

FOR PUBLICATION

**UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT**

HELPING HAND TOOLS; ROB
SIMPSON,

Petitioners,

v.

U.S. ENVIRONMENTAL PROTECTION
AGENCY; GINA MCCARTHY, in her
capacity as Administrator of the U.S.
Environmental Protection Agency;
DEBORAH JORDAN, in her capacity as
Director of the Air Division of U.S.
Environmental Protection Agency
Region IX,

Respondents,

SIERRA PACIFIC INDUSTRIES, INC.,
Respondent-Intervenor.

No. 14-72553

CENTER FOR BIOLOGICAL
DIVERSITY,

Petitioner,

v.

U.S. ENVIRONMENTAL PROTECTION
AGENCY; GINA MCCARTHY, in her
official capacity as Administrator of
the United States Environmental
Protection Agency; JARED
BLUMENFELD, in his official capacity
as Regional Administrator of Region
9 of the United States Environmental
Protection Agency; DEBORAH
JORDAN, in her official capacity as
Director of the Air Division of
Region 9 of the United States
Environmental Protection Agency,

Respondents,

SIERRA PACIFIC INDUSTRIES, INC.,

Respondent-Intervenor.

No. 14-72602

EPA No.
EPA-R09-OAR-
2012-0634

OPINION

On Petitions for Review of an Order of the
United States Environmental Protection Agency

Argued and Submitted July 19, 2016
San Francisco, California

Filed September 2, 2016

Before: Susan P. Graber and Richard C. Tallman, Circuit Judges, and Nancy G. Edmunds,* Senior District Judge.

Opinion by Judge Tallman

SUMMARY**

Environmental Law

The panel denied a petition for review of a decision of the United States Environmental Protection Agency granting Sierra Pacific Industries, Inc. a prevention of significant deterioration permit for construction of a new biomass-burning power plant at its lumber mill in California.

The panel held that the EPA did not act arbitrarily or capriciously in granting a prevention of significant deterioration permit to Sierra Pacific.

Addressing petitioner Helping Hands Tools' claims that the EPA was required to consider solar power and a greater natural gas mix as clean fuel control technologies in the best available control technology ("BACT") analysis for pollutants subject to Clean Air Act regulation, the panel held that because the EPA properly took the requisite hard look at Sierra Pacific's proposed design and the key purpose of

* The Honorable Nancy G. Edmunds, Senior United States District Judge for the Eastern District of Michigan, sitting by designation.

** This summary constitutes no part of the opinion of the court. It has been prepared by court staff for the convenience of the reader.

burning its own biomass waste, the EPA reasonably concluded that consideration of solar or increased natural gas would disrupt that purpose and redefine the source.

Addressing petitioner Center for Biological Diversity's claims raised in response to the supplemental greenhouse gas BACT analysis, the panel deferred to the agency's determination because EPA was largely relying on its own guidance, acting at the frontiers of science.

COUNSEL

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OPINION

TALLMAN, Circuit Judge:

Helping Hand Tools (“Helping Hand”) and Center for Biological Diversity (“Center”) petition for review of a final decision of the United States Environmental Protection Agency (“EPA”) granting Sierra Pacific Industries (“Sierra Pacific”) a prevention of significant deterioration (“PSD”) permit for construction of a new biomass-burning power plant at its lumber mill in California. Plaintiffs contend that EPA issued the PSD permit in violation of the Clean Air Act, 42 U.S.C. §§ 7401–7671q. This is the first time we have reviewed EPA’s doctrine of “redefining the source.” It also appears to be the first time that EPA’s framework for evaluating the best available control technology for greenhouse gas emissions from facilities burning biomass fuels is considered by any circuit in the United States. We hold that EPA did not act arbitrarily or capriciously in granting a PSD permit to Sierra Pacific pursuant to that framework.

I

Sierra Pacific owns and operates a lumber manufacturing facility in Anderson, California, situated at the northern end of the Central Valley in Shasta County. On March 29, 2010, Sierra Pacific filed an application for a PSD permit with EPA

in order to construct a new cogeneration¹ unit at its mill. The new unit was designed to burn biomass fuels² in a boiler to produce steam used to turn turbine blades to generate 31 megawatts of electricity and to heat existing lumber dry kilns. Fuel for the unit would come primarily from wood wastes from Sierra Pacific's own lumber mills, as well as other readily available sources of agricultural and urban wood wastes. The new boiler replaces a smaller existing boiler at the Anderson Facility. The smaller boiler could burn only 60,000 bone-dry tons ("BDT")³ of the 160,000 BDT of wood waste the Anderson Facility annually produces. The new boiler has the increased capacity to burn up to 219,000 BDT of wood waste. Additionally, the boiler will utilize natural gas for the limited purpose of startup, shutdown, and flame stabilization.⁴

¹ Cogeneration units produce both electrical power and heat. *See, e.g., In re N. Mich. Univ. Ripley Heating Plant*, 14 E.A.D. 283, 285 (E.A.B. 2009).

² Used interchangeably with the terms "bioenergy" and "biogenic," biomass fuels include wood waste such as chips and bark from sawmill operations, forest residue, agricultural residue, crops, grasses, standing trees, and waste from landfills or water treatment. 76 Fed. Reg. 43,490-01, 43,493 (July 20, 2011).

