United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued February 2, 2017 Decided August 15, 2017

No. 15-1489

SIERRA CLUB,
PETITIONER

v.

UNITED STATES DEPARTMENT OF ENERGY,
RESPONDENT

FLNG LIQUEFACTION 2, LLC, ET AL.,
INTERVENORS

On Petition for Review of the Department of Energy Office of Fossil Energy
Orders 3357-B (Nov. 14, 2014) and 3357-C (Dec. 4, 2015);
DOE/FE Docket No. 11-1161-LNG

Nathan Matthews argued the cause for petitioner. With him on the briefs was *Sanjay Narayan*. *Joanne M. Spalding* entered an appearance.

John L. Smeltzer, Attorney, U.S. Department of Justice, argued the cause for respondent. With him on the brief were *John C. Cruden*, Assistant Attorney General, and *David Gunter*, Attorney.

Jonathan S. Franklin argued the cause for intervenors Freeport LNG Expansion, L.P., et al. With him on the brief was *Lisa M. Tonery*. *Charles R. Scott* entered an appearance.

Catherine E. Stetson, *Stacy R. Linden*, and *Ben Norris* were on the brief for intervenor American Petroleum Institute.

Before: HENDERSON and WILKINS, *Circuit Judges*, and SENTELLE, *Senior Circuit Judge*.

Opinion for the Court filed by *Circuit Judge* WILKINS.

WILKINS, *Circuit Judge*: In this petition for review, Sierra Club challenges the Department of Energy's (the "Department") grant of an application to export liquefied natural gas ("LNG") using terminals and liquefaction facilities (collectively, the "Freeport Terminal") on Quintana Island in Brazoria County, Texas. The Federal Energy Regulatory Commission ("FERC") is responsible for approving the siting and construction of any such facilities. In *Sierra Club v. FERC* ("*Sierra Club (Freeport)*"), 827 F.3d 36, 40 (D.C. Cir. 2016), we upheld FERC's decision to approve the construction of the Freeport Terminal. However, the export of LNG out of that terminal requires separate approval from the Department.

In 2011, the Intervenors, Freeport LNG Expansion, L.P. and its related entities (collectively, "Freeport"), requested permission to export an amount of LNG equivalent to 0.4 billion cubic feet per day ("Bcf/d") of natural gas out of the Freeport Terminal. The Department granted the application, finding the proposed exports are in the "public interest" under Section 3(a) of the Natural Gas Act. Under the National Environmental Policy Act ("NEPA"), the Department also considered and disclosed the potential environmental impacts of its decision. Sierra Club argues that the Department fell

short of its obligations under both the Natural Gas Act and NEPA. In particular, it asserts that the Department did not sufficiently examine the indirect effects of LNG exports, such as the effects related to the likely increase in natural gas production and usage that will result from the export authorization here, as well as the cumulative effects of other anticipated, pending, or approved export proposals. For the following reasons, Sierra Club's petition is denied.

I.

Much of the pertinent background is explained in our earlier decision in *Sierra Club (Freeport)*. There, we determined FERC complied with both the Natural Gas Act and NEPA with respect to its decision to authorize the construction of the Freeport Terminal. Yet the Department was independently required to consider the environmental impacts of its export authorization decision under NEPA and determine whether it satisfied the Natural Gas Act's "public interest" test.

A.

Section 3 of the Natural Gas Act authorizes the exportation of natural gas from the United States unless the Department determines that doing so "will not be consistent with the public interest." 15 U.S.C. § 717b(a). The Department's discretion in this regard depends on whether the country to which the gas will be exported is one that has with the United States a "free trade agreement requiring national treatment for trade in natural gas" (a "Free Trade" country). *Id.* § 717b(c). If so, then the Department must authorize the exportation to that country "without modification or delay." *Id.* § 717b(c). However, if the country does not have such an agreement with the United States (a "non-Free Trade" country), then the Department must independently determine whether such exports would be

inconsistent with the public interest. Rather than assign LNG export applications to particular end-user destinations, the applications are designated for export to either Free Trade or non-Free Trade countries, generally.

Freeport submitted four separate applications to the Department seeking LNG export authorizations out of the Freeport Terminal – two for Free Trade countries and two for non-Free Trade countries, with each one seeking to export an amount of LNG equivalent to 1.4 Bcf/d of natural gas. In accordance with the Natural Gas Act, the Department promptly granted Freeport's Free Trade applications. For the non-Free Trade applications, the Department published notices of intent to initiate public-interest review proceedings. Sierra Club filed a protest and moved to intervene in one of those proceedings regarding Freeport's 2011 application (the "*FLEX* application"), which is the subject of the present petition. *See* 77 Fed. Reg. 7568 (Feb. 13, 2012) ("*FLEX*"). Although the *FLEX* application originally sought authorization to export an amount of LNG equivalent to 1.4 Bcf/d of natural gas, the Department subsequently limited its authorization to 0.4 Bcf/d after Freeport amended its application to construct a facility with a smaller maximum capacity.

