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# Resolving Technological Controversies in Regulatory Agencies

Sidney A. Shapiro\*

## Introduction

In May 1994, a U.S. District Court in Wisconsin upheld the "Land and Resources Management Plan (Plan)" adopted by the U.S. Forest Service for the Chequamegon National Forest.<sup>1</sup> The judge rejected a claim by several environmental groups that the Forest Service had improperly rejected important scientific evidence concerning an agency obligation to protect biological diversity.<sup>2</sup>

This paper uses that dispute to explain and analyze how administrative agencies resolve scientific and technological controversies. First, it summarizes the nature of the dispute concerning the Plan. Then, it analyzes procedures the Forest Service and other agencies use to resolve scientific and technical disputes. Finally, it considers the role of judicial review in resolving such disputes.

The paper concludes, first, that use of additional procedures, e.g., meetings with interested persons or advisory committees, might increase rule making accuracy, but such procedures will also delay an already slow process and should be left to the discretion of individual agencies. It also concludes that judicial review for "adequate reasons" can help ensure that agency actions are rational, but such review also invites judges to second-guess regulatory choices. Judges can avoid this tendency by using a "pass-fail" test to determine whether an agency has a satisfactory explanation for its actions.

## The Dispute

The National Forest Management Act requires the Forest Service to develop specific objectives for recreational and commercial use of each

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<sup>1</sup> *Sierra Club v. Marita*, 845 F.Supp. 1317 (E.D. Wis. 1994).

<sup>2</sup> *Id.* at 1319.

national forest and to proscribe a management plan to achieve those objectives.<sup>3</sup> These plans must protect biological diversity<sup>4</sup> and be based on an integrated understanding of the major natural and social sciences.<sup>5</sup> The Forest Service and the environmentalists had different conceptions of how to best protect the biodiversity in the Chequamegon forest. The environmentalists sought to protect large sections of undeveloped land, but the Service declined to take this approach.

### *Two Approaches To Biodiversity*

The Plan was based on the scientific premise that biodiversity is best protected by diversifying local habitats.<sup>6</sup> In a forest, this premise requires two actions. First, the Forest Service must maintain different species of trees found in the forest. Second, it must ensure that trees of different ages are maintained. In the Chequamegon forest, the Service identified three tree species and said it would maintain small, medium and large trees of each species.<sup>7</sup>

The environmentalist adopted a different scientific premise. They maintained that the larger a habitat, the more likely it is that a species will survive a catastrophic disturbance.<sup>8</sup> On this and similar grounds,<sup>9</sup> they contended that the Forest Service should establish two "Diversity Maintenance Areas (Dams)" each consisting of at least 50,000 acres that would not be developed.<sup>10</sup>

<sup>3</sup> National Forest Management Act, 16 U.S.C. § 1600.

<sup>4</sup> *Id.* § 1604(g)(3); see 36 C.F.R. §§ 219.3, 219.26, 219.27(g). The Service is also obligated by the National Environmental Policy Act (NEPA) to evaluate the environmental impact of how federal lands are used which includes the impact on biological diversity. 42 U.S.C. § 4321.

<sup>5</sup> 36 C.F.R. § 219.5(a).

<sup>6</sup> *Sierra Club*, 845 F. Supp. at 1322.

<sup>7</sup> *Id.*

<sup>8</sup> *Id.* at 1324.

<sup>9</sup> The environmentalists offered two additional reasons to support their request to set aside undeveloped land to protect biodiversity. They argued that biological diversity declines as habitats are isolated because organisms can not survive disturbances in one habitat by migrating to another. This understanding is based on the study of biodiversity on oceanic islands and is known as "island biogeography." *Id.* They also argued that biodiversity is related to the extent to which a habitat is penetrated by adverse external forces, or "edge effects," from adjacent habitats. *Id.*

<sup>10</sup> *Id.*

*Science and Policy*

Like many regulatory controversies, the disagreement between the Service and the environmentalists was not solely a scientific dispute. The issue was the extent to which the ecology literature compelled the conclusion that Dams were the best way to protect biodiversity. To decide, the Forest Service had to resolve three issues. The last involved a policy choice rather than a scientific question.

