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Statement of Purpose

The purpose of the *Texas Environmental Law Journal* is to provide the members of the Environmental and Natural Resources Law Section of the State Bar of Texas and the public with legal articles and recent development columns on relevant environmental and natural resources law issues. The *Journal* also provides news of Section activities and other events pertaining to this area of law. The *Journal* is the leading source for articles on Texas environmental and natural resources law.

Joint Publication

The *Texas Environmental Law Journal* is an official publication of the Environmental and Natural Resources Law Section of the State Bar of Texas and is published jointly with the University of Texas School of Law's *Texas Environmental Law Journal*. In 1990, the Environmental and Natural Resources Law Section reached an agreement with this student organization at the University of Texas School of Law to co-produce the *Journal* as the *Texas Environmental Law Journal*. The students' involvement began with the summer issue in 1990.

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Journal Announcements

With Volume 39, the *Journal* changed from a quarterly publication to a triannual publication (Fall, Winter, and Spring & Summer). Also, the *Journal* is no longer carrying the "Changes in the Environment" section. Those announcements can be found on the Section's website at www.texenrls.org.

Solicitation of Articles

The *Journal* is soliciting articles from authors on environmental and natural resources subjects that will assist Texas environmental and natural resource law practitioners and develop the advancement of environmental and natural resource law.

If you are interested in submitting an article, please contact:

1. Solicitations Associate Editor (lkalisek@lglawfirm.com); or
2. Student Lead Articles Editor (telj@law.utexas.edu); or
3. Editor-in-Chief (lyn.clancy@lcra.org)

A SPECIAL LETTER FROM THE EDITOR

Dear Readers,

This issue of the *Texas Environmental Law Journal* is my last as Editor-in-Chief. I have been a part of the *Journal*, and the *Journal* has been a part of me, for the past twenty-eight years, twenty-seven years as the Editor-in-Chief. I am retiring from the position as Editor-in-Chief but staying involved with the *Journal* and the Environmental and Natural Resources Law Section in a more relaxed and retired role, with my responsibilities less time-consuming and less frequent.

"The only constant is change." — Heraclitus, 470 BC

"The only constant is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be." — Isaac Asimov

"Time may change me/But I can't trace time." — David Bowie

The *Journal* has undergone significant changes over the past twenty-eight years. It has grown from an eight- to twenty-page newsletter to a full-blown legal journal. The *Journal* has, over the years, provided important information to Section members (Executive Committee minutes, announcements of CLE courses and position changes in the environmental law community, an additional column on activities in Washington, D.C., and special announcements as warranted), and has grown with the electronic age so that it is delivered electronically to most of our members. The Section's website provides links to past issues and will be providing early links to the *Journal's* Recent Developments. Since 1990, the Section has worked with a group of law students at The University of Texas School of Law to get their assistance in editing the *Journal* and providing and soliciting student notes for the *Journal*. The students bring energy and devote considerable time to sustain the *Journal.* The recent switch to the more-traditional law journal format grew from an agreement with the Publications Office of The University of Texas School of Law to assist in managing the publication of the *Journal*, which is proving to be a valuable asset and benefit to our Section.

Most important to me is that I am extremely pleased with what the *Journal* has become and is. The sounds of success are the compliments that the Section receives and the increasing interest of people to be involved in the Section and the *Journal*.

I must say "thank you, thank you" to the many people who have been instrumental, supportive, kind, and generous in the life of the *Journal.* I thank these people not in any particular order: Connie Westfall, Howard Gilberg, Randy Wilburn, Lyn Clancy, Teresa Salamone, Mary Koks, Paul Goldman, Cindy Bishop,

Jeff Civins, John Turney, Bob Stewart, Hal Ray, Phil Haag, Myron Hess, Sara Burgin, Gene Montes, Emily Rogers, Drew Miller, Aileen Hooks, Mary Reagan, Ali Abazari, Howard Slobodin, Tim Wilkins, Steve Kosub, Fran Phillips, Harless Benthul, Paul Seals, Charles Jordan, Mary Mendoza, Kerry Haliburton, Mike Gershon, Peter Gregg, Susan Williamson, Michele Cumpston, Jenny Hodgkins, Meitra Farhadi, Robin Smith, Sharon Smith, Deborah Clarke Trejo, Larry Feldcamp, Kathy Casarez, and Norm Radford. I am certain that I have forgotten some people who would meet these criteria, but chalk those omissions to a full and often-used memory.

Lyn Clancy is the new Editor-in-Chief of the *Journal* with a background of at least twelve years of experience in assisting in the publication of the *Journal*. I encourage all persons to support her in her new role.

Jimmy Alan Hall
Editor-in-Chief (1984 – 2011)

From The Editors

Dear Readers,

In our sole lead article in this issue, "NEPA and Climate Change: After the CEQ's Draft Guidance," **James R. Holcomb, IV**, examines the ongoing debate about whether combating climate change falls within the purview of the National Environmental Policy Act (NEPA).

Mr. Holcomb argues that NEPA "is a procedural tool not intended to confront climate change." Thus, he posits that the Council on Environmental Quality's draft guidance fails to resolve some of the uncertainties on this issue in case because the aims of the guidance "go beyond the intended scope of NEPA." In Part II of this article, Mr. Holcomb provides the background of NEPA's role and the importance of the Council on Environmental Quality and the Environmental Impact Statement in the NEPA regulatory process. Part III of his article provides as discussion of NEPA-related case law and common problems arising in cases in which parties have sought to use NEPA as a tool to regulate GHGs, and "then explains how the draft guidance attempts to solve some of these problems." In the concluding Part IV, Mr. Holcomb offers recommendations that could improve the draft guidance.

Our first student note is "Nuclear Uncertainty: A Look at the Uncertainties of a U.S. Nuclear Renaissance" by **T.L. Fahring**. The author's purpose is to evaluate the feasibility of the U.S. promoting new nuclear construction as an alternative energy source. Within his note, he examines the uncertainties of developing new nuclear power plants and provides ideas for how to mitigate them. Mr. Fahring also describes how the U.S. has taken steps to promote nuclear development and evaluates how effective these steps will be in the future. Lastly, he provides ideas to improve the U.S. government's effectiveness in promoting new nuclear construction.

Our second student note, "Cost-Benefit Analysis in Environmental Regulation," is written by **Sanja Muranovic**. Ms. Muranovic examines the role of cost-benefit analysis in environmental regulation by focusing on regulation of impingement and entrainment, two environmental effects of withdrawing surface water for use in power plants. She analyzes the 2009 Supreme Court case, *Entergy Corp. v. Riverkeeper*, and the statute it interprets, § 316(b) of the Clean Water Act. Her discussion leads her to question the role of cost-benefit analysis in this area of environmental regulation because it is difficult to measure the multiple environmental and economic factors and "with such uncertainty, this analytical tool could easily be manipulated."

NEPA and Climate Change: After the CEQ's Draft Guidance

by James R. Holcomb, IV

I. INTRODUCTION

Does combating climate change fall within the purview of the National Environmental Policy Act (NEPA)?[1] The answer is the subject of an ongoing debate.

NEPA is a process-oriented statute that requires federal agencies to disclose and consider publicly the environmental consequences of their actions and of private actions requiring federal permits or approvals.[2] Environmentalists have attempted over the years to compel the evaluation of climate-change impacts in NEPA documents. Their efforts have only increased in vitality following the U.S. Supreme Court's 2007 *Massachusetts v. EPA* decision holding that carbon dioxide and other greenhouse gases (GHGs) are air pollutants subject to regulation under the Clean Air Act.[3]

For the most part, case law is not clear regarding when and how climate-change impacts must be evaluated.[4] For this reason, the International Center for Technology Assessment, the Natural Resources Defense Council, and the Sierra Club filed a petition with the Council on Environmental Quality (CEQ) in March 2008 seeking to ensure that climate-change impacts would be analyzed in all NEPA environmental review documents.[5]

In February 2010, the CEQ issued draft guidance responding to the petition and established the White House's position that federal agencies should both consider climate-change impacts and take opportunities to reduce GHG emissions.[6] If finalized without change, the guidance would advise federal agencies to consider both the GHG emissions effects of a proposed action and its alternatives, and the relationship of climate-change effects of a proposed action or alternatives in NEPA environmental impact statements (EISs).[7] Because courts typically accord deference to administrative interpretations that have been subject to notice and comment rulemaking, the final guidance is important litigation-wise for federal agencies, industry, and potential environmental petitioners.[8]

This article argues that NEPA is a procedural tool not intended to confront climate change and, as a result, the CEQ's attempts to resolve some of the uncertainties that have cropped up in case law through its publication of the draft guidance

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1 National Environmental Policy Act, 42 U.S.C. §§ 4321–4370 (2006).

2 *See generally id.*

3 Massachusetts v. United States Envtl. Prot. Agency, 549 U.S. 497, 528-29 (2007).

4 Svend A. Brandt-Erichsen & Dustin T. Till, *CEQ Marks 40th Anniversary of NEPA with New Guidance on Greenhouse Gas Impacts, Mitigation, and Categorical Exclusions*, MARTEN LAW, Feb. 22, 2010, http://www.martenlaw.com/newsletter/20100222-nepa-climate-change-guidance.

5 *Id.*

6 National Environmental Policy Act (NEPA) Draft Guidance, 75 Fed. Reg. 8046 (Feb. 23, 2010).

7 It is possible that the CEQ will never finalize the draft guidance. This possibility became more likely when Republicans captured a number of seats as a result of the midterm elections of 2010. It may be unlikely, then, that President Obama would use political capital to encourage the CEQ to finalize the draft guidance.

8 Ass'ns Working for Aurora's Residential Env't v. Colorado Dept. of Transp., 153 F.3d 1122, 1127, n. 4 (10th Cir. 1998) ("Although we recognize that we may rely on the interpretive guidance offered by CEQ, the Forty Questions document is not owed the substantial deference afforded to administrative rules that are the product of notice and comment procedures.").

ultimately fail because its aims go beyond the intended scope of NEPA. Part II of this article explains NEPA's role and the importance of the CEQ and the EIS in the NEPA regulatory process. Part III discusses NEPA-related case law and common problems that have arisen in cases in which litigants have sought to use NEPA as a tool to regulate GHGs, and then explains how the draft guidance attempts to solve some of these problems. Part IV offers recommendations that could improve the draft guidance.

II. NEPA, the CEQ, and Environmental Impact Statements

Heralded as the "Magna Carta" of the country's environmental movement because it is one of the oldest of the major U.S. environmental laws, NEPA does not force agencies to adopt alternatives with lower environmental impacts, it only requires that they disclose alternatives and consider their impacts.[9]

NEPA requires that federal agencies prepare an EIS for all "major federal actions significantly affecting the quality of the human environment."[10] While NEPA explicitly keys in on federal agency activities, its reach is actually broader. Specifically, non-federal actions that are regulated, licensed, permitted, or approved by federal agencies generally are considered federal actions for NEPA purposes.[11] As a result, NEPA may play a role, for example, in the permitting of a power plant that needs federally-enforceable permits to operate.

The CEQ—composed of three members appointed by the President and confirmed by the Senate—administers NEPA.[12] It primarily issues guidelines to federal agencies for the preparation of EISs, "makes rules that describe the procedures by which [NEPA] is to be implemented, and [defines] its key terms."[13]

NEPA's effectiveness is ultimately born out of its EIS requirement, which must be included in every recommendation or report on proposals for legislation and other major federal actions "significantly affecting the quality of the human environment."[14] The Supreme Court has explained that the requirement to prepare an EIS serves the

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9 Environmental Law Handbook 545 (Thomas F. Sullivan ed., 2009); Jessica Leber, *Can NEPA Pass Tests Posed by Climate-Related Projects?*, ClimateWire (2009), http://www.eenews.net/public/climatewire/2009/03/26/1.

10 National Environmental Policy Act, 42 U.S.C. § 4332(2)(C) (2006).

11 Lowell Rothschild, Dana Nifosi, & Margaret Strand, *CEQ Issues Draft NEPA Climate Change Guidance*, Venable LLP News Alert (2010), http://www.lexology.com/library/detail.aspx?g=6d378e71-bae0-4e15-801d-138ee652ef4f.

12 Environmental Law Handbook, *supra* note 9, at 586.

13 Lauren Giles Wishnie, *NEPA for a New Century: Climate Change and the Reform of the National Environmental Policy Act*, 16 N.Y.U. Envtl. L.J. 628, 633 (2008).

14 Environmental Law Handbook, *supra* note 9, at 583; National Environmental Policy Act, 42 U.S.C. § 4332(2)(C)(ii) (2006). CEQ regulations provide that the term *major* reinforces but does not have a meaning independent of the term *significantly*, and define *significantly* by suggesting consideration of both the *context* and the *intensity* of the specific circumstances. CEQ Terminology, 40 C.F.R. § 1508.18–.27 (2009).The *context* refers to the surrounding circumstances where the action is proposed and its impact upon society as a whole, the affected region, the affected interests, and the locality, while *intensity* refers to the severity of the impact, including its beneficial impacts.CEQ Terminology, 40 C.F.R. § 1508.18 (2009); *see also* Brandt-Erichsen & Till, *supra* note 4.

purposes of ensuring that federal agencies will have available, and carefully consider, detailed information on significant environmental impacts and that the information will be made available to a larger audience (*i.e.*, the public and other stakeholders) so they may also play a role in the decision-making process.[15] To that end, an EIS must include "a discussion of the environmental impact of the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, alternatives to the proposed action, the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."[16]

Courts have confronted whether an EIS is an appropriate tool for regulating GHG emissions and have arrived at different conclusions. The draft guidance attempts to resolve some of the uncertainties that exist because of conflicting case law.

III. Issues That Have Arisen in NEPA-Related Case Law, and How the Draft Guidance Attempts To Solve Them

NEPA should not be used to explicitly mandate GHG reductions because it is a process-oriented statute, but incorporating GHG emission considerations into the EIS process may have that effect.[17] According to CEQ Chairwoman Nancy Sutley, "there was really no question that there are environmental effects associated with climate change, and thus incorporating that as part of agencies' thinking as they look at their NEPA obligations and looking at environmental impacts makes sense."[18]

The release of the draft guidance may not be a clear win for environmental activists, however. In a December 29, 2009, letter to Republican senators, Chairwoman Sutley indicated that it was the CEQ's position that while "appropriate and necessary to consider the impact of significant Federal actions on greenhouse gas emissions and the potential for climate change to affect Federal activities . . . NEPA cannot be used to regulate greenhouse gas emissions," and added that the Obama Administration remained committed to addressing climate change through comprehensive climate and energy legislation.[19]

The draft guidance, nevertheless, does advise federal agencies that they should consider opportunities to reduce GHG emissions caused by "federal actions,"—which includes, for example, approving permits for coal-fired power plants, adapting their actions to climate-change impacts throughout the NEPA process, addressing these issues in their agency NEPA procedures, and considering "the greenhouse gas emissions

15 Dep't of Transp. v. Public Citizen, 541 U.S. 752, 768 (2004) (citing Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989)).

16 National Environmental Policy Act, 42 U.S.C. § 4332(2)(C)(i)-(v) (2006).

17 Wishnie, *supra* note 13, at 638.

18 Noelle Straub, *New White House Guidance "Straightforward, Commonsense,"*N.Y. TIMES, Feb. 19, 2010, *available at* http://www.nytimes.com/gwire/2010/02/19/19greenwire-new-white-house-guidance-straightforward-commo-96518.html.

19 Noelle Straub, *"No Basis" for Excluding Climate Impacts from NEPA Reviews, CEQ Says*, N.Y. TIMES, Jan. 15, 2010, *available at* http://www.nytimes.com/gwire/2010/01/15/15greenwire-no-basis-for-excluding-climate-impacts-from-ne-77722.html.

effects of a proposed action," its alternatives, and "the relationship of climate change effects of a proposed action or alternatives."[20]

Case law conflicts on whether NEPA is an appropriate tool to address climate change. To understand how the draft guidance attempts to resolve the uncertainty found in conflicting judicial decisions, it will be useful to review NEPA case law in the context of climate change, focusing on two issues: first, difficulties in demonstrating the "significance" of a project under NEPA, and second, the feasibility of the use of "cumulative impacts" analysis to overcome these difficulties.[21]

A. Problems with Demonstrating "Significance"

Only "significant" impacts need be analyzed in an EIS.[22] In determining whether an impact is "significant" and, therefore, whether an EIS is required, NEPA mandates that agencies take into account all other "past, present, and future reasonably foreseeable actions" with "individually minor but collectively significant impacts."[23]

In the context of incorporating GHG emissions into an EIS, then, an accurate determination of significance due to climate effects may be implausible, epitomizing a NEPA quandary known as the "tyranny of small decisions"—thousands of federal actions, each contributing a relatively small fraction of worldwide GHG emissions, combine to increase the likelihood of global greenhouse-gas-related impacts, yet fall below the bar for EIS preparation.[24]

Other factors also make climate-change significance determinations problematic. For one, an accepted method does not exist for tracing specific GHG emissions to specific climate impacts, and second, little certainty exists as to the predicted effects of climate change.[25] As a result, linking a particular proposal's GHG emissions to specific climate -hange impacts will most often be "speculative or attenuated."[26] This speculative or attenuated linking is significant because judicial adoption of this view can be determinative: federal agencies are not required to consider highly speculative effects in determining whether to prepare an EIS.[27]

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20 Memorandum from Nancy Sutley, Chair, Council on Envtl.Quality (Feb. 18, 2010), *available at* http://ceq.hss.doe.gov/nepa/regs/Consideration_of_Effects_of_GHG_Draft_NEPA_Guidance_FINAL_02182010.pdf.

21 Wishnie, *supra* note 13, at 641.

22 National Environmental Policy Act, 42 U.S.C. § 4332(2)(C) (2000).

23 CEQ Terminology, 40 C.F.R. § 1508.7 (2009).

24 Madeline June Kass, *A NEPA Climate Paradox: Taking Greenhouse Gases into Account in Threshold Significance Determination*, 42 Ind. L. Rev. 47, 63 (2009).

25 *Id.*

26 *Id.*

27 *Id.* at 63–64; Environmental Law Handbook, *supra* note 9, at 546.

1. Case law reveals that determining what constitutes a "significant" level of GHG emissions under NEPA has been difficult and that it will be difficult in most cases to show that a federal project that will emit GHGs meets the significance requirement

Three key cases—*City of Los Angeles v. National Highway Traffic Safety Administration*,[28] *Friends of the Earth v. Watson*,[29] and *Mid-States Coalition for Progress v. Surface Transportation Board*[30]—illustrate how different court approaches impact the challenge of demonstrating "significance."[31]

The *City of Los Angeles* case concerned the Energy Policy and Conservation Act, which created a national fuel-efficiency Corporate Average Fuel Economy (CAFE) standard of 27.5 miles per gallon from model year 1985 onward.[32] The act permitted the National Highway Traffic Safety Administration (NHTSA) to set different CAFE standards by regulation, and NHTSA chose to exercise that authority, setting lower standards for model years 1987-89.[33] Environmental groups, and a number of cities, challenged the NHTSA's decision not to complete an EIS for the less stringent standards, arguing that the NHTSA had an obligation to assess the impact of increased emissions on global warming.[34]

The D.C. Circuit rejected the plaintiffs' suit based on lack of standing, specifically on traceability and redressability grounds.[35] The plaintiffs had alleged that global climate change was the harm that they suffered, but the court found that the plaintiffs had not demonstrated climate change as a whole to be traceable to NHTSA's decision to lower the CAFE standard for model years 1987–89.[36] The court further found that NHTSA's action was "an insignificant tributary to the causal stream leading to the overall harm that the petitioners have alleged," and, therefore, the plaintiffs could not demonstrate that the harm alleged would be redressed even if an EIS were completed.[37]

However, almost twenty years later, the Ninth Circuit expressly disagreed with the *City of Los Angeles* decision, holding that if a substantial question exists regarding whether an action "may have a significant effect" on the environment, then the agency must prepare an EIS, and that "[t]he impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct."[38]

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28 City of Los Angeles v. Nat'l Highway Traffic Safety Admin., 912 F.2d 478 (D.C. Cir. 1990).
29 Friends of the Earth v. Watson, 2005 WL 2035596 (N.D. Cal. Aug. 23, 2005).
30 Mid-States Coalition for Progress v. Surface Transportation Board,345 F.3d 520 (8th Cir. 2003).
31 Wishnie, *supra* note 13, at 641–43.
32 *City of Los Angeles*, 912 F.2d at 482.
33 *Id.*
34 Wishnie, *supra* note 13, at 641.
35 *City of Los Angeles*, 912 F.2d at 483–84.
36 *Id.*
37 *Id.* at 484.
38 Center for Biological Diversity v. National Highway Traffic Safety Administration, 538 F.3d 1172, 1217–19 (9th Cir. 2008).

Unlike in *City of Los Angeles*, the plaintiffs in *Friends of the Earth* established standing successfully because they demonstrated the project's significant impact on global GHG emissions.[39] The *Friends of the Earth* plaintiffs argued that the Overseas Private Investment Corporation (OPIC) and the Export-Import Bank of the United States ("Bank") were required to complete an EIS that included an analysis of the GHG emissions of their overseas financing projects.[40] The court found that Bank and OPIC's lending activity had an impact on overall global climate change sufficient to constitute a judicially cognizable causal relationship, and thus refused to grant summary judgment.[41] However, the *Friends of the Earth* decision is unusual in that the proposed federal action was estimated to be causally linked to eight percent of global GHG emissions, whereas most federal actions will be causally linked to a considerably smaller percentage.[42]

The *City of Los Angeles* and *Friends of the Earth* decisions together highlight the difficulty of proving the significance of federal actions when global climate change is the harm alleged.[43] However, courts have been creative in easing the difficulty of demonstrating "significance." The Eighth Circuit in *Mid-States Coalition for Progress v. Surface Transportation Board*, for example, took a different tack that made proving "significance" easier.[44]

In *Mid-States*, the Surface Transportation Board completed an environmental assessment[45] on the proposed construction of a rail line into the Powder River Basin.[46] The plaintiffs challenged the environmental assessment on the ground that it failed to assess the impact on carbon dioxide emissions of increasing the availability and lowering the price of low-sulfur coal in the East.[47] The Eighth Circuit treated the case as an air-pollution case, focusing on the emission of the GHGs themselves, rather than attempting to assess the interplay between carbon dioxide emissions and global warming.[48]

The *Mid-States* court found that NEPA clearly required the analysis of GHG impacts, dismissing without discussion the idea that the environmental effects of GHG emissions from a project of the proposed size would be insignificant.[49] The court explained degradation in air quality resulting from increased emissions of GHGs must be addressed in an EIS if it is reasonably foreseeable, meaning "sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a

39 Wishnie, *supra* note 13, at 642.
40 *Id.*
41 *Id.*
42 *Id.*
43 *Id.*
44 *Id.*
45 An environmental assessment is used by federal agencies to determine whether an environmental impact statement need be prepared. NEPA Regulations, § 1508.9.
46 Wishnie, *supra* note 13, at 642.
47 *Id.* at 643.
48 *Id.*
49 *Id.*

decision."[50] The defendants argued that if the availability of coal would drive the construction of additional power plants, the Board would need to know where those plants would be built, and how much coal these new plants would use in order to assess resulting impacts.[51] Even though no hauling contracts had been executed and the relevant information was unknown, rendering the analysis "pure speculation—hardly the reasonably foreseeable significant impacts that must be analyzed under NEPA,"[52] the court held that the defendants' arguments showed only that the *extent* of the effect was speculative, not the *nature* of the effect.[53] As a result, the outcome in *Mid-States* is unusual because the court used air quality, rather than global climate change, as the frame of reference, making a showing of significance easier.[54]

The preceding cases demonstrate that traditionally it is challenging to demonstrate significance in the context of GHG emissions under NEPA.[55] In *City of Los Angeles*, the court found it unthinkable that the emissions in question could be considered to significantly affect a global problem like climate change.[56] The *Friends of the Earth* court, on the other hand, did find significance on a global level, but the project in question was unusually large.[57] The court in *Mid-States* approached GHG emissions from an air-pollution perspective and found a significant impact.[58] Without any frame of reference or regulatory benchmark, however, the *Mid-States* court's conclusory finding of significance does not appear entirely supportable under NEPA.[59] For that reason, although the *Mid-States* ruling provides precedent for requiring GHG analysis under NEPA, it does not offer legitimate guidance to future courts attempting to determine what GHG emitting projects qualify as significant.[60] Because the majority of projects will emit relatively insignificant amounts of GHGs, especially relative to the proposed federal action in *Friends of the Earth*, case law strongly indicates that demonstrating significance for GHG emissions will be difficult.[61]

50 Mid-States Coal. for Progress v. Surface Transp. Bd., 345 F.3d 520. 549 (8th Cir. 2003) (quoting Sierra Club v. Marsh, 976 F.2d 763, 767 (1st Cir. 1992)).

