United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued November 1, 2024 Decided June 20, 2025

No. 23-1177

CENTER FOR BIOLOGICAL DIVERSITY,
PETITIONER

v.

ENVIRONMENTAL PROTECTION AGENCY, ET AL.,
RESPONDENTS

AMERICAN PETROLEUM INSTITUTE, ET AL.,
INTERVENORS

Consolidated with 23-1240, 23-1243, 23-1246, 23-1247, 23-1249

On Petitions for Review of a Final Rule
of the Environmental Protection Agency

Elizabeth B. Dawson and *Jonathan G. Hardin* argued the causes for Refiner Petitioners. With them on the briefs were *Robert J. Meyers*, *Alexandra Magill Bromer*, *Michael R. Huston*, *Jeffrey R. Holmstead*, *Brittany M. Pemberton*, *Richard S. Moskowitz*, *Tyler J. Kubik*, and *Karl J. Worsham*.

Margaret A. Coulter and *Carrie Apfel* argued the causes for Environmental Petitioners. With them on the briefs were *Jason C. Rylander*, *Peter Lehner*, and *Ashley Ingram.*

Sandra P. Franco argued the cause for petitioner Sustainable Advanced Biofuel Refiners Coalition. With her on the briefs was *Jerome C. Muys, Jr.*

Jeremy M. Bylund argued the cause for petitioner Neste US, Inc. With him on the briefs were *Amina Dammann*, *Ilana Saltzbart*, *Ashley C. Parrish*, and *K. Paige Tenkhoff*.

Alexander M. Purpuro and *John H. Martin*, Attorneys, U.S. Department of Justice, argued the causes for respondents. With them on the brief were *Todd Kim*, Assistant Attorney General, and *Kimere J. Kimball* and *Joseph Crusham*, Attorneys.

David M. Lehn argued the cause for Biofuel Intervenors responding to Refiner Petitioners' brief. With him on the brief were *Matthew W. Morrison*, *Shelby L. Dyl*, *Sandra P. Franco*, *Bryan Killian*, and *Douglas Hastings.*

Ethan G. Shenkman argued the cause for Biofuel Intervenors responding to Environmental Petitioners' brief. With him on the brief were *Matthew W. Morrison*, *Bryan Killian*, and *Douglas Hastings.*

Robert J. Meyers, *Elizabeth B. Dawson*, *Richard S. Moskowitz*, *Tyler Kubik*, *Robert A. Long, Jr.*, *Kevin F. King*, *Thomas R. Brugato*, *MaKade C. Claypool*, *John Wagner*, and *Michele Schoeppe* were on the brief for intervenors American Fuel & Petrochemical Manufacturers and American Petroleum Institute in support of respondents. *Daniel G. Randolph* entered an appearance.

Kyle Danish, *Tyson C. Kade*, and *Charlene Koski* were on the brief for *amici curiae* Agricultural, Biomass, and Greenhouse Gas Lifecycle Scientists in support of respondents.

Before: PILLARD, KATSAS and CHILDS, *Circuit Judges*.

Opinion for the Court filed PER CURIAM:

Opinion concurring in part and dissenting in part filed by *Circuit Judge* KATSAS.

PER CURIAM: By now, EPA is accustomed to challenges to its implementation of the Clean Air Act's (CAA) Renewable Fuel Standards (RFS) Program. The RFS Program is generally recognized as Congress's attempt to promote renewable energy and lower greenhouse gas emissions by requiring the petroleum industry to introduce increasing volumes of renewable fuel from year to year. *See* 42 U.S.C. § 7545(o). Last year, we reviewed RFS Program standards for the years 2020, 2021, and 2022. *See Sinclair Wyo. Refin. Co. LLC v. EPA* (*Sinclair Wyo. I*), 101 F.4th 871, 877 (D.C. Cir. 2024). We now consider consolidated petitions for review of EPA's RFS Program standards for the years 2023, 2024, and 2025. *See* Renewable Fuel Standard (RFS) Program: Standards for 2023-2025 and Other Changes, 88 Fed. Reg. 44,468 (July 12, 2023) (hereinafter the Set Rule).

Petitioners representing two nonprofit conservation organizations (Environmental Petitioners), many refiners of petroleum products (Refiner Petitioners), a renewable fuel producer (Neste), and the Sustainable Advanced Biofuel Refiners Coalition (SABR), a trade association representing certain biodiesel stakeholders, filed challenges to the Set Rule. Only two of those challenges have merit: the Environmental Petitioners' claims that (1) EPA failed to adequately explain why—for purposes of addressing lifecycle greenhouse gas (GHG) emissions associated with crop-based biofuels—it re-used the results of an admittedly outdated study instead of newer data collected from EPA's literature review of the most reliable post-2010 findings; and (2) the United States Fish and Wildlife Service (FWS) failed to adequately explain how its conclusion that the Set Rule will have "no effect" on endangered species or their critical habitats accords with the legal framework set forth in its Consultation Handbook and the implementing regulations of the Endangered Species Act (ESA). We therefore grant Environmental Petitioners' petition

only to the extent that we will remand the Set Rule to EPA and FWS without vacatur for further consideration and explanation. We deny the petitions of Neste and Refiner Petitioners and dismiss SABR's petition for untimeliness and lack of standing.

BACKGROUND

Because of the successive nature of challenges to the RFS Program, we provide a complete but streamlined explanation of the statutory scheme for purposes of understanding the issues in this appeal. Additional background is reflected in prior decisions involving challenges to the Program.[1]

A. The Renewable Fuel Standards Program

Congress created the RFS Program by way of the Energy Policy Act of 2005, codified in Section 211(o) of the CAA (42 U.S.C. § 7545(o)), and further expanded it in the Energy Independence and Security Act of 2007. Overview of RFS Program, EPA (last updated May 16, 2024), https://perma.cc/TV47-8CUQ. The RFS Program "requires an increasing amount of renewable fuel to be introduced into the Nation's transportation fuel supply each year." *Ams. for Clean Energy v. EPA (ACE)*, 864 F.3d 691, 696 (D.C. Cir. 2017) (referencing 42 U.S.C. § 7545(o)). "To accomplish th[is] goal[], the Program regulates suppliers through 'applicable volume[s]'—mandatory and annually increasing quantities of

[1] *See Nat'l Petrochemical & Refiners Ass'n v. EPA*, 630 F.3d 145 (D.C. Cir. 2010); *Am. Petroleum Inst. v. EPA*, 706 F.3d 474 (D.C. Cir. 2013); *Monroe Energy, LLC v. EPA*, 750 F.3d 909 (D.C. Cir. 2014); *Ams. for Clean Energy v. EPA*, 864 F.3d 691 (D.C. Cir. 2017); *Alon Refin. Krotz Springs, Inc. v. EPA*, 936 F.3d 628 (D.C. Cir. 2019); *Am. Fuel & Petrochemical Mfrs. v. EPA*, 937 F.3d 559 (D.C. Cir. 2019); *Growth Energy v. EPA*, 5 F.4th 1 (D.C. Cir. 2021); *Wynnewood Refin. Co., LLC v. EPA*, 77 F.4th 767 (D.C. Cir. 2023).

renewable fuels that must be 'introduced into commerce in the United States' each year—and tasks the EPA Administrator with 'ensur[ing]' that those annual targets are met." *Am. Fuel & Petrochemical Mfrs. v. EPA*, 937 F.3d 559, 568 (D.C. Cir. 2019) (quoting 42 U.S.C. § 7545(o)(2)(A)(i)). Accordingly, Congress charged EPA with promulgating regulations to ensure that each requisite type of fuel introduced into commerce in the United States satisfies the RFS Program's applicable volume requirements. 42 U.S.C. § 7545(o)(2)(A)(i).

"After EPA determines the volume requirements for the various categories of renewable fuel, it has a 'statutory mandate' to 'ensure[ ]' that those requirements are met," which it fulfills "by translating the annual volume requirements into 'percentage standards,'" *ACE*, 864 F.3d at 698-99 (citations omitted), *i.e.* what percentage of the nation's transportation fuel must be comprised of each congressionally specified renewable fuel. "The percentage standards inform each obligated party of how much renewable fuel it must introduce into U.S. commerce based on the volumes of fossil-based gasoline or diesel it imports or produces." *Id.* at 699. "Once EPA issues a rule informing obligated parties . . . of their renewable fuel obligations, it is up to the obligated parties to comply with the statute." *Id.*

The statute provides EPA latitude to impose "renewable fuel obligation[s]" on "refineries, blenders, and importers," as appropriate. 42 U.S.C. § 7545(o)(3)(B)(ii)(I). EPA has chosen by rule to impose obligations only on parties that introduce fossil fuels into the United States economy: refiners and importers. *See Alon Refin. Krotz Springs, Inc. v. EPA*, 936 F.3d 628, 648-53 (D.C. Cir. 2019); 40 C.F.R. § 80.2 (designating obligated parties). Obligated parties must purchase compliance credits known as Renewable Identification Numbers (RINs)

from renewable fuel producers in volumes sufficient to meet their percentage standard obligations and then prove their compliance annually by retiring those RINs with EPA. 42 U.S.C. § 7545(o)(5); 40 C.F.R. §§ 80.2, 80.1426, 80.1427(a), 80.1428(b).

The RFS Program establishes volumes for four congressionally chosen categories of renewable fuel: (1) cellulosic biofuel; (2) biomass-based diesel; (3) advanced biofuel; and (4) total renewable fuel. 42 U.S.C. § 7545(o)(1)(B), (D), (E), (J). The categories vary in their renewable biomass sources and their GHG emissions. According to the CAA, biofuels used to meet RFS Program obligations must achieve "certain GHG reductions based on a lifecycle analysis (LCA)." 88 Fed. Reg. at 44,500. Each category of fuel under the program must reduce GHG emissions by a certain percentage from the baseline established by petroleum-based fuels. *Id*. In general, to qualify as a renewable fuel under the program, a fuel must be produced from approved feedstocks and have lifecycle GHG emissions at least 20 percent less than the baseline. *Id.* Advanced biofuels and biomass-based diesel must have at least 50 percent lower GHG emissions than baseline fuels, "while cellulosic biofuel is required to have lifecycle emissions at least 60 percent less than baseline fuels." *Id.*

The renewable fuel types "are 'nested,' meaning that cellulosic biofuel and biomass-based diesel are kinds of advanced biofuel, and advanced biofuel in turn is a kind of renewable fuel that may be credited toward the total renewable fuel obligation." *ACE*, 864 F.3d at 697-98. In this regard, nested RINs satisfy obligations for all categories that include them. For example, cellulosic biofuel is counted toward its own volume obligation, the advanced biofuel volume

obligation, and the total renewable fuel volume obligation. *Id.* at 698.

The statute contains tables that set the annual, nationally applicable volume requirements for each renewable fuel category: cellulosic biofuel, advanced biofuel, and total renewable fuel through the year 2022; and biomass-based diesel through 2012. 42 U.S.C. § 7545(o)(2)(B)(i). For later years, Congress gave EPA statutory authority to set applicable volumes and directed it to base the volume numbers on a review of the implementation of the program in previous years and an analysis of the six factors (set criteria) found in 42 U.S.C. § 7545(o)(2)(B)(ii). The set criteria are:

> (I) the impact of the production and use of renewable fuels on the environment, including on air quality, climate change, conversion of wetlands, ecosystems, wildlife habitat, water quality, and water supply;
>
> (II) the impact of renewable fuels on the energy security of the United States;
>
> (III) the expected annual rate of future commercial production of renewable fuels, including advanced biofuels in each category (cellulosic biofuel and biomass-based diesel);
>
> (IV) the impact of renewable fuels on the infrastructure of the United States, including deliverability of materials, goods, and products other than renewable fuel, and the sufficiency of infrastructure to deliver and use renewable fuel;
>
> (V) the impact of the use of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods; and

> (VI) the impact of the use of renewable fuels on other factors, including job creation, the price and supply of agricultural commodities, rural economic development, and food prices.

Id. § 7545(o)(2)(B)(ii)(I-VI).

In determining volumes, EPA may reduce the applicable volumes by issuing waivers. The statute authorizes two waiver types: (1) a cellulosic waiver allowing reduction of "the applicable volume of cellulosic biofuel . . . to the projected volume available during that calendar year" whenever the projected volume falls short of the volume in the statutory table, *id.* § 7545(o)(7)(D)(i); and (2) a general waiver permitting the reduction of "the national quantity of renewable fuel required . . . based on a determination . . . that implementation of the requirement would severely harm the economy or environment of a State, a region, or the United States . . . or [that] there is an inadequate domestic supply," *id.* § 7545(o)(7)(A).

"EPA must meet two different statutory deadlines when promulgating volume requirements and percentage standards." *ACE*, 864 F.3d at 716. "First, EPA must promulgate all renewable fuel percentage standards for a given year by November 30 of the preceding year." *Id.* (citing 42 U.S.C. § 7545(o)(3)(B)(i)). "Second, EPA must promulgate the volume requirements for those years not covered by the statutory tables 'no later than 14 months before the first year' for which such volume requirements will apply." *Id.* at 716-17 (citing 42 U.S.C. § 7545(o)(2)(B)(ii)). However, EPA may issue late volume requirements "with retroactive effect so long as EPA reasonably mitigates any burdens that its lateness imposes on obligated parties," *id.* at 717, "by considering the 'benefits and the burdens attendant to its approach' of issuing

late renewable fuel requirements," *id.* at 718 (quoting *Nat'l Petrochemical & Refiners Ass'n v. EPA*, 630 F.3d 145, 166 (D.C. Cir. 2010)).

Congress mandated that EPA determine and publish in the Federal Register the renewable fuel obligations for the upcoming calendar year in the form of volume percentages of transportation fuel sold or imported into the United States. 42 U.S.C. § 7545(o)(2)(B). In essence, if each obligated party were to include the RFS Program's percentage requirement of renewable fuel in the obligated party's total fuel production, the volume requirements for the Program would be achieved. EPA determines the percentage for each of the four renewable fuel types under the Program by dividing the projected annual volume of each fuel type by the estimated total of gasoline and diesel volume that will be used in the upcoming year. 40 C.F.R. § 80.1405(c).

B. The Endangered Species Act

EPA must evaluate the potential impacts of any regulation stemming from the RFS Program on critical habitats and entities listed in the ESA. 16 U.S.C. §§ 1531-1544. "Congress enacted the ESA 'to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved' . . . 'to provide a program for the conservation of such endangered species and threatened species[]' . . . [and] to 'halt and reverse the trend toward species extinction, whatever the cost.'" *Ctr. for Biological Diversity v. EPA*, 861 F.3d 174, 177 (D.C. Cir. 2017) (citations omitted). Under Section 7 of the ESA, EPA must "insure that any action authorized, funded, or carried out by [the] agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species." 16 U.S.C.

