
NOT YET SCHEDULED FOR ORAL ARGUMENT

No. 24-1129 and Consolidated Cases

**IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT**

STATE OF NEBRASKA, et al.,
Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY, et al.,
Respondents,

ALLIANCE OF NURSES FOR HEALTHY ENVIRONMENTS, et al.,
Intervenors.

On Petition for Review from the United States Environmental Protection Agency
No. EPA-HQ-OAR-2022-0985

**BRIEF OF AMICI CURIAE
THE CHAMBER OF COMMERCE OF THE UNITED STATES OF
AMERICA AND THE AMERICAN TRUCKING ASSOCIATIONS, INC.
IN SUPPORT OF PETITIONERS**

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to Circuit Rule 28, amici curiae, through their undersigned counsel, certify as follows:

(A) Parties and amici. Except for the following, all parties, intervenors, and amici appearing in this Court are listed in the certificate filed as part of the Brief for Private Petitioners.

The Chamber of Commerce of the United States of America and the American Trucking Associations, Inc. are submitting this amicus brief in support of Petitioners.

(B) Ruling under review. These consolidated cases involve final agency action of the United States Environmental Protection Agency, titled “Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles—Phase 3,” published in the Federal Register at 89 Fed. Reg. 29,440 (Apr. 22, 2024).

(C) Related cases. The following consolidated cases seek review of the agency action challenged here: *Petersen v. EPA*, No. 24-1133; *Western States Trucking Ass’n, Inc. v. EPA*, No. 24-1157; *American Fuel & Petrochemical Manufacturers v. EPA*, No. 24-1207; *American Petroleum Institute v. EPA*, No. 24-1208; *American Free Enterprise Chamber of Commerce v. EPA*, No. 24-1209; *Clean Fuels Alliance America v. EPA*, No. 24-1210; and *The Transport Project v. EPA*, No. 24-1214. Amici curiae are not aware of any other related cases.

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DISCLOSURE STATEMENT

Pursuant to Federal Rule of Appellate Procedure 26.1 and D.C. Circuit Rule 26.1, amici curiae the Chamber of Commerce of the United States of America (“Chamber”) and the American Trucking Associations, Inc. (“ATA”) make the following disclosures:

- The Chamber of Commerce of the United States of America (“Chamber”) states that it is a non-profit, tax-exempt organization incorporated in the District of Columbia. The Chamber has no parent corporation, and no publicly held company has 10% or greater ownership in the Chamber.
- American Trucking Associations, Inc., is a non-profit trade association incorporated in the District of Columbia. ATA has no parent corporation, and no publicly-held company has a 10% or greater ownership interest in it.

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GLOSSARY

Argonne	Argonne National Laboratory
DCFC	Direct-Current/Fast Charging
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
EV	Electric Vehicle(s)
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
MY	Model Year
RIA	Regulatory Impact Analysis
RTC	Response to Comments
ZEV	Zero-Emission Vehicle(s)

INTEREST OF THE AMICI CURIAE¹

The Chamber of Commerce of the United States of America is the world's largest business federation. It represents approximately 300,000 direct members and indirectly represents the interests of more than three million companies and professional organizations of every size, in every industry sector, and from every region of the country. An important function of the Chamber is to represent the interests of its members in matters before Congress, the Executive Branch, and the courts. To that end, the Chamber often files amicus curiae briefs in cases, like this one, that raise issues of concern to the nation's business community.

The Chamber supports policies that reduce greenhouse-gas emissions as much and as quickly as reasonably possible, consistent with the pace of innovation and the feasibility of implementing large-scale technical change. *See* U.S. Chamber of Commerce, *Our Approach to Climate Change*, <https://www.uschamber.com/climate-change-position>. The Chamber also has a strong interest in ensuring that agencies comply with the law.

American Trucking Associations, Inc. (ATA) is the national association of the trucking industry. ATA regularly represents the common interests of the trucking industry in courts throughout the nation, including this Court. The motor carriers

¹ No counsel for any party authored this brief in whole or in part, and no entity or person, aside from amici curiae, their members, or their counsel, made any monetary contribution intended to fund the preparation or submission of this brief.

represented by American Trucking Associations, directly and through its federation of affiliated state trucking associations, own and operate a significant portion of the commercial trucks in the United States. ATA and its members thus have an acute interest in this case, and in the proper construction and application of Section 202 of the Clean Air Act to the regulation of heavy-duty vehicles.

