

United States Court of Appeals
FOR THE DISTRICT OF COLUMBIA CIRCUIT

Argued March 12, 2015

Decided June 12, 2015

No. 14-1154

NATIONAL ASSOCIATION OF BROADCASTERS,
PETITIONER

v.

FEDERAL COMMUNICATIONS COMMISSION AND UNITED
STATES OF AMERICA,
RESPONDENTS

CTIA - THE WIRELESS ASSOCIATION, ET AL.,
INTERVENORS

Consolidated with 14-1179, 14-1218

On Petitions for Review of Orders of
the Federal Communications Commission

Miguel A. Estrada argued the cause for petitioner National Association of Broadcasters. *John K. Hane* argued the cause for petitioner Sinclair Broadcast Group, Inc. With them on the joint briefs were *Lucas C. Townsend*, *Ashley S. Boizelle*, *Rick Kaplan*, *Jerianne Timmerman*, *Jeetander T. Dulani*, and *Cynthia Cook Robertson*. *Clifford M. Harrington*, *Thomas G. Allen*, and *Jane E. Mago* entered appearances.

Jacob M. Lewis, Associate General Counsel, Federal Communications Commission, argued the cause for respondents. With him on the brief were *William J. Baer*, Assistant Attorney General, U.S. Department of Justice, *Robert J. Wiggers* and *Kristen C. Limarzi*, Attorneys, *Jonathan B. Sallet*, General Counsel, Federal Communications Commission, *David M. Gossett*, Deputy General Counsel, and *C. Grey Pash Jr.*, Counsel. *Richard K. Welch*, Deputy Associate General Counsel, Federal Communications Commission, entered an appearance.

Dominic F. Perella argued the cause for intervenors CTIA - The Wireless Association, et al. in support of respondents. With him on the brief were *Michael K. Kellogg*, *Scott H. Angstreich*, *Catherine E. Stetson*, *Elizabeth Austin Bonner*, *Michael Altschul*, *Rebecca M. Thompson*, and *Julie M. Kearney*.

Preston R. Padden and *Daniel M. Armstrong* were on the brief for intervenor Expanding Opportunities for Broadcasters Coalition in support of respondents.

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

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

SRINIVASAN, *Circuit Judge*: This case arises out of the Federal Communications Commission's rulemaking under Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. No. 112-96, 126 Stat. 156, known as the Spectrum Act. In recognition of the changing needs of American consumers, the Spectrum Act authorizes the FCC to shift a portion of the licensed airwaves from over-the-air television broadcasters to mobile broadband providers. The

Act directs the Commission to carry out the objective of repurposing spectrum through three interdependent initiatives: (i) a reverse auction to determine the prices at which broadcasters would voluntarily sell their spectrum rights; (ii) a reassignment of broadcasters who wish to retain their rights to new channels in a smaller band of spectrum; and (iii) a forward auction to sell the blocks of newly available spectrum to wireless providers, with the proceeds used to compensate broadcasters who voluntarily relinquished their spectrum rights and to pay the relocation expenses of broadcasters reassigned to new channels.

After the FCC adopted rules setting forth its framework for the incentive auction and channel-reassignment process, members of the television broadcast industry filed petitions for review of the Commission's orders in this court. Petitioners argue that certain Commission decisions announced in the orders conflict with the Spectrum Act or are otherwise arbitrary and capricious. We deny the petitions for review and sustain the Commission's orders.

I.

Nearly two-thirds of American adults now own a smartphone. Aaron Smith et al., Pew Research Ctr., *U.S. Smartphone Use in 2015*, at 2 (2015), available at http://www.pewinternet.org/files/2015/03/PI_Smartphones_0401151.pdf. For that and related reasons, the use of wireless networks in the United States is “skyrocketing, dramatically increasing demands on both licensed and unlicensed spectrum—the invisible infrastructure on which all wireless networks depend.” *In the Matter of Expanding the Economic & Innovation Opportunities of Spectrum Through Incentive Auctions*, 27 FCC Rcd. 12,357, ¶ 1 (2012) (*NPRM*). The FCC warns that the country “faces a major challenge to ensure that

the speed, capacity, and accessibility of our wireless networks keeps pace with these demands in the years ahead.” *Id.*

Broadcast television currently occupies an important portion of radiofrequency spectrum. Resp’ts’ Br. 5; *see NPRM*, ¶ 12 & n.12. Approximately 8,400 broadcast television stations provide service in the very-high frequency (VHF) and ultra-high frequency (UHF) bands, with each station allotted a channel covering a particular geographic area. Resp’ts’ Br. 5. Broadcast television stations supply free over-the-air programming “that is often highly responsive to the needs and interests of the communities they serve,” including local news, educational programming, and emergency information. *NPRM*, ¶ 13.

“Although broadcast television continues to be a vital source of local news and information for most Americans, the other offerings in the video programming marketplace have diverted much of broadcast television’s over-the-air viewing audience over the years.” *Id.* ¶ 14. At one time, “virtually all” television households received programming through an over-the-air signal. *Id.* During the 2011-2012 television season, however, only about 10 percent of television households relied solely on broadcast television for programming. *Id.*

In 2009, the broadcast television industry completed a congressionally mandated transition from analog to digital transmission (“the DTV transition”). *Id.* ¶ 15. Currently, however, “[n]ot all broadcasters are in a position to take advantage of the opportunities created by the digital transition,” and the Commission anticipates that a significant number of broadcasters will struggle financially and eventually exit the business. *Id.* ¶ 16.

In light of the state of the broadcast television industry, and in response to the nation's growing need for spectrum, Congress, in the Spectrum Act, authorized the FCC to hold an incentive auction to encourage broadcasters to relinquish their spectrum rights in exchange for incentive payments. Middle Class Tax Relief and Job Creation Act, Title VI; *see NPRM*, ¶ 3. For broadcasters who decline to give up their spectrum rights in the reverse auction, the Act authorizes the FCC to undertake a "repacking" process under which it will reassign those broadcasters to new channels in a different (and smaller) band of spectrum. *See NPRM*, ¶ 7. Those measures will enable the Commission to recover a portion of the UHF spectrum, *see id.* ¶ 5, which possesses propagation and penetration characteristics "especially well-suited for mobile broadband use," Resp'ts' Br. 5. The agency will then conduct a forward auction to offer the recovered spectrum to wireless carriers. *See NPRM*, ¶ 5.