B.

In considering whether to grant the *FLEX* application, the Department needed to determine whether and to what extent to issue an environmental impact statement under NEPA. That statute requires every agency proposing a "major Federal action" to prepare a statement of its environmental impact if the action will "significantly affect[] the quality of the human environment." 42 U.S.C. § 4332(C).

The agency must consider not just the "direct" environmental effects that "are caused by the [agency's] action and occur at the same time and place," but also the action's "indirect" environmental effects that "are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." 40 C.F.R. § 1508.8; *Sierra Club (Freeport)*, 827 F.3d at 41. In addition, the agency must consider the "cumulative impact[s]" on the environment, meaning "the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 C.F.R. § 1508.7.

Where multiple federal agencies have authority over different aspects of the same project, agencies may coordinate review, and may incorporate one another's analysis. Here, FERC was the "lead agency" for the purposes of complying with NEPA, *see* 15 U.S.C. § 717n(b)(1), and the Department acted as a "cooperating agency," 40 C.F.R. § 1501.6(b). This meant the Department could "adopt [FERC's] environmental analysis as its own for purposes of any additional NEPA review triggered by an export-authorization request." *Sierra Club (Freeport)*, 827 F.3d at 41. However, the Department must still "independently review [FERC's] work and conclude that [the Department's] own 'comments and suggestions have been satisfied.'" *Id.* at 41-42.

C.

The Department received applications similar to *FLEX* from other companies seeking to export LNG around the same time Freeport submitted its applications. In response to all pending and anticipated applications, the Department commissioned two studies – which we will refer to as the "EIA Study" and the "NERA Study" – to evaluate the impact of LNG

exports on domestic energy markets and related macroeconomic effects.

The first study was done by the Energy Information Administration ("EIA"). By August 2011, the Department had received applications for authority to export that totaled 5.6 Bcf/d of natural gas, J.A. 151, and requested that EIA conduct a study on various scenarios assessing how "increased natural gas exports could affect domestic energy markets, focusing on consumption, production, and prices," J.A. 132. In the EIA Study, issued in January 2012, EIA examined how LNG exports in amounts equivalent to 6 and 12 Bcf/d might impact domestic energy markets over a 25-year period using the National Energy Modeling System. *See* U.S. Energy Information Administration, Effect of Increased Natural Gas Exports on Domestic Energy Markets (January 2012), J.A. 318-26.

EIA observed that "projections of energy markets over a 25-year period are highly uncertain and subject to many events that cannot be foreseen, such as supply disruptions, policy changes, and technological breakthroughs." EIA Study at 3, J.A. 134. Its particular study contained several limitations that made its projections even more uncertain, such as the fact that it did not take account of the interaction of the U.S. market with the global energy market. *Id.* With these caveats, EIA projected that increased LNG exports would lead to increased natural gas prices within the United States and that the U.S. market would respond by increasing gas production.

Specifically, across all cases, it projected that increased natural gas exports (of 6 to 12 Bcf/d, compared to a baseline of no exports) would result in increased natural gas production that would satisfy about 60 to 70 percent of the increase in natural gas exports. *Id.* at 6, J.A. 137. Notably, across most

cases, about three-quarters of this increased production would come from shale sources. *Id.* In response to higher gas prices, EIA also projected a decrease in the amount of gas consumed domestically, to be replaced primarily by switching to coal and secondarily to renewable fuels. *Id.*[1]

The second study, the NERA Study, considered how these domestic projections might fit into the global marketplace. NERA Economic Consulting examined the same export scenarios within the context of the global marketplace, as well as additional scenarios involving different assumptions about natural-gas development and international economic conditions. *See* NERA Study at 3-5, J.A. 183-85. The results revealed that "in many cases" – including the EIA Study's reference case – "the world natural gas market would not accept the full amount of exports assumed in the EIA scenarios at export prices high enough to cover the U.S. wellhead domestic prices calculated by the EIA." *Id.* at 3, J.A. 183. Although "U.S. natural gas prices increase when the [United States] exports LNG[,] . . . the global market limits how high U.S. natural gas prices can rise under pressure of LNG exports because importers will not purchase U.S. exports if U.S. wellhead price rises above the cost of competing supplies." *Id.* at 2, J.A. 182. Thus, NERA "estimated lower export volumes" than the EIA Study, indicating lesser impacts on U.S. markets