Many commenters in the rulemaking that led to the Phase 3 rule under review, including the amici here, support advancing a single, workable, and effective nationwide greenhouse-gas (GHG) emissions standard for heavy-duty vehicles, to ensure both a thriving economy and sustainable solutions to environmental challenges. Vehicle emissions standards must be cost-effective and technologically achievable and must allow adequate lead time and compliance flexibility. In particular, emissions standards must give due weight to crucial outside-the-vehicle factors that are beyond the control of regulated entities. Such factors, which include the availability of critical minerals and electric charging infrastructure, will ultimately drive the rate of vehicle turnover and customer acceptance. Under core administrative-law requirements, as well as section 202(a) of the Clean Air Act, EPA was required to carefully consider these factors in setting standards. EPA did not do so here. As explained below, EPA's action was arbitrary and capricious.²

² Amici take no position in this brief on the other challenges to the Phase 3 rule raised by the various petitioners. Amici further note that affected businesses do not have a

INTRODUCTION AND SUMMARY OF ARGUMENT

More than 80% of U.S. communities rely exclusively on trucking to meet their freight transportation needs, and more than 70% of the nation's annual freight tonnage travels by truck. *See* ATA Comment at 3. The vast majority of trucking fleets are made up of diesel- and gas-powered trucks, which have been constantly improved over the last four decades to substantially reduce the levels of pollutant emissions generated by trucking activities. *Id.* EPA's Phase 3 rule seeks to transform these fleets so that a substantial portion of them run on electric motors, instead of internal combustion engines.

Encouraging the use of new technology to promote environmental sustainability is a laudable goal, but EPA's Phase 3 rule seeks to do too much, too soon. When fleet operators and representatives from other industries raised serious concerns about whether EPA's projections and assumptions regarding heavy-duty electric vehicle use were realistic, and whether such vehicles would be affordable for operators to purchase and operate, EPA brushed those concerns aside (or, in some instances, ignored them entirely). EPA's failure to address those concerns demonstrates that the Phase 3 rule was not the product of reasoned decision-making, and is therefore arbitrary and capricious.

unified view of the questions presented in this litigation, as reflected in the differing positions of private-sector petitioners and private-sector respondent-intervenors.

EPA's Phase 3 rule establishes new greenhouse gas standards for heavy-duty vehicles from model year (MY) 2027 through MY 2032. EPA's expectation is that, under those standards, up to 45% of new heavy-duty vehicles in America will be electric by 2032. That expectation, in turn, is based on the assumptions that: (1) manufacturers will have the resources they need to meet demand, (2) there will be a national infrastructure in place to keep heavy-duty electric vehicles powered on the road, and (3) operators of heavy-duty vehicles will be incentivized to buy electric models because of the eventual cost savings.

Many commenters in the rulemaking, including the amici here, identified critical flaws in EPA's assumptions about feasibility and lead time. On manufacturing, several commenters noted that lithium—a "critical mineral" used to build electric-vehicle batteries—is already in short supply, and that the Phase 3 rule will exacerbate the problem of growing demand for refined lithium that far outstrips its limited supply. On infrastructure, commenters remarked that heavy-duty electric vehicles will not be viable unless there is a comprehensive, nationwide charging infrastructure to support them—and that there is no plan in place to build the thousands of public heavy-duty charging points needed to make long-distance use of such vehicles viable. On operator cost, commenters explained that, because of charging requirements, long-distance use of heavy-duty electric vehicles will require additional drivers, adding further to the cost and practical challenges of adopting the

technology. These concerns—and others—raised serious questions about the technological feasibility of the Phase 3 rule, and whether the rule gives enough lead time for compliance.

EPA gave short shrift to these concerns, waving them off or failing to address them at all. Its failure to account for critical weaknesses in its foundational assumptions demonstrates that the Phase 3 rule is not the product of reasoned decision-making, which makes the rule arbitrary and capricious.

ARGUMENT

Under section 202(a) of the Clean Air Act, an EPA regulation prescribing emission standards for motor vehicles must allow the lead time “necessary to permit the development and application of the requisite technology, giving appropriate consideration to the cost of compliance within such period.” 42 U.S.C. § 7521(a)(2). In other words, the regulation must be predicated on a finding of “technological feasibility,” which requires the agency to provide “sufficient lead time to permit manufacturers to develop and apply the necessary technology.” *Motor & Equip. Mfrs. Ass’n v. Nichols*, 142 F.3d 449, 463 (D.C. Cir. 1998). Section 202(a) “requires that emission regulations be technologically feasible within economic parameters” because “Congress wanted to avoid undue economic disruption in the automotive manufacturing industry and also sought to avoid doubling or tripling the cost of motor vehicles to purchasers.” *Motor & Equip. Mfrs. Ass’n, Inc. v. EPA*, 627 F.2d

1095, 1118 (D.C. Cir. 1979).

When EPA makes predictions about developments in technology and associated market behavior, its “latitude for projection is subject to the restraints of reasonableness, and does not open the door to crystal ball inquiry.” *Int’l Harvester Co. v. Ruckelshaus*, 478 F.2d 615, 629 (D.C. Cir. 1973) (quotation marks and citation omitted). Thus, EPA must “provide a reasoned explanation of its basis for believing that its projection is reliable,” which “includes a defense of its methodology for arriving at numerical estimates.” *Bluewater Network v. EPA*, 370 F.3d 1, 22 (D.C. Cir. 2004) (quoting *NRDC v. EPA*, 655 F.2d 318, 328 (D.C. Cir. 1981)).

EPA had many reasons to doubt the feasibility-related projections and assumptions that backed the Phase 3 rule—including from the very sources on which EPA relied. EPA’s failure to address these reasons—or, in some instances, even to acknowledge them—reinforces the conclusion that the Phase 3 rule is not the product of reasoned decision-making. The rule should be vacated as arbitrary and capricious.