³ A BDT is 2,000 pounds of wood pulp with a zero percent moisture content.

⁴ Flame stabilization is necessary when optimal operations of the boiler are upset by fuel variability, such as from burning wet wood waste fuel. At these times, the optimal combustion of the wood waste is not occurring and natural gas is used to stabilize combustion and to maximize efficiency by returning the boiler to desired high temperature operations.

To understand the process by which Sierra Pacific sought approval by EPA to build the new boiler and the resulting litigation that ensued first requires an examination of the statutory and regulatory framework underlying the permitting process and then an examination of how EPA employed that process with Sierra Pacific's particular permit application.

A

The Clean Air Act establishes a comprehensive program for controlling and improving air quality. As part of this program, 42 U.S.C. §§ 7470–7479 require new and modified major emitting facilities, like Sierra Pacific's new boiler, to seek a PSD permit prior to construction. *Id.* § 7475(a). These permits are required in geographical regions designated to meet particular national ambient air quality standards. *Id.* § 7471. Critically, in order to obtain a PSD permit, the applicant must demonstrate that the proposed facility utilizes the best available control technology (“BACT”) for every pollutant subject to regulation by the Clean Air Act. *Id.* § 7475(a)(4). BACT is defined as

an emission limitation based on the maximum degree of reduction of each pollutant subject to regulation . . . from any major emitting facility, which [EPA], on a case-by-case basis, . . . determines is achievable for such facility through application of production processes and available methods, systems, and techniques, including fuel cleaning, clean fuels, or treatment or innovative fuel combustion techniques for control of each such pollutant.

Id. § 7479(3). In every case-by-case analysis, EPA will consider “energy, environmental, and economic impacts and other costs.” *Id.*

In 1990, in the absence of any clear guidance from Congress on how to evaluate BACT for a particular pollutant, EPA developed a five-step, “top-down” approach. *See* Environmental Protection Agency, New Source Review Workshop Manual, Chapter B (1990) (hereinafter “NSR Manual”). PSD permit applicants must engage in this analysis for every regulated pollutant with a significant emissions increase. *Id.* at B.4.

Briefly, the top-down analysis begins at Step 1 when the applicant lists all available control technologies. *Id.* at B.5. Control technologies are those technologies that have “a practical potential for application to the emissions unit and the regulated pollutant under evaluation.” *Id.* This list is meant to be comprehensive and include all options applicable to the particular pollutant even though the option may be eliminated in later steps. *Id.* at B.5–7. At Step 2, the applicant eliminates any technically infeasible options and must clearly document why the particular control option cannot be used. *Id.* at B.7. At Step 3, the applicant ranks the remaining control options against each other in order of overall effectiveness. *Id.* at B.7–8. Then, based on this ranking, at Step 4, the applicant evaluates each control option to consider the energy, environmental, and economic impacts. *Id.* at B.8. If the top candidate is unfavorable for any of these reasons then the applicant evaluates the impacts of the next available control option. *Id.* at B.8–9. The most effective control option that is not eliminated at Step 4 is then chosen as BACT at step 5. *Id.* at B.9.

EPA supplemented the top-down approach as it applied to greenhouse gases⁵ in March 2011 when it issued new guidance.⁶ *See* Environmental Protection Agency, PSD and Title V Permitting Guidance for Greenhouse Gases (2011) (hereinafter “GHG Permitting Guidance”). At the same time, EPA issued more specific BACT guidance for carbon dioxide emissions from facilities that use biomass as a primary fuel source. *See* Environmental Protection Agency, Guidance for Determining Best Available Control Technology for Reducing Carbon Dioxide Emissions from Bioenergy Production (2011) (hereinafter “Bioenergy BACT Guidance”). The Bioenergy BACT Guidance describes how each step of the five-step BACT analysis should be approached when a facility proposes to use mostly biomass as a fuel. *Id.* at 10–11. It does not supersede prior guidance, *id.* at 4, and agencies must still consider each PSD application on a case-by-case basis, *id.* at 5.

EPA promulgated a more particular BACT framework because carbon dioxide emissions from biomass fuels participate in the carbon cycle differently than other fuels, and biomass fuel stocks replenish more quickly than fossil

⁵ “Greenhouse gases” are considered a single pollutant comprised of the aggregate of carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

⁶ Though the extent to which EPA can require particular facilities to comply with BACT requirements for greenhouse gases has been heavily litigated, the Supreme Court recently held that “EPA’s decision to require BACT for greenhouse gases emitted by sources otherwise subject to PSD review is” permissible. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2448 (2014). The cogeneration power plant proposed by Sierra Pacific is such a facility and neither party disputes EPA’s authority to regulate greenhouse gas emissions from that facility.

fuel stocks. *Id.* at 6. Trees are a classic example of this phenomenon in nature. The short regenerative time means that new growing plant matter, biomass carbon stocks, can absorb excess carbon dioxide from the atmosphere more quickly than fossil fuel carbon stocks. *Id.* Additionally, photosynthesis from a well-managed biomass carbon stock, such as a well-managed forest, can act as a carbon sink, thereby decreasing the net carbon dioxide released from burning biomass as fuels. *Id.* “Biogenic [carbon dioxide] emissions are distinct from other regulated pollutants at bioenergy facilities because, unlike other pollutants and other [greenhouse gases], [carbon dioxide] emissions can participate directly in the global carbon cycle through photosynthesis.” *Id.* at 7. Therefore, EPA modified the steps of the traditional BACT analysis in particular ways to account for the unique properties of biomass.