First, the Service had to decide whether studies cited by environmentalists were valid, a "scientific" issue requiring the application of scientific training and experience.<sup>11</sup> It conceded that the plaintiffs' position rested on "sound ecological theory."<sup>12</sup>

Second, it had to decide whether it should infer from the studies that protection of biodiversity in the Chequamegon forest required the use of Dams. This issue is also "scientific." Laypersons can evaluate such inferences only to the extent that they are competent to evaluate the validity of the scientific assumptions that undergird them.<sup>13</sup> The Forest Service discounted research cited by the environmentalists because it was conducted in ecosystems substantially different than the Chequamegon forest.<sup>14</sup> The environmentalists, however, had offered substantial expert opinion evidence that these studies did support the need for Dams.<sup>15</sup> As one expert explained,<sup>16</sup>

Supporting large reserves these days is like supporting motherhood. The overwhelming consensus among ecologists and biogeographers is "the larger the better."

The Service's response to this expert evidence was rather remarkable. The Chief Forester explained,<sup>17</sup>

<sup>11</sup> Sidney Shapiro, *Scientific Issues and the Function of Hearing Procedures: Evaluating the FDA's Public Board of Inquiry*, 1986 Duke L.J. 288, 292.

<sup>12</sup> The Court found that environmentalists had presented the Forest Service with "a wealth of authority" to back up their position and that the Service offered "nothing that directly contradicts the plaintiffs' scientific analysis." 845 F. Supp. at 1329.

<sup>13</sup> Thomas McGarity, *Substantive & Procedural Discretion in Administrative Resolution of Science Questions: Regulating Carcinogens in EPA & OSHA*, 67 Geo. L.J. 729, 746 (1979).

<sup>14</sup> *Sierra Club*, 845 F. Supp. at 1329.

<sup>15</sup> Thirteen experts on biodiversity, however, had unanimously agreed that biodiversity could not be maintained without establishing Dams. *Id.* at 1317.

<sup>16</sup> *Id.*

[U]ntil there is conclusive, empirical evidence that the conclusions, hypothesis, or predictive capabilities for terrestrial ecosystems are valid, it is proper to acknowledge [such inferences] as untested theory.

This is also true for the agency's own scientific premise. It also lacked conclusive proof that the best way to protect biodiversity was by maintaining habitat diversity. Indeed, no agency has the luxury of waiting for conclusive scientific proof before acting.

As the final issue, the Forest Service was presented with a policy question. It acted on one scientific premise; the environmentalists on another. Apparently, some evidence supported both. When there is an expert scientific disagreement, a regulatory agency must decide what is appropriate under its statutory mandate. This issue is not a scientific question because scientific training is unhelpful in its resolution. Legal and policymaking expertise comes into play at this point.<sup>18</sup>

The Forest Service's policy preference for its own approach to protecting biodiversity may have represented its judgment that this approach best served its statutory mandate. But there is another possible explanation. The sale of government timber is worth millions of dollars which is shared between the federal and state governments.<sup>19</sup> Thus, the agency's rejection of Dams may also reflect political pressure to maximize logging operations in the national forests.

### The Hearing Process

The dispute between the Forest Service and the environmentalists arose in the rulemaking process used by the agency to adopt the Plan.<sup>20</sup> The APA does not require notice and comment procedures for the adoption of rules concerning public property,<sup>21</sup> but the Forest

<sup>17</sup> *Id.*

<sup>18</sup> Sidney Shapiro, *supra* note 11, at 292, 294.

<sup>19</sup> 16 U.S.C. §§ 499–500; see Michael E. Shapiro, *Sagebrush and Seaweed Robbery: State Revenue Losses From Onshore and Offshore Federal Lands*, 12 *Ecology L.Q.* 481, 481 n.3 (1985) (Receipts from the sale and use of federal timber totaled \$900 million in fiscal year 1984).

<sup>20</sup> According to the Administrative Procedure Act (APA), the plan for the Chequamegon forest was a "rule" because it regulated the agency's future conduct concerning the forest. 5 U.S.C. § 551(4).

<sup>21</sup> *Id.* § 553. An agency, however, must use formal rulemaking if its statutory mandate requires it to promulgate a rule "on the record after an opportunity for a

Service voluntarily used them.<sup>22</sup> Beyond these procedures, local officials also held meetings with interested persons.<sup>23</sup>

### *Notice and Comment Rule making*

Congress normally requires notice and comment rule making for the resolution of technological and scientific controversies. Moreover, the Supreme Court has ruled that the federal courts may not require more.