51 Barbara Schussman, Manu Pradhan, & Sean Marciniak, MCCUTCHEN CLE SUPERCONFERENCE, NEPA Review and Impacts on Climate Change (Mar. 6-7, 2008), http://www.bingham.com/Media.aspx?MediaId=6641.

52 *Mid States*, 345 F.3d at 549.

53 *Id.* (citations omitted).

54 Wishnie, *supra* note 13, at 643.

55 *Id.*

56 *Id.*

57 *Id.*

58 *Id.*

59 *Id.*

60 Wishnie, *supra* note 13, at 643.

61 *Id.* at 644.

2. The draft guidance fails because it provides federal agencies with relatively limited guidelines on when and how to analyze GHG and climate-change effects

The draft guidance provides guidelines to clarify "significance," but does not do enough to define what is "significant" for NEPA and GHG purposes.

First, the draft guidance stresses that the suggested EIS analysis of climate change is recommended only for large projects. While the draft guidance does not establish a bright line, it recommends that agencies consider the effects of GHG emissions for projects that will result in "meaningful" GHG emissions, and suggests that projects that are "reasonably anticipated to cause direct emissions of 25,000 metric tons or more of CO_2-equivalent GHG emissions" annually are "meaningful" and likely to require climate-change analysis.[62] The draft guidance did not propose this threshold "as an indicator of a threshold of significant effects, but rather as an indicator of a minimum level of GHG emissions that may warrant some description in the appropriate NEPA analysis for agency actions involving direct emissions of GHGs."[63] For smaller projects, the "CEQ encourages federal agencies to consider" whether they should perform a GHG analysis based on the project's projected long-term emissions, but does not require or even suggest it.[64]

The 25,000-metric-ton threshold is the same one that the EPA originally proposed for requiring permits for GHG emissions under the Clean Air Act, and also was the threshold that the EPA adopted in the fall of 2009 in rules requiring annual reporting of GHG emissions.[65] However, pressure from fossil-fuel industries and Congress over the EPA's Tailoring Rule caused the EPA to backpedal to a threshold of 75,000 metric tons per year,[66] a limit the EPA ended up raising in its final rule to 100,000 metric tons per year for all sources beginning in July 2011.[67] CEQ Chairwoman Sutley has made clear that the draft guidance's threshold of 25,000 metric tons is designed to focus on "projects where there's [sic] likely to be effects associated with greenhouse gas emissions."[68] It may be the case that this threshold will be increased in the final guidance to accord with the EPA's Tailoring Rule—the fact that the Tailoring Rule establishes 100,000 metric tons as the threshold for Clean Air Act permitting programs caused one commenter to request that the CEQ "bring the indicator level of GHG emissions in the guidance memorandum in line with the thresholds in EPA's final Tailoring Rule . . . ."[69]

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62 Sutley, *supra* note 20, at 1.

63 *Id.* at 2.

64 *Id.*

65 Brandt-Erichsen & Till, *supra* note 4.

66 Christian Parenti, *The Case for EPA Action*, The Nation, April 15, 2010, *available at* http://www.thenation.com/article/case-epa-action.

67 Tailoring Rule, 75 Fed. Reg. 31,514, 31,516 (June 3, 2010).

68 Straub, *supra* note 19.

69 Carol E. Whitman, Nat'l Rural Elec. Coop. Ass'n, Comments on National Environmental Policy Act (NEPA) Draft Guidance, "Consideration of the Effects of Climate Change and Greenhouse Gas Emissions," Notice, 74 Fed. Reg. 8046 (Feb. 23, 2010) (May 24, 2010), *available at*http://www.nreca.org/press/Filings/Documents/NRECACommentsonNEPAGHGuidance_05242010.pdf.

Even though the draft guidance concludes that GHG emission levels high enough to warrant regulation by the EPA are "meaningful," the draft guidance still leaves the question of what constitutes a "significant" GHG emission level to federal agencies.[70] As a result, agencies will continue to make the threshold significance determination on a case-by-case basis, based on the project's context and intensity.[71] This approach not only leaves agencies with ample discretion, but also results in uncertainty, arming project opponents with potential litigation tools.[72] Thus, the CEQ's proposed guidance is unhelpful on the threshold issue that determines whether NEPA documents contain a climate-change discussion at all, and if so, whether a project's GHG emissions are significant enough, in and of themselves, to warrant EIS development.[73]

Overall, the draft guidance's scant direction on how to analyze climate-change effects and a lack of specific requirements that must be included in a NEPA analysis will confuse federal agencies.[74] Further, it will provide agencies with a great deal of flexibility as to when and how to analyze GHG emissions and climate-change impacts,[75] bounding them only by the traditional NEPA "rule of reason."[76] If one thing is clear, it is that if the CEQ does not clarify these defects in its final guidance, NEPA-based litigation is inevitable.[77]

B. Problems associated with addressing "cumulative impacts"

While federal agencies routinely address direct and indirect effects in an EIS, they have had difficulty in addressing cumulative effects.[78] NEPA's implementing regulations define a cumulative impact as the "impact on the environment which results from the incremental impact of the action when added to other past, present, and *reasonably foreseeable* future actions regardless of what agency or person undertakes such other actions."[79] The phrase "reasonably foreseeable" has been limited in several cases to those actions that are not speculative or too far off in the distant future.[80] The regulations clarify that individually insignificant but cumulatively significant impacts justify EIS preparation.[81]

One court has declared that "the purpose of this requirement is to prevent agencies from dividing one project into multiple individual actions 'each of which individually has an insignificant environmental impact, but which collectively have a

70 Brandt-Erichsen & Till, *supra* note 4.
71 *Id.*
72 *Id.*
73 *Id.*
74 Sutley, *supra* note 20.
75 *Id.*
76 Brandt-Erichsen & Till, *supra* note 4.
77 *Id.*
78 ENVIRONMENTAL LAW HANDBOOK, *supra* note 9, at 546. In 1993, CEQ reviewed 116 Final EISs to determine the extent they addressed cumulative effects. Only 67 EISs mentioned cumulative impact while 49 ignored it.
79 40 C.F.R. § 1508.7 (2009) (emphasis added).
80 ENVIRONMENTAL LAW HANDBOOK, *supra* note 9, at 546; Headwaters, Inc. v. Bureau of Land Management, 914 F.2d 1174, 1182 (9th Cir. 1990).
81 40 C.F.R. § 1508.7 (2009).

substantial impact.'"[82] While this standard would seem to require GHG emissions to be considered in an EIS, projects included in a cumulative impacts analysis have typically fallen within the same geographic area.[83] Because geography does not provide a logical limiting principle in the case of climate change, the straightforward application of cumulative-impacts analysis could result in any federal project resulting in even the smallest emissions of GHGs breaching the significance threshold,[84] potentially creating serious administrative burdens for agencies.[85]

By and large, case law affirms that all reasonably foreseeable actions must be analyzed in the cumulative-impacts context.[86] In addition to the problem of geography not being a logical limiting principle in climate-change cases, requiring all reasonably foreseeable actions to be analyzed in an EIS is problematic because what is "reasonably foreseeable" is up for debate in the context of scientific uncertainty.

1. The Ninth Circuit is clear: the impact of GHG emissions on climate change "is precisely the kind of cumulative impact analysis that NEPA requires agencies to conduct"

The Ninth Circuit has held that federal agencies must assess GHG emissions and climate-change impacts in NEPA environmental-review documents.[87] The court's decision arose out of challenges to new automobile fuel-efficiency standards that the NHTSA developed.[88] Petitioners alleged that NHTSA's environmental review under NEPA failed to take the requisite "hard look" at the carbon dioxide emissions and climate-change impacts attributable to the new CAFE standards, failed to assess alternatives to its proposed rulemaking, and failed generally because an EIS was not prepared.[89]

The Ninth Circuit agreed with the petitioners on all counts.[90] In particular, the court found NHTSA inappropriately failed to "discuss the actual environmental effects" of the proposed standard, and ordered the agency to "evaluate the 'incremental impact' that [those] emissions will have on climate change or on the environment more generally in light of other past, present, and reasonably foreseeable actions such as other light truck and passenger automobile CAFE standards."[91]

In response to the argument that a cumulative-impact assessment was not warranted because climate change is a global phenomenon, the court was clear: "[t]he fact that 'climate change is largely a global phenomenon that includes actions that are outside

82 Natural Resources Def. Council v. Hodel, 865 F.2d 288, 297 (D.C. Cir. 1988).
83 Wishnie, *supra* note 13, at 640.
84 *Id.* at 644; Kass, *supra* note 24, at 66.
85 Wishnie, *supra* note 13, at 644.
86 *See, e.g.,* City of Oxford v. Fed. Aviation Admin., 428 F.3d 1346, 1353 (11th Cir. 2005); City of Shoreacres v. Waterworth, 420 F.3d 440, 453 (5th Cir. 2005); Blue Mountains Biodiversity Project v. Blackwood, 161 F.3d 1208, 1214 (9th Cir. 1998); Hammond v. Norton, 370 F. Supp. 2d 226, 245 (D.D.C. 2005).
87 Center for Biological Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008).
88 *Id.* at 1181, n.1.
89 *Id.* at 1219–20.
90 *Id.* at 1176.
91 *Id.* at 1216.

of [the agency's] control . . . does not release the agency from the duty of assessing the effects of its actions on global warming within the context of other actions that also affect global warming.'"[92] The court further explained that, "[a]ny given rule setting a CAFE standard might have an 'individually minor' effect on the environment, but these rules are 'collectively significant actions taking place over a period of time.'"[93] Thus, NHTSA was required to provide contextual information about the cumulative and incremental impacts of its rule in light of other CAFE rulemakings and other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes those other actions.[94]

The court's ultimate holding in *Center for Biological Diversity* is clear: the "impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impact analysis that NEPA requires agencies to conduct."[95] Some federal agencies going forward will find it difficult to avoid evaluating climate-change impacts for projects requiring federal approvals or permits, meaning that project proponents could be required to evaluate the interplay between a project's emissions, emissions attributable to other past and reasonably foreseeable future actions, and the actual environmental impacts attributable to climate change.[96]

Despite the Ninth Circuit's ruling, some federal decisions have deferred to minimal or cursory evaluations of climate-change impacts, while others require more detailed evaluations, leaving project proponents uncertain about when and how climate-change impacts must be evaluated.[97]

2. The draft guidance requires federal agencies to discuss cumulative effects in an EIS, but permits agencies to limit the scope of this analysis based on practical considerations, like scientific uncertainty

The draft guidance includes scant discussion of the role of cumulative impacts analysis under NEPA.[98] When an agency concludes that a discussion of cumulative effects of GHG emissions related to a proposed action is warranted to inform decision-making, the draft guidance recommends that the agency do so "in a manner that meaningfully informs decision makers and the public regarding the potentially significant effects in the context of the proposal for agency action."[99] This discussion would most appropriately focus on "an assessment of annual and cumulative emissions of the proposed action and the difference in emissions associated with alternative actions."[100]

92 *Id.* at 1217 (internal citation omitted).
93 *Id.*
94 *Id.*
95 *Id.*
96 Dustin Till, *Ninth Circuit Requires Climate Change Analysis Under NEPA*, MARTEN LAW, Nov. 28, 2007, http://www.martenlaw.com/newsletter/20071128-climate-change-analysis.
97 Brandt-Erichsen & Till, *supra* note 4.
98 *See* Sutley, *supra* note 20, at 8.
99 *Id.* at 5.
100 *Id.*

Unfortunately, the draft guidance provides very little direction as to how federal agencies should evaluate the contribution of GHG emissions associated with the actions under review to cumulative climate effects. It states, for example, that "nearly every aspect of energy choices and use" is likely to add to or reduce the cumulative total of human GHG emissions.[101] The draft guidance's failure to include meaningful guidance in this context leaves agencies with an insufficient ruler for evaluating the contribution of a proposed action to the cumulative effect of human GHG emissions.

Additionally, the draft guidance permits agencies to limit the scope of cumulative-impact analyses based on practical considerations that, in the case of climate change, include scientific uncertainty regarding anticipated environmental effects in a specific project area.[102] It also recognizes the difficulty of determining when individually insignificant projects become cumulatively significant in light of the global nature of GHG emissions.[103] In particular, the draft guidance states that,"[t]he global climate change problem is much more the result of numerous and varied sources, each of which might seem to make a relatively small addition to global atmospheric greenhouse gas concentrations," and recommends, "that environmental documents reflect this global context and be realistic in focusing on ensuring that useful information is provided to decision makers for those actions that the agency finds are a significant source of greenhouse gases."[104]

The draft guidance, then, does not provide much in the way of guidance, but merely acknowledges the problems associated with addressing climate change, which could help agencies and project applicants fend off challenges to cumulative-impact analyses that acknowledge such uncertainty.[105]

C. Scientific uncertainty and increased project delay are other arguments against NEPA-based GHG review

The CEQ's acknowledgement of the uncertainty that accompanies climate change is a practical caveat to the climate-change-impacts evaluation required by the draft guidance. Indeed, significant scientific debate and public unrest concerning the temporal and regional ramifications of global warming, the extent of those ramifications on the quality of the human environment, and the link between specific emissions and climate effects remain.[106] The Intergovernmental Panel on Climate Change itself accepts that the scientific uncertainty in accurately measuring the extent of climate change is high.[107] Scientists studying climate change are usually quick to acknowledge the uncertainties that accompany their findings.[108]

101 Sutley, *supra* note 20, at 10.
102 *Id.* at 8.
103 *Id.* at 9.
104 *Id.* at 2.
105 Brandt-Erichsen & Till, *supra* note 4.
106 Kass, *supra* note 24, at 76.
107 Joseph Smith & David Shearman, Climate Change Litigation: Analyzing the Law, Scientific Evidence & Impacts on the Environment, Health & Property 143 (Presidian Legal Publications 2006).
108 Friedrich Soltau, Fairness in International Climate Change Law and Policy 33 (2009).

Thus, every major federal action with direct or indirect GHG emissions raises controversial questions of scientific and causal debate of major significance to the health of the human environment.[109]

1. Recent cases emphasize that GHGs should be considered in an EIS, but the case law is not unanimous

In *Border Power Plant Working Group v. Department of Energy*, a federal court held that the Department of Energy must include an analysis of GHGs emitted from power-plant turbines in an EIS.[110] In that case, the Department of Energy (DOE) was in the process of determining whether to approve the construction and operation of transmission lines that would connect to Mexican power plants.[111] The court was confronted with the question of whether the NEPA analysis for the approval should consider effects resulting from operation of the plants.[112]

Under NEPA, such effects must be causally linked to the proposed federal action to require consideration in an EIS.[113] In *Border Power*, the court found the transmission lines were "but for" causes of the operation of some of the power-plant turbines and, therefore, the DOE must include the effects of operating those turbines in the NEPA analysis for the transmission lines.[114]

It is in this context that the court addressed an argument that the Department of Energy's NEPA environmental review documents failed to consider emissions of carbon dioxide from operation of the power-plant turbines.[115] The DOE argued that carbon dioxide is not a hazardous or toxic pollutant under federal law, and that accordingly it was not arbitrary and capricious to not analyze the effects of carbon dioxide emissions because an agency need not evaluate questionable effects or imaginary horribles.[116]

The court disagreed with the Department of Energy, reasoning that because the DOE admitted the turbines would emit carbon dioxide, these effects were neither questionable nor imaginary.[117] The court found convincing that the record showed that carbon dioxide was one of the pollutants emitted, and that because carbon dioxide is a GHG, "the emissions have potential environmental impacts and . . . failure to disclose and analyze their significance is counter to NEPA."[118]

Courts have not unanimously adhered to this decision, however. Three years later, in a case considering a challenge to an application filed in response to the *Border Power*

109 Kass, *supra* note 24, at 76–77.
110 Schussman, Pradhan, & Marciniak, *supra* note 50, at 6–7 (citing Border Power Plant Working Group v. Dept. of Energy, 260 F. Supp. 2d 997 (S.D. Cal. 2003)).
111 *Id.*
112 *Id.*
113 *Border Power Plant*, 260 F. Supp. 2d at 1016.
114 *Id.* at 1017.
115 *Id.* at 1028.
116 *Id.*
117 *Id.*
118 *Id.* at 1029.

case, a federal district court upheld an only cursory analysis of GHGs.[119] In *Hapner v. Tidwell*, another federal district court ruled that the Ninth Circuit in *Biological Diversity* "did not establish an absolute requirement that every action analyzed under NEPA must include an analysis of climate change, and NEPA does not require affirmative presentation of every uncertainty."[120]

2. If anthropogenic GHG emissions are not in fact causing harmful climate change, then the draft guidance is not necessary

Establishing that global warming is linked to carbon dioxide emissions from burning fossil fuels is problematic, as is conclusively proving that anthropogenic global warming is in fact occurring. First, carbon dioxide is only one of several infrared-absorbing GHGs that humans produce, so the GHG effect problem is not confined to the consequences of burning fossil fuels.[121] Carbon dioxide has always been in the atmosphere, and without the partial greenhouse effect from naturally occurring carbon dioxide and other gases, the temperature of the Earth's surface would be about 20 degrees below zero.[122] Second, climate models—known as global circulation models—relied on by climate scientists are crude in space, crude in time, and an enormous amount of natural phenomena cannot be modeled, such as the impact of water vapor and clouds on climate.[123] Today's models use a grid of cells to map the earth, and those grids are too large to allow for the modeling of actual weather. Smaller and more accurate grids would require better modeling software, which would require additional computing power that is not yet available.[124]

Skepticism towards climate change has been heightened by recent challenges to climate science. Recently, errors were discovered in a 2007 report by the United Nations' Intergovernmental Panel on Climate Change, including the discovery that a claim that Himalayan glaciers could disappear because of global warming by 2035 was not supported by scientific evidence[125] and that, through the release of e-mail messages released from a British climate-research center, climatologists had tried to suppress climate data unfavorable to climate-change proponents.[126] The content of the messages opened some well-known scientists to charges of concealing temperature data from rival researchers and manipulating results to conform to "precooked conclusions."[127]

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119 Border Power Plant Working Group v. Dept. of Energy, 467 F. Supp. 2d 1040 (S.D. Cal. 2006).

120 Hapner v. Tidwell, CV 08-92-M-DWM, 32 (D. Mont. Oct. 30, 2008).

121 Robert M. Hazen & James Trefil, Science Matters 339 (2009).

122 *Id.*

123 Steven D. Levitt & Stephen J. Dubner, Superfreakonomics 181–82 (2009).

124 *Id.* at 182.

125 Seth Bornstein, *UN Climate Report Riddled with Errors on Glaciers*, The Seattle Times, Jan. 20, 2010, *available at* http://seattletimes.nwsource.com/html/businessandtechnology/2010845740_APsciunclimatechange.html.

126 John M. Broder, *Scientists Taking Steps to Defend Work on Climate*, N.Y. Times, Mar. 2, 2010, *available at* http://www.nytimes.com/2010/03/03/science/earth/03climate.html?ref=earth.

127 *Id.*

Considering the uncertainty involved with the effects and occurrence of climate change, federal actions subject to NEPA should not represent an opportunity to solve climate-change problems of unknown magnitude.[128] For one, application of NEPA's "significance" trigger might require the corralling of comments by climatologists, biologists, conservationists, or other environmental experts in favor of EIS preparation on climate grounds.[129] Additionally, NEPA, as written, is a procedural statute designed to tackle geographically bounded environmental concerns—not global problems like climate change.[130] Federal actions appropriately analyzed under NEPA have more local or regional effects, like whether the federal action will contribute to the destruction of a habitat used by a resident population of an endangered species.[131] Climate-change impacts are unique from the impacts of other traditional criteria pollutants because the impact on climate is the same if one hundred facilities all over the world emit one unit of carbon dioxide, or one facility emits one hundred units.[132] Even NEPA's cumulative-impacts-analysis requirement, which requires aggregation of insignificant effects of foreseeable federal actions, has been interpreted by some, but not all, courts to have limited geographic reach.[133]

Senator James Inhofe, ranking member of the Senate Environment and Public Works Committee, has criticized the specifics of the draft guidance, saying that NEPA was not intended to regulate GHGs, and "[u]sing NEPA as a backdoor tool to regulate greenhouse gases will stifle job creation and create greater uncertainty for the economy . . . [and] [t]he Administration's proposed NEPA guidance for greenhouse gases appears to do exactly that: it will enable federal agencies to block or delay production of America's domestic energy resources, which are the largest in the world."[134]

NEPA's draft guidance, then, could do more harm than good. NEPA is not designed to respond to the problems presented by climate change.[135]

3. Requiring agencies to consider GHG emissions in an EIS will add to the already existing delays in navigating NEPA requirements

Projects requiring federal approvals are routinely delayed due to "inappropriate and inefficient implementation and litigation from existing environmental regulations." The National Surface Transportation Policy and Revenue Study Commission estimated that the median time to complete NEPA EISs for highway projects, even without having to consider GHG emissions, has been as high as eighty months.[136]

128 Kass, *supra* note 24, at 76–77.
129 *Id.* at 77.
130 Wishnie, *supra* note 13, at 640.
131 *Id.* at 640–41.
132 *Id.*
133 *Id.* at 640–44.
134 Straub, *supra* note 19.
135 Wishnie, *supra* note 13, at 640.
136 Noelle Straub, *GOP Senators Object to Including Global Warming in NEPA Regs*, GREENWIRE, Oct. 23, 2009, *available at*http://www.eenews.net/public/Greenwire/2009/10/23/3.

Department of Energy data puts average EIS completion time at about two years.[137] Simply put, completing an EIS is expensive and time-consuming.

Consideration of GHG impacts would create only additional project delays due to the increased documentation demands that the draft guidance would bring into the EIS purview.[138] Without question, private entities seeking federal approval of, or funding for, their projects view NEPA compliance as an expensive and lengthy process. In 2009, for example, California Governor Arnold Schwarzenegger requested $44 billion for transportation, energy and water projects in California but, knowing that NEPA environmental review would slow short-term job creation, Governor Schwarzenegger asked the Obama Administration to "waive or greatly streamline National Environmental Protection Act requirements . . ."[139]

If agencies are required to consider GHG impacts in the EIS analysis, the process will become even more expensive and lengthy.[140] Adding another layer of analysis to a process known to some as an "endless black hole" is unwise, especially considering that NEPA is not the appropriate tool to confront climate change.[141]

4. The draft guidance acknowledges the uncertainty associated with climate change, yet still requires federal agencies to use evolving and controversial scientific evidence to assess public and private projects

The draft guidance acknowledges the uncertainty inherent in any assessment of the environmental impacts resulting from specific GHG emissions, given the current state of climate science.[142] Specifically, the draft guidance insists that federal agencies "ensure the scientific and professional integrity of their assessment of the ways in which climate change is affecting or could affect environmental effects of the proposed action," and "should use the scoping process to set reasonable spatial and temporal boundaries for this assessment and focus on aspects of climate change that may lead to changes in the impacts, sustainability, vulnerability and design of the proposed action and alternative courses of action."[143] The draft guidance further states that agencies "should recognize the scientific limits of their ability to accurately predict climate change effects, especially of a short-term nature, and not devote effort to analyzing wholly speculative effects."[144]

Nevertheless, the draft guidance commands that when assessing the effects of climate change on a proposed action, an agency should start with an identification

137 Wishnie, *supra* note 13, at 635.

138 Kass, *supra* note 24, at 72.

139 Press Release, Office of the Governor, Governor Schwarzenegger Sends Letter to President-Elect Obama Regarding Federal Economic Stimulus Proposal (Jan. 5, 2009), http://pbstimulus.com/pdfs/agency_resp/California-LettertoObama.pdf.

140 Alston & Bird LLP, *Draft NEPA Guidance Would Place Additional Pressure on Greenhouse Gas Emitters in Absence of Congressional Action*, LEXOLOGY, Feb. 23, 2010 (http://www.lexology.com/library/detail.aspx?g=64674965-f01d-406b-80c1-1c88398494b3).

141 *Id.*

142 Brandt-Erichsen & Till, *supra* note 4.

143 Sutley, *supra* note 20, at 2.

144 *Id.*

of the "reasonably foreseeable future condition of the affected environment for the 'no action' alternative based on available climate change measurements, statistics, observations, and other evidence."[145] The draft guidance further states that,"[t]he reasonably foreseeable affected environment should serve as the basis for evaluating and comparing the incremental effects of alternatives," and obligates agencies to "discuss particular effects [turning] on a reasonably close causal relationship between the environmental effect and the alleged cause."[146] Again acknowledging scientific uncertainty, the draft guidance continues, "[w]here climate change effects are likely to be important but there is significant uncertainty about such effects, it may also be useful to consider the effects of any proposed action or its alternatives against a baseline of reasonably foreseeable future conditions that is drawn as distinctly as the science of climate change effects will support."[147] The draft guidance would require agencies to disclose the limitations of climate models to project potential changes reliably at the regional, local, or project level in explaining the extent to which they rely on particular studies or projections.[148]

Regardless of whether the final guidance will continue to recognize scientific uncertainty as a roadblock to accurately analyzing GHG effects on climate change, by requiring the consideration of climate change impacts the guidance will require federal agencies to use evolving and controversial scientific evidence to assess the environmental impact of both public and private projects[149]—further support for the notion that consideration of GHG emissions exceeds NEPA's intended scope.