Of particular relevance, at Step 1, EPA notes that “it will be important to address the extent to which the BACT analysis for [greenhouse gases] should include” an evaluation of other fuel types. *Id.* at 15. However, if utilization of biomass is the primary purpose of the project, then the agency can rely on that purpose to determine that another fuel would redefine the project. *Id.* If a facility relies primarily on biomass as fuel, the options at Step 1 “may be limited to (1) utilization of biomass fuel alone, (2) energy efficiency improvements, and (3) carbon capture and sequestration.” *Id.*

Skipping to Step 4,⁷ the Bioenergy BACT Guidance notes that the traditional Step 4 analysis is “an environmental, economic, and energy impacts analysis that includes both

⁷ Steps 2 and 3 are conducted in the same manner as promulgated in the NSR Manual. Bioenergy BACT Guidance at 16–17.

direct and indirect (*i.e.*, collateral) considerations.” *Id.* at 18. EPA emphasizes that indirect environmental impacts and benefits are better suited to analysis in Step 4, *id.* at 21, and burning different biomass fuel stocks will not have a differential impact on emissions at the facility but at the forest or region where the biomass fuel is taken, *id.* at 22.⁸

In holding that facilities like Sierra Pacific’s were subject to PSD permit requirements for greenhouse gas emissions, the Supreme Court expressly refrained from deciding whether to approve or endorse EPA’s current approach for determining BACT for greenhouse gases. *Util. Air Regulatory Grp. v. EPA*, 134 S. Ct. 2427, 2449 (2014). To our knowledge, no other court has evaluated EPA’s approach. We examine it here as it was used to grant Sierra Pacific its PSD permit.

⁸ To illustrate the point, burning a dead tree that has fallen in the forest, instead of a live tree, will have a different impact on the environment. Burning the dead tree releases the same amount of carbon dioxide into the atmosphere that would be released anyway as the tree decomposed. But the emissions occur faster and at the facility, not in the forest. Burning the live tree, which uses carbon dioxide for photosynthesis, removes a carbon dioxide absorbing source from the forest and also releases carbon dioxide emissions at the facility. The facility emits carbon dioxide in either case but the environmental impact at the forest—the benefit of removing a carbon dioxide emitting decomposing tree or the harm in removing a carbon dioxide absorbing live one—are an indirect result of burning biomass fuel at the facility. However, a comparison of different biomass fuel stocks, such as comparing the effects of burning mill waste to the effects of burning a dead tree, is a much more technical endeavor that EPA is actively trying to calculate at present. Bioenergy BACT Guidance at 23. The problem, according to the agency, is the current inability of the available science to quantify the tradeoff. *Id.* Where the agency is acting on the frontiers of developing science, our deference is at its highest level. *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983).

B

EPA’s consideration of Sierra Pacific’s permit application took place in two phases. During the first phase in September 2012, EPA proposed to issue a PSD permit to Sierra Pacific that required the use of add-on control technologies and inherently lower-emitting controls as BACT for the pollutants analyzed. EPA did not consider BACT for greenhouse gases because it was not then required.⁹ EPA accepted Sierra Pacific’s cap on natural gas use of no more than 10% of the total fuel required, because it was to be used only for limited purposes during startup, shutdown, and flame stabilization.

After public comment, EPA issued the PSD permit, and Helping Hand petitioned the Environmental Appeals Board (“the Board”) for review. On July 18, 2013, the Board remanded the PSD permit to EPA for further proceedings on a single ground—that EPA had abused its discretion in not holding a public hearing. The Board held that EPA did not abuse its discretion in approving the permit on all other issues, two of which are relevant to the current petition before us.

First, the Board held that EPA did not abuse its discretion by declining to consider the inclusion of solar power as a fuel source or a greater percentage of natural gas because it would impermissibly redefine the source. In making this determination, the Board reviewed the administrative record

⁹ At the time, EPA had issued a rule deferring regulation of biogenic carbon sources in order to examine the science behind biogenic carbon dioxide emissions from stationary sources like power plants. *See Ctr. for Biological Diversity v. EPA*, 722 F.3d 401, 407 (D.C. Cir. 2013). The District of Columbia Circuit later vacated this rule. *Id.* at 412.

and determined that the primary purpose of the project was to allow Sierra Pacific “to put to use the hundreds of thousands of bone-dry tons of wood waste the company has in the Shasta County region, for the production of lumber and electricity.” The Board then held that “requiring [Sierra Pacific] to burn fewer tons of wood waste so that it could generate solar power or burn more natural gas instead would plainly disrupt the project’s ‘basic business purpose’ of using as much surplus biomass as possible” to get rid of the byproduct and to generate steam to dry lumber in kilns and produce electricity for use on site and for sale to the electrical grid.

Second, the Board held that EPA did not abuse its discretion in limiting the mix of fuel to 90% biomass and 10% natural gas. The Board held that Sierra Pacific’s prudent use of natural gas for startup, shutdown, and flame stabilization was a valid reason to limit the quantity of natural gas used and “not evidence of a project design ‘derived for reasons of air quality permitting.’”