Under the APA, an agency must allow interested parties to file written comments, but there is no requirement that it hold some type of hearing.<sup>24</sup> The notice and comment rulemaking process is known as "informal" rule making, while rule making that includes additional procedures is described as "hybrid" rule making. The courts have not had authority to require hybrid rule making since *Vermont Yankee*.<sup>25</sup> There, the Supreme Court reversed a ruling by the D.C. Circuit that cross-examination of expert witnesses might be necessary for the resolution of scientific disputes. The Court held that the courts could not impose on agencies greater procedural requirements than those required by the APA or another applicable statute.<sup>26</sup>

Congress, however, sometimes requires hybrid rule making. The 1977 Clean Air Act amendments, for example, require EPA to provide an opportunity for oral presentation of data, views or arguments.<sup>27</sup> The 1974 amendments to the Federal Trade Commission Act require rulemaking hearings to include cross-examination of some witnesses.<sup>28</sup>

hearing." *Id.* § 553(c).

<sup>22</sup> The rulemaking procedures of the APA do not apply to matters relating to public property, *id.* § 553(a)(2), but Forest Service regulations required the use of such procedures. 36 C.F.R. § 219.6. The Forest Service must give notice of its intention to adopt a plan and invite written public comments. 36 C.F.R. at § 219.6(b)-(d).

<sup>23</sup> See *id.* § 219.6(d).

<sup>24</sup> See *supra* note 21 & accompanying text. The Service, however, is required to hold such meetings in certain circumstances by its procedural regulations. 36 C.F.R. § 219.6(d).

<sup>25</sup> *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, Inc.*, 435 U.S. 519 (1978).

<sup>26</sup> The Court has also reduced the number of agencies required to use formal rulemaking, *U.S. v. Florida East Coast*, 410 U.S. 224 (1973), or hybrid rulemaking, *U.S. v. Allegheny-Ludlum Steel Corp.*, 406 U.S. 742 (1972).

<sup>27</sup> 42 U.S.C. § 7607.

*The Adequacy of Rulemaking Procedures*

Such developments raise the issue of whether informal rule making is adequate to resolve technical disputes. For example, under what circumstances, if any, should agencies use meetings as the Forest Service did? As Professor Crampton pointed out long ago, the answer "must rest on a judgment that balances the advantages and disadvantages of each proposal."<sup>29</sup> He recommended that the analyst consider:<sup>30</sup>

- (1) the extent to which the procedure furthers the accurate selection and determination of the relevant facts and issues;
- (2) the extent to which it furthers the disposition of business; and (3) the extent to which the procedure, when viewed in the light of statutory objectives, is acceptable to the agency, the participants, and the general public.

When so judged, informal rule making is normally appropriate for scientific and technical disputes, but additional procedures may be useful. Whether to use them, however, should be left to agencies.

In *Vermont Yankee*, the Court observed that hybrid rule making is unnecessary for the accurate resolution of scientific and technological disputes.<sup>31</sup> This reflects Professor Davis' famous insight that trial-type hearings are necessary only for accurate resolution of "adjudicative facts" or ones uniquely within the possession of individuals. Davis argued that informal rule making is adequate to find what he called "legislative" or "policy facts." Hybrid rule making is unnecessary because legislative facts are widely available in the scientific and technical literature.<sup>32</sup> Professor Boyer's study of hybrid rule making at the FTC supports this conclusion. He found it to be expensive and burdensome, with no detectable increases in fairness or accuracy.<sup>33</sup>

<sup>28</sup> 15 U.S.C. § 557a.

<sup>29</sup> Roger Crampton, *Administrative Procedure Reform: The Effects of S. 1663 On the Conduct of Federal Rate Proceedings*, 16 Admin. L.Rev. 108, 111-12 (1964).

<sup>30</sup> *Id.*

<sup>31</sup> 435 U.S. at 524.

<sup>32</sup> See Kenneth C. Davis & Richard Pierce, Jr., *Administrative Law Treatise*, § 9.2, at 7 (1994) (The "most useful sources of data for resolution of disputes concerning legislative facts often are contained in the published literature of the social or natural science disciplines relevant to the legislative fact at issue.")