§ 1536(a)(2). To satisfy this requirement, before taking any proposed action, EPA consults with FWS and the National Marine Fisheries Service (NMFS) (together, the Services), which "share responsibilities for administering the [ESA]." 50 C.F.R. § 402.01(b). "This process, called . . . 'consultation,' . . . 'ensur[es] that such action does not go forward without full consideration of its effects on listed species.'" *Ctr. for Biological Diversity*, 861 F.3d at 177-78 (quoting *Lujan v. Defs. of Wildlife*, 504 U.S. 555, 603 (1992)).

C. The Set Rule

On July 12, 2023, EPA published the Set Rule that, in relevant part, (1) announced the volume and percentage standards of cellulosic biofuel, advanced biofuel, total renewable fuel, and biomass-based diesel for the years 2023, 2024, and 2025; (2) addressed outstanding volume remaining from a remand of 2016 annual total renewable fuel volume in *ACE*; (3) amended RFS regulatory provisions, including adjusting the conversion factor for biomass-based diesel; and (4) clarified recordkeeping provisions for renewable fuel producers and RIN generation for fuel not used in the United States.

1.

As a starting point, to determine the volumes for the four categories of renewable fuel encompassed by the RFS Program, EPA developed "'candidate volumes' for each category." 88 Fed. Reg. at 44,480. EPA developed these candidate volumes (meaning preliminary projected volumes) by analyzing "a subset of the statutory factors that are most closely related to supply of and demand for renewable fuel" (supply-and-demand-related factors), namely production and use of renewable fuels, the expected annual rate of future commercial production of renewable fuels, and the sufficiency

of infrastructure to deliver and use renewable fuel. *Id.* In developing candidate volumes, EPA also considered the historical supply of renewable fuel.

To assess the effects of the candidate volumes, EPA established a baseline of renewable fuel volumes EPA projected would be produced in a scenario in which the Set Rule did not exist. EPA then used the candidate volumes to conduct analyses of the other environmental and economic factors under the remaining statutory factors not yet considered. Based on the results of these analyses, EPA determined the final volume requirements for the four categories for the years 2023, 2024, and 2025. Below is a table summarizing the final renewable fuel volume targets (in billions of RINs) issued by EPA in the Set Rule.

TABLE I.A.1-1—FINAL VOLUME TARGETS

[Billion RINs][a]

	2023	2024	2025
Cellulosic biofuel	0.84	1.09	1.38
Biomass-based diesel[b]	2.82	3.04	3.35
Advanced biofuel	5.94	6.54	7.33
Renewable fuel	20.94	21.54	22.33
Supplemental standard	0.25	n/a	n/a

88 Fed. Reg. at 44,470. EPA also conveyed the percentage standards for the years 2023, 2024, and 2025.

TABLE I.A.2-1—PERCENTAGE STANDARDS

	2023 (%)	2024 (%)	2025 (%)
Cellulosic biofuel	0.48	0.63	0.81
Biomass-based diesel	2.58	2.82	3.15
Advanced biofuel	3.39	3.79	4.31
Renewable fuel	11.96	12.50	13.13
Supplemental standard	0.14	n/a	n/a

Id. at 44,471.

2.

In the Set Rule, EPA completed the process of addressing our remand in *ACE* of the 2014, 2015, and 2016 annual volumes. As to those volumes, EPA had originally relied on the general waiver authority for inadequate domestic supply to lower the 2016 total renewable fuel volume by 500 million gallons. *See* RFS Program: Standards for 2014, 2015, and 2016 and Biomass-Based Diesel Volume for 2017, 80 Fed. Reg. 77,420, 77,433 (Dec. 14, 2015). In *ACE*, we held that "EPA exceeded its authority under the 'inadequate domestic supply' provision," "vacate[d] EPA's decision . . . and remand[ed] . . . for further consideration." 864 F.3d at 703. To address the *ACE* remand, EPA "impose[d] a 500-million-gallon supplemental volume requirement for renewable fuel over two years." 88 Fed. Reg. at 44,509. EPA "required the first 250-million-gallon supplement in 2022," *id.*, which we recently upheld. *See Sinclair Wyo. I*, 101 F.4th at 893-96. In the Set Rule at issue here, EPA mandated compliance with the second 250-million-gallon supplement. 88 Fed. Reg. at 44,509.

3.

Pursuant to its statutory mandate under 16 U.S.C. § 1536, EPA engaged in informal consultation with the Services regarding the Set Rule. In the first half of 2023, EPA provided a Biological Evaluation and supportive documentation as part of its informal consultation with the Services. In its Biological Evaluation, "EPA . . . determined that the production of crop-based feedstocks ha[d] the potential to affect endangered and threatened species . . . and critical habitat by contributing to land use changes that could . . . lead to habitat loss or water quality impairments via runoff from agricultural lands." EPA Biological Evaluation at 6 (J.A. 1025). Therefore, as a result

of the Set Rule, consultation was necessary because species or habitats could be affected "where crops of corn, soybean, and canola are currently grown in the U.S. and . . . downstream areas could be impacted by agricultural runoff and pollution from such crop areas." EPA Biological Evaluation at 6 (J.A. 1025). "EPA found that the Set Rule action area overlaps with a total of 712 unique species: 672 FWS species, 32 NMFS species, and 8 that are both FWS and NMFS species . . . [a]nd . . . a total of 810 populations [we]re evaluated in th[e] Biological Evaluation." EPA Biological Evaluation at 6 (J.A. 1025). Ultimately, EPA determined "that the Set Rule may affect, but is not likely to adversely affect . . . any of the 810 populations within the Set Rule action area or their critical habitat." EPA Biological Evaluation at 13 (J.A. 1032).

In its Set Rule concurrence letter expressing agreement with EPA's determination, the National Marine Fisheries Service observed that "[t]he applicable standard to find that a proposed action is not likely to adversely affect ESA-listed species or designated critical habitat is whether the effects to listed species and critical habitat are expected to be discountable, insignificant, or completely beneficial." NMFS Concurrence at 9 (J.A. 2050). Based on its analysis of available information regarding changes in crop production and water quality, NMFS concurred "with EPA that the effects of [the Set Rule] may affect, but are not likely to adversely affect the ESA-listed and proposed species and/or designated and proposed critical habitats." NMFS Concurrence at 25 (J.A. 2066).

The Fish and Wildlife Service took a different approach. In its response to EPA's request for concurrence, FWS asserted that, according to the ESA Section 7 Consultation Handbook, "a 'may affect' determination is appropriate when 'a proposed action may pose any effects on listed species or critical habitat.'" FWS Concurrence at 2 (J.A. 2069). However,

"[b]ecause there [we]re no general environmental changes identified in the [Biological Evaluation] that would not occur but for EPA's action and that are reasonably certain to occur," FWS concluded "that the Set Rule will not result in any 'effects of the action,' and a determination of 'no effect' [wa]s appropriate." FWS Concurrence at 2 (J.A. 2069). Having concluded that the Set Rule would have no effect, FWS concurred with "EPA's finding that the Set Rule is not likely to adversely affect ESA-listed species or designated critical habitats." FWS Concurrence at 9 (J.A. 2076).

4.

In the Set Rule, EPA acknowledged its adoption of specified regulatory changes to improve the RFS Program. First, EPA revised the conversion factor used in the calculation of applicable biomass-based diesel percentage standards from 1.5 to 1.6 to reflect the increasing volume of renewable diesel in the biomass-based diesel pool. 88 Fed. Reg. at 44,546-47. Next, EPA addressed RIN generation by revising 40 C.F.R. § 80.1426 to specify that "renewable fuel producers and importers may only generate RINs . . . for qualifying renewable fuel." *Id.* at 44,547. Finally, EPA addressed the generation and maintenance of records for waste feedstocks by "providing an option to allow independent auditors to verify records held by the feedstock aggregator," *id.* at 44,548.

D. Petitioners

Various petitioners challenge the Set Rule. Environmental Petitioners are advocacy organizations. Refiner Petitioners are (or represent) refiners and retailers of petroleum products subject to the Set Rule's volume requirements. "Neste is a foreign producer of renewable fuel that generates RINs under the RFS [P]rogram." Neste Br. 4. SABR is a trade association of stakeholders in biodiesel, and includes "feedstock growers

to biodiesel producers, distributors, retailers, and consumers, as well as infrastructure, products, and services suppliers." SABR Br. C-4.

Intervenors also filed briefs. Two of the Refiner Petitioners—American Petroleum Institute and American Fuel & Petrochemical Manufacturers—intervened to oppose SABR's petition. Several Biofuel Intervenors filed in support of the Set Rule and in opposition to the petitions for review filed by the Refiner Petitioners and the Environmental Petitioners.[2]

E. Jurisdiction and Standards of Review

This Court has jurisdiction to review EPA's Set Rule pursuant to 42 U.S.C. § 7607(b)(1). Because "we apply the same standard of review under the [CAA] as we do under the Administrative Procedure Act," *Allied Loc. & Reg'l Mfrs. Caucus v. EPA*, 215 F.3d 61, 68 (D.C. Cir. 2000), we will uphold EPA's action unless it is "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law . . . ." 42 U.S.C. § 7607(d)(9)(A). Our review is narrow; if an action is not contrary to law, "agency action simply [must] be 'reasonable and reasonably explained.'" *Cmtys. for a Better Env't v. EPA*, 748 F.3d 333, 335 (D.C. Cir. 2014) (citation omitted). EPA is required to "examine the relevant data and articulate a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" *Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (citation omitted).

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[2] Coalition for Renewable Natural Gas did not join the other Biofuel Intervenors in opposing the Environmental Petitioners' petition for review.

An EPA rule is arbitrary and capricious if:

> [T]he agency (1) 'has relied on factors which Congress has not intended it to consider,' (2) 'entirely failed to consider an important aspect of the problem,' (3) 'offered an explanation for its decision that runs counter to the evidence before the agency,' or (4) 'is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.'

U.S. Sugar Corp. v. EPA, 830 F.3d 579, 606 (D.C. Cir. 2016) (quoting *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43). The Court "owes particular deference to EPA when its rulemakings rest upon matters of scientific and statistical judgment within [its] sphere of special competence and statutory jurisdiction." *Id.* (citation omitted). But the Court is "hesitant to rubber-stamp EPA's invocation of statistics without some explanation of the underlying principles or reasons why its formulas would produce an accurate result." *Id.* (citation omitted). Moreover, if an agency changes positions, it must "display awareness that it *is* changing position." *FCC v. Fox Television Stations, Inc.*, 556 U.S. 502, 515 (2009) (emphasis in original). Thus, an agency "may not, for example, depart from a prior policy sub silentio." *Id.*

DISCUSSION

We discuss the challenges in the following order: Environmental Petitioners, Refiner Petitioners, Neste, and SABR.

I. Environmental Petitioners

The Environmental Petitioners challenge the volumes established in the Set Rule as contrary to the CAA and the ESA.

They claim that EPA's statutorily mandated analysis of the effects of the Set Rule on climate change was inadequate, and that deficient ESA compliance by EPA, the NMFS and the FWS will harm listed species or critical habitat. We address the various claims advanced under each statute in turn, ultimately concluding that EPA's analysis of the effects of the Set Rule on climate change under the CAA was arbitrary and capricious and that, while NMFS adequately complied, FWS's concurrence with EPA as to the effects of the Set Rule on endangered species under the ESA rests on arbitrary and capricious analysis. We remand to EPA and FWS for further explanation without vacating the Set Rule's volumes.

A. Clean Air Act

The Environmental Petitioners challenge the volumes in the Set Rule under the CAA and the Administrative Procedure Act (APA). They claim that EPA's weighing of the statutorily required factors was arbitrary and capricious, as was its analysis of the Set Rule's effects on climate change. Only the latter challenge succeeds.

1.

The CAA requires EPA to set volumes based on "a review of the implementation of the [RFS Program]" in prior years and an analysis of six factors. 42 U.S.C. § 7545(o)(2)(B)(ii). Those statutory factors are: (1) the impact of the production and use of renewable fuels on the environment; (2) the impact of renewable fuels on the United States' energy security; (3) the expected annual rate of future commercial production of renewable fuels; (4) the impact of renewable fuels on the infrastructure of the United States; (5) the impact of renewable fuels on the cost to consumers of fuel and on the cost to transport goods; and (6) the impact of renewable fuels on other factors, including job creation, the price and supply of

agricultural commodities, rural economic development, and food prices. *Id.* As part of its analysis of those statutorily required factors, EPA considered the effect of the Set Rule on environmental justice, which EPA defines as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." 88 Fed. Reg. at 44,506.

The Environmental Petitioners argue that EPA gave short shrift to the Set Rule's harms to the environment, communities that manifest environmental justice concerns, and consumers. The Environmental Petitioners acknowledge that EPA considered those harms but maintain that they are so grave compared to the potential benefits of the Rule that EPA failed to justify its decision to "finalize volumes that lead to such an imbalance in positive to negative impacts." Env't Pet. Br. 38. In their view, the severity of those harms requires vacatur of the volumes the Set Rule established for crop-based renewable fuels.

Our dissenting colleague would vacate the volumes for distinct but related reasons. He contends that EPA has failed to explain how the costs associated with the program are justified by countervailing benefits and accordingly has not fulfilled its duty to select volumes "based on" an analysis of the six statutory factors. *See post* at 7-8. On the partial dissent's reading, the large discrepancy between the monetized costs and benefits of the Rule further magnifies EPA's error and renders its decision arbitrary and capricious. *Id.* at 9-10.

We reject those arguments for two reasons. *First*, EPA did more than merely acknowledge those harms. It rationally explained why its balancing of the potential harms and benefits

associated with the Set Rule supported the volumes it established. Specifically, EPA used a subset of the factors most closely related to the supply and demand for renewable fuels to identify candidate volumes (*i.e.* preliminary projected volumes) for the relevant renewable fuel categories. *See* 88 Fed. Reg. at 44,480. It then analyzed the effect of those candidate volumes on the other statutorily required environmental and economic factors to arrive at final volumes. *Id.*

EPA's process for setting cellulosic biofuel volumes illustrates that process. EPA established its candidate volumes for cellulosic biofuel based on its analysis of projected growth in cellulosic biofuel production and constraints on consumption (*e.g.*, vehicle compatibility). *Id.* at 44,512; Regul. Impact Analysis (RIA) at 277-95 (J.A. 1585-1604). Considering the effects of that volume on the other statutory factors, EPA found that cellulosic biofuel's impact on the environment is broadly positive because it emits significantly fewer greenhouse gases than fossil fuels and its feedstocks are largely waste or byproducts that do not require dedicating farmland acreage to its production. 88 Fed. Reg. at 44,512. And, because cellulosic biofuel largely uses waste or byproduct feedstocks, EPA found its impact on several other statutory factors like the price and supply of agricultural commodities and food prices to be minimal. *Id.* But EPA found that cellulosic biofuel's impact on transportation fuel costs to consumers is relatively high—adding as much as 2 cents per gallon to the price of gasoline and diesel. *Id.* at 44,513; RIA at 44 (J.A. 1352).

Based on its balancing of all the factors, EPA ultimately decided to set final volumes for cellulosic biofuel at the candidate levels it had projected. 88 Fed. Reg. at 44,513. EPA similarly analyzed each of the other statutory renewable fuel

categories. By using available data bearing on the statutory supply-side factors to develop preliminary candidate volumes, then balancing all the statutory factors before setting final volumes, EPA fulfilled its statutory obligation for each category of renewable fuel. *Id.* at 44,512-18.