[1] EIA later, in 2014, updated the EIA Study at the Department's request. *See* J.A. 900, 924. It updated its baseline level of exports to reflect its latest projections (as explained in its 2014 Annual Outlook report) for U.S. LNG exports in 2029: 3,500 Bcf/y (approximately 9.6 Bcf/d). *See* J.A. 908. It then modeled the incremental impact of increasing exports from this baseline level (9.6 Bcf/d) to increased levels of 12 Bcf/d and 20 Bcf/d (that is, 4,380 to 7,300 Bcf/y). J.A. 908. EIA's updated study largely confirmed the basic conclusions of the initial study regarding how the U.S. energy market might respond to increased LNG exports. J.A. 907, 910-13.

than projected by EIA. *Id.* at 10, J.A. 190. But it acknowledged "great uncertainties about how the U.S. natural gas market will evolve." *Id.* at 21, J.A. 201. Regardless, NERA concluded that, in all the scenarios analyzed, "the U.S. would experience net economic benefits from increased LNG exports." *Id.* at 6, J.A. 186.

Both studies were published in 2012. In 2013, the Department issued orders with findings on all non-environmental issues considered under Section 3(a), and conditionally approved Freeport's non-Free Trade export applications, including *FLEX*. *See* Dep't of Energy, Order No. 3357, Dkt. 11-161-LNG (Nov. 15, 2013). Approval was contingent on Freeport's satisfactory completion of the ongoing FERC-led environmental review of the proposed Freeport Liquefaction Project.

D.

In June 2014, FERC released its final environmental impact statement for the Freeport Terminal construction project (the "Impact Statement") in accordance with NEPA. The Impact Statement disclosed and analyzed direct, indirect, and cumulative impacts from the construction and operation of the proposed liquefaction and export facilities. However, it did not evaluate the indirect effects pertaining to the authorization of exports. The Department adopted the Impact Statement in full and supplemented it with two reports relevant here: the Addendum and the Life Cycle Report.

First, the Department issued an Addendum to the Impact Statement to examine certain indirect effects of LNG exports, focusing primarily on the impacts of export-induced natural gas production in the United States. *See* Addendum to Environmental Review Documents Concerning Exports of

Natural Gas from the United States ("Addendum" or "Add."), 79 Fed. Reg. 48,132 (Aug. 15, 2014). The Department issued this Addendum in response to concerns raised by many commenters that the Department had not examined the potential impacts of increased natural gas production and in particular shale gas production – a trend its economic studies suggested would occur under a variety of scenarios. *See* Add. at 1, J.A. 815. The Addendum was intended to fill that void by providing "additional information to the public regarding the potential environmental impacts of unconventional natural gas production activities," based on a review of existing literature, regulations, and best management practices. *Id.* at 2-3, J.A. 816-17. In particular, it disclosed the various ways shale gas production might impact the water, air, and land resources surrounding production activities; but it made no attempt to specifically project where or to what extent the impacts of increased production might occur in response to any particular amount of exports.

Second, to address potential indirect effects of LNG exports on global greenhouse-gas emissions (CO_2 and methane), the Department commissioned the National Energy Technology Laboratory to prepare a report. *See* Life Cycle Greenhouse Gas Perspective on Exporting Liquefied Natural Gas from the United States ("Life Cycle Report"), 79 Fed. Reg. 32,260 (June 4, 2014). The report assesses the "life cycle" – from the wellhead to power plant – of greenhouse-gas emissions associated with electricity generated using U.S. LNG in Europe or Asia, and compares these with emissions from electricity generated from coal or other sources of gas. *See* Life Cycle Report at 1-2, J.A. 586-87. The report concluded that exporting U.S. LNG to produce power in Europe and Asia would not increase greenhouse-gas emissions compared to regional coal power, and that potential differences in greenhouse-gas emissions relating to the use of U.S. LNG as

opposed to alternative sources of gas are largely dependent on transport distance but are "indeterminate" due to "uncertainty in the underlying modeled data." Life Cycle Report at 9, 18, J.A. 594, 603.

