ORAL ARGUMENT NOT YET SCHEDULED

No. 14-1268

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

STATE OF KANSAS, et al.,

Petitioners,

v.

ENVIRONMENTAL PROTECTION AGENCY, et al.,

Respondents.

On Petition for Review from the Environmental Protection Agency

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BRIEF FOR THE PETITIONERS

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October 28, 2015 - Final Version

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CERTIFICATE AS TO PARTIES, RULINGS, AND RELATED CASES

Pursuant to D.C. Circuit Rules 26.1 and 28(a)(1), and Fed. R. App. P. 26.1, the undersigned counsel certifies as follows:

(A) Parties and Amici. The Petitioners are the State of Kansas, the State of Nebraska, the Energy Future Coalition, and Urban Air Initiative, Inc.

The Respondents are the U.S. Environmental Protection Agency and Gina McCarthy, Administrator of the U.S. Environmental Protection Agency.

(B) Rulings Under Review. The ruling under review is the U.S. Environmental Protection Agency's *Official Release of the MOVES2014 Motor Vehicle Emissions Model for SIPs and Transportation Conformity*, published at 79 Fed. Reg. 60343, on October 7, 2014.

(C) Related Cases. There are no related cases.

October 28, 2015

/s/ Adam R.F. Gustafson
Adam R.F. Gustafson

CORPORATE DISCLOSURE STATEMENT

Pursuant to Fed. R. App. P. 26.1 and Circuit Rules 26.1 and 28(a)(1), Petitioners make the following disclosure:

The Energy Future Coalition is an unincorporated initiative of the Better World Fund, which is in turn a nonprofit publicly supported organization incorporated in a manner consistent with Section 501(c)(3) of the Internal Revenue Code. The Energy Future Coalition's purpose is to identify and advance pragmatic solutions to energy and environmental policy challenges that can achieve broad-based bipartisan support in the public interest. The Better World Fund builds and implements public-private partnerships to address the world's most pressing problems, and works to broaden support for the UN through advocacy and public outreach. No "parent company" or publicly-held company has a 10% or greater ownership interest in the Energy Future Coalition or the Better World Fund.

Urban Air Initiative, Inc. (UAI) is a social welfare organization incorporated in a manner consistent with Section 501(c)(4) of the Internal Revenue Code. UAI is dedicated to educating the public about the health threats posed by domestic use of petroleum-based fuels, and to taking positive steps to reduce the threat to public health by encouraging a change in the additives used in such fuels. UAI's goal is to improve the public's health by

focusing on U.S. urban areas where citizens are exposed to the most dangerous levels of vehicle emissions. No "parent company" or publicly-held company has a 10% or greater ownership interest in UAI.

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page(s)

CASES

* Authorities upon which we chiefly rely are marked with asterisks.

PUBLIC LAWS AND U.S. CODE

REGULATORY MATERIALS

MISCELLANEOUS

GLOSSARY

APA	Administrative Procedure Act, 5 U.S.C. §§ 500 *et seq.*
Aromatic hydrocarbons	Chemicals used in gasoline to increase octane levels that increase emissions of PM, VOCs, NOx, and other air toxics.
Blendstock	The base gasoline fuel to which ethanol is added in an ethanol-gasoline blend
CO	Carbon monoxide
Conformity analysis	A State's required demonstration that its federally funded activities, including transportation projects, "conform to" an applicable SIP and will not delay compliance with the applicable NAAQS. 42 U.S.C. § 7506(c)(1).
Distillation temperature	The temperature at which a given percentage of a fuel's volume vaporizes
DOT	Department of Transportation
E0	Gasoline with no ethanol
E10	Gasoline with 10% ethanol
E15	Gasoline with 15% ethanol
E20	Gasoline with 20% ethanol
E85	Gasoline with 85% ethanol
EPA	Environmental Protection Agency
EPAct	The Energy Policy Act of 2005, Pub. L. 109-58, 42 U.S.C. § 15801 et seq.

EPAct study	A study of the effects of several fuel components on air pollution, on which the MOVES2014 model's emissions factors are based
EPAct Final Report	*Assessing the Effect of Five Gasoline Properties on Exhaust Emissions from Light-Duty Vehicles Certified to Tier 2 Standards: Analysis of Data from EPAct Phase 3 (EPAct/V2/E-89)*, Final Report (Apr. 2013)
Ethanol	A clean, high-octane biofuel additive for gasoline, commonly made from corn
G-efficiency	A measure of design optimality for regression problems
Hot-spot analysis	A State's required demonstration that transportation projects will not cause or increase in severity the State's localized nonattainment with a PM or CO NAAQS. 40 C.F.R. § 93.116
IQA Petition	Petitioners' Request for Correction of Information concerning the EPAct study and MOVES2014 model, filed with EPA pursuant to the agency's Information Quality Act Guidelines
Match blending	The formulation of ethanol-blend test fuels using pre-adjusted gasoline blendstocks to maintain select fuel parameters with the addition of ethanol
MOBILE4.1	EPA's first vehicular emissions model promulgated in response to the Clean Air Act Amendments of 1990
MOBILE5	EPA's 1993 major update to the MOBILE4.1 model
MOBILE5a	EPA's 1993 minor revision of MOBILE5

MOBILE5a_H	EPA's non-binding 1994 update to MOBILE5a
MOBILE5b	EPA's 1996 interim update to MOBILE5a
MOBILE6	EPA's 2002 major update to the MOBILE5 model
MOBILE6.2	EPA's 2004 minor update to MOBILE6
MOVES2004	EPA's first draft of the Motor Vehicle Emission Simulator (MOVES) model
MOVES2009	EPA's second draft of the MOVES model
MOVES2010	EPA's first official Motor Vehicle Emission Simulator (MOVES) model, adopted in 2010 to replace MOBILE6.2
MOVES2010a	EPA's 2010 update to MOVES2010, for its first application to $PM_{2.5}$ hot-spot analysis
MOVES2010b	EPA's 2012 minor update to MOVES2010a
MOVES2014	EPA's 2014 "major revision" of its vehicular emissions model for use in SIPs, conformity analysis, and hot-spot analysis, incorporating the EPAct study's results
NAAQS	National Ambient Air Quality Standards for pollutants, including ozone, $PM_{2.5}$, and SO_2, promulgated by EPA pursuant to 42 U.S.C. § 7409(a)(1)
NO_X	Nitrogen oxide, a precursor of ozone
Nonattainment area	A metropolitan statistical area within a State that is not in compliance with a NAAQS
$PM_{2.5}$	Particulate matter less than 2.5 micrometers in diameter

PM_{10}	Particulate matter less than 10 micrometers in diameter
RFG	Reformulated gasoline, required in specified nonattainment areas, pursuant to 42 U.S.C. § 7545(k)(1)
RVP	Reid Vapor Pressure—a measure of a fuel's volatility or tendency to vaporize
SIP	State Implementation Plan, describing a State's proposed policies for bringing its nonattainment areas into compliance with a NAAQS
SO_2	Sulfur dioxide
Splash blending	The addition of ethanol to commercial gasoline blendstocks
T50	Temperature at which 50% of a fuel's volume vaporizes
T60	Temperature at which 60% of a fuel's volume vaporizes
T80	Temperature at which 80% of a fuel's volume vaporizes
T90	Temperature at which 90% of a fuel's volume vaporizes
TSA	Transportation Security Administration
VOC	Volatile organic compound, a precursor of ozone

JURISDICTIONAL STATEMENT

Pursuant to section 307(b)(1) of the Clean Air Act, 42 U.S.C. § 7607(b)(1), this Court has jurisdiction to review the final EPA action entitled *Official Release of the MOVES2014 Motor Vehicle Emissions Model for SIPs and Transportation Conformity*, 79 Fed. Reg. 60343 (Oct. 7, 2014).

STATEMENT OF THE ISSUES PRESENTED FOR REVIEW

Petitioners respectfully ask this Court to decide whether EPA's rule ordering the States to use a new vehicular emissions model, MOVES2014, in their air quality planning and analysis is procedurally unlawful because:

1. EPA evaded public notice and comment procedure in violation of the Administrative Procedure Act, 5 U.S.C. § 553(b), (c); and

2. EPA bypassed its own Science Advisory Board in violation of 42 U.S.C. § 4365(c)(1).

Petitioners further ask this Court to decide whether the MOVES2014 model is substantively arbitrary and capricious because:

3. The model is based on a flawed fuel effects study that erroneously blamed ethanol for increased emissions from test fuels that were manipulated by unrealistically adding more toxic components to

higher ethanol blends, yielding a slate of fuels that do not represent actual market fuels;

4. MOVES2014's modeling of the emissions effects of ethanol is demonstrably inaccurate, as it estimates that ethanol *increases* emissions of pollutants that it actually *reduces*; and

5. MOVES2014 requires the States to use fuel parameter inputs that are inconsistent with the real-world fuel it is supposed to model.

STATUTES AND REGULATIONS

EPA's *Official Release of the MOVES2014 Motor Vehicle Emissions Model for SIPs and Transportation Conformity* was published at 79 Fed. Reg. 60343 (Oct. 7, 2014). All applicable statutes and regulations are contained in Addendum B, pursuant to Circuit Rule 28(a)(5).

STATEMENT OF THE CASE

The challenged rule requires States to use EPA's new MOVES2014 vehicular emissions model in crafting their State Implementation Plans (SIPs) for compliance with EPA's National Ambient Air Quality Standards (NAAQS). Beginning in October 2016, States must also use MOVES2014 to

demonstrate that their transportation projects conform to their SIPs or face the threat of losing federal highway funds.

EPA's "Official Release" of MOVES2014[1] is both procedurally unlawful and substantively arbitrary and capricious:

As a matter of procedure, the rule violates the APA because EPA promulgated it in final form without public notice and an opportunity for interested parties to comment. EPA also violated 42 U.S.C. § 4365(c)(1), a provision of the Clean Air Act that requires the agency to provide the MOVES2014 model and underlying data to the Science Advisory Board before finalizing the rule.

As a matter of substance, MOVES2014 is arbitrary and capricious because its modeling of ethanol's emissions effects is fundamentally flawed. EPA's model projects that adding ethanol to gasoline increases emissions of criteria pollutants and their precursors, but in reality the exact opposite is true: adding ethanol reduces those emissions. The model's counterfactual assumptions are based on the erroneous results of a fuel effects study, known as the "EPAct study," that was designed so poorly that the harmful emissions effects of other gasoline components were attributed to ethanol. In addition,

[1] App. 435 (*Official Release of the MOVES2014 Motor Vehicle Emissions Model for SIPs and Transportation Conformity*, 79 Fed. Reg. 60343, 60344 (Oct. 7, 2014)).

the MOVES2014 model assigns to the States fuel parameters that do not correspond to the fuel actually used in those States.

As a result of the model's flaws, it cannot possibly produce accurate results for the States that are now required to use MOVES2014 in designing policies for achieving compliance with the NAAQS. Indeed, the model will have the opposite of its intended effect, causing States to implement policies that increase pollution rather than reducing it.

STATEMENT OF FACTS

I. REGULATORY BACKGROUND

The challenged rule mandates the use of MOVES2014, EPA's new vehicular emissions model, as an integral component of EPA's far-reaching scheme of air quality regulation in the States.

A. National Ambient Air Quality Standards

"Air quality regulation under the [Clean Air Act] is an exercise in cooperative federalism." *Dominion Transmission, Inc. v. Summers*, 723 F.3d 238, 240 (D.C. Cir. 2013). EPA sets National Ambient Air Quality Standards for certain "criteria pollutants," including ozone, particulate matter (PM), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). 42 U.S.C. § 7409(a)(1). But rather than dictating how the States must comply with the NAAQS, the Clean

Air Act allows States to develop their own air quality policies, tailored to the priorities of their own local economies.