In response to objections that the draft guidance attempts to regulate or force consideration of GHG emissions via a statute not intended to do so, White House officials stress the guidance is not meant to regulate GHG emissions.[150] This statement cannot be accurate, though, as the draft guidance instructs federal agencies to "consider opportunities to reduce [GHG] emissions caused by proposed Federal actions," and, "[w]here an agency determines that an assessment of climate issues is appropriate, the agency should identity alternative actions that are both adapted to anticipated climate change impacts and mitigate the greenhouse gas emissions that cause climate change."[151] The draft guidance also suggests several steps that could increase the upfront cost of the projects, like installing carbon capture and sequestration technology on a coal plant or capturing methane as it escapes from a mine shaft.[152]

Additionally, draft guidance on "mitigation" under NEPA was released concurrently with the draft guidance that is the subject of this article.[153] The draft mitigation guidance "arguably moves [the] CEQ from its traditional mission of protecting the

145 *Id.* at 7.
146 *Id.*
147 *Id.*
148 *Id.* at 8.
149 Brandt-Erichsen & Till, *supra* note 4.
150 Jim Tankersley, *New Rules Could Affect Coal Plants*, BALTIMORE SUN, Feb. 18, 2010, *available at* http://www.baltimoresun.com/news/dp-natl-coal-rules-dup,0,7982861.story.
151 Sutley, *supra* note 20, at 5.
152 *Id.* at 6.
153 *See* Nancy H. Sutley, Chair, Council on Envtl. Quality, Memorandum for Heads of Federal Departments and Agencies, (Feb. 18, 2010) Draft Guidance for NEPA Mitigation and Moni-

environmental review process, toward a mission of requiring substantive mitigation of impacts identified during NEPA reviews."[154] This requirement exceeds NEPA's traditional "informational" aim and morphs NEPA into a substantive rather than procedural tool. One commenter recognized the CEQ's mistake, indicating that "the Draft Guidance inappropriately ventures into the realm of substantive regulation of federal action by suggesting that agencies: (1) develop, and make binding commitments to implement detailed mitigation plans prior to undertaking projects; (2) base future, post-decision actions on the implementation and effectiveness of mitigation monitoring programs; (3) reconsider past decisions in light of mitigation monitoring; and (4) impose conditions in financial agreements, grants, permits, or other approvals, and condition funding on the implementation of mitigation."[155]

IV. Conclusion

The draft guidance addresses the problems of demonstrating significance, considering cumulative impacts, and confronting scientific uncertainty, but it has plenty of room for improvement. The final guidance needs to be more explicit on when and how federal agencies should analyze GHG and climate change effects, and should further expound on when and how agencies will be permitted to limit the scope of its climate-change analysis based on practical considerations like scientific uncertainty. Those needs assume, of course, that the draft guidance will be finalized. With Republicans picking up a number of seats in Congress as a result of the midterm elections in 2010 and a stagnating economy, it may be unlikely that President Obama would use his political capital to pressure the CEQ to finalize the guidance.

Even if the CEQ finalizes the draft guidance, and regardless of any improvements the CEQ makes after considering the comments made in response to the draft guidance, NEPA is not an appropriate tool for addressing the nature and consequences of energy development in the developing world, especially since NEPA is intended to be a procedural tool.[156] Even though the White House claims that the draft guidance is not a "backdoor" way of regulating GHG emissions, it seems clear that the draft guidance's requirements will do just that. For example, because the draft guidance recommends discussion and consideration of alternatives in a project's EIS, environmentalists are given new ammunition to challenge projects requiring federal permits. Environmentalists already file petitions challenging these projects based on GHG emissions, but a guidance memorandum from the CEQ gives environmental advocates another "leg to stand on" in regard to *successfully* challenging these projects by allowing

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toring, *available at* http://ceq.hss.doe.gov/nepa/regs/Mitigation_and_Monitoring_Draft_NEPA_Guidance_FINAL_02182010.pdf.

154 Svend A. Brandt-Erichsen, *In Draft Mitigation Guidance, CEQ Moves Toward Adding Substantive Mitigation to NEPA's Procedural Requirements*, Marten Law, Mar. 5, 2010, http://www.martenlaw.com/newsletter/20100305-nepa-substantive-mitigation.

155 Nuclear Energy Institute Comment Letter at 4 (May 24, 2010), *available at*http://ceq.hss.doe.gov/current_developments/docs/mmcomments/NEI_MMComments05192010.pdf.

156 Alice Kaswan, *The Domestic Response to Global Climate Change: Federal, State, and Litigation Initiatives*, 42 U.S.F. L. Rev. 39, 90 (2007).

them to question whether alternatives were adequately discussed and considered in an EIS.

To ensure that the final guidance is more acceptable than the draft guidance, the final guidance needs to be more explicit and provide more certainty for federal agencies and industry. Considering that the draft guidance has been subjected to the notice-and-comment process, it seems likely that the CEQ will have to at least consider similar recommendations. However, the more specific the CEQ is in the final guidance, the more prone to challenge the final guidance will be.[157]

It ultimately makes the most sense to let Congress decide how to regulate GHG emissions rather than allowing an administrative agency composed of unelected bureaucrats to do so via NEPA, a statute maligned for delay and not designed to tackle climate change. Regardless of any changes the CEQ makes to the draft guidance, then, the final guidance has a limited ceiling for improvement relative to the draft guidance.

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157 Interview with Jeff Civins, Partner, Haynes & Boone L.L.P. (April 19, 2010).

Nuclear Uncertainty: A Look at the Uncertainties of a U.S. Nuclear Renaissance

By T.L. Fahring

I. INTRODUCTION

In recent years, many have touted nuclear power as a means of addressing ever-increasing energy demands as well as concerns about global climate change.[1] Nuclear power generation does not emit carbon dioxide, any notable sulfur oxides, nitrogen oxide, or particulates.[2] Nuclear power, thus, benefits the environment by almost eliminating airborne wastes and particulates during generation.[3] Among the environmental drawbacks of nuclear power, however, is its production of radioactive wastes.[4] In contrast, coal and natural gas generation produce more airborne emissions but fewer radioactive wastes than nuclear power. Thus, from an environmental standpoint, the decision to switch from fossil fuel to nuclear power generation depends upon the value one places on airborne emissions vis-à-vis radioactive wastes.

Owing in part to concerns about global-climate change, nuclear power has seen a resurgence of interest worldwide. At present, forty-four reactors are under construction in a dozen countries, principally China, India, Korea, and Russia.[5] As of 2008, another ninety-three were being planned.[6] This resurgence of interest has not passed

1 NUCLEAR ENERGY ADVISORY COMMITTEE, NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY 5-7 (2008), http://www.ne.doe.gov/neac/neacPDFs/NEAC_Final_Report_Web%20Version.pdf.

2 U.S. Energy Information Administration, Nuclear Power and the Environment, http://www.eia.doe.gov/cneaf/nuclear/page/nuclearenvissues.html (last visited Feb. 27, 2011).

3 *Id.*

4 *Id.*

5 JOHN M. DEUTCH ET AL., UPDATE OF THE MIT 2003 FUTURE OF NUCLEAR POWER 6 (2009), http://web.mit.edu/nuclearpower/pdf/nuclearpower-update2009.pdf.

6 NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY, *supra* note 1, at 14.

by the United States. With 104 reactors generating around twenty percent of its electricity, the United States is already the world's largest producer of nuclear energy.[7]

But nuclear power in the United States has a history of uncertainty that has prevented new nuclear construction.[8] During the 1950s and 1960s, a combination of government subsidies, favorable regulation, and widespread public support reduced uncertainty to developers and led to rapid growth in the U.S. nuclear industry.[9] By the 1970s, however, growing public disillusionment with nuclear power and defects in the nuclear-licensing system led to prolonged build times and cost overruns.[10] With construction costs growing ever more uncertain, financing new projects became more difficult.[11] As a result, the Nuclear Regulatory Commission (NRC) did not receive any nuclear-licensing applications between 1978 and 2007.[12] The most recent nuclear plant entered operation in 1996, but it took twenty-three years to complete.[13]

While new construction is currently not underway in the United States, the federal government has taken measures over the last two decades to reduce uncertainties that previously hindered nuclear development.[14] First, the NRC created a new streamlined licensing system to correct those defects that led to cost overruns in the 1970s and 1980s.[15] The streamlined licensing system consists of three new licenses: the Early Site Permit (ESP), the Standard Design Certification, and the combined Construction and Operating License (COL).[16] In addition, the NRC reduced the level of formality at licensing hearings in an effort to limit the cost of the process.[17] Second, the Depart-

7 Nuclear Energy Institute, U.S. Nuclear Power Plants, http://www.nei.org/resourcesandstats/nuclear_statistics/usnuclearpowerplants (last visited Aug. 17, 2011); Nuclear Energy Institute, Top 10 Nuclear Generating Countries (2008), http://www.nei.org/resourcesandstats/documentlibrary/reliableandaffordableenergy/graphicsandcharts/top10nucleargeneratingcountries/ (last visited Aug. 17, 2011).

8 *See* Duke Power Co. v. Carolina Envtl. Study Group, 438 U.S. 59, 63 (1978) (stating that in its infancy, "profits from the private exploitation of atomic energy were uncertain and the accompanying risks substantial"); Sanford Berg et al., *(When) To Build Or Not To Build?: The Role of Uncertainty in Nuclear Power Expansion,* 3 TEX. J. OIL, GAS & ENERGY L. 174, 180 (2008) ("Nuclear power projects face uncertainties and associated financial risks in the overall business climate during both construction and commercial operation").

9 *See* STEVEN MARK COHN, TOO CHEAP TO METER: AN ECONOMIC AND PHILOSOPHICAL ANALYSIS OF THE NUCLEAR DREAM 75–83 (1997); Donald N. Zillman, *Nuclear Power,* ENERGY LAW AND POLICY FOR THE 21ST CENTURY 10-15 (The Energy Law Group et al. eds., 2000); *Nuclear Dawn*, THE ECONOMIST, Sept. 8, 2007, at 25.

10 *See* Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1171 (D.C. Cir. 1992); *see also Nuclear Dawn, supra* note 9, at 25.

11 *See Nuclear Power: The Shape of Things to Come?*, THE ECONOMIST, July 7, 2005 at 58 (noting that the nuclear industry's history of cost overruns is currently preventing the financing of new nuclear construction).

12 *Nuclear Power: Atomic Renaissance*, THE ECONOMIST, Sept. 6, 2007, at 73.

13 *Id.*

14 DEUTCH ET AL., *supra* note 5, at 5.

15 Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Reactors, 54 Fed. Reg. 15,372 (April 18, 1989) (to be codified at 10 C.F.R. pts. 2, 50, 51, 52, and 170).

16 10 C.F.R. §§ 52.15, 52.1(a) & 52.71 (2010).

17 *Id.* § 2(L).

ment of Energy's (DOE) Nuclear Power 2010 program (NP 2010) seeks to demonstrate the effectiveness of this new licensing system by sharing costs with the first few developers to apply for one of these new licenses.[18] Finally, the Energy Policy Act of 2005 (2005 EPACT) provides incentives for new nuclear construction. The 2005 EPACT gives developers production tax credits for new nuclear capacity that enters operation before 2021, provides some standby insurance to developers for certain delays in construction, and guarantees loans to help developers obtain financing for construction.[19] The goal of these incentives is to jumpstart nuclear development by subsidizing the first few reactors built.[20] Gains in experience, it is hoped, will reduce the cost for subsequent reactors to cause nuclear power to become economical without subsidies.[21]

To a certain extent, these three measures have proven successful in spurring interest in new nuclear construction among developers.[22] Since 2007, the NRC has received seventeen COL applications for twenty-six reactors.[23] The NRC has granted four ESPs and four Standard Design Certifications.[24] The NRC has another seven Standard Design Certifications under review.[25]

Still, new U.S. nuclear construction faces serious impediments. The remainder of this note will evaluate the viability of the above-mentioned U.S. measures to promote new nuclear construction. First, this note will outline the three types of uncertainty that affect nuclear construction along with ways in which developers can mitigate these types of uncertainties. Second, it will explain the factors currently causing uncertainty for nuclear developers and attempt to classify the types of uncertainty that these factors have caused. Third, this note will lay out in more detail the measures the federal government has taken in recent years to promote new nuclear development. Fourth, it will attempt to evaluate how effectively these measures address the causes of uncertainty hindering nuclear development. And fifth, this note will provide suggestions on how to improve the effectiveness of the U.S. government's promotion of new nuclear construction.

18 U.S. Dep't of Energy Office of Nuclear Energy, Program Activities for the Deployment of Nuclear Power, http://www.ne.doe.gov/np2010/activities.html (last visited Aug. 17, 2011).

19 26 U.S.C.A. § 45J (West 2010); 42 U.S.C.A. §§ 16014 &16513 (West 2010).

20 KEYSTONE CENTER, NUCLEAR POWER JOINT FACT-FINDING 34 (June 2007), http://keystone.org/files/file/about/publications/FinalReport_NuclearFactFinding6_2007.pdf.

21 ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2009 72 (March 2009), http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2009).pdf.

22 NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY, *supra* note 1, at 7.

23 U.S. Nuclear Regulatory Comm'n, Combined License Applications for New Reactors, http://www.nrc.gov/reactors/new-reactors/col.html (last visited Aug. 17, 2011).

24 *See* U.S. Nuclear Regulatory Comm'n, Early Site Permit Applications for New Reactors, http://www.nrc.gov/reactors/new-reactors/esp.html (last visited Aug. 17, 2011); U.S. Nuclear Regulatory Comm'n, Design Certification Applications for New Reactors, http://www.nrc.gov/reactors/new-reactors/design-cert.html (last visited Aug. 17, 2011).

25 *Id.*

II. Three Types of Uncertainty Affecting Nuclear Construction

When deciding whether to build a nuclear power plant, developers face three kinds of uncertainty: technical uncertainty, input-cost uncertainty, and post-construction operating and revenue uncertainty.[26] Developers can mitigate these uncertainties to varying degrees.[27]

A. Technical Uncertainty

Technical uncertainty relates to the amount of time, effort, and materials needed to complete a project if the costs of inputs are known.[28] An example of technical uncertainty is when a developer chooses to build a plant with an advanced design.[29] In such a situation, the developer might not know the amount of time, effort, or materials necessary to bring the advanced design to commercial operation.[30] To mitigate technical uncertainty, a developer may begin construction of a plant, gathering information about these unknowns as construction progresses.[31] If information gathered during construction reveals that it would be uneconomical to complete construction, the developer can abandon the plant to avoid incurring further costs.[32]

B. Input-Cost Uncertainty

Input-cost uncertainty, on the other hand, relates to the costs of land, labor, and materials needed to complete a project if the amount of time, effort, and materials are known.[33] Input-cost uncertainty comes into play especially when costs associated with materials, labor, or regulations change over the time of construction, as is most often the case.[34] While developers can partially mitigate technical uncertainty by stopping construction when the amount of time, effort, or materials needed for completion becomes uneconomical, mitigation of input-cost uncertainty for the most part remains beyond developers' control.[35] The fundamental difference between input-cost uncertainty and technical uncertainty is that input costs may change regardless of whether

26 Berg et al., *supra* note 8, at 181–86.
27 *Id.*
28 *Id.* at 181.
29 *Id.*
30 *Id.*
31 *Id.*
32 Berg et al., *supra* note 8, at 181.
33 *Id.*
34 *Id.* Exasperating the tendency of inputs to fluctuate over time are the long construction times, both historical and projected, for a nuclear power plant. For the last reactors completed in the United States, a construction time of over twenty years was not unheard of. *See Nuclear Power: Atomic Renaissance, supra* note 12, at 73. The projected construction times range from five to seven years, although the whole process including licensing may take anywhere from fifteen to twenty years. Larry Parker & Mark Holt, Cong. Research Serv., RL33442, Nuclear Power: Outlook For New U.S. Reactors 8 (Mar. 9, 2007), *available at* http://www.fas.org/sgp/crs/misc/RL33442.pdf.
35 Berg et al., *supra* note 8, at 182.

a developer decides to proceed with construction.[36] One way to mitigate input-cost uncertainty is to delay construction.[37] By delaying the commencement of construction, a developer can gather more information as the cost of materials and regulations evolve.[38]

C. Post-Construction Operating and Revenue Uncertainty

Post-construction operating and revenue uncertainty is related to the operating environment and projected revenue to be generated from commercial operation of the facility.[39] The operating environment determines the revenue to be generated, which determines the developer's ability to recoup its initial capital investment.[40] An example of post-construction operating and revenue uncertainty is the price of uranium, which varies over the course of a nuclear power plant's commercial operation.[41] Other causes of post-construction operating and revenue uncertainty include changes in electricity demand, changes in the prices of competing coal and gas technologies, changes in federal and state pricing regulations, taxes, and subsidies, and indecision regarding the treatment of nuclear waste.[42] Developers can mitigate this type of uncertainty by entering into long-term contracts with suppliers and customers before construction.[43] Other causes of operating and revenue uncertainty are more difficult to mitigate. For instance, developers do not have any control over the costs of rival fuels and technologies or over future state and federal polices.[44] Faced with this uncertainty, a developer, as with input-cost uncertainty, might delay beginning construction to gain more information as conditions evolve.[45]

D. Conclusion on Types of Uncertainties

A conclusion one might draw from this section's discussion is that governments might best encourage new nuclear construction by limiting the types of uncertainty that cause developers to delay construction. As noted above, the types of uncertainty that cause developers to delay construction are input-cost uncertainty and post-construction operating and revenue uncertainty.

III. Causes of Uncertainty in U.S. Nuclear Construction

Currently, substantial risk and uncertainty affect the ability and lengths of time actually required to license and build a nuclear power plant. This risk and uncertainty make it difficult to control the financial and material costs of building nuclear

36 *Id.*
37 *Id.* at 186–87.
38 *Id.*
39 *Id.* at 183.
40 *Id.* at 185.
41 Berg et al., *supra* note 8, at 185.
42 *Id.*
43 *Id.* at 185–86.
44 *Id.* at 186.
45 *Id.* at 186–87.

power plants, and raise the rates of return investors require to commit capital to build them.[46]

Presently a number of factors create uncertainty for developers and hinder new nuclear construction. This section will discuss four of these factors: the history of cost overruns in U.S. nuclear construction (caused by public disillusionment with nuclear power and defects in the licensing process), nuclear power's lack of competitiveness with rival technologies, the increasing costs of materials, labor, and capital needed for nuclear construction, and the absence of recent U.S. nuclear construction on which to base cost projections. Through the course of this discussion, the uncertainty caused by each factor will also be classified according to the three types of uncertainty outlined in the preceding section.

A. A History of Cost Overruns in U.S. Nuclear Construction

One major factor currently causing uncertainty to developers is U.S. nuclear construction's history of cost overruns and delays.[47] Early on, government subsidies and a smooth licensing process (the latter caused by favorable regulation and widespread public support) helped foster the nuclear power industry by reducing various kinds of uncertainty.[48] After the 1970s, however, growing public disillusionment with nuclear power and defects in the licensing process led to cost overruns and delays in nuclear construction.[49] Further exacerbating problems in the 1970s and 1980s was the loss or diminishment of nuclear subsidies that helped foster the industry in its infancy.[50] Because uncertainties in the licensing process and public opinion have yet to be fully resolved, the history of U.S. nuclear power development continues to hinder new nuclear construction.

1. The Rise of Nuclear Power in the United States

From the 1950s until the early-1970s, nuclear power benefited from a stable policy environment in the United States.[51] U.S. nuclear development began with the Atomic Energy Act of 1946.[52] At the time, Congress envisioned the industry as a government monopoly, with the federal government controlling the production, ownership, and use of fissionable materials.[53] To carry out these functions, the act created the Atomic Energy Commission (AEC) with the dual mandate to promote and to regulate nuclear power.[54]

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46 Nuclear Energy: Policies and Technology for the 21st Century, *supra* note 1, at 1.

47 *See Nuclear Power: The Shape of Things to Come?*, *supra* note 11, at 58.

48 *See* Cohn, *supra* note 9, at 75–83; Zillman, *supra* note 9, at 10-15; *Nuclear Dawn*, *supra* note 9, at 25.

49 *See* Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1171 (D.C. Cir. 1992); Cohn, *supra* note 9, at 127–135; *Nuclear Dawn, supra* note 9, at 25.

50 Cohn, *supra* note 9, at 82–83.

51 Nuclear Energy: Policies and Technology for the 21st Century, *supra* note 1, at 13.

52 Zillman, *supra* note 9, at 10-7.

53 *Id.* at 10-9.

54 *Id.*

Congress changed its mind about the appropriateness of a government monopoly over nuclear power with the Atomic Energy Act of 1954, which opened the industry to private developers.[55] While the federal government retained ownership over nuclear fuel production facilities and over nuclear fuel itself, the AEC could license private nuclear facilities and their use of nuclear fuel.[56]

Despite Congress's authorization, the technology's uncertain profits and enormous risks still represented an obstacle to private developers.[57] To overcome this obstacle, the United States subsidized nuclear development both explicitly and implicitly. The Price-Anderson Act, which limited developers' liability for nuclear accidents, was one of the most important of these subsidies.[58] In 1957, the AEC projected that a worst-case scenario nuclear accident would generate liabilities of around five to seven billion dollars.[59] In contrast, insurance companies were only willing to provide $60-million worth of coverage per plant.[60] Thus, the potential liability for a nuclear accident far exceeded developers' ability to repay, creating uncertainty that stalled nuclear development.[61] In 1957, the Price-Anderson Act alleviated this post-construction operating uncertainty by putting a $560-million liability cap on nuclear accidents.[62] Furthermore, developers and the government agreed to split the remaining liability.[63] Developers would put up the first $60 million (the maximum coverage insurance companies were willing to provide) and public funds would account for the remaining $500 million.[64] Private developers thus benefited from having liability capped at a comparatively low $560 million, as well as having the government account for most of their potential liability.[65] From 1957 to 1988, the Price-Anderson Act amounted to a subsidy rate of around $77 million per plant per year.[66] Without such a liability cap, a U.S. nuclear power industry might not exist much less be available to resurrect.[67]

Fuel and enrichment subsidies comprised another part of the United States' subsidization of the infant nuclear power industry.[68] Prior to 1964, all uranium sales had to be made through the AEC.[69] Using this power, the AEC undercharged utilities for the licensing of nuclear fuel and over-compensated them for plutonium buybacks.[70] This fuel subsidy reduced operating and revenue uncertainty by reducing fears of supply

55 *Id.* at 10-9–10-10.
56 *Id.* at 10-12.
57 Duke Power Co. v. Carolina Envtl. Study Group, 438 U.S. 59, 63 (1978).
58 COHN, *supra* note 9, at 79.
59 *Id.* at 341 n.30.
60 Id.
61 *Duke Power Co.*, 438 U.S. at 63.
62 *See* 42 U.S.C. § 2210 (2010); *see also* COHN, *supra* note 9, at 79; Michael G. Faure & Tom Vanden Borre, *Compensating Nuclear Damage: A Comparative Economic Analysis of the U.S. and International Liability Schemes*, 33 WM. & MARY ENVTL. L. & POL'Y REV. 219, 240 (2008).
63 Faure & Vanden Borre, *supra* note 62, at 240.
64 *Id.* at 241.
65 *Id.*
66 COHN, *supra* note 9, at 79.
67 *Id.* at 79–80.
68 *Id.* at 75, 78.
69 *Id.* at 75.
70 *Id.* at 75, 78.

bottlenecks.[71] Enrichment subsidies functioned in a manner similar to fuel subsidies. The connection between uranium enrichment and nuclear weapons proliferation led all enrichment facilities to be government-owned.[72] These facilities sold enrichment supplies at below-market prices and guaranteed their availability to utilities.[73] Moreover, at the end of their operating life, the government assumed responsibility for the cost of decommissioning these enrichment facilities.[74] Like fuel subsidies, enrichment subsidies reduced nuclear developers' operating and revenue uncertainty. Altogether, fuel and enrichment subsidies were estimated at $2 million/kWh from 1954 to 1975.[75]

The United States also used tax subsidies to foster its nuclear power industry. Accelerated depreciation, shortened book-lives, investment tax credits, and tax-exempt control bonds numbered among such subsidies.[76] From 1954 to 1975, they gave nuclear power a $1 million/kWh tax advantage over coal.[77] From 1950 to 1990, tax subsidies decreased plant capital costs by $26 billion in 1990 dollars.[78]

In addition, the United States subsidized regulatory costs of the new industry.[79] Nuclear development brought with it health and national-security concerns that demanded significant regulatory expense.[80] Until 1974, regulatory operating subsidies averaged $2 million/kWh, and regulatory development subsidies figured around $1.25 billion.[81] Through 1990, these subsidies totaled around $9 billion.[82] Regulatory subsidies seemed to have reduced developers' input cost uncertainty.