<sup>33</sup> Barry Boyer, *Report on the Trade Regulation Rulemaking Procedures of the Federal Trade Commission (Phase III)*, 1979 ACUS Ann. Rep. 41; 1980 ACUS Ann. Rep. 33.

While generally valid, Professor Davis' distinction does not always hold up for scientific and technical disputes. Hearing procedures, for example, may be useful to examine assumptions from which experts draw interpretation of scientific evidence.<sup>34</sup> Although such inferences may be "result-oriented and highly policy-dominated," notice and comment rule making may not reveal this bias.<sup>35</sup> This problem can be addressed by cross-examination of expert witnesses,<sup>36</sup> but more informal methods can also be used, such as advisory committees or meetings between agency and nongovernmental scientists.<sup>37</sup>

Another defect of notice and comment rule making is that it does not allow the agency to probe the magnitude of policy disagreements among interested persons. As explained earlier, an agency must make a policy choice when experts disagree concerning inferences to be drawn from scientific and technical information.<sup>38</sup> In such circumstances, negotiation may produce an agreement between organized interests and the agency concerning appropriate policy.<sup>39</sup>

Although hybrid rule making may be useful, it can also impose greater burdens than benefits. Since agencies are in the best position to make cost-benefit process decisions, Congress and the courts should let them decide when to use additional procedures. Congress, however, should require agencies to share information concerning their experiences. This would create a data bank that agencies could consult when the issue of additional procedures comes up.

#### *Hybrid Procedures*

Agencies that want to use hybrid rule making have two options. One is to hold some type of hearing.<sup>40</sup> The other is to involve scientists in decision making. As noted, agencies can appoint scientific or technical advisory committee.<sup>41</sup> They can also convene hearings

<sup>34</sup> Sidney Shapiro, *supra* note 11, at 298.

<sup>35</sup> Thomas McGarity, *supra* note 13, at 777-78.

<sup>36</sup> *Id.* at 778.

<sup>37</sup> Sidney Shapiro, *supra* note 11, at 299-304.

<sup>38</sup> See *supra* note 18 & accompanying text.

<sup>39</sup> See Regulatory Negotiation Act, 5 U.S.C. §§ 561-570.

<sup>40</sup> The Service met with interested parties. An agency can also invite interested persons to make short presentations in a legislative type hearing. More elaborate hearings would involve the examination, and even cross-examination, of witnesses.



presided over by panels of scientists<sup>42</sup> along the lines of the long-proposed "Science Court."<sup>43</sup>

In these roles, scientists can explain complex technical issues, provide peer review for agency decisions, and identify areas of consensus among scientists.<sup>44</sup> When they function in this fashion, scientists can improve the accuracy of agency decision making. The usefulness of such input, however, is limited to scientific questions. As discussed earlier, technical expertise has no particular virtue concerning the resolution of policy issues.<sup>45</sup>

Most administrators understand that policy questions should not be referred to scientists. Nevertheless, there are two potential problems with advisory committees and scientific panels. First, it is often difficult to separate questions of pure science from their policy components. Second, it may be politically beneficial for an administrator to ignore the science/policy distinction. As long as the policy aspect of a science/policy question is not immediately apparent to the public, the decision maker can use a scientific advisory committee or panel as a shield from criticism for policy choices by maintaining that the decision was made in accordance with the neutral advice of independent scientists.<sup>46</sup> These problems do not require that agencies forgo the use of scientific advice in the rulemaking process, but only that proper precautions be taken to mitigate this danger.<sup>47</sup>

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<sup>41</sup> See Sidney Shapiro, *supra* note 11, at 302–303 (describes advisory committees).

<sup>42</sup> See *id.* at 303–04 (description of scientific hearing panels).

<sup>43</sup> E.g., Arthur Kantrowitz, *Proposal for an Institution for Scientific Judgment*, 156 Science 763 (1967); see generally, *Twenty-five Year Retrospective On The Science Court: A Symposium*, 4 Risk 95 (1993).

<sup>44</sup> Sidney Shapiro & Thomas McGarity, *Reorienting OSHA: Regulatory Alternatives and Legislative Reform*, 6 Yale J. on Reg. 1, 35 (1989).