In November 2014, the Department issued its Authorization Order authorizing exports in the *FLEX* application. Dep't of Energy, Order 3357-B, Dkt. 11-161-LNG, *Final Opinion and Order* ("Authorization Order") (Nov. 14, 2014). In that order, the Department explained its reasoning for adopting FERC's Impact Statement in full and granting Freeport's *FLEX* application under Section 3(a) of the Natural Gas Act, finding the proposed exports are in the "public interest." Sierra Club petitioned for rehearing, which the Department denied in December 2015. Dep't of Energy, Order 3357-C, Dkt. 11-161-LNG, *Opinion and Order Denying Request for Rehearing* ("Rehearing Order") (Dec. 4, 2015). This petition followed.

Sierra Club challenges the Department's compliance with the NEPA as well as the Natural Gas Act. We review both challenges under the arbitrary and capricious review standard.

II.

We begin with the NEPA challenge. "NEPA is 'essentially procedural,' designed to ensure 'fully informed and well-considered decision[s]' by federal agencies." *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1309-10 (D.C. Cir. 2014) (quoting *Vt. Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 558 (1978)). The statute serves that purpose by requiring federal agencies to take a "hard look" at "their proposed actions' environmental consequences in advance of deciding whether and how to proceed." *Sierra Club v. U.S. Army Corps of Eng'rs*, 803 F.3d 31, 37 (D.C. Cir. 2015).

NEPA "does not dictate particular decisional outcomes, but 'merely prohibits uninformed—rather than unwise—agency action.'" *Id.* (quoting *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 351 (1989)).

In reviewing Sierra Club's challenges, "our task is not to 'flyspeck' [the Department]'s environmental analysis for 'any deficiency no matter how minor.'" *Sierra Club (Freeport)*, 827 F.3d at 46 (quoting *Theodore Roosevelt Conservation P'ship v. Salazar*, 661 F.3d 66, 75 (D.C. Cir. 2011)). Our job is simply "to ensure that the agency has adequately considered and disclosed the environmental impact of its actions and that its decision is not arbitrary or capricious." *Del. Riverkeeper*, 753 F.3d at 1312-13 (quoting *Balt. Gas & Elec. Co. v. NRDC*, 462 U.S. 87, 97-98 (1983)). "Courts may not use their review of an agency's environmental analysis to second-guess substantive decisions committed to the discretion of the agency." *Id.* at 1313. "Where an issue 'requires a high level of technical expertise,' we 'defer to the informed discretion of the [agency].'" *Id.* (quoting *Marsh v. Or. Nat. Res. Council*, 490 U.S. 360, 377 (1989)).

Sierra Club asserts the Department failed to comply with NEPA because it did not tailor its review of indirect environmental effects to any particular volume of exports. The Department responds that the type of analysis Sierra Club urges would be too speculative and, in any event, unhelpful to its decisionmaking. For the following reasons, Sierra Club's petition for review of the Department's decision with respect to NEPA is denied.

A.

Before we consider the merits of Sierra Club's challenge, we address two preliminary matters.

First, the Department insists that it complied with NEPA by adopting FERC's Impact Statement, and that its supplemental environmental reports (*i.e.*, Addendum and Life Cycle Report) were part of the Department's effort to go above and beyond what NEPA requires. Yet the Department plainly relies on these supplemental records to justify its "hard look" under NEPA. *See, e.g.*, Respondent Br. 30 ("Together, the [Impact Statement], Environmental Addendum, and Life Cycle Report constitute a 'hard look' at relevant environmental issues."). Perhaps the Department framed its argument this way to avoid accusations of defective notice; but Sierra Club did not raise a notice challenge in its opening brief. Whatever the intention, the result is that the Department's arguments are needlessly complicated. For our purposes, we will consider the supplemental materials to be part of the agency's environmental review. The issue is whether, overall, the Department conducted the requisite "hard look" "to ensure that [it] has adequately considered and disclosed the environmental impact of its actions . . . ." *Minisink Residents for Env'tl Pres. & Safety v. FERC*, 762 F.3d 97, 111 (D.C. Cir. 2014).

Second, Sierra Club takes aim at the Department's decision with respect to both the "indirect effects" of its *FLEX* authorization as well as the "cumulative" impact of its decision "when added to other past, present, and reasonably foreseeable future actions." 40 C.F.R. § 1508.7. For each claim, Sierra Club argues that the Department should have tailored its environmental impacts analysis to a particular amount of exports. For indirect effects, Sierra Club considers the amount authorized in the *FLEX* proceeding; and for cumulative effects, it considers the *FLEX* application as well as other pending and anticipated LNG export approvals. The cumulative impact requirement ensures that agencies consider effects that result from "individually minor but collectively significant actions

taking place over a period of time." *Del. Riverkeeper*, 753 F.3d at 1319-20 (quoting 40 C.F.R. § 1508.7). Sierra Club does not argue that the Department impermissibly "segmented" its review of the Freeport Terminal exports from other export authorizations, and "thereby fail[ed] to address the true scope and impact of the activities that should be under consideration." *Id.* at 1313. The nature of the Department's environmental review does not lend itself to that argument because the Department's generalized impact assessment is not tailored to *any* specific level of exports. Thus, we will consider whether the Department adequately considered the indirect effects of the *FLEX* authorization but our analysis applies equally to its cumulative effects, given that the only distinction drawn by Sierra Club between the two categories is the level of exports involved in each one.