The second phase of consideration occurred when, just a few days before the Board’s decision, the District of Columbia Circuit vacated EPA’s rule deferring BACT determinations for greenhouse gases emitted from facilities like Sierra Pacific’s boiler. *See Ctr. for Biological Diversity v. EPA*, 722 F.3d 401, 412 (D.C. Cir. 2013). As a result, EPA conducted a supplemental BACT analysis on Sierra Pacific’s new biomass facility. EPA considered public comments on the supplemental analysis, and the Center contended that EPA could not consider the burning of biomass fuel alone as a control option at Step 1 and should have directly compared the environmental impacts of different biomass fuel stocks at Step 1.

EPA nonetheless issued a final PSD permit notice on April 25, 2014. The Center appealed to the Board and the Board dismissed for lack of jurisdiction because, in its July 2013 decision, the Board specifically stated that, pursuant to 40 C.F.R. § 124.19(l)(2)(iii), it would not require or accept an appeal after the remand. Helping Hand and the Center then filed the petitions for review now before us. Because all available administrative remedies have been exhausted, we have jurisdiction under 42 U.S.C. § 7607(b)(1).¹⁰

II

EPA’s decision is reviewed under the Administrative Procedure Act and may be set aside only if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. § 706(2)(A); *see Alaska Dep’t of Envtl. Conservation v. EPA*, 540 U.S. 461, 496–97 (2004). EPA must “articulate[] a rational connection between the facts found and the choice made.” *Sierra Club v. EPA*, 346 F.3d 955, 961 (9th Cir. 2003) (alteration in original) (quoting *Ariz. Cattle Growers’ Ass’n v. U.S. Fish & Wildlife*, 273 F.3d 1229, 1236 (9th Cir. 2001)).

¹⁰ Though not disputed by EPA, because this is the first time the case is before an Article III court, Helping Hand and the Center must establish standing. *See Sierra Club v. EPA*, 762 F.3d 971, 976 (9th Cir. 2014). We are satisfied that, through the declarations of its members, both Helping Hand and the Center have associational standing to bring the current petition. *See id.* at 976–78 (discussing that “[a]n association has standing to bring suit on behalf of its members when its members would otherwise have standing to sue in their own right” and further discussing the factors demonstrating that the individual members had standing to pursue Clean Air Act claims (internal quotation marks omitted)).

“[W]e do not simply review whether it was arbitrary or capricious” for the Board to reject a petitioner’s claims that EPA clearly erred. *Citizens for Clean Air v. EPA*, 959 F.2d 839, 845–46 (9th Cir. 1992). “Rather, we conduct a deferential review of the entire agency action,” including whether approval of the PSD permit is based on a clearly erroneous finding of fact or conclusion of law. *Id.* at 846.

III

First, we address the claims raised by Helping Hand that EPA was required to consider solar power and a greater natural gas mix as clean fuel control technologies in the BACT analysis. This is an issue of first impression in our circuit, but our opinion is guided by well-reasoned decisions of the Board and the Seventh Circuit. Because EPA properly took the requisite hard look at Sierra Pacific’s proposed design and the key purpose of burning its own biomass waste, we hold that EPA reasonably concluded that consideration of solar or increased natural gas would disrupt that purpose and redefine the source.

A

Though failure to consider all available control alternatives in a BACT analysis constitutes clear error, EPA does not have to consider control alternatives that would “redefine the source.” *See, e.g., In re Desert Rock Energy Co.*, 14 E.A.D. 484, 526 (E.A.B. 2009); *see also* NSR Manual at B.13. In essence, a control alternative redefines the source if it requires a complete redesign of the facility. In a classic and simple example, a coal-burning power plant need not consider a nuclear fuel option as a “cleaner” fuel because it would require a complete redesign of the coal-burning power-

plant. See *Sierra Club v. EPA*, 499 F.3d 653, 655 (7th Cir. 2007). Considering control technologies is rarely so simple, however, and EPA engages in a two-step process to determine whether a control technology will redefine the source.

First, “the permit applicant initiates the process and . . . defines the proposed facility’s end, object, aim or purpose—that is the facility’s basic design.” *In re Prairie State Generating Co.*, 13 E.A.D. 1, 22 (E.A.B. 2006), *aff’d sub nom Sierra Club*, 499 F.3d 653; *accord Desert Rock*, 14 E.A.D. at 530; *In re N. Mich. Univ. Ripley Heating Plant*, 14 E.A.D. 283, 301–02 (E.A.B. 2009) (hereinafter “NMU”). The purpose must be “objectively discernable.” *Prairie State*, 13 E.A.D. at 22. Additionally, the applicant’s proposed definition “must be for reasons independent of air permitting” and cannot be motivated by cost savings or avoidance of risks. *Id.* at 23 n.23; *see also Desert Rock*, 14 E.A.D. at 530; *NMU*, 14 E.A.D. at 302 n.28.