In addition to subsidies, the nuclear power industry's growth from 1950 to the 1970s was indebted to a relatively smooth licensing process.[83] In the industry's early years, nuclear regulation was facilitative and simple.[84] Regulatory aids to the industry included "pro-nuclear utility pricing and accounting procedures, sympathetic anti-trust review, infant industry regulation of nuclear power's negative externalities, and the general exercise of public authority to promote nuclear expansion."[85] Like the subsidization of regulatory costs, these aids helped to reduce the input cost uncertainty associated with nuclear regulation.[86]

It is important, however, not to forget the role public opinion played in the industry's early growth. The most important factor behind the smooth licensing process from 1954 to 1970 might well have been the technology's widespread popular sup-

71 *Id.* at 78.
72 COHN, *supra* note 9, at 78.
73 *Id.*
74 *Id.*
75 *Id.*
76 *Id.* at 75–83.
77 *Id.* at 79.
78 COHN, *supra* note 9, at 79.
79 *Id.* at 78.
80 *Id.*
81 *Id.*
82 *Id.*
83 *See* Zillman, *supra* note 9, at 10-15.
84 COHN, *supra* note 9, at 83.
85 *Id.*
86 *Id.*

port.[87] During the 1950s, government officials promised the American public that nuclear power would produce enormous amounts of energy at rates "too cheap to meter."[88] Even though the Atomic Energy Act of 1954 gave an opportunity to contest nuclear license applications, the American public generally ignored licensing activities during the industry's first two decades.[89] The public contested only three out of sixteen applications for construction permits in the period 1962 to 1966 and only twenty-four out seventy-four applications in the period 1966 to 1970.[90]

As can be seen, during the 1950s and 1960s a combination of government subsidies and a smooth licensing process (the latter caused by favorable government regulation and widespread public support) reduced uncertainty to developers and led to a surge in new nuclear construction.[91] The AEC believed nuclear power to be so successful at the end of the 1960s that over 1,000 reactors would be operating in the United States by the year 2000.[92]

2. The Decline of Nuclear Power in the United States

After the 1970s, however, the U.S. nuclear power industry entered a precipitous decline, in large part due to defects in the licensing system and growing public disillusionment with the industry.[93] Both of these factors led to cost overruns and delays in construction.[94] While contested license applications were infrequent during the 1960s, they rarely went uncontested after 1970.[95] Underneath these much more frequent contested applications lay a growing public disillusionment with nuclear power.

One cause of this disillusionment was concern about nuclear power's potential impact upon health, safety, and the environment.[96] Safety concerns focused on the continued uncertainty about radioactive-waste disposal and on the potential consequences of a nuclear accident.[97] Actual nuclear accidents in the 1970s and 1980s, particularly those at Browns Ferry, Three Mile Island, and Chernobyl, did little to reassure the public.[98] In contrast, environmental concerns often focused on waste heat, nuclear plant sites marring scenic areas, and fish deaths around water-intake structures used for plant cooling.[99]

A second cause of disillusionment was diminished trust in government in general and in the government's relationship with the nuclear power industry in particular.[100] From its inception, the AEC had carried out its dual mandate of regulating the

87 *See* Zillman, *supra* note 9, at 10-15; *Nuclear Dawn*, *supra* note 9, at 25.
88 *Nuclear Dawn*, *supra* note 9, at 25.
89 *See* ATOMIC ENERGY ACT OF 1954 § 189(a); Zillman, *supra* note 9, at 10-15.
90 Zillman, *supra* note 9, at 10-15.
91 *See* COHN, *supra* note 9, at 75–86.
92 PARKER & HOLT, *supra* note 34, at 6.
93 *See* Zillman, supra note 9, at 10-15–10-16.
94 *See* COHN, *supra* note 9, at 85–86.
95 Zillman, *supra* note 9, at 10-15.
96 COHN, *supra* note 9, at 132–33; *Nuclear Dawn*, *supra* note 9, at 25.
97 *Nuclear Dawn*, *supra* note 9, at 25.
98 KEYSTONE CENTER, *supra* note 20, at 31; *Nuclear Dawn*, *supra* note 9, at 25.
99 COHN, *supra* note 9, at 133.
100 *Id.* at 134–35.

nuclear power industry at the same time that it sought to promote it.[101] Beginning in the 1970s, many began to question whether this dual mandate bred a conflict of interests in the AEC that sacrificed public safety in favor of the nuclear industry's well-being.[102]

In 1974, Congress sought to resolve this question with the Energy Reorganization Act.[103] With this act, Congress abolished the AEC, divvying its promotional and regulatory functions between two independent agencies.[104] From then on, the newly formed NRC would regulate, while the Energy Research and Development Administration (later absorbed into the DOE) would promote the industry.[105] But concerns about potential conflicts of interest in the NRC's regulation of the industry persisted.

In part, such concerns persisted due to the potential for abuse created by the other factor behind the industry's cost overruns: defects in the licensing system. While the licensing process ran smoothly enough during the 1950s and 1960s, regulatory simplicity had little to do with it. Until 1989, the AEC (after 1974, the NRC) had a two-part licensing process for nuclear power plants.[106] First, a developer applied for a construction permit.[107] During the construction permit phase, the NRC had to determine the acceptability of the proposed site and preliminary designs, which required a public hearing.[108] The NRC would allow construction to progress, however, without complete design information.[109] After finishing construction, the developer applied for an operating license.[110] To grant an operating license, the NRC had to approve the reactor's final design, requiring another public hearing.[111] Only when the NRC granted the operating license would it make a final safety determination for the plant.[112]

This licensing process led to two problems. First, it raised public concerns about whether the NRC had an incentive to overlook safety flaws when deciding to grant an operating license.[113] Delaying a final safety determination until after construction put an enormous amount of risk on developers.[114] The risk that the NRC would find a plant unsafe after the developer had sunk vast sums of money into the project might have given rise to input-cost uncertainty, which would lead developers to delay new construction. Considering the effects of this uncertainty, the NRC may have been more lenient in its final safety determinations, so as to avoid responsibility for causing

101 Richard Goldsmith, *Regulatory Reform and the Revival of Nuclear Power*, 20 HOFSTRA L. REV. 159, 170 (1991).

102 *Id.*

103 NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY, *supra* note 1, at 12; *see also* 42 U.S.C. § 5801 (2010).

104 NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY, *supra* note 1, at 12.

105 *Id.*

106 Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1170 (D.C. Cir. 1992).

107 *Id.* at 1171.

108 *Id.*

109 *Id.*

110 *Id.*

111 *Id.*

112 *Nuclear Info. Res. Serv.*, 969 F.2d at 1170.

113 Power Reactor Dev. Co. v. United States, 367 U.S. 396, 417 (1961) (Douglas, J., dissenting).

114 *Id.*

a "white elephant."[115] Thus, concerns of regulatory leniency caused public distrust of U.S. nuclear regulation.[116]

In addition, new regulatory requirements became necessary as construction progressed because the NRC allowed developers to begin construction with incomplete design information.[117] This process resulted in a "design-as-you-go" and "regulate-as-you-go" culture in nuclear licensing and construction.[118] The effect of this culture was that every reactor built in the United States was one-of-a-kind, which increased the difficulty and cost of ascertaining the safety of a plant.[119] This resulting lack of a standardized design also prevented regulators from identifying particular safety problems and applying the solutions from one reactor to others, further increasing the time and cost of construction.[120]

The loss or diminishment of nuclear subsidies in the 1970s and 1980s only exacerbated the industry's problems.[121] The history of the Price-Anderson Act after 1957 illustrates this decline in subsidies. A 1975 amendment to the Price-Anderson Act diverted public funds from the set liability amount.[122] From then on, industry-wide retrospective premiums took the place of public funds.[123] When damage from a nuclear accident surpassed a plant's individual liability coverage of $60 million, the excess liability was taken out of a pool of retrospective premiums into which each plant paid.[124] By 1982, the liability scheme under the Price-Anderson Act was completely privately funded.[125] By eliminating public funds from liability coverage under the Price-Anderson Act, the United States greatly reduced a major subsidy to the nuclear power industry.[126] Successive increases in the liability cap, reaching $7 billion in 1988 and $11 billion in 2005, further reduced the value of the Price-Anderson subsidy.[127] For example, the increase in the cap in 1988 alone reduced Price-Anderson subsidies by fifty percent.[128] The increase in potential liability, in turn, increased post-construc-

115 *Id.* ("[W]hen millions have been invested, the momentum is on the side of the applicant, not on the side of the public. The momentum is not only generated by the desire to salvage and investment. No agency wants to be the architect of 'white elephant.'); Goldsmith, *supra* note 101, at 168 ("Nuclear power plants have cost billions . . . to construct and the annals of the commission are filled with example of decisions to issue operating licenses that seem more concerned with relieving a utility of the crushing financial burden of an unproductive billion dollar 'white elephant' than with safety").

116 Goldsmith, *supra* note 101, at 169.

117 *Nuclear Info. Res. Serv.,* 969 F.2d at 1170.

118 *Id.*

119 *Id.* at 1171.

120 *Id.*

121 COHN, *supra* note 9, at 82-83.

122 Faure & Vanden Borre, *supra* note 62, at 243.

123 *Id.*

124 *Id.*

125 *Id.*

126 *Id.* at 267 (By continuing to have a cap on liability, however, the Price-Anderson Act continues to subsidize the nuclear power industry).

127 *See* COHN, *supra* note 9, at 79; *see also* Faure & Vanden Borre, *supra* note 62, at 244.

128 COHN, *supra* note 9, at 82.

tion operating and revenue uncertainty to developers.[129] By no means was the diminishment in the Price-Anderson subsidy isolated. Other nuclear subsidies were affected as well. For instance, the Carter administration reduced enrichment subsidies, thereby increasing post-construction operating and revenue uncertainties to developers.[130] Another example: Since 1990, the NRC has been required to recover all regulatory costs from licensees, thereby ending the NRC regulatory subsidy and increasing input cost uncertainty to developers.[131]

A nightmare scenario of how these factors could lead to cost overruns in nuclear construction is that of New York's Shoreham Nuclear Plant. Construction began in 1973, and the plant was eventually completed.[132] Public opposition, however, prevented the plant from ever entering commercial operation and it was eventually decommissioned in 1994.[133] The plant's cost mushroomed from $70 million in 1973 to $6 billion in 1994.[134]

Thus, public disillusionment, defects in the licensing system, and a decrease in subsidies caused nuclear development to stall by the late 1970s. All of these factors represented increased input-cost and post-construction operating and revenue uncertainties to developers.[135] These types of uncertainty caused developers to delay beginning new nuclear construction.[136] As a result, the last application for a construction permit in the twentieth century was filed in 1978.[137] Since 1970, more than one hundred previously ordered nuclear power plants were canceled, including all of those ordered after 1973.[138]

Uncertainties over the licensing system and public support remain. Even after the NRC's streamlining of its licensing process, "no one knows whether companies actually will save time and money."[139] Moreover, polls differ about the degree to which the public supports new nuclear construction. According to a 2009 Gallup poll, fifty-nine percent of the American public favors nuclear power.[140] Polls in recent years, however, also show that the American public is less amenable to nuclear construction in the area in which they live. Another Gallup poll from 2005 showed that while at

129 *See id.*

130 *Id.*

131 *Id.* at 76.

132 *Nuclear Power: Atomic Renaissance*, *supra* note 12, at 73.

133 *See id.*

134 *Id.*

135 *See* Berg et al., *supra* note 8, at 182.

136 *See id.* at 183 ("[I]nput cost uncertainty (including changing regulatory requirement) likely had the greatest impact on the financial feasibility of nuclear plant construction in the 1980s. Thus, even though technical uncertainty influenced nuclear plant cancellations, the role of input costs appears to have been even more important, leading to decisions to delay further nuclear investments. [These] findings are consistent with the casual observation that no plants have been ordered since the 1970s (potential developers are waiting) . . . ").

137 *See* Mark Holt, Cong. Research Serv., RL33558, Nuclear Energy Policy 6 (Oct. 21, 2010), *available at* http://www.fas.org/sgp/crs/misc/RL33558.pdf.

138 *Id.*

139 Berg et al., *supra* note 8, at 210.

140 Jeffrey Jones, *Support for Nuclear Power Inches Up to New High*, Gallup, Mar. 20, 2009, http://www.gallup.com/poll/117025/support-nuclear-energy-inches-new-high.aspx.

the time fifty-four percent favored nuclear power, only thirty-five percent favored the construction of a nuclear plant in their area.[141] Because problems with public support and with the licensing process could still lead to delays and cost overruns today, developers may be wary of beginning new development. A repeat of history could still be in the offing.

B. Lack of Competitiveness With Rival Technologies

Another serious obstacle to nuclear development is that without government subsidies, new nuclear power plants will not be competitive with coal and natural gas power plants.[142] Historically, nuclear power has been characterized as having higher capital costs, but lower operating costs, than coal or natural gas power. The projections in the 2009 Update of the MIT 2003 Future of Nuclear Power bear out this characterization.[143] This study estimates the overhead cost of building a new nuclear power plant in the United States to be $4,000/kW compared to $2,300/kW for a coal plant and $850/kW for a natural gas plant in 2007 dollars.[144] This amount falls somewhere in the middle of other recent projections.[145] Projected nuclear construction costs are highly conjectural, as are estimates of nuclear power's competitiveness with coal and natural gas.[146] Still, projected costs of nuclear construction ranged anywhere from $2,000/kW to $6,000/kW in 2008, with the perceived tendency that these projections will rise over time.[147]

The 2009 MIT study sets operating costs for nuclear at $.67/mmBtu compared to $2.60/mmBtu for coal and $7.00mm/Btu for natural gas.[148] The overall cost for nuclear power, however, would be 8.4¢/kWh compared to 6.2¢/kWh for coal and 6.5¢/kWh for natural gas.[149] Given this last set of figures, nuclear power's lack of competitiveness with coal and natural gas represents a post-construction operating and revenue uncertainty to nuclear developers.[150]

C. Increasing Costs of Materials, Labor, and Capital

The rising projected costs of nuclear construction in the United States may also be related to rising costs for materials, labor, and capital. From 2000 to 2008, the cost of building any type of new plant more than doubled.[151] Among the factors behind this

141 Darren K. Carlson, *Public Warm to Nuclear Power, Cool to Nearby Plants*, GALLUP, May 3, 2005, http://www.gallup.com/poll/16111/Public-Warm-Nuclear-Power-Cool-Nearby-Plants.aspx.

142 *See* DEUTCH ET AL., *supra* note 5, at 6; *Nuclear Power: The Shape of Things to Come?*, *supra* note 11, at 58 ("Taking into account the uncertainties, most studies done on nuclear economics . . . conclude that new plants built by the private sector, with investors bearing the full brunt of risks, are not economic without subsidy").

143 DEUTCH ET AL., *supra* note 5, at 6.

144 *Id.*

145 Ronald M. Frye, Jr., *The Current "Nuclear Renaissance" in the United States, Its Underlying Reasons, and Its Potential Pitfalls*, 29 ENERGY L. J. 279, 320 (2008).

146 *Id.*

147 *Id.* at 312, 316–320.

148 DEUTCH ET AL., *supra* note 5, at 6.

149 *Id.*

150 *See* Berg et al., *supra* note 8, at 185–86.

151 ENERGY INFO. ADMIN., *supra* note 21, at 44.

increase: high international demand for generating equipment, rising labor costs, and rising costs for construction materials (cement, steel, and copper).[152]

The costs associated with nuclear construction, however, are increasing at a faster rate than construction costs for its fossil fuel rivals.[153] From 2003 to 2008, the projected cost of nuclear power plant construction increased at a rate of fifteen percent a year.[154] In part, the greater increase in costs for nuclear construction reflects the atrophy of the industry in the United States over the last few decades.[155] For instance, two decades ago the American Society of Mechanical Engineers (ASME) licensed 400 nuclear suppliers and 900 sub-suppliers in the United States; as of 2011, ASME license only eighty suppliers and 200 sub-suppliers.[156] Moreover, world-wide forging supply of reactor components is limited.[157] Today, only two companies are qualified to supply heavy forgings needed for nuclear construction: Japan Steel Works and Creusot Forge, and only Japan Steel Works can manufacture ultra-heavy forgings.[158] The limited supply of ultra-heavy forgings alone could double or triple nuclear construction costs.[159] In addition, the lack of skilled labor for nuclear construction could prolong construction times and increase costs.[160]

Further increasing costs of nuclear construction is the cost of capital. Technical uncertainty, input-cost uncertainty, and operating and revenue uncertainty associated with nuclear power combine to increase the cost of capital in financing nuclear construction.[161] For instance, Standard & Poor argued in 2005 that "[t]he industry's legacy of cost growth, technological problems, and cumbersome political and regulatory oversight and the newer risks brought about by competition . . . may have kept the credit risk too high for even [federal legislation providing loan guarantees] to overcome."[162]

D. Absence of Recent Nuclear Construction in the United States

As noted above, the history of nuclear power has led to a fourth factor causing uncertainty to developers: the fact that it has been over a decade since the last nuclear power was constructed to completion in the United States.[163] Current projections of the cost for new construction in the United States rely on the costs of recent foreign builds.[164] Differences in regulation, access to alternative technologies, and public acceptance between the United States and these foreign countries render the accuracy of

152 *Id.*
153 Deutch et al., *supra* note 5, at 6.
154 *Id.*
155 *See* Keystone Center, *supra* note 20, at 34–35.
156 *Id.* at 35.
157 *Id.*
158 *Id.*
159 Frye, *supra* note 145, at 308.
160 Keystone Center, *supra* note 20, at 35.
161 *Id.* at 35, 44 ("[H]igher investor risk will translate into higher overall cost of capital").
162 *Nuclear Power: The Shape of Things to Come?, supra* note 11, at 58.
163 Keystone Center, *supra* note 20, at 31.
164 *Id.* at 32.

projections based on foreign builds uncertain.[165] Because the amounts of time, effort, and materials needed to build a new nuclear plant in the United States are unclear, the lack of recent U.S. nuclear construction represents a technical uncertainty to developers.[166]

E. Conclusion

Uncertainties caused by the history of U.S. nuclear construction and by the rising cost of materials, labor, and capital may be categorized as input-cost uncertainties to developers. On the other hand, uncertainty caused by the high cost of nuclear power relative to coal and natural gas may be characterized as post-construction operating and revenue uncertainty. Finally, uncertainty caused by the lack of new construction in the United States may be characterized as technical uncertainty. As discussed above, developers can mitigate technical uncertainty by beginning construction and stopping if it becomes clear that the amount of time, effort, and materials needed to complete the plant would make it uneconomical to continue. Developers mitigate most kinds of input-cost and post-construction operating and revenue uncertainty by waiting to see how the factors causing these types of uncertainty evolve. Therefore, to promote new nuclear construction, the United States must take measures to reduce the types of uncertainty that cause developers to wait.

IV. Measures Taken by the United States to Promote New Nuclear Construction

Since at least 1989, the United States has attempted to resurrect its nuclear power industry.[167] Initially such efforts focused on regulatory reforms, seeking to reduce the possibility of delays that plagued the industry in the 1970s and 1980s.[168] Recently, Congress joined the cause by adding incentives for new development.[169] While these incentives have led to a jump in license applications, it remains unclear how much new construction will result.

A. Reforms at the NRC

For many years, both the NRC and the nuclear industry as a whole sought to "modify the process for licensing new nuclear plants."[170] The industry contended that no electric utility would consider nuclear "unless licensing became quicker and more predictable, and designs were less subject to mid-construction safety-related changes required by [the] NRC."[171] After the decline of the U.S. nuclear industry in the 1970s and 1980s, developers claimed that the NRC's licensing process was "the reason for 'the loss of the nuclear option', and that reform of the process [was] the 'sine qua

165 *Id.* at 33.

166 *See* NUCLEAR ENERGY: POLICIES AND TECHNOLOGY FOR THE 21ST CENTURY, *supra* note 1, at 1; *see also* Berg et al., *supra* note 8, at 207.

167 *See infra* text accompanying notes 170–207.

168 *Id.*

169 *See infra* text accompanying notes 220–260.

170 HOLT, *supra* note 137, at 23.

171 *Id.*

non' of the viability of that option."[172] In 1989, to meet this perceived need, the NRC revised its licensing regulations by adding 10 C.F.R. Part 52.[173] This streamlined set of regulations was aimed in part to eliminate the "design-as-you-go," "regulate-as-you-go" culture in nuclear construction that led to cost overruns in the 1970s and 1980s.[174] The NRC sought to standardize plant designs and to resolve plant safety issues as early in the process as possible.[175] The agency sought to accomplish this goal through the creation of three permits.[176] In addition, the NRC reduced its level of formality in licensing hearings to reduce costs.[177]

1. Early Site Permit

First, the NRC created an Early Site Permit (ESP).[178] A developer may apply for an ESP before applying for a Construction and Operating License (COL).[179] An ESP allows a developer to "resolve[] site safety, environmental protection, and emergency preparedness issues independent of a specific nuclear plant design."[180] An application for an ESP must address the site's physical, safety, and environmental characteristics.[181] These characteristics include the site's boundaries, seismic, meteorological, hydraulic, and geologic data, the existing and future population around the site area, an evaluation of alternative sites, the type of plant cooling system to be used, the radiation dose consequences of hypothetical accidents, and plans for coping with emergencies.[182] After the NRC makes a safety determination on an ESP, it holds a public hearing.[183] An ESP remains good for ten to twenty years.[184] This time period allows the developer to wait and to proceed with development when conditions are right.[185]

172 Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Reactors, *supra* note 15, at 15,372–73.

173 U.S. Nuclear Regulatory Comm'n, Backgrounder on Nuclear Power Plant Licensing Process, http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/licensing-process-bg.html (last visited Aug. 17, 2011). Congress subsequently codified this change in the regulations through the Energy Policy Act of 1992. *See* 42 U.S.C.A. § 2235 (West 2010). Prior to this congressional action, there were doubts as to whether the statute as then written required the old two-part licensing process as well as a full post-construction safety determination. *See* Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1172–73 (D.C. Cir. 1992) (holding that the statute did not require such procedures).

174 *See Nuclear Info. Res. Serv.* 969 F.2d at 1170-1171.

175 *See* Nuclear Power Plant Standardization: Policy Statement, 52 Fed. Reg. 34,884 (Sept. 15, 1987).

176 10 C.F.R. § 52.15 (2010).

177 Keystone Center, *supra* note 20, at 62.

178 10 C.F.R. § 52.15 (2010).

179 *Id.*

180 U.S. Nuclear Regulatory Comm'n, *supra* note 173.

181 10 C.F.R. § 52.17 (2010); Backgrounder on Nuclear Power Plant Licensing, *supra* note 174.

182 Id.

183 U.S. Nuclear Regulatory Comm'n, *supra* note 173.

184 10 C.F.R. § 52.26 (2010).