I. EPA did not reasonably explain how serious hurdles to the availability of critical minerals and charging infrastructure will be overcome.

EPA states that it is not “mandat[ing] any specific technology for any manufacturer or any vehicles” or “the production or purchase of any particular vehicle.” 89 Fed. Reg. at 29,452. But the Phase 3 rule contemplates that a significant number of heavy-duty zero-emission vehicles will be put on the road. For example,

EPA expects that, by 2032, over 45% of new “short-haul” tractors and 25% of new “long haul” tractors will be electric. RIA 897, 899. That is a dramatic increase over EPA’s “no action” scenario, which projects that just 10% of new short-haul tractors and less than 5% of new long-haul tractors will be electric in 2032. RIA 897, 899.

EPA’s vision will be feasible only if there are sufficient resources to produce the vehicles, a comprehensive charging infrastructure to support them, and operators willing to buy them. Several commenters, including the Chamber and ATA, raised concerns that EPA’s projections on all of these factors were too optimistic and not grounded in reality. *See, e.g.*, Chamber Comment at 2; ATA Comment at 15-19. In the final rule, EPA assured commenters that these problems will likely be overcome, but its expression of optimism failed to address important concerns calling into question whether EPA’s expectations concerning the use of heavy-duty electric vehicles will realistically be achieved within the rule’s timeframe.

A. EPA failed to address important questions about sourcing the critical minerals necessary to produce electric-vehicle batteries.

EPA’s assumptions about the heavy-duty trucking industry’s electric-vehicle uptake started with a faulty premise: that manufacturers will have the resources they need to produce the projected quantity of heavy-duty electric trucks contemplated by the Phase 3 rule. Specifically, EPA failed to address whether enough lithium—“the most important of the critical minerals,” 89 Fed. Reg. at 29,496—would be available (and sufficiently affordable) to meet demand. EPA’s failures on this issue

render the Phase 3 rule arbitrary and capricious. *See Bluewater Network*, 370 F.3d at 22.³

In finalizing the rule, EPA considered the projected availability of “a key set of minerals (lithium, cobalt, nickel, manganese, and graphite) commonly used in [battery electric vehicles],” because “their general availability impacts the production of battery cells and battery components.” 89 Fed. Reg. at 29,495. The “increased use” of these five minerals, in particular, “is unique to [battery electric vehicles].” *Id.* at 29,496. Since “[a] typical electric car requires six times the mineral inputs of a conventional car,” “[t]he transition to clean energy means a shift from a fuel-intensive to a material-intensive system.” Int’l Energy Agency, *The Role of Critical Minerals in Clean Energy Transitions* 28 (2021), <https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions>.

In response to EPA’s Phase 3 proposed rule, commenters cautioned EPA that the resources needed to construct electric vehicles (and build the necessary batteries) would be scarce. As one commenter explained, “the lithium-ion battery supply chain [is] controlled nearly entirely by China,” which controls “41% of the world’s cobalt,

³ EPA’s analysis about the availability of critical minerals other than lithium was similarly flawed. This discussion focuses on lithium in light of EPA’s acknowledgment of lithium’s importance.

28% of the world’s lithium, and 78% of the world’s graphite.” RTC 1614.⁴ EPA nevertheless waved off those concerns by noting that, for *most* of these minerals, manufacturers can find a substitute with ample supply. 89 Fed. Reg. at 29,496.

But not for lithium. “[T]here is not a viable alternative to lithium in [electric vehicle] batteries,” so EPA considered “lithium availability as a potential limiting factor on the rate of growth of ZEV production.” *Id.*; *see also* Proposed Rule, *Greenhouse Gas Emissions Standards for Heavy-Duty Vehicles—Phase 3*, 88 Fed. Reg. 25,926, 25,941 (Apr. 27, 2023) (“One of the most important factors influencing the extent to which [battery electric vehicles] are available for purchase and able to enter the market is the cost of lithium-ion batteries, the single most expensive component of a [battery electric vehicle].”). EPA’s feasibility assumptions depend on the “expectation that mineral prices will not continually rise,” and that lithium prices will be at “equilibrium ... as the rapidly growing supply chain continues to mature.” 89 Fed. Reg. at 29,500. But if lithium supply is lower or lithium demand is higher than EPA assumed, then prices will naturally go up, meaning fewer heavy-duty electric trucks will be manufactured, and those trucks will be more expensive. As explained below, in its analysis of lithium scarcity through 2032, EPA relied on

⁴ *See also* Agnes Chang & Keith Bradsher, *Can the World Make an Electric Car Battery Without China?*, N.Y. Times (May 16, 2023), <https://www.nytimes.com/interactive/2023/05/16/business/china-ev-battery.html>.

unrealistic projections that are too rosy and unlikely ever to materialize.