Second, EPA takes a “hard look” at the proposed definition to determine which design elements are inherent to the applicant’s purpose and which elements can be changed to reduce pollutant emissions without disrupting the applicant’s basic business purpose. *Desert Rock*, 14 E.A.D. at 530 (remanding a permit back to the agency because it failed to take a “hard look” when the agency determined a particular technology would redefine the source even though the applicant had considered the technology in its application); *see also Prairie State*, 13 E.A.D. at 25–26; *NMU*, 14 E.A.D. at 302. This determination and “[r]efining [of] the statutory definition of ‘control technology’ . . . to exclude redesign is the kind of judgement by an administrative agency to which a reviewing court should

defer.” *Sierra Club*, 499 F.3d at 655. Our examination of this two-step process for Sierra Pacific’s PSD permit is guided significantly by the reasoning of our sister circuit in *Sierra Club* in which it denied the petition arising from *Prairie State*.

When a fuel source is co-located with a facility, EPA need not consider in the BACT analysis fuel sources that are not readily available, because it would redefine the source. *Prairie State*, 13 E.A.D. at 28. There, *Prairie State* Generating Company filed an application for a PSD permit with EPA to build a coal-burning electrical plant in southern Illinois. *Id.* at 4–5. The proposed facility was a “mine-mouth” plant in which the plant is located at the site of the coal mine which fuels it. *Id.* at 16. However, the mine only produced high-sulfur coal which emits more sulfur dioxide pollution than low-sulfur coal from other outlying mines. *Id.* at 15. EPA did not list low-sulfur coal as a control technology in Step 1 of the BACT analysis, however, because low-sulfur coal would have to be shipped in by rail from long distances. *Id.* EPA explained that “it would be inconsistent with the scope of the project to use coal from other regions of the country.” *Id.* at 16.

In making this determination, EPA noted that “the project that must be addressed when evaluating BACT is the project for which an application has been submitted.” *Id.* In this instance, the construction of a “mine-mouth” plant. *Id.* EPA found that “use of a particular coal supply is an inherent aspect of the proposed project.” *Id.* EPA broadly considered alternative coal supplies but rejected a more detailed analysis because it was beyond the scope of the project. *Id.* at 18.

The ultimate dispute before the Board lay in determining how to define the basic purpose of the project and whether Prairie State could include use of coal from a particular source as part of that purpose. *Id.* at 21–22. “The permit issuer must be mindful that BACT, in most cases, should not be applied to regulate the applicant’s objective or purpose for the proposed facility.” *Id.* at 23. The Board specifically rejected petitioners’ assertion that the facility’s business purpose must be viewed broadly as the production of electricity from coal because “we have frequently recognized that an electric generating facility’s purpose may be more narrowly defined.” *Id.* at 25. The Board held that, in defining the scope of a project, EPA could consider if a particular fuel source was an inherent part of the project design. *See id.* (“It has also been long-standing EPA policy that certain fuel choices are integral to the electric power generating station’s basic design.” (citing NSR Manual at B.13)).

Additionally, the Board rejected the petitioners’ argument that a purpose that includes a particular fuel source “would allow a permit applicant to avoid all BACT review by including its preferred fuel . . . and hide behind the claim that requiring anything different would unlawfully ‘redefine’ the proposed source.” *Id.* at 27. Because Prairie State could narrowly define its purpose as burning a particular fuel source, EPA needed only to review the facility proposed, and that meant reviewing a facility that burned co-localized high-sulfur coal. The Board examined EPA’s review of the proposed facility and was satisfied that EPA had taken a hard look at whether further emissions reductions were possible. *Id.* Therefore, the Board concluded, EPA did not err when it “determined that consideration of low-sulfur coal, because it necessarily involves a fuel source other than the co-located

mine, would require Prairie State to redefine the fundamental purpose or basic design of its proposed Facility” and, as a result, EPA properly rejected low-sulfur fuel from Step 1 of the BACT analysis. *Id.* at 28.

In denying the petition arising out of *Prairie State*, the Seventh Circuit noted that the Board and EPA were struggling to draw the line between where “control technology ends and redesign of the ‘proposed facility’ begins.” *Sierra Club*, 499 F.3d at 655. The court noted that if EPA had to consider all clean fuels, it would be required to consider a nuclear plant rather than a coal-fired one, and it was clearly not required to do that. *See id.* (“That approach would invite a litigation strategy that would make seeking a permit for a new power plant a Sisyphean labor, for there would always be one more option to consider.”). Because it was not as clear cut, the Seventh Circuit characterized its case as lying on the borderline between control technology and redesign. *Id.* at 656.

That borderline, defining the distinction between considering alternative fuels to be control technologies or to redefine the facility, is a product of EPA’s framework for evaluating BACT. The Seventh Circuit therefore held that “it makes sense to let the EPA, the author of the underlying distinction, draw it, within reason.” *Id.* at 655. In the facility proposed in *Sierra Club*, the court noted that, in isolation, the difference between low-sulfur and high-sulfur coal as a fuel source is a difference in control technology. *Id.* at 657. But “the difference between a plant co-located with a coal mine and a plant that obtains its coal from afar” is a difference in design. *Id.* Therefore, the Seventh Circuit upheld the BACT determination because EPA reasonably drew the line between control technology and redefining the source. *Id.*