B.

The first set of "indirect effects" concerns the environmental impacts of export-induced natural gas production in the United States. Sierra Club is particularly focused on how gas production might impact water resources and ozone concentration wherever export-induced production activities might occur.[2] Although the Department examined these impacts generally in the Addendum, Sierra Club's chief complaint is that the Department did not attempt to quantify the impacts or tailor them to specific levels of exports or export-induced gas production.

In its Authorization Order, the Department explained that it deliberately did not perform such a quantitative impact analysis – that is, tying an incremental increase in exports to an

[2] In Part II.D, we separately consider greenhouse-gas emissions resulting from export-induced gas production.

incremental increase in gas production, and in turn, to an impact on specific environmental resources. It determined that such indirect effects were not "reasonably foreseeable."

1.

In determining what effects are "reasonably foreseeable," an agency must engage in "reasonable forecasting and speculation," *Del. Riverkeeper*, 753 F.3d at 1310 (quoting *Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm'n*, 481 F.2d 1079, 1092 (D.C. Cir. 1973)), with *reasonable* being the operative word. The agency "need not foresee the unforeseeable, but by the same token neither can it avoid drafting an impact statement simply because describing the environmental effects of and alternatives to particular agency action involves some degree of forecasting." *Scientists' Inst. for Pub. Info.*, 481 F.2d at 1092. To navigate that dividing line, we consider the "usefulness of any new potential information to the decisionmaking process." *Dep't of Transp. v. Pub. Citizen*, 541 U.S. 752, 767 (2004).

NEPA also "requires a reasonably close causal relationship between the environmental effect and the alleged cause," analogous to proximate causation from tort law. *Sierra Club (Freeport)*, 827 F.3d at 47 (quoting *Pub. Citizen*, 541 U.S. at 767). Just as baseless speculation is unhelpful, so, too, is information that the agency "lacks [any] power to act on." *Pub. Citizen*, 541 U.S. at 768. Thus, the agency need not examine everything for which the *FLEX* exports out of Freeport "could conceivably be a but-for cause." *Sierra Club (Freeport)*, 827 F.3d at 46. "Instead, the effect must be sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision." *Id.* at 47 (internal quotation marks and citations omitted). We "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." *Pub. Citizen*, 541 U.S. at 76 (quoting *Metro. Edison Co. v. People Against Nuclear Energy*, 460 U.S. 766, 774 (1983)).

The Department offered a reasoned explanation as to why it believed the indirect effects pertaining to increased gas production were not reasonably foreseeable. At the outset, it explained the difficulty with attempting to predict the incremental quantity of natural gas that might be produced in response to an incremental increase in LNG exports out of the Freeport Terminal. The link between the two depends on the price of gas, and the Department explained that the price competitiveness of U.S. LNG in foreign energy markets depends upon numerous factors that are inherently difficult to predict, including the pace of technological change, U.S. and international economic conditions, potential market disruptions, and U.S. and foreign energy and environmental regulations. Auth. Order at 84, J.A. 1024; Reh'g Order at 16-17, J.A. 1115-16.

More importantly, even if the Department could make reasonable projections about the quantity of export-induced gas production, the Department was stumped by where, at the local level, such production might occur. As the Department explained, shale plays[3] and other unconventional sources of natural gas are spread throughout the lower 48 states, and there is an interconnected pipeline system covering these states. Reh'g Order at 19, J.A. 1118. This means every natural-gas-producing region in the country is a potential source for new gas wells in order to meet export-induced natural gas demand. Forecasting the locale of export-induced production would

[3] A "play" is a subsurface geological formation containing natural gas.

require an economic model that used as an input the price elasticity of each potentially productive area at the local level throughout the country. Yet the Department explained it was "fundamentally uncertain how natural gas production at the local level will respond to price changes at the national level," Reh'g Order at 17, J.A. 1116, and "it would be impossible to identify with any confidence the marginal production at the wellhead or local level that would be induced by FLEX's exports over the [20-year[4]] period of its non-[Free Trade country] authorization," Reh'g Order at 16, J.A. 1115. This is in large part due to the "local idiosyncrasies" involved, such as "the limitations of estimating geology at the local level, and the uncertainty of predicting local regulation, land use patterns, and the development of supporting infrastructure." Reh'g Order at 18, J.A. 1117. Given that "nearly all of the environmental issues presented by unconventional gas production are local in nature," the Department concluded that without knowing where the production would occur, the corresponding environmental impacts are "not 'reasonably foreseeable'" under NEPA. Auth. Order at 85, J.A. 1025.