Our dissenting colleague takes issue with EPA's approach because of its outcome. In his view, that the Set Rule's final volumes largely tracked candidate volumes means EPA gave too much weight to the "subset of statutory factors" that it used to determine the candidate volumes and merely "report[ed] the various high economic and environmental costs" the statute also requires it to analyze. *Post* at 7. But that is not what EPA did. As the cellulosic biofuel example demonstrates, EPA analyzed those economic and environmental considerations, reasonably found that the benefits outweighed the costs, and so decided to set the final volumes at candidate volume levels. *See* 88 Fed. Reg. at 44,513. And to the extent that implies EPA gave greater weight to the supply-related factors it used to set candidate volumes, that choice was well within its "considerable discretion to weigh and balance the various factors required by statute." *Sinclair Wyo. I*, 101 F.4th at 887 (citation and internal quotation marks omitted).

Second, the Environmental Petitioners' (and our dissenting colleague's) argument that EPA should have set lower volumes because of the purported imbalance between the positive and negative impacts of the Set Rule fundamentally misunderstands the statute. In *Sinclair Wyoming I*, we considered an identical challenge brought by refiners to an RFS Program Rule asserting that the rule would drive up compliance costs and GHG emissions. The refiners argued EPA's failure to reconcile the "vast disparity" between the monetized costs and monetized benefits of the Rule rendered the volumes it set arbitrary and capricious. 101 F.4th at 888-

89. A key reason we rejected that argument was that "the statute does not state what weight should be accorded to the relevant factors," and so "we give EPA considerable discretion to weigh and balance the various factors required by statute." *Id.* at 887 (citation and internal quotation marks omitted).

The same reasoning applies here: The text of the CAA does not require EPA to monetize or otherwise quantify all of the factors it must consider, nor to conduct a cost-benefit analysis to set volumes. Instead, the Act states that EPA "shall . . . determine[]" those volumes "based on a review of the implementation of the program" in past years and "an analysis" of six other statutory factors. 42 U.S.C. § 7545(o)(2)(B)(ii). Contrary to our dissenting colleague's characterization, those factors are not "categories of cost." *Post* at 8. In fact, only one of those factors—the impact of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods—explicitly requires EPA to analyze monetary costs. *Id.* § 7545(o)(2)(B)(ii)(V). EPA undertook that analysis, estimating that the Set Rule would impose significant fuel costs on consumers between 2023 and 2025. 88 Fed. Reg. at 44,506. But, as we have previously noted, Congress in the RFS Program "made a policy choice to accept higher fuel prices" in exchange for the benefits of energy security and reduced GHG emissions. *Sinclair Wyo. I*, 101 F.4th at 889.

Nothing in the Act or precedent supports a freestanding requirement that EPA balance the quantifiable costs and benefits of the volumes it sets, let alone that EPA may implement the RFS Program only insofar as its benefits—quantified or not—outweigh its costs. Indeed, in *National Association of Home Builders v. EPA*, 682 F.3d 1032 (D.C. Cir. 2012), we rejected a similar argument under a kindred provision of the Toxic Substances Control Act (TSCA). The Home Builders contended that TSCA imposed a duty on EPA

to demonstrate that the benefits of a rule promulgated under the Act outweighed its costs. *Id.* at 1039. We noted that while the TSCA requires EPA to "consider," among other factors, the "economic consequences" of action taken pursuant to the statute—it does not require a cost-benefit analysis. *Id*. EPA had nonetheless opted to do a cost-benefit analysis, which we accordingly reviewed and sustained as reasonable. *Id.* at 1039-41; *see also Nat'l Wildlife Fed'n v. EPA*, 286 F.3d 554, 570-71 (D.C. Cir. 2002) (per curiam). And those cases are fully consistent with the Supreme Court's decision in *Michigan v. EPA*, 576 U.S. 743 (2015). There, the Court held that while EPA had to "consider cost . . . before deciding whether regulation is appropriate and necessary," *id.* at 759, it did not need to conduct "a formal cost-benefit analysis" because it was "up to the Agency to decide . . . how to account for cost." *Id.*

Thus, contrary to the Environmental Petitioners' and the partial dissent's assertion, it does not matter that the monetized benefits of the Rule may be less than its monetized costs. What matters is whether EPA acted in a reasonable, non-arbitrary manner in setting volumes based on its review of the prior implementation of the program and its consideration of the statutorily required factors. EPA did so. Its decision to set the challenged volumes was reasonable and reasonably explained.

2.

Separately, the Environmental Petitioners argue that EPA's analysis of the effect of the Set Rule on climate change was arbitrary and capricious. The statute requires EPA to analyze the "impact of the production and use of renewable fuels on the environment, including on . . . climate change." 42 U.S.C. § 7545(o)(2)(B)(ii)(I). The mandatory climate analysis is "related to, but distinct from" EPA's duty to ensure that specific renewable fuels satisfy minimum GHG emission

reduction targets mandated by the CAA. 88 Fed. Reg. at 44,500-01; *see also* 42 U.S.C. § 7545(o)(2)(A)(i) (requiring the various renewable fuels produced from new facilities to achieve a minimum of 20-60 percent reductions in emissions compared to baseline). The Environmental Petitioners advance three reasons why they believe EPA's analysis was arbitrary and capricious. On our independent review, we reject two but conclude that one of them has merit: EPA disregarded the results of its own literature review without adequate explanation. We turn first to that meritorious challenge.

a.

The Environmental Petitioners take issue with EPA's review of the latest scientific literature estimating the quantity of GHG emissions attributable to renewable fuels and EPA's ensuing analysis of the effects of the Set Rule on climate change. The review identified a wide range of estimates for each renewable fuel depending on what assumptions and analyses each study used. For example, one study yielded what turned out to be the low-end estimate within the literature that corn-based ethanol emits 38 grams of carbon dioxide per megajoule of energy generated (gCO2e/MJ), while another study yielded a high-end estimate that it emits 116 gCO2e/MJ. 88 Fed. Reg. at 44,501 (Table IV.A–1). In comparison, studies estimate that petroleum gasoline emits between 84 and 98 gCO2e/MJ.

EPA made inconsistent use of the data it culled from the literature. It used the high-end and low-end estimate of each range reflected in the literature to construct worst-case and best-case scenarios, respectively, for the effects of the Set Rule on GHG emissions over a thirty-year period relative to a baseline scenario that assumed the Set Rule did not exist. RIA at 164-66 (J.A. 1472-74). But for crop-based renewable fuels

like corn-based ethanol and soybean oil-based biodiesel, EPA did not use the ranges derived from the literature review. For only that subset of renewables, EPA turned back to (lower) figures it drew from a study it had conducted in 2010 to identify renewable fuels that met the Clean Air Act's GHG emission reduction targets. RIA at 161-62 (J.A. 1469-70). The Environmental Petitioners argue that EPA never reasonably explained why it used the results of the literature review to construct its estimates on some of the effects of the Set Rule but not others.

We agree. EPA has failed to justify its climate conclusions regarding the GHG emission reductions attributable to the Set Rule. To be clear, EPA's use of ranges derived from credible publications like peer-reviewed journal articles and government reports to make projections was not, by itself, objectionable. EPA explained that, because "all [lifecycle emissions] studies and models have particular strengths and weaknesses, as well as uncertainties and limitations," its goal for the literature review was "to consider the ranges of published estimates, not to adjudicate which particular studies, estimates or assumptions are most appropriate." 88 Fed. Reg. at 44,500. But EPA's unexplained decision to generally rely on those published estimates for every other fuel category and to disregard them for crop-based renewable fuels in favor of ranges derived from its dated 2010 study was arbitrary and capricious.

To begin with, that decision to rely on a nearly 15-year-old study is inconsistent with EPA's acknowledgement that the modeling framework "EPA ha[d] previously relied upon"—primarily, the results of the 2010 study—to analyze the effects of renewable fuels on climate change "is old" and newer data and research is now available. 88 Fed. Reg. at 44,501.

That decision also was not reasonably explained. EPA stated that it used the results of the 2010 study because it was the "only study identified in [the literature review] that . . . report[s] an annual stream of land use change emissions." RIA at 161 (J.A. 1469). Land use change emissions are those GHG emissions attributable to growing crops as feedstocks for renewable fuels on land that was previously not used for that purpose. According to EPA, an annual stream is important to calculating emission changes from crop-based biofuels over a thirty-year period because the initial conversion of land to grow the needed crops leads to relatively high emissions at the start of the period, when the land is converted, but lower emissions over the long term once the conversion is complete. RIA at 129 (J.A. 1437). EPA contends that the studies in the literature review systematically overestimate GHG emissions attributable to crop-based renewable fuels. RIA at 161 (J.A. 1469). According to EPA, "an annual stream of land use change emissions" over a period of years is required for accurate estimation of GHG effects, and "[t]he only study identified in our review that does report an annual stream of land use change emissions is the analysis for the 2010 RFS2 rule." RIA at 161 (J.A. 1469).

There are two problems with EPA's explanation. First, EPA's statement that the 2010 study was the "only" one to report an annual stream of land use change emissions contradicts its statement on the same page that "[t]he *majority* of the land use change GHG estimates in the literature"—*i.e. not all* of them—"do not report an annual stream." RIA at 161 (J.A. 1469) (emphasis added). EPA clearly implies that some minority of the studies EPA considered did in fact report annual streams of emissions associated with land use change.

Second, EPA asserts that it was justified in using the substantially lower emissions estimates from its 2010 RFS

study for corn-based ethanol and soybean-based renewable fuels in lieu of the aggregate range of estimates from its literature review because the latter systematically overestimated GHG emissions from land use changes. But that assertion of systemic skew is contradicted by EPA's own figures showing that GHG emissions estimates drawn from the literature review were effectively identical to those included in the 2010 study for all crop-based renewable fuel—except corn-based ethanol. *Compare* RIA at 161 (J.A. 1469) (charting ranges based on the literature review), *with* RIA at 162 (J.A. 1470) (charting virtually identical ranges based on the 2010 RFS2 rule for soybean-based renewable fuels). The 2010 study's high-end emissions estimate for soybean oil-based biodiesel was only slightly lower—72 gCO2e/MJ rather than 73—and the high-end estimate for soybean oil-based renewable diesel remained unchanged when the 2010 study's results were used. RIA at 161-62 (J.A. 1469-70). Only for corn-based ethanol was there a significant difference: In contrast to the high-end emissions estimate of 116 gCO2e/MJ for corn-based ethanol from the updated literature review, the high-end emissions estimate from the 2010 study was only 91 gCO2e/MJ—more than 20 per cent lower. RIA at 161-62 (J.A. 1469-70).

That substantial, unexplained discrepancy is particularly problematic for EPA because it plays an outsized role in the program overall. Corn-based ethanol is by volume the largest category of renewable fuel produced in the United States—and it drives the largest aggregate portion of GHG emissions attributable to renewable fuels. If EPA improperly relied on a lower high-end emission estimate for corn-based ethanol, it lacks support for its climate conclusion that "on average [corn-based ethanol] provides some GHG reduction in comparison to gasoline." 88 Fed. Reg. at 44,517. And that unsupported

conclusion potentially skewed EPA's ultimate assessment of the various factors and the volumes EPA set.

Accordingly, we hold that EPA failed to articulate a "rational connection between the facts found and the choice made" to use the results of the 2010 study, which, absent further explanation, renders its climate change analysis arbitrary. *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43 (internal quotation marks omitted). EPA placed significant weight on its climate conclusions in establishing the implied conventional renewable fuel volume requirement. If EPA cannot justify its use of the results of the 2010 study on remand, it will need to explain how other, appropriate data affect its climate conclusions, whether properly supported climate conclusions change EPA's assessment of the statutory factors, and whether its updated analysis justifies the volumes it set.

b.

Second, the Environmental Petitioners fault EPA for not using the results of the model comparison exercise EPA conducted to evaluate the Set Rule's climate change effects. The model comparison exercise studied five different models that estimate the effects of crop-based renewable fuel production and consumption on global GHG emissions by running hypothetical scenarios involving major increases in renewable fuel production through the models and comparing the results. *See* 88 Fed. Reg. at 44,501-02. Two of those models estimated that an increase in global demand for soybean oil-based biodiesel would lead to a net increase in GHG emissions, while one estimated a decrease. Model Comparison Exercise Tech. Document at 113 (J.A. 1993). The Environmental Petitioners argue that because the model outputs are based on a common set of hypothetical scenarios about renewable fuel production, the model comparison

exercise, and not the literature review, is "the best evidence" concerning the Set Rule's effect on climate change. Env't Pet. Br. 30.

But this argument misunderstands the purpose of the model comparison exercise. In its Notice of Proposed Rulemaking, EPA stated that it was conducting the exercise to better understand the capabilities of various models and to locate the underlying reasons model estimates differ, not to produce a "single robust estimate of the [GHG] impacts associated with the volume requirements." RFS Program: Standards for 2023-2025 and Other Changes, 87 Fed. Reg. 80,582, 80,611 (proposed Dec. 30, 2022). And EPA ultimately decided not to rely on the exercise's results to inform final volumes because it wanted to "engage with stakeholders and receive feedback . . . before deciding how to use any results in a rulemaking context." 88 Fed. Reg. at 44,501. That was because it found that the models had differing underlying assumptions and degrees of flexibility that produced fundamentally different analyses, underscoring the need for further study before EPA could use the models to estimate the effects of the Set Rule. For current purposes, EPA simply noted that insights derived from the model comparison exercise would inform its "future analytical efforts" to assess the effect of the RFS Program on climate change. *Id.* Given EPA's acknowledgement that its previous approach is outdated, these new efforts are welcome.

In the meantime, we do not fault EPA for choosing not to use the results of the model comparison exercise to evaluate the Rule's climate effects. We give an "extreme degree of deference" to the "evaluation of scientific data within [EPA's] technical expertise," *Sinclair Wyo. I*, 101 F.4th at 883 (internal quotation marks omitted), including the agency's assessment that more research on analytical tools like these climate change

models is needed before they are more broadly deployed. Accordingly, we hold that EPA's decision not to use the results of the model comparison exercise to evaluate the effects of the Set Rule on climate change was reasonable and reasonably explained.

c.

Third, the Environmental Petitioners argue that EPA erred in not including the "carbon opportunity cost" of renewable fuel production in its analysis of the effects of the Set Rule on climate change. Env't Pet. Br. 31-32. The carbon opportunity cost of renewable fuel production refers to a calculation of the difference between the climate benefits of using land to grow crops for renewable fuel and hypothetical uses of the same land in other ways potentially more beneficial to the climate. One of those possible uses would be to let land lie fallow to regenerate native vegetation, which sequesters carbon dioxide. The Environmental Petitioners extrapolate from that possibility that the CAA's requirement that EPA consider "the impact of the production and use of renewable fuels on the environment," 42 U.S.C. § 7545(o)(2)(B)(ii)(I), obligates the agency to compute how much carbon dioxide the land could sequester if, rather than producing crops for renewable fuels, it were allowed to revert to native vegetation. By not incorporating such a computation into its analysis, the Environmental Petitioners contend, EPA missed a "significant climate change impact of land use" related to renewable fuels. Env't Pet. Br. 32.