<sup>45</sup> See *supra* note 18 & accompanying text.

<sup>46</sup> Thomas McGarity & Sidney Shapiro, *Workers at Risk: The Failed Promise of the Occupational Safety and Health Administration 196* (1993). For this strategy to work, an administrator will have to select scientists with the same policy preferences. This can be relatively easily done by choosing scientists whose past actions of scientists indicate how they will resolve science/policy questions. *Id.*

<sup>47</sup> See Sidney Shapiro, *Public Accountability of Advisory Committees*, 1 Risk 189 (1990) (discussing procedures to increase the accountability of advisory committees).

### Judicial Review

The environmentalists sought judicial review after the Forest Service declined to adopt their position. Whether courts can play a useful role in resolving scientific and technological disputes has been a subject of considerable debate in administrative law. The following describes the scope of judicial review, the debate concerning such review and how that debate relates to the district court opinion. This section concludes that courts have an important, but limited, role to play concerning the appropriate resolution of science and technology disputes.

#### *Rational Connection*

In *State Farm*, the Supreme Court required agencies to:<sup>48</sup>

examine the relevant data and articulate a satisfactory explanation for [an] action including a "rational connection between the facts found and the choice made."

If an agency fails to establish the necessary rational connection, its action is "arbitrary and capricious."<sup>49</sup> Nevertheless, a court will normally remand a rule to an agency rather than declaring the rule to be invalid. The remand recognizes that an agency might offer adequate reasons if given another opportunity

#### *The Controversy*

*State Farm* appears to endorse "hard look" review.<sup>50</sup> Judge Leventhal coined the term for an agency's obligation to take a "hard look" at the evidence and available policy options.<sup>51</sup> Such review has been identified as a principal cause of the slowdown of rule making.<sup>52</sup>

<sup>48</sup> *Motor Vehicle Manufacturers Assoc. v. State Farm Mutual Automobile Co.*, 463 U.S. 29, 43 (1983).

<sup>49</sup> *State Farm* indicated an agency would fail to offer an adequate justification in the following circumstances: "Normally, an agency rule would be arbitrary and capricious if the agency has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise." *Id.*

<sup>50</sup> Cass Sunstein, *Deregulation and the Hard-Look Review Doctrine*, 1983 Sup. Ct. Rev. 177, 210.

<sup>51</sup> *Greater Boston Television Corp. v. FCC*, 444 F.2d 841, 851-52 (D.C. Cir. 1970), *cert. denied* 403 U.S. 923 (1971).

<sup>52</sup> Thomas McGarity, *Some Thoughts on "Deossifying" the Rulemaking Process*, 41 Duke L.J. 1385 (1992).

The problem is that this form of review invites courts to remand whenever there is “some” discrepancy between the agency’s conclusion and its evidence, even if the discrepancy is not significant.<sup>53</sup> Most agencies have been the subject of this type of judicial behavior, but its extent is uncertain.<sup>54</sup> Nevertheless, agency lawyers must take into account the possibility of stringent judicial review. They will therefore seek to minimize the chance that a court will remand a rule because the agency failed to respond to a comment, ignored a regulatory alternative, or made some other error. Not surprising, such flyspecking substantially slows rule making.<sup>55</sup>

Hard look review can help ensure that agency decisions meet a minimal level of rationality, but such review also invites courts to second-guess agency decision making. For this reason, courts should use something like a “pass-fail” test. According to this metaphor, the judge’s disagreement with the agency’s conclusion is not a reason for a failing grade. Only where there is an inexcusable gap in the analysis, obvious misquote, or evidence of intellectual dishonesty should the judge send back the agency’s action.<sup>56</sup>

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<sup>53</sup> See Stephen Breyer, *Judicial Review of Questions of Law & Policy*, 38 Admin. L.Rev. 363, 388 (1986) (questioning the capacity of judges to supervise the substance of agency policymaking).

<sup>54</sup> Patricia M. Wald, *Regulation At Risk: Are Courts Part of the Solution or Most of the Problem?* 67 S. Cal. L.Rev. 621 (1994). For example, Professor Melnick has found that aggressive review substantially interfered with EPA’s implementation of the CAA, R. Shep Melnick, *Regulation and the Courts: The Case of the Clean Air Act* (1983), but a later study by Rosemary O’Leary concluded that judges have actively and aggressively intervened only “in the smallest minority of cases.” Rosemary O’Leary, *Environmental Change: Federal Courts and the EPA* 169 (1993).