The Department was not required to "foresee the unforeseeable." *Scientists' Inst. for Pub. Info.*, 481 F.2d at 1092. Its determination that an economic model estimating localized impacts would be far too speculative to be useful is a product of its expertise in energy markets and is entitled to deference. *See Del. Riverkeeper*, 753 F.3d at 1312. Sierra Club does not seriously dispute that the agency could not predict where export-induced production would occur on a local level. Because the Department could not estimate the locale of production, it was in no position to conduct an environmental analysis of corresponding local-level impacts, which inevitably

[4] The *FLEX* application originally sought approval for exports over a 25-year period but the Department reduced the term to 20 years.

would be "more misleading than informative." Reh'g Order at 17, J.A. 1116; *cf. Theodore Roosevelt Conservation P'ship*, 616 F.3d at 513 (agency did not violate NEPA where it omitted from its cumulative impact analysis other projects which were "too preliminary to meaningfully estimate their cumulative impacts" in an environmental impact statement).

2.

Sierra Club contends that even if identifying impacts specific to local-level resources is a challenge, the agency could have engaged in a *regional* impacts analysis. Although acknowledging that the Department provided "some regional analysis of how gas production in general affects water resources . . . [and] regional ozone levels[,]" Sierra Club suggests it should have done more. Pet'r Br. 60. In particular, Sierra Club points out that the Department demonstrated an ability to conduct an economic analysis projecting where increased production might occur at the shale-play level, yet the Department failed to explain why it could not use those tools to project shale-play level environmental impacts specific to the amount of exports authorized.

In its Rehearing Order, the Department explained why its economic projections do not translate over well in the environmental-impact context. Identifying which shale plays are likely to contribute to export-induced production would not "provide [any] information about where any incremental production would arise *within* those shale plays," which themselves "overlap and stretch for thousands of square miles below diverse surface environments." Reh'g Order at 18-19, J.A. 1117-18 (emphasis added). It would not add any confidence to projections about impacts on particular water resources, for example, which are "unique for each location and may vary widely from well to well." Add. at 10, J.A. 824.

Nor could the agency predict "where in relation to existing ozone concentrations the incremental production would occur," thus making futile any effort to determine which attainment areas might be at risk. Reh'g Order at 18, J.A. 1117; *see also* Add. at 29, J.A. 843 (map showing overlay of ozone non-attainment zones and shale basins, with no correlation between the two). Under these circumstances, the Department determined that it would not "facilitate meaningful analysis" to make projections about play-level environmental impacts. Reh'g Order at 18-19, J.A. 1117-18; *see also* Auth. Order at 85, J.A. 1025 ("[N]early all of the environmental issues presented by unconventional gas production are local in nature, affecting local water resources, local air quality, and local land use patterns, all under the auspices of state and local regulatory authority."). It thus declined to engage in the shale-play level analysis urged by Sierra Club.

The Department's determination in that regard is consistent with the "rule of reason." The purpose of NEPA is not to "generate . . . excellent paperwork," but rather to "foster excellent action" through informed decisionmaking. 40 C.F.R. § 1500.1(c). The Department drew the line when it declined to attempt to quantify impacts on a regional level that would not provide meaningful information about what water resources or attainment areas might be impacted. Sierra Club suggests certain estimates that the Department could have provided, such as regional totals of estimated water usage; but its suggestions do not reveal any flaw in the Department's reasoning, which recognized that shale plays do not correspond to the water resources that might be impacted. At a certain point, the Department's obligation to drill down into increasingly speculative projections about regional environmental impacts is also limited by the fact that it lacks any authority to control the locale or amount of export-induced gas production, much less any of its harmful effects. *Cf. Pub.*

Citizen, 541 U.S. at 768 ("Since [the agency] has no ability categorically to prevent the cross-border operations of Mexican motor carriers, the environmental impact of the cross-border operations would have no effect on [its] decisionmaking—[the agency] simply lacks the power to act on whatever information might be contained in the EIS.").