B. State Implementation Plans

For a "nonattainment area" that does not meet the NAAQS for a given pollutant, a State submits to EPA its SIP describing how the State intends to achieve compliance with the NAAQS. *Id.* § 7410(a). The SIP must demonstrate that the State will use "all reasonably available control measures" to bring the area into attainment. *Id.* § 7502(c)(1). "Reasonably available control measures" include fuel regulations intended to control motor vehicle emissions of criteria pollutants and their precursors. *See Miss. Comm'n on Envt'l Qual. v. EPA*, No. 12-1309, slip op. at 8 (D.C. Cir. June 2, 2015). If a State does not submit an adequate SIP, EPA develops its own implementation plan. 42 U.S.C. § 7410(c)(1).

To determine what effect a State's proposed implementation policies will have on its compliance with the NAAQS, the Clean Air Act requires EPA to promulgate and periodically revise the model ("emissions factors") used to "estimate the quantity of emissions" of the relevant pollutants. 42 U.S.C. § 7430. EPA must also authorize "improved emissions estimating techniques" suggested by "any person" following "appropriate public participation." *Id.*

This case concerns EPA's "Official Release" of its most recent vehicular emissions model—MOVES2014.

C. Transportation Conformity

Once a State's SIP has been approved, or a federal implementation plan has been instituted in its place, the State must, as a requirement of receiving federal funds, demonstrate that its federally funded activities, including transportation projects, "conform to" that plan. 42 U.S.C. § 7506(c)(1). This "transportation conformity" analysis requires the State to show that its highway projects will not cause, contribute to, or worsen a NAAQS violation, or delay attainment of a NAAQS, *id.* § 7506(c)(1)(B); and that the State's transportation program "implement[s] the transportation provisions of any applicable [SIP]," *id.* at § 7506(c)(2). In conducting this transportation conformity analysis, States are required to use "the latest emission estimation model available"—a requirement that is satisfied by use of EPA's latest vehicular emissions model for SIP purposes. 40 C.F.R. § 93.111.

D. Hot-Spot Analysis

For certain transportation projects, the State must conduct a localized, project-level "hot-spot analysis," using the same emissions model, to demonstrate that "no new local violations [of the NAAQS for carbon monoxide (CO) and particulate matter (PM_{10}, and $PM_{2.5}$)] will be created and

the severity or number of existing violations will not be increased as a result of the project." 40 C.F.R. § 93.116.

II. EPA IMPOSED THE MOVES2014 MODEL ON THE STATES WITHOUT NOTICE AND AN OPPORTUNITY FOR COMMENT.

MOVES2014 is a "major revision" of the prior model. App. 436 (Official Release, 79 Fed. Reg. at 60344). Its significant changes include new assumptions about fuel content resulting from recent rulemakings and the capability to model new kinds of fuel.

But most importantly, MOVES2014 marks a radical departure from EPA's prior modeling of the emissions effects of blending ethanol into gasoline. Unlike the prior model, MOVES2010b, which treated all blends over 5% ethanol as E10 (gasoline with 10% ethanol), *see* App. 102, 103 (MOVES2010b: Additional Toxics Added to MOVES, at 8, 12), MOVES2014 allows modeling of higher ethanol levels, including E15 and E20 (gasoline with 15% and 20% ethanol). And it estimates higher emissions of volatile organic compounds (VOCs), nitrous oxide (NO_X), particulate matter ($PM_{2.5}$ and PM_{10}), and sulfur dioxide (SO_2) with every increase in ethanol concentration. *See infra* at 56; Wilkinson Declaration, Addendum A, at A-28, ¶ 32.a (In runs of the MOVES2014 model for the year 2017 in three different

cities, "VOC, NO_X, PM_{10}, $PM_{2.5}$ and SO_2 emissions estimates trend up from E0 to E30 fuels.").

Pursuant to EPA's Official Release of the MOVES2014 model, States must *immediately* begin using MOVES2014 in the preparation of any new SIPs. App. 436 (79 Fed. Reg. at 60344). And beginning October 7, 2016, States must also use MOVES2014 for transportation conformity and hot-spot analysis. App. 437–38 (*Id.* at 60345–46).

The Official Release of MOVES2014 was not preceded by public notice and an opportunity for comment, as prior vehicular emissions models were, *see infra* at 9–15, even though EPA characterized MOVES2014 as a "*major* revision" of the prior model, in contrast to past "*minor* updates."[2] Nor did MOVES2014 undergo the "thorough peer/outside review process that has been characteristic of earlier versions of the model." App. 471 (Release of MOBILE5b (Oct. 11, 1996)). Before publishing the Official Release, EPA issued nonbinding "Policy Guidance" on the use of MOVES2014. App. 308. But EPA did not publish notice in the Federal Register; nor did it invite

[2] App. 311, 310 (EPA, Policy Guidance on the Use of MOVES2014 for State Implementation Plan Development, Transportation Conformity, and Other Purposes 3, 2 (July 2014)) (emphases added); *accord* App. 436 (Official Release, 79 Fed. Reg. at 60344).

comment on the model—or on the Guidance, which it characterized as "not a regulation." App. 314 (*Id.* at 6).

III. EPA HAS USED NOTICE AND COMMENT PROCEDURE TO PROMULGATE PRIOR VEHICULAR EMISSIONS MODELS.

MOVES2014 is the latest in a series of major revisions to EPA's vehicular emissions model. As it did with those prior models, EPA published a "notice of availability" of the new model, mandating that States use it in their SIPs and transportation conformity analyses. *Compare* App. 435 (MOVES2014), *with* App. 364 (MOBILE4.1); App. 371 (MOBILE5); App. 386 (MOBILE6); App. 421 (MOVES2010); *and* App. 428 (MOVES2010a).

But MOVES2014 is the first major revision *not* to be subjected to the regular, transparent process of notice and comment. Until it issued the challenged rule in this case, EPA had promulgated all major revisions of its vehicular emissions model following notice and comment, as shown below.

MOBILE4.1. The Clean Air Act Amendments of 1990 required EPA, within six months of enactment and at least every three years thereafter, to "review and, if necessary, revise, the methods ('emissions factors') used . . . to estimate the quantity of emissions of [various pollutants] from . . . mobile sources." 42 U.S.C. § 7430. MOBILE4.1 was the first vehicular emissions model promulgated in response to this law. Before EPA issued this revision of

MOBILE4, the agency published notice in the Federal Register of a public workshop "to provide an opportunity for comment . . . before release of a revised version of the model." App. 362 (56 Fed. Reg. 11745, 11745 (Mar. 20, 1991)). The notice invited "[w]ritten comments . . . on [any] aspect[] of the model." App. 363 (*Id.* at 11746). Only after this opportunity for public input did EPA require states to use MOBILE4.1. App. 364 (56 Fed. Reg. 42053 (Aug. 26, 1991)). EPA's transparent process—advance notice, public workshops, and opportunity for comment—charted a path that the agency followed with all subsequent major revisions to the vehicular emissions model—until MOVES2014.

MOBILE5. While EPA's next model, MOBILE5, was still in development, the agency gave notice of two public workshops and an "opportunity to provide comment . . . at the workshop or subsequently in writing" on the development of the model and the factors to be included in it. App. 367 (57 Fed. Reg. 5445 (Feb. 14, 1992)); App. 369 (57 Fed. Reg. 27771 (June 22, 1992)). EPA promised to consider written comments submitted after the draft release of the model for inclusion in the final version of MOBILE5.

App. 370 (*Id.* at 27772). Only after this opportunity for comment did EPA require States to use MOBILE5. App. 371 (58 Fed. Reg. 7780 (Feb. 9, 1993)).[3]

MOBILE5b. In 1996, EPA released MOBILE5b, an "interim update to the current highway vehicle emission factor model," that took account of several intervening rule changes and made other minor design changes. App. 469 (Release of MOBILE5b, at 1 (Oct. 11, 1996)). The release made clear that "use of MOBILE5b is not being required at this time." *Id.* Instead, EPA sought "comment from affected parties" on the need for and use of the model, including "when if ever use of this version should be required." App. 473 (Comments on Use of MOBILE5b (Nov. 22, 1996)). EPA never finalized MOBILE5b.

MOBILE6. Instead, in 2002, EPA promulgated MOBILE6, "the first major update of the MOBILE model since [MOBILE5 in] 1993." App. 387 (67 Fed. Reg. 4254, 4255 (Jan. 29, 2002)). Before mandating that States use the model, EPA advertised public workshops and invited public comment.

[3] Three months after the official release of MOBILE5, EPA issued MOBILE5a, a minor revision that corrected errors in the code and replaced preliminary estimates of the emissions effects of new rules with updated estimates. App. 374 (58 Fed. Reg. 29409 (May 20, 1993)). EPA released another minor revision, MOBILE5a_H, in November 1994, although MOBILE5a remained the "official version of the model." App. 380 (62 Fed. Reg. 10849, 10849 (Mar. 10, 1997)).

See App. 383 (62 Fed. Reg. 10849, 10852 (Mar. 10, 1997)); App. 385 (62 Fed. Reg. 45802, 45803 (Aug. 29, 1997)). And EPA "modified" the proposed model "in response [to] comments received." *See* App. 385 (62 Fed. Reg. at 45803).

MOBILE6.2. MOBILE6 was eventually replaced by MOBILE6.2, which added PM emissions estimates, corrected "some minor coding errors" related to emissions of three other pollutants, and revised the CO emissions estimates for certain new vehicles. App. 406 (69 Fed. Reg. 28830, 28830 (May 19, 2004)). EPA did not seek comment before this initial release: the States were under no obligation at that time to prepare SIPs or conduct transportation conformity analysis for $PM_{2.5}$,[4] and MOBILE6.2's other changes had a "generally very small" impact. *Id.* at 28831. No party challenged EPA's Official Release of MOBILE6.2.

In conjunction with its implementation of the $PM_{2.5}$ NAAQS, EPA *did* seek public comment on the application of transportation conformity analysis to $PM_{2.5}$, App. 391–97 (68 Fed. Reg. 62690, 62706–12 (Nov. 5, 2003)), as well as on whether and how to require quantitative PM hot-spot analysis, App.

[4] *See* App. 408 (69 Fed. Reg. at 28832) ("EPA has not yet finalized implementation policy for the $PM_{2.5}$ . . . NAAQS. . . . No $PM_{2.5}$ SIPs have previously been done using other models and therefore[] the release of MOBILE6.2 . . . does not constitute a change in models.").

397–99 (*id.* at 62712–14); App. 413 (69 Fed. Reg. 72140, 72143 (Dec. 13, 2004)). Interested parties took these opportunities to comment on MOBILE6.2's application to transportation conformity, *see* App. 410 (69 Fed. Reg. 40004, 40033 (July 1, 2004)), and hot-spot analysis, *see* App. 416 (71 Fed. Reg. 12468, 12499 (Mar. 10, 2006)). In response to a challenge by some of those commenters to EPA's procedure, this Court cited EPA's response to their comments on the model in holding that EPA *properly gave notice and invited comment* before declining to extend MOBILE6.2 to hot-spot analysis. *Envt'l Def., Inc. v. EPA*, 509 F.3d 553, 562 (D.C. Cir. 2007); *see infra* at 32–34.