That argument centrally relies on the flawed assumption that, in the absence of the Set Rule, farmers would repurpose land from growing renewable fuel feedstocks to lying fallow and regenerating native vegetation. But the Act empowers EPA to set volumes for renewable fuels that obligated parties

must meet; it does not authorize the agency to control farmers' land use decisions. And any assumption that land not used for renewable fuels will necessarily lie fallow or be devoted to regenerating native flora is questionable as a factual matter. Experience shows that land no longer used to grow crops is often sold for commercial or residential development.

EPA accordingly set aside the only study in the literature that attempted to incorporate a carbon opportunity cost into its analysis because it assumed forest regeneration as the alternative land use. EPA instead assumed, consistent with the bulk of the empirical literature, that absent the Set Rule land would be used in a "business as usual" fashion—which is to say, as it was used before the Set Rule came into effect. RIA at 138 n.241 (J.A. 1446 n.241). We therefore hold that EPA's decision not to adopt the Environmental Petitioners' preferred analysis of carbon opportunity cost effects of the Set Rule on climate change was reasonable and reasonably explained.

* * *

In response to the Environmental Petitioners' claims, we hold that EPA's climate change analysis under the CAA was arbitrary and capricious for its failure to adequately explain why it used a nearly 15-year-old study to estimate the effect of crop-based renewable fuel production on GHG emissions rather than the updated literature review it had conducted for expressly that purpose and used to estimate effects of other types of renewable fuels. We reject the Environmental Petitioners' other challenges to the Set Rule under the CAA and APA.

B. Endangered Species Act

Separately, the Environmental Petitioners challenge the compliance of EPA, NMFS, and FWS with the ESA and its

implementing regulations. They argue that each of those entities acted arbitrarily and capriciously—and in the case of FWS, contrary to the statute—in determining that the Set Rule was not likely to adversely affect endangered species or their critical habitats. We grant the Environmental Petitioners' petition with respect to FWS, concluding that its concurrence was arbitrary and capricious. We reject all the other ESA challenges.

Section 7 of the ESA imposes a duty on federal agencies to prevent harm to endangered wildlife and flora, reflecting a "conscious decision by Congress to give endangered species priority over the 'primary missions' of federal agencies." *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 185 (1978). Specifically, under Section 7(a)(2), each federal agency "shall . . . insure that any action . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of [critical] habitat of such species." 16 U.S.C. § 1536(a)(2). To ensure compliance with that statutory mandate, the ESA's implementing regulations require each federal agency to determine whether its proposed action "may affect listed species or critical habitat." 50 C.F.R. § 402.14(a). If so, the agency must engage in formal consultation with NMFS and FWS (collectively, the Services) as to the potential effects of its proposed action on the endangered species or their critical habitats under each Service's jurisdiction and discuss steps the agency can take to mitigate harm. *Id.* § 402.14(g).

After the agency determines that its action "may affect" endangered species or their critical habitats, the factual record may nonetheless support a determination that the agency's action "is not likely to adversely affect any listed species or critical habitat." *Id.* § 402.14(b)(1). If the agency so determines and the Services concur with that assessment, formal

consultation is not required. *Id.* In ESA parlance, those sequential determinations are referred to as "may affect" (as opposed to "no effect") and "is not likely to adversely affect" determinations. The criteria for making those determinations are set forth in two separate sets of regulatory materials.

The Services' joint Endangered Species Consultation Handbook (Handbook) establishes the procedures for the Services' consultations with federal agencies pursuant to ESA Section 7. It states that a "may affect" determination is appropriate when a proposed agency action "may pose **any** effects on listed species or designated critical habitat." Handbook at xvi (J.A. 2127) (emphasis in original). Conversely, it states that a "no effect" determination is appropriate when a proposed agency action will not affect a listed species or designated critical habitat. Finally, it states that a determination that the agency action "is not likely to adversely affect" listed species or critical habitat is appropriate when effects have been identified, but they "are expected to be discountable, insignificant, or completely beneficial." Handbook at xv (J.A. 2126). An identified but "discountable" effect is one that is "extremely unlikely to occur." *Id.* at xvi (J.A. 2127). An "insignificant" effect is one that the agency identified but would not "be able to meaningfully measure, detect, or evaluate." Handbook at xvi (J.A. 2127).

Separately, the ESA's implementing regulations define the "effect" of an agency action as "all consequences to listed species or critical habitat that are caused by the proposed action." 50 C.F.R. § 402.02(d). That regulation lists two criteria that together identify when a consequence is caused by an agency action (and thus counts as an "effect" under the ESA): A consequence is a cognizable effect of an agency action when (1) the agency action is the "but for" cause of the

consequence; and (2) the consequence is "reasonably certain to occur." *Id.*

How to reconcile the apparent tension between the definition of "effect" in the regulations (reasonably certain effect of which the federal action is a but-for cause) and the definition of a "may affect" determination in the Handbook (the federal action may pose *any* effect) is not discussed in either source.

1.

The Environmental Petitioners first argue that EPA's determination in its Biological Evaluation that the Set Rule "may affect" but is "not likely to adversely affect" endangered species or their critical habitats was arbitrary and capricious for two reasons. Neither has merit.

In its Biological Evaluation, EPA determined that the Set Rule may affect endangered species or their critical habitats if they induce the conversion of critical habitat into farmland to grow crops (corn, soybeans, and canola) for renewable fuels, which could also impair water quality by increasing fertilizer and pesticide runoff into nearby waterways. As part of its estimation of the magnitude of the Set Rule's effects, EPA predicted how many acres of land the Rule would cause to be newly converted to grow crops for renewable fuels. To make that prediction, EPA extrapolated from recent studies evaluating the effect of renewable fuel production on the conversion of land to farmland. And, to predict where land conversion was likely to occur, EPA used data-based models that allocate the anticipated increased cropland acreage across the United States. By overlaying the predicted locations of land conversions onto the habitat ranges of endangered species, EPA generated a list of those endangered species that could be

affected by the Set Rule and estimated how much of their habitat was at risk of conversion.

The Environmental Petitioners first claim that EPA set the wrong environmental baseline against which to measure the effects of the Set Rule on endangered species or their critical habitats. They argue that, rather than calculating incremental land conversion as EPA did by comparing the effects of the Set Rule to a hypothetical circumstance in which the Set Rule did not go into effect, EPA should have compared the effects of the Set Rule to a hypothetical circumstance in which the entire RFS Program, from 2007 onward, never existed. Env't Pet. Br. 18. They defend that baseline by pointing out that "EPA had full statutory discretion to set volumes for corn and soy[beans] at zero." *Id*. In the Environmental Petitioners' view, using their preferred baseline would have forced EPA to reckon with the cumulative environmental effects of all previous rules promulgated since the RFS Program's inception for which EPA did not comply with its ESA obligations.

It is true that EPA has generally failed to comply with its ESA obligations in previous RFS Program rulemakings. In *American Fuel & Petrochemical Manufacturers v. EPA*, for example, we held that EPA's failure to make an effects determination as to the 2018 RFS Rule violated the ESA. 937 F.3d at 597-98. And in *Growth Energy v. EPA*, 5 F.4th 1 (D.C. Cir. 2021), we held that EPA's determination that its 2019 RFS Rule would have "no effect" on endangered species or their critical habitats was arbitrary and capricious. *Id.* at 32.

But the fact that the Set Rule represents EPA's first full attempt to comply with its obligations under the ESA does not mean the agency must here account for the RFS Program's cumulative effects on endangered species since the program's outset. The Environmental Petitioners identify no authority for

that proposition, and the ESA's implementing regulations foreclose it. The regulations define an "environmental baseline" as "the condition of the listed species or its designated critical habitat in the action area, without the consequences to the listed species or designated critical habitat *caused by the proposed action*." 50 C.F.R. § 402.02(d) (emphasis added). In this case, the proposed agency action is the Set Rule establishing volumes for 2023 through 2025. The environmental baseline includes "the past and present impacts of all Federal . . . actions." *Id.* That definition requires EPA to include the cumulative impact of previous rules promulgated under the RFS Program in its environmental baseline. Accordingly, EPA's use of a baseline that excludes only the effects of the Set Rule, and not the full impact of the Program since its inception, was reasonable and not contrary to law.

The Environmental Petitioners next contend that EPA failed to analyze any harms to endangered species from increased water pollution despite listing it as a potential effect of the Set Rule. EPA acknowledged that cropland expansion attributable to the Set Rule could result in increased fertilizer and pesticide runoff into waterways near expected areas of cropland expansion, leading to problems like hypoxia for endangered species. But, contrary to the Environmental Petitioners' claims, EPA did analyze those harms, ultimately determining that the effects on endangered species were discountable (that is, extremely unlikely to occur) or insignificant (that is, not measurable). EPA based that determination on extrapolation from a 2021 study published by Chen et al. (Chen study) that modeled the impact on water quality from crop expansion in the Missouri River Basin. That study estimated that crop expansion had led to, at most, an increase of 0.8% and 2.1% in the amount of nitrogen and phosphorous, respectively, in that waterway, representing only

"minor increase[s]" from existing conditions. EPA Biological Evaluation at 178, 234 (J.A. 1197, 1253).

The Environmental Petitioners critique the Chen study for not addressing upstream tributaries. But EPA determined that study was a "reasonable proxy" for the effects of the Set Rule and that it "provides the best information available" on the topic; the Environmental Petitioners do not point to any alternative source in the record, let alone a better one. EPA Biological Evaluation at 175 (J.A. 1194). Because "what constitutes the best scientific and commercial data available is itself a scientific determination," it "belongs to the agency's special expertise and warrants substantial deference." *Nat'l Fam. Farm Coal. v. EPA*, 966 F.3d 893, 925 (9th Cir. 2020) (citation and internal quotation marks omitted); *see also Shafer & Freeman Lakes Env't Conservation Corp. v. FERC*, 992 F.3d 1071, 1090 (D.C. Cir. 2021) (holding that FWS's judgment in selecting a particular method for calculating the effects of agency action "merits the deference traditionally given to an agency when reviewing a scientific analysis within its area of expertise") (citation and internal quotation marks omitted).

We thus hold that EPA reasonably considered the effects of increased water pollution from the Set Rule on endangered species; its determination that the Set Rule is not likely to adversely affect endangered species or their critical habitats was reasonable and reasonably explained.

2.

The Environmental Petitioners also challenge as arbitrary and capricious the National Marine Fisheries Service's concurrence with EPA's view that the Set Rule is not likely to adversely affect endangered species or their critical habitats. In its Biological Evaluation, EPA identified 73 ESA-listed

species and 57 designated critical habitats under NMFS jurisdiction that the Set Rule may affect through habitat conversion and water pollution. Based on the information EPA provided, NMFS considered two different scenarios in which harm could come to species under its jurisdiction: when a species lives (1) near or (2) downstream of a potential crop conversion area. NMFS determined that the effects of the Set Rule on species in the first scenario were discountable, and that in the second scenario they were insignificant. The Service therefore concurred with EPA that, while the Set Rule may affect endangered species or critical habitat, it was not likely to adversely affect them.

The Environmental Petitioners concede that NMFS's "discountable" determination was reasonable, but contest NMFS's "insignificant" determination as to species or habitat downstream of potential crop conversion areas. That determination is arbitrary, they say, because "insignificant" means that "*no* harm will occur to even a single individual of that species, not that impacts appear tiny," and EPA's own Biological Evaluation predicted, for example, hundreds of additional acres in corn cultivation and thousands more in soybean cultivation in the Chesapeake Atlantic Sturgeon's range. Env't Pet. Br. 24; EPA Biological Evaluation at 227 (J.A. 1246). But the Handbook defines an "insignificant" effect as one that a person would not "be able to meaningfully measure, detect, or evaluate." Handbook at xvi (J.A. 2127). So, while the Environmental Petitioners are correct that an effect cannot be insignificant if it harms an endangered species or its habitat, the nature and magnitude of the effect matters. A harm that cannot be meaningfully detected or measured cannot be attributed to an agency action.

NMFS determined here that the effect of the Set Rule on overall water pollutant concentrations was extremely minor,

representing only a slight change from baseline conditions. NMFS's research demonstrated that species' exposure to pollutants like pesticides can vary by over 10% due to intrinsic differences in climate and soil conditions and that species' mortality rates can vary by more than 5% even if the species are not exposed to additional pollutants. NMFS Concurrence at 22 (J.A. 2063). In view of those facts, NMFS reasonably determined that it could not meaningfully measure or detect the projected effects of the Set Rule on species or habitat downstream of potential crop conversion areas and that accordingly, those effects are insignificant. As NMFS put it, an extremely minor increase in pollutant exposure leads to minimal increases in exposure and mortality among species, and those minimally increased levels remain within the routine variability of "the baseline conditions prior to any crop conversion." NMFS Concurrence at 22 (J.A. 2063).

Finally, the Environmental Petitioners argue that, even if NMFS's determinations as to the effects of the Set Rule on endangered species or habitats were reasonable, NMFS erred by failing to give the "benefit of the doubt" to the species, contradicting what petitioners claim is its longstanding practice and policy. Env't Pet. Br. 26. In support of that claim, they quote from the Handbook, which instructs: "If the nature of the effects [of the agency action] cannot be determined, benefit of the doubt is given to the species. Do not concur in this instance." Handbook at 3-12 (J.A. 2134). The problem with that argument is that EPA did determine the nature of the effects of the Set Rule: It could lead to habitat conversion and increased water pollution that might harm endangered species or their critical habitats. It then further determined, consistently with the Handbook, that those effects were either discountable or insignificant. Thus, NMFS did not err by concurring with EPA on those grounds.

3.

The Environmental Petitioners also challenge the Fish and Wildlife Service's concurrence with EPA as both contrary to the ESA and arbitrary and capricious. Unlike NMFS, FWS did not concur with EPA by determining the Set Rule's effects on the 685 endangered species and 155 critical habitats under FWS jurisdiction to be insignificant or discountable. Instead, FWS made a threshold determination that the Set Rule would have "no effect" on any endangered species or critical habitat, and that it follows "[l]ogically" from such determination "that these species or critical habitats are not likely to be adversely affected by the action." FWS Concurrence at 1 & n.2 (J.A. 2068 & n.2).

FWS rested its "no effect" determination on the definition of the "effect" of an agency action in the ESA implementing regulations. FWS reasoned that, because EPA could not *identify* with geographical certainty where any cropland conversions triggered by the Set Rule would occur, the Rule could not *be* the but-for cause of any such conversions, making them not "reasonably certain to occur." 50 C.F.R. § 402.02. Accordingly, FWS determined that the Set Rule would have "no effect" on any endangered species or critical habitat under 50 C.F.R. § 402.02 and thus would not likely adversely affect those species or habitats.