Finally, we pause to consider whether the Department should have taken a different approach for its cumulative impacts analysis. The Supreme Court has instructed that "when several proposals for . . . actions that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together." *Kleppe v. Sierra Club*, 427 U.S. 390, 410 (1976). "[T]he key language there is 'upon a region.'" *Sierra Club (Freeport)*, 827 F.3d at 50 (quoting *Kleppe*, 427 U.S. at 410). Here, the crucial stumbling block in the Department's indirect-effects analysis was identifying *where* the export-induced natural gas production might occur or, if a regional analysis was possible, how its impacts might play out. Our conclusion is thus no different in the context of cumulative exports as it is for the indirect effects of the *FLEX* application itself.

Rather than ignore the potential impacts of increased gas production altogether, the Department assumed that production could occur *anywhere* across the country and examined the effects with that in mind. Thus, the Addendum considered impacts that may be felt regardless of where they occur, *see, e.g.*, Add. at 13-14, J.A. 827-28 (identifying water-contamination risks associated with any drilling operation), as well as those that are more specific to particular environments, *see, e.g.*, *id.* at 13, J.A. 827 (explaining water impacts are "most likely to be more prevalent in the arid western regions of the United States"). It also identified the relevant policymakers,

and existing state and federal laws that govern, and might curtail, the environmental impacts. *See, e.g.*, *id.* (explaining the Clean Water Act regulates surface discharge and the Safe Drinking Water Act regulates underground injection of wastewaters); *id.* at 16-17, J.A. 830-31 (chart providing state-by-state comparison of hydraulic fracturing chemical disclosure regulations). Generalizing the impacts does not necessarily mean minimizing them; and here, the Addendum candidly discussed significant risks associated with increased gas production. *See, e.g.*, *id.* at 27, J.A. 841 (explaining that increased production causes pollution and might "create new or expanded ozone non-attainment areas" and could frustrate state implementation plans for bringing current non-attainment areas into compliance with national standards).

Under our limited and deferential review, we cannot say that the Department failed to fulfill its obligations under NEPA by declining to make specific projections about environmental impacts stemming from specific levels of export-induced gas production.

C.

Sierra Club similarly contends that the Department failed to fulfill its obligations with respect to the potential for the U.S. electric power sector to switch from gas to coal in response to higher gas prices, which in turn would be a response to increased exports. *See* EIA Study at 6, J.A. 137. As the Department noted, the economic causal chain between its export authorization and the potential use of coal as a substitute fuel for gas "is even more attenuated" than its relationship to export-induced gas production. Reh'g Order at 23, J.A. 1122. Sierra Club has the same complaint about the Department's failure to make specific projections about the indirect effects of coal, but offers no reason to believe the impacts are any more

foreseeable or more prone to usefulness than those associated with increased gas production. Thus, Sierra Club's petition with respect to coal usage is denied.

D.

Sierra Club challenges the Department's examination of the potential greenhouse-gas emissions resulting from the indirect effects of exports. To address these issues, the Department evaluated the upstream and downstream greenhouse-gas emissions (CO_2 and methane) from producing, transporting, and exporting LNG in its Life Cycle Report. *See* J.A. 578. Sierra Club challenges the adequacy of the Department's review.

As for the "upstream" – *i.e.*, domestic – emissions, Sierra Club asserts that the Department failed to disclose the "amount of greenhouse gases that would be emitted by export-induced gas production" in the Impact Statement. Pet'r Br. 63. Although the Impact Statement itself did not contain that information, Sierra Club acknowledges that the information it seeks is provided in the Life Cycle Report. Indeed, Sierra Club explains that studies published by the Department collectively "provide detailed estimates of the amount of emissions from each stage of the well-to-terminal life cycle" – which it describes as providing a "thorough analysis" and which it suggests the Department should have used as a reference for analyzing the effects of export-induced gas production in individual shale plays. Pet'r Reply Br. 21.

As for "downstream" emissions – *i.e.*, those resulting from transport and usage abroad – Sierra Club does not challenge the method employed by the Department to address them, but instead believes it should have evaluated additional variables. The Department compared emissions from exported U.S. LNG

to emissions of coal or other sources of natural gas. Sierra Club asserts that the Department should have also considered the potential for LNG to compete with renewables, which it says are "prevalent" in certain import markets.[5] Sierra Club's complaint "falls under the category of 'flyspecking.'" *Myersville Citizens for a Rural Cmty., Inc. v. FERC*, 783 F.3d 1301, 1324 (D.C. Cir. 2015).