<sup>55</sup> See Richard J. Pierce, *Two Problems in Administrative Law: Political Polarity on the District of Columbia Circuit and Judicial Deterrence of Rulemaking*, 1988 Duke L.J. 300, 310 (“to survive judicial review, an agency’s ‘concise general’ statement of basis and purpose must deal comprehensively and in detail with each issue raised in the comments, no matter how trivial that issue appears to the agency.”); Jerry Mashaw & David Harfst, *Regulation and Legal Culture: The Case of Motor Vehicle Safety*, 4 Yale J. on Reg. 257, 282 (describing how agencies adopt a “full court press” in light of judicial requirements that the agency respond to every serious comment).

<sup>56</sup> McGarity & Shapiro, *supra* note 46, at 260.

*The Application*

In the Chequamegon forest case, the district court concluded that the:<sup>57</sup>

Service did not act arbitrarily or capriciously, etc. in failing to base its diversity analysis on principles of conservation biology set forth by plaintiffs.

The court's review illustrates both the upside and downside potential of hard look review. As you may recall, the agency defended its plan on the ground that the scientific evidence of the environmentalists was not conclusive. In particular, the agency discounted research because it took place in ecosystems that were different from the Chequamegon forest.<sup>58</sup> The environmentalists, however, had submitted substantial expert opinion evidence that these studies did suggest that protection of biodiversity in the Chequamegon forest required Dams.<sup>59</sup> The district court's opinion is unclear concerning on what grounds the Forest Service disregarded this opinion evidence.

If the agency had offered no explanation why it discounted this evidence, the district court should have remanded the plan back to the agency. An agency's failure to offer any explanation why it rejected legitimate expert opinion evidence is a ground for a remand.<sup>60</sup> As discussed earlier, however, the Chief Forester said that until the environmentalists had conclusive proof for their position, it was only a "theory."<sup>61</sup> This explanation is also inadequate. The Forest Service also lacked conclusive proof for its approach. The agency has an obligation to explain why it picked one theory over the other. If the agency offered such an explanation, however, the court should apply a "pass-fail" test. When an agency is making "predictions, within its area of special expertise, at the frontiers of science," the Supreme Court requires review to be at its "most deferential."<sup>62</sup>

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<sup>57</sup> *Sierra Club*, 845 F. Supp. at 1330.

<sup>58</sup> *See supra* notes 14 & accompanying text.

<sup>59</sup> *See supra* notes 15 & accompanying text.

<sup>60</sup> *See supra* note 49.

<sup>61</sup> *Supra* note 17 & accompanying text.

<sup>62</sup> *Baltimore Gas & Electric Co. v. NRDC*, 462 U.S. 87 (1983).

## Conclusion

The administrative law system uses a minimal adversarial process to resolve scientific and technological disputes. Most agencies adopt new regulatory policies by notice and comment rule making that is subject to judicial review under an “arbitrary and capricious” standard of review. To meet this scope of review, an agency must furnish an adequate explanation or justification for its actions.

The adequacy of this system concerning this resolution of scientific and technical disputes has long been the subject of a two-part discussion in administrative law. One issue is whether notice and comment rule making is sufficient to ensure the accuracy of agency decisions. The second issue is whether review for adequate reasons is in part responsible for slow process of rule making.

Additional procedures, such as meetings and advisory committees, might increase process accuracy, but they will also delay already slow rule making. Agencies are in the best position to judge whether the benefits of additional procedure outweigh such delay. Congress and the courts should therefore delegate to agencies the decision whether to use additional procedures. Congress, however, should require agencies to share information concerning the efficacy of such procedures. Agencies could turn to this data bank when they consider whether to do more than notice and comment rule making.

Judicial review for adequate reasons helps to ensure that agencies have rational reasons for their actions. This type of review, however, also invites judges to second-guess agencies concerning their policy choices. Judges can avoid this tendency if they use a “pass-fail” test to decide whether an agency has offered a satisfactory explanation for its actions.