The Environmental Petitioners argue that FWS's approach is contrary to the ESA because it relies on the definition of "effect" in the ESA's implementing regulations in a way that is not reflected in—and indeed conflicts with—the relevant Handbook passage, which FWS and NMFS jointly developed and have treated as authoritative for more than 50 years. EPA identified hundreds of species under FWS jurisdiction that it concluded the Rule "may affect." In the Environmental

Petitioners' view, FWS then failed to use scientific techniques to assess the potential effects on those species, instead resorting to a novel, acontextual reading of a regulatory definition that conflicts with EPA and NMFS's determinations.

For its part, EPA contends that FWS's concurrence was a reasonable application of ESA's implementing regulations and is supported by the Handbook because FWS has the final responsibility, as the concurring service, to determine the "effects of the action." EPA Br. 130. And, EPA claims, it is of no import that NMFS and FWS rested their concurrences on different rationales because "neither the ESA, its regulations, nor the Handbook mandate[s] a uniform methodology for making no-effect/may-effect determinations." EPA Br. 131-32.

Faced with those disparate approaches, neither party provides a cohesive framework for understanding the relationship between the ESA's implementing regulations and the Handbook's guidance. The Environmental Petitioners ignore the plain text of 50 C.F.R. § 402.02, which defines the "effect" of an agency action. If there is no effect of an agency action because, for example, it is not "reasonably certain" that a consequence of the action will occur, it is hard to see how an agency action "may affect" an endangered species or critical habitat. Handbook at xvi (J.A. 2127). EPA, on the other hand, ignores the tensions between the Handbook and the ESA's implementing regulations. For example, if a consequence must be "reasonably certain to occur" to constitute an "effect" of an agency action, 50 C.F.R. § 402.02, how can an action's effects ever be identifiable because they "may affect" species, yet be "discountable," which the Handbook defines as one that is "extremely unlikely to occur"? Handbook at xvi (J.A. 2127). And it is difficult to see how FWS can be right that the Rule had "no effect" at all if EPA and NMFS correctly determined

that there were identifiable effects of the Set Rule—albeit effects that were "insignificant" or "discountable."

We need not resolve the parties' conflicting legal positions because the inadequacy of FWS's record and reasoning alone makes clear that FWS's concurrence was arbitrary and capricious. Specifically, FWS's concurrence failed to engage with EPA's resolution of the problem of geographical uncertainty using forecasting models. FWS based its "no effects" determination chiefly on the lack of geographical certainty as to where cropland conversions would occur. That information is inevitably somewhat uncertain because EPA cannot control where or whether farmers will convert land to cropland to meet the increased supply for renewable fuels induced by the Set Rule. But in its Biological Evaluation, EPA acknowledged the geographical uncertainty and addressed it using forecasting models to predict the locations where cropland conversion is most likely to occur. For new acres of corn and canola, EPA employed a "probabilistic approach" to select plots projected for conversion from land EPA identified as the most likely to be converted to cropland based on historical land use conversions. EPA Biological Evaluation at 133-34, 166 (J.A. 1152-53, 1185). Repeating that process many times, EPA generated a list of locations most likely to be converted under the Set Rule to cropland to grow corn and canola. And for new acres of soybeans, EPA developed a model that ranked acres of land in the United States by their suitability for soybean farming based on several factors, including the land's ability to grow soybeans, proximity to existing soybean fields, and historic soybean cultivation rates. EPA then used that model to predict where conversion of land to soybean cultivation is most likely to occur.

FWS's concurrence acknowledged the existence of those models, yet did not explain why they were flawed or

inadequate to support an aggregate estimate of the geographical impact of the Set Rule. FWS simply dismissed their results as uncertain. But certainty is not required. FWS simply ignored what were, in EPA's view, the "best estimates using the available data" to resolve inherent uncertainty regarding the geographical effects of the RFS Program. EPA Biological Evaluation at 231 (J.A. 1250); Exchange Between EPA and NMFS at 4 (J.A. 1278). Because FWS failed to engage with the results of those models or, in the alternative, identify why they did not constitute the best available science and data, it "entirely failed to consider an important aspect of the problem." *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43. Accordingly, we hold that FWS's concurrence with EPA's bottom line based on FWS's determination that the Set Rule will have "no effect" on endangered species or their critical habitats was arbitrary and capricious.

* * *

In sum, we grant the petition as to two of the Environmental Petitioners' challenges: The CAA challenge to EPA's climate change analysis and the ESA challenge to FWS's concurrence with EPA's Biological Evaluation. As to those two challenges, the Environmental Petitioners are correct that EPA and FWS, respectively, failed to adequately explain the basis for their decisions. We deny the petition in all other respects.

C. Remedy

With respect to remedy, the ordinary response to a violation is to vacate the unlawful agency action. *See* 5 U.S.C. § 706(2). And the Environmental Petitioners request vacatur of the Set Rule's volumes of corn-based ethanol and soybean oil-based renewable fuels. But in some cases, instead of vacating the action we remand for the agency to correct its

errors. *See Allied-Signal, Inc. v. U.S. Nuclear Regul. Comm'n*, 988 F.2d 146, 150-51 (D.C. Cir. 1993). The appropriateness of the remand-without-vacatur remedy turns on two factors: "(1) the seriousness of the deficiencies of the action, that is, how likely it is the agency will be able to justify its decision on remand; and (2) the disruptive consequences of vacatur." *United Steel v. Mine Safety & Health Admin.*, 925 F.3d 1279, 1287 (D.C. Cir. 2019) (citation and internal quotation marks omitted).

Here, both factors support remanding without vacatur to give the agencies an opportunity to correct their errors. As for the likelihood of justifying their decisions on remand, EPA and FWS each erred by inadequately explaining the connection between the result it reached and the record underlying its decision. The CAA provides EPA with significant discretion as to how it structures its analysis of the effect of the Set Rule on climate change. The agency may well be able to justify its chosen volumes so long as it adequately explains why the older 2010 study, rather than the updated literature review, remains the best source of data for estimating crop-based renewable fuels' long-term effects on GHG emissions. Similarly, FWS may be able to better explain its reasoning for concurring with EPA's determination that the Set Rule is not likely to adversely affect endangered species or their critical habitats. Both FWS and NMFS received the same set of data and analyses from EPA, and NMFS was able to adequately explain its decision. Moreover, vacatur would be highly disruptive to all stakeholders in the RFS Program as the compliance deadlines for 2023 and 2024 have already passed.

Accordingly, we remand to EPA and FWS without vacating the Set Rule's volumes for further explanation of their decisions.

II. Refiner Petitioners

The Refiner Petitioners challenge several aspects of the volumes established in the Set Rule. First, they claim EPA's 2023 and 2024 volume requirements were impermissibly late and the 2023 Supplemental Standard was not authorized by statute. Second, they assail the process EPA used to set all the volumes as contrary to the CAA or alternatively, arbitrary and capricious. Third, they attack the volumes established in the Set Rule for specific categories of renewable fuels. Fourth, they dispute EPA's reliance on the economic theory that the cost to obligated parties of complying with the Set Rule's volume mandates is passed through to consumers, also known as the "RIN-passthrough theory." We address each of those challenges in turn, concluding they either lack merit or were not properly preserved.

A. Late and Supplemental Standards

We begin with legal claims that the 2023 and 2024 volume requirements were impermissibly late and that the 2023 Supplemental Standard was not authorized by statute. As explained below, our precedent forecloses both contentions.

1.

Refiner Petitioners ask us to set aside the 2023 and 2024 volume requirements because EPA missed the statutory deadlines for promulgating them. In years without a statutory volume requirement, the CAA requires EPA to promulgate volume requirements "no later than 14 months before the first year for which such applicable volume will apply." 42 U.S.C. § 7545(o)(2)(B)(ii). That means EPA was required to promulgate 2023 requirements by the end of October 2021 and 2024 requirements by the end of October 2022. But EPA did not promulgate volume requirements for either year until July

2023. *See* 88 Fed. Reg. at 44,468. Requirements for both years thus were tardy, and the 2023 requirements, promulgated midway through that compliance year, also were partially retroactive. Refiner Petitioners contend that we should therefore vacate the requirements for both years and instruct EPA to set new requirements no higher than the 2022 requirements. We disagree.

We repeatedly have held that EPA may promulgate late, and even retroactive, volume requirements so long as it "reasonably considers and mitigates any hardship caused to obligated parties by reason of the lateness." *Sinclair Wyo. I*, 101 F.4th at 887 (citation omitted). For example, in *National Petrochemical & Refiners Association v. EPA*, 630 F.3d 145 (D.C. Cir. 2010), we rejected a challenge to late and partially retroactive volume requirements because EPA reasonably considered whether obligated parties had adequate lead time and access to a sufficient number of RINs to comply with the delayed requirements. *See id.* at 165; *see also Sinclair Wyo. I*, 101 F.4th at 887 (applying *National Petrochemical*); *Monroe Energy, LLC v. EPA*, 750 F.3d 909, 920 (D.C. Cir. 2014) (same).

EPA reasonably considered the requisite factors here. It explained that the market would produce enough renewable fuel to enable obligated parties to satisfy the requirements. *See* 88 Fed. Reg. at 44,478. It also explained that obligated parties would have at least nine months to bring themselves into compliance with the 2023 requirements, and at least 22 months to bring themselves into compliance with the 2024 requirements. *Id.* at 44,479. And EPA noted that any remaining hardship would be minimal because, if an obligated party could not acquire sufficient RINs within those times, it could still achieve compliance by using carryover RINs or carrying forward RIN deficits. *Id.*

Refiner Petitioners make two objections. First, they contend that our precedents approving late volume requirements are inapposite because they involved requirements derived from statutory volume tables whereas the volumes here were set by rule. *ACE* squarely forecloses that argument. There, we held that the principles established in *National Petrochemical* and *Monroe Energy* govern regardless of whether the tardy volume requirements were derived from the statutory tables or imposed in the first instance by EPA. *See* 864 F.3d at 721. Second, Refiner Petitioners contend that EPA did not give enough lead time for the renewable-fuel industry to increase production in response to the higher volume requirements. In other words, the industry is unlikely to produce enough fuel to enable obligated parties to achieve compliance. But EPA set volume requirements within the range that it found the renewable-fuel industry could produce. Moreover, when EPA promulgated the requirements, it noted that "RIN generation data from the first quarter of 2023 suggest[ed] the market [was] on track to supply the volumes [it was] finalizing for 2023." 88 Fed. Reg. at 44,478. In light of that factual finding—which Refiner Petitioners do not contest—EPA reasonably concluded that the RIN supply would be adequate.

2.

Refiner Petitioners also challenge the 250-million-gallon 2023 Supplemental Standard. EPA imposed that standard in response to *ACE*, which vacated EPA's decision to reduce the 2016 statutory renewable-fuel requirement by 500 million gallons. *See ACE*, 864 F.3d at 713. To remedy the underlying legal error, EPA added 250 million gallons to both the 2022 and 2023 volume requirements. *See Sinclair Wyo. I*, 101 F.4th at 893. We upheld the 2022 Supplemental Standard in *Sinclair Wyoming I* as a valid exercise of EPA's authority under 42

U.S.C. § 7545(o)(3)(B)(i) to "ensure" that applicable volumes are "met." *See id.* at 893-96. Because Refiner Petitioners identify no meaningful difference between the 2022 and 2023 Supplemental Standards, we are bound to reject this challenge.

B. All Volumes

The Refiner Petitioners argue that the process EPA used to set all volumes in the Set Rule was contrary to the statute and arbitrary and capricious for two reasons. First, they claim EPA exceeded the bounds of the CAA by relying on a policy of continuously increasing volumes that Congress did not intend it to consider. Second, like the Environmental Petitioners, they contend that EPA's weighing of the statutory factors was arbitrary and capricious—with the Refiner Petitioners arguing that the monetized costs of the Set Rule are unjustifiably greater than its monetized benefits. Neither claim succeeds.

1.

The Refiner Petitioners argue that EPA "prioritized its own policy over Congress's text," relying on an "extra-statutory . . . policy of ever-increasing volumes of renewable fuel" that misreads Congress's intent. Refiner Pet. Br. 12-13, 14-15. For support, the Refiner Petitioners point to the statutory mandate that EPA set volumes based on "a review of the implementation of the [RFS Program]" in prior years together with its analysis of the six factors Congress specified. 42 U.S.C. § 7545(o)(2)(B)(ii). The Refiners stress that, because some of those factors may weigh against higher renewable fuel volumes, the volumes that EPA set can only be explained as the result of a tacit EPA policy of ever-increasing volumes.

The Refiner Petitioners also point to three fuel-specific statutory guardrails as indicia that Congress did not intend EPA

to require ever-greater renewable fuel volumes: Congress set a floor for biomass-based diesel volumes at one billion gallons but gave no "direction that biomass-based diesel should increase aspirationally year-over-year." Refiner Pet. Br. 14. It required advanced biofuel to make up at least as high a percentage of total renewable fuel as it did in 2022, thereby effectively limiting the implied conventional renewable fuel volume by linking it to the volume of less readily available advanced biofuel. And Congress required EPA to set the cellulosic biofuel volume at a level that would not require it to issue a waiver reducing those volumes in the future, thereby limiting the volumes to what is reliably attainable. *See id*. at 13-14 (citing 42 U.S.C. § 7545(o)(2)(B)(iii)-(v)). The implication of those guardrails, according to the Refiner Petitioners, is that EPA should have set lower volumes for renewable fuels.

Refiner Petitioners catalog statutory indicia that Congress did not intend EPA to employ a policy of setting ever-increasing RFS volumes, but they fail to establish that EPA used any such policy in setting the volumes that it did. They do not, for example, contend that EPA exceeded any of the guardrails they identify. The bare fact that the volumes established in the Set Rule increase each year from 2023 to 2025 does not show that EPA followed a tacit policy of continuous expansion contrary to the statute as written.

Refiner Petitioners also point to EPA's statement in the Final Rule that "[t]he volumes that [it] is finalizing continue to support ongoing growth in renewable fuels, recognizing their benefits, and based on EPA's consideration of the multiple factors identified in the statute." 88 Fed. Reg. at 44,473. This, they suggest, shows EPA's impermissible adherence to an extra-statutory goal to increase volumes each year from 2023 to 2025. But nothing about that statement suggests action

inconsistent with the terms of the statute as Refiner Petitioners themselves read it. We therefore reject the Refiner Petitioners' contention that EPA violated the Act by relying on any extra-statutory factor of ever-increasing growth of the requisite volumes of renewable fuels.

2.

Like the Environmental Petitioners, the Refiner Petitioners also argue that EPA's weighing of the statutory factors was arbitrary and capricious because it failed to account for the large disparity between the benefits and costs of the Set Rule. Specifically, they point to the Rule's monetized cost in increased fuel prices, which was estimated at $23.8 billion from 2023 to 2025, while the monetized benefit of improved energy security was estimated at $513 million. By not addressing that disparity when it set the challenged volumes, they argue, EPA failed to consider an important aspect of the problem, rendering its volumes arbitrary and capricious.