185 U.S. Nuclear Regulatory Comm'n, *supra* note 173.

2. Standard Design Certification

Second, the NRC allowed for a Standard Design Certification.[186] This certification allows developers to build multiple units from a single design, or "off the shelf."[187] Like the ESP, a developer can apply for a Standard Design Certification prior to an application for a COL.[188] The design-certification process addresses many of the issues that the construction permit and operating license proceedings would have addressed under the prior two-part licensing process.[189] For instance, an application for a design certification must provide a description and analysis of the structures, systems, components, and safety features of the facility, as well as a description of the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) needed to ensure that a facility based on the design has been built according to specifications.[190] Additionally, design-certification application must be detailed enough for the NRC to prepare inspection requirements.[191] The NRC hopes that standardization will create standardized programs of construction practice, quality assurance, and personnel training, improve maintenance and operation, increase safety performance of plants, generate economies of scale in learning and sharing operating experience, and reduce costs of construction.[192]

3. Combined Construction and Operating License

Third, the NRC provided a combined COL as an alternative to the two-part licensing process.[193] A COL functions as a construction permit as well as a conditional operating license.[194] Essentially, a COL requires a developer to provide all the design information before construction that would have been necessary to obtain a construction permit and operating license under the two-part licensing scheme.[195] If the COL references a Standard Design Certification or an ESP, the NRC will deem the issues addressed in those licenses resolved.[196] While a COL requires a greater amount of detail about the plant's final design than was needed for the old construction permit, after construction the NRC will treat every licensing issue as finally resolved except for whether the plant meets ITAAC specifications.[197] The issuance of a COL requires a

186 10 C.F.R. § 52.1(a) (2010).
187 *Id.*
188 *Id.* § 52.45(a).
189 KEYSTONE CENTER, *supra* note 20, at 62.
190 10 C.F.R. §§ 52.47(a)(2), (b)(1) (2010).
191 *Id.* § 52.47.
192 *See* Nuclear Power Plant Standardization: Policy Statement, *supra* note 175, at 38,884. At the same time, the NRC acknowledges that there are some drawbacks to a standardized design. For instance, a problem in a design would affect all reactors that had been built to that design. *Id.* at 38,884–85. The NRC, however, believes that that the benefits of standardization exceed the costs. *Id.* at 38,885.
193 10 C.F.R. §§ 52.71, 52.73 (2010).
194 Nuclear Info. Res. Serv. v. Nuclear Regulatory Comm'n, 969 F.2d 1169, 1172–73 (D.C. Cir. 1992).
195 U.S. Nuclear Regulatory Comm'n, *supra* note 173.
196 *Nuclear Info. Res. Serv.* 969 F.2d at 1171–72.
197 *Id.* at 1172.

public hearing.[198] The NRC may also hold a public hearing after construction, but will consider petitions for such a hearing only if the petitioner demonstrates that the plant fails to meet its ITAAC specifications.[199] A COL remains in effect for forty years and can be renewed for up to twenty years.[200]

4. Ideal Sequence in and Goals of the Streamlined Licensing Process

To obtain the maximum benefit from these streamlined regulations, according to the NRC, a developer should first obtain an ESP and a Standard Design Certification, and then apply for a COL.[201] The NRC envisions developers engaging in a three-step decisionmaking process before making a major investment.[202] First, the developer conducts a "utility level project analysis, including needs assessment, environmental impact analysis, and identification of siting issues."[203] Developers may resolve these issues through an ESP, but are not required to.[204] This step may take anywhere from two to four years.[205] Then, if the developer wishes to proceed, it should submit to the NRC a COL application with the information it gathered in the first step, along with financial data and completed designs.[206] Plant design information may reference a Standard Design Certification, but need not.[207] Only after obtaining a COL must the developer decide whether to go through with construction.[208]

"The nuclear industry and the NRC hope that the new licensing process will help improve the risk profile of new facilities by increasing the certainty that a plant will be built expeditiously and begin operations in a timely manner."[209] As a whole, the streamlined licensing process seeks to reduce the input cost uncertainty caused by the prior two-part licensing process by putting safety determinations as close to the beginning of the process as possible.[210] By doing so, the NRC aims to eliminate the "design as you go" and "regulate as you go" culture prevalent in nuclear construction up to the present, thus counteracting the uncertainty the U.S. nuclear power industry's history of cost overruns creates, itself caused by defects in the licensing process.

198 U.S. Nuclear Regulatory Comm'n, *supra* note 173.

199 *Id.* The NRC argues that the limited opportunity for a public hearing after construction does not prevent the public from participating in the licensing process. Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Reactors, *supra* note 15, at 15,372, 15,374. Rather, the new COL process merely relegates the majority of public participation to the issuance of the ESP, standard design certification, and COL. *Id.*

200 10 C.F.R. §§ 52.104, 52.107, 54.31 (2010).

201 Elaine Hiruo, *Applicants injected uncertainty into licensing process, Jaczko says*, Inside NRC, 2009 WLNR 4002485 (Feb. 16, 2009).

202 Parker & Holt, *supra* note 34, at 10.

203 *Id.*

204 *Id.*

205 *Id.*

206 *Id.*

207 *Id.*

208 Parker & Holt, *supra* note 34, at 11.

209 *Id.*

210 *See* Nuclear Power Plant Standardization: Policy Statement, *supra* note 175, at 34,884; Berg et al., *supra* note 8, at 210.

5. Reduction in Licensing Hearing Formality

In 2004, the NRC also finalized a reduction in the formality of reactor licensing hearings.[211] The previous regulations for reactor licensing hearings allowed traditional discovery devices, motions for summary disposition, and evidentiary hearings at which testimony could be obtained through the parties' direct- and cross-examination of witnesses.[212] The new regulations eliminate traditional discovery, requiring mandatory disclosures concerning expert witnesses, relevant documents, document compilations, and claims of privilege.[213] In addition, the regulations eliminate the opportunity for public and intervener groups to cross-examine witnesses.[214]

The reduction in formality also aids the task of reducing the time and costs of construction by limiting public participation in the licensing process, which had previously stymied nuclear development.[215] Given the role public opposition played in nuclear power's cost overruns in the 1970s and 1980s, a reduction in public participation in the licensing process also seems to be aimed at reducing input cost uncertainty.

B. DOE's Nuclear Power 2010 Program

Even though the NRC streamlined its licensing process in 1989, by the beginning of this century no developer had yet to try the process.[216] While the other causes of uncertainty discussed earlier in this note partly account for this reticence, the new licensing process, being itself untested and unpredictable, also played a role.[217]

In 2002, the DOE began the Nuclear Power 2010 program to reduce the uncertainty inherent in an untested licensing process.[218] The program sought to accomplish this objective by entering into a fifty-fifty cost-sharing agreement with developers to demonstrate how the new licensing process works.[219] By reducing this input-cost uncertainty, the program sought to lower the cost of financing nuclear plants and the eventual cost to consumers of the electricity produced.[220] To date, the program has helped

211 10 C.F.R. § 2 Subpart L (2010). Developers had urged that these changes in hearing formality be made when the NRC streamlined its licensing process in 1989, although the NRC declined to make such changes at that time. Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Reactors, *supra* note 15, at 15,372–73.

212 10 C.F.R. §§ 2.704, 2.705 (2010).

213 *Id.* § 2.1203(d).

214 KEYSTONE CENTER, *supra* note 20, at 63.

215 Opponents of this reduction in formality have primarily challenged the elimination of discovery and the reduction in the availability of cross-examination. Citizens Awareness Network, Inc. v. United States, 391 F.3d 338, 350 (1st Cir. 2004) (upholding the NRC's new rules: "although there might well be less information available to citizen-interveners under the new rules, the difference is one of degree").

216 *See* KEYSTONE CENTER, *supra* note 20, at 31, 62.

217 *Id.* at 43.

218 *See* U.S. DEP'T OF ENERGY OFFICE OF NUCLEAR ENERGY, NUCLEAR POWER 2010 2 (May 2009), http://www.ne.doe.gov/pdfFiles/factSheets/NP2010.pdf.

219 *Id.*

220 *See generally id.*

developers get approval for three ESPs.[221] While the program is currently involved with a COL demonstration project, it has yet to achieve results.[222]

C. Energy Policy Act of 2005

Congress also provided incentives for new nuclear construction with the Energy Policy Act of 2005 (2005 EPACT), which provides three incentives: production tax credits, standby insurance, and loan guarantees.

1. Production Tax Credits

First, 2005 EPACT provides a tax credit of 1.8¢ per kilowatt-hour of electricity produced and sold by an advanced nuclear facility to an unrelated party during the first eight years of the facility's commercial operation.[223] Under the statute, an advanced nuclear facility is any facility that has a reactor design which the NRC approved after December 31, 1993, and that commences commercial operation after the enactment of the statute but before January 1, 2021.[224] 2005 EPACT has an aggregate national megawatt capacity limitation of 6,000 megawatts to be allocated by the Internal Revenue Service (IRS) to each qualifying facility.[225] Each facility's national credit will not exceed the ratio of its national megawatt capacity limitation to its nameplate capacity.[226]

The IRS will allocate national megawatt capacity limitation to a facility if the developer filed a COL application with the NRC before the later of December 31, 2007, or the date on which the aggregate nameplate capacity for those facilities that have filed COL applications with the NRC equals or exceeds 6,000 megawatts.[227] In addition, construction on the facility must begin before January 1, 2014, with construction in this context meaning that the developer has begun pouring safety-related concrete for the reactor building.[228] Finally, the DOE must certify that the facility is an advanced nuclear facility, that the first two requirements are satisfied, and that it is possible for the facility to enter service before January 1, 2021.[229]

Once an advanced nuclear facility qualifies for allocation, the IRS will allocate the national megawatt capacity limitation in one of two ways.[230] If the total nameplate capacity of all qualifying facilities is less than the national megawatt capacity limitation, then each facility will have allocated to it the amount of national megawatt capacity limitation equal to its nameplate capacity.[231] If, however, the total nameplate capacity of all qualifying facilities is greater than the national megawatt capacity limitation,

221 U.S. Dep't of Energy Office of Nuclear Energy, *supra* note 18.
222 *Id.*
223 26 U.S.C.A. § 45J(a) (West 2010).
224 *Id.* § 45J(d).
225 *Id.* § 45J(b)(2), (3).
226 *Id.* § 45J(b)(1).
227 I.R.S. Notice 2006-40, § 3.01(1) (2006).
228 *Id.* § 3.01(2).
229 *Id.* § 3.01(3).
230 *Id.* § 3.03.
231 *Id.* § 3.03(1).

then the limitation will be allocated to the facilities in proportion to their nameplate capacities.[232]

When the IRS has determined those qualifying advanced nuclear facilities and the allocation of the national megawatt capacity limitation, it plans to initiate a three-step process to calculate each facility's annual production tax credit.[233] First, the tentative credit for the taxable year is determined by multiplying 1.8¢ by the kilowatt-hours of qualified electricity produced at and sold by the facility.[234] Second, the facility's credit percentage is determined by one of two methods.[235] If the facility's nameplate capacity is greater than its national megawatt capacity limitation, then the credit percentage equals the national megawatt capacity limitation divided by the nameplate capacity.[236] If the facility's nameplate capacity is less than its national megawatt capacity limitation, then the credit percentage for the facility is one-hundred percent.[237] Third, the credit allowed is the lesser of the tentative tax credit for the facility multiplied by the credit percentage or $125 million per 1000 megawatts of national megawatt capacity limitation allocated to the facility.[238]

Primarily, production tax credits will address post-construction operating and revenue uncertainty by providing a more favorable cash-flow to offset fluctuations in fuel prices and energy demand that occur early in the life of a new nuclear plant.[239] These production tax credits also help mitigate technical uncertainty in the sense that they provide incentives for potential developers of the first few projects.[240] Moreover, the production tax credits help mitigate input cost uncertainty for developers that wait. This benefit is because the developers encouraged by the tax credit to begin construction will reveal information about the workings of the licensing system that would otherwise remain unknown.[241]

2. Standby Insurance

Second, 2005 EPACT authorizes the Secretary of Energy to provide standby insurance for certain regulatory delays that the developer does not cause.[242] The DOE has specified that it will enter into a Standby Support Contract with the first six developers that fulfill its requirements.[243] To qualify for standby insurance, a developer must have a COL, a detailed construction plan, a detailed business plan, and an estimate of the amount and timing of standby support payments.[244] Standby insurance will reimburse covered costs associated with delays caused by the failure of the NRC to fol-

232 *Id.* § 3.03(2).
233 I.R.S. Notice 2006-40, § 2.04.
234 *Id.* § 2.04(1).
235 *Id.* § 2.04(2).
236 *Id.*
237 *Id.*
238 *Id.* § 2.04(3).
239 Berg et al., *supra* note 8, at 207.
240 *Id.*
241 *Id.*
242 42 U.S.C.A. § 16014 (West 2010).
243 10 C.F.R. § 950.10(a) (2010).
244 *Id.* § 950.10(b).

low its schedules for review and approval of the facility's ITAAC, and delays caused by litigation before the plant enters commercial operation.[245] It will not, however, cover delays caused by failure of the developer to take action required by law or regulation, by events within the control of the developer, or by normal business risks.[246] The DOE may reimburse one-hundred percent of the costs of delay up to $500 million per contract for the first two reactors to qualify for standby insurance.[247] For the next four reactors that qualify, the DOE may reimburse fifty percent of the covered costs of delay up to $250 million per contract.[248] Standby insurance should reduce input cost uncertainty associated with regulatory delays for those first few developers to begin construction.[249] "It is apparently hoped that the licensing experience of the first two reactors would provide enough confidence for the next four to proceed with half the coverage, and then for additional reactors to be built with no regulatory risk insurance."[250]

3. Loan Guarantees

Third, 2005 EPACT allows the Secretary of Energy to guarantee loans for energy projects employing new or improved technologies that avoid, reduce, or sequester air pollutants.[251] An advanced nuclear facility qualifies as such a project.[252] Congress must make a specific appropriation for the cost of the guarantees.[253] The act limits the guarantees to eighty percent of the total cost of construction as it is estimated at the time the DOE issues the guarantee.[254] In addition, the Secretary must determine that it is reasonable to expect that the borrower will repay the principal and interest on the obligation, and that the amount of the obligation would be sufficient to carry out construction.[255] The DOE has determined that it will guarantee up to ninety percent of the costs of a particular debt instrument or loan obligation so long as it does not make up more than eighty percent of the total cost of construction.[256] In determining whether to guarantee a loan, the DOE will take into account the financial commitment a developer has in the project, whether the developer will rely upon other forms of federal assistance (such as tax credits, grants, or other loan guarantees), and a credit assessment of the project without a loan guarantee.[257]

The Consolidated Appropriation Act of 2008 limited future loan guarantee solicitations to $38.5 billion, of which $18.5 billion was dedicated to nuclear construction.[258] In June 2009, the DOE split up $18.5 billion in loan guarantees among four

245 42 U.S.C.A. § 16014(c)(1) (West 2010).
246 *Id.* § 16014(c)(2).
247 *Id.* § 16014(d)(2).
248 *Id.* § 16014(d)(3).
249 Parker & Holt, *supra* note 34, at 14.
250 *Id.*
251 42 U.S.C.A. § 16513(a) (West 2010).
252 *Id.* § 16513(b)(4).
253 *Id.* § 16512(b).
254 *Id.* § 16512(c).
255 *Id.* § 16512(d)(1)–(2).
256 Proposed Rules: Loan Guarantees for Projects the Employ Innovative Technologies, 72 Fed. Reg. 27,471, 27,476 (May 16, 2007).
257 *Id.*
258 Energy Info. Admin., *supra* note 21, at 17.

developers planning on building seven reactors in the U.S.[259] The combined cost of these reactors is estimated to be around $40 billion dollars, and the developers' equity in the projects varied from twenty percent to fifty percent of the total cost.[260] In February 2010, President Obama announced $8.33 billion in loan guarantees for the construction and operation of two new nuclear reactors at a plant in Burke, Georgia.[261] Loan guarantees should reduce input-cost uncertainty by lowering the cost of financing new nuclear construction.[262]

D. Conclusion To Measures Taken By The United States to Promote New Nuclear Construction

Measures taken by the NRC, the DOE, and Congress aim to promote new nuclear development by counteracting the factors behind the uncertainty that have led developers to delay new construction. The NRC's new streamlined process and reduced formality in licensing hearings address those interconnecting factors that led to a history of cost overruns in U.S. nuclear construction: a defective licensing process and lack of public support. Insofar as the Nuclear Power 2010 and 2005 EPACT provide benefits to the first reactors to begin construction, they reduce the technical uncertainty caused by the absence of recent nuclear construction in the United States and the input-cost uncertainty to developers that wait. In addition, 2005 EPACT's production tax credits reduce post-construction operating and revenue uncertainty by providing a more certain cash-flow during operation.

V. Potential Problems with the Combined Government Measures to Promote New Nuclear Construction

In 2007, a developer filed with the NRC the first application for a new reactor in nearly thirty years.[263] To date, the NRC has received eighteen COL applications for twenty-eight reactors.[264] The NRC has granted four ESPs and four Standard Design Certifications.[265] Applicants have filed seventeen applications for a Standard Design Certification.[266] The DOE has another seven Standard Design Certifications under review.[267] This recent spate of licensing activity after so long a dry-spell arguably owes much to the measures the United States has taken as of late to promote new nuclear

259 Rebecca Smith, *U.S. Chooses Four Utilities to Revive Nuclear Industry*, WALL ST. J., June 17, 2009, at A1.

260 *Id.*

261 Obama Administration Announces Loan Guarantees to Construct New Nuclear Reactors in Georgia, *at* http://www.whitehouse.gov/the-press-office/obama-administration-announces-loan-guarantees-construct-new-nuclear-power-reactors (last visited Aug. 17, 2011).

262 Berg et al., *supra* note 8, at 209.

263 *Nuclear Power: Atomic Renaissance*, *supra* note 12, at 73.

264 Combined License Applications for New Reactors, *supra* note 23.

265 *See* Early Site Permit Applications for New Reactors, *supra* note 24; Design Certification Applications for New Reactors, *supra* note 24.

266 Hiruo, *supra* note 201.

267 Design Certification Applications for New Reactors, *supra* note 24.

development. To the extent that these applications have been filed, these measures have been a success.

But this initial success does not necessarily ensure that new nuclear construction will take place:

> In announcing the new reactor license applications . . . utilities have made clear that they are not committed to actually building the reactors, even if the licenses are approved. Large uncertainties about nuclear plant construction costs still remain . . . All those problems helped cause the long cessation of U.S. reactor orders and will need to be addressed before financing for new multibillion-dollar nuclear power plants is likely to be obtained.[268]

A number of obstacles, thus, still might stand in the way of new nuclear construction in the United States.

A. Developers Have Not Followed the Ideal Sequence in the NRC's Streamlined Licensing Process

First, developers have failed to follow the ideal steps of the NRC's streamlined licensing process.[269] NRC Commissioner Gregory Jaczko explains:

> The idea was that utilities could get a plant design completed and certified and a site reviewed first . . . They could then submit an application that simply references an already certified design and an approved early site permit. But almost no one is following that ideal process. Instead, we are once again doing everything in parallel . . . [270]

Developers also are delaying review of their applications.[271] They have put four of the seventeen COL applications filed with the NRC on hold.[272] They also have yet to complete the seventeen applications for designs filed with the NRC and are continuing to revise the four designs under review.[273]

A possible explanation for the problems with the streamlined licensing process is that much of 2005 EPACT provides incentives only for the first few developers to proceed with new nuclear construction. In particular, the production tax credits, as construed by the IRS, were available only for the first 6,000 megawatts of additional nameplate capacity filed through COL applications with the NRC.[274] All COL applications that the NRC has received were filed after IRS Notice 2006-40, which provided this guidance.[275] "The deadline for automatic eligibility for the tax credit appears to [have provided] a strong incentive for nuclear plant applicants to file with the NRC by

268 Parker & Holt, *supra* note 34, at 4.
269 Hiruo, *supra* note 201.
270 *Id.*
271 *See id.*
272 *See id.*
273 *Id.*
274 *See* 26 U.S.C.A. § 45J(b) (West 2010); I.R.S. Notice 2006-40, § 3.01(1).
275 Combined License Applications for New Reactors, *supra* note 23.

the end of 2008 . . ."[276] Given this incentive, developers might have filed quickly and with incomplete information, in the process failing to follow the NRC's ideal streamlined licensing sequence.[277]

These problems with the licensing process could be detrimental to continued nuclear development. Defects in the licensing process led to cost overruns in the 1970s and 1980s, which dissuaded developers from undertaking any new nuclear construction for nearly thirty years.[278] Continued problems would constitute an input cost uncertainty to developers who have not yet filed applications, which might cause them to further delay new construction.

B. The Reduction in Reactor Licensing Hearing Formality Might Cause a Public Backlash

Second, insofar as the NRC's reduction in nuclear licensing hearing formality limits public participation in the licensing process, it could lead to a public backlash. "Public involvement has two basic functions: it permits the raising of issues that will improve the safety of nuclear power plants, and it enhances the transparency and level of confidence and trust that the public can have in nuclear regulation and decision-making."[279] Measures that limit public participation in the nuclear licensing process undermine both of these functions.[280] As noted in the overview of the history of U.S. nuclear construction above, nuclear construction has always been extremely sensitive to changes in public opinion. In 2009, a majority of the American public favored nuclear power.[281] However, only a minority of the public favored new nuclear construction in the area in which they live.[282] After the nuclear crisis at the Fukushima Daiichi plant in Japan, U.S. public support for nuclear power fell sharply, with polls showing that many feared a major nuclear accident in this country.[283] Limiting public participation in the licensing process could decrease public support by undermining any trust that the public has in the regulatory system. This defect could lead to more litigation and a repeat of U.S. nuclear construction's nightmarish cost overruns of the 1970s and 1980s, thus increasing input cost uncertainty to developers.[284]

276 PARKER & HOLT, *supra* note 34, at 13.

277 It appears that only three of the seventeen COLs have been filed by developers who have already obtained ESPs. *See* Combined License Applications for New Reactors, *supra* note 23; Early Site Permit Applications for New Reactors, *supra* note 24.

278 KEYSTONE CENTER, *supra* note 20, at 44.

279 *Id.* at 63.

280 *Id.*

281 Jones, *supra* note 140.

282 Carlson, *supra* note 141.

283 Michael Cooper, *Nuclear Power Loses Support in New Poll*, NEW YORK TIMES, March 22, 2011, http://www.nytimes.com/2011/03/23/us/23poll.html.

284 PARKER & HOLT, *supra* note 34, at 11. As it is, substantial public comment has slowed down initial ESP applications. *Id.* There might be tradeoff, however, between generating a public backlash by reducing formality and increasing the efficiency of licensing hearings.

C. Costs for Nuclear Construction Still Might Rise Over Time

Third, much of 2005 EPACT is animated by the belief that costs will be highest for the first few reactors to be built: as developers build subsequent units, costs will go down.[285] The history of U.S. nuclear development shows this assumption not necessarily to be the case.[286] Historically, costs of nuclear construction rose over time. Nothing indicates that the costs of nuclear construction will do otherwise now.[287]

D. The Production Tax Credit Might Not Be Sufficient to Reduce Costs of Construction in a Reactor Series

Fourth, even if conditions are such that costs will decrease over time, the production tax credits in 2005 EPACT might not be sufficient to reduce costs in a reactor series.[288] The credits go to those first reactors up to 6,000 megawatts in nameplate capacity filed with the NRC.[289] However, at the time of this note, the NRC has approved four standard design certifications.[290] Because each COL has a reactor with a nameplate capacity between 1,200-1,500 megawatts, at most only four to five reactors would be covered.[291] Therefore, only one or two reactors from each design certification would be built that would qualify for the credit.[292] Thus, this tax credit might not be enough to reduce costs through series production so that subsequent units would be economically viable without a tax credit.[293] Moreover, the production tax credit does not have any adjustment for inflation, which could decrease its benefits to the first new plant to come online.[294] Because the benefit of the production tax credit is uncertain, developers have less incentive to go through with new construction.

VI. Suggestions on How to Improve the Measures Taken by the United States to Promote New Nuclear Construction

What follows are a few suggestions on how to improve measures to promote new nuclear construction in the United States.

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285 Keystone Center, *supra* note 20, at 34. "In building the early units of a new reactor design, engineers and construction workers learn how to build plants more efficiently with each plant they build." Univ. of Chicago, The Economic Future of Nuclear Power S-5 (2004), http://www.ne.doe.gov/np2010/reports/NuclIndustryStudy-Summary.pdf.

286 Keystone Center, *supra* note 20, at 31. \

287 *Id.* at 34.

288 Parker & Holt, *supra* note 34, at 13.

289 *See id.*

290 Design Certification Applications for New Reactors, *supra* note 24. This analysis does not even take into account the fact that another five design certifications are under review. *Id.* All told, seventeen applications for standard design certification have been filed with the NRC. Hiruo, *supra* note 201.

291 Parker & Holt, supra note 34, at 13.

292 *Id.*

293 *Id.*

294 Berg et al., *supra* note 8, at 208–209. For instance, if the first new plant were to come on line in 2015, the real value of the tax credit could be reduced by as much as 25–35%. *Id.*

A. Make the Streamlined Licensing Process Mandatory

If the NRC's streamlined licensing process really is more efficient and less costly than the prior two-part process, then the NRC should make it mandatory. Allowing developers to engage in a costly and inefficient method of licensing is to allow a disastrous history to repeat itself. As seen above, U.S. nuclear construction's history of cost overruns is a factor currently causing input-cost uncertainty to developers. This uncertainty has already contributed to the thirty-year hiatus in nuclear licensing activity. To allow current developers to perpetuate the mistakes of the past, the NRC runs the risk of increasing input cost uncertainty to developers who are waiting on the sidelines, thereby further hindering future nuclear construction.