Lithium is a “critical mineral” under the Energy Act of 2020; that is, one of the minerals for which the Secretary of Energy has found “a high risk of a supply chain disruption” and that it “serves an essential function in 1 or more energy technologies.” 30 U.S.C. § 1606(a)(2); U.S. Dep’t of Energy, Notice of Final Determination on 2023 DOE Critical Materials List, 88 Fed. Reg. 51,792 (Aug. 4, 2023). The U.S. Department of Energy (DOE) projects that, during the implementation period for the Phase 3 standards, lithium, along with several of the other resources needed to construct electric-vehicle batteries, will be “critical” to energy needs and will face a high supply risk:

MEDIUM TERM 2025-2035



U.S. Dep’t of Energy, *What Are Critical Materials and Critical Minerals?*, <https://www.energy.gov/cmm/what-are-critical-materials-and-critical-minerals>.

In a memorandum to EPA, DOE noted that the International Energy Agency (IEA) “project[ed] a lithium supply shortage after 2025.” DOE Communication to EPA Regarding Critical Mineral Projects, Attachment 1 at 1, EPA-HQ-OAR-2022-0829-0357; *see also* IEA, *Global EV Outlook 2022*, at 186 (2022),

<https://www.iea.org/reports/global-ev-outlook-2022> (“Demand for lithium will greatly exceed current supply projections by 2030 in the Announced Pledges Scenario.”). Nevertheless, despite DOE’s repeated warnings about lithium’s scarcity over the next decade, EPA concluded that lithium supply would be adequate within the timeframe of the Phase 3 standards. *See* 89 Fed. Reg. at 29,496-50.

In making this determination, EPA relied heavily on a single study by the DOE’s Argonne National Laboratory (“Argonne”); *see also* Argonne Nat’l Lab., *Securing Critical Materials for the U.S. Electric Vehicle Industry* (Feb. 2024), <https://publications.anl.gov/anlpubs/2024/03/187907.pdf> (emphasis added) (“Argonne Study”). Argonne performed its analysis in coordination with DOE, an analysis that “EPA considers to be both thorough and up to date.” *Id.* at 29,496; *see id.* at 29,494-95 (“DOE worked together with Argonne National Laboratory (ANL) beginning in 2022 to assess global critical minerals availability and North American battery components manufacturing, and coordinated with EPA to share the results of these analyses during much of 2023 and early 2024.”). EPA considered the Argonne Study to be a linchpin of its analysis of the “availability of critical minerals and battery supply during the timeframe of the Phase 3 rule.” RTC 1653.

According to EPA, “[Argonne] assesses that domestic lithium production is currently limited, but the next decade could see a surge from promising projects that are already underway, potentially satisfying domestic demand and allowing the U.S.

to become a global leading producer of lithium depending in part on the progress of permitting and other contingencies common to any new mining operations.” RIA 61. Relying on the Argonne Study, EPA concluded that, “[i]n the near term (the next few years), manufacturers will need to import lithium, and ample capacity exists to source lithium from countries with whom the United States has free trade agreements (FTA).” 89 Fed. Reg. at 29,497.

But EPA’s assessment of the Argonne Study failed to address important limitations of the study—some of which were noted by the study itself and which affect the viability of EPA’s conclusions about both lithium supply and lithium demand.

On the expected **supply** of lithium, EPA noted, but did not seriously address, a critical shortcoming of the Argonne Study flagged by the study itself: that the study assumes a perfect world in which *every* contemplated mining development project is completed on time, without delay, and meets anticipated production targets. The Argonne Study identifies “numerous lithium extraction projects ... in various stages of development” within the United States, which suggests that “the U.S. is poised to become a key global producer of lithium by 2030, and could become one of the world’s largest producers of lithium by 2035.” 89 Fed. Reg. at 29,497. But that optimistic forecast came with troubling caveats:

While the study projects a substantial capacity could come online both domestically and globally to meet the

anticipated demand, several uncertainties and challenges remain that could hinder the upstream scaling of these minerals. These include environmental, geopolitical, and ethical dilemmas, maintaining economic feasibility, technical and technology challenges, and financing potential. *The projections from this study do not account for these risks.*

Argonne Study at 65 (emphasis added). For example, EPA repeatedly cites, and relies on, the Argonne Study's projections from domestic lithium extraction projects in Thacker Pass, Rhyolite Ridge, and Kings Mountain. 89 Fed. Reg. at 29,497-48; RTC 1653; RIA 61-62. But the Argonne Study emphasizes that "the projected capacity of these projects largely depends upon whether projects can successfully navigate all phases of development, from exploration to operation," and that "[a] mining project's ability to reach full operation faces several risks that can lead to delay or even termination of a project." Argonne Study at 35. Thacker Pass and Rhyolite Ridge are good examples of how delays might materialize: both sites have been the subject of litigation seeking to block mining activity. *W. Watersheds Project v. McCullough*, Nos. 23-15259, 23-15261, 23-15262, 2023 WL 4557742, at *3 (9th Cir. July 17, 2023) (affirming the district court's conclusion that the Bureau of Land Management did not act arbitrarily or capriciously in approving a Thacker Pass lithium mining project); *Ctr. for Biological Diversity v. Bernhardt*, No. 20-cv-1812, 2021 WL 1565787, at *1 (D. Nev. Apr. 21, 2021) (Endangered Species Act challenge involving Rhyolite Ridge lithium mining operations).