But the Refiner Petitioners' argument fails for the same reason as the Environmental Petitioners'. As explained in Section I.A.1, the CAA does not require EPA to conduct a cost-benefit analysis to set volumes. And nothing in our precedent supports a freestanding requirement that, in setting volumes, EPA must balance the quantified costs and benefits of each volume it sets, let alone that the quantified benefits of the volume must outweigh the quantified costs. Instead, the statute affords EPA discretion in assessing the statutory factors. EPA explained how it weighed the statutory factors in setting the volumes it did, and its decision to set those volumes was not arbitrary and capricious simply because the estimated quantified costs of the Rule were greater than the quantified benefits. We therefore deny the Refiner Petitioners' various

challenges to the process EPA used to set all volumes in the Set Rule.

C. Conventional Renewable Fuels

Next up is Refiner Petitioners' contention that EPA arbitrarily set unattainable implied volume requirements for conventional renewable fuel, as primarily met by corn ethanol. EPA set those volumes at 15 billion gallons per year even though its candidate volume projections ranged from about 13.8 billion to 14 billion gallons per year. *See* 88 Fed. Reg. at 44,517. In doing so, EPA recognized that ethanol production was unlikely to reach 15 billion gallons in any year through 2025. *Id.* But it noted that "[t]he implied volume requirement for conventional renewable fuel can also be satisfied by non-ethanol advanced biofuel, such as conventional biodiesel and renewable diesel or advanced biodiesel and renewable diesel beyond what is required by the advanced biofuel volume requirement." *Id.* And it reduced the non-cellulosic advanced biofuel requirement by an amount sufficient to offset the projected ethanol shortfall. *See id.* at 44,516. In sum, EPA shifted slightly more than one billion gallons per year from the implied non-cellulosic advanced biofuel volume to the implied conventional volume.

EPA made this decision in an effort to incentivize a push beyond the E10 blendwall. *See id.* at 44,517. By shifting volumes from the advanced biofuel requirement to the conventional requirement, EPA permitted obligated parties to satisfy that volume with *either* type of fuel. In doing so, EPA promised rewards for market actors who find ways to enable increased ethanol consumption—for example, by producing more motor vehicles that can use fuel with higher concentrations of ethanol. But EPA declined to mandate increased ethanol consumption, which would have strained

obligated parties' ability to comply with their RFS obligations. These choices were reasonable and reasonably explained.

Refiner Petitioners primarily object that EPA's shifting of volumes will increase RIN prices for ethanol. Perhaps so. But the shift also reduced advanced biofuel volumes by corresponding amounts, so one might expect an offsetting decrease in RIN prices for that category. According to Refiner Petitioners, the offsetting reduction merely indicates that EPA arbitrarily set the advanced biofuel requirement too *low*. That objection is difficult to understand, for the shift allows Refiner Petitioners *more* compliance flexibility: If increased ethanol consumption proves impossible, Refiner Petitioners may achieve compliance by acquiring more RINs for advanced biofuel, which also count toward the total renewable fuel requirement, as would have been required absent the volume shift away from that category. And in any event, if the volume shift does engender an increase in ethanol RIN prices, that is not problematic standing alone. As we have explained, "increases in RIN prices are a completely understandable effect" of any regulatory "pressure to expand renewable volumes." *Alon Refin.*, 936 F.3d at 652.

Refiner Petitioners' other objections fare no better. They contend that EPA lacks statutory authority to tailor volume requirements in order to incentivize ethanol use. But ethanol is a kind of renewable fuel that the CAA seeks to incentivize, and EPA justified its decision by reference to the factors that the statute requires it to consider. *See* 88 Fed. Reg. at 44,517. Further, Refiner Petitioners suggest that EPA's decision will not impact the overall consumption of renewable fuel. That is true but irrelevant. As detailed above, EPA reasonably explained its decision to shift volume from a narrower category to a broader one.

D. Cellulosic Biofuels

Refiner Petitioners also challenge the cellulosic biofuel volume requirements, which were keyed to the amount of that fuel EPA thought would be produced in the relevant years. *See id.* at 44,482-83. In the notice of proposed rulemaking, EPA projected a 13.1 percent annual growth rate in the production of cellulosic biofuel over 2022 levels. *See id.* at 44,482. In the Final Rule, it revised that rate upward to 25 percent. *See id.*

Refiner Petitioners object that this projected growth rate was arbitrarily high. That is wrong. EPA based its initial projection on increased production in 2021 and 2022. After receiving comments, EPA concluded that the COVID pandemic had temporarily depressed growth over that time, so EPA expanded its sample size to consider production growth rates from 2015 through 2022. EPA reasoned that doing so would mitigate the effect of COVID-related distortions and so would more accurately reflect projected growth in the cellulosic biofuel industry through 2025. *See id.* at 44,483. Refiner Petitioners object that growth rates in the production of cellulosic biofuel were trending downward before the onset of COVID. *See* Response to Comments (RTC) at 30 (J.A. 1789). Nonetheless, it appears that year-over-year growth remained around 25 percent in April 2020, and EPA reasonably concluded that the pandemic brought additional headwinds. Under these circumstances, EPA reasonably based its projected growth rate on increases observed over a longer period.

E. RIN Cost-Passthrough Theory

Refiner Petitioners object to EPA's invocation of the "RIN cost-passthrough theory," which assumes that "obligated parties pass through their RIN costs to consumers and that fuel blenders reflect the RIN value of the renewable fuels in the price of the blended fuels they sell." *See* 88 Fed. Reg. at

44,505. As Refiner Petitioners note, we have recognized that this theory does not *always* hold true, and hardship exemptions might be required in instances where it does not. *See Sinclair Wyo. Refin. Co. v. EPA* (*Sinclair Wyo. II*), 114 F.4th 693, 712-14 (D.C. Cir. 2024). Yet we have also acknowledged that its central premise—refineries are able to pass RIN costs along to consumers—*is* generally true. *See id.* at 714 (RIN costs "*generally* are passed through from [obligated parties] to their customers" (emphasis in original) (citing *Alon Refin.*, 936 F.3d at 649)). Here, EPA reasonably invoked that generally true premise in setting generally applicable volume requirements.

EPA also invoked the RIN cost-passthrough theory in considering its obligations under the Regulatory Flexibility Act (RFA). That statute generally requires agencies to prepare a regulatory flexibility analysis for any rule subject to notice-and-comment rulemaking procedures. *See* 5 U.S.C. § 604(a). An agency need not do so, however, if it certifies that the rule will not have a significant economic impact on a substantial number of small entities. *See id.* § 605(b). EPA made such a certification based on a determination that small refineries would pass on their RIN costs to consumers. *See* 88 Fed. Reg. at 44,552. Refiner Petitioners contend this was arbitrary because, even if obligated parties generally pass RIN costs along to consumers, small refineries often may be unable to do so. Refiner Petitioners again invoke *Sinclair Wyoming II*, which held that EPA had arbitrarily relied on the passthrough theory to deny hardship exemptions to two small refineries. *See* 114 F.4th at 714. In particular, we criticized EPA for applying the theory without showing that every small refiner could immediately pass on RIN costs to its customers. *See id.*

That argument was not preserved before EPA in the rulemaking at issue here. The CAA generally forecloses judicial review of objections that were not "raised with

reasonable specificity during the period for public comment," 42 U.S.C. § 7607(d)(7)(B), and no commenter raised the RFA during that period. The Refiner Petitioners respond that they did raise the factual predicate for their RFA claim—namely that obligated parties do not in fact pass all of their RIN costs onto consumers. But they did so only in the context of a challenge to the volume requirements themselves. And as we have explained, assessing whether the general rule was arbitrary may be a far different inquiry from assessing an RFA claim, which is keyed to the specific impact of the rule on small businesses. Because no party put EPA "on notice" of an RFA challenge, the CAA now bars that claim. *Appalachian Power Co. v. EPA*, 135 F.3d 791, 818 (D.C. Cir. 1998).

* * *

We therefore deny the Refiner Petitioners' petition in all respects.

III. Neste

Neste challenges the Set Rule's recordkeeping and RIN generation provisions, arguing that they are arbitrary and capricious. According to Neste, the recordkeeping provisions improperly impose new location, amount, and certification requirements on renewable fuel producers. In Neste's view, EPA neither adequately justified these changes nor reasonably responded to objections. Separately, Neste asserts that EPA failed to justify revisions to its RIN generation requirements. We address each challenge in turn.

A. Recordkeeping Provisions

Neste is a foreign producer of renewable fuel that generates RINs under the RFS program. Section 211 of the

CAA mandates that qualifying renewable fuel must be produced from renewable biomass. *See* 42 U.S.C. § 7545(o)(1)(J). To ensure compliance, RFS regulations require that "any RIN-generating foreign producer of a renewable fuel . . . must keep records of feedstock purchases and transfers associated with renewable fuel for which RINs are generated, sufficient to verify that feedstocks used are renewable biomass." 40 C.F.R. § 80.1454(c).

Certain feedstocks, such as separated food waste, are subject to additional requirements to confirm compliance. *Id.* § 80.1454(j). Producers must maintain documents demonstrating the "amounts, by weight, purchased" from separated waste sources, *id.* § 80.1454(j)(1)(i), and the "location of any establishment(s) from which the waste stream consisting solely of . . . separated food waste . . . is collected," *id.* § 80.1454(j)(1)(ii). Initially, producers were required to submit a plan at registration documenting feedstock types, collection methods, verification measures, and, where applicable, how the cellulosic and non-cellulosic portions of waste would be quantified. *See id.* § 80.1450(b)(1)(vii)(B) (cleaned up).

Because producers were required to update their information each time their feedstock suppliers changed, in 2016, EPA proposed removing the registration requirement while maintaining the requirement that producers comply with general recordkeeping obligations under 40 C.F.R. § 80.1454. *See* Renewables Enhancement and Growth Support Rule, 81 Fed. Reg 80,828, 80,902-03 (Nov. 16, 2016). Producers still "must have documents from their feedstock supplier certifying that the feedstock qualifies as renewable biomass, describing the feedstock and identifying the process that was used to generate the feedstock." 40 C.F.R. § 80.1454(c)(1)(iii). In 2020, EPA finalized the removal of the registration

requirement and promulgated a provision at 40 C.F.R. § 80.1454(j)(1)(ii) to emphasize that the general requirement remained. *See* RFS Program: Standards for 2020 and Biomass-Based Diesel Volume for 2021 and Other Changes, 85 Fed. Reg. 7,016, 7,062 & n.230 (Feb. 6, 2020).

EPA's 2020 rule clarified that the term "location" in subsection (j) refers to "the physical address that the aggregator obtained the waste used as feedstocks from, not the physical or company address of the aggregator." *See id*. at 7,062 (clarifying the meaning of "location" in recognition that "many renewable fuel producers receive wastes used as feedstocks from an aggregator"). The Set Rule maintained those recordkeeping requirements without modification. *See* 88 Fed. Reg. at 44,547-48. EPA further clarified that self-declarations are not permitted under subsections 80.1454(d) and (j) due to the difficulty of auditing records that often originate from parties outside EPA's direct regulation, including those that originate outside the United States. *See* RTC at 367 (J.A. 1904). To allay producer concerns about requesting confidential business information from aggregators, EPA added a compliance option based on independent auditors' verification of records held by the feedstock aggregator. *See* 88 Fed. Reg. at 44,548.

1.

We deny Neste's challenge as to the Set Rule's location-recordkeeping requirement because that provision comports with RFS regulations without capricious deviation. Neste argues that the requirement imposes a new burden inconsistent with prior guidance. In its view, prior to the Set Rule, producers were permitted to comply by reporting the physical address of an aggregator rather than of the original source. Neste points to EPA's 2015 guidance, which it insists allowed

producers to rely on aggregator addresses and regional information, as evidence of a significant policy shift. RFS Registration Presentation at 3-4 (J.A. 2153-54). But this argument overlooks the plain language of the regulation, the statutory framework, and the broader purpose of the RFS Program.

EPA reasonably justifies requiring records that ensure feedstock can be traced back to its origins, rather than only to aggregators that receive feedstock from those original sources. First, the statute requires documentation of "the location of any establishment(s) from which the waste stream consisting solely of separated yard waste, separated food waste, or biogenic waste oils/fats/greases is collected," expressly focusing on recording the place where the feedstock originated. The point of the recordkeeping is to ensure traceability to confirm that feedstocks meet the statutory definition of renewable biomass. 40 C.F.R. § 80.1454(j)(1)(ii). Tellingly, the 2020 clarification frames "location" as the source from which "the aggregator *obtained* the waste used as feedstocks," distinguishing it from "the physical or company address of the aggregator." 85 Fed. Reg. at 7,062 (emphasis added). That reading of the regulation is further reinforced by a related provision, which requires all domestic producers to "keep documents . . . that identify where the feedstocks were produced and are sufficient to verify that feedstocks used are renewable biomass." 40 C.F.R. § 80.1454(d)(1).

Second, Neste fails to account for the regulatory history. Recordkeeping provisions have consistently required producers to document the origin of feedstocks. *Compare* 40 C.F.R. § 80.1454(c)(1), (d)(1) *with* (j)(1)(ii). The 2015 guidance Neste cites concerns only the RFS Program's now-revoked registration requirements and has no bearing on the recordkeeping obligations that remain in place. The 2015

guidance does not transform the Set Rule's discussion of the requirement to record source location into a new or unexplained deviation from the existing recordkeeping framework. *See El Puente v. U.S. Army Corps of Eng'rs*, 100 F.4th 236, 256 (D.C. Cir. 2024). To the contrary, there is no deviation. Neste has not pointed to any pre-2020 EPA rule or guidance that interprets the relevant recordkeeping provisions in a way that diverges from EPA's current understanding.

Finally, the purpose of the location recordkeeping requirement further underscores its validity. Accurate documentation of original source locations ensures that feedstocks qualify as renewable biomass. 40 C.F.R. § 80.1454(c)(1). Traceability prevents fraud, enhances accountability, and ensures renewable fuel achieves its intended environmental benefits. RTC at 365 (J.A. 1902). By requiring source documentation and prohibiting self-declarations, the Set Rule strengthens compliance, deters fraud, and promotes transparency. EPA reasonably explained that "it is not possible to verify self-declarations without additional documentation." RTC at 367 (J.A. 1904). These measures implement Congress's directive to prevent fraudulent RIN generation and ensure that renewable fuel meets rigorous environmental standards. *See* RTC at 365 (J.A. 1902).

2.

We also deny Neste's challenges to the Set Rule's requirement to document waste amounts. Neste argues that the Set Rule's amount-recordkeeping provision imposes new burdens by requiring detailed tracking of amounts at individual sources. In its view, EPA's prior practices and guidance permitted producers to rely on aggregate amount data rather than records for each specific source. Neste contends that the Set Rule effects a significant policy shift and imposes

impractical obligations on renewable fuel producers. These arguments are unpersuasive.