B. Change the Production Tax Credit

Congress could also fix the problems with the production tax credit. To start off, the amount of the production tax credit should be tied to inflation so as to maximize the incentive for developers to proceed with construction. Next, if one of the goals of the production tax credit is to reduce the cost of construction within a reactor series, then Congress should limit the availability of the credit to those reactors of a specified design or designs. As noted above, the production tax credit will be available only for maybe four to six reactors. If developers qualifying for the production tax credit can choose to build whatever design they want, chances are greater that each of the reactors will be based on a different design. If each reactor is based on a different design, then cost reductions for subsequent reactors in a series will be less likely. By limiting the models available for the production tax credit, the likelihood of such cost reductions might be increased, thus also furthering the goal of design standardization.[295]

C. Extend Standby Insurance Beyond the First Six Reactors

As seen in the history of U.S. nuclear construction, contested licensing hearings seemed to increase over time, with litigation often resulting. While the NRC has resolved the defect in the prior licensing process whereby a final safety determination was made only after the completion of construction, it is still probable that litigation will accompany the issuance of COL and delay construction. Given the history of nuclear construction, such litigation likely will not decrease over time. Thus, standby insurance should be extended beyond the first six reactors as a hedge against continued public opposition.

D. Reduce the Disparity in Costs Between Nuclear Power and its Fossil Fuel Competitors Through a Carbon Tax

Finally, introducing a carbon tax could be an effective way further to reduce uncertainty to nuclear developers. The goal of a carbon tax is to reflect the social costs of damage caused by carbon emissions.[296] A carbon tax would reduce post-construction operating and revenue uncertainty to developers by reducing the disparity in costs that presently exist between nuclear and its fossil fuel rivals. Most studies estimate that even a moderate carbon tax would make nuclear power competitive in a free market

295 *See* Nuclear Power Plant Standardization: Policy Statement, *supra* note 175, at 38,884.

296 *Nuclear Power: The Shape of Things to Come?*, *supra* note 11, at 58.

with coal and natural gas.[297] For instance, the 2009 MIT Update projects that a carbon tax of $\$25/tCO_2$ would bring the total cost of coal generation to 8.3¢/kWh and of natural gas to 7.4¢/kWh, compared to 8.4¢/kWh for the first few nuclear plants built in 2007 dollars.[298] If the cost of capital for nuclear construction were reduced through initial demonstrations that nuclear construction costs can be held in check, then nuclear power fares even better.[299] With the same cost of capital as coal and natural gas, the cost of nuclear generation would decrease to 6.6¢/kWh.[300] At that cost, and with a carbon tax, nuclear power would be cheaper than coal and natural gas.[301]

Reducing post-construction operating and revenue uncertainty through a carbon tax might be an effective addition to the limited subsidies that 2005 EPACT offered. Reducing the disparity between nuclear power and its fossil fuel rivals would likely make it more likely economical for developers to invest in nuclear power. While much of 2005 EPACT attempts to spur new nuclear construction by providing incentives to the first few developers in hopes that costs will decrease over time, such a decrease is uncertain given nuclear power's history. Faced with this uncertainty, developers still might not begin construction. By increasing the costs of fossil fuel generation, a carbon tax would mitigate this uncertainty: even if the cost of nuclear construction does not decrease, at least nuclear generation would start from a position of competitiveness with coal and natural gas.

VII. Conclusion

A history of cost overruns, lack of competitiveness with fossil fuel rivals, the increasing costs of materials, labor, and capital, and the absence of recent construction in the United States represent uncertainties that have caused developers to delay new nuclear construction. Without further government action, developers will continue to delay. While the NRC's reform of its licensing regulations, the DOE's Nuclear Power 2010 program, and 2005 EPACT do much to diminish these uncertainties, problems persist that might derail any potential nuclear renaissance.

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297 *Id.*
298 Deutch et al., *supra* note 5, at 6.
299 *Id.* at 6 tbl.1, 8.
300 *Id.* at 6 tbl.1.
301 *Id.*

Cost–Benefit Analysis in Environmental Regulation: The Case of Impingement and Entrainment and What to Take Away from *Entergy Corp. v. Riverkeeper, Inc.*

By Sanja Muranovic

I. Introduction

Energy and water have a uniquely interdependent relationship that has come to be known as the "energy–water nexus."[1] As industries that provide two of our most essential utilities, electricity and water depend on each other in important ways. Water

1 *See* Ashlynn S. Stillwell et al., *Energy–Water Nexus in Texas*, Envtl. Def. Fund *3–*4 (Apr. 2009), http://www.edf.org/documents/9479_Energy-WaterNexusinTexasApr2009.pdf.

is used in many aspects of the electricity-generating process while electricity is needed to develop and treat water for public uses.[2] Nationally, demand on both industries is increasing as the United States population grows at an exponential rate.[3] Yet, environmental changes like droughts, heat waves, and declining reservoir and groundwater levels threaten water supplies without which the increasing demand for both utilities will be difficult to meet.[4] Furthermore, an increasingly deregulated and competitive market for electricity generation is resulting in greater numbers of proposed power plants, which will inevitably place greater demand on water supply.[5]

This nexus among electricity and water presents a multidimensional challenge, which for practical purposes is beyond the scope of this note. This note has a more modest goal of exploring one aspect of the relationship between electricity and water, an aspect whose significance is illuminated by the above-described nexus. Specifically, this note seeks to assess the environmental impacts of impingement and entrainment, which result from thermoelectric power plants' use of water and explore how these impacts are regulated. In doing so, this note considers what role cost–benefit analysis should play in regulating impingement and entrainment and environmental regulation at large.

Part II of this note provides a background in three parts. First is an examination of why thermoelectric power plants rely on water to generate electricity, stressing the scale of the demand electricity places on water. Following is a description of how these plants' Cooling Water Intake Structures (CWIS) withdraw water from local freshwater and groundwater resources, including an overview of the different technologies available for these intake structures. Part II finishes by explaining impingement and entrainment, two environmental impacts specific to CWIS in thermoelectric power plants.

Part III examines the 2009 U.S. Supreme Court case *Entergy Corp. v. Riverkeeper*.[6] Looking at how environmental impacts of CWIS are regulated at the federal level, this section of the note will examine Section 316(b) of the Clean Water Act (CWA), pursuant to which the EPA has only recently adopted the Phase II standards at issue in *Entergy*. This discussion will be followed by an explanation of the Supreme Court's legal analysis and holding in *Entergy*.

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2 *Id.* at *20.

3 U.S. DEPT. OF ENERGY, *Energy Demands on Water Resources: Report to Congress on the Interdependency of Energy and Water* 10–11 (Dec. 2006), http://www.sandia.gov/energy-water/docs/121-RptToCongress-EWwEIAcomments-FINAL.pdf (referencing the Energy Information Administration's estimate in 2004 that the U.S. population will grow by about 70 million in the next 25 years alone and that electricity demand will grow by about fifty percent); *see also* ENVTL. PROT. AGENCY, *Profile of the Electric Industry* 20 (Mar. 26, 2009), http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/phase2/upload/2009_03_26_316b_phase2_econbenefits_final_a3.pdf (predicting electricity demand will grow by approximately by 1.8% every year between 2000 and 2025).

4 U.S. DEPT. OF ENERGY, *supra* note 3, at 29.

5 *See* Stillwell et al., *supra* note 1, at *29–*30.

6 Entergy Corp. v. Riverkeeper, Inc., 129 S.Ct. 1498 (2009). Entergy Corporation is an energy company engaged primarily in electric power production and retail distribution operations. Riverkeeper is a clean water advocacy organization in New York.

Part IV evaluates the opinions of *Entergy* and asks what the case adds to the debate on using cost–benefit analysis in the context of environmental regulation. This note argues that although *Entergy* may indicate a change in the Court's position on the debate, the holding nonetheless maintains its neutrality by deferring to the EPA's reasonable interpretation of a silent statute. In addition, this note argues that although cost–benefit analysis may be appropriate in other instances, this decision-making tool is questionable for purposes of Section 316(b) of the CWA.

II. Background

A. Scale of Electricity Generation's Demand on Water

The electric power industry has three major sectors: generation, transmission, and distribution.[7] The first of these sectors consists of power plants, including thermoelectric facilities that produce electricity.[8] Thermoelectric power plants rely on heat to generate electric power.[9] The source of heat may be any of a variety of combustible fuels including coal, nuclear, natural gas, oil, and biomass.[10] Each of these types of fuel requires different amounts of water for cooling purposes, mostly for condensing steam and preventing plants from overheating.[11]

To satisfy the plant's cooling requirements, or thirst, if you will, CWIS withdraw water from nearby water sources.[12] Thermoelectric power plants are quite thirsty; the amount of water required to generate electricity is substantial. Some studies estimate that generating electricity in the United States requires nearly 136 billion gallons of fresh water per day.[13] The intensity of water required to generate electricity is measured in gallons per kilowatt-hours (gal/kWh).[14] With this amount in mind, the average power plant in the United States requires about twenty-five gallons for every kilowatt-hour generated, but the intensity varies depending on the particular fuel the plants use.[15] For example, nuclear plants average 43 gal/kWh while coal and natural gas plants average 36 gal/kWh and 14 gal/kWh respectively.[16] More specifically, in 2006, nuclear power plants generated 787 billion kWh using 33.8 trillion gallons of water; coal-fueled power plants generated 1,957 billion kWh using 52.8 trillion gallons of water; and plants fueled by natural gas generated 877 kWh using 12.3 trillion gallons of water.[17]

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7 U.S. Dept. of Energy, *supra* note 3, at 2.
8 *Id.*
9 Stillwell et al., *supra* note 1, at 5.
10 *Id.*
11 *Id.*
12 *Id.* at 6.
13 U.S. Dept. of Energy, *supra* note 3, at 18. (citing S. Hutson et al., U.S. Geological Surv., Estimated Use of Water in the United States in 2000, Circular 1268 (2004)).
14 Benjamin K. Sovacool & Kelly E. Sovacool, *Preventing National Electricity–Water Crisis Areas in the United States*, 34 Colum. J. Envtl. L. 333, 339 (2009).
15 *Id.*
16 *Id.* at 340.
17 *Id.*

The numbers are undeniably significant and are made more so because thermoelectric power plants primarily use surface water and groundwater for cooling purposes. Nearly 80% of the water used by these plants comes from these freshwater sources, while the remainder comes from ocean and brackish water sources.[18] These plants accounted for 39% of all freshwater withdrawals in the United States in 2000.[19] Thus, power plants overwhelmingly affect our national freshwater resources.

B. Cooling Water Intake Structures

Considering the amount of water power plants need to cool off, it goes without saying that large volumes of water pass through CWIS. Depending on the technology used, each specific type of CWIS withdraws water in different ways and requires different amounts of water.

The most prevalent of CWIS use "wet" technologies that consist of two basic types: open-loop cooling and closed-loop cooling.[20] Open-loop cooling, also known as once-through cooling, is so named because the process entails withdrawing water from a nearby source, passing it through the cooling system, and then discharging it back to the same source, only to withdraw more water on a repeated basis.[21] Most power plants built before the 1970s operate with open-loop cooling systems.[22] In the United States, about 52% of national generation capacity uses this type of cooling technology.[23] On the other hand, closed-loop cooling technology withdraws water, but instead of discharging it back to its source, the water is recycled for cooling purposes.[24] The recycled water is stored in either cooling towers or cooling reservoirs.[25] Most thermoelectric power plants built since the mid-1970s employ closed-loop systems.[26]

Each of these technologies has its advantages and disadvantages. Open-loop technology withdraws larger volumes of water, 70%–98% more, than closed-loop technology.[27] Meanwhile, closed-loop systems lose far more water due to evaporation.[28] For purposes of entrainment and impingement, however, closed-loop technology is far kinder to the environment. Although new plants have been and are converting to closed-loop cooling technology, the old plants with open-loop cooling have a long lifespan, and as the U.S. Department of Energy observed, these old plants still have "several decades of

18 Ellen Baum, *Wounded Waters: the Hidden Side of Power Plant Pollution*, CLEAN AIR TASK FORCE *2 (Feb. 2004), http://www.catf.us/resources/publications/files/Wounded_Waters.pdf.

19 David L. Feldman, *Freshwater Availability and Constraints on Thermoelectric Power Generation in the Southeast U.S.*, S. STATES ENERGY BD. 4 (June 2008), http://www.sseb.org/files/freshwater-availability-thermoelectric-power.pdf.

20 *See* Baum, *supra* note 18, at *2–*3. Some power plants use "dry cooling" technologies, which rely on air for cooling purposes, but only about 1% of plants in the U.S. use this dry cooling technology. Also, newer plants are employing "hybrid" cooling technologies that combine water and air, but these too are small in number.

21 Stillwell et al., *supra* note 1, at *7.

22 U.S. DEPT. OF ENERGY, *supra* note 3, at 18.

23 Baum, *supra* note 18, at *2.

24 Stillwell et al., *supra* note 1, at *7–*8.

25 *Id.*

26 U.S. DEPT. OF ENERGY, *supra* note 3, at 18–19.

27 *Profile of the Electric Industry*, *supra* note 3, at 17.

28 Stillwell et al., *supra* note 1, at *8.

service life, and therefore, continue to represent a significant demand for water."[29] Because the old, open-loop cooling systems regularly withdraw water instead of recycling it, they have a greater impact on the aquatic life that inhabits the waters from which such plants withdraw. In other words, one of the central environmental concerns raised by CWIS is how to minimize impingement and entrainment, particularly as it concerns older power plants operating with open-loop cooling technologies.

C. Impingement and Entrainment: Environmental Impacts of Cooling Water Intake Structures

Electricity generation impacts our water resources in many ways that are environmentally detrimental. The release of toxins into waters, increased water temperatures, changes in water levels, and altered flow patterns are only some of these impacts. Impingement and entrainment are two other environmental impacts, but they are specific to CWIS.[30]

Intake structure technologies "use" water in two conceptually distinct ways: withdrawal and consumption.[31] Withdrawal of water consists of removing water from the surface or groundwater source for use by the plant.[32] Most of the water withdrawn is returned to its source, albeit at much hotter temperatures.[33] Consumption of water consists of the water lost (not returned directly to its source) due to evaporation in the process of electricity generation.[34] The first of these, withdrawal of water, is what causes impingement and entrainment.[35]

Impingement occurs when turtles, fish, larvae, shellfish, and other aquatic life forms are trapped at the point of water intake against mesh screens, which are used to prevent any larger debris from entering the cooling structure along with the water.[36] By contrast, entrainment occurs if and when any smaller fish happen to pass through the mesh screens; the small aquatic life is swept up in the flow of water and subsequently subject to "mechanical, thermal and toxic stress."[37]

The magnitude of both impingement and entrainment depends on several factors, including the type of body of water from which the plant is withdrawing water, how close the plant is located to sensitive biological areas, the design of the intake screens, and the amount of water the specific intake structure withdraws.[38] A study from Cana-

29 U.S. Dept. of Energy, *supra* note 3, at 18; *see also* Baum, *supra* note 18, at *4 (observing that plant retirement and turnover is not common).

30 Envtl. Prot. Agency, *Chapter 11: CWIS Impingement & Entrainment (I&E) Impacts & Potential Benefits* 11-1 (Apr. 4 2009), http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/phase1/upload/2009_04_02_316b_phase1_economics_ch11.pdf.

31 Benjamin K. Sovacool, *Running on Empty: The Electricity–Water Nexus and the U.S. Electric Utility Sector,* 30 Energy L.J. 11, 17 (2009).

32 *Id.* at 17 n.54.

33 *Id.* at 17

34 *Id.* at 17 n.53.

35 Stephen L. Kass et al., *Power Plant Cooling Water, Hudson River Fish – Again*, N.Y. L.J. (Feb. 23, 2007), *available at* http://www.clm.com/publication.cfm/ID/118.

36 Sovacool & Sovacool, *supra* note 14, at 350.

37 *Id.*

38 Envtl. Prot. Agency, *supra* note 30, at 11-2–11-4.

da finds that the number of fish both impinged and entrained is directly related to the size of the relevant power plant.[39]

For the above-mentioned reasons, it is difficult to calculate exactly how much aquatic life is impacted, but some studies provide estimates believed to be more or less accurate. For example, one consulting group specializing in fisheries policy and damage assessment in Maryland conducted an assessment of the economic effects of impingement and entrainment at the Bay Shore Power Plant in Oregon, Ohio.[40] The plant, which withdraws about 650 million gallons of water each day from the Maumee River near Lake Erie, "impinges 46–52 million fish annually, representing 270.3 metric tons of biomass. In addition, it entrains 208.6 million eggs, 2.2 billion larval fish[,] and 13.8 billion juvenile fish."[41] On a national scale, the EPA estimates that entrainment and impingement result in the deaths of 3.4 billion fish and shellfish each year.[42]

Because older thermoelectric power plants use open-loop cooling technology, they withdraw substantially more water, thereby trapping and killing more aquatic life at intake points.[43] By contrast, newer power plants use closed-loop cooling technologies and reduce impingement and entrainment rates by up to 98%.[44] This difference in impact from the technologies raises significant regulatory issues. Should older and newer power plants be held to the same standards? How and to what extent should impingement and entrainment caused by older power plants be minimized because, as already mentioned, these plants will continue to generate substantial amounts of our electricity for decades to come?

III. *ENTERGY CORP. V. RIVERKEEPER*

These regulatory issues—how and to what extent to regulate impingement and entrainment, particularly as they pertain to older power plants—led to the litigation in *Entergy*. In April 2009, the Supreme Court of the United States in a six to three decision held that the EPA may conduct cost–benefit analyses in promulgating new regulatory standards for technologies that CWIS use in thermoelectric power plants.[45]

39 John R. M. Kelso & Gary S. Milburn, *Entrainment and Impingement of Fish by Power Plants in the Great Lakes Which Use the Once-Through Cooling Process*, 5 J. GREAT LAKES RES. 182, 182 (1979), *available at* http://www.iaglr.org/jglr/db/show_article.php?file_name=1979/num2/5_2_182-194.pdf.

40 Brad Gentner with Mike Bur, *Economic Damages of Impingement and Entrainment of Fish, Fish Eggs, and Fish Larvae at the Bay Shore Power Plant*, SIERRA CLUB 3 (May 2010), http://www.sierraclub.org/coal/oh/downloads/bay_shore_economic_report.pdf.

41 *Id.*

42 Entergy Corp. v. Riverkeeper, Inc., 129 S.Ct. 1498, 1504 (2009).

43 *See* ENVTL. PROT. AGENCY, *Economic and Benefits Analysis for the Proposed Section 316(b) Phase II Existing Facilities Rule* 26 (Feb. 28, 2002), http://water.epa.gov/lawsregs/lawsguidance/cwa/316b/phase2/upload/toc.pdf.

44 *See* ENVTL. PROT. AGENCY, *supra* note 3, at 17.

45 *Entergy Corp.* 129 S.Ct. at 1510.

A. Regulatory Framework for Entergy: Section 316(b) of the Federal Clean Water Act

The Supreme Court decided *Entergy* against a backdrop of federal regulation. Since 1972, the Clean Water Act (CWA) has regulated Cooling Water Intake Structures (CWIS), seeking to minimize the impingement and entrainment these technologies cause.[46] Specifically, Section 316(b) of the CWA states that the EPA's standards for CWIS "shall require that the location, design, construction, and capacity of CWIS reflect the best technology available for minimizing adverse environmental impact."[47] Although Congress passed this law in 1972, it took the EPA until 2001 to research the environmental impacts of CWIS and develop standards in line with Section 316(b) of the CWA.[48]

Pursuant to this provision, the EPA adopted standards in three phases.[49] In 2004, the EPA adopted Phase II of the standards, which are at issue in *Entergy* and apply to already-existing power plants.[50] The CWIS of these plants withdraw more than 50 million gallons of water per day, of which at least 25% is used for cooling purposes.[51] The EPA estimates that over 500 power plants, accounting for over half of the United States' electricity generating capacity, fall within the scope of Phase II rules.[52] Most of the power plants to which Phase II regulations apply withdraw water from freshwater sources: 247 plants from rivers, 114 plants from lakes and reservoirs, and 113 plants from estuaries.[53]

The Phase II regulations require those facilities that fall under their scope to reduce "impingement mortality for all life stages of fish and shellfish by 80%–95% from the calculation baseline," and a subset of these facilities must reduce entrainment of such aquatic organisms by 60%–90% from the calculation baseline through employment of "commercially available" remedial technologies.[54] Otherwise, the Phase II regulations allow power plants to deviate from the standards on a case-by-case basis if they can demonstrate that either: 1) the cost of compliance is significantly greater than the benefits of complying with the applicable performance standards, or 2) the cost of compliance would be significantly greater than the costs that the EPA considers in setting the standards.[55] If a power plant establishes that it warrants variance from the

46 *The Supreme Court 2008 Term: Leading Cases*, 123 Harv. L. Rev. 342, 343 (2009).

47 33 U.S.C. § 1326(b) (2010).

48 *Entergy Corp.*, 129 S.Ct. at 1503 (noting that during the three decades without standards, CWIS were evaluated and permitted on a case-by-case basis).

49 Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65,256 (Dec. 18, 2001) (Phase I regulations were adopted in 2001 and require new thermoelectric power plants to limit their levels of impingement and entrainment commensurate with that which can be attained by a closed-loop cooling system); Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576 (July 9, 2004) (Phase II regulations addressed large power plants); Cooling Water Intake Structures at Phase III Facilities, 71 Fed. Reg. 35,006 (June 16, 2006) (Phase III regulations cover all other facilities not covered by Phase I or II rules).

50 Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576.

51 *Entergy Corp.*, 129 S.Ct. at 1504.

52 *Id.*; Envtl. Prot. Agency, *supra* note 43, at 10.

53 Envtl. Prot. Agency, *supra* note 3, at 17.

54 *Entergy Corp.*, 129 S.Ct. at 1504 (citing 40 C.F.R. §§ 125.94(b)(1)–(2) (2007)).

55 40 C.F.R. §§ 125.94(a)(5)(i)-(ii) (2007).

national standards, then its permit issuer must impose remedial measures that will yield results "as close as practicable to the applicable performance standards."[56]

In effect, the EPA does not require Phase II plants to adopt closed-loop cooling systems or even reach a comparable level of reductions in impingement and entrainment to that required by Phase I regulations for new plants. Instead it lowers the standards for Phase II plants and even allows them to deviate from these already-lower standards if a cost–benefit analysis so warrants. Considering the vague statutory language of Section 316(b) of the CWA and the policy implications of cost–benefit analysis in environmental cases, it is not difficult to see why these Phase II standards led to legal challenges and took the EPA to litigation in *Entergy*.

B. Parties' Arguments and Justice Scalia's Majority Holding

Soon after the EPA adopted the Phase II standards, Riverkeeper, other environmental interest groups, states, and some industry associations filed suit, challenging the EPA's right to conduct cost–benefit analysis under Section 316(b) of the CWA.[57] Judge Sonia Sotomayor of the Second Circuit found impermissible the use of cost–benefit analysis under Section 316(b) of the CWA (meaning that Phase II's site-specific variances based on cost–benefit analysis are impermissible under Section 316(b)).[58] Subsequently, the Supreme Court granted certiorari on the following issue: "Whether [316(b)] ... authorizes [the EPA] to compare costs with benefits in determining 'the best technology available for minimizing adverse environmental impact' at cooling water intake structures."[59]

Petitioners (Entergy Corp., et al.) defended the EPA's right to conduct cost–benefit analysis for purposes of promulgating standards pursuant to Section 316(b) of the CWA. The petitioners argued that the "best technology available" (BTA) language of Section 316(b) allows for consideration of costs and benefits.[60] Specifically, they argued that site-specific variances from national performance standards should be allowed when financial costs of upgrading cooling water intake technology exceed the environmental benefits of doing so.[61] Although closed-loop technology could decrease impingement and entrainment by 98%, "the cost of rendering all Phase II facilities closed-cycle-compliant would be approximately $3.5 billion per year."[62] This cost is nine times more than the cost to comply with current Phase II standards, which strive for a more modest 80%–95% reduction with an even lower 60%–90% reduction for some power plants.[63]

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56 *Id.*

57 *Entergy Corp.*, 129 S.Ct. at 1504.

58 *Id.* at 1510.

59 *Id.* at 1505.

60 *Id.* (citing Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. 41,576, 41,626 (July 9, 2004)).

61 *Id.*

62 *Id.* at 1504 (citing Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. at 41,601 & 41,605).

63 *Entergy Corp.*, 129 S.Ct. at 1504 (citing Cooling Water Intake Structures at Phase II Existing Facilities, 69 Fed. Reg. at 41,605 & 41,666; 40 C.F.R. § 125.94(b)(1) (2007)).