Those three initiatives—the reverse auction, the repacking process, and the forward auction—work together. *Id.* As the FCC explains in its brief, the "reverse auction depends on forward auction bidders' willingness to pay and the forward auction depends on reverse auction bidders' willingness to relinquish spectrum rights in exchange for payments, and each of these depend on an efficient repacking of the spectrum used by the broadcasters that remain to clear a portion of the UHF band for new uses." Resp'ts' Br. 9.

In October 2012, the Commission issued a Notice of Proposed Rulemaking to implement the measures authorized by the Spectrum Act. *NPRM*, 27 FCC Rcd. 12,357. On June 2, 2014, after receiving extensive comments on its proposals, the Commission issued a 329-page Report and Order. *In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, 29

FCC Rcd. 6567 (2014) (*Order*). The Order adopted rules for the reverse and forward auctions. The Commission also explained its planned implementation of the repacking process, including how it intended to fulfill the Spectrum Act's requirement to undertake "all reasonable efforts" to preserve "the coverage area and population served" of broadcasters reassigned to new channels. 47 U.S.C. § 1452(b)(2). The Commission stated that it would aim to assure that each repacked station "serves essentially the same viewers that it served before the incentive auction." *Order*, ¶ 7. Two commissioners issued statements dissenting from various aspects of the Commission's Order. *Id.* at 7038 (dissenting statement of Commissioner Pai); *id.* at 7048 (dissenting statement of Commissioner O'Rielly).

In August and September 2014, respectively, the National Association of Broadcasters (NAB) and Sinclair Broadcast Group, Inc. each filed a petition for review of the Commission's Order with our court. *See* 47 U.S.C. § 402(a); 28 U.S.C. §§ 2342(1), 2344. We consolidated the petitions and set an expedited briefing schedule pursuant to petitioners' request. On September 30, 2014, the Commission issued a Declaratory Ruling to "clarify" how it "intend[ed] to preserve the 'coverage area' as well as the 'population served' of eligible broadcasters in the repacking process," in an effort to "remove any uncertainty" about its planned approach. *In the Matter of Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, 29 FCC Rcd. 12,240, ¶ 1 (2014) (*Declaratory Ruling*). NAB filed a petition for review of the Declaratory Ruling, which we consolidated with NAB's and Sinclair's original petitions.

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II.

Petitioners press a series of arguments challenging the Commission's implementation of the Spectrum Act's mandate to expend "all reasonable efforts" to preserve "the coverage area and population served" of broadcasters reassigned to new channels in the repacking process. 47 U.S.C. § 1452(b)(2). We reject petitioners' arguments.

A.

Petitioners' principal challenge concerns the Commission's approach for determining the geographic area and customer base served by each broadcast licensee. The Spectrum Act grants the Commission authority to "make such reassignments of television channels as the Commission considers appropriate" when reallocating broadcast spectrum to other uses. *Id.* § 1452(b)(1). The statute instructs that, in doing so, the Commission "shall make all reasonable efforts to preserve, as of February 22, 2012, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69 of the Office of Engineering and Technology of the Commission." *Id.* § 1452(b)(2).

Petitioners seize upon the statutory instruction to use "the methodology described in OET Bulletin 69" when determining the coverage area and population served of each broadcast licensee. In petitioners' view, that language means that the Commission must apply not just the general approach set out in OET Bulletin 69 for determining a broadcaster's population served and coverage area as of February 22, 2012, but also the specific computer software and data inputs the Commission would have used to make those determinations on that date. The Commission, by contrast, interprets the phrase "methodology described in OET Bulletin 69" to refer

to the “procedures for evaluating television coverage and interference that are provided for in that bulletin, not the computer software or input values” that may have been “used to apply that methodology in any given case.” *Order*, ¶ 134.

We review the Commission’s interpretation of the Spectrum Act pursuant to the two-step *Chevron* framework. *Northpoint Tech., Ltd. v. FCC*, 412 F.3d 145, 151 (D.C. Cir. 2005); see *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837 (1984). We first ask whether Congress “has directly spoken to the precise question at issue.” *Chevron*, 467 U.S. at 842. If so, then “the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress.” *Id.* at 842-43. But “if the statute is silent or ambiguous with respect to the specific issue,” we proceed to *Chevron* step two and ask whether the Commission’s resolution is “based on a permissible construction of the statute.” *Id.* at 843. “A ‘reasonable’ explanation of how an agency’s interpretation serves the statute’s objectives is the stuff of which a ‘permissible’ construction is made,” but “an explanation that is ‘arbitrary, capricious, or manifestly contrary to the statute’ . . . is not.” *Northpoint Tech.*, 412 F.3d at 151 (quoting *Chevron*, 467 U.S. at 843-44). In that sense, a *Chevron* step-two argument and a claim that the agency has acted arbitrarily and capriciously (which petitioners also assert here) overlap. *Gen. Instrument Corp. v. FCC*, 213 F.3d 724, 732 (D.C. Cir. 2000).

1. The pertinent statutory language calls for the Commission to “make all reasonable efforts to preserve, as of February 22, 2012, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69.” 47 U.S.C. § 1452(b)(2). An understanding of petitioners’ and the Commission’s competing interpretations of that provision

requires a bit of background on the statute's reference to "the methodology described in OET Bulletin 69."

That reference concerns a document, Bulletin No. 69, originally issued in 1977 by the FCC's Office of Engineering and Technology (OET) and updated in 2004. Office of Eng'g & Tech., Fed. Commc'ns Comm'n, *OET Bulletin No. 69, Longley-Rice Methodology for Evaluating TV Coverage and Interference* (2004) (*OET-69*) (J.A. 490). OET-69 uses the Longley-Rice methodology, which "make[s] predictions of radio field strength at specific geographic points based on the elevation profile of terrain between the transmitter and each specific reception point," to evaluate service coverage and interference between stations. *Id.* at 1 (J.A. 492). OET-69 notes the need for a computer program to make those calculations. *Id.* The computer program "takes certain inputs, including population data, geographical terrain data, and data about stations' transmission facilities," and applies the Longley-Rice model "to generate a station's predicted coverage area and population served." *Order*, ¶ 127.

In the course of the Spectrum Act rulemaking, OET published a Public Notice announcing its development of a new computer program, called *TVStudy*, to perform interference analyses for broadcast stations in the reverse auction and the repacking process called for by the Spectrum Act. *Office of Engineering and Technology Releases and Seeks Comment on Updated OET-69 Software*, 28 FCC Rcd. 950 (2013) (*TVStudy PN*). OET explained that the *TVStudy* software would calculate television stations' coverage areas and populations served using the methodology described in OET-69. *Id.* at 950. The Public Notice, along with OET's corresponding notice in the Federal Register, *see* Office of Engineering and Technology Seeks Comment on Updated OET-69 Software, 78 Fed. Reg. 11,129 (Feb. 15, 2013),

sought comments on the new software program and also on proposals to update certain data inputs or to use new databases. Those improvements, OET explained, would serve “an important objective” by creating “software with improved accuracy . . . that makes use of the best available data to compute estimates of the coverage area and population served of each broadcast television licensee.” *TVStudy PN*, 28 FCC Rcd. at 952.

The Commission subsequently announced in its Order that it would use *TVStudy* for the reverse auction and repacking process. *Order*, ¶ 130. The Commission also announced that it would rely on population data from the 2010 U.S. Census to determine the population served by each broadcast station as of February 22, 2012. *Id.* ¶ 148. And the Commission decided to adopt most of the other updates and improvements proposed in OET’s Public Notice, including: using a new terrain elevation database maintained by the U.S. Geological Survey (rather than the previous, and no-longer-maintained, terrain database discussed in OET-69), *id.* ¶ 150; inputting actual antenna beam tilt data from each station (instead of applying a standard antenna tilt figure for all stations, as the computer program referred to in OET-69 had done), *id.* ¶ 153; and increasing the precision of the model’s geographic coordinates (rather than rounding those coordinates to the nearest second, as the computer program referred to in OET-69 had done), *id.* ¶ 155.

The Commission explained that its decision to “update the computer software and input values used to implement the OET-69 methodology” accorded with the Spectrum Act’s “ambiguous” instruction to use “the methodology described in OET Bulletin 69” in determining a broadcast licensee’s coverage area and population served. *Order*, ¶¶ 133-34. The Order defines the “OET-69 methodology” as comprising:

“(1) a specification for determining a contour that defines the boundaries of a station’s coverage area, and (2) an algorithm for evaluating the availability of service within that contour, including the effects of interference from neighboring stations.” *Id.* ¶ 134 n.435. Or, as the Commission’s counsel described the methodology at oral argument: first, “you identify the signal contour”—that is, “the area that a [broadcast] signal of a particular strength covers”—next, “you chop that up into a grid” containing “a number of cells,” and then “you use the Longley-Rice propagation model to evaluate whether or not you actually get a viewable signal in those cells.” Oral Arg. Tr. 31. That “methodology” does not, in the Commission’s view, encompass the specific computer software (*e.g.*, *TVStudy*) or input values (*e.g.*, updated Census figures) used to “implement” it in any given instance. *Order*, ¶ 134.

Petitioners read the statute differently. The relevant provision, as noted, calls for the Commission to undertake “all reasonable efforts” to “preserve, as of February 22, 2012, the coverage area and population served of each broadcast television licensee, as determined using the methodology described in OET Bulletin 69.” 47 U.S.C. § 1452(b)(2). Petitioners interpret that language to mean that the Commission must endeavor to preserve a broadcaster’s coverage area and population served *as they would have been calculated in implementing the OET-69 methodology on February 22, 2012*. Petitioners submit that the OET-69 “methodology” is a “fixed suite of software and procedures that existed on February 22, 2012” and that the Commission must therefore apply OET-69 just as it would have been applied on that date. Pet’rs’ Br. 23. Petitioners therefore argue that the Commission is barred from making use of software improvements or alternate data inputs that the Commission was not using as of that date.

2. We first consider petitioners' argument that the statute unambiguously compels that conclusion at *Chevron* step one. We agree with the Commission that the statutory text does not preclude the Commission's decision to use the improved *TVStudy* software and more accurate and current data when determining a broadcast licensee's coverage area and population served.

The statutory term "methodology" is wholly consistent with the Commission's understanding. That term is defined as "a body of methods, procedures, working concepts, rules, and postulates employed by a science, art, or discipline," and "the processes, techniques, or approaches employed in the solution of a problem or in doing something." *Webster's Third New International Dictionary, Unabridged* (online ed. 2015). As the Commission explained in its Order, "[d]istinguishing between a 'methodology' and the 'software' and 'inputs' used for applying that methodology" is "consistent with the ordinary meaning" of each of those terms. *Order*, ¶ 134. And as the Commission further observed, while "the methodology described in OET-69 requires a computer program and data inputs," those are "tools for applying" the methodology, not the methodology itself. *Id.*

Petitioners contend that "the methodology described in OET Bulletin 69" is a regulatory term of art through which Congress unambiguously incorporated the precise software program and data inputs the Commission would have used to calculate a broadcast station's coverage as of February 22, 2012. They maintain, for instance, that Congress unequivocally barred the FCC from using 2010 Census data when assessing a broadcaster's population served. In other words, Congress, in petitioners' understanding, *compelled* the Commission to calculate a broadcaster's population coverage

based on obsolete figures from the 2000 Census rather than on up-to-date figures from 2010.

Nothing in the statutory text requires us to attribute that counterintuitive intention to Congress. While the statute references OET-69, that bulletin contains no specification about which Census data to use. Petitioners point to a separate regulation, 47 C.F.R. § 73.616(e)(1), in which the Commission as of 2008 prescribed use of 2000 Census data—the most recent Census then available—for post-DTV-transition station applications. That regulation, however, has no necessary bearing on the incentive auction and repacking processes subsequently called for by the Spectrum Act, which had yet to be enacted at the time of the regulation’s promulgation.

Petitioners’ argument asserts not only that Congress inexplicably foreclosed the use of up-to-date Census figures to assess a broadcaster’s population served, but also that Congress, for some reason, precluded the development of improved software tailored to implement OET-69 for purposes of the Spectrum Act. Again, nothing in the statute or in OET-69 itself compels that conclusion. OET-69 states only that “[a] computer is needed to make” the Longley-Rice radio propagation model’s “predictions,” *OET-69*, at 1 (J.A. 492), suggesting that, while a computer is necessary to implement the methodology, no particular software program inheres in the methodology. And although OET-69 explains that there is a “computer program now used by the [FCC] Media Bureau” to evaluate applications for new and modified broadcast stations, *id.* at 8 n.1 (J.A. 499), it contemplates that others “desiring to implement the Longley-Rice model” may use “their own computer program,” *id.* at 5 (J.A. 496).

Additionally, as the Commission explained in the Order, “[t]he Commission’s bureaus have used *different* software programs to implement OET-69” for different purposes. *Order*, ¶ 146. “Each type of software provides a different utility that serves the purposes for which it is used (*i.e.*, licensing, interference and international coordination).” *Id.* Especially in that light, there is no reason to conclude that, merely by referencing “the methodology described in OET Bulletin 69,” Congress sought to foreclose the Commission’s development of software designed to best implement the incentive auction and repacking process newly called for by the Spectrum Act. At the very least, the statute does not unambiguously compel that surprising reading.

We are unpersuaded by petitioners’ identification of two prior instances in which the Commission arguably used the word “methodology” to refer both to OET-69’s general approach and to particular data inputs. Petitioners point to no instance in which *Congress* applied the term in that fashion. Nor can petitioners identify anything that supports their reading in OET-69 itself—the document contains no definition of the word “methodology.” Further, the two prior instances of Commission usage arose in contexts unrelated to the Spectrum Act. Those instances identified by petitioners thus fall well short of establishing that Congress unequivocally barred the Commission from using improved software and updated data inputs when applying OET-69 under that Act.

In addition, the two instances noted by petitioners are not models of clarity. The first concerns the Commission’s adjustments in 2008 to the rules governing the then-ongoing DTV transition. *See* Third Periodic Review of the Commission’s Rules and Policies Affecting the Conversion to Digital Television, 73 Fed. Reg. 5634 (Jan. 30, 2008). There,

the Commission stated that it was “revis[ing] the OET 69 interference analysis methodology to make the results more accurate,” including by using 2000 Census data in evaluating station applications. *Id.* at 5668; *see* 47 C.F.R. § 73.616(e)(1). Although the Commission observed that it was revising “the OET 69 interference analysis methodology,” it may have been using shorthand to describe a revision to its particular *application* of the methodology in connection with the DTV transition. And notably, whereas the Commission sought to make its application of OET-69 “more accurate” by using the most current Census data, petitioners’ reading of the Spectrum Act would have the opposite effect here, precluding the use of up-to-date Census data. The second instance identified by petitioners concerns an FCC ruling (also related to the DTV transition) referring to “the default vertical antenna patterns inherent in the OET-69 methodology.” *In the Matter of Qualcomm Inc. Petition for Declaratory Ruling*, 21 FCC Rcd. 11,683, ¶ 14 (2006). That oblique statement again may be a shorthand reference to the Commission’s *application* of OET-69’s methodology in that context. But even if otherwise, it fails to establish a broader understanding under which any reference to that methodology necessarily incorporates the particular computer software and data inputs in use at any particular time.

For those reasons, we reject petitioners’ contention at *Chevron* step one that the statute unambiguously forecloses the Commission’s use of the improved *TVStudy* program along with updated data inputs when applying OET-69 to determine a broadcaster’s coverage area and population served.

3. Proceeding to *Chevron* step two, we ask whether the Commission offered a “reasonable explanation of how [its] interpretation serves the statute’s objectives.” *Northpoint*

Tech., 412 F.3d at 151 (internal quotation marks omitted). The Commission's Order readily met that standard.

The Commission persuasively explained why the *TVStudy* software is both more user-friendly and better adapted to handle the kinds of computations the Commission will need to conduct in the reverse auction and repacking process called for by the Spectrum Act. *See Order*, ¶¶ 130-32. The repacking, the Commission observed, “presents a complex engineering problem that must be solved repeatedly during the course of the reverse auction bidding process: namely, how to determine which channels to assign to stations that will stay on the air, consistent with statutory requirements, as well as . . . technical requirements.” *Id.* ¶ 6. That requires a computer program capable of “undertak[ing], in a timely fashion, the volume of interference calculations necessary to ensure that all stations that will remain on the air following the auction are assigned channels in accordance with the provisions of the Spectrum Act.” *Id.* ¶ 130; *see id.* ¶ 19. The Commission's engineering experts tell us that *TVStudy* is up to the task: for instance, unlike the Commission's prior software, *TVStudy* can “create and use a uniform nationwide grid for analysis of coverage area and population served” and “undertake pairwise interference analyses of every station that will remain on the air after the incentive auction and generate data that identify combinations of stations that can (or cannot) co-exist on the same channel or adjacent channels.” *Id.* ¶¶ 130, 132 (internal footnote omitted). And it can perform that analysis much more quickly than the prior software could. *Id.* ¶ 132.

The Commission also explained that its use of updated and more precise data inputs advanced its statutory mandate to use “all reasonable efforts” to preserve each station's coverage area and population served as of February 22, 2012.

Id. ¶ 130. It is self-evident that the accuracy of the Commission's determinations would be improved by its use of more recent population data, more precise terrain calculations, and more exact technical information. Indeed, the terrain database mentioned in the 2004 version of OET-69 has become "obsolete" and is no longer distributed or maintained by the U.S. Geological Survey. *Id.* ¶ 150. Moreover, while petitioners believe that the Commission paid insufficient attention to the interests of broadcasters accustomed to the old program, the Commission explained that its engineers had taken care in designing and developing *TVStudy* "to ensure that it faithfully implements the OET-69 methodology, provides results that closely match those of the earlier computer software (notwithstanding updates that improve accuracy), and avoids bias that would systematically reduce broadcast stations' coverage areas and populations served." *Id.* ¶ 140.