First, the unchallenged regulatory text plainly requires documentation of the "amounts, by weight, purchased" from waste sources. 40 C.F.R. § 80.1454(j)(1)(i). And such specificity is critical to verifying that the feedstocks qualify as renewable biomass. As EPA explained in its Response to Comments, the requirement ensures transparency and prevents the generation of fraudulent RINs. *See* RTC at 365 (J.A. 1902). EPA did not make substantive changes to the amount requirement in the Set Rule; Neste offers no evidence that EPA has ever interpreted this regulation differently than it does now. Its assertion that EPA has shifted policy is therefore unsubstantiated. *See El Puente*, 100 F.4th at 256.

Second, EPA provided a reasonable explanation for maintaining the amount-recordkeeping requirement. EPA clarified that, while the now-revoked registration provision only required enough information for EPA to determine it was *possible* for producers to obtain qualifying feedstocks, more detail is required if the recordkeeping requirements are to provide means to verify that the quantities of feedstocks used to produce renewable fuel are, in fact, in compliance with the statute. *See* RTC at 374-75 (J.A. 1911-12). While Neste argues that requiring records of feedstock amounts from each original source significantly burdens producers that rely on confidential information from aggregators to supply separated waste, Neste Comment at 12 (J.A. 552), any such burden is mitigated by the alternative recordkeeping pathway. *See generally* 40 C.F.R. § 80.1479; 88 Fed. Reg. at 44,548.

Under that alternative compliance option, aggregators can maintain detailed amount records on behalf of producers, alleviating concerns about operational inefficiencies or the

confidentiality of aggregators' sources. 40 C.F.R. § 80.1479(e); s*ee Spirit Airlines, Inc. v. Dep't of Transp.*, 997 F.3d 1247, 1255 (D.C. Cir. 2021) (citing *Chamber of Com. v. SEC*, 412 F.3d 133, 145 (D.C. Cir. 2005) ("Where a party raises facially reasonable alternatives, the agency must either consider those alternatives or give some reason for declining to do so.") (cleaned up)). EPA reasonably considered industry feedback in developing this pathway, which balances compliance oversight with practical flexibility. *See* RTC at 359-78 (J.A. 1896-1915); *see also Fox Television Stations*, 556 U.S. at 515; *Motor Vehicle Mfrs. Ass'n*, 463 U.S. at 43.

Accordingly, we reject Neste's challenges to the amount requirement.

3.

Neste also claims that the Set Rule arbitrarily eliminated the use of self-certification by aggregators. We conclude that EPA never issued authoritative guidance suggesting that aggregators could satisfy all RFS recordkeeping requirements merely with self-certification. To comply with the recordkeeping requirements, RIN-generating foreign renewable fuel producers and importers must secure certification from originating feedstock suppliers verifying that their feedstocks qualify as renewable biomass. Such certification has always been required of importers and foreign producers that generate RINs. *See* 40 C.F.R § 80.1454(c)(1)(iii). They must also "keep records of feedstock purchases and transfers . . . sufficient to verify that feedstocks used are renewable biomass." *Id.* § 80.1454(c)(1).

In the Set Rule, EPA merely reaffirmed that aggregators' self-certifications cannot meet these requirements because they lack independent verifiability. In this regard, RFS regulations have always stated that regulated entities must provide "such

other records as may be requested by EPA." 40 C.F.R. 80.1454(j)(1)(iii); *see* EPA Br. 98. EPA identified significant fraud risks that may lead to an increase in misrepresented feedstock compliance. RTC at 370 (J.A. 1907). Because aggregators may assume recordkeeping responsibilities, provided they register and submit to EPA oversight under Section 80.1479, EPA's approach reasonably balances the RFS program's integrity with flexibility for industry participants.

We therefore reject Neste's challenge to the certification requirement.

B. RIN Generation Provision

We further deny Neste's challenges to the Set Rule's restriction on generating RINs for fuel not ultimately used in the United States. Neste contends that this restriction constitutes an arbitrary and capricious policy shift and imposes retroactive burdens on producers. We are unpersuaded.

In the Set Rule, EPA reinforced that: (1) RINs may not be generated for renewable fuel that is not produced for use in the United States, 40 C.F.R. § 80.1426(c)(2); and (2) RINs corresponding to fuel that is not sold in the United States are invalid, *id.* § 80.1431(a)(1)(viii). *See* 88 Fed. Reg. at 44,582. Neste argues that those two provisions are at odds with one another and represent an unjustified substantive change that imposes new burdens on producers. However, when read together, those provisions reflect a consistent statutory mandate under the CAA. The statute directs EPA to ensure that "transportation fuel sold or introduced into commerce in the United States . . . contains at least the applicable volume of renewable fuel." 42 U.S.C. § 7545(o)(2)(A)(i). Congress focused on whether the renewable fuel is in fact consumed within the United States. It is insufficient that the fuel might at some point have been intended for U.S. consumption.

The interplay between subsections 80.1426(c)(2) and 80.1431(a)(1)(viii) addresses potential discrepancies between *intended* and *actual* fuel destinations, particularly in dynamic global markets where fuel originally produced for domestic use may ultimately be used elsewhere. *See* 88 Fed. Reg. at 44,547. By aligning RIN validity with actual domestic usage, EPA's interpretation ensures consistency with the statutory goal of promoting renewable fuel consumption within U.S. borders. *See, e.g.*, 88 Fed. Reg. at 44,525 n.264.

Neste contends that the Rule's prohibition on generating RINs from renewable fuel not used in the United States imposes impractical burdens by requiring producers to predict market dynamics and fuel destinations. However, EPA reasonably addressed these concerns by noting the regulatory flexibility available to foreign producers. *See* 88 Fed. Reg. at 44,547. Foreign producers can modify their storage practices to eliminate the need to predict the final destination of their fuel or, alternatively, rely on U.S.-based importers to generate RINs, so long as the requirements are met under 40 C.F.R. § 80.1426. *Id.*; RTC at 358 (J.A. 1895). And producers may notify EPA to invalidate RINs generated in error for fuel not ultimately used in the United States.

Neste also argues that the Set Rule's requirements amount to a retroactive regulatory change, creating unforeseen burdens on producers who generated RINs under prior rules. Retroactivity principles bar agencies from imposing new obligations on past actions without clear statutory authority. *See Sierra Club v. Whitman*, 285 F.3d 63, 68 (D.C. Cir. 2002). However, the record does not support this claim. Here, EPA's clarification reinforces its longstanding framework; it does not alter past obligations or otherwise impose any retroactive changes. *See* 88 Fed. Reg. at 44,547.

For these reasons, we hold that EPA's interpretation of RIN generation requirements is neither arbitrary nor capricious. Accordingly, we deny Neste's challenges.

IV. SABR

In addition to joining with Petitioners' other challenges as discussed above, SABR challenges EPA's decision to include renewable diesel and renewable jet fuel in the Set Rule's biomass-based diesel program. The biomass-based diesel category encompasses both biodiesel and renewable diesel. Both of those fuels are substitutes for fossil-based diesel but each is produced by a different chemical process. EPA Br. 69-70. SABR accordingly asserts that it was arbitrary and capricious for EPA to continue to allow "renewable diesel, and renewable jet fuel to be used to meet the 'biomass-based diesel' volume requirements." SABR Br. 10. In SABR's view, EPA should have "revised its compliance provisions to ensure that only 'biodiesel' that qualifies as 'biomass-based diesel' is used to meet that requirement." *Id.* at 10-11.

Before reaching the merits of SABR's challenge, we must determine whether it is timely. Section 307 of the CAA requires a challenge to a final EPA action to

> be filed within sixty days from the date notice of such promulgation, approval, or action appears in the Federal Register, except that if such petition is based solely on grounds arising after such sixtieth day, then any petition for review . . . shall be filed within sixty days after such grounds arise.

42 U.S.C. § 7607(b)(1). "This time bar is jurisdictional." *Growth Energy*, 5 F.4th at 12 (citation omitted).

EPA asserts that SABR's challenge to the categorical makeup of the biomass-based diesel volumes is untimely because EPA included renewable diesel and renewable jet fuel as biomass-based diesel in 2010, more than thirteen years before SABR filed its petition. In 2007, EPA explicitly interpreted "biodiesel" under 42 U.S.C. § 13220(f) to include both mono-alkyl ester biodiesel and non-ester renewable diesel. Regulation of Fuels and Fuel Additives: Renewable Fuel Standard Program, 72 Fed. Reg. 23,900, 23,917 (May 1, 2007). EPA then implemented its interpretation of the biomass-based diesel category in 2010, when it set its first volume standards for biomass-based diesel. *See* Regulation of Fuels and Fuel Additives: Changes to Renewable Fuel Standard Program, 75 Fed. Reg. 14,670, 14,686 (Mar. 26, 2010); 40 C.F.R. § 80.1401 (2010). Thereafter, EPA's 2010 regulations explained that biomass-based diesel "includes both biodiesel (mono-alkyl esters) and non-ester renewable diesel (including cellulosic diesel)," and defined biomass-based diesel to include renewable diesel and renewable jet fuel. 75 Fed. Reg. at 14,686, 14,864; 40 C.F.R. § 80.1401 (2010). In 2013, EPA further clarified that biomass-based diesel RINs "may be generated for renewable jet fuel." Regulation of Fuels and Fuel Additives: Identification of Additional Qualifying Renewable Fuel Pathways Under the Renewable Fuel Standard Program, 78 Fed. Reg. 14,190, 14,201 (Mar. 5, 2013). To be timely, SABR needed to file a petition within sixty days of one of these instances of rulemaking. It failed to do so, and its current petition is untimely as to this issue. Moreover, SABR does not contend that any "after-arising" grounds exist. *See* 42 U.S.C. § 7607(b)(1). We therefore lack jurisdiction to reach the merits of SABR's biomass-based diesel challenge.

SABR next challenges EPA's decision to adjust the conversion factor for biomass-based diesel based on the increasing share of that category composed of renewable

diesel. According to EPA, however, SABR lacks Article III standing to challenge the biomass-based diesel conversion factor in the percentage standard equation because its members suffer no injury from EPA's upward adjustment of the biomass-based diesel conversion factor. For standing purposes, there must be an injury-in-fact—an "invasion of a judicially cognizable interest which is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical." *Bennett v. Spear*, 520 U.S. 154, 167 (1997).

"In the Set Rule, EPA adjusted the conversion factor from 1.5 to 1.6 to account for the increase in the amount of renewable diesel relative to biodiesel in the biomass-based diesel category." EPA Br. 84 (citing 88 Fed. Reg. at 44,546-47). "Early in the RFS [P]rogram, virtually all biomass-based diesel was mono-alkyl ester biodiesel, so EPA set the conversion factor based on the value for mono-alkyl ester biodiesel, 1.5." *Id.* at 85 (citing 88 Fed. Reg. at 44,545). "In the Set Rule, EPA explained that due to the growth of renewable diesel, the percentage standard equation for biomass-based diesel should be adjusted to account for that growth." *Id.* (citing 88 Fed. Reg. at 44,546-47). As a result, "EPA increased the biomass-based diesel conversion factor from 1.5 to 1.6." *Id.* "The effect of this change is a higher annual volume obligation for biomass-based diesel." *Id.* The higher volume benefits SABR members because it means obligated parties have a higher compliance obligation in the "biomass-based diesel" category. They can satisfy that compliance obligation by blending or purchasing RINs of any qualifying type of biomass-based diesel, including the biodiesel SABR members produce and distribute. Because SABR members lack a discernible injury, SABR lacks standing to challenge the biomass-based diesel conversion factor. We therefore must dismiss its petition as nonjusticiable.

CONCLUSION

For the foregoing reasons, we grant in part Environmental Petitioners' petition to the extent that we remand the Set Rule to EPA and FWS without vacatur for EPA and FWS to conduct further proceedings consistent with this decision. We deny the petitions of Refiner and Neste Petitioners and dismiss SABR's petition.

So ordered.

KATSAS, *Circuit Judge*, concurring in part and dissenting in part: Imagine I am planning a celebratory chambers dinner. I ask a law clerk to select a restaurant based on three considerations—quality of food, cost, and proximity to the courthouse. The clerk begins by surveying food ratings and, based on that consideration alone, tentatively picks the Inn at Little Washington. Then, the clerk determines the expected cost of the meal ($300 per person, without wine) and expected travel time (1.5 hours one-way, assuming no traffic). Without addressing whether this expensive and distant meal is worth it, and without assessing the quality, cost, or travel time for dinner at any other restaurant, the clerk announces that he has considered all the relevant factors and then books a reservation at the Inn. Would anyone think that the clerk has fairly understood my instructions and reasonably explained his choice? Obviously not.

In this case, the Environmental Protection Agency did something quite similar. Congress instructed the EPA to set renewable fuel standards based on six considerations, including production capacity, environmental impacts, energy security, and fuel and food costs. Yet in setting the standards at issue, EPA considered only one of these factors—how much renewable fuel the industry might be capable of producing. Then, addressing the other statutory factors, EPA determined various costs and benefits of the standards as so set. But EPA never weighed those costs and benefits. Nor did it consider the costs and benefits of possible standards other than the ones keyed to maximum production capacity. And EPA omitted these steps even though its own analysis showed that costs—including monetized fuel and food costs, as well as unmonetized environmental costs—would dramatically outstrip any climate or other benefits.

In my view, these standards are neither reasonable nor reasonably explained. I agree that they are arbitrary for the narrow reasons flagged by my colleagues. But I respectfully

disagree with my colleagues' broader conclusion that EPA adequately accounted for the relevant costs and benefits. And because the flaws in EPA's analysis run much deeper than my colleagues acknowledge, I not only would hold that the standards are arbitrary, but also would set them aside.

I

The Clean Air Act requires minimum volumes of renewable fuels to be sold in the United States as transportation fuel. 42 U.S.C. § 7545(*o*)(2)(A)(i). These fuels vary according to their feedstocks and expected reductions in greenhouse-gas emissions. *Id.* § 7545(*o*)(1)(B), (D), (E), (J). For each of four renewable fuel categories, Congress itself set minimum annual volumes, in statutory tables running through 2022. *Id.* § 7545(*o*)(2)(B)(i)(I)–(IV). For years after 2022, EPA must set minimum annual volumes "based on a review of the implementation of the program during calendar years specified in the tables, and an analysis of" six enumerated factors:

> (I) the impact of the production and use of renewable fuels on the environment, including on air quality, climate change, conversion of wetlands, ecosystems, wildlife habitat, water quality, and water supply;
>
> (II) the impact of renewable fuels on the energy security of the United States;
>
> (III) the expected annual rate of future commercial production of renewable fuels ... ;
>
> (IV) the impact of renewable fuels on the infrastructure of the United States ... ;

> (V) the impact of the use of renewable fuels on the cost to consumers of transportation fuel and on the cost to transport goods; and
>
> (VI) the impact of the use of renewable fuels on other factors, including job creation, the price and supply of agricultural commodities, rural economic development, and food prices.

Id. § 7545(*o*)(2)(B)(ii). Simplified, this provision requires EPA to set minimum annual volumes "based on" its analysis of (1) environmental impacts, including climate change, (2) energy security, (3) production of renewable fuels, (4) infrastructure, (5) costs, including fuel and food costs, and (6) other factors.

At issue here are the minimum volumes that EPA set for 2023, 2024, and 2025. For each of the statutory renewable-fuel categories, the volume requirements steadily increase from year to year. Renewable Fuel Standards (RFS) Program: Standards for 2023–2025 and Other Changes, 88 Fed. Reg. 44,468, 44,470 (July 12, 2023) (Final Rule).

EPA sought to justify these requirements in two steps. First, it established "candidate volumes" based on what it described as "a subset of the statutory factors that are most closely related to supply of and demand for renewable fuel." Final Rule, 88 Fed. Reg. at 44,480. EPA acknowledged that these "supply-related factors" did not encompass "the other economic and environmental factors" referenced in the statute, including factors related to costs. *Id.* But EPA described the candidate volumes as "a reasonable first step" to "narrow[] the scope for the multifactor analysis." *Id.*

Second, EPA determined various costs and benefits of the candidate volumes, measured against a baseline of no required

minima. EPA summarized those effects in the rule itself, Final Rule, 88 Fed. Reg. at 44,499–506, and it elaborated on them in an accompanying Regulatory Impact Analysis (RIA), J.A. 1297–1773. The RIA identified some 28 "[p]otential impacts associated with" the candidate volumes, organized around the six statutory factors. RIA at *v*. Most strikingly, it determined that these requirements would cost consumers at least $41 billion over three years: $23.8 billion in increased fuel costs and $17.2 billion in increased food costs. *Id.* (fuel); *see id.* at 370 (food). The RIA also described in qualitative terms fifteen different environmental harms from production and use of the candidate volumes: four adverse effects on air quality; three adverse effects on wetlands, ecosystems, and wildlife habitat; six adverse effects on soil and water quality; and two adverse effects on water quantity and availability. *Id.* at *v*.

On the other side of the ledger, the RIA identified an energy-security benefit of $513 million over the same three-year time frame. RIA at *v*. In qualitative terms, the RIA identified benefits of increased employment and economic development in agricultural sectors, with the caveat that "increases in employment in some sectors may be offset by unemployment in other sectors." *See id.* at 351. Finally, the RIA discussed at length possible climate benefits from use of the candidate volumes, as measured by reduced greenhouse-gas emissions over a thirty-year timeframe. *See id.* at 120–210. But after surveying the relevant literature, EPA could report only a range of widely varying estimates, and it expressly declined to "adjudicate which particular studies, estimates or assumptions are most appropriate." Final Rule, 88 Fed. Reg. at 44,500. These ranges even indicated a possibility that some renewable fuels might *increase* GHG emissions because lower emissions from burning the fuel might not offset higher emissions from producing it. *See* RIA at 128. For example, EPA noted studies indicating that lifecycle GHG emissions

from ethanol—the most common type of renewable fuel—may be as high as 116 grams of carbon dioxide per unit of energy, compared to a range of 84 to 98 grams per unit of energy for petroleum-based fuel. *See id.* at 161.

Despite its agnosticism about the extent of any climate benefit, EPA went on to calculate "Illustrative Scenario[s]" regarding GHG emissions reductions. RIA at 164. One scenario assumed relatively high emissions for petroleum-based fuels and relatively low emissions for biofuels; it showed that the candidate volumes produced a sizable reduction in emissions over three decades. *Id.* at 174. Another scenario assumed relatively low emissions for petroleum-based fuels and relatively high emissions for biofuels; it showed only a marginal reduction in GHG emissions over the same timeframe. *See id.* at 178. EPA then monetized those results using three possible discount rates. The first scenario produced a climate benefit somewhere between $19 billion and $115 billion. *See id.* at 198. The second scenario produced a climate *harm* somewhere between $1.2 billion and $1.5 billion. *See id.* at 206.[1]

After identifying the potential costs and benefits associated with the candidate volumes, EPA imposed those volumes with one immaterial exception.[2] In doing so, EPA

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[1] In the second scenario, marginally reduced GHG emissions cashed out as a net climate harm because use of renewable fuels causes a substantial short-term increase in emissions due to land-use changes, followed by decreased emissions gradually occurring over longer periods and thus discounted over longer timeframes.

[2] EPA shifted about one billion gallons from the advanced biofuel requirement to the implied requirement for conventional renewable fuel, thereby pushing the latter requirement some one billion gallons *above* the outer bound of what EPA thought the market could produce. *See* Final Rule, 88 Fed. Reg. at 44,517–18.

stated that it had "balance[d] the relevant factors" and found the candidate volumes "appropriate." Final Rule, 88 Fed. Reg. at 44,472. But neither the Final Rule nor the RIA attempted to compare the various costs and benefits, whether quantitative or qualitative, of the candidate volumes. Nor did EPA compare the costs and benefits of the candidate volumes to the costs and benefits of any lower possible volumes other than zero.[3]

II

The Clean Air Act requires us to reverse rules that are "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 42 U.S.C. § 7607(d)(9)(A). This text copies the familiar standard of review set forth in the Administrative Procedure Act. *See* 5 U.S.C. § 706(2)(A). Therefore, in construing the governing legal standard, we must not defer to the EPA's views. *See Loper Bright Enters. v. Raimondo*, 603 U.S. 369, 392 (2024). And in assessing EPA's explanation of its policy choice, we must consider whether the decision "was based on a consideration of the relevant factors and whether there has been a clear error of judgment." *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983) (cleaned up). Likewise, we must set aside the

[3] EPA made similarly conclusory statements in adopting the component categories of the candidate volumes. *See* Final Rule, 88 Fed. Reg. at 44,513 ("Based on our analyses of all of the statutory factors, we find that the benefits of higher volumes of cellulosic biofuel outweigh the potential negative impacts."); *id.* at 44,516 ("Based on our analyses of all of the statutory factors, we believe that the candidate volumes derived [for advanced biofuel] would be reasonable and appropriate to require."); *id.* at 44,517 ("Our analysis of several of the statutory factors highlighted, in our view, the importance of ongoing support for corn ethanol generally and for an implied conventional renewable fuel volume requirement that helps to incentivize the domestic consumption of corn ethanol.").

volume requirements if EPA "entirely failed to consider an important aspect of the problem" or "offered an explanation for its decision that runs counter to the evidence" before it. *Id.* In short, we must consider whether the requirements are "reasonable and reasonably explained." *FCC v. Prometheus Radio Project*, 592 U.S. 414, 417 (2021).

A

Start with the governing statutory standard. It requires EPA to set volume requirements "based on" six factors. In ordinary parlance, that phrase connotes *some* measure of balancing. If my hapless law clerk selects the Inn at Little Washington for its superlative food quality and then simply reports the high costs and travel times, he has not made a decision "based on" the three relevant factors. Likewise, if EPA selects volumes based on a "subset" of statutory factors excluding economic and environmental considerations, Final Rule, 88 Fed. Reg. at 44,480, and then merely reports the various high economic and environmental costs associated with those volumes, it has not selected the volumes "based on" the six statutory considerations.

EPA claims to have "balance[d] all the relevant factors," Final Rule, 88 Fed. Reg. at 44,472, but the record indicates otherwise. At every turn, the RIA simply racked up the many costs and few benefits associated with the candidate volumes. *See*, *e.g.*, RIA at 115 (impact on pollutants); *id.* at 198 & 207 (GHG emissions); *id.* at 222 (wetland conversions); *id.* at 237–38 (soil and water quality); *id.* at 270 (energy security); *id.* at 1675 (commodity prices); *id.* at 367 (food prices). But neither the RIA nor the Final Rule attempted to weigh these competing costs and benefits, or to explain why any concededly speculative, long-term climate benefit might outweigh the concededly certain, immediate, and onerous economic and

environmental costs. Likewise, after setting candidate volumes for the express purpose of determining maximum industry production capacity, EPA never sought to consider whether less ambitious standards might produce more sensible tradeoffs. (Just as, say, my law clerk never considered whether a Zagat-rated 28 dinner, a few minutes away and costing only $100 per person, might be a more sensible choice than the 29-rated dinner at the Inn.) And EPA never addressed whether to temper the candidate volumes, even as the RIA racked up one cost after another.

My colleagues contend that EPA need not balance the relevant costs and benefits at all. *Ante* at 22. But even when a statute says nothing about costs, agencies must take them into account because "reasonable regulation ordinarily requires paying attention to the advantages *and* the disadvantages of agency decisions." *Michigan v. EPA*, 576 U.S. 743, 752–53 (2015); *see also id.* at 769 (Kagan, J., dissenting) ("Cost is almost always a relevant—and, usually, a highly important—factor in regulation."). My colleagues invoke cases suggesting that a requirement to "consider" costs does not require formal cost-benefit analysis. *See Nat'l Ass'n of Home Builders v. EPA*, 682 F.3d 1032, 1039–41 (D.C. Cir. 2012); *Nat'l Wildlife Fed'n v. EPA*, 286 F.3d 554, 570–71 (D.C. Cir. 2002) (per curiam); *ante* at 22–23. These cases are in some tension with *Michigan v. EPA*, which stressed the importance of cost considerations unless Congress explicitly makes them irrelevant. But in any event, the cases are inapposite here, where the governing statute does more than simply require some consideration of costs. As explained above, Congress required EPA to promulgate volume requirements "based on" specific categories of costs, 42 U.S.C. § 7545(*o*)(2)(B)(ii), which implies more than merely identifying strikingly high costs and then moving ahead anyway.

B

EPA's failure to weigh costs and benefits was no small oversight. The petitioners here, including various industry and environmental groups, contend that the costs of the Final Rule "dwarf" its benefits. Env't Pet. Br. 37. They are correct.

The economic costs are striking. By EPA's own measure, they run to at least $41 billion over three years. *See* RIA at *v*, 370. "[T]hat's billion with a b." *White Stallion Energy Cir., LLC v. EPA*, 748 F.3d 1222, 1259 (D.C. Cir. 2014) (Kavanaugh, J., concurring in part and dissenting in part), *rev'd sub nom. Michigan v. EPA*, 576 U.S. 743 (2015). And they exceed the lone monetized benefit—energy security—by almost 80 times over. *See* RIA at *v*.

Of course, climate impacts must also be considered. But EPA declined to make any estimate of reduced GHG emissions, other than to note widely varying ranges reflected in the literature. And EPA declined to commit itself to any monetized climate benefit, other than to run calculations showing wildly disparate values depending on the emissions estimates and discount rates selected. Moreover, even on assumptions favorable to EPA, the numbers do not add up. Assume for example the first scenario noted above, which posits relatively high GHG emissions for petroleum-based fuels and relatively low GHG emissions for renewable fuels. Also assume a three percent discount rate—the intermediate rate used by EPA. On those assumptions, the candidate volumes yield a climate-change benefit of $75 billion over *thirty* years, *see* RIA at 198, compared to increased fuel and food costs of $41 billion over the first *three* years alone. One need hardly be a trained economist to discern that, in any apples-to-apples comparison over comparable timeframes, EPA's own analysis would show costs dwarfing benefits, even

accounting for the climate. And this says nothing of the second, less favorable scenario presented by EPA, in which there is *no* climate benefit at all.

Turning to other qualitative impacts, the picture becomes even bleaker. Most notably, consider environmental impacts besides climate change. According to EPA, the candidate volumes will cause increased emission of ammonia, carbon monoxide, nitrogen oxides, sulphur dioxide, and volatile organic compounds, among other pollutants. RIA at *v.* They will cause increased conversion of various habitats to cropland, decreased plant diversity, and increased use of harmful pesticides. *Id.* They will increase erosion, deplete soil nutrients, risk chemical contaminations, and increase stress on aquatic life. *Id.* And they will deplete aquifers and divert water used to meet human needs. *Id.* EPA briefly flagged economic benefits for rural sectors that supply feedstock for renewable fuel. *See id.* at 354–57. But it also noted that those benefits may be offset by countervailing harms in other sectors, like those supplying inputs for petroleum products. *See id.* at 351. And it nowhere explained how these upstream economic impacts could justify the eleven-digit price-tag and multiple environmental harms noted above.

C

To justify the 2023–25 volume requirements, EPA primarily invokes *Sinclair Wyoming Refining Co. LLC v. EPA*, 101 F.4th 871 (D.C. Cir. 2024), which upheld the 2022 volume requirements. *Sinclair* involved an exercise of EPA's reset authority. Before 2022, this provision required EPA to prospectively adjust statutory volume requirements if it had waived substantial portions of such volumes in preceding years. 42 U.S.C. § 7545(*o*)(7)(F). In making these adjustments, EPA was required to take account of the same six

factors at issue here. *See id*. For 2022, the reset authority was triggered by waivers due to chronic shortfalls in the availability of one narrow category of renewable fuel—cellulosic biofuel. *See Sinclair Wyo.*, 101 F.4th at 880. EPA took that shortfall into account, but otherwise preserved all of the express and implied statutory volume requirements. *See id.* In upholding the reset 2022 requirements, we concluded that EPA had "reasonably used the implied statutory volumes in setting the 2022 applicable volumes." *Id.* at 888.

By contrast, there are no statutory volume requirements for EPA to fall back on for 2023–25. EPA acknowledged that this absence required a fundamentally different approach to setting the requisite volumes:

> We acknowledge that we are taking a different approach to developing candidate volumes in this rule than we did under the reset authority in the 2020–2022 rule. The primary difference is that in the 2020–22 rule the candidate volumes for non-cellulosic advanced biofuel and conventional renewable fuel were generally in the implied statutory volumes for these fuel types in comparison to the statutory volumes. In this rule we are establishing volumes for 2023–2025, a time period for which there are no statutory targets. We therefore developed the candidate volumes for non-cellulosic biofuel and conventional biofuel based primarily on a consideration of supply-related factors, with a consideration of other relevant factors as noted in the following sections.

Final Rule, 88 Fed. Reg. at 44,480. Given the different statutory considerations and agency rationales, *Sinclair* does not compel affirmance here.

* * * *

In sum, EPA's decision to impose candidate-volume requirements is difficult to understand in light of the six statutory factors. And all EPA offers to suggest that it balanced those factors is its own *ipse dixit*, which is no substitute for reasoned decision-making. *See Am. Clean Power Ass'n v. FERC*, 54 F.4th 722, 727 (D.C. Cir. 2022).

III

For these reasons, as well as the narrower ones identified by my colleagues, I would hold that the 2023–25 volume requirements are arbitrary. Because those requirements are more deeply flawed than my colleagues recognize, and because EPA has shown no significant possibility that it will be able to rehabilitate the requirements on remand, I would set aside the requirements rather than simply remanding without vacatur. *See* 42 U.S.C. § 7607(d)(9)(A); *Allied-Signal, Inc. v. U.S. Nuclear Regul. Comm'n*, 988 F.2d 146, 151 (D.C. Cir. 1993).[4]

[4] Other than the points addressed above, I agree with the analysis in the per curiam opinion. Accordingly, I respectfully dissent from parts I.A.1, I.C, and II.B.2 of that opinion, and join the rest.