EPA nodded to these shortcomings, but it failed to explain why it gave the projections in the Argonne Study such outsize persuasive weight despite the very uncertainties that, as the study itself makes clear, sharply limits the utility of the projections. EPA's unexplained reliance on the projections was arbitrary and capricious.⁵ Citing the Argonne Study, EPA comments that "DOE notes that a number of uncertainties affect every forward-looking assessment of mineral and manufacturing trends, and EPA has considered this inherent layer of uncertainty which could act to cause these projections to prove either optimistic or pessimistic." RTC 1658. Despite acknowledging the "inherent layer of uncertainty," and despite the Argonne Study's express caveat that its "projections ... do not account for these risks," EPA never explains to what extent, if at all, EPA actually factored in these risks as part of its projections, or why the Argonne Study was persuasive despite its many caveats. Instead, EPA simply states that "these uncertainties are well

⁵ While the arbitrary-and-capricious standard is "particularly deferential" with respect to an agency's predictive judgments, *Rural Cellular Ass'n v. FCC*, 588 F.3d 1095, 1105 (D.C. Cir. 2009), that is only true for those judgments that lie in the agency's area of expertise—where it is able to "make use of the experience it has gained through years of dealing with the problem." *NARUC v. FCC*, 737 F.2d 1095, 1140 (D.C. Cir. 1984). As EPA itself acknowledged, DOE is the expert agency on mineral scarcity, not EPA. DOE made no predictive judgments relevant here, as its projections about lithium availability did not account for the Phase 3 rule. And, in any event, deference to predictive judgments is unwarranted where the agency gives "pious hope and speculation in the place of evidence," as EPA did in addressing lithium supply and other issues. *NARUC*, 737 F.2d at 1140.

understood to accompany most if not all mining investments,” and therefore “EPA does not consider these factors to be uniquely restrictive of the ability of the global industry to develop mineral production capacity in response to what is widely understood to be an era of robust demand.” *Id.* That non-response does not justify EPA’s reliance on the Argonne Study. Whether or not the risks are “uniquely restrictive” in this context, those risks are plainly important—as both DOE and Argonne took pains to emphasize—and EPA simply failed to account for them. *See Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998) (“An agency’s use of a model is arbitrary if that model bears no rational relationship to the reality it purports to represent.... EPA retains a duty to examine key assumptions as part of its affirmative burden of promulgating and explaining a non-arbitrary, noncapricious rule.” (citations and internal quotation marks omitted)).

EPA also failed to address the Argonne Study’s limitations in projecting lithium **demand**. In the final rule, EPA reproduced a graph from the Argonne Study that “project[ed] domestic lithium supply through 2035, along with domestic lithium recycling potential, and compared these to estimated demand.” 89 Fed. Reg. at 29,498. But the Argonne Study’s estimates of lithium demand do not line up with (and are much lower than) EPA’s, largely because the study draws on numbers from 2022—which do not account for post-2022 developments that would likely cause a substantial increase in the demand for lithium, such as the Phase 3 rule itself, or

California’s Advanced Clean Trucks regulation. *See* Argonne Study 81 (explaining that its “process of estimating battery demand for EVs follows a bottom-up approach” analyzing “projected EV sales,” with medium-duty and heavy-duty electric vehicle sales projections drawn from a 2022 study). For example, in its “high scenario,”⁶ the Argonne Study (at 82) projects that only 5.1% of long-haul tractors will be electric in 2032. In stark contrast, under the Phase 3 rule, EPA projects that 25.0% of long-haul tractors will be electric in 2032—more than five times what the Argonne Study projected. RIA 650, 898-99.

B. EPA ignored serious concerns that the charging infrastructure necessary to power long-haul electric trucks will not be ready in time to comply with the Phase 3 standards.

Even assuming that electric-vehicle manufacturers will have the mineral resources necessary to produce the heavy-duty electric vehicles needed to meet EPA’s projections, the Phase 3 rule’s targets cannot be met unless there is a national infrastructure in place to power those vehicles. Many commenters told EPA that such an infrastructure would require considerable time and money: hundreds of billions of dollars in structural investments, massive scaling of yet-to-be-proven technologies, and unprecedented levels of regulatory cooperation and public-private

⁶ “ANL-High presents an U.S. EV sales trajectory that aligns with the decarbonization goal for net-zero emissions in the energy economy by 2050 and serves as an upper limit. ANL-Low presents a U.S. EV sales trajectory that aligns with market dynamics.” Argonne Study 26.