MOVES2010. Over several years, EPA developed a new framework for modeling vehicle emissions, MOVES, which incorporated new vehicle data and provided "greater flexibility with input and output options." App. 491 (MOVES2009 Q&A at 2, ¶ A3 (Apr. 2009)). The agency employed liberal notice-and-comment procedure at every stage of the process.

First, in 2005, EPA announced the "draft release" of its new Motor Vehicle Emission Simulator, MOVES2004. App. 486 (Draft MOVES2004 Model and Documentation Released for Public Review (Jan. 6, 2005)). EPA made the draft model, underlying data, and reports available online and requested comments, *id.*, which would be "considered in the development of

the next version of MOVES." App. 488 (A Roadmap to MOVES2004, EPA420-S-05-002, at 8 (Mar. 2005)).

Later, while "MOBILE6.2 remain[ed] the approved motor vehicle emissions model," App. 493 (MOVES2009 Q&A at 4, ¶ A7), EPA released Draft MOVES2009 to allow users to " 'test drive' and comment upon" the new model, "so that EPA c[ould] resolve any issues and implement any improvements suggested in time for the official release," App. 492 (*id.* at 3, ¶ A6). EPA expressly requested comment on many specific aspects of the model. App. 500, 501, 502, 503, 504 (Draft MOVES2009 Highway Vehicle Population and Activity Data (Aug. 2009), at 4, 10, 20, 21, 76).

After this comment period, EPA finalized the draft MOVES model as MOVES2010 and published its "Official Release," requiring the states to use it instead of MOBILE6.2 for purposes of SIPs and conformity analysis. App. 422 (75 Fed. Reg. 9411, 9412 (Mar. 2, 2010)).

MOVES2010a. MOVES2010 was initially not required for PM hot-spot analysis. Pursuant to a settlement agreement in *Environmental Defense, Inc. v. EPA*, No. 06-1164 (D.C. Cir.), EPA published draft guidance and requested comment on it before extending MOVES2010 to PM hot-spot analysis. App. 425 (75 Fed. Reg. 29537, 29537 & n.3 (May 26, 2010)). After receiving 15 sets

of comments, EPA mandated the use of MOVES2010a for conformity and hot-spot analysis. App. 432 (75 Fed. Reg. 79370, 79374 (Dec. 20, 2010)).[5]

IV. THE EPACT STUDY ON WHICH EPA BASED MOVES2014 IMPUTES TO ETHANOL THE EMISSION EFFECTS OF OTHER GASOLINE COMPONENTS.

MOVES2014's adverse treatment of ethanol's emissions effects is based directly on the results of a large-scale fuel effects study, which are incorporated in the new model. *See* App. 335–46 (Air Toxics in MOVES2014, at 18–22, 34–40). The "EPAct study,"[6] as it is known, was a response to the Energy Policy Act of 2005, which required EPA to make several studies on the air pollution effects of ethanol and other fuel components. Pub. L. 109-58, 119 Stat. 594, 1080–81, §§ 1505–06 (Aug. 8, 2005).

EPA conducted the EPAct study with the assistance of Southwest Research Institute and the Coordinating Research Council, a non-profit organization supported by the American Petroleum Institute and automobile

[5] MOVES2010b was a subsequent "minor model revision[]" that "enhance[d] model performance and d[id] not significantly affect the criteria pollutant emissions results from MOVES2010." App. 434 (77 Fed. Reg. 46672, 46674 (Aug. 6, 2012)).

[6] *See* App. 140 (EPA, *Assessing the Effect of Five Gasoline Properties on Exhaust Emissions from Light-Duty Vehicles Certified to Tier 2 Standards: Analysis of Data from EPAct Phase 3 (EPAct/V2/E-89)*, Final Report (Apr. 2013) (hereinafter "EPAct Final Report")).

manufacturers. *See* App. 254 (*EPAct/V2/E-89: Final Report on Program Design, App'x A: Re-Design of Fuel Matrices for EPAct Program*, at A-8 (Apr. 2013) (hereinafter "EPAct Re-Design")). A Chevron consultant—but no one from outside the oil industry—was brought in to help design the slate of test fuels to be studied. *See id.*

The EPAct study is an ambitious but misguided analysis of the tailpipe emissions effects of five fuel parameters:

- ethanol content, at increments of 0%, 10%, 15%, and 20% (E0, E10, E15, and E20);
- aromatic hydrocarbon content, measured as a total volumetric percentage of all classes of aromatics, combined;
- Reid Vapor Pressure (RVP), a measure of the fuel's volatility; and
- two distillation temperature parameters, T50 and T90, the temperatures at which 50% and 90% of the fuel's volume vaporizes.

The EPAct study involved 15 vehicles and 27 specially designed test fuels, representing various combinations of pre-determined levels of each of the five targeted parameters. *See* App. 148–49 (EPAct Final Report at 1–2).

The EPAct study's conclusions about ethanol's emissions effects (and, by extension, MOVES2014's modeling of those effects) resulted directly from

the study's convoluted fuel-blending design. The EPAct study's designers did not simply "splash-blend" test fuels by adding different volumes of ethanol to commercial gasoline blendstocks. Instead, they created novel fuels found nowhere in the market through a so-called "match-blending" process in which they pre-adjusted the gasoline blendstocks so that when ethanol was added, the other four selected parameters (total aromatics, RVP, T50, and T90) would match arbitrary levels preordained by the experimental design, but not representative of fuels actually put into real-world gas tanks by real-world drivers. *See* App. 594 (James E. Anderson et al., *Issues with T50 and T90 as Match Criteria for Ethanol-Gasoline Blends*, SAE International, 2014-01-9080, at 1034 (Nov. 1, 2014)).

When ethanol is simply splash-blended into gasoline, it enables a greater portion of the resulting fuel mix to boil at lower temperatures, thereby lowering the fuel's T50 and T90—the temperatures at which 50% and 90% of the fuel is vaporized. *See infra* at 49–50. This effect is a desirable quality of ethanol, because the components of fuel that vaporize at the highest temperatures contribute the most to tailpipe pollution. *See* App. 594–95 (Anderson at 1034–35).

To needlessly counteract this (beneficial) effect of ethanol, the EPAct study's higher ethanol blends were created from blendstocks with artificially

elevated T50 and T90 boiling points using high-boiling-point aromatic and saturated hydrocarbons. *See* App. 592 (*Id.* at 1032). That way, the T50 and T90 of the resulting fuel blends would match those of test fuels with lower ethanol content. *Id.* Put another way: the EPAct study's designers added dirty fuel components to ethanol-gasoline blends, undoing ethanol's natural clean-up effect, to mimic the higher T50 and T90 boiling points of non-ethanol gasoline, and in the process produced fuel blends that are not used in the real world.

The ostensible purpose of this confounding fuel-blending methodology was to isolate the emissions effects of each fuel parameter by holding the others constant. *See* App. 153 (EPAct Final Report at 6). But there is no good reason for holding T50 and T90 boiling-point temperatures constant, and the methods used to do so confounded the results, because a host of interacting fuel parameters—not just the five in the EPAct study—affect emissions. Even with regard to boiling points, true matching is impossible: The distillation profiles of blended fuels are not straight lines, and the chemicals added to raise T50 and T90 to match the EPAct study's targeted levels have unintended effects on other points in the distillation curve that are associated with increased pollution. *See infra* at 51.

The EPAct study relied on the premise that "all other factors could be held constant," but as a "MOVES Review Workgroup" explained, it "[d]oesn't work this way for real fuels!" App. 139 (Aron Butler & James Warila, EPAct/V2/E-89: Testing, Results & Application in MOVES2013, at 36 (Apr. 30, 2013)). Gasoline refiners have an economic incentive *not* to artificially elevate boiling points for higher ethanol blends, because it is expensive to do so. *See infra* at 52–54.[7] Not surprisingly then, the resulting EPAct study test fuels deviated significantly from fuels available in the market, *see infra* at 53–55 with unrealistic octane ratings, for example, far outside the normal range, *see infra* at 53–54.

This match-blending methodology led to the EPAct study's conclusion that "[o]ther factors being equal, increasing ethanol is associated with an increase in emissions." App. 154 (EPAct Final Report at 7). Specifically, the EPAct study associated higher levels of ethanol with increased NO_X, $PM_{2.5}$,

[7] EPA's methodology is especially glaring because EPA *itself* has previously acknowledged that when fuel producers "match blend" ethanol into gasoline, they match octane ratings (not T50 and T90), thereby reducing (not increasing) the level of high-boiling-point hydrocarbons in gasoline. *See* App. 418 (*Control of Hazardous Air Pollutants From Mobile Sources*, 72 Fed. Reg. 8428, 8479 (Feb. 26, 2007) (accurately predicting that in the transition to E10, "not only will increased ethanol use decrease aromatics concentrations through dilution, but refiners will make the economic decision to use ethanol to reduce or avoid producing aromatics for the purpose of increasing octane")).

total hydrocarbon (THC), non-methane organic gas (NMOG), non-methane hydrocarbons (NMHC), benzene, and 1,3-butadiene emissions, even though studies in which ethanol is splash-blended show the opposite. *See* App. 571–75 (Information Quality Act Petition at 32–36). The only explanation for the EPAct study's inverted results is that its convoluted match-blending caused the pollution increase because of the *other* fuel components that were added to counteract ethanol's good qualities, and that the ethanol was blamed for these emissions effects.

Many of the flaws in the EPAct study's fuel-blending design were identified in a peer-reviewed study by engineers from Ford and General Motors. App. 587 (James E. Anderson et al., *Issues with T50 and T90 as Match Criteria for Ethanol-Gasoline Blends*, SAE International, 2014-01-9080 (Nov. 1, 2014)). By that time, however, EPA had already imposed its MOVES2014 model, which incorporates the EPAct study's flawed results, on the States without notice and an opportunity for comment. App. 435 (Official Release, 79 Fed. Reg. 60343 (Oct. 7, 2014)).

V. EPA DENIED PETITIONERS' REQUEST TO CORRECT THE MISINFORMATION IN MOVES2014 WITHOUT RESPONDING TO PETITIONERS' CRITICISM OF THE MODEL AND UNDERLYING STUDY.

After filing the petition in this case, Petitioners submitted to EPA a Request for Correction of Information, pursuant to the agency's Information

Quality Guidelines,[8] asking EPA to correct the false information propagated by the MOVES2014 model and the EPAct study. App. 535. Petitioners explained in detail the defects in the model and in the underlying EPAct fuel effects study and invited EPA to moot this case by "withdraw[ing] the challenged model and underlying fuel effects study before briefing commences." App. 546 (*Id.* at 7).

EPA denied the request without responding to the issues it raised, because of its relationship to this litigation. App. 525 (Letter from Janet G. McCabe to Adam Gustafson (May 11, 2015)).

SUMMARY OF ARGUMENT

In its Official Release of MOVES2014, EPA compelled States implementing the agency's air quality standards to use a vehicular emissions model so deeply flawed that its ethanol-related estimates reflect the opposite of what happens in reality. EPA did this without providing any opportunity for outside criticism of the model—either from the public or from the agency's

[8] App. 478 (EPA, Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Environmental Protection Agency (Oct. 2002)).

own Science Advisory Board. As a result, the Official Release is both procedurally unlawful and substantively arbitrary and capricious.

The Administrative Procedure Act requires EPA to provide notice and an opportunity for comment before promulgating a rule. 5 U.S.C. § 553. EPA's failure to do so in this case cannot be justified under any of § 553's narrow exceptions.

MOVES2014 is not an "interpretative rule," but the implementation of a statutory requirement that EPA periodically revise its emissions model, 42 U.S.C. § 7430, and thus a legislative rule deserving of notice and comment. As a "major revision" of the prior model, MOVES2014 works a substantive regulatory change on the Clean Air Act's NAAQS compliance regime—"incorporat[ing] substantial *new* data for emissions," App. 436 (79 Fed. Reg. at 60344), from a *new* fuel effects study, modeling *new* fuels, and setting in place *new* erroneous assumptions that will "curtail [the regulator's] discretion" and frustrate the States' efforts to reduce pollution. *McLouth Steel Prods. Corp. v Thomas*, 838 F.2d 1317, 1322 (D.C. Cir. 1988).

The Official Release is not a policy statement or procedural rule, for the simple reason that it has a "present binding effect" and imposes "new substantive burdens" on the States who now "must" use MOVES2014 in their

NAAQS compliance efforts. *Id.* at 1320; *Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec.* (*EPIC*), 653 F.3d 1, 5–6 (D.C. Cir. 2011); 79 Fed. Reg. at 60345.

EPA also violated the Clean Air Act's requirement that the agency submit its new model to the Science Advisory Board—an expert body with experience reviewing—and criticizing—EPA's computer models. 42 U.S.C. § 4365(c)(1).

MOVES2014 cannot be rehabilitated in its current form because the model is not just procedurally defective but substantively arbitrary and capricious.

To begin with, MOVES2014 incorporates several fatal flaws of the EPAct fuel effects study on which it is based. After a series of unexplained alterations to that study's design, EPA's consultants settled on a convoluted set of specially designed test fuels with five arbitrarily fixed parameters that were achieved by spiking higher ethanol blends with toxic chemicals to offset ethanol's pollution-reducing qualities. These toxic chemicals had unreported effects on other fuel parameters, causing pollution that the EPAct study erroneously attributed to ethanol. And the resulting test fuels bore little resemblance to commercial gasoline, despite EPA's stated goal of "predicting emissions for the majority of in-use fuels." App. 148 (EPAct Final Report at 1).

Because MOVES2014 took flawed emissions data from the EPAct study, it is arbitrary and capricious. Its modeling of ethanol's emission effects lacks "a 'rational relationship' to the real world." *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1053 (D.C. Cir. 2001). Although multiple reliable studies have shown that ethanol blending *reduces* VOCs, NO_X, and $PM_{2.5}$, the MOVES2014 model projects *increased* emissions of each of these pollutants with every increase in ethanol content.

Finally, the default fuel parameters that EPA requires the States to use with its new model are radically inconsistent with the parameters of real-world fuel, making accurate results impossible.

STANDING

The States of Kansas and Nebraska are directly regulated by EPA's Official Release of the MOVES2014 model, which requires the States to use the model in constructing SIPs, App. 435 (79 Fed. Reg. at 60343), and in assessing the conformity of their federally funded transportation projects with those SIPs, App. 436 (*id.* at 60344).

Last year EPA proposed a new NAAQS for ozone "within the range of 0.065 to 0.070 parts per million (ppm)"—more stringent than the current 0.075 ppm standard. 79 Fed. Reg. 75234, 75234 (Dec. 17, 2014). Several counties in

Kansas and Nebraska will be in nonattainment with any standard in the proposed range. *See* Brunetti Declaration, Addendum A, at A-1, ¶ 6; Macy Declaration, Addendum A, at A-5, ¶ 5. EPA plans to finalize the ozone rule in October 2015.[9] Under the Official Release, Kansas and Nebraska will have to use MOVES2014 in developing their SIPs for the new ozone NAAQS, and in subsequent transportation conformity analysis. App. 436 (79 Fed. Reg. at 60344).

"[D]irectly regulated parties" like Kansas and Nebraska "are the most natural challengers for the[] rules" that govern their conduct. *Shays v. FEC*, 414 F.3d 76, 94 (D.C. Cir. 2005). Such parties generally have standing, for when a party "is himself an object of the action" at issue, "there is ordinarily little question that the action" has "caused him injury, and that a judgment preventing" the action "will redress it." *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 561–62 (1992). This case is no exception. The challenged rule constrains the policy choices of the States and inflicts significant environmental, economic, and administrative injuries on them that this Court can redress by vacating the Official Release.

[9] *See* Office of Information and Regulatory Affairs, Office of Management and Budget, Unified Agenda (Spring 2015), http://1.usa.gov/1eNZbGC.

Air Quality. The Official Release's required use of the MOVES2014 model in SIPs will have a detrimental effect on the air quality of Kansas and Nebraska and on the States' ability to provide for the health and welfare of their citizens. Because of a fundamental defect in the underlying fuel effects study, *see infra* at 49–50, the MOVES2014 model associates higher ethanol content with increased emissions of NO_X and VOCs, the two main precursors of ground-level ozone, as well as $PM_{2.5}$, SO_2, and other pollutants. *See* Wilkinson Declaration at A-28, ¶ 32.a. Ozone, $PM_{2.5}$, and SO_2 are NAAQS criteria pollutants for which the Official Release mandates use of MOVES2014. *See* App. 436 (79 Fed. Reg. at 60344). Thus, the model's conclusions about the emissions effects of ethanol will encourage all States with nonattainment areas for these pollutants to develop SIPs that limit the blending and sale of ethanol in motor vehicle fuel within their borders. *See* Brunetti Declaration at A-3, ¶ 15.[10]

But blending ethanol into fuel has been shown to *reduce* emissions of criteria pollutants, their precursors, and other air toxics. *See infra* at 55–57. Thus, SIPs in Kansas, Nebraska, and States upwind of them that limit ethanol

[10] Kansas has previously relied on vehicle and fuel regulations, including "reductions through time of VOCs and NO_X from motor vehicles," to maintain compliance with the ozone NAAQS. *See* App. 532–33 (1 Kansas City Eight-Hour Ozone Maintenance Plan 13–14 (June 15, 2007)); App. 534 (*id.* at 27).

blending (or simply fail to encourage ethanol blending as they would under a corrected model) will have the opposite of their intended effect, increasing pollution, delaying NAAQS attainment, and harming human health. *See* Brunetti Declaration at A-3, ¶¶ 17–19.

This air quality injury gives Kansas and Nebraska standing, because every State, in its capacity as quasi-sovereign, "has an interest independent of and behind the titles of its citizens, in all the earth and air within its domain. It has the last word as to whether . . . its inhabitants shall breathe pure air." *Massachusetts v. EPA*, 549 U.S. 497, 518–19 (2007) (quoting *Georgia v. Tennessee Copper Co.*, 206 U.S. 230, 237 (1907) (Holmes, J.)); *see also id.* at 520 ("Given th[e] procedural right [to challenge final EPA action under the Clean Air Act] and [a State's] stake in protecting its quasi-sovereign interests, the [States] [are] entitled to special solicitude in our standing analysis.").[11]

Revenue. The challenged rule also inflicts a financial injury on Kansas and Nebraska through the perverse incentive that MOVES2014 places on all States with nonattainment areas to reduce the amount of ethanol in gasoline. The corn and ethanol industries of Kansas and Nebraska make a significant

[11] The Urban Air Initiative and the Energy Future Coalition share the States' interest in promoting clean air and human health through policies that encourage rather than limit ethanol blending in fuel. *See supra* at ii-iii.

contribution to their States' economies. Since ethanol is a national commodity, SIPs anywhere in the country that limit ethanol blending in response to MOVES2014 will depress the price of ethanol (and the corn it comes from) in Kansas and Nebraska with detrimental effects on their tax revenues. *See* McClaskey Declaration, Addendum A, at A-4, ¶¶ 2, 5; Sneller Declaration, Addendum A, at A-7, ¶¶ 2–3.

This detrimental effect on tax revenue is a cognizable injury for purposes of standing. *See Wyoming v. Oklahoma*, 502 U.S. 437, 447 (1992) (holding "Wyoming clearly had standing" to challenge an Oklahoma law requiring use of Oklahoma-mined coal, whose effect "has been to deprive Wyoming of severance tax revenues" due to reduced demand for Wyoming-mined coal); *ARCO Alaska, Inc. v. FERC*, 89 F.3d 878, 881 (D.C. Cir. 1996) (holding Alaska had standing to challenge a FERC rate structure that "render[ed] a higher quantity of [heavy oil] uneconomical to produce," thereby "adversely affect[ing] Alaska's oil tax revenue").

Policy Constraint. The Official Release limits the potential policies available to Kansas and Nebraska as they prepare to implement the ozone NAAQS. These States have a financial interest in reducing ozone through policies that *increase* ethanol production within their borders. Since ethanol has been shown to reduce both of ozone's precursors, VOCs and NO_X, *see infra* at

56–57, policies that incentivize use of higher ethanol blends, such as E15, should be available to the States as potential SIP components. Kansas, for example, "would encourage gasoline retailers to market E15 and, if possible, higher ethanol blends if this practice resulted in the lowering of modeled ground-level ozone." Brunetti Declaration at A-3, ¶ 16. But the mandate to use MOVES2014 eliminates such options because that model erroneously estimates that higher ethanol blends produce *more* VOCs and NO_X, not less. *See* Wilkinson Declaration at A-28, ¶ 32.a.

Rules that constrain a State's SIP policy choices give rise to standing. *See West Virginia v. EPA*, 362 F.3d 861, 868 (D.C. Cir. 2004) ("The lower the emissions budget, the more difficult and onerous is the states' task of devising an adequate SIP. Thus, lower growth factors [derived from EPA's Integrated Planning Model] leading to lower emissions budgets cause[] injury to the states as states.").

Compliance Costs. Finally, the challenged rule places a costly administrative burden on the States. In addition to the "hardware, time, and personnel" costs associated with actually running the model to develop SIPs, Kansas and Nebraska will incur costs learning how to use it. *See* Brunetti Declaration at A-3, ¶ 11. Modelers in the Kansas Department of Health and Environment already have experience using MOVES2014's predecessor

model, MOVES2010b. *Id.* But if Kansas is required to use MOVES2014 in its ozone SIP, those personnel will have to "become familiar with the MOVES2014 emissions model" and undergo "training" on the new model. *Id.* ¶ 12; 79 Fed. Reg. at 60345. Such compliance costs give rise to standing. *See Cellco P'ship v. FCC*, 357 F.3d 88, 100 (D.C. Cir. 2004).

If EPA is made to consider and respond to comments on the substantive defects in MOVES2014 and the underlying EPAct fuel effects study, *see infra* at 47–59, EPA will be unable to finalize the model in its present form, *see infra* at 62–64. Thus, vacating the Official Release would redress the challenged rule's detrimental effect on air quality and on the corn and ethanol industries in Kansas and Nebraska, and it would remove the policy constraints and compliance costs that the rule imposes.

For standing purposes, however, this Court need not decide whether Petitioners' substantive claims about MOVES2014 are correct or whether EPA will have to respond favorably to their comments: Because the Petitioners "assert a procedural violation"—namely EPA's failure to submit the rule to notice and comment—this Court "can assume the causal link between that procedural violation and the substantive outcome of the agency action." *Mendoza v. Perez*, 754 F.3d 1002, 1015–16 (D.C. Cir. 2014).

ARGUMENT

I. STANDARD OF REVIEW

Under the Administrative Procedure Act, this Court must "hold unlawful and set aside agency action . . . found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law." 5 U.S.C. § 706(2)(A); *see Nat'l Envt'l Dev. Ass'n's Clean Air Project v. EPA*, 752 F.3d 999, 1008 (D.C. Cir. 2014) ("[I]t is undisputed that the arbitrary and capricious standard of review applies to EPA actions taken under the Clean Air Act.").

A rule fails this standard when it violates the APA's notice-and-comment requirement, *see Mendoza*, 754 F.3d at 1020; when it reflects "a clear error of judgment," *Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co.* (*State Farm*), 463 U.S. 29, 43 (1983); when it is based "upon an erroneous factual premise," *Consol. Edison Co. of N.Y. v. FERC*, 823 F.2d 630, 632 (D.C. Cir. 1987); when it "offer[s] an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise," *State Farm*, 463 U.S. at 43; when it does not "consider an important aspect of the problem," *id.*; or when it fails to state a "rational connection between the facts found and the choice made," *id.*

II. THE OFFICIAL RELEASE OF THE MOVES2014 MODEL IS PROCEDURALLY UNLAWFUL.

A. The Official Release Is a Substantive Rule that Unlawfully Bypassed Notice-and-Comment Procedure.

"An agency is generally required by the APA to publish notice of proposed rulemaking in the Federal Register and to accept and consider public comments on its proposal." *Mendoza v. Perez*, 754 F.3d 1002, 1020 (D.C. Cir. 2014).

This Court has previously acknowledged that "the requirements of notice and comment rulemaking" apply to vehicular emissions models. *Envt'l Def., Inc. v. EPA*, 509 F.3d 553, 562 (D.C. Cir. 2007).[12] *Environmental Defense, Inc.* concerned EPA's decision *not* to require States to use the MOBILE6.2 model in hot-spot analysis. *Id.* At the time of this challenged action, MOBILE6.2 was the required model for SIPs and transportation conformity

[12] The scientific consensus is that stakeholder input is critical to the legitimacy of such models. *See* Committee on Models in the Regulatory Decision Process, Board on Environmental Studies and Toxicology, Division on Earth and Life Studies, National Research Council of the National Academies, Models in Environmental Regulatory Decision Making 81 (2007) ("Because models are uncertain and are used to make policy, stakeholders necessarily play a vital role in EPA's development, use, and evaluation of models. . . . [T]hese various constituencies and individuals must be able to . . . produc[e] their own supporting or conflicting model results, and challeng[e] the legitimacy or accuracy of a model in public comments or judicial actions."), http://bit.ly/1Nlyi7N.

analysis. *See* 69 Fed. Reg. 28830, 28832 (May 19, 2004). Petitioners challenged a rule declining to extend MOBILE6.2 to $PM_{2.5}$ and PM_{10} hot-spot analysis. 509 F.3d at 561. This Court did not dispute the petitioners' contention that EPA's "Official Release" of a new vehicular emissions model is "a legislative rule that has the force of law," because it "establishe[s] the legal rights of parties and obligations of agencies, removed agency discretion, and reflected the consummation of agency decisionmaking processes." Petitioners' Opening Brief at 40, *Environmental Defense, Inc. v. EPA*, No. 06-1164 (D.C. Cir. June 18, 2007). Rather, this Court found that EPA had satisfied the applicable notice-and-comment "requirements" when, through a "Supplemental [Notice of Proposed Rulemaking], . . . EPA provided sufficient notice and comment opportunities." 509 F.3d at 561–62. In support, this Court cited EPA's response to several comments by the petitioners and others explicitly addressing MOBILE6.2's application to hot-spot analysis. *Id.* (citing 71 Fed. Reg. 12468, 12499 (Mar. 10, 2006)). EPA had addressed those comments in the final rule, siding with commenters who believed MOBILE6.2 was "not appropriate" for that purpose, based on the agency's detailed assessment of the "technical limitations of using MOVES6.2 for hot-spot analyses." *Id.* at 12499–50; *see id.* at 12498–99.

Section 553 of the APA provides limited exceptions to "the requirements of notice-and-comment rulemaking" that this Court held had been satisfied in *Environmental Defense, Inc.*, 509 F.3d at 562. None of those exceptions justifies EPA's decision to skip notice-and-comment rulemaking when it mandated use of MOVES2014 in SIP development, transportation conformity analysis, and hot-spot analysis. If any of these exceptions had applied to EPA's vehicular emissions model, this Court's analysis of the adequacy of notice and comment for MOBILE6.2 in *Environmental Defense, Inc.* would have been superfluous.

The notice-and-comment requirement does not apply to "interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice." 5 U.S.C. § 553(b)(A). But EPA's Official Release of the MOVES2014 model is none of those things.[13] The rule effects a substantive change in the NAAQS implementation regime, and it imposes substantive burdens on the States in the form of a binding obligation to use MOVES2014.

[13] That the rule is labeled "Official Release" and "Notice of Availability" rather than "Final Rule" is of no moment. "[T]he agency's characterization of its own action is not controlling if it self-servingly disclaims any intention to create a rule with the 'force of law,' but the record indicates otherwise." *CropLife Am. v. EPA*, 329 F.3d 876, 883 (D.C. Cir. 2003) (holding that a press release was a regulation for which EPA was required to follow notice-and-comment procedure).

1. The Official Release Is Not an Interpretive Rule.

The first exception to the notice-and-comment requirement is for "interpretative rules," 5 U.S.C. § 553(b)(A), also known as "interpretive rules." As its name suggests, "[a]n 'interpretative rule' describes the agency's view of the meaning of an existing statute or regulation." *Mendoza*, 754 F.3d at 1021 (quoting *Batterton v. Marshall*, 648 F.2d 694, 702 n.34 (D.C. Cir. 1980)). Such rules "clarify a statutory or regulatory term, remind parties of existing statutory or regulatory duties, or merely track preexisting requirements and explain something the statute or regulation already required." *Id.* (quotation marks and alterations omitted).

Of course, not every rule that references an existing statute or rule is an interpretive rule. To the contrary, "[a] rule is *legislative* if it supplements a statute, adopts a new position inconsistent with existing regulations, or otherwise effects a substantive change in existing law or policy." *Id.* (emphasis added). Thus, "[t]he practical question inherent in the distinction between legislative and interpretive regulations is whether the new rule effects 'a substantive regulatory change' to the statutory or regulatory regime." *Elec. Privacy Info. Ctr. v. U.S. Dep't of Homeland Sec.* (*EPIC*), 653 F.3d 1, 6–7 (D.C. Cir. 2011), *quoted in Mendoza*, 754 F.3d at 1021.

This Court takes a holistic approach to these two inquiries: Its determination whether a rule merely clarifies the meaning of another legal authority is informed by the Court's assessment of whether it effects a "substantive regulatory change." In *EPIC*, for example, this Court found "some merit in the TSA's argument it has done no more than resolve an ambiguity inherent in its statutory and regulatory authority" to develop new technologies for detecting weapons. *Id.* at 7. But the Court ultimately concluded that the Transportation Security Administration's new policy of using advanced imaging techniques in airport security was not an interpretive rule, because it "substantially changes the experience of airline passengers." *Id.* EPA's imposition of the MOVES2014 model on the States cannot be considered an interpretive rule for both reasons: It does not interpret any statute or rule, and, according to EPA itself, the model effects a "major" regulatory change. App. 436 (79 Fed. Reg. at 60344).

The Official Release does not interpret anything. To be sure, the Clean Air Act requires EPA to revise its vehicular emissions model every three years. 42 U.S.C. § 7430. And the Act requires SIPs to "include a comprehensive, accurate, current inventory of actual emissions" from nonattainment areas, "including such periodic revisions as the Administrator may determine

necessary." 42 U.S.C. § 7502(c)(3).[14] But these provisions do not "set[] out a substantive standard" that EPA's emissions model "might interpret." *Mendoza*, 754 F.3d at 1022. Rather, they delegate rulemaking authority to the agency to fill a specific gap in the statutory scheme. "[A] binding rule promulgated pursuant to a delegation of legislative authority is 'the clearest possible example of a legislative rule, as to which the notice and comment procedure . . . is mandatory." *Id.* That is why EPA subjected past emissions models to notice and comment. *See supra* at 9–15.

The Official Release effects a "substantive regulatory change." *Mendoza*, 754 F.3d at 1021. In its Official Release, EPA conceded that "MOVES2014 is a *major* revision to MOVES2010b," App. 436 (79 Fed. Reg. at 60344) (emphasis added), as distinguished from a "minor revision . . . that is made to improve performance but does not change results," *id.* at 60345 n.6. EPA's decision to grant the maximum two-year grace period before States must use MOVES2014 for transportation conformity reflects the high "degree of change

[14] Likewise, a preexisting EPA rule requires States to base their transportation conformity determinations "on the latest emission estimation model available," a requirement that is satisfied by use of "the motor vehicle emissions model specified by EPA" for use in the relevant SIP. 40 C.F.R. § 93.111(a).

in the model and the transportation re-planning . . . likely to be necessary" as a result. *Id.* at 60345; *accord* 40 C.F.R. § 93.111(b)(2).

Among other changes, MOVES2014 "incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010," including "exhaust and evaporative emissions[] and fuel effects." App. 436 (*Id.* at 60344). Most important among the new data incorporated in MOVES2014 is that from the EPAct study, "the largest fuels research program conducted since . . . the early 1990s." App. 148 (EPAct Final Report at 1). Specifically, MOVES2014 adopts the EPAct study's data on the emissions effects of various fuel parameters, such as ethanol content, which it erroneously associates with increased pollution. *See* App. 571–76 (IQA Petition at 32–37). MOVES2014's modeling of E15, E20, and higher levels of ethanol was not even possible under MOVES2010b, which was capped at E10. *See* App. 102, 103 (MOVES2010b: Additional Toxics Added to MOVES, at 8, 12).

By compelling the States to use MOVES2014 instead of its predecessor model in SIPs, transportation conformity, and hot-spot analysis, the Official Release introduces major changes in the modeling of vehicular emissions from ethanol and other fuel components, *see infra* at 55–57, and these changes have major public policy ramifications. *See infra* at 26–29. States now will have to tailor vehicle and fuel regulations and transportation projects to the new

model's erroneous assumptions about ethanol's emissions effects. *See* Brunetti Declaration at A-3, ¶ 15. Those assumptions, and the regulations they inform, will increase pollution, making it harder to reach attainment. *See id.* at A-3, ¶¶ 17–19. And it will retard or reverse the growth of the national market for ethanol, undermining the financial standing of the ethanol industry and the States in which they are based. *See* McClaskey Declaration at A-4, ¶ 2; Sneller Declaration at A-7, ¶ 2.

Because of the "substantive regulatory changes" that MOVES2014 effects on the NAAQS compliance regime and beyond, the challenged rule is legislative, not interpretive. *Mendoza*, 754 F.3d at 1021 (quoting *EPIC*, 653 F.3d at 6–7).

2. The Official Release is Not a Policy Statement.

The second exception to the notice-and-comment requirement is for "general statements of policy." 5 U.S.C. § 553(b)(A). "The question raised by the policy exception 'is whether a statement is . . . of present binding effect'; if it is, then the APA calls for notice and comment." *EPIC*, 653 F.3d at 7 (quoting *McLouth Steel*, 838 F.2d at 1320). "[A]n agency pronouncement will be considered binding as a practical matter if it either appears on its face to be binding, or is applied by the agency in a way that indicates it is binding." *Id.*

(citations omitted) (quoting *Gen. Elec. Co. v. EPA*, 290 F.3d 377, 383 (D.C. Cir. 2002)).