In response, Respondents (Riverkeeper, Inc., et al.) presented several arguments, each of which Justice Scalia, writing for the majority, dealt with systematically, reversing the Second Circuit and holding that Section 316(b) does not preclude cost–benefit analysis.[64] The respondents' arguments and Scalia's analysis of them can best be divided into three different categories: textual, structural, and precedent-oriented. While Scalia considered each category separately, the *Chevron* doctrine guided his reasoning for all three categories. *Chevron* held that when a statute is ambiguous, an administrative agency's interpretation of it must be upheld "if it is a reasonable interpretation of the statute—not necessarily the only possible interpretation, nor even the interpretation deemed *most* reasonable by the courts."[65]

First, the majority opinion considered the statutory language of Section 316(b) of the CWA, which requires the EPA's standards for CWIS to reflect "the best technology available for minimizing adverse environmental impact."[66] The respondents argued, and the Second Circuit agreed, that the BTA language in Section 316(b) requires "the technology that achieves the greatest reduction in adverse environmental impacts," but Justice Scalia held that that interpretation is only one reasonable interpretation.[67] Acknowledging that "best" can mean "most advantageous," Justice Scalia wrote that it could also be interpreted to require a technology that "*most efficiently* produces some good."[68] Further, respondents failed to persuade Justice Scalia that the modifying phrase "for minimizing adverse environmental impact" disqualifies any reading of the statute other than requiring a reduction of environmental impacts to the "smallest amount possible."[69] Instead, he held that the word "minimize is a term that admits of degree," and compared it to the more stringent provisions of the CWA that use words like "elimination" or "no discharge."[70] Thus, applying the *Chevron* doctrine, the majority did not find the respondents' reading of the statute incorrect, but it found that the statute's ambiguous language allows for other reasonable interpretations.

Second, the majority rejected the respondents' set of arguments based on the structure of the CWA. The respondents pointed out that in addition to Section 316(b)'s BTA standard, the CWA has four other similar standards, generally conceptualized in a "(presumed) order of increasing stringency."[71] These four standards include: best practicable technology, best conventional technology, best available technology economically achievable, and best available demonstrated technology.[72] Respondents argued that comparing Section 316(b)'s BTA language, which does not expressly authorize a cost–benefit analysis, with two of the other four standards that authorize

64 *Id.* at 1506.
65 *Id.* at 1505 (citing Chevron U.S.A,. Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 843-44 (1984)).
66 *Id.*
67 *Id.* at 1505–06.
68 *Id.* at 1506.
69 *Entergy Corp.*, 129 S.Ct. at 1506.
70 *Id.*
71 *Id.* at 1507 (citing Envtl. Prot. Agency v. Nat'l Crushed Stone Ass'n., 449 U.S. 64, 69–70 (1980)).
72 *Id.* (citing 33 U.S.C. § 1311(b) (2010); 33 U.S.C. §§ 1316(a)–(b) (2010)).

it reveals congressional intent to forbid its use.[73] Justice Scalia and the majority disagreed. The respondents' logic, he argued, implies that BTA forbids any consideration of costs at all.[74] But unlike the other standards, BTA does not offer any factors for consideration.[75] Justice Scalia reasoned that following respondents' logic causes an implausible result because it would mean that the EPA cannot consider any factors in implementing standards for Section 316(b).[76] Additionally, while only two of the standards expressly authorized cost–benefit analysis, all four standards authorize some consideration of costs.[77] Instead of finding silently implied prohibition, Scalia deemed it more reasonable that a silent statute implies legislative discretion to the EPA to decide whether cost–benefit analysis should be used.[78] Once again, the majority's reasoning is guided by and stays true to the *Chevron* doctrine.

Third, Justice Scalia and the majority disagreed with the respondents that judicial precedent requires reading Section 316(b)'s silence as a bar on cost considerations. The majority opinion first analyzed *Whitman v. American Trucking Assns., Inc.*[79] In this 2001 case, the Supreme Court held that the similar silence of Section 109 of the Clean Air Act "'unambiguously bars cost considerations' in setting air quality standards."[80] However, the majority limited *Whitman* to its particular "statutory context."[81] Similarly, the majority distinguished Section 316(b) from the holding in *American Textile Mfrs. Institute, Inc. v. Donovan*.[82] In this 1981 case, the Supreme Court held that statutory silence on cost–benefit analysis means that the relevant regulatory agency is *not required* to conduct such analysis in setting standards.[83] Scalia interpreted this precedent in a logically neutral way, stating that in light of *Chevron,* the fact that an agency is not *required* to do something does not mean it is not *permitted* to do so.[84]

C. Justice Breyer's Partial Concurrence and Partial Dissent

Unlike Justice Scalia, Justice Breyer focused on the drafting and legislative history of the CWA, leading him to concur in part and dissent in part.[85] While Justice Breyer agreed it is reasonable to interpret Section 316(b) of the CWA to permit cost–benefit analysis, he was not without reservations.[86] The legislative history, Justice Breyer opined, indicated that the EPA should have been relying on cost–benefit analysis to

73 *Id.* at 1508.
74 *Id.*
75 *Entergy Corp.*, 129 S.Ct. at 1508.
76 *Id.*
77 *Id.*
78 *Id.*
79 *Id.* (citing Whitman v. Am. Trucking Ass'n., 531 U.S. 457 (2001)).
80 *Id.* (citing Whitman, 531 U.S. at 471).
81 *Entergy Corp.*, 129 S.Ct. at 1508 (citing Whitman, 531 U.S. at 467–68).
82 *Id.* (citing Am. Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 510–12 (1981)).
83 *Id.*
84 *Id.*; *see also* Jonathan Cannon, *The Sounds of Silence: Cost–benefit Canons in Entergy Corp. v. Riverkeeper, Inc.*, 34 HARV. ENVTL. L. REV. 425, 451 (2010).
85 *Entergy Corp.*, 129 S.Ct. at 1512 (Breyer, J., dissenting).
86 *Id.*

regulate permitting of thermoelectric power plants for the span of about thirty years during which it did not set any precise standards.[87]

At the same time, Justice Breyer read the legislative history as equally concerned with limiting the scope of the EPA's reliance on cost–benefit analysis for several reasons.[88] First, conducting cost–benefit analysis is usually very time-intensive, prolonging an already lengthy regulatory process.[89] Second, cost–benefit analysis is problematic in the environmental context because monetary costs are measurable while benefits such as the value of saving a species of fish are qualitative and not quantitative.[90] Finally, Justice Breyer pointed out that limiting cost–benefit analysis may increase incentives among industry competitors to develop advanced control technologies.[91]

In addition to highlighting these common criticisms of cost–benefit analysis in the context of environmental regulation, Justice Breyer also dissented in part because he found that the EPA's Phase II standards depart from the Agency's usual standards, which find costs insupportable only when "wholly disproportionate" to benefits.[92] The Phase II regulations allow site-specific variances to any power plant that can show its costs are "significantly greater than" the benefits that would result if it upgraded its technology.[93] On the basis of this dissent, Justice Breyer would require the EPA to either apply its traditional "wholly disproportionate" standard to Phase II power plants or would ask the Agency for further explanation on the change.[94] Despite these concerns, Justice Breyer agreed with the majority that Section 316(b) of the CWA allows, but does not require, cost–benefit analysis.[95]

D. Justice Stevens' Dissent, Joined by Justices Souter and Ginsburg

Three justices found that congressional silence in Section 316(b) of the CWA forecloses the EPA's right to conduct cost–benefit analysis in promulgating standards under this statute.[96] Writing for the dissent, Justice Stevens argued that it is typically Congress' role to decide whether cost–benefit analysis is appropriate in a given regulatory context, and even in light of *Chevron*, the Court does not have the right to read statutory silence as implicit authorization.[97] To this end, Justice Stevens disagreed with the majority's decision to distinguish *American Trucking*, finding it "should have guided" the Court's reading of Section 316(b).[98] Apart from criticizing the bases of the majority's decision, Justice Stevens also provided independent reasons for the dissent's

87 *Id.* at 1513.
88 *Id.*
89 *Id.*
90 *Id.*
91 *Entergy Corp.*, 129 S.Ct. at 1513 (Breyer, J., dissenting).
92 *Id.* at 1515.
93 *Id.*
94 *Id.*
95 *Id.* at 1512–13.
96 *Entergy Corp.*, 129 S.Ct. at 1516 (Stevens, J., dissenting).
97 *Id.* at 1517.
98 *Id.* at 1517–18.

position. Notably, he did not shy away from a normative evaluation of using cost–benefit analysis in the environmental regulatory context:

> As typically performed by [the EPA], cost–benefit analysis requires the Agency to first monetize the costs and benefits of a regulation, balance the results, and then choose the regulation with the greatest net benefits. The process is particularly controversial in the environmental context in which the regulation's financial costs are often more obvious and easier to quantify than its environmental benefits. And cost–benefit analysis often, if not always, yields a result that does not maximize environmental protection.[99]

Hence, Justice Stevens found Section 316(b) does not allow cost–benefit analysis.

IV. *ENTERGY*'S TAKE ON COST–BENEFIT ANALYSIS

Entergy is the latest in a line of Supreme Court cases to join the debate over the use of cost–benefit analysis in the context of environmental regulation. The debate can more or less be divided into a "for" camp, which includes supporters of relaxed regulatory standards for the energy industry, and an "against" camp, typically composed of environmental advocates who favor more stringent regulation. Supporters of weighing costs and benefits see several advantages to the decision-making tool. One of these advantages is that cost–benefit analysis ensures "well-balanced" standards and can attain more-or-less neutral ground between those who favor stringent environmental regulation and those hoping to use cheaper, more profitable technology.[100] In addition, cost–benefit analysis may be beneficial for stimulating informed debate and increasing transparency.[101]

Despite these advantages, cost–benefit analysis is not without its critics. Environmental advocates are typically opposed to regulatory agencies' reliance on this method.[102] Several criticisms of it are usually provided. First, this standard-setting tool is frequently seen as "a stand-in for a deregulatory agenda" that hinders regulatory progress and allows industries to get away with less-stringent measures for protecting the environment.[103] The idea is that cost–benefit analysis allows the industry sector to manipulate the factors used to measure both costs and benefits of specific technologies. Second, those opposed to cost–benefit analysis find it inappropriate specifically in the environmental context because the environment, like human health and safety, embodies a "moral urgency" to which one cannot assign a specific dollar amount; the value of our environment, argue many groups, cannot be quantified for purposes of measuring the benefits of certain technologies.[104]

99 *Id.* at 1516.
100 Cannon, *supra* note 84, at 425.
101 *Id.*
102 *Id.* at 429.
103 *Id.* at 429–430.
104 *Id.* at 425.

A. A Departure From Precedent?

The debate over using cost–benefit analysis for purposes of environmental regulation has permeated the decisions of the federal courts, and in particular the United States Supreme Court. Since the early 1980s, when regulatory agencies first began employing cost–benefit analysis, the Supreme Court began walking a fine line, starting with the *Donovan* case, when it declined to find a requirement of cost–benefit analysis absent authorization of it in the relevant statutory language.[105] Twenty years later, in the *American Trucking* case, the Court refused to find a requirement of cost–benefit analysis implicit in ambiguous sections of the Clean Air Act.[106] In the *Entergy* case, Justice Scalia distinguished the CWA and the case at issue from those two precedents, arguing that silence may sometimes be interpreted as permission of cost–benefit analysis.[107] While prior cases implied a presumption against cost–benefit analysis, the *Entergy* case may be seen as steering the wheel in a different direction. Although viable arguments exist for reading the *Entergy* opinion as a change from the Court's previous position on the debate, the Court's holding in the case most likely maintains its neutrality by deferring to the EPA's reasonable interpretation of silent statutes.[108]

One reason why the *Entergy* opinion may be interpreted as parting from precedent is because of the majority's incomplete application of *Chevron* to explain its holding and to help distinguish the case from its above-mentioned precedents. The *Chevron* doctrine originates from a 1984 Supreme Court case.[109] The relevant issue then before the Court was what standard of review it should apply when evaluating an administrative agency's reading of a statute.[110] The Court's answer was a two-step test that has since served as the "primary guide" in such issues.[111] Specifically, *Chevron* held:

> When a court reviews an agency's construction of the statute which it administers, it is confronted with two questions. First, always, is the question whether Congress has directly spoken to the precise question at issue. If the intent of Congress is clear, that is the end of the matter; for the court, as well as the agency, must give effect to the unambiguously expressed intent of Congress. If, however, the court determines Congress has not directly addressed the precise question at issue, the court does not simply impose its own construction on the statute, as would be necessary in the absence of an administrative interpretation. Rather, if the statute is silent or ambiguous with respect to the specific issue, the question for the court is whether the agency's answer is based on a permissible construction of the statute.[112]

105 *See* Am. Textile Mfrs. Inst. v. Donovan, 452 U.S. 490, 510–12 (1981).
106 *See* Whitman v. Am. Trucking Ass'n., Inc., 531 U.S. 457, 467–68 (2001).
107 Entergy Corp. v. Riverkeeper, Inc., 129 S.Ct. 1498, 1508 (2009).
108 *Id.*
109 *See* Chevron U.S.A,. Inc. v. Nat. Res. Def. Council, Inc., 467 U.S. 837 (1984).
110 *Id.*
111 Cannon, *supra* note 84, at 433.
112 *Chevron*, 467 U.S. at 842–43.

Thus, courts must first determine whether Congress directly and unambiguously spoke or expressed intent on the issue, and if the answer is "no," then they must consider whether the agency's interpretation of the statute is reasonable.[113]

An argument can be made that, instead of following both steps, the majority skipped the first part and justified its reason for doing so in a less than satisfactory way.[114] In a footnote, Justice Scalia explained his decision not to inquire whether Congress directly spoke on the issue at hand by writing, "[b]ut surely if Congress has directly spoken to an issue then any agency interpretation contradicting what Congress has said would be unreasonable."[115] While Justice Scalia did go on to examine the "direct" language of the statute, he did not consider congressional intent. A literal reading of *Chevron* would require both a consideration of whether Congress had "directly spoken" on the issue *and* whether congressional "intent . . . is clear."[116] Indeed, as shown above, both Justice Breyer and Justice Stevens gave important consideration to legislative history and legislative intent in their opinions while Justice Scalia brushed over it with a simple footnote. Thus, Justice Scalia left step one of the *Chevron* analysis unsatisfied in *Entergy*. Of course, one must concede that just because step one of *Chevron* was left unsatisfied, it does not mean that Justice Scalia would not have reached the same result had he inquired into congressional intent. He may not have found any evidence of congressional intent, which would likely have led step two of the *Chevron* analysis identical to the one performed in the majority opinion.

Another reason why *Entergy* may be seen as departing from precedent toward a pro cost–benefit position is reflected in the 5-1-3 divide in *Entergy*.[117] The justices' opinions split along more or less predictable ideological lines, with conservatives joining Justice Scalia's majority opinion and more liberal Justices joining Justice Stevens' dissent.[118] According to one scholar, the conservatives in the majority "are skeptical of the value of environmental regulation and thus eager to uphold a Bush-era EPA regulation that the power industry favors, while the liberals in dissent want stricter enforcement of environmental laws."[119] It is possible that this divide alone indicates the judges' decisions may be based on personal policy preferences.

Despite this divide along more-or-less ideological lines, the *Entergy* opinion can be read as little more than a continuation of the Court's past practices. After all, all three opinions in *Entergy* uphold the main policy reasons underlying *Chevron* (even though they disagree on how to apply the doctrine's two steps).[120] All of the justices agree the judiciary should defer to the relevant regulatory agency when legislative intent is unclear.[121] Such decisions are better left to lawmakers and interpretations

113 *Id.*

114 *See Entergy Corp.*, 129 S.Ct. at 1505 n.4.

115 *Id.*

116 *See Chevron*, 467 U.S. at 842–43.

117 *See Entergy Corp.*, 129 S.Ct. 1498.

118 Cannon, *supra* note 84, at 443.

119 Michael C. Dorf, *Why the Supreme Court Decision Upholding Cost–Benefit Analysis Under the Clean Water Act Should Not Be Used to Discredit Best-Practice Standards*, FINDLAW (Apr. 6, 2009), http://writ.news.findlaw.com/ dorf/20090406.html.

120 *See Entergy Corp.*, 129 S.Ct. at 1498; Cannon, *supra* note 84, at 444–454.

121 Cannon, *supra* note 84, at 433.

of the lawmakers' statues are best left to the agencies designed to administer them.[122] Thus, all essentially agree that when a statute is ambiguous, the decision whether to use cost–benefit analysis should be left up to the EPA, which as an Executive Agency is part of a branch of government that, unlike the judiciary, can be held politically accountable.[123]

Therefore, although the Court's divide may indicate personal policy preferences, those preferences are at least neutralized if not overpowered by the Court's commitment to judicial deference.[124] In turn, that judicial deference at the heart of the majority's decision may simply be seen as ensuring that the Court is trying to walk on neutral ground and not necessarily depart from precedent. In effect, neither the environmentalists not the industry folk can claim victory in a decision like *Entergy*. When a statute is ambiguous, it is up to the regulatory agency to interpret it as it deems good policy and reasonable; such a holding is neutral because it really depends on the agency's ultimate interpretation and not the Court's. The EPA could a year from now decide that it will no longer permit site-specific variances based on cost–benefit analysis for purposes of Section 316(b) permits, and that too will likely be found a reasonable interpretation of the statute.

B. What Role Should Cost–Benefit Analysis Play In Environmental Regulation?

In light of Justice Scalia's arguable reliance on *Chevron* and all of the justices' personal policy orientations, the *Entergy* decision continues the controversy over the use of cost–benefit analysis in the environmental context. Should regulatory agencies ever rely on cost–benefit analysis in promulgating industry standards for the benefit of our environment? The EPA should pick and choose its battles; it should not rely on conduct cost–benefit analysis for purposes of Section 316(b) of the CWA, but this decision-making tool may be appropriate in other environmental contexts.

In the case of Section 316(b) of the CWA, which requires standards that will "reflect the best technology available for minimizing adverse environmental impact," the EPA should require all power plants to meet the same standard.[125] Specifically, the EPA should disallow permit variances based on cost–benefit analysis (as it now allows with Phase II standards) and require all plants, including older ones, to upgrade to closed-loop cooling technologies.[126] The advantages to that decision are not limited to environmental benefits alone, although it would result in as close of an elimination of impingement and entrainment as possible (reducing them by 98%).[127] Apart from the environmental benefits, requiring all power plants to adopt closed-loop cooling technologies is advantageous for efficiency reasons. A clear, uniform standard would be easier to both implement and monitor. The EPA would spend less time, energy, and taxpayers' money on evaluating whether site-specific variances are warranted and then

122 *Id.* at 437–38.
123 *Id.* at 443.
124 *The Supreme Court*, *supra* note 46, at 350–51.
125 33 U.S.C. § 1326(b) (2010).
126 *Entergy Corp.*, 129 S.Ct. at 1504.
127 *Id.*

issuing them to different plants when appropriate. Instead, these resources could be allocated to ensuring that more efficient environmental standards are met.

A uniform standard requiring all plants to implement the best technology would also be more efficient because impingement and entrainment levels are difficult, if not near impossible, to measure.[128] The EPA has already spent about thirty years studying impingement and entrainment, and it still has difficulty doing so in a way that accurately reflects the "benefits" side of a cost–benefit analysis.[129] For example, Justice Stevens points out in his dissent that although estimates show CWIS kill about 3.4 billion fish and shellfish per year, the EPA's calculation of "benefits" only monetizes and considers the "commercially and recreationally harvested" species, which make up less than 2% of all of the impacted aquatic life.[130] Like any environmental impact, it is difficult to assess impingement and entrainment in exact numbers and in dollar amounts. Thus, the EPA would best attain its goal of minimizing adverse impacts of CWIS if it disallowed variances based on cost–benefit analysis.

Another reason for requiring all plants to adopt closed-loop cooling technology is, surprisingly, grounded in economics. The primary reason energy companies favor cost–benefit analysis is because it allows them to use cheaper, less environmentally-friendly technology. Indeed, the primary reason Entergy Corp. and others in the electric industry favor the Phase II standards for Section 316(b) is because they do not want to pay the $3.5 billion per year that would accompany a requirement to upgrade all facilities to closed-loop cooling technologies.[131] While this dollar amount is a substantial sum for any industry to incur, one should not overlook the likelihood that these costs will be offset.

With the demand on electricity increasing as our population grows, companies have sufficient incentives to compete in the market. Upgrading to new technology is a single, albeit large, investment, but it is one that will last for decades to come. With an increasing population and market to look forward to, companies will make more than a return on such an investment. In addition, the market for electricity generation is increasingly deregulated and competitive, so companies will be willing to undertake the additional costs of updating to the "best technology available" because if they do not, other companies will.[132] Although the electric industry's pockets would feel a big pinch as a result of upgrading to closed-loop technology, the pinch they feel will not be as painful as they fear. It is ultimately up to the EPA to determine the meaning of "best technology available," but the Agency should not shy away from requiring all power plants to upgrade their technologies to closed-loop cooling despite the significant costs the industry will have to incur.

Of course, along with the advantages comes a major accompanying disadvantage. As Justice Scalia points out, and even respondents Riverkeeper admit, it would be unreasonable to "spend billions to save one more fish or plankton."[133] After all, requiring all plants to adopt closed-loop cooling technology would cost about $3.5 billion per

128 *Id.*
129 *Id.* at 1503.
130 *Entergy Corp.*, 129 S.Ct. at 1516 (Stevens, J., dissenting).
131 *Entergy Corp.*, 129 S.Ct. at 1504.
132 *Id.*
133 *Id.* at 1510.

year.[134] In addition, the EPA argued this change would cause production of electricity to drop by 2.4%–4.0%, inevitably requiring more power plant construction to recoup the costs.[135] These drawbacks are even more disinviting if one considers that angered companies will likely pass on the extra costs to consumers, increasing the price of thermoelectric generation, which is typically valued for being a cheap form of energy. So, how much is too much? Is it "too much" when it comes to stopping damage to our environment? These policy questions are the ones that continue to characterize the debate over using cost–benefit analysis in the environmental context.

V. Conclusion

Although decided in the context of impingement and entrainment, the *Entergy* opinion raises the difficult policy questions that accompany the use of cost–benefit analysis in environmental regulation at large. On the one hand, upgrading all CWIS to the best technology available would cost the industry $3.5 billion per year.[136] On the other hand, this upgrade would reduce the rate of impingement and entrainment by 98%.[137] The difficulty of using cost–benefit analysis is deciding what factors will be considered in conducting the analysis. How far does one go in measuring costs and benefits? With such uncertainty, this analytical tool could easily be manipulated, making it an ever-more important policy question.

In the *Entergy* decision, the Supreme Court was ultimately correct to defer these policy decisions to the legislature and administrative agencies in accordance with the *Chevron* doctrine. Nonetheless, even the three opinions in *Entergy* reveal politically biased views related to the larger debate. While the case may hint at where the Court stands, its holding is, for legal purposes, neutral and ensures the debate over cost–benefit analysis will continue at the legislative and executive levels.

It is interesting to note that now-Justice Sotomayor, who wrote the opinion for the Second Circuit in the *Entergy* case before it went to the Supreme Court, found that Section 316(b) of the CWA prohibits cost–benefit analysis.[138] It remains to be seen whether her recent appointment to the Supreme Court by President Barack Obama eventually affects the debate over cost–benefit analysis. At the same time, Justice Stevens, a dissenter in *Entergy*, has retired. Most likely, the debate will continue inside and outside of the courts. As in *Entergy,* the Court will probably continue respecting the *Chevron* doctrine, leaving the ultimate decisions up to the legislators and executive agencies who administer such decisions because they are more politically-accountable than the judiciary.

Author's Note:

On March 28, 2011, pursuant to a settlement agreement with Riverkeeper and other environmental groups, the EPA proposed new "common sense" standards for

134 *Id.* at 1504.
135 *Id.*
136 *Id.* at 1504.
137 *Entergy Corp.*, 129 S.Ct. at 1504.
138 Riverkeeper Inc. v. U.S. Envtl. Prot. Agency, 475 F.3d 83, 98 (2nd Cir. 2009).

cooling water intake structures at most existing facilities.[139] The proposals were open for comment through July 19, 2011.[140] The newly-proposed standards elaborate on Section 316(b) of the CWA, leaving significant discretion to permitting authorities while establishing new, numerical and statistical standards for entrapment and impingement at already-existing power plants.[141]

Of interest is the EPA's decision not to require closed-cycle cooling systems as the best technology available pursuant to Section 316(b).[142] While the rule reflects a more flexible approach than any previous standards, some environmental groups have already criticized it for failing to establish closed-cycle cooling systems as the best technology available for all power plants.[143] It is possible, if not likely, that the rule will lead to further litigation.

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139 ENVTL. PROT. AGENCY, News Release: EPA to Open Public Comment on Proposed Standards to Protect Aquatic Ecosystems, http://yosemite.epa.gov/opa/admpress.nsf/3881d73f4d4aaa0b85257359003f5348/1a6586526d351a1d852578610077d4c8!OpenDocument

140 *Id.*

141 *See id.*

142 *Id.*

143 Riverkeeper, *Dead Fish, Fouled Water, EPA Misses Opportunity to Fix Power Plant Damage*, Mar. 29, 2011. http://www.riverkeeper.org/news-events/news/preserve-river-ecology/dead-fish-fouled-water-epa-misses-opportunity-to-fix-power-plant-damage/.

Recent Developments

Air Quality

The Sunset Commission Decision: The TCEQ's Authority to Adjust the Annual Emissions Tonnage Cap for the Air Emissions Fee

Introduction

The Sunset Advisory Commission ("Sunset Commission") is an independent state agency composed of twelve members appointed by the Lieutenant Governor and the Speaker of the House that reviews the policies and programs of state agencies every twelve years. Sunset Advisory Commission. Sunset Advisory Comm'n, Guide to the Sunset Process 1 (Dec. 2009), http://www.sunset.state.tx.us/guide.pdf. The Sunset Commission reviewed the Texas Commission on Environmental Quality (TCEQ) in preparation for the 2011 legislative session. Sunset Advisory Commission. Sunset Advisory Comm'n, Guide to the Sunset Process 1 (Dec. 2009), http://www.sunset.state.tx.us/guide.pdf. *Id.* The overall purpose of the review is to assess the need to retain the agency, look for potential duplication of programs within the TCEQ and other state agencies, and consider changes to improve agency operation. *Id.*

The process began in October 2009 when the TCEQ submitted a preliminary self-evaluation report. *Sunset Advisory Commission Review of the TCEQ*, http://www.tceq.texas.gov/agency/sunset/index.html (last visited Mar. 1, 2011). The Sunset Commission then conducted interviews and held discussions with interested members of the public and produced its own analysis and audit of the TCEQ. *Id.* Next, the Sunset Commission met with the TCEQ staff. *Id.*

With this information, the Sunset Commission staff formed the Staff Report. *Id.* "This report contained recommendations to improve agency operation and was to be posted at least 30 days in advance of the Dec. 2010 public hearings on the Sunset Advisory Commission's website." *Id.*

The Sunset Commission then conducted two public hearings addressing the TCEQ. On December 15, 2010 the Sunset Commission "heard testimony from Sunset staff, the TCEQ, and the public about the agency," and on January 12, 2011 the

Sunset Commission held another hearing at which they "adopted management and statutory recommendations regarding the TCEQ." *Id.* The 82nd Texas Legislature considered the statutory recommendations during the 2011 session. *Id.* Of the issues discussed in the Sunset Commission Decisions, only Issue 8 specifically addresses an Air Quality issue.

Issue 8: The Statutory Cap on Emissions Limits the TCEQ's Ability to Adequately Fund the Title V Air Permit Program

Issue 8 addresses the Air Emissions Fee. Any facility that emits regulated air pollutants must pay either an Air Emissions Fee or an Air Inspection Fee, whichever is greater. Tex. Comm'n Env. Quality, 30 Tex. Admin. Code § 101.27(a) (April 30, 2011). The Air Emissions Fee serves the purposing of covering "the costs of running Texas' Title V air permitting program including preparing regulations, reviewing applications, modeling and monitoring emissions, enforcing permits, and preparing emissions inventories." SUNSET ADVISORY COMM'N, COMMISSION DECISIONS—TEXAS COMMISSION ON ENVIRONMENTAL QUALITY 71 (Jan. 2011), http://www.sunset.state.tx.us/82ndreports/tceq/tceq_dec.pdf [hereinafter *Commission Decisions*]. The Air Inspection Fee, on the other hand, "is designed to recover the costs of inspections and other enforcement activities." *Id.* Since the two fees serve distinct purposes, each goes to a different General Revenue Dedicated Fund. *Id.*

Currently, the Air Emissions Fee is based on a rate of $25 per ton of regulated pollutants, with a cap of 4,000 tons per year of emissions. 30 TEX. ADMIN. CODE § 101.27(f)(1). The TCEQ rulemaking establishes the tonnage rate while state law establishes the emissions cap and provides for inflationary increases. TEX. HEALTH & SAFETY CODE ANN. § 382.0621(d). (Vernon 2009). Any emissions over the cap are not subject to the fee. *Id.* Some of the regulated pollutants subject to the Air Emissions Fee include carbon monoxide, nitrogen oxides, lead, particulate matter, sulfur dioxide, and volatile organic compounds. *Commission Decisions*, *supra*, at 71; 30 TEX. ADMIN. CODE § 101.27(f)(3).

As it currently stands, revenue from the Air Emissions Fee is not sufficient to support the Title V program fully. *Commission Decisions*, *supra*, at 71. The Sunset Commission notes that revenue from the fee is decreasing as the control of emissions has become more effective. *Id.* In fiscal year 2009, fee revenue first fell short of needed expenditures to support the permit program by about $400,000. *Id.* at 71-72. In fiscal year 2010, the gap widened to $4,000,000. *Id.* The fee returned $30.6 million while the program costs totaled $34.6 million. *Id.* So far, the TCEQ has been able to cover the deficit by tapping the unspent balances in the Title V Operating Permit Fees Account from previous years. *Id.* at 71. However, this method is most likely unsustainable as the TCEQ has projected these balances will be depleted during the fiscal year of 2012. *Id.* (citing TEX. COMM'N ON ENVTL. QUALITY, LEGISLATIVE APPROPRIATIONS REQUEST FOR FISCAL YEARS 2012 AND 2013 6.E 22 (Aug. 2010), *available at* http://www.tceq.texas.gov/assets/public/comm_exec/pubs/sfr/037_12.pdf). According to the TCEQ, the rise in expenses for the Title V program is attributable to "higher costs associated with implementing new and revised federal requirements and increased agency personnel costs." *Commission Decisions*, *supra*, at 72.

Consequences of Continued Deficits

Federal rules require that state-approved Title V air-permitting programs be adequately funded through a fee based on the quantity of emissions of criteria air pollutants. *Id.* (citing 40 C.F.R. § 70.9(b) (2010)). If a state fails to adequate fund the program, the EPA will issue a notice of deficiency and potentially disapprove the state program. 40 C.F.R. § 70.10(b)(1) (2010). The EPA can then resort to serious sanctions including setting higher emissions offsets in nonattainment areas, withdrawing federal transportation funds, and creating a federal program for the issuance of Title V permits in place of the state program. *Commission Decisions*, *supra*, at 72 (citing 40 C.F.R. § 70.10(b)(2) (2010)).

Recommendation 8.1: Give the TCEQ the Statutory Authority to Administratively Adjust the Annual Emissions Tonnage Cap for AEF

Currently, the TCEQ's only means of addressing the Title V program's deficit is to increase the fee amount above its current level of $25 per ton. *Commission Decisions*, *supra*, at 73; *see* 30 Tex. Admin. Code § 101.27. The Sunset Commission points out that increasing the fee without increasing the emissions cap would result in a more inequitable fee-payment scheme. *Commission Decisions*, *supra*, at 72. As currently structured, the fee does not charge facilities for emissions above the statutorily set cap of 4,000 tons per year, per regulated pollutant. 30 Tex. Admin. Code § 101.27(f)(1). Thus, facilities that emit more than 4,000 tons per year of a regulated pollutant "pay less per-ton of emitted pollutant than facilities with emissions below the cap." *Commission Decisions*, *supra*, at 72. How much less depends on exactly how far beyond the emissions cap a facility goes. Increasing the value of the fee rather than the value of the cap only increases this inequity. *Id.*

Recommendation 8.1 would grant the TCEQ the statutory authority to adjust the emissions cap as needed to provide adequate funding for the Title V program. *Id.* at 73. The TCEQ would be allowed only to make adjustments once a year and only in accordance with appropriations authority granted in the General Appropriations Act. *Id.* The Sunset Commission notes that the added flexibility of being able to set both the emissions cap and the fee rate would allow the TCEQ to fashion a more equitable solution for spreading costs of the program. *Id.* Importantly, under Recommendation 8.1, the TCEQ would not have to follow rulemaking procedures, limiting the availability of public involvement in the process. *Id.*

Seven parties registered their support for Recommendation 8.1, including Texas Senator Wendy Davis, Al Armendariz of Environmental Protection Agency, Lize Burr of the Alliance for a Clean Texas, Brandt Mannchen and Luke Metzger of Environment Texas, David Weinberg of the Texas League of Conservation Voters, and the League of Women Voters of Texas. *Commission Decisions*, *supra*, at 74a. Five parties registered their opposition including Luke Bellsnyder of the Texas Association of Manufacturers, John W. Fainter, Jr. of the Association of Electric Companies of Texas, Deb Hastings of the Texas Oil and Gas Association, Hector Rivero of the Texas Chemical Council, and Stephen Minick of the Texas Association of Business. *Id.* Some opponents proposed modifications. *Id.* at 74b.

Conclusion

The Sunset Commission did not take any action on Issue 8. *Id.* Thus, the Sunset Commission did not adopt Recommendation 8.1, and therefore, it was not included with the Sunset Commission's proposed changes to the TCEQ's enabling legislation for the 82nd legislative session. The state legislature still has the authority to change the emissions cap in this or subsequent sessions.

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Natural Resources

The *Severance v. Patterson* Indecision and the Texas Open Beaches Act

On November 5, 2010, the Texas Supreme Court handed down a possibly important decision regarding beachfront-access easements. *Severance v. Patterson*, No. 09-0387, 2010 WL 4371438 (Tex. June 5, 2010). The court's original decision, if it remains in place, could have far-reaching effects on the rights of private-property owners with beachfront property and public access to beaches on the coast of the Gulf of Mexico. The case appeared before the court in the form of three certified questions from the United States Court of Appeals for the Fifth Circuit. *Id.* at *1. The questions concerned (1) whether Texas recognizes a "rolling" public beachfront-access easement; (2) whether that easement, if recognized, is derived from the common law or the Open Beaches Act; and (3) whether a private-property owner should receive compensation for limitation on use of his or her property due to such an easement. *Id.*

Factual Background

In April 2005, Carol Severance ("Severance") purchased beachfront property on Galveston Island in the West Beach area of the island. She improved the property with a single-family house used for rental purposes. In September 2005, Hurricane Rita caused the vegetation line to rapidly move further inland, resulting in the shifting of much of Severance's property, including the house, seaward of the vegetation line onto the dry beach. *Id. at* *2. On June 7, 2006, a temporary moratorium on the removal of houses in the area, including Severance's home, ended. *Severance v. Patterson*, 566 F.3d 490, 494 (5th Cir. 2009). The State offered Severance roughly $40,000 to relocate or remove the house and, in response, Severance filed suit against the State officials, alleging "an illegal seizure under the Fourth Amendment, an impermissible taking without just compensation under the Fifth Amendment," and a violation of her substantive due process rights. *Id.*

Legal Background

The Republic of Texas made the original state grant of the western part of Galveston Island in 1840 to Levi Jones and Edward Hall. *Severance,* 2010 WL 4371438 at *5. That original grant was recognized twice by the State Legislature after the admission of Texas to the Union. *Id.* The final recognition in 1854 affirmed the grant of ownership and did not make any express reservation of either title to the property or a public right to use the beaches. *Id.* In 1959, the Texas Legislature passed the Open Beaches Act (OBA) to ensure that the public have free and unrestricted access to state-owned beaches. *Id.* at *6; *See* Tex. Nat. Res. Code § 61.012) (Vernon 2009). Specifically, the OBA prevents private-property owners from obstructing

> state-owned beaches to which the public has the right of ingress and egress bordering on the seaward shore of the Gulf of Mexico or any larger area extending from the line of the mean low tide to the line of vegetation bordering on the Gulf of Mexico if the public has acquired a right of use or easement to or over the area by prescription, dedication, or has retained a right by virtue of continuous right in the public.

Id. at *7 (citing Tex. Nat. Res. Code. §§ 61.012, 61.013(a))(Vernon 2009)). Texas went further in 2009 by adopting a constitutional amendment that reflects the policy of the OBA and its definition of "public beach," while also acknowledging the public's easement is based on Texas common law. Tex. Const. Art. I, § 33(a). The beachfront is divided into two distinct areas: the dry beach is the area from the mean high tide line to the vegetation line, and the wet beach is the area from the mean low tide to the mean high tide. *Severance*, 2010 WL 4371438 at *4. While the OBA includes protection of public access to beaches, it is important to distinguish that access to the wet beach is through State ownership, while access to the dry beach is through an easement. *Id. at* *6 (citing *Luttes v. State*, 324 S.W.2d 167 (Tex. 1958)). In 1975, a case in Galveston County established that the land seaward of Severance's property was burdened by an easement, including what at the time was the dry beach. *Id.* at *2; *see Hill v. West Beach Encroachment,* Cause No. 108,156; 122nd District Court, Galveston County, Texas.

The Majority's Opinion

Because the case addressed an interpretation of state law, the Court of Appeals for the Fifth Circuit certified the *Severance* case to the Texas Supreme Court asking three questions concerning public beachfront-access easements under Texas state law. *Severance*, 2010 WL 4371438 at *1. The majority opinion, written by Justice Wainwright and joined by five other Justices, concedes that property lines, including the boundaries of easements, are "necessarily" dynamic on a beachfront. *Id.* at *9. Littoral property owners gain or lose property gradually or imperceptibly through erosion and accretion. *Id.* However, the majority notes that avulsion, in which sudden changes in land occur, presents a different situation for beachfront-property rights. *Id.* at *10. When an avulsive event occurs, the sudden change in the vegetation line does not automatically deprive the private-property owner the right to exclude the public from the private-property owner's land now situated in the dry beach. *Id.* Any private property that becomes part of the wet beach, however, is lost in an avulsive event because the wet beach is always State-owned, regardless of any sudden shift. *Severance*, 2010 WL 4371438 at *10.

The majority acknowledges that an avulsive event can cause "the former dry beach to become part of State-owned wet beach or completely submerged." *Id.*

The majority based its argument on the language in the OBA that requires the public to have "acquired a right of use or easement" and by the original grant of the western portion of Galveston Island. *Id.* at *7 (quoting Tex, Nat. Res. Code §§ 61.012, 61.013(a)). Since the original grant did not reserve any right of use for the public or reservation in title, the State must prove an easement exists to burden the dry beach before enforcing the OBA against private-property owners. *Id.* at *10. This burden of proof was not a problem for the State before Hurricane Rita because the public had acquired an easement in 1975 for the dry beach as it existed prior to the hurricane. *Id.* at *8. After Hurricane Rita, however, the dry-beach area burdened by the public easement was now deemed to be State-owned wet beach, and the new dry beach, which included the Severance property, was unburdened by an easement. *Id.* at *11. Thus, while the public beachfront-access easement is dynamic, the court concluded it does not "roll." *Severance*, 2010 WL 4371438 at *11. The State must prove that the new dry beach is burdened by an easement before enforcing the OBA against a private-property owner affected by an avulsive event. *Id.*

THE DISSENTING OPINION

The dissenting opinion, written by Justice Medina and joined by Justice Lehrmann, in essence views the public easement in terms of the dry beach, regardless of whether the dry beach changes gradually or suddenly. *Severance*, 2010 WL 4371438 at *16 (Medina, J., dissenting). The dissent argues that the majority's distinction between dynamic and "rolling" is a contradiction, since both imply movement or change without regard to the suddenness of that change. *Id.* at *18. According to the dissent, the use of the terms "mean high tide," "mean low tide," and "vegetation line" is meant to ensure the dynamic nature of the boundaries between the State-owned wet beach, the easement-burdened dry beach, and the unburdened private property, and by tying the dry beach to the vegetation line, the OBA maintains the public-access easement no matter where or to what extent the vegetation line moves. *Id.* at *20. The dissent views the majority's reliance on the original land grant as mistaken because, while the land grant did not contain an express easement, it ignores the implied easement granted through the continual use of Texas beaches by the public. *Id.* at *19.

Additionally, the dissent notes that beachfront-property owners, in accordance with requirements by the OBA, are warned of the risks of owning beachfront property precisely because the boundaries are not static. *Id.* at *20. The majority responds that notice does not excuse the State from its legal obligations to private-property owners and cannot justify sudden change to the rights of those owners. *Severance*, 2010 WL 4371438 at *12. The dissent also points to a wealth of case law in Texas appellate courts where "rolling" easements were accepted as the law. *Severance*, 2010 WL 4371438 at *19 (citing *Seaway Co. v. Attorney General*, 375 S.W.2d 923 (Tex.App –Houston [1st Dist.] 1964, writ ref'd n.r.e); *Moody v. White*, 593 S.W.2d 372 (Tex. App.–Corpus Christi 1980, writ denied)).

POSSIBLE EFFECTS OF THE DECISION

An immediate effect of the *Severance* decision could be to require the State to prove the existence of a new public easement if it wishes to enforce the OBA against

private-property owners following a drastic and sudden change in beachfront-property boundaries, such as that which occurred following Hurricane Rita. The case itself has been returned to the Fifth Circuit for consideration of the Constitutional questions, but it appears that the ruling could severely burden the State. Some have argued that the ruling could empower private-property owners to question actions of the State in which it tries to keep the dry beach open to the public by relying on every new storm or hurricane as an avulsive event. Matthew Tresaugue & Harvey Rice, *Beach Homeowners Win Ruling*, HOUSTON CHRON., Nov. 5, 2010, http://www.chron.com/disp/story.mpl/business/realestate/7281075.html. Even if most of those private-property owners fail in their efforts, the number of lawsuits concerning public access to the beachfront can be expected to increase.

The effects of the decision are not necessarily limited to the question of public access to beaches, however. At least one property-law expert has speculated that the majority's opinion could have far-reaching effects on implied easements generally, such as the implied surface-use easement for mineral leases. Lynn E. Blais, *Legal Tide Shifts Against Texans*, AUSTIN AMERICAN-STATESMAN, Dec. 15, 2010, http://www.statesman.com/opinion/blais-legal-tide-shifts-against-texans-1124784.html. The dissent, in fact, cites to a decision regarding an oil and gas lease to argue that Texas common law acknowledges that easements are not necessarily restricted by their boundaries, but by their purpose and use. *Severance*, 2010 WL 4371438 at *17 (Medina, J., dissenting) (citing *Sun Oil Co. v. Whitaker*, 483 S.W.2d 808, 810 (Tex. 1974)).

The ruling's effects extend beyond the legal rights of the public and private-property owners to beachfront property. General Land Commissioner Jerry Patterson, one of the named defendants, was forced to halt an estimated $40 million renourishment plan for West Galveston Island because Texas law does not allow state funds to be spent on private beaches if the public will not be allowed access. Blais, *supra*. The Pacific Legal Foundation, who represented Severance, argued that the halting of the renourishment plan was due not to the ruling, but rather to the General Land Office's refusal to accept voluntary static easements. J. David Breemer, *U.S. Constitution Applies on the Coast*, GALVESTON DAILY NEWS, Dec. 12, 2010, http://www.pacificlegal.org/page.aspx?pid=1441.

Of course, not everyone is upset by the decision. It was reported that several West Galveston property owners were enthusiastic about the decision as a protection of their property rights despite changes in the beachfront boundaries. Tresaugue, *supra*. The Pacific Legal Foundation has expressed that it feels that the decision will force the General Land Office to change its policies regarding acquisition of beachfront property by forcing it to recognize the importance of private property rights. Breemer, *supra*.

CONCLUSION

The decision by the Texas Supreme Court in *Severance v. Patterson* could have potentially far-reaching effects in the years to come. The requirement that the State prove the existence of an easement whenever an avulsive event drastically changes the boundaries of beachfronts could potentially lead to a severe restriction on public beach access in the future. When a severe storm or hurricane hits the Gulf Coast, property owners affected by the change in the vegetation line will be encouraged to claim that their property, now situated on the dry beach, is unencumbered by an easement. Under the *Severance* ruling, they will likely be victorious as it may be difficult to

prove that the public has an easement in property to which a private owner has always had a right to exclude the public.

The issue, however, is not completely settled. In December 2010, the defendants in *Severance* filed a motion for rehearing with the Texas Supreme Court. They are being supported in their efforts by several state agencies, including the Attorney General. Blais, *supra*. On March 11, 2011, the Texas Supreme Court granted the motion for rehearing and oral arguments were on April 19, 2011. Chuck Lindell, *Supreme Court to Rehear Open Beaches Case*, AUSTIN AMERICAN-STATESMAN, Mar. 11, 2011, http://www.statesman.com/blogs/content/shared-gen/blogs/austin/courts/entries/2011/03/11/supreme_court_to_rehear_open_b.html. Barring a reversal in position by the court, the *Severance* decision sets out a new protection for private-property owners on Texas beachfronts that has the potential to alter the public's access to Texas beaches drastically.

On July 29, 2011, the ultimate disposition of this case became even more uncertain when the Texas Supreme Court abated its reconsideration. The court abated its reconsideration under the pending rehearing in response to the appellees motion to vacate the opinion as moot because Severance sold the subject property on June 24, 2011. The court notified the Fifth Circuit of the sale and awaits the Fifth Circuit's determination of whether Severance's federal lawsuit is moot. *Severance v. Patterson*, No. 09-0387, (Tex. S. Ct. Jul. 29, 2011), http://www.supreme.courts.state.tx.us/historical/2011/jul/090387.htm; *see also* July 29, 2011. Chuck Lindell, *Supreme Court Punts on Open Beaches Question*, AUSTIN AMERICAN-STATESMAN, Jul. 29, 2011, http://www.statesman.com/blogs/content/shared-gen/blogs/austin/courts/entries/2011/07/29/supreme_court_punts_open_beach.html?cxntfid=blogs_austin_legal.

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SOLID WASTE

EVALUATION OF VAPOR INTRUSION: EPA GUIDANCE AND THE HAZARDOUS RANKING SYSTEM

On January 31, 2011, the Environmental Protection Agency (EPA) announced it would seek public input on whether vapor intrusion should be included as a criterion for its Hazardous Ranking System (HRS). Janice Valverde, *EPA Seeks Comment on Vapor Intrusion as Criterion for Site on Superfund List*, 42 ER 225 (2011) [hereinafter Valverde, *Criterion for Superfund*]. The EPA uses the HRS to determine whether to add a site to the Superfund National Priorities List (NPL). *Id.* The period for public comment lasted through April 16, 2011. *Id.*

In November 2002, the EPA issued the Office of Solid Waste and Emergency Response (OSWER) Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air

Pathway from Groundwater and Soils (Draft Guidance). Envtl Prot. Agency, EPA 530-D-02-004, OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) 1 (Nov. 2002), http://www.epa.gov/epawaste/hazard/correctiveaction/eis/vapor/guidance.pdf. Using OSWER technical and policy recommendations, the Draft Guidance addresses the evaluation of vapor intrusion in determining whether a site's contamination levels might endanger the health of humans or the environment. *Id.* at 1-2.

The EPA posted its initial review of the Draft Guidance in August 2010. Janet Valverde, *EPA to Seek Input on Effort to Revise 2002 Draft Guidance on Vapor Intrusion,* 41 ER 2459 (2010) [hereinafter Valverde, *EPA to Seek Input*]. In the review, the EPA stated that most of the Draft Guidance remains relevant and technically sound, yet several areas should be updated. Envtl. Prot. Agency, Review of the Draft 2002 Subsurface Vapor Intrusion Guidance 2 (Aug. 2010). On October 27, 2010, the EPA announced it would solicit public comment on its review of the Draft Guidance. Valverde, *EPA to Seek Input*, *supra*.

The EPA defines "vapor intrusion" as the migration of volatile chemicals from subsurface groundwater or soil into overlying buildings. OSWER Draft Guidance, *supra*, at 4. Buried chemicals can emit vapors that may pass through subsurface soils and then into indoor air spaces. *Id.* Volatile chemicals include, but are not limited to, "volatile organic compounds, select semivolatile organic compounds, and some inorganic analytes, such as elemental mercury, radon, and hydrogen sulfide." Public Comment on the Development of Final Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway, 76 Fed. Reg. 14,660, 14,661 (Mar. 17, 2011). These chemicals are not always the result of vapor intrusion; they are sometimes the product of ambient sources such as household solvents, cleaners, etc. OSWER Draft Guidance, *supra*, at 5. As an example of possible changes in the final draft guidance, the EPA has indicated the process for addressing background contamination in indoor settings will likely be updated. Valverde, *EPA to Seek Input*, *supra*.

Typically, volatile-chemical concentration levels measured in dwellings or occupied buildings are low or non-existent. OSWER Draft Guidance, *supra*, at 5. Even low concentration levels may pose an unacceptable risk of chronic health effects over an extended period of time. *Id.* At higher levels, vapors may cause more immediate safety hazards such as explosions, acute health effects, or aesthetic problems such as odors. *Id.*

As a whole, the Draft Guidance is intended to aid the user in determining whether a complete vapor intrusion pathway exists and, if so, whether it poses an unacceptable health risk. *Id.* at 1. Any human exposure to vapors from site contamination constitutes a complete pathway. *Id.* If the vapor-intrusion pathway is incomplete, the EPA generally recommends that any further vapor-intrusion analysis is unnecessary. *Id.* It is important to note that the Draft Guidance is "not intended to provide recommendations on how to delineate the extent of risk or how to eliminate the risk." *Id.*

The approaches suggested in the Draft Guidance are primