

[PUBLISH]

IN THE UNITED STATES COURT OF APPEALS
FOR THE ELEVENTH CIRCUIT

No. 11-12168

D.C. Docket No. 2:01-cv-00152-VEH

UNITED STATES OF AMERICA,

Plaintiff-Appellant,

ALABAMA ENVIRONMENTAL COUNCIL,

Intervenor-Appellant,

versus

ALABAMA POWER COMPANY,

Defendant-Appellee.

Appeals from the United States District Court
for the Northern District of Alabama

(September 19, 2013)

Before BARKETT and JORDAN, Circuit Judges, and HODGES,* District Judge.

* Honorable Wm. Terrell Hodges, United States District Judge for the Middle District of Florida, sitting by designation.

JORDAN, Circuit Judge:

This case, brought by the United States against Alabama Power Company for alleged violations of the Clean Air Act, 42 U.S.C. § 7401 *et seq.*, has lasted for over a decade, lending some literal support to Justice Holmes' quip that "[l]awyers spend their professional careers shoveling smoke."¹ The government's central allegation is that Alabama Power, contrary to the Act, made major modifications at three of its coal-fired power plants without obtaining a permit or installing modern pollution control devices.

In support of its case, the government sought to introduce the expert testimony of Robert Koppe, a power plant reliability engineer, and Dr. Ranajit Sahu, an environmental permitting engineer. The testimony of these two experts, according to the government, would show that Alabama Power should have expected the modifications to significantly increase pollutant emissions at the plants, in violation of the Act. The district court, relying on *United States v. Cinergy Corp.*, 623 F.3d 455 (7th Cir. 2010), excluded the testimony of Mr. Koppe and Dr. Sahu, agreeing with Alabama Power that their methodology relied on incorrect and unrealistic assumptions about the operation of Alabama Power's generating units. *See United States v. Alabama Power Co.*, 773 F. Supp. 2d 1250

¹ Statement attributed to Justice Oliver Wendell Holmes, Jr. in 1 EDWARD W. KNAPPMAN, WATERGATE AND THE WHITE HOUSE 100 (1973).

(N.D. Ala. 2011) ("*Alabama Power I*"). The district court also struck, as an untimely new expert opinion, additional statements and calculations made by Dr. Sahu in his supplemental declaration. See *United States v. Alabama Power Co.*, 274 F.R.D. 686 (N.D. Ala. 2011) ("*Alabama Power II*"). Because the government indicated that it could not proceed without the expert testimony excluded in *Alabama Power I*, the district court entered summary judgment in favor of Alabama Power. See *Alabama Power II*, 274 F.R.D. at 686.

The government and the Alabama Environmental Council, an intervenor, now appeal. Following review of the voluminous record, and with the benefit of oral argument, we affirm without further discussion the district court's ruling in *Alabama Power II*. That ruling, in our view, was not an abuse of discretion. We reverse, however, the district court's wholesale exclusion of the expert testimony of Mr. Koppe and Dr. Sahu in *Alabama Power I*, vacate the judgment in favor of Alabama Power, and remand for further proceedings. The Koppe-Sahu model, as utilized here, is sufficiently reliable to establish a relationship between potential generation of electricity and expected pollutant emissions at Alabama Power's modified plants. The Seventh Circuit's decision in *Cinergy Corp.*, moreover, does not preclude admission of the expert testimony.

I

The Clean Air Act seeks to protect the nation's air resources and promote public health through the prevention and control of air pollution. *See* 42 U.S.C. § 7401(b). The Act directs the Environmental Protection Agency to develop national standards regulating the emission of certain hazardous airborne pollutants. *Id.* at § 7409. The Act also tasks the EPA with overseeing each State's adoption of control measures and policies, i.e., the State Implementation Plan, to ensure that each State achieves the required air quality standards. *Id.* at § 7410. In its enforcement role, the EPA may bring suit directly against any operator of a pollution source for violation of the Act, regulations promulgated under the Act, or the relevant SIP. *Id.* at § 7413.

Under the Act's Prevention of Significant Deterioration ("PSD") Program, enacted in 1977, major new sources of air pollution must limit their emissions to preserve the country's air quality and protect human health. Sources built before 1977 are exempt from this requirement unless they undergo a "major modification." *See* 42 U.S.C. § 7475; 40 C.F.R. § 52.21(b)(2)(i). A "major modification" includes physical or operational changes to a power plant that would result in a "significant net emissions increase" in sulfur dioxide and nitrogen oxide. *See* 40 C.F.R. § 52.21(b)(2)(i). A net emissions increase for either of these pollutants is "significant" if it is greater than 40 tons per year. *See* 40 C.F.R. §

52.21(b)(23)(i); Ala. Adm. Code § 335-3-14-.04(1)(a).² The permitting process requires an operator to adopt stringent pollutant emission controls at the plant, including the incorporation of costly equipment and procedures. *See Nat'l Parks & Conservation Ass'n, Inc. v. Tennessee Valley Auth.*, 502 F.3d 1316, 1319 (11th Cir. 2007). *See also Alabama Power Co. v. Costle*, 636 F.2d 323, 351 (D.C. Cir. 1979).

A

When a coal-fired power plant is operating, it burns coal to fuel an intense fire that converts water to steam. The steam passes over and turns the blades of a turbine; the kinetic energy of the turning blades is then converted into electricity by a generator. The process involves numerous mechanical components working in concert in an extremely inhospitable environment. A power-plant operator might schedule ahead to shut down a plant and complete regular maintenance and repair components. A shut-down, however, may also be unscheduled (e.g., when there is a sudden catastrophic failure).

A plant does not generate electricity when it is shut down and, therefore, does not need to burn coal during periods of inactivity. If the repair or replacement of a problematic component renders a plant more reliable and less susceptible to future shut-downs, the plant will be able to run consistently for a longer period of time. Assuming that the operator wishes to exploit this extra availability to

² The parties agree that these standards control.

generate more electricity, more coal will need to be burned. Because coal-fueled combustion produces sulfur dioxide and nitrogen oxide, such increased plant operations may result in increased pollutant emissions.

B

In 1985, Alabama Power conducted an air-flow conversion of Unit 10 at its Gorgas plant from a "forced draft" system to a "balanced draft" system. In 1989, Alabama Power completely replaced the primary reheaters (a major boiler component) of Unit 2 at its Greene County plant. Similarly, in 1997, Alabama Power replaced a reheater section of Unit 2 at its Barry plant. Alabama Power did not obtain permits under the Clean Air Act for these projects.

These modifications, according to the government, were performed to reduce the amount of time each plant would spend shut down for future maintenance and repairs. By replacing older infrastructure, prone to failure, with newer, more reliable components, Alabama Power intended to improve the reliability of its plants. As a consequence of this improved reliability, the government asserted, the modified power plants would be able to generate electricity for longer intervals throughout the year than before the modifications. Additionally, the government alleged, the balanced draft conversion at Gorgas Unit 10 would not only increase the plant's availability, but also raise its maximum hourly capacity for electricity generation. In order to exploit this additional

capacity, the plant would need to burn even more coal. More coal burned to exploit additional capacity, in the government's view, would also increase pollutant emissions. In short, the government believed that the Gorgas, Greene County, and Barry projects constituted "major modifications" under the Clean Air Act.

To satisfy its burden under the Act, the government had to show that at the time of the projects Alabama Power expected, or should have expected, that its modifications would result in a "significant net emissions increase" of sulfur dioxide or nitrogen oxide at each plant. *See Cinergy Corp.*, 623 F.3d at 459 ("the permit must be obtained before the modification is made, and so the effect on emissions is a prediction rather than an observation"); *United States v. Ohio Edison Co.*, 276 F. Supp. 2d 829, 865 (S.D. Ohio 2003) ("the determination of whether a given project will cause a significant net pollution increase requires a pre-construction determination as to the additional pollutants projected to be emitted as a result of the proposed physical change"). The expert testimony of Mr. Koppe and Dr. Sahu, which we explain later, was critical to the government's ability to make that showing.

III

As noted earlier, the district court struck the expert testimony of Mr. Koppe and Dr. Sahu because it concluded that their methodology was unreliable within the meaning of *Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 595 (1993), and its

progeny. We review that ruling for abuse of discretion. *See, e.g., Toole v. Baxter Healthcare Corp.*, 235 F.3d 1307, 1312 (11th Cir. 2000). "A district court abuses its discretion if it applies an incorrect legal standard, follows improper procedures in making the determination, or makes findings of fact that are clearly erroneous." *Chicago Tribune Co. v. Bridgestone/Firestone, Inc.*, 263 F.3d 1304, 1309 (11th Cir. 2001).

Under Rule 702, a district court acts as a gatekeeper to keep out irrelevant or unreliable expert testimony. *See Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 145 (1999); *Daubert*, 509 U.S. at 596. This gatekeeping role, however, "is not intended to supplant the adversary system or the role of the jury: 'vigorous cross-examination, presentation of contrary evidence, and careful instruction on the burden of proof are the traditional and appropriate means of attacking shaky but admissible evidence.'" *Allison v. McGhan Med. Corp.*, 184 F.3d 1300, 1311-12 (11th Cir. 1999) (citing *Daubert*, 509 U.S. at 596). In evaluating the reliability of scientific expert testimony, a district court "must assess whether the reasoning or methodology underlying the testimony is scientifically valid and whether the reasoning or methodology properly can be applied to the facts in issue." *United States v. Frazier*, 387 F.3d 1244, 1261-62 (11th Cir. 2004) (en banc) (internal quotation marks and ellipsis omitted).

With these standards in mind, we turn to the expert testimony of Mr. Koppe and Dr. Sahu, and the reasons the district court gave for its exclusion.

A

The Koppe-Sahu model consists of two parts. The first is an analysis of each modification's expected effect on the power plant's availability and capacity to generate additional electricity. The second is a calculation of the marginal increase of pollutant emissions at each power plant due to increases in availability and capacity.

Mr. Koppe's analysis constituted the first part of the model. Mr. Koppe examined Alabama Power's rationale for its projects and how each project addressed certain problematic components prone to failure. Mr. Koppe also analyzed the historical operating data and records of each unit to determine the number of hours it spent shut down due to that specific, faulty component. The replacement of that component, Mr. Koppe opined, would preclude similar shutdowns in the future, thereby increasing the unit's overall availability to generate electricity.

In the case of Gorgas Unit 10, however, the balanced draft conversion project addressed a system design flaw that led to numerous component failures and limited the unit's overall reliability and performance. Because the scope of that project was larger than the replacement of a single component, Mr. Koppe was

unable to perform his standard availability analysis. Instead, he reviewed the records of nine other units owned by Southern Company (the parent of Alabama Power) that had undergone balanced draft conversions before Gorgas Unit 10. He found that, on average, the modified units suffered fewer outages and, therefore, experienced greater availability than before their modifications. Notably, Southern Company had also conducted the same analysis of those nine units in September of 1982, three years before the modification of Gorgas Unit 10. *See* D.E. 321, Ex. 4 at 93-94. Southern Company's own study concluded, as did Mr. Koppe, that a balanced draft conversion should be expected to improve a unit's availability. *Id.*³ According to Mr. Koppe, because Alabama Power was aware that a balanced draft conversion would likely improve a unit's availability, it should have expected an increase in availability at Gorgas Unit 10.

Additionally, Mr. Koppe cited to another Alabama Power study (this one conducted in September of 1983) which estimated a significant increase in Gorgas Unit 10's maximum capacity for electricity generation following a balanced draft conversion. *See id.* at 96-97. That study also projected the number of hours per year the unit would operate at this increased capacity. *See id.* Because these estimates came directly from Alabama Power, and could reasonably be imputed as

³ Alabama Power referenced Southern Company's study, along with its findings, in an April 1983 statement supporting the draft conversion proposal for Gorgas Unit 10. *See* D.E. 321, Ex.4 at 92.

the company's expectations for the modification at Gorgas Unit 10, Mr. Koppe incorporated these estimates in his calculations.

As to all three modifications, Mr. Koppe reviewed the pre-project operation records of each unit to analyze its utilization by Alabama Power. Based on these records and his analysis, Mr. Koppe was confident that any additional hours made available to the power plants due to the modifications would actually be utilized by Alabama Power to generate additional electricity. Based on this analysis, Mr. Koppe calculated the expected increase in electricity generation at each modified plant. These estimates were then passed along to Dr. Sahu for the second stage of the model.

Because the emission of pollutants accompanies the generation of electricity at a coal-fired power plant, Dr. Sahu constructed an algorithm to convert Mr. Koppe's estimates of increased generation into the associated increase in pollutant emissions. The actual conversion factors employed by Dr. Sahu were specific to each power plant because the distinctive physical and operational attributes of each power plant will affect its emission of pollutants.

The Koppe-Sahu model predicted a "significant net increase" in the sulfur dioxide and nitrogen oxide emissions from each of the three units due to the modifications. Because these predictions were based on industry-standard

practices⁴ and utilized documents generated by and/or readily accessible to Alabama Power, the government asserted that the company should have expected similar increases of emissions before undertaking the modifications. Alabama Power's failure to obtain appropriate permits, according to the government, violated the Clean Air Act.

B

The district court held that the model's "presumption that an increase in a facility's annual capacity will result in a proportionately equal increase in its output is only valid if the facility is operated virtually continuously at the highest level of output possible." *Alabama Power I*, 773 F. Supp. 2d at 1258. In other words, the district court held that the Koppe-Sahu methodology was only valid for "baseload" units, which it defined as facilities which "operate[] 'virtually continuously' at 'full

⁴ To determine a unit's increase in generation due to an increase in availability, Mr. Koppe used a method recommended by the Electric Power Research Institute. *See* D.E. 373-2 at 11. In a study published in 1985, the EPRI – "a membership organization composed of domestic utilities engaged in the commercial production of electricity," *Critical Mass Energy Project v. Nuclear Regulatory Comm'n*, 820 F.2d 278, 280 n.10 (D.C. Cir. 1987) – noted that this method was useful for predicting increased generation at both baseload coal plants as well as cycling coal plants. *See* D.E. 373-2 at 12. Dr. Sahu based his emission conversion factors on the methodology provided by the EPA in a publication entitled "Compilation of Air Pollutant Emission Factors AP-42." *See* D.E. 331 at 21.

capacity.'" *Id.* at 1256 (quoting *Cinergy Corp.*, 623 F.3d at 459-60).⁵ Relying on *Cinergy Corp.*, the district court excluded the testimony of Mr. Koppe and Dr. Sahu after determining that each of the Alabama Power units in question were not baseload facilities.

We disagree with the district court's legal rationale and analysis, and conclude that the exclusion of the expert testimony of Mr. Koppe and Dr. Sahu constituted an abuse of discretion. Although the Koppe-Sahu model can certainly be used to estimate pollutant emissions from baseload plants, its validity is not limited solely to such facilities. The model can be used to

⁵ The parties disagree about the proper definition of a "baseload" unit, but given our decision we need not determine which definition is correct. Because we are remanding, however, we do note that the district court's definition – which was based solely on how often a unit is operating – does not take into account an important component in determining the classification of a power plant – the cost of operation:

Optimizing output is usually achieved by *operating at full capacity the plants that are cheapest to operate, to supply the baseload* (the minimum required at all times), and by using plants that are more costly to operate to meet surges in demand. Utilities operate power generation equipment in three general ways: baseload, cycling, and peaking. *Baseload equipment is operated virtually continuously; such operation results in a low cost per kilowatt hour.* Cycling equipment is operated on a regular or fairly regular basis, but not continuously, because of its higher per kilowatt hour cost. For example, such equipment might be needed daily during hours of high demand and then shut down at night. Peaking equipment is generally used only during hours of maximum demand.

Cinergy Corp., 623 F.3d at 459-60 (internal quotation marks omitted and emphasis added). *See also United States v. Louisiana Generating, LLC*, ___ F. Supp. 2d ___, ___, 2012 WL 1676706 at*3-4 (M.D. La. 2012) ("Unsurprisingly, economic principles dictate how a plant is used. The *Cinergy Corp.* court . . . determined that because the plant in question was old and expensive to run it was a cycling unit. . . . The capacity at which a plant operates is a function of its status as baseload or cycling, not the other way around.").

estimate such emissions from so-called "cycling" units, which are "operated on a regular or fairly regular basis, but not continuously." *Cinergy Corp.*, 623 F.3d at 459-60.

In *Cinergy Corp.*, the Seventh Circuit held that expert testimony similar to that provided by Mr. Koppe and Dr. Sahu could not reliably predict how modifications would affect the generation of electricity and, consequently, emissions for cycling facilities. *See id.* The Seventh Circuit noted that the "formula" before it carried a presumption of reliability when estimating a baseload unit's emissions, but concluded that such a presumption was not valid for a cycling unit. *See id.* at 460 ("There can be no presumption that an increase in [a cycling plant's] annual capacity would result in a proportionately equal increase in its output . . . In contrast, if a baseload plant is modified to enable it to produce more electricity, there is a presumption that it will produce at the higher rate enabled by the modification").

"The rules relating to Daubert issues are not precisely calibrated and must be applied in case-specific evidentiary circumstances that often defy generalization." *United States v. Brown*, 415 F.3d 1257, 1266 (11th Cir. 2005). Assuming that *Cinergy Corp.* is persuasive, the district court misconstrued the reach of the Seventh Circuit's decision. Simply because a model cannot be presumed reliable in a specific context, as *Cinergy Corp.* held, does not mean that it is per se unreliable

in that context. The district court therefore erred in ruling that under *Cinergy Corp.* the Koppe-Sahu model is "reliable only when used with 'baseload' electric generating units" and "works only if the unit is operated as a baseload unit." *Alabama Power I*, 773 F. Supp. 2d at 1256.

What the Seventh Circuit actually held in *Cinergy Corp.* is that testimony like the Koppe-Sahu methodology "doesn't work for a cycling facility . . . [w]ithout expert testimony to support an estimate of actual emissions caused by the modifications." *Cinergy Corp.*, 623 F.3d at 460 (emphasis added). Although the government lacked sufficient expert testimony to support the use of its theory in *Cinergy Corp.*, here it submitted ample evidence to support the Koppe-Sahu model.

At the *Daubert* hearing, Mr. Koppe testified that the model was robust enough to predict emission increases for either cycling or baseload units. *See* D.E. 370 at 44:23-25. The model, according to Mr. Koppe, would be valid for cycling units so long as three underlying conditions were satisfied: (1) that the unit, assuming the modification provides additional hours of unit availability, will actually use the additional available hours; (2) that the unit will not spend more time in reserve shutdown in the future that it did in the past; and (3) that the output factor for the unit will not decrease. *Id.* at 43:10-15. Mr. Koppe affirmed that each

of the three relevant units, based on his review and analysis, satisfied these conditions. *See id.* at 44:18-22.

The district court rejected the applicability of these conditions because of an ostensible lack of supporting evidence. *See Alabama Power I*, 773 F.Supp.2d at 1259 n.14 ("*Daubert* does not permit the Court to admit opinion evidence which is connected to existing data only by the *ipse dixit* of the expert").⁶ The district court's finding about the lack of evidentiary support for the conditions, however, was clearly erroneous. As the excerpts below show, Mr. Koppe's assertions about the satisfaction of the conditions were not mere *ipse dixit*, and we are left with a "definite and firm conviction that a mistake has been committed." *Concrete Pipe and Products of California, Inc. v. Const. Laborers Pension Trust for Southern California*, 508 U.S. 602, 622 (1993) (internal quotation marks and citation omitted).

(1) EVIDENCE THAT THE UNITS WOULD LIKELY USE EXTRA AVAILABILITY POST-PROJECT

- There are a number of things I quote that talk about we're [i.e., Alabama Power] going to be using this unit more in the future but the main thing is the projections that are in the worth of unit improvement books, which are the projections of capacity factors that are all consistent with rising utilization and little or no reserve shutdown. Koppe Deposition, D.E. 321-5 at 294:16-22.

⁶ Generally speaking, an *ipse dixit* is "[s]omething asserted but not proved." BLACK'S LAW DICTIONARY 905 (9th ed. 2009).

- Alabama Power knew that increasing the EAF [Equivalent Availability Factor, i.e., availability] of a unit would increase the amount of electricity that unit generated. This principle is implicit in the methodology used in Alabama Power's Worth of Unit Improvement books to assess the 'worth' of a one percent reduction in a unit's EFOR [Effective Forced Outage Rate, i.e., outages]. Koppe Expert Report, D.E. 321-4 at 6.
- Former Alabama Power employee Joseph Tyner testified that if Alabama Power increased the availability of Gorgas 10 as a result of balanced-draft conversion, he would expect that it would generate more megawatts. *Id.* (alterations in original omitted).
- At the time of each project, the Company expected that any incremental reduction in the amount of outage time at a unit would result in an incremental increase in generation by that unit. This expectation is realistic. It is shared by every utility... It is embedded in the system planning models used by the Company. It is implicit in the Company's Worth of Unit Improvement Books. And it was confirmed by the Company's representative, Mr. Lucius Burris, during his Rule 30(b)(6) deposition. Koppe Amended Rebuttal Report, D.E. 321-2 at 3.
- At the time of the project, Gorgas 10 was the most heavily utilized of all of the Company's coal units. This means that Gorgas 10 was one of the least expensive units to operate. The Company would reduce utilization of other, more expensive, units before reducing that of Gorgas 10. *Id.* at 33 (citation omitted).
- The [Greene County 2 and Barry 2] projects . . . all took place during 1989 through 1997. This was a time when the Company and the industry were expecting increases in the utilization of coal units. Given the situation at the times of these projects, it is unlikely that the

Company would have expected that utilization of any of the units would decrease. *Id.*

- I found the projections that were presented in the Worth of Unit Improvement Book (WUIB) that the Company issued during the calendar year during which the project was implemented. For each unit, the WUIB presents . . . the expected future service hours for each unit for each calendar year in the future. For each project, I looked at the company's forecasts for the five calendar years immediately following the year in which the project was implemented. *Id.*

- In order for [Greene County 2] unit to meet its expected load demands in the upcoming years, these sections [i.e., the reheater] will require replacement. Alabama Power Company Supporting Statement for Greene County 2 Project, D.E. 321-9.

(2) EVIDENCE THAT THE UNITS WERE NOT PLANNED TO EXPERIENCE MORE RESERVE SHUTDOWN TIME

- In the early 1980s, [the Company's] units spent some time in reserve shutdown. During 1982-1983, the amount of time in reserve shutdown ranged from a low of 14 days per year (at Gorgas 10) to a high of 107 days per year (at Greene County 2). The amount of time the units spent in reserve shutdown generally decreased through the 1980s, then spiked during 1989-1991, then decreased through the 1990s. During the late 1990s, the [Alabama Power] units each spent no time, or only minimal amounts of time, in reserve shutdown. Koppe Expert Report, D.E. 321-4 at 22.

- [For Gorgas 10 and Greene County 2, each] unit had spent little time in reserve shutdown pre-project and the Company [according to forecasts prepared by Alabama Power] expected the same post-project. For [Barry Unit 2], the unit had spent a considerable amount of time in reserve shutdown pre-project. However, the Company forecast that [Barry Unit 2] would spend little or no time in reserve

shutdown post-project. Koppe Amended Rebuttal Report, D.E. 321-2 at 23.

- For each project, the data [from the Company's documents] indicate that the Company expected little or no reserve shutdown at each of the affected units post-project. *Id.* at 35.

(3) EVIDENCE THAT EACH UNIT'S OUTPUT FACTOR WOULD NOT DECREASE

- The output factors for the [] Alabama Power units increased through the 1980s, decreased during 1989-1991, and then increased through the 1990s. By the late 1990s, each of the five units was operating with an output factor in the range of 90 to 93%. Koppe Expert Report, D.E. 321-4 at 22.

- Over time, it was expected that each of the units would be 'committed' more often and, when they were run on line, run at higher output levels. Koppe Amended Rebuttal Report, D.E. 321-2 at n.3 (quoting Report of Alabama Power's Expert, D. Wayne Moore, D.E. 318-1 at 19).

- For each project, I looked at the company's forecasts for the five calendar years immediately following the year in which the project was implemented. Using those data, I calculated the average expected post-project values of the CF [capacity factor] and the OF [output factor]. I used the GADS data for the 60 months preceding each project to calculate the average actual pre-project values of the CF and the OF. . . . [based on these calculations] the Company expected substantial increases in both the Output Factor and Capacity Factor of the affected unit. *Id.* at 33-35.

- Based on those data [i.e., Alabama Power's own pre-project evaluation], I calculated the expected post-project output factor for the unit [Gorgas Unit 10] [based on information from [Alabama Power's]

own pre-project evaluation]. This was larger than the actual pre-project output factor. *Id.* at 33.

In sum, there was a sufficient evidentiary basis under Rule 702 – including Alabama Power's own records and predictions – to support Mr. Koppe's assertions that the three initial conditions were satisfied and that the Koppe-Sahu methodology applied to Barry Unit 2, Greene County Unit 2, and Gorgas Unit 10, even if those units are deemed cycling rather than baseload. *Cf. Louisiana Generating*, 2012 WL 1676706, at *4 ("*Cinergy* is not controlling on this court, of course, and the court finds that the failure of La-Gen to seriously contend there is another source of power to satisfy its baseload demand is all the court needs to determine that the units in question are baseload units. As such, the Sahu/Koppe methodology is reliable under *Daubert* and the rules of evidence for forecasting emissions under the PSD program.").

C

The district court was also critical of the rigor of the evaluation performed by Mr. Koppe because he admitted that, if any of the units in question spent a lot of time on reserve shutdown, he would have to conduct further investigation to determine whether the three conditions had been met. Given this admission, the district court believed that it could not rely on the assertion by Mr. Koppe that he had conducted sufficient investigation to determine whether the conditions had in

fact been satisfied. *See Alabama Power I*, 773 F. Supp. 2d at 1259 n.13. But Mr. Koppe's admission was largely irrelevant, and did not support wholesale exclusion of the Koppe-Sahu model, for the district court itself found (or noted without contradiction in the record) that the three units spent little time on reserve shutdown.⁷

Alabama Power may have a number of reasons why the Koppe-Sahu methodology should not be accepted as persuasive at trial, but it offers no persuasive argument to support the notion that *Daubert* and its progeny require all-out exclusion of the expert testimony of Mr. Koppe and Dr. Sahu prior to trial. That the Koppe-Sahu model always predicts an increase in pollutant emissions as a result of increased unit availability is not a fatal *Daubert* flaw, as Alabama Power suggests, but rather a natural outcome of the model's deterministic nature. Although a court may certainly evaluate the mathematical rigor of a model, the possible existence of a more thorough, more complex model is not a basis for wholesale exclusion. *See Allison*, 184 F.3d at 1311-12.

V

We affirm the district court's striking of the additional statements and calculations contained in Dr. Sahu's supplemental declaration in *Alabama Power*

⁷ In contrast, *Cinergy Corp.* concerned a "low-utilization" unit that apparently spent a lot of time on reserve shutdown. *See* 623 F.3d at 460.

II, reverse the district court's exclusion of the expert testimony of Mr. Koppe and Dr. Sahu in *Alabama Power I*, vacate the judgment in favor of Alabama Power, and remand for further proceedings.

AFFIRMED IN PART, REVERSED IN PART, VACATED, AND REMANDED.

HODGES, District Judge, dissenting:

Technical skill and effectiveness is best demonstrated by the ability to isolate, simplify, and analyze the individual components of complex problems. Precision and brevity in doing so are the hallmarks of excellence. Judge Jordan's opinion for the court reflects those qualities in cogently explaining the regulatory scheme and technical background that produces the *Daubert* issue to be decided on this appeal. I dissent, with utmost respect, only from the ultimate conclusion reversing the district court's ruling on the *Daubert* issue excluding the expert testimony of Mr. Koppe and Dr. Sahu. My specific disagreement relates to the court's application of the governing standard of review – abuse of discretion – under which I would affirm the district court in all respect.¹

As I understand the abuse of discretion standard, particularly as applied to *Daubert* issues of admissibility of expert opinion under Fed. R. Evid. 702, the district court has a “range of choice.” *United States v. Brown*, 415 F.3d 1257,

¹ In *Joiner v. General Elec. Co.*, 78 F.3d 524 (11th Cir. 1996) this court recognized the general rule that evidentiary rulings are reviewed for abuse of discretion; but, the court said, relying upon *Daubert*, “[b]ecause the Federal Rules of Evidence governing expert testimony display a preference for admissibility, we apply a particularly stringent standard of review to the trial judge's exclusion of expert testimony.” *Id.* at 529. The Supreme Court reversed, holding that abuse of discretion was the proper standard of review and that “[a] court of appeals applying ‘abuse-of-discretion’ review to such rulings may not categorically distinguish between rulings allowing expert testimony and rulings disallowing it.” *General Elec. Co. v. Joiner*, 522 U.S. 136, 142, 118 S. Ct. 512, 517 (1997). The Supreme Court also held that the outcome determinative effect of the evidentiary ruling by the district court does not affect the abuse of discretion standard of review. *Id.* at 143. 118 S. Ct. at 517. *See also Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137, 142, 119 S. Ct. 1167, 1171 (1999).

1265 (11th Cir. 2005) (citing *Rasbury v. Internal Revenue Serv. (In re Rasbury)*, 24 F.3d 159, 168 (11th Cir. 1994)). “[U]nder the abuse of discretion standard of review there will be occasions in which we affirm the district court even though we would have gone the other way had it been our call.”² *Rasbury*, 24 F.3d at 168. Further, “[w]hat is true about the review of evidentiary issues in general applies with equal or even greater force to *Daubert* issues in particular, an area where the abuse of discretion standard thrives.” *Brown*, 415 F.3d at 1265-66. It is an area that involves, to quote Chief Judge Carnes’ metaphor, a “heavy thumb – really a thumb and a finger or two – that is put on the district court’s side of the scale. . . .” *Id.* at 1268. *See also Kirkpatrick v. Breg, Inc.*, 613 F. 3d 1329, 1344 (11th Cir. 2010). That deference to the district court regarding *Daubert* evidentiary rulings is not idle dicta is established by research disclosing that, in the last five years, there have been 54 reported decisions of this court (13 published opinions and 41 unpublished opinions) reviewing district court evidentiary rulings under *Daubert*, and the district court was reversed in only three of those cases. This does not mean, of course, that *Daubert* rulings in the district courts are altogether unreviewable, *see Brown*, 415 F.3d at 1266, but the rarity of reversals does signify an awareness that when it comes to managing the gate at Fed. R. Evid. 702, both

² Research discloses that this passage in *Rasbury* has been quoted in other Eleventh Circuit opinions no less than 45 times.

this court and the Supreme Court have consistently emphasized the need to defer to the district court's discretionary gatekeeping decisions under Fed. R. Evid. 702 including, in particular, decisions involving reliability determinations. “[T]he law grants a district court the same broad latitude when it decides how to determine reliability as it enjoys in respect to its ultimate reliability determination.” *Kumho Tire Company, Ltd.*, 526 U.S. at 142, 119 S. Ct. at 1171 (citing *Joiner*, 522 U.S. at 143, 118 S. Ct. at 517).

The district court heard testimony that electrical generating facilities are generally referred to as either baseload or cycling in character. Mr. Koppe testified that the term “baseload” means that the facility is one that is operated continuously when available. 773 F.Supp.2d at 1257, n. 8. A “cycling” unit is one that is used at different levels intermittently depending upon the peaks and valleys of demand. With respect to baseload units, Mr. Koppe testified that his method of calculating increased output (and, ultimately, increased emissions) can be applied as a “no brainer” to baseload units “because the units are used [by definition] all the time when available.” *See* D.E. 370, p. 44. With respect to cycling units, however, Mr. Koppe testified that in order to properly apply his method, particularized investigation would be required concerning three anticipated conditions:

THE WITNESS: Yes. There are a couple of different ways to look at it. I could count it as two or three. I'm trying to think of the easiest way to say it.

You need to – you need to conclude that, one, they will actually use the additional available hours. We said that. The second is that the unit won't spend more time in reserve shutdown in the future than it did in the past. And then the third thing is that the output factor for the unit won't decrease.

Now, both of those – those second – the second and third thing would both be consequences of needing the unit less. They're just different parts of the consequences of needing the unit less. (D.E. 370, p. 43).

Later during the hearing the district court questioned Mr. Koppe about his investigation of those three factors with respect to the remaining units in dispute:

THE COURT: Okay. Did you or anyone – that would, I guess, be Dr. Sahu – do the three areas of investigation that you did for Wabash projects [in the Cinergy case] for any of the three units at issue in this case?

THE WITNESS: Yes. I did it for all three.

THE COURT: You did those three areas of investigation even though they were baseload plants?

THE WITNESS: Yes. The investigation was very easy in some cases. For example, because they're baseload plants, because they operate for every hour when they're available, then the – it is a fact that if they are available for more hours, they will run for more hours.

THE COURT: So you didn't go – well, then that's not – it sounds to me like you investigated far enough to determine that an investigation was not – further investigation was not necessary.

THE WITNESS: That's correct. And with respect to the reserve shutdown, that was easy. With respect to the output factor, as I said, I looked at a whole bunch of different things, including the company's own projections that the output factors were going to increase. And obviously, if they're going to increase, they're not going to decrease.

THE COURT: But if the plants had been cycling, would you have done more investigation in any of these three areas that you identified that you had to do in the less easy or more complicated Wabash situation?

THE WITNESS: Yes.

THE COURT: Okay. If the plants had been cycling, you would have done more investigation in at least one of these three areas?

THE WITNESS: Yes.

THE COURT: Okay. Thank you. Thank you. (D.E. 370, pp. 67-68).

In its decision the district court concluded that each of the three facilities in issue (Barry Unit 2, Greene County Unit 2 and Gorgas Unit 10) were not baseload units and, therefore, that the Koppe/Sahu method of determining increased emissions could not reliably be applied, according to Mr. Koppe's own admission, absent additional investigation concerning the assumptions upon which the method rested. On this record, in my view, that conclusion was within the "range of choice" available to the district court in its discretion. Or, stated another way, the choice it made was not a clear error in judgment.

The majority opinion makes the best case possible for a contrary result based upon other evidence upon which the district court might have relied in reaching that result. And, indeed, if this appeal involved error correction on de novo review, a reversal might well be the appropriate result. But applying the abuse of discretion standard, I believe the district court is due to be affirmed. As the Supreme Court noted in *Daubert* itself:

We recognize that, in practice, a gatekeeping role for the judge, no matter how flexible, inevitably on occasion will prevent the jury from learning of authentic insights and innovations. That, nevertheless, is the balance that is struck by Rules of Evidence designed not for the exhaustive search for cosmic understanding but for the particularized resolution of legal disputes.

Daubert v. Merrell Dow Pharmaceuticals Inc., 509 U.S. 579, 597, 113 S. Ct. 2786, 2798-99 (1993).