collaboration. *See* RTC 887-89. In particular, commenters explained that heavy-duty electric vehicles will, at a minimum, require *thousands* of heavy-duty chargers placed across the country to support basic interstate freight operations, never mind robust coast-to-coast travel, and that achieving this network would require hundreds of billions of dollars in public infrastructure investment. *See* Atlas Public Policy, *U.S. Vehicle Electrification Infrastructure Assessment: Medium- and Heavy-Duty Truck Charging* 21 (2021) (“Atlas Report”) (estimating that 4,151 ports would be necessary to support long-haul trucking on the Primary Highway Freight System, and 5,785 ports for the entirety of the National Highway Freight Network), https://atlaspolicy.com/wp-content/uploads/2021/11/2021-11-12_Atlas_US_Electrification_Infrastructure_Assessment_MD-HD-trucks.pdf; *see also* RIA 118-19 (discussing the Atlas Report). Commenters also noted that the Phase 3 rule’s timeframe did not consider the need for regulatory approval of charging stations—specifically, how resistance from the thousands of local governments that wield approval authority is likely to delay or even prevent the construction of the requisite individual charging stations. *See* RTC 903; RIA 122-23. In many cases, such resistance is based on broader concerns of grid managers and utilities that the supply of electricity necessary to provide reliable power to new vehicle charging stations will not be available. *See* State Petitioners’ Br. 22-25 (addressing grid reliability).

In issuing the final rule, EPA failed to address the very real prospect that, even

assuming EPA's projected fleet of heavy-duty electric vehicles can be manufactured in accordance with the timelines provided by the Phase 3 rule, there will be too few places to power them. That crucial defect in EPA's assumptions about feasibility also renders the Phase 3 rule arbitrary and capricious.

1. *Scale of Necessary Charging Infrastructure.* The Phase 3 rule covers a wide range of heavy-duty vehicles, with a wide range of charging needs. Yet the rule fails to account for the reality that electric charging is not a one-size-fits-all proposition. Chargers for medium-duty vehicles, for example, cannot viably charge heavy-duty vehicles. And even among the different categories of heavy-duty vehicles, charging needs may vary considerably due to factors such as battery size. For example, a charger for a small shuttle bus cannot realistically charge a long-haul truck; charging may be theoretically possible, but at a slow pace that would take the truck out of commission for long periods of time. (And to support freight operations, long-haul trucks must always be on the move.) Yet EPA's assumptions about the available charging infrastructure—particularly for long-haul trucks—did not take these differences into account. EPA hardly mentioned heavy-duty chargers *at all*; it simply assumed that “public charging needs will be met.” 89 Fed. Reg. at 29,542. That mistaken assumption further demonstrates that the Phase 3 rule is arbitrary and capricious.

Electric vehicle charging is currently divided into at least four levels of

charging output: Level 1 charging, which provides approximately five miles of range per hour (at 120 volts, which is about the same as plugging in an appliance at home); Level 2, which provides approximately 25 miles of range per hour (at 240 volts, or equivalent to a washer-dryer); “direct-current/fast charging,” (DCFC), which is used for medium- and heavy-duty vehicles and is capable of charging more quickly than Level 1 or Level 2, *see* U.S. Dep’t of Energy, Alternative Fuels Data Center, *Electric Vehicle Charging Stations*, <https://afdc.energy.gov/fuels/electricity-stations>; and megawatt-level charging, which EPA describes as “even higher-powered DCFC.” RIA 107. The standards for megawatt-level charging are “currently under development,” and there are only a handful of megawatt-level chargers in the country. *See id.* (noting eight megawatt-level chargers near Daimler’s North American headquarters); Private Petitioners’ Br. 60 (explaining that there is only one experimental station with operational 1-megawatt ports in the United States).

Larger commercial vehicles, including long-haul tractors, need megawatt-level charging, as they “use a lot of energy and often must recharge quickly to avoid costly downtime.” Argonne Nat’l Lab., *Charging for Heavy-Duty Electric Trucks*, https://www.anl.gov/sites/www/files/2023-03/MCS_FAQs_Final_3-13-23.pdf.

For example, if a long-haul trucker wants to charge his electric semi-trailer truck during a half-hour break, a 1.6-megawatt charger would give him 400 miles of

charge in 30 minutes. *Id.* And long-haul, heavy-duty electric vehicles must be charged “en-route,” or on the road—in other words, at public charging stations, not private depots. *E.g.*, Hussein Basma et al., *Total Cost of Ownership of Alternative Powertrain Technologies for Class 8 Long-Haul Trucks in the United States* 12 (“Basma Study”) <https://theicct.org/wp-content/uploads/2023/04/tco-alt-powertrain-long-haul-trucks-us-apr23.pdf> (“We assume long-haul trucks will utilize on-route public charging stations at truck stops along highways.”). Lower-wattage DCFCs, such as the 350-kilowatt DCFCs discussed extensively by EPA, are no substitute for megawatt-level charging. *E.g.*, 89 Fed. Reg. at 29,542, 29,547-48. Even at a 350-kilowatt DCFC port, that same long-haul truck could take 7.4 hours to charge. Atlas Report at 22.

In its statements about the Phase 3 rule, EPA acknowledges the importance of having a charging infrastructure capable of supporting megawatt-level charging for long-haul trucks. *See, e.g.*, 89 Fed. Reg. at 29,556 (assuming that stations will have 17 one-megawatt ports); *id.* at 29,536 (assuming that day cabs and sleeper cabs can spend “less than 30 minutes ... mid-day charging at 1 [megawatt]”). Yet EPA neglected to address how it expected that charging infrastructure to materialize. EPA “assume[d] public charging needs will be met with a mix of megawatt-level” charging and “150 kw” charging, “consistent with a recent ICCT analysis [the Basma Study].” 89 Fed. Reg. at 29,542. But it provided no real support for that

assumption.