The Spectrum Act aims to enhance the technological capacity of the United States by requiring the Commission to conduct an incentive auction that is "the first such auction ever attempted worldwide." *NPRM*, ¶ 4. The Commission understandably declined to fulfill that forward-looking mandate by using obsolete software and inaccurate data. Petitioners' insistence that the Commission do so runs counter to the statute's basic objectives.

We thus reject petitioners' argument that the Commission's decision to use *TVStudy* and updated inputs amounts to an unreasonable interpretation of the Spectrum Act at *Chevron* step two. Our analysis also suffices to dispense of petitioners' arbitrary-and-capricious arguments to the same effect. *See Gen. Instrument*, 213 F.3d at 732.

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B.

Petitioners also lodge a procedural challenge to the Commission's decision to use *TVStudy*. Petitioners argue that the Commission's decision was flawed because the Commission's Notice of Proposed Rulemaking for the Spectrum Act failed to include a proposal to use a new computer program or updated data inputs. The only notice regarding the Commission's planned use of *TVStudy*, they maintain, came from OET, a staff-level Commission Office, and not from the full Commission. Petitioners invoke our court's decision in *Sprint Corp. v. FCC*, in which we found that the FCC failed to comply with the Administrative Procedure Act's notice-and-comment requirements when the only public notice regarding the Commission's rule change came from the FCC's Common Carrier Bureau. 315 F.3d 369, 376-77 (D.C. Cir. 2003); *see* 5 U.S.C. § 553(b).

We need not examine in detail the interplay between § 553(b)'s requirements and the Commission's actions here, however, because any error in OET's (rather than the Commission's) issuing the Public Notice was certainly harmless. *See* 5 U.S.C. § 706 (courts shall take "due account" of "the rule of prejudicial error" in reviewing agency action); *U.S. Telecom Ass'n v. FCC*, 400 F.3d 29, 41 (D.C. Cir. 2005). In this regard, *Sprint*, on which petitioners rely, materially differs from this case. In *Sprint*, the Common Carrier Bureau did not publish its notice in the Federal Register. 315 F.3d at 374. Additionally, the Bureau's notice in *Sprint*—which sought comment on a party's petition for clarification—"described a proposal completely different from that which the FCC ultimately adopted," *U.S. Telecom*, 400 F.3d at 41 n.25 (describing *Sprint*), such that "the parties did not appreciate that the Commission was contemplating" the rule it ultimately issued, *Sprint*, 315 F.3d at 376.

Here, OET published its notice in the Federal Register as a “proposed rule” of the Commission. *See* Office of Engineering and Technology Seeks Comment on Updated OET-69 Software, 78 Fed. Reg. 11,129. The notice stated unequivocally that “[t]he Commission plans to use this new software in connection with the proposed broadcast television spectrum incentive auction,” *id.* at 11,129, and it asked for comment both on the software generally and on all of the various data inputs the Commission was considering changing, *see id.* at 11,131-32. The notice therefore “made the issue under consideration crystal clear.” *U.S. Telecom*, 400 F.3d at 41. Petitioners make no suggestion that the Commission’s decision to use *TVStudy* and the updated data sets departed in any significant way from OET’s account of its proposals in the Federal Register. In fact, petitioners acknowledge that the Commission more or less adopted OET’s proposals wholesale. Moreover, NAB and other industry members articulated their opposition to the use of *TVStudy* and the proposed data sets in written submissions and *ex parte* meetings with Commission staff. And the Commission acknowledged and responded to their concerns throughout its Order. *See, e.g., Order*, ¶¶ 129, 147.

Consequently, this is not a case in which the petitioner has made a “colorable claim that it would have more thoroughly presented its arguments had it known that the Commission was contemplating a rulemaking,” such that the effect of any procedural error is “uncertain.” *Sprint*, 315 F.3d at 377. Rather, this is a case in which it is apparent that any procedural error was non-prejudicial. *See U.S. Telecom*, 400 F.3d at 41; *City of Arlington v. FCC*, 668 F.3d 229, 244-45 (5th Cir. 2012).

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C.

Aside from their unsuccessful challenge to the Commission's use of *TVStudy*, petitioners press two additional arguments concerning the Commission's statutory obligation to "make all reasonable efforts to preserve, as of February 22, 2012, the coverage area and population served of each broadcast television licensee." 47 U.S.C. § 1452(b)(2). Neither argument persuades us.

1. Petitioners argue that the Commission failed to make reasonable efforts to preserve the "population served" by a station when it declined to protect repacked stations against so-called "terrain loss" occasioned by reassignment to a new channel. The Commission interpreted "population served" to mean those persons who reside in a station's "coverage area" in locations at which the station's signal avoids interference from other stations. *Order*, ¶ 179. The Commission explained that it intended to "preserve" that coverage area in the repacking process by replicating the station's existing signal contour on its new channel, including by allowing power adjustments necessary to enable the signal to continue to reach the same geographic area. *Id.* ¶ 166. But because "radio signals propagate differently on different frequencies," a station's reassignment to a different channel means that "its technical facilities (transmit power and antenna pattern) must be modified to preserve its coverage area." *Id.* ¶ 163. "With such modifications," in turn, "there may be some small differences in the specific geographic areas served within the station's . . . contour, even though the total geographic area within the station's contour remains the same." *Id.* That is called terrain loss, *i.e.*, loss of coverage because the station's new frequency interacts in new ways with the terrain in the station's geographic contour. *See* Pet'rs' Br. 49; *Order*, ¶ 163.

The Commission described the possibility of terrain loss as “unavoidable,” explaining that “exact replication of coverage within a station’s contour is not always attainable under the laws of physics.” *Order*, ¶ 170. During the comment period, commenters suggested that the Commission should make up for terrain loss by expanding a repacked station’s signal contour. *See id.* ¶ 172. The Commission declined to do so because “[a]llowing contour extensions during the repacking process [would] make it more difficult to repack stations efficiently.” *Id.* ¶ 173. The Commission similarly declined to withhold consideration of any post-auction channel reassignment that would result in anything greater than a *de minimis* change in coverage. *Id.* According to the Commission, “[r]educing the number of potential channels significantly limits [its] flexibility to assign channels in the repacking process, increasing the potential costs of clearing the spectrum and decreasing the likelihood of a successful auction outcome.” *Id.* And the Commission interpreted the Act’s preservation mandate “to require that we make all reasonable efforts to preserve each station’s coverage area and population served *without sacrificing the goal of a successful incentive auction.*” *Id.* (emphasis added).