The reasoning of *Prairie State* and *Sierra Club* has been applied to subsequent cases from the Board. In *NMU*, relating to the construction of a power plant on a college campus, the Board remanded a PSD permit back to the agency when it rejected the assertion that considering a different proportion of a coal and wood fuel mix would impermissibly redefine the source. 14 E.A.D. at 301–03. Particularly, the Board noted that NMU locked onto a particular fuel combination without any logic or data to justify the choice. *Id.* at 303; *see also id.* at 297 (“[A]lthough the record reflects that other coal . . . will produce the lowest sulfur emissions, [the agency] proceeds without explaining why these sources are unavailable or not technologically feasible.”). Notably relevant to the current appeal, NMU did not fully analyze the possibility of natural gas as a fuel source when the permit application stated that it would be used for boiler startup and as a backup fuel source. *Id.* at 297 n.17; *see also In re Cash Creek Generation LLC*, 2009 WL 7513857 (E.P.A. 2009) (remanding the permit to the applicant because the record was insufficient to justify a determination that an exclusive use of natural gas, a secondary fuel for the project, would impermissibly redefine the source).

B

Adopting the two-step analysis promulgated by the Board and approved by the Seventh Circuit, we must now determine whether EPA erred in determining that using solar power or a greater natural gas mix in Sierra Pacific’s proposed facility would impermissibly redefine the source.

First, we look at how Sierra Pacific itself defined its facility. In its application description, Sierra Pacific

explicitly stated that it intended to build a power plant “that would burn biomass fuels in a boiler to produce steam that would be used to generate electricity and to heat existing lumber dry kilns at the facility.” Sierra Pacific then went on to define more particularly that its biomass fuel source would come from the existing Sierra Pacific mills, in-forest materials from timberlands owned by Sierra Pacific, and other readily available sources of agricultural and urban wood wastes. Sierra Pacific would use natural gas only for the limited purposes of startup, shutdown, and flame stabilization. Capped at 10%, Sierra Pacific estimated its annual usage of natural gas to be significantly below that limit.

Next, we must determine if EPA took the appropriate “hard look” at how Sierra Pacific defined the facility and whether EPA appropriately determined that the burning of biomass was an inherent element of the facility or whether it could be changed to reduce emissions. In the PSD permit issued by EPA, the project description stated that fuel for the power plant would be generated on-site or received from other local sources to produce steam in the new facility. The steam was then to be used to dry lumber and to power a steam turbine to generate electricity for use onsite or for sale to the northern California power grid.

Helping Hand argues that the Board improperly deferred to Sierra Pacific’s purpose of “burning biomass ‘as much as possible’” and read “clean fuels” out of the Clean Air Act. Sierra Pacific’s purpose, according to Helping Hand, is only to generate steam for lumber drying kilns and to make electricity. However, Sierra Pacific’s purpose need not be so limited, *see Prairie State*, 13 E.A.D. at 25, and Helping Hand concedes that “Sierra Pacific arguably can have a basic

business purpose of ‘primarily’ burning a dirtier fuel that is readily available to it.” Just as the Prairie State facility was co-located with its fuel source, a high-sulfur coal mine, Sierra Pacific’s facility is co-located with its fuel source, waste from its lumber manufacturing operations. Therefore, EPA took a “hard look” at the record and how Sierra Pacific defined its facility and reasonably determined that use of a co-located fuel source was an inherent part of the facility’s design.

Having determined that biomass fuel was an inherent part of the design, we finally examine whether the two proposed alternative clean fuels were control alternatives that should have been considered or would impermissibly redefine the source; keeping in mind the deference EPA must be afforded in making such a determination. Like the petitioners in *Sierra Club*, Helping Hand essentially argues that “if a plant is capable—with redesign—of burning a clean fuel, it must undergo a ‘best available control technology’ analysis.” 499 F.3d at 656. Requiring a solar component just because it is a cleaner fuel than biomass is the same as requiring Sierra Pacific to consider the nuclear option. *See id.* Sierra Pacific and EPA are not required to take on the “Sisyphean” task of considering every possible clean fuel alternative. *See id.* at 655. Therefore, EPA properly dismissed solar as a control technology.

The Board noted, correctly, that consideration of a greater natural gas mix was a closer question. Sierra Pacific’s proposed project falls on the borderline discussed in *Sierra Club*. However, unlike the applicant in *Sierra Club*, Sierra Pacific is not considering two fuel sources as control options: one an off-site “clean” fuel, one an on-site “dirty” fuel. In this instance, Sierra Pacific has access to two on-site fuel sources: “clean” natural gas and “dirty” biomass. Though

this typically would suggest that Sierra Pacific must consider a greater mix of natural gas, even when an alternative fuel is available, it need not be considered at Step 1 if it disrupts the business purpose. GHG Permitting Guidance at 28 (“[G]reater utilization of a fuel that the applicant is already proposing to use in some aspect of the project design should be listed as an option in Step 1 unless it can be demonstrated that such an option would disrupt the applicant’s basic business purpose for the proposed facility.”). Here, a greater use of natural gas would disrupt Sierra Pacific’s intent to burn the biomass waste it produces from mill operations.¹¹

Notably, unlike the facilities in *NMU* and *Cash Creek*, Sierra Pacific does not propose to use natural gas as a “secondary” or backup fuel source but only for strictly limited purposes. And unlike the facilities in *NMU* and *Cash Creek*, Sierra Pacific gave valid reasons for imposing a 10% cap: that its purpose was to burn as much of its own biomass waste as possible, and that it expected to burn much less than 10% natural gas because it was being used for such a limited purpose. Burning natural gas is therefore incidental to Sierra Pacific’s business purpose of using its on-site source of biomass as fuel for the new facility. Declining to consider greater use of an incidental fuel is not arbitrary, capricious, or an abuse of discretion.¹²

¹¹ This conclusion is supported by evidence in the record that Sierra Pacific produces more waste than could be consumed by the proposed generator.