Consider the question of *how many* megawatt-level charging stations would be needed for long-haul electric trucking to be feasible. Long-haul electric trucks need to charge at public stations, yet EPA made no attempt to “directly estimate the number of public [electric vehicle supply equipment] ports that would be needed to support the [battery electric vehicles] that we project to use public charging”; instead, it simply assumed that the infrastructure would be developed, with costs “passed onto [battery electric vehicle] owners through the charging price.” *Id.* The number is somewhere well into the thousands: Atlas Public Policy estimates that installing ten 2-megawatt ports at every 100 miles of the Primary Highway Freight System would require 4,151 ports nationwide. *See* RIA 119 & n.550.⁷ Atlas goes on to estimate that, for complete coverage of the entire National Highway Freight Network, 5,785 2-megawatt charging ports will be needed. *See id.* EPA does not explain how it expects those ports to be constructed, and whether they will be built in time to meet the Phase 3 rule’s implementation timeline.

EPA also failed to explain who will pay for the necessary public charging stations. It merely announced its expectation “that public [electric vehicle supply equipment] stations will be built to meet demand.” RTC 891. While EPA did note funding “has been committed specifically for charging infrastructure for medium-

and heavy-duty [battery electric vehicles],” RTC 892 (citing an Atlas study estimating \$30 billion in such funding, committed by public and private sources), that funding is nowhere near enough. To start, the funding is for *both* medium-duty and heavy-duty vehicles. The same policy center that calculated the \$30 billion estimate on which EPA relies also determined that long-haul trucking alone will need at least \$62 billion in charging infrastructure development. *See* Atlas Report at 23. Put differently, EPA’s own source forecasts for high-capacity charging infrastructure a *minimum* shortfall of \$32 billion.

EPA’s gauzy assumptions were unjustified, particularly in light of the many commenters expressing concerns about who would pay for the development of a nationwide public charging infrastructure and how that infrastructure would come about. *See* RTC 887-89 (summarizing those comments). EPA itself recognized that a “key question[] for future public charging needs, particularly for long-haul vehicles, is how many stations will be needed to provide geographic coverage across the country.” RIA 119. As EPA left that “key question” unanswered, its conclusions about charging infrastructure were not the result of reasoned decision-making, thereby rendering the Phase 3 rule arbitrary and capricious. *Columbia Falls*, 139 F.3d at 923 (holding that, “[i]f ... the model is challenged, the agency must provide a full analytical defense,” and noting that the agency “retains a duty to examine key assumptions as part of its affirmative burden of promulgating and explaining a non-

arbitrary, noncapricious rule”).

2. *Permitting delays.* As EPA acknowledges, “[t]he construction of any new charging station requires compliance with various building and safety regulations,” and “[p]ermitting times vary based on state or local jurisdiction, site specifics, and other factors.” RIA 122. Moreover, “permitting ... times could be longer for larger, more complex, and/or higher-power charging stations.” *Id.* at 123. In this vein, commenters cited evidence that “the permitting process for DCFC stations is sometimes lengthy and fraught with delays due to unfamiliarity with the technology, protracted zoning reviews, and undefined requirements for permitting DCFC.” RTC 903 (comment of Daimler Truck North America LLC (citation omitted)).

In response, EPA agreed that permitting delays could impact “infrastructure deployment times,” but it asserted that “permitting generally falls within state and local jurisdictions” and therefore “specific policies to streamline or standardize it are outside the scope of this rulemaking.” RTC 914. EPA then concluded that it does not “think permitting times will pose a barrier to the overall pace of infrastructure deployment supporting [battery electric vehicle] adoption.” *Id.*

To justify this conclusion, EPA opined that permitting issues will be limited, because “approximately 88%” of EPA’s “projected depot ports will be Level 2.” *Id.* But there are two problems with EPA’s response. First, as explained above, EPA

has not even attempted to calculate the number and charging capacity of public charging stations needed to make long-distance trucking viable. Long-haul electric trucking is not possible with a charging infrastructure largely consisting of Level 2 ports. Second, EPA's response fails to address the concern of several commenters that higher-wattage charging stations will likely require more complex permitting approval.

EPA also tried to bypass public-infrastructure concerns by noting that it is not counting on public charging until model year (MY) 2030, which “allow[s] time for public infrastructure to develop.” RTC 914-15. The absence of adequate public charging, however, is only part of the problem. And EPA did not engage in any actual analysis to determine whether the MY 2030 date is sufficient or indicate the basis for that conclusion. EPA therefore failed to “provide a reasoned explanation of its basis for believing that its projection is reliable” and “a defense of its methodology for arriving at numerical estimates.” *Bluewater Network*, 370 F.3d at 22.

II. EPA's feasibility analysis failed to consider the added labor costs of operating long-haul electric trucks, which EPA recognized as one of the two “largest shares of ... vehicle operating costs.”

