disclose the reasonably foreseeable environmental impacts on the U.S. of the Keystone XL project, we recommend that the discussion of GHG emissions be expanded to include, in particular, an estimate of the extraction-related GHG emissions associated with long-term importation of large quantities of oil sands crude from a dedicated source.[126]

This was addressed in the final EIS, issued in August 2011, which evaluated the life-cycle emissions of oil sands crude, although noting that the Department of State was "providing this information as a matter of policy, although the proposed Project would not substantively influence the rate or magnitude of oil extraction activities in Canada, or the overall volume of crude oil transported to the U.S. or refined in the U.S."[127] The Draft SEIS that was issued by the State Department in March 2013 for the current form of the Keystone XL proposal also includes a life-cycle analysis of the GHG emission of oil sands crude, although it again notes that "such a broad review is typically beyond the scope of NEPA."[128] President Obama has stated that he will not grant approval for the pipeline if it will "significantly exacerbate the problem of carbon pollution."[129]

When analyzing indirect GHG emissions from fossil fuel transport projects the focus is typically on downstream emissions from the end-use of the fuel, as this is the most substantial source of emissions in the life-cycle. In the case of Keystone XL, considerable attention is also being paid to upstream emissions caused by the project, because the extraction of WCSB crude oil is "significantly more GHG intensive than other crudes."[130] Thus, unlike coal exports, the most significant indirect effects of the Keystone XL pipeline are likely to be upstream, when the crude oil is extracted from the tar sands, rather than downstream.[131] Life-cycle analysis of the GHG emissions of the Keystone XL project has two key elements. First, a market analysis was conducted to establish the changes in the rate of production and consumption of WCSB crude that could be linked to the pipeline. This analysis concluded that, if the pipeline and all other proposed pipelines were not built, there would be a 2 to 4 percent decrease in

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[125] ENVIRONMENTAL IMPACT STATEMENT FOR THE KEYSTONE XL OIL PIPELINE PROJECT, *supra* note 104, sec. 3.14.3.14 (discussing emissions associated with the construction, operation and downstream refining of the crude, but not those from extraction or end-use).

[126] Letter from Cynthia Giles, Assistant Administrator for Enforcement and Compliance Assurance, EPA, to Jose W. Fernandez and Kerri-Ann Jones, Assistant Secretaries, Department of State (Jul. 16, 2010), *available at* *http://yosemite.epa.gov/oeca/webeis.nsf/(PDFView)/20100126/$file/20100126.PDF*.

[127] DEPARTMENT OF STATE, FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE KEYSTONE XL PROJECT, pp. 3.14 to 3.44 (Aug. 2011).

[128] DEPARTMENT OF STATE, DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE KEYSTONE XL PROJECT, pp. 4.15 to 4.79 (Mar. 2013).

[129] President Barack Obama, Remarks by the President on Climate Change, Georgetown University, Washington, D.C., (June 25, 2013), *available at* http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change.

[130] Letter from Cynthia Giles, *supra* note 126, at p. 2 (noting that the extraction of WCSB crude is GHG-intensive relative to other forms of crude oil).

[131] *Id.*

production of WCSB crude by 2030.[132] The second stage of the life-cycle quantification used the market analysis to calculate the incremental increase in GHG emissions that could be attributed to the project. The estimated range of emissions that would be avoided if all elements of the pipeline project were denied was 0.35 to 5.3 million metric tons of CO2 equivalent annually. While the EPA has commended the Department of State for including this analysis in the Draft SEIS, it has commented that more up to date market research and consideration of the alternative of rail transport is needed to ensure that the final EIS is "complete and accurate."[133]

4. Conclusion

In the absence of final guidance from the CEQ, there is likely to continue to be uncertainty about the scope of NEPA review in relation to coal export projects. NEPA clearly requires consideration of both direct and indirect impacts, along with cumulative effects from a project. Through an examination of the CEQ Regulations and relevant case law, it can be shown that if the increased export and use of coal is a reasonably foreseeable consequence of a new coal mining lease, railway or port, the impacts of combusting that coal are required to be considered as part of the NEPA review of the export project. While determining whether any single project will have a "significant" impact on climate change is a fraught question, when considered as "cumulative impacts" these emissions can be objectively evaluated.

While this conclusion may seem controversial, and the current policies of some Federal agencies do not accord with it, it should not be all that surprising. NEPA explicitly requires assessment of indirect and cumulative effects, which indicates that it was never the intention of the statute for environmental review to be limited to the immediate impacts of the relevant action. Moreover, several federal agencies have already begun including life-cycle GHG emission analyses into their EISs. The BLM, DoE, STB and Department of State have all carried out this type of analysis, at least in some instances.

Of course it is important to also consider what the consequence of including downstream emissions in an EIS might be. As this paper acknowledges, NEPA is a procedural statute—it only requires that environmental effects be given a "hard look," and decision-makers retain the discretion to approve a project or undertake an action in spite of its potential impacts. Thus, coal export projects may still receive the necessary approvals from Federal agencies, in spite of any possible impact on climate change. But by including the downstream GHG emissions of these projects in the EIS a decision-maker, and the public, will have more adequate and complete information about the impacts of the action. In turn, this should lead to higher quality decision-making and more effective public scrutiny.

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[132] DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE KEYSTONE XL PROJECT, *supra* note 128, pp. 4.15 to 4.80

[133] Letter from Cynthia Giles, Assistant Administrator for Enforcement and Compliance Assurance, EPA, to Jose W. Fernandez and Kerri-Ann Jones, Assistant Secretaries, Department of State (Apr. 2, 2013), p. 3, *available at* http://www.epa.gov/compliance/nepa/keystone-xl-project-epa-comment-letter-20130056.pdf.