¹² Petitioners seize upon Sierra Pacific’s admission that it limited natural gas to 10% to avoid the nitrous oxide limiting requirements of the New Source Performance Standards (“NSPS”). See 40 C.F.R. § 60.44b(d). Limiting natural gas to avoid a nitrous oxide emission limit is not a design decision “independent of air permitting.” The Board erroneously held that

Drawing the line between control technology and redefining the source is a technical determination to which a court should defer to EPA, *see Sierra Club*, 499 F.3d at 655, and there was sufficient justification in the record for EPA to determine that primarily burning biomass from Sierra Pacific's own wood waste, a co-localized source, was an inherent aspect of the facility's design. Requiring EPA and Sierra Pacific to consider solar power, a completely different fuel source, or a greater percentage of natural gas, an incidental fuel source, would redefine the source. EPA did not act arbitrarily or capriciously and Helping Hand's petition is denied.

IV

Next we address the claims raised by the Center in response to the supplemental greenhouse gas BACT analysis. The Center contends that EPA could not consider burning of biomass fuel alone as a control option at Step 1 and that it erred in weighing the effects of different biomass fuel stocks at Step 4 instead of directly comparing them at Step 1. Because EPA was largely relying on its own guidance, acting

such a self-imposed cap was acceptable because it was "federally enforceable." Deciding whether or not to impose a cap of 10% natural gas to avoid NSPS requirements does not exclude consideration of greater utilization of natural gas in the BACT analysis. *See NSR Manual* at B.12 ("The only reason for comparing control options to an NSPS is to determine whether the control option would result in an emissions level less stringent than the NSPS."). Though troubling, this error does not ultimately undermine the key fact that Sierra Pacific's basic business purpose and facility design is to use a co-localized source of biomass fuel, its own wood wastes, to generate steam and electricity for its mill and limited use of natural gas is incidental to that purpose. For that reason, any error in justifying the 10% cap is harmless.

at the frontiers of science, we defer to the agency's determination. See *Baltimore Gas & Elec. Co. v. Nat. Res. Def. Council, Inc.*, 462 U.S. 87, 103 (1983)

A

We review questions of statutory interpretations of the Clean Air Act by the two-step process of *Chevron U.S.A. Inc. v. Natural Resources Defense Council, Inc.*, 467 U.S. 837, 842–43 (1984). See *Vigil v. Leavitt*, 381 F.3d 826, 833–34 (9th Cir. 2004). If Congress has not directly spoken to the precise issue, or the statute is silent or ambiguous, the court must determine if the agency's construction is permissible. *Chevron*, 467 U.S. at 842–43. When Congress has not provided clear guidance in a statute, an agency may fill the gap and its construction is to be given “controlling weight unless . . . arbitrary, capricious, or manifestly contrary to the statute.” *Id.* at 844 (deferring to EPA's interpretation of “source” in the Clean Air Act); see also *EPA v. EME Homer City Generation, L.P.*, 134 S. Ct. 1584, 1603–07 (2014) (deferring to EPA's interpretation of “amount” in the Good Neighbor Provision of the Clean Air Act).

“[T]he weight that we are to give an administrative interpretation not intended by an agency to carry the general force of law is a function of that interpretation's thoroughness, rational validity, and consistency with prior and subsequent pronouncements.” *Wilderness Soc'y v. U.S. Fish & Wildlife Serv.*, 353 F.3d 1051, 1068 (9th Cir. 2003) (en banc). However, when an agency is acting “within its area of special expertise, at the frontiers of science,” the court should “be at its most deferential.” *Baltimore Gas & Elec. Co.*, 462 U.S. at 103; see also *Nat'l Wildlife Fed'n v. U.S. Army Corps of Eng'rs*, 384 F.3d 1163, 1174 (9th Cir. 2004)

(“Where scientific and technical expertise is necessarily involved in agency decision-making, . . . a reviewing court must be highly deferential to the judgment of the agency.”).

What level of deference we must show EPA’s BACT guidance is unclear. The publications are not intended to carry the force of law because EPA must still analyze each application on a case-by-case basis. However, all the publications were promulgated by EPA in order to bring meaning to the BACT statute which Congress has not defined any further than it did in 42 U.S.C. § 7479(3). EPA promulgated these policies specifically to carry out Congress’s intent. We need not resolve the issue here, however, because, as discussed below, under either standard EPA’s actions were neither arbitrary nor capricious.

B

Ultimately, the Center’s concerns are not particular to the Sierra Pacific permit but attack the Bioenergy BACT Guidance. The Bioenergy BACT Guidance builds on the NSR Manual that EPA has used for decades and proposes a more detailed analysis for a particular pollutant—greenhouse gas emissions from biomass fuels—because the emissions from this particular fuel source have unique environmental consequences. Nothing prohibits EPA from refining its top-down BACT approach for particular pollutants—particularly when the refinement is heavily dependent upon the agency’s own scientific expertise. Following the Bioenergy BACT Guidance is therefore thorough, rational, and consistent with EPA’s prior practice. *See Wilderness Soc’y*, 353 F.3d at 1068. And as explained above, we must defer to EPA agency expertise and not disturb the analysis set forth in the Bioenergy BACT Guidance.