EPA's Official Release is binding on its face, because it gives the States no choice but to use MOVES2014 in SIPs and transportation conformity. It states unequivocally that "MOVES2014 should be used in ozone, CO, PM, and nitrogen dioxide (NO_2) SIP development as expeditiously as possible, as there is no grace period for the use of MOVES2014 in SIPs." App. 436 (79 Fed. Reg. at 60344). It warns that States "will need to become familiar" with the model, App. 437 (*id.* at 60345),[15] and, even more forcefully, that "[n]ew regional conformity analyses that are started after the grace period is over *must* be based on MOVES2014," *id.* (emphasis added), and that post-grace-period hot-spot analysis "*must* use MOVES2014," App. 438 (*id.* at 60346) (emphasis added). Because it binds the States, the rule cannot be considered a mere policy statement.

3. The Official Release Is Not a Procedural Rule.

Finally, the notice-and-comment requirement includes an exception for "rules of agency organization, procedure, or practice"—known collectively as "procedural rules." 5 U.S.C. § 553(b)(A). "In general, a procedural rule does

[15] *See McLouth Steel*, 838 F.2d at 1321–22 ("The use of the word 'will' suggests the rigor of a rule, not the pliancy of a policy.").

not itself alter the rights or interests of parties . . . . That is, the rule does 'not impose new substantive burdens.' " *EPIC*, 653 F.3d at 5 (quoting *Aulenback, Inc. v. Fed. Highway Admin.*, 103 F.3d 156, 169 (D.C. Cir. 1997)). The exception for procedural rules "must be narrowly construed." *Id.* at 6 (quoting *United States v. Picciotto*, 875 F.2d 345, 347 (D.C. Cir. 1989)).

The Official Release is a substantive rule rather than a procedural rule for the same reason it is not a policy statement: the rule imposes on the States the "substantive burden" of implementing the MOVES2014 model and thereby adopting EPA's conclusions about the emissions effects of various fuel parameters, including ethanol, in developing SIPs and in establishing the conformity of their highway projects. *See supra* at 40.

Because MOVES2014 is more than a simple update to the prior model and requires new inputs from its users, the challenged rule imposes novel data management, training, SIP development, and transportation planning burdens on the States that are now required to use it. For example, States will have to "convert existing data for use in MOVES2014." App. 437 (79 Fed. Reg. at 60345). And even "current . . . users" of MOVES2010b "will need to become familiar with the MOVES2014 emissions model" and undergo "training" on the new model. *Id.* Most onerous of all, MOVES2014's significant emissions modeling changes will render obsolete the States' "previous SIP

demonstrations of what emission levels are consistent with attainment." *Id.* And those modeling changes require corresponding changes to the States' SIP development and "transportation planning process." *Id.* "[A]ll these factors" led EPA to grant the longest possible grace period so that States would have time to adjust to the new model before being compelled to use MOVES2014 for transportation conformity and hot-spot analyses. *Id.*

4. Rules that Mandate Use of an Agency's Computer Models are Substantive Rules Deserving of Notice-and-Comment Rulemaking.

The contestable nature of a complex computer model, resting as it must on a host of scientific data and extrapolations, makes transparency and public input critical. *See supra* at 32 n.12. That is why, as a general matter, this Court has held that an agency action mandating a specific statistical model for significant regulatory applications is a legislative rule—not an interpretive rule, policy statement, or procedural rule.

In *McLouth Steel Prods. Corp. v. Thomas*, for example, this Court held that EPA erred by failing to undertake notice-and-comment rulemaking before using a model for computing probable hazardous waste contamination levels. 838 F.2d 1317, 1322 (D.C. Cir. 1998). EPA used the model to fulfill its statutory duty to "identify those wastes that are hazardous and thus subject to regulation" before de-listing a pollutant. *Id.* at 1319. This Court held that EPA

"gave the effect of a rule" to its model by relying on it in denying a de-listing petition. *Id.* The model was not a mere policy statement, because it "constrain[ed] the agency's discretion." *Id.* at 1320. And the Court found that "[w]hile the exact definition of an interpretive rule is unclear, it is clear that we don't have one here." *Id.* at 1322. The model "meets [the] definition of a legislative rule: it substantially curtails EPA's discretion in delisting decisions and accordingly has present binding effect." *Id.* The MOVES2014 model similarly limits the discretion of State (or federal) regulators to attain the ozone NAAQS through SIPs (or federal implementation plans) that encourage ethanol blending in gasoline.

Likewise, in *Batterton v. Marshall*, this Court held that the Department of Labor's substitution of one unemployment statistics formula for another was a legislative rule deserving of notice and comment: "[T]he methodology is not merely an interpretation of statutory language because it actually prescribes the regulatory structure through which the critical variable . . . is attained," 648 F.2d 694, 705–06 (D.C. Cir. 1980). In *Batterton*, that "critical variable" was the state unemployment statistic that triggers allocations of federal job program funds; here it is the relative emissions of various fuel blends that determine what state policies may be chosen for a SIP.

The legislative nature of the Official Release is confirmed by the conflict between its mandate to use MOVES2014 and the Clean Air Act's provision for the use of alternative models. *See infra* at 60–61. When a rule "limit[s] state discretion" conferred by statute "and impose[s] an obligation on the states not found in the statute itself[,] [i]t cannot reasonably be argued that the[] rule[] [is] merely interpretative." *Cabais v. Egger*, 690 F.2d 234, 239 (D.C. Cir. 1982).

B. The Official Release Was Unlawfully Promulgated Without Review by the Science Advisory Board.

In addition to violating the APA's procedural requirements, EPA failed to provide the MOVES2014 model in advance to the Science Advisory Board—"an expert body charged with providing scientific advice to EPA." *Delta Const. Co. v. EPA*, 783 F.3d 1291, 1296 (D.C. Cir. 2015). "Under the controlling statute, if EPA provides 'any proposed criteria document, standard, limitation, or regulation under the Clean Air Act to any other Federal agency for formal review and comment,' it must 'make [it] available to the Board.' " *Id.* (alteration omitted) (quoting 42 U.S.C. § 4365(c)(1)).

EPA's Official Release of the MOVES2014 model is a "regulation under the Clean Air Act" imposing immediate legal obligations on the States. *See supra* at 40.

EPA's obligation to provide MOVES2014 to the Science Advisory Board was triggered by its "consultation with [the Department of Transportation

(DOT)]" about the proper length of the grace period before MOVES2014 is required for transportation conformity. 79 Fed. Reg. at 60345. Consistent with EPA's previously expressed intentions on the subject, EPA and DOT jointly considered the significance of "the effects of the new emissions model" when they decided on a two-year grace period. *Id.* (quoting 58 Fed. Reg. 62211); *see also* 40 C.F.R. § 93.111(b) ("EPA will consult with DOT to establish a grace period . . . depend[ing] on the degree of change in the model."). That consultation required DOT to have access to the model.[16]

Under § 4365(c)(1), EPA was required to give the Science Advisory Board the "proposed . . . regulation [*i.e.,* the Official Release], together with relevant scientific and technical information in the possession of [EPA] on which the proposed action is based." 42 U.S.C. § 4365(c)(1). In the case of MOVES2014, the "relevant scientific and technical information" includes the model itself, the EPAct study on which the model is based, and all related reports and data.

Petitioners are not aware of any evidence that EPA provided any of this material to the Science Advisory Board at any time, and EPA's required filings

[16] DOT also necessarily reviewed the model in connection with the "DOT training" on MOVES2014 that must precede the model's use in transportation conformity analyses. App. 437 (79 Fed. Reg. at 60345).

in this case give no indication that it did so. *See* Certified Index to the Administrative Record (Mar. 2, 2015).

III. THE MOVES2014 MODEL IS ARBITRARY AND CAPRICIOUS.

Petitioners recognize that this Court does "not sit as a panel of statisticians, but as a panel of generalist judges." *AEP Texas N. Co. v. Surface Transp. Bd.*, 609 F.3d 432, 443 (D.C. Cir. 2010). The technical arguments outlined below would have been well suited to an initial airing in the agency responsible for developing the MOVES2014 model. That is why the APA requires an agency to respond to comments and why Petitioners raised these arguments in detail before EPA in a petition under the Information Quality Act. *See supra* at 21; App. 535.

Petitioners are forced to raise these technical arguments before this Court only because EPA failed to accept comment before finalizing its Official Release of the MOVES2014 model and because EPA denied Petitioners' IQA petition without responding in substance. App. 525 (Letter from Janet McCabe). Petitioners raise these arguments here not to persuade the Court to adjudicate every technical detail but to demonstrate why notice-and-comment procedure was necessary before mandating the use of MOVES2014 and why the Official Release should be vacated, and not merely remanded, while EPA develops a corrected model pursuant to notice-and-comment rulemaking.

In short, "these arguments encapsulate exactly the kind of analysis in which the [agency] should have engaged before" deciding on its model. *AEP*, 609 F.3d at 443. When an agency relies on "modeling of complex phenomena," the agency must "explain[ ] the assumptions and methodology used in preparing the model and *provide[ ] a complete analytic defense should the model be challenged*." *Appalachian Power Co. v. EPA*, 249 F.3d 1032, 1053–54 (D.C. Cir. 2001) (per curiam) (emphasis added). EPA has refused to hear the challenge, much less to offer a defense, so the rule mandating use of MOVES2014 must be vacated as arbitrary and capricious.

A. MOVES2014's Emissions Projections Are Based on the EPAct Study's Flawed Design.

The origin of MOVES2014's counterfactual estimates of ethanol's emissions effects is the EPAct study. *See* App. 335–46 (Air Toxics in MOVES2014, at 18–22, 34–40). The fundamental design flaws of the EPAct study infect the MOVES2014 model and render its emissions estimates unreliable.

1. The EPAct Study's Design Was Altered Mid-Stream Without Scientific Justification and Fell Short of Its Intended Optimal Design.

Because EPA declined to consider public comments on MOVES2014, the agency has not addressed Petitioners' concerns about the circumstances surrounding the development of the EPAct study on which the model was

based. Those concerns are set out in greater detail in Petitioners' Request for Correction of Information, App. 554–59 (IQA Petition at 15–20), which EPA also declined to consider. In short, the EPAct study's design was altered several times without adequate explanation—in many cases without any explanation at all or due to funding shortfalls. App. 556–58 (*Id.* at 17–19).[17]

At each stage in the development of the EPAct study, it slid ever further from its original aims. *See id.* And the agency's level of confidence in its results deteriorated along with it: Using a measure of design optimality for regression problems, the EPAct study's designers tracked its decline from an original "G-efficiency" value of 72.6% to an eventual value of 51.6%, before the scope of the design was even further reduced and unwanted results were discarded. App. 559 (*Id.* at 20). EPA has described but not explained these changes to the design of the EPAct study. *See* App. 247 (EPAct Re-Design). This treatment falls short of the agency's duty to "explain[] the assumptions and methodology used in preparing the model." *Appalachian Power*, 249 F.3d at 1054.

[17] EPA contracted with oil industry consultants both to set the parameters for the EPAct test fuels and to blend the fuels to those specifications. *See* App. 554–55 (IQA Petition at 15–16). But EPA never consulted with other parties engaged in the production of in-use fuel components concerning the design of the EPAct study.