Petitioners argue that, in electing to proceed with channel reassignments notwithstanding the possibility of terrain loss, the Commission failed to satisfy its duty to make reasonable efforts to preserve a station’s pre-auction customer base. We disagree. As an initial matter, the Commission explained that “the majority” of UHF broadcast stations would be reassigned to channels lower in the UHF band whose “superior propagation characteristics” could be expected to *decrease* terrain loss. *Id.* ¶ 174. With respect to those circumstances in which some terrain loss could occur, the Commission’s decision to live with that possibility lay well within its latitude under § 1452(b)(2).

Congress's instruction to make "all reasonable efforts" to preserve the service of existing stations did not constrain the Commission to accept nothing more than a *de minimis* change in coverage area or population served in the repacking process. *See id.* ¶¶ 123, 173. In deciding which preservation efforts would be "reasonable," it was entirely permissible for the Commission to take into account the Spectrum Act's overarching objective of repurposing broadcast spectrum. The term "reasonable," we have explained, "opens a rather large area for the free play of agency discretion." *Orloff v. FCC*, 352 F.3d 415, 420 (D.C. Cir. 2003); *see Capital Network Sys., Inc. v. FCC*, 28 F.3d 201, 204 (D.C. Cir. 1994) ("Because 'just,' 'unjust,' 'reasonable,' and 'unreasonable' are ambiguous statutory terms, this court owes substantial deference to the interpretation the Commission accords them."). The Commission reasonably exercised its discretion in concluding that a prohibition against any reassignments carrying a risk of terrain loss would unduly limit its flexibility in connection with the reverse auction and repacking process.

2. Petitioners contend that the Commission contravened its duty to preserve repacked stations' coverage areas by failing adequately to account for unpopulated areas within a station's geographic contour. The Commission explained that, for each station potentially subject to the repacking process, it will create an "interference-paired file" that lists all the other stations that could *not* be assigned to operate on the same channel or an adjacent channel due to concerns about signal interference. *Order*, ¶ 114. In a footnote, the Commission noted that the "interference-paired file will match the coverage area of a station *to the degree that the area is populated.*" *Id.* ¶ 114 n.372 (emphasis added). Petitioners argue that the footnote amounts to an announcement that the Commission intends to preserve a station's geographic coverage area only to the extent it is

populated, in derogation of the obligation to make all reasonable efforts to preserve coverage area.

As Commission counsel clarified during oral argument, however, when the Commission replicates a station's preexisting signal contour on its new channel as part of the repacking process, unpopulated areas will remain within the protected contour when there is no signal interference to those areas. Oral Arg. Tr. 40; *see Declaratory Ruling*, ¶ 8. Insofar as a possibility of signal interference exists, the Commission reasonably decided against insulating an area from interference if it is unpopulated—*i.e.*, if there are no viewers affected by the interference. As the Commission explained, the term coverage area “defines the geographic region within which a signal is predicted to have a specified field strength.” *Declaratory Ruling*, ¶ 8. And the Commission “fulfill[s] the statutory obligation to ‘preserve’ a station’s coverage area . . . by ensuring that [it] can continue to operate at technical parameters sufficient to maintain [its] coverage area[] as of February 22, 2012.” *Id.* Protecting an area from signal interference even if it is unpopulated, the Commission reasoned, “would significantly constrain [its] flexibility in the repacking process and impair the efficiency of the final television channel assignment scheme,” perhaps to no great purpose—for instance, a station’s unpopulated coverage areas may be uninhabitable. *Id.* ¶ 10. Again, we find that the Commission permissibly considered the Spectrum Act’s overall goals in deciding how to exercise its “reasonable efforts” mandate.

D.

In their final joint argument, petitioners attack one of the Commission’s determinations concerning which kinds of broadcast stations it will protect in the repacking process.

Petitioners take issue with the Commission's decision to disregard service provided by "fill-in translators" (also called "digital replacement translators," "DRTs," or "digital low power TV translators") in determining a broadcast licensee's coverage area. *See Order*, ¶¶ 237-43. A fill-in translator is a low-power station that receives the broadcast signal of a full-power station and simultaneously retransmits that signal on another channel. *In the Matter of Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Digital Low Power Television, Television Translator, and Television Booster Stations and to Amend Rules for Digital Class A Television Stations*, 19 FCC Rcd. 19,331, ¶ 5 (2004). A broadcaster can use such stations to "fill in" service to terrain-obstructed areas within the primary station's coverage contour. *Id.* The Commission created that class of stations in 2009 to enable full-power stations to restore service to areas that lost coverage as a result of the digital transition. *In the Matter of Amendment of Parts 73 and 74 of the Commission's Rules to Establish Rules for Replacement Digital Low Power Television Translator Stations*, 24 FCC Rcd. 5931, ¶ 1 (2009) (*DRT Order*).

Petitioners argue that the decision to leave fill-in translators unprotected contravenes the Spectrum Act's preservation mandate and is otherwise arbitrary and capricious. Once again, however, we defer to the Commission's reasonable implementation of the mandate. The provision calls for efforts to preserve the coverage area and population served "of each broadcast television licensee." 47 U.S.C. § 1452(b)(2). The Act, in turn, defines "broadcast television licensee" as "the licensee of . . . a full-power television station; or . . . a low-power television station that has been accorded primary status as a Class A television licensee" under the Commission's rules. *Id.* § 1401(6). As the Commission explained, fill-in translators fall outside that

definition: they are not full-power television stations, and they do not qualify as Class A stations. The preservation mandate's terms therefore do not extend to fill-in translators. *See Order*, ¶ 238.

Petitioners argue that the Commission nonetheless had an obligation to protect fill-in translators because a broadcast licensee's "coverage area and population served" may come in part from retransmission via a fill-in translator. While the Commission perhaps could have elected to protect fill-in translators for that reason, the statute does not mandate their protection. Fill-in translators possess a separate license from the station whose programming they retransmit (though the translator license is "associated with" the main station's license). *See DRT Order*, ¶ 23; *Order*, ¶ 243. And the two stations often operate on different channels. *See DRT Order*, ¶ 4; *Order*, ¶ 242. A full-power station's license thus need not be considered to encompass fill-in service provided by another station under a separate license. The Commission's determination is all the more reasonable in light of the distinct and secondary status the Commission has generally afforded to translator stations, *see Order*, ¶¶ 239 & n.741, 244, and the Commission's assessment of the significant practical difficulties that would attend protection of fill-in translators, *see id.* ¶ 242 & n.747. In particular, the Commission would need to "protect a separate channel facility for each DRT operated by a full power station, significantly affecting repacking flexibility in markets where they are licensed." *Id.* We defer to the Commission's reasonable judgment about the treatment of fill-in translator stations.

III.

Petitioner Sinclair Broadcast Group, not joined by NAB, raises two additional challenges to the Commission's Order.

First, Sinclair takes issue with the Commission's establishment of a 39-month construction period within which reassigned broadcasters are expected to transition their services to their new channels. The 39-month period has come to be known as the "go-dark" deadline because broadcasters must cease operations on their pre-auction stations within that time. Second, Sinclair attacks the Commission's interpretation of the Spectrum Act's requirement that "at least two competing licensees participate in the reverse auction" before the Commission accepts a broadcaster's relinquished spectrum. 47 U.S.C. § 309(j)(8)(G)(ii). We reject both of Sinclair's challenges.

A.

We initially address the Commission's argument that Sinclair lacks Article III standing to pursue its two arguments in our court. To establish its standing, Sinclair must show: (1) "an 'injury in fact' that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) [that] the injury is fairly traceable to the challenged action of the defendant; and (3) [that] it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision." *Friends of the Earth, Inc. v. Laidlaw Env'tl. Servs. (TOC), Inc.*, 528 U.S. 167, 180-81 (2000). When a party claims a future harm, as Sinclair does here, it must show a "substantial probability of injury," *Sierra Club v. Jewell*, 764 F.3d 1, 7 (D.C. Cir. 2014), or a "substantial risk that the harm will occur," *Susan B. Anthony List v. Driehaus*, 134 S. Ct. 2334, 2341 (2014) (internal quotation marks omitted). Sinclair has made that showing with respect to both of its challenges.

1. With regard to the 39-month deadline, the Commission argues that Sinclair's claim of future injury is

unduly speculative because it is unknown whether any Sinclair station will in fact be subject to repacking. But Sinclair submitted a declaration from its Vice President of Advanced Technology asserting that the company owns “at least 27 stations in the portion of the television broadcast band that is most likely to be cleared and repacked in the auction.” Decl. of Mark A. Aitken ¶ 19 (Aitken Decl.) (Pet’rs’ Add. 46). That assertion draws support from Sinclair’s reasoned predictions about which channels the Commission will clear upon reaching certain “clearing targets”—*i.e.*, amounts of spectrum obtained and sold—during the incentive auction. *See id.* ¶¶ 17-19 (Pet’rs’ Add. 45-46). In the Commission’s view, even if certain of Sinclair’s stations are repacked, Sinclair likely would be able to construct the necessary facilities before the go-dark deadline. That, however, is the very issue in dispute on the merits: Sinclair asserts that 39 months is insufficient time, *see id.* ¶¶ 7-15 (Pet’rs’ Add. 40-45), and the Commission disagrees, *see Order*, ¶¶ 569-71. For purposes of the threshold standing stage, we need not (and should not) assume the accuracy of the Commission’s position. *See In re Navy Chaplaincy*, 697 F.3d 1171, 1178 (D.C. Cir. 2012); *City of Waukesha v. EPA*, 320 F.3d 228, 235 (D.C. Cir. 2003). Rather, based on its description of the “inescapable challenges” facing broadcasters in the repacking process, Aitken Decl. ¶ 12 (Pet’rs’ Add. 43), Sinclair offers enough to show a “substantial risk” that one of its stations will miss the go-dark deadline.

2. Sinclair also has standing to raise its second challenge. As discussed below, the Commission interprets the requirement that “at least two competing licensees participate in the reverse auction” to be satisfied as long as two licensees anywhere in the country submit a valid application to take part in the auction and the two licensees are not commonly controlled. *Order*, ¶¶ 413-14. The Commission contends that

its interpretation cannot injure Sinclair because “a single licensee in any specific market (as opposed to in the auction as a whole) can only benefit from the absence of a directly competing bidder, as that absence will reduce downward pressure on reverse auction payments.” Resp’ts’ Br. 65. Sinclair, for that reason, might well lack standing if it claimed injury only as a future auction participant. But Sinclair also attests that certain of its stations will *not* participate in the reverse auction, which leaves those stations vulnerable to repacking and its attendant risks. Aitken Decl. ¶ 17 (Pet’rs’ Add. 45). Sinclair further explains that, if the Commission is able to acquire more relinquished spectrum in the reverse auction (as the Commission’s broad interpretation of the two-participant requirement would serve to enable), the Commission then would repack more stations against their will. *Id.* The Commission does not counter Sinclair’s articulation of the link between the Commission’s reverse-auction clearing targets and the amount of spectrum it will subsequently repack. We therefore find that Sinclair has shown a substantial risk that the Commission’s interpretation of the two-participant restriction will ultimately work to Sinclair’s detriment.

B.

Although Sinclair has standing to press its two challenges, we find in favor of the Commission on the merits of both.

1. With respect to the Commission’s decision to establish a 39-month go-dark period, we perceive nothing arbitrary or capricious about the Commission’s choice of that cut-off point. The Commission chose a 39-month period based on the combination of a three-month period within which to apply for a construction permit and a 36-month

period within which to transfer facilities to the new channel. Although Sinclair submits that the period is unduly brief, a number of commenters on the broadcaster side, including NAB, pushed for a still shorter period of less than 36 months. *Order*, ¶ 568 n.1604. Moreover, the Commission's choice accords with FCC rules requiring licensees constructing entirely *new* facilities to do so within three years. *Id.* ¶ 568; *see* 47 C.F.R. § 73.3598(a). And the transition period also coheres with the Spectrum Act's requirement that the Commission reimburse reassigned broadcasters for their relocation expenses within three years of the forward auction. *Order*, ¶ 568; *see* 47 U.S.C. § 1452(b)(4)(D).

Sinclair argues that the Commission failed to account for significant resource and labor shortages in the supply of broadcast-television construction services, which it predicts will only grow during the repacking process under the pressure of increased demand. The Commission specifically noted those concerns, however, and explained that the transition would proceed in phases to “eliminat[e] the need for all stations to obtain their equipment or schedule a tower crew at the same time.” *Order*, ¶ 571. In addition, the Commission expects service providers to respond to the surge in demand, *id.*, a predictive judgment about a matter within its expertise to which we accord “substantial deference.” *See Nuvio Corp. v. FCC*, 473 F.3d 302, 306-07 (D.C. Cir. 2006).

To be sure, the Commission, while expecting the vast majority of relocated broadcasters to meet the 39-month deadline, acknowledged that some stations might face challenges in doing so. *Order*, ¶ 569. But the Commission determined that extending the go-dark deadline beyond 39 months “could depress forward-auction participation or the value of investments made by forward auction winners,” some of whom would already have to wait three years before

enjoying the fruits of their investments. *Id.* ¶ 572 & n.1613. We find that the Commission reasonably balanced the Spectrum Act’s competing imperatives. *Cf. Fresno Mobile Radio, Inc. v. FCC*, 165 F.3d 965, 971 (D.C. Cir. 1999).

2. Sinclair fares no better with respect to its challenge concerning the requirement that “at least two competing licensees participate in the reverse auction” before the Commission accepts and transfers a broadcaster’s relinquished spectrum. 47 U.S.C. § 309(j)(8)(G)(ii). The Commission interpreted the requirement to be met if two broadcast licensees who lack common control successfully submit applications to take part in the reverse auction. *Order*, ¶¶ 413-14. According to that interpretation, as long as a broadcaster presents a complete application and complies with the auction rules, it need not actually tender a bid to be considered an auction “participant.” *Id.* ¶ 413. Moreover, the two broadcasters need not operate in a common geographic market or channel location to be considered “competing.” *Id.* ¶ 414.

The statutory language does not foreclose the Commission’s interpretation at *Chevron* step one. Sinclair maintains that a broadcaster only can be said to “participate” in the auction if the broadcaster accepts the Commission’s offer for its license. But the ordinary meaning of “participate” is to “take part in something (as an enterprise or activity) usually in common with others.” *Webster’s Third New International Dictionary, Unabridged* (online ed. 2015). Just as one could be said to “take part” in an ordinary auction by arriving at the auction house and considering whether to bid on the offerings, a broadcaster could be said to “take part” in the reverse auction by demonstrating eligibility and considering the Commission’s opening price. The statute’s use of the participial adjective “competing” is likewise

ambiguous. To “compete” is to “seek or strive for something (as a position, possession, reward) for which others are also contending,” or to “vie with another or others for or as if for a prize.” *Webster’s Third New International Dictionary, Unabridged* (online ed. 2015). But the statute does not say what the broadcasters must compete *for*. See 47 U.S.C. § 309(j)(8)(G)(ii).

The Commission resolved those ambiguities by adopting a sensible interpretation in the context of the reverse auction’s design. With regard to “participate,” the Commission reasoned that “the knowledge that another [licensee] *might* bid will create competitive pressure for a second bidder to accept lower incentive payments than it would absent any competition,” even if the other licensee does not in fact submit a bid. *Order*, ¶ 413 (emphasis added). And with regard to “competing,” the Commission explained that, under its auction design framework, “regardless of their pre-auction geographic or channel location, all participants in the reverse auction will compete to receive incentive payments from the same limited source—the aggregate proceeds of the forward auction.” *Id.* ¶ 414. The Commission, as Sinclair argues, adopted a broad understanding of the two-participant requirement: theoretically, the Commission’s rule would be met if any two broadcasters anywhere in the country submit compliant applications and one of them accepts the Commission’s opening offer for its license. Congress, however, enacted no specification that the two licensees must occupy the same geographic market or possess licenses covering substantially the same contour. Congress instead granted the Commission definitional discretion to be exercised in the context of the particular incentive auction the Commission ultimately designed.

Sinclair does not purport to offer a better interpretation of “competing” in the context of the reverse auction for broadcast spectrum. And we are hard-pressed to come up with one. That two broadcasters may compete in the provision of television service in a particular geographic market fails to determine the broadcasters’ relationship in connection with the reverse auction. The Commission will offer buy-out prices in that auction on a station-by-station basis, with the prices getting lower in each round. *Id.* ¶¶ 450, 453. The prices will take into account not only the station’s geographic location but also its potential to cause interference to other stations, because the latter could affect the Commission’s flexibility in making reassignments during the repacking process. *Id.* ¶ 450. As the Commission explained, “the interdependent nature of the repacking process, where repacking one station may have widespread effects across geographic areas with possible nationwide band plan implications, means that participants will be affecting, and competing with, licensees far beyond their contour, DMA [Designated Market Area], or channel.” *Id.* ¶ 414. Given the myriad ways in which one broadcaster’s spectrum offerings could be said to be “competing” with the offerings of another, the Commission reasonably settled on a definition focused on the one way in which all broadcasters unquestionably interact with one another in the reverse auction: they all vie for the same limited pool of forward-auction proceeds.

The Commission, moreover, persuasively explained why it rejected a geography-based definition of “competing.” Such a rule “could mean that an otherwise willing and eligible broadcast television licensee would not be allowed to bid in the reverse auction if it is the only participant in its DMA.” *Id.* ¶ 415. We agree with the Commission that if a wireless provider stands willing to pay enough in the forward auction to cover the broadcast licensee’s buy-out price and other

associated expenses, there is no apparent reason to deny the Commission the ability to accept the broadcaster's bid to relinquish that spectrum. To require the Commission to forgo the spectrum merely because no other broadcaster in the same geographic market wishes to sell "would limit the Commission's ability to allow market forces to determine the highest and best use of spectrum" and prevent acquisition of adequate spectrum to allow the auction to close. *Id.* We are unable to conclude that Congress intended to bring about such a result.

* * * * *

We have considered petitioners' other arguments and concluded that none has merit. Accordingly, we deny the petitions for review.

So ordered.