As the Department explained, there are a number of other fuel sources that U.S. LNG might compete with, and "[t]o model the effect that U.S. LNG exports would have on net global [greenhouse-gas] emissions would require projections of how each" fuel source (nuclear, renewable, etc.) would be affected in each potential LNG-importing nation. Auth. Order at 93, J.A. 1033. Such an analysis, the Department noted, would require consideration of the dynamics of all energy markets in LNG-importing nations, and given the many uncertainties in modeling such market dynamics, the analysis would be "too speculative to inform the public interest determination." Auth. Order at 93, J.A. 1033. In addition to foreseeability limitations, "'practical considerations of feasibility might well necessitate restricting the scope' of an agency's analysis." *Sierra Club (Freeport)*, 827 F.3d at 50 (quoting *Kleppe*, 427 U.S. at 414). We see nothing arbitrary about the Department's decision.

III.

Finally, we consider whether the Department appropriately authorized the *FLEX* exports destined for non-

[5] Freeport argues we lack jurisdiction of this claim because Sierra Club did not raise its objection before the Department. *See* 15 U.S.C. § 717r(b). We disagree. Sierra Club's rehearing request challenged the Department's analysis of the extent to which U.S. LNG exports would displace other fuel sources.

FTA countries under the Natural Gas Act's "public interest" test. *See* 15 U.S.C. § 717b(a). We review the Department's decision here, too, under the arbitrary and capricious standard. *Wash. Gas Light Co. v. FERC*, 532 F.3d 928, 930 (D.C. Cir. 2008).

Congress enacted the Natural Gas Act with the "principal purpose" of "encourag[ing] the orderly development of plentiful supplies of . . . natural gas at reasonable prices." *NAACP v. Fed. Power Comm'n*, 425 U.S. 662, 669-70 (1976). Other "subsidiary" purposes include respecting "conservation, environmental, and antitrust" limitations. *Id.* at 670 & n.6; *accord Myersville Citizens for a Rural Cmty.*, 783 F.3d at 1307.

The Natural Gas Act provides that the Department "shall" authorize exports to non-FTA nations "*unless* . . . it finds that the proposed exportation . . . will not be consistent with the public interest." 15 U.S.C. § 717b(a) (emphasis added). We have construed this as containing a "general presumption favoring [export] authorization." *W. Va. Pub. Servs. Comm'n v. U.S. Dep't of Energy*, 681 F.2d 847, 856 (D.C. Cir. 1982). Thus, there must be "an affirmative showing of inconsistency with the public interest" to deny the application. *Panhandle Producers & Royalty Owners Ass'n v. Econ. Regulatory Admin.*, 822 F.2d 1105, 1111 (D.C. Cir. 1987).

For its "public interest" review, the Department considered various factors such as domestic economic effects (*e.g.*, job creation and tax revenue, J.A. 313-14) and foreign policy goals (*e.g.*, global fuel diversification and energy security for our foreign trading partners, J.A. 1036), in addition to the environmental impacts it examined through the NEPA process. It ultimately decided to grant the *FLEX* application, explaining that Section 3 of the Natural Gas Act "is too blunt

an instrument to address [Sierra Club's] environmental concerns efficiently." Auth. Order at 87, J.A. 1027.

In the two-and-a-half pages Sierra Club dedicates to this claim, the only factor it suggests is inconsistent with the public interest is environmental. Sierra Club argues that the Department failed to conduct a thorough enough examination of the environmental impacts and thus arbitrarily granted the application. In doing so, it repeats the same argument it made to support its NEPA claim – namely, that the Department arbitrarily failed to evaluate foreseeable indirect effects of exports. We have already rejected this argument and explained why the Department adequately considered the environmental impacts of its decision. Sierra Club offers no basis for reevaluating the scope of the Department's evaluation for purposes of the Natural Gas Act.

To the extent Sierra Club suggests the Department should have weighed environmental concerns more heavily before granting the *FLEX* application, it fails to overcome the presumption in favor of exports. Notably, even if the Department determined the impacts were significant, it could still find that the public interest weighs in favor of allowing the exports. "[I]t is . . . well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process." *Robertson*, 490 U.S. at 350. Thus, "[i]f the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other values outweigh the environmental costs." *Id.*; *see, e.g.*, *id.* ("[I]t would not have violated NEPA if the Forest Service, . . . had decided that the benefits to be derived from downhill skiing at Sandy Butte justified the issuance of a special use permit, notwithstanding the loss of 15 percent, 50 percent, or even 100 percent of the mule deer herd."). Sierra Club has given us no reason to

question the Department's judgment that the *FLEX* application is not inconsistent with the public interest. Sierra Club's petition for review on this claim is denied.

IV.

For the foregoing reasons, Sierra Club's petition for review of the Department's orders is denied.

So ordered.