Several commenters told EPA that electrification will mean charging eats up more of a truck driver's limited workday than refueling. As a result, operators of long-haul trucks will need to use additional drivers—and pay higher labor costs. As

ATA explained in its comments on the proposed Phase 3 rule, long-haul trucks require “significantly heavier batteries,” which means they have “reduced payload capacity.” ATA Comments 4. That reduced payload capacity means “limited mileage range, and [more] downtime for charging,” the consequence of which is that “more trucks and drivers are needed to move the same amount of freight.” *Id.* Other groups echoed similar concerns. *See* RTC 748 (Chevron noting that “[an electric] truck may be idle for several hours while recharging the batteries and may have to recharge more frequently due to range limitations,” which “will have a negative impact on efficiency, requiring more trucks, drivers, and trips to deliver the same quantity of cargo”); RTC 752 (Valero explaining that federal law “regulates the number of hours commercial drivers may drive and work per day and week,” and “[g]iven the time intensity of EV charging, additional drivers will be needed to ensure [heavy-duty] fleets’ charging needs are satisfied while complying with the applicable hours-of-service regulations”).

EPA ultimately did not factor this expense into its cost-benefit analysis or its feasibility analysis. EPA’s unexplained omission further demonstrates the flaws with the Phase 3 rule’s assumptions, making the rule arbitrary and capricious.

The omission is all the more glaring given that EPA recognizes that “outlays for labor and fuel generally constitute the two largest shares of [heavy-duty] vehicle operating costs.” 89 Fed. Reg. at 29,702; *see* RIA 730 (same). And EPA’s cost-

benefit analysis assumes “significant reductions in operating costs for [heavy-duty] ZEVs compared to comparable ICE vehicles.” RIA 730. Yet the agency failed to consider the added labor costs for long-haul truck operators.

In a footnote, EPA stated that it “do[es] not expect the labor costs for drivers to differ between [internal combustion engine] and [zero emission] vehicles.” RIA 237 n.963. That conclusory assertion is the entirety of the agency’s explanation—or non-explanation, rather. And it cannot be squared with EPA’s recognition that “outlays for labor” are one of “the two largest shares of [heavy-duty] vehicle operating costs.” 89 Fed. Reg. at 29,702; *see* RIA 730 (same). Accordingly, “[t]he agency’s explanation contradicts itself and thus fails to meet the requirement of a reasoned cost-benefit analysis.” *Interstate Nat. Gas Ass’n of Am. v. Pipeline and Hazardous Materials Safety Admin.*, 114 F.4th 744, 755 (D.C. Cir. 2024); *see also Nat. Res. Def. Council v. U.S. Nuclear Regul. Comm’n*, 879 F.3d 1202, 1214 (D.C. Cir. 2018) (“[I]t would be arbitrary and capricious for the agency’s decision making to be ‘internally inconsistent.’” (citation omitted)).

Given the importance of labor costs, EPA’s failure to consider those costs means that it has “entirely failed to consider an important aspect of the problem.” *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983). EPA’s decision thus is arbitrary and capricious on this ground as well.

This failing undermines EPA’s feasibility analysis, not just its cost-benefit analysis. The agency’s analysis of feasibility turns on a very optimistic zero-emission-vehicle adoption rate, which itself relies on a “payback” theory—*i.e.*, that purchasers will choose to pay higher costs upfront for zero-emission vehicles because they “reduce operating costs,” particularly “outlays for ... fuel.” 89 Fed. Reg. at 29,702; *see id.* at 29,703 (“[I]t is reasonable ... to conclude that truck purchasers are very unlikely to ignore the significant operational cost savings associated with [heavy-duty zero-emission vehicles].”). In fact, EPA claims that “economic theory suggests that the market should deliver those savings, and increase [zero-emission-vehicle] adoption, even without EPA’s standards,” and the rule is needed only to counteract “an ‘energy efficiency gap’ or ‘energy paradox’” that somehow thwarts rational market behavior. RIA 730.

EPA’s “payback” analysis has many flaws, which the Private Petitioners discuss (at 53-62). The agency’s failure to account for increased labor costs resulting from zero-emission-vehicle adoption is one such glaring flaw. EPA conducted its “payback” calculations on the assumption that operators would have “strong incentives” to reduce fuel outlays, which is one of “the two largest shares of [heavy-duty] vehicle operating costs.” 89 Fed. Reg. at 29,702. But EPA never evaluated whether, and to what extent, the other major operational cost—labor—might undermine the incentive structure EPA posits. EPA’s failure to consider the cost of

labor—the other of the two “largest shares of ... vehicle operating costs”—as part of its feasibility projections further supports the conclusion that the Phase 3 rule is arbitrary and capricious.

CONCLUSION

The petitions for review should be granted.

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CERTIFICATE OF COMPLIANCE

This brief complies with the type volume limitations of Federal Rules of Appellate Procedure 29(a)(5) and 32(a)(7)(B) because it contains 6,338 words, excluding the parts exempted by Rule 32(f).

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I hereby certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the District of Columbia Circuit by using the appellate CM/ECF system on October 23, 2024, and the text of the electronic brief is identical to the text of the paper copies.

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