In particular, the Center contends that utilization of biomass fuel alone cannot be considered a control technology for the burning of biomass fuel at Step 1 of the BACT analysis because it does not “control” biomass emissions. EPA argues, however, that the option is used as a baseline to which all other options are compared and is not inconsistent with the traditional top-down approach. Moreover, EPA did not ultimately choose this option but selected other control technologies including: combustion of specific biomass fuel stocks; energy efficient design, operation, and maintenance; and employing good combustion practices and efficient operation as a cogeneration unit. In the end, EPA chose the same control measures as five other facilities. Providing a baseline in the BACT analysis does not make the ultimate determination arbitrary, capricious, or even unreasonable.

The Center further argues that the effect of burning different biomass fuel stocks should be considered at Step 1 of the analysis. EPA does not disagree in theory. But EPA currently lacks the scientific data at this time to make such a quantitative determination and is actively collecting the data to do in the future the type of analysis desired by the Center. *See* Bioenergy BACT Guidance at 23. Furthermore, because the same amount of carbon dioxide will be released at the facility no matter which biomass fuel stock is burned, any difference in environmental consequences is indirect. *Id.* at 22. Therefore, consistent with the NSR Manual, these indirect environmental impacts and benefits are better suited to analysis in Step 4.

Acknowledging the differences in the environmental impact of different biomass fuel stocks, however, EPA responded to the Center’s comment by clarifying the fuel restrictions in the final permit. Notably, Sierra Pacific and

EPA were particularly proactive in ensuring the appropriate fuel restrictions were written into the PSD permit. Sierra Pacific's initial application contemplated the use of co-localized mill waste as well as in-forest materials from Sierra Pacific's timber operations and other readily available agricultural and urban wood wastes.

The environmental impact report ("EIR") prepared by EPA noted that there were different estimates of the type of biomass fuel blend Sierra Pacific planned on using, ranging from 100% mill wastes to a blend supplementing mill wastes with biomass from forest-harvesting operations, forest-thinning operations, agricultural waste from the Sacramento Valley, and urban wood waste. EPA therefore conducted the EIR assuming a "worst-case" scenario in which 35% of the biomass used was not co-localized with the facility. The supplemental Statement of Basis and Ambient Air Quality Impact Report also assumed a biomass fuel mix of 75% mill residue and 25% in-forest residues, agricultural residues, and urban wood residues.

Based on the EIR, EPA drafted a PSD permit restricting fuel to "clean cellulosic biomass" allowing Sierra Pacific to burn an extensive list of biomass fuels at the facility. Sierra Pacific commented on the draft asking for more restrictive limitations on the types of biomass fuel it would be allowed to use in its facility because it was more consistent with the original application. EPA adopted Sierra Pacific's modifications in another draft of the permit, which was then further modified in response to the Center's comments.

Though it was not prepared at the time to compare the environmental impacts of sawmill residue versus other biomass wastes, EPA ensured that Sierra Pacific would not

log timber solely for the purpose of using it as biomass for the new facility. EPA limited Sierra Pacific to only the particular biomass fuels readily available to the facility: mill residues, untreated wood debris from urban areas such as pallets and crates, agricultural crops and residues, forest residues, and non-merchantable forest biomass. The only trees that can be burned in Sierra Pacific's facility, therefore, are those that would be removed from the forest anyway as part of Sierra Pacific's ongoing forest management and forest-thinning operations.

Though the Center argues that EPA is equipped to proceed with a quantitative analysis of different biomass fuel stocks at Step 1, EPA says it cannot do that based on the current state of the science. Because the agency is acting at the frontiers of science, we must defer. *See Baltimore Gas & Elec.*, 462 U.S. at 103. The Center does not clearly explain how EPA's analysis here is not thorough, rational, and consistent with EPA's prior guidance on BACT. Sierra Pacific is restricted to the forms of biomass waste readily available to it and cannot clear cut forests just to produce electricity for its lumber mills. EPA did consider the environmental impacts of different biomass fuel stocks, just not in the manner or the level of detail the Center would prefer. Because we must defer to EPA's interpretation of BACT and its scientific expertise, EPA's analysis is not arbitrary, capricious, or an abuse of discretion, and we deny the Center's petition.

V

Sierra Pacific's application went through an extensive process to issue a reasoned PSD permit for its new biomass burning boiler. EPA properly defined the project and rejected

control technologies that redefined the project with thoughtful and reasonable explanations. The Bioenergy BACT Guidance EPA applied to the greenhouse gas emissions from Sierra Pacific's new facility is rational and thoroughly consistent with EPA's prior guidance. The guidance relies extensively on the continually evolving analysis of the environmental effect of different biomass fuels in the ever-developing field of climate-change science. It is not our place to interfere with EPA's expertise when the record shows that its endeavors were reasonable.

Costs are awarded to Respondents.

The petitions for review are **DENIED**.