2. The EPAct Study's Selective Match Blending Generated Confounding Variables.

Spiking high-ethanol test fuels with high-boiling-point hydrocarbons to counteract ethanol's benign effects on distillation temperatures led to the conclusion that ethanol was responsible for the emissions caused by those toxics. Or, as the study's final report put it, "[o]ther factors being equal, increasing ethanol is associated with an increase in emissions." App. 154 (EPAct Final Report at 7). This conclusion is profoundly misleading, because in the real world "other factors are *not* equal when ethanol is added to gasoline." App. 594 (Anderson at 1034) (emphasis added). The added ethanol lowers (in a non-linear manner) T50 and other distillation temperatures at which various portions of the fuel vaporize, thereby reducing pollution. *Id.* And ethanol offsets the volume of highly toxic octane additives in the fuel with its own clean octane. *See id.* ("Depending on the blendstock, the added ethanol reduces T50 due to near-azeotropic behavior,[18] and reduces T90 and

[18] An azeotrope is a blend of two or more liquids that has a boiling point higher or lower than that of either of the liquids measured by itself. Ethanol's effect on gasoline is "near-azeotropic" because it depresses the middle part of the distillation curve more than the high and low ends.

aromatics content by dilution."). This is a good thing: "Considered as a whole, these factors tend to reduce emissions with increasing ethanol."[19]

The EPAct study's adulteration of higher ethanol test fuels with high-boiling-point hydrocarbons to raise T50 was as unnecessary as it was confounding. There is no regulatory, mechanical, or health justification for adding toxic hydrocarbons to test fuels when measuring ethanol's effect on tailpipe emissions. *See id.* at 1030. And that is the only way to account for the EPAct study's results: Ethanol has been shown in numerous empirical studies to contribute to a *decrease* in emissions. App. 591 (Anderson at 1031 & nn.1, 13, 14, 15, 16, 17, 18, 19) (citing studies).

The confounding effect of match-blending is incurable. Even when one tries to account for the other four fuel parameters in the study (aromatics, T50, T90, and RVP), it is impossible to derive accurate results from the EPAct study, because its "matching" of these parameters was misleadingly incomplete.

[19] *See* App. 594 (Anderson at 1034); App. 2 (Thomas D. Durbin et al., Effects of Ethanol and Volatility Parameters on Exhaust Emissions, CRC E-67, at 1 (Jan. 30, 2006) ("The reduction of T50 and T90 and the corresponding reduction of heavy fuel hydrocarbon compounds have generally been found to reduce exhaust hydrocarbon emissions.")).

Distillation Curves. The study failed to control for differences in the full range of the test fuels' distillation temperatures (other than the T50 and T90 boiling points). Because of ethanol's non-linear effect on gasoline vaporization, raising the T50 of higher ethanol blends to match the T50 of E0 and E10 blends results in elevated distillation temperatures in the range of T60 to T80. *See* App. 567–68 (IQA Petition at 28–29).[20] And these elevated T60-T80 values increase pollution, because whenever more heat is required to vaporize fuel components, more of the fuel will be emitted without fully combusting. *See* App. 592 (Anderson at 1032).

Aromatics Profiles. The EPAct study also fails to account for differences in the speciation of the test fuels' hydrocarbon content. Not all aromatic hydrocarbons are created equal. *See* App. 519–20 (Tier 3 RIA at 3-9 to 3-10). The high-boiling-point aromatics that are most effective at raising T50 and T90 also have the most harmful effect on emissions because they are most resistant to combustion. And those "high-boilers" were used disproportionately in the EPAct study's higher ethanol test fuels. *See* App. 569 (IQA Petition at 30). But for purposes of its match-blending methodology, the

[20] *See* Addendum C (showing that within every set of test fuels with matched T50 and T90, and varying ethanol concentrations, the boiling points of one or more higher-ethanol fuels exceeded those of one or more lower-ethanol fuels for the entire T60-T80 range).

study treats all aromatics alike, further confounding the reported emissions effects of ethanol. *See* App. 568–69 (*Id.* at 29–30). The EPAct study also fails to control for differences in the test fuels' volumes of saturated hydrocarbons, which were also used to elevate T50 and T90.

Aromatics Proportions. The EPAct study's attempt to match aromatics levels failed on an even more basic level. EPA's own analysis of the test fuels using the highly sensitive method of gas chromatography revealed that the test fuels' aromatics levels significantly exceeded the levels for which they were designed. *See* App. 570 (IQA Petition at 31); Addendum D. Some fuels designed to have aromatics levels of 35% approached or exceeded 40% aromatics, *see id.* at D-1. That volume far surpasses the levels found in typical market fuel, which average approximately 21% aromatics. *See id.* at D-3. Others designed for aromatics levels of 15% exceeded 20%. *See id.* at D-1.

3. The EPAct Study's Test Fuels Are Not Representative of Actual Market Fuel.

In order to achieve the EPAct study's arbitrarily matched T50 and T90 parameters, the study's designers had to add high-boiling-point, high-octane hydrocarbons to the test fuels whose distillation temperatures would be naturally lowered by the addition of ethanol. But this is the opposite of what occurs in the real world. Real fuel refiners add *less* of these costly

hydrocarbons, *not* more, to blendstocks designed for ethanol blending. *See* App. 518 (Tier 3 RIA, at 3-3) ("[I]t is evident that many refiners have backed off on octane production at the refinery by reducing levels of aromatics and olefins. Producing these high-octane components at the refinery represents a significant cost to refiners, so they are able to reduce costs by taking advantage of ethanol's octane value.").

As a result of the EPAct study's make-believe methodology, the test fuels it studied deviate from real-world fuels in several important respects, as Petitioners explained to EPA in greater detail. *See* App. 559–64 (IQA Petition at 20–25). This invalidates the resulting data. *See* App. 592 (Anderson at 1032).

Octane. The EPAct study's test fuels contained unrealistically high levels of octane—a measure of a fuel's resistance to premature combustion. *See* Addendum E; App. 563–64 (IQA Petition at 24–25). All of the E10 test fuels, for example, had octane ratings in the range of 90.55 to 92.76 AKI—far above the market average of 88.36 AKI (weight-adjusted to account for varying sales of regular and premium fuel). *See id.* at E-1.[21] As EPA itself has acknowledged, rational refiners will not waste expensive octane additives when they can

[21] The EPAct test fuels are much closer to (though on average they still exceed) the octane ratings of premium fuel, *see id.* at E-3, which represents about 10% of all fuel sales, *see id.* at E-1, n.2.

"tak[e] advantage of ethanol's octane value" at lower cost. App. 518 (Tier 3 RIA, at 3-3); App. 515 (Draft Tier 3 RIA, at 3-2 (Mar. 2013)) ("[R]efiners are doing their best not to give [octane] away."). Thus, today's gasoline begins with a blendstock roughly 2 to 2.5 octane points lower than the final gasoline; it receives those 2 to 2.5 octane points when it is eventually blended with the most cost-efficient source of octane, ethanol. *See* App. 584 (David S. Hirshfeld et al., *Refining Economics of U.S. Gasoline: Octane Ratings and Ethanol Content*, 48 Envt'l Sci. & Tech. 11064, 11065 (Aug. 21, 2014)).

Increasing the ethanol content of gasoline beyond E10 will only further reduce the octane levels of the blendstock as refiners respond to economic incentives to produce lower volumes of the high-boiling-point hydrocarbons used to raise octane levels in the absence of ethanol. *See* App. 586 (*id.* at 11067).

Unrepresentative E15. Although the EPAct study purports to "span the ranges of in-use fuel properties" in its selection of test fuels, App. 148 (EPAct Final Report at 1), the slate of test fuels does not include a single E15 fuel with low T90 and low aromatics, *see* App. 562 (IQA Petition at 23). This is a serious omission, because E15 blends sold in the marketplace tend to have lower T90 and lower aromatics than their E10 counterparts as a result of the additional ethanol.

* * *

EPA's failure to use representative market fuel in the EPAct study cannot be sustained in a study intended to "provid[e] a basis for the development of statistical models capable of predicting emissions for the majority of *in-use fuels*." App. 148 (EPAct Final Report at 1) (emphasis added).

B. MOVES2014's Emissions Projections Are Erroneous.

Because MOVES2014 bases its pollution estimates on the flawed EPAct study, its modeling of ethanol's emissions effects is the opposite of ethanol's real-world impact. "An agency's use of a model is arbitrary if that model 'bears no rational relationship to the reality it purports to represent.' " *Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998) (quoting *Am. Iron & Steel Inst. v. EPA*, 115 F.3d 979, 1005 (D.C. Cir. 1997)). MOVES2014's projections are flatly contradicted by empirical analysis. Because EPA has had no occasion to respond to comments, the agency has not "addressed what appear to be stark disparities between its projections and real world observations." *Appalachian Power*, 249 F.3d at 1054. On that basis alone, the rule is arbitrary and capricious. *Id.*

$PM_{2.5}$. MOVES2014 estimates that higher-ethanol blends emit more particulate matter than lower-ethanol blends do. *See* Wilkinson Declaration at A-28, ¶ 32.a. But this conclusion, borrowed from the EPAct

study, *see* App. 572–73 (IQA Petition at 33–34), is directly contradicted by "[n]umerous studies in which ethanol was splash-blended with a fixed gasoline blendstock." App. 591, 597–98 (Anderson at 1031 & nn.1, 13, 14, 15, 16, 17, 18, 19). These "particularly well documented" studies demonstrate "the *reduction* of PM emissions with the addition of ethanol." App. 591 (*Id.* at 1031) (emphasis added). And those studies' empirical findings are "supported by fundamental combustion chemistry considerations." App. 591, 598 (*Id.* at 1031 & nn. 15, 20, 21, 22).

NO_X. MOVES2014 associates higher levels of ethanol with increased nitrous oxide emissions. *See* Wilkinson Declaration at A-28, ¶ 32.a. This is consistent with the EPAct study. *See* App. 573 (IQA Petition at 34). But empirical studies have found *decreases* in NO_X emissions of "about 20%" when the ethanol content of fuel is increased from 0% to 17% or higher. *See* App. 21 (M. Matti Maricq, et al., *The Impact of Ethanol Fuel Blends on PM Emissions from a Light-Duty GDI Vehicle*, 46 Aerosol Sci. & Tech. 576, 580 (2011)).

VOCs. While MOVES2014 estimates that higher levels of ethanol result in higher emissions of VOCs, *see* Wilkinson Declaration at A-28, A-29, ¶¶ 32.a, 34.a, EPA itself has noted that "[s]cientific information supports a conclusion that [when] motor vehicles . . . operat[e] on gasoline-ethanol blends . . . volatile organic compound (VOC) and carbon monoxide (CO) emissions

decrease." *Partial Grant and Partial Denial of Clean Air Act Waiver Application Submitted by Growth Energy To Increase the Allowable Ethanol Content of Gasoline to 15 Percent*, 75 Fed. Reg. 68094, 68096 (Nov. 4, 2010).

This sort of "inconsistent treatment," the Court has found, is a "hallmark of arbitrary agency action." *Catawba Cnty., N.C. v. EPA*, 571 F.3d 20, 51 (D.C. Cir. 2009).

* * *

"While courts routinely defer to agency modeling of complex phenomena, model assumptions must have a 'rational relationship' to the real world." *Appalachian Power Co.*, 249 F.3d at 1053 (citing *Chemical Mfrs. Ass'n v. EPA*, 28 F.3d 1259, 1265 (D.C. Cir. 1994)). MOVES2014's modeling of ethanol's emissions effects does not meet that standard.

C. MOVES2014's Default Fuel Parameters Do Not Correspond to Real-World Fuel.

Even if MOVES2014 were capable of generating accurate estimates from accurate inputs—and it is not—the model would still fail the test of reasonableness, because it prevents State regulators from using accurate fuel data when they run the model. States are at the mercy of MOVES2014's

default fuel parameters.[22] But the defaults are inconsistent with known data about the fuel actually sold throughout the country.

MOVES2014's default T50 values, for example, are generally higher than those of real-world fuel in corresponding counties. *See* Addendum F, at F-1. But this basic discrepancy masks an even more fundamental error in the model's default parameters: In the real world, reformulated gasoline (RFG) tends to have a *higher* T50 boiling point than conventional (non-RFG) gasoline. *See id.* This is because the lower vapor pressure (RVP) required in RFG demands the addition of low-volatility, high-boiling-point hydrocarbons. But the MOVES2014 defaults reverse this relationship without explanation.

[22] EPA's guidance allows substitution of the State's own parameters only "where precise local volumetric fuel property information is available." App. 524 (*MOVES2014 Technical Guidance: Using MOVES to Prepare Emission Inventories for State Implementation Plans and Transportation Conformity* 46, ¶ 4.9.1). EPA will not countenance "single or yearly station samples." *Id.* This rules out the industry-standard *North American Fuel Survey* by the Alliance of Automobile Manufacturers. And fuels that are not yet sold locally (such as higher ethanol blends) or that are no longer in general use (such as E0) cannot possibly meet this standard. For those, the States must use EPA's "Fuels Wizard," which is based not on retail samples but on undisclosed "refinery modeling" data. *See* App. 326 (MOVES2014 for Experienced Users 16, slide 32 (Sept. 2014)).

The model assumes that RFG has significantly *lower* T50 than conventional fuels, *id.*—the exact opposite of what is found in the real world.[23]

In the case of T90, the average MOVES2014 defaults (327.34°F) are significantly *higher* than the corresponding market averages for both RFG (314.87°F) and conventional gasoline (317.71°F). *Id.* at F-1.

This mismatch between real-world fuel parameters and MOVES2014's assumptions undermines the reliability of its results. "Data bases and related procedures for estimating input parameters are an integral part of the modeling procedure. . . . Input data are a major source of uncertainties in any modeling analysis." Guideline on Air Quality Models, 40 C.F.R. pt. 51, App'x W, ¶ 8.0. Thus, using the default fuel parameters only compounds the model's other flaws. *See generally Mississippi v. EPA*, 744 F.3d 1334, 1352 (D.C. Cir. 2013) (citing "the inviolable law of data analysis, 'garbage in; garbage out.' ").

* * *

Like this Court in *AEP*, Petitioners "recognize the difficulty of determining whether a model produces estimates so inaccurate as to be

[23] Market survey data reports an average T50 for RFG of 206.70°F, but the MOVES2014 default T50 values for the corresponding counties average a much *lower* 195.49°F. *See* Addendum F, at F-1. For conventional gasoline the difference is reversed: In the market, conventional gasoline has an average T50 of 192.91°F, but the model defaults average a much *higher* 204.35°F. *Id.*

invalid." 609 F.3d at 443. "But," as this Court held in *AEP*, "that does not mean the [agency] was free to choose . . . without opportunity for comment by the parties and without any apparent rigor in its analysis." *Id.*

EPA's decision to adopt the MOVES2014 model in spite of its flaws and without addressing these problems, much less responding to public comment, constitutes arbitrary and capricious decisionmaking. No computer model can be perfect, but "even an imperfect estimate must be justified to satisfy [the APA's arbitrary-and-capricious standard]." *Id.* at 444. Thus, in the development of a complex model, EPA "retains a duty to examine key assumptions as part of its affirmative burden of promulgating and explaining a non-arbitrary, non-capricious rule." *Columbia Falls Aluminum Co. v. EPA*, 139 F.3d 914, 923 (D.C. Cir. 1998) (quoting *Small Refiner Lead Phase–Down Task Force v. EPA*, 705 F.2d 506, 534 (D.C. Cir. 1983)).

D. The Official Release Conflicts with the Clean Air Act's Allowance of Alternative Models.

The Official Release demands in mandatory terms that the States use MOVES2014, without any provision for alternative models. *See* App. 436–37 (79 Fed. Reg. at 60344–45). This conflicts with the Clean Air Act's requirement that EPA consider any proffered alternative to the official vehicular emissions model: "[T]he Administrator shall permit any person to demonstrate improved emissions estimating techniques, and following

approval of such techniques, the Administrator shall authorize the use of such techniques," provided that they undergo "appropriate public participation." 42 U.S.C. § 7430.

Because the unqualified mandate to use MOVES2014 is inconsistent with the very statute that authorizes EPA to develop the model in the first place, the rule is unlawful.[24] "The agency's policy preferences cannot trump the words of the statute." *U.S. Dep't of the Treasury I.R.S. Office of Chief Counsel Washington D.C. v. FLRA*, 739 F.3d 13, 21 (D.C. Cir. 2014).

IV. THE APPROPRIATE REMEDY IS VACATUR.

Because EPA promulgated the Official Release without notice-and-comment rulemaking and Science Advisory Board review, and without any consideration of the model's fundamental defects, "the APA directs the court to 'hold unlawful and set aside [the] agency action.' " *In re Long-Distance Tel. Serv. Fed. Excise Tax Refund Litig.*, 751 F.3d 629, 634 (D.C. Cir. 2014) (quoting 5 U.S.C. § 706(2)). Therefore, "the court typically vacates rules when an agency entirely fails to provide notice and comment." *Daimler Trucks N. Am.*

[24] Elsewhere in its administration of the Clean Air Act, EPA is careful to preserve States' discretion to develop their own models. *See Clean Air Fine Particle Implementation Rule*, 72 Fed. Reg. 20586, 20593 (Apr. 25, 2007).

LLC v. EPA, 737 F.3d 95, 103 (D.C. Cir. 2013) (quotation marks and alteration omitted).[25]

The agency's procedural violations prejudiced Petitioners. EPA has previously modified revisions to its vehicular emissions model in response to criticisms raised through notice-and-comment procedure. *See supra* at 12; App. 385 (62 Fed. Reg. 45802, 45803 (Aug. 29, 1997)) ("[T]he model revisions proposed in [a draft version of MOBILE6] have been modified to some extent in response [to] comments."). If EPA had followed that procedure here, States and other interested parties would have filed comments voicing the same substantive critique of the MOVES2014 model that Petitioners raise in this brief, expounded more fully in their Information Quality Act petition. App. 535–82. Because the model's fundamental defects run to its core assumptions about the emissions effects of various fuel components, EPA would have been required to correct the model before finalizing the rule. *See generally Home Box Office, Inc. v. FCC*, 567 F.2d 9, 35 n.58 (D.C. Cir. 1977) (requiring an agency to respond to "significant" comments).

[25] *See, e.g.*, *Sorenson Commc'ns Inc. v. FCC*, 755 F.3d 702, 710 (D.C. Cir. 2014); *Sierra Club v. EPA*, 699 F.3d 530, 535 (D.C. Cir. 2012); *CropLife Am. v. EPA*, 329 F.3d 876, 884 (D.C. Cir. 2003).

Likewise, review by the Science Advisory Board would have confirmed MOVES2014's substantive defects and caused EPA to stay its hand. The Board takes seriously its review of EPA computer models,[26] offering "recommendations for improvements" and noting when a model's proposed uses "are not all fully supported by the science underlying the model."[27] At least one Board consultant has even critiqued prior EPA vehicular emissions models in the context of another project.[28] And when the agency actually

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[26] *See, e.g.*, *Science Advisory Board Staff Office Request for Nominations for the Science Advisory Board Second Generation Model Advisory Panel*, 69 Fed. Reg. 41474 (July 9, 2004) (soliciting nominations for a panel to review the Second Generation Model, a "regionally disaggregated model of the global economy"); *see generally* Science Advisory Board, *Resolution on the Use of Mathematical Models by EPA for Regulatory Assessment and Decision-Making*, EPA-SAB-EEC-89-012, at 4 (1989) ("There is a need for a central coordinating group within EPA to assess the status of environmental models . . . proposed for use in regulatory assessment."), http://1.usa.gov/1FbKzFN.

[27] Science Advisory Board, *Review of EPA Region 5 Critical Ecosystem Assessment Model (CrEAM)*, EPA-SAB-05-011, at 4, 19 (2005), http://www.epa.gov/sab/pdf/cream_sab-05-011.pdf.

[28] Science Advisory Board, *Review of the USEPA's Report to Congress on Residual Risk*, App'x A: "Written Comments of Subcommittee Members," at A-37 to A-38 (Sept. 30, 1998) (criticizing MOBILE5a's lack of precision and "biases in the model predictions due to the mathematical formulation of the model," and praising EPA's "significant effort . . . to develop a more credible approach to emissions estimation in the forthcoming MOBILE6 model, to submit key assumptions of the new model to peer review, and to more fully document the new model"), http://1.usa.gov/1e4zAID.

submits its models for Board review, EPA regularly corrects its models in response to the Board's criticism.[29]

Vacatur is especially warranted here because the deficiencies of MOVES2014 are "serious" and because vacating the Official Release would have no "disruptive consequences" for the NAAQS compliance regime. *Milk Train, Inc. v. Veneman*, 310 F.3d 747, 755–56 (D.C. Cir. 2002) (quoting *Allied-Signal Inc. v. U.S. Nuclear Regulatory Comm'n*, 988 F.2d 146, 150–51 (D.C. Cir. 1993)). MOVES2014's predecessor model, MOVES2010b, would remain in effect without any further action by EPA. While that model is undergoing a lawful major revision based on a sound fuel effects study that avoids the EPAct study's pitfalls, the agency may choose to issue a less drastic interim revision that merely updates the model's background air quality data to reflect recent

[29] To take one example, the Science Advisory Board reviewed EPA's proposed model for assessing the health and environmental impacts of hazardous waste and found that it "lack[ed] the scientific defensibility for its intended regulatory use." Science Advisory Board, *Review of a Methodology for Establishing Human Health and Ecologically Based Exit Criteria for the Hazardous Waste Identification Rule (HWIR)*, EPA-SAB-EC-96-002, at 1 (1996), http://1.usa.gov/1LAmptT. In response to the Board's criticisms, various EPA offices collaborated to develop a sound replacement model. Reviewing this new model, the Board observed that EPA had been "acutely aware of the need to address criticisms of pervious modeling attempts to the problem posed by the HWIR." Science Advisory Board, *Review of the Multimedia, Multipathway, and Multireceptor Risk Assessment (3MRA) Modeling System*, EPA-SAB-05-003, at 1 (2004), http://www.epa.gov/sab/pdf/sab_05_003.pdf.

rules without changing the projected emissions effects of various fuel components. EPA can do that in relative short order and with minimal disruption, as it has in the past. *See supra* at 11.

CONCLUSION

For the foregoing reasons, Petitioners respectfully request that the Court grant their petition for review and vacate the Official Release.

Respectfully submitted,

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CERTIFICATE OF COMPLIANCE

Pursuant to Fed. R. App. P. 32(a)(7)(C) and Circuit Rule 32(a), this brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B), because the brief contains 13,999 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii).

This brief complies with typeface requirements of Fed. R. App. P. 32(a)(5) and the type-style requirements of Fed. R. App. P. 32(a)(6), because it has been prepared in a proportionally spaced typeface using Microsoft Word in Calisto MT 14-point font.

/s/ Adam R.F. Gustafson
October 28, 2015 Adam R.F. Gustafson

CERTIFICATE OF SERVICE

I hereby certify that all counsel of record who have consented to electronic service are being served today with a copy of this document via the Court's CM/ECF. All parties in this case are represented by counsel consenting to electronic service.

/s/ Adam R.F. Gustafson
October 28, 2015 Adam R.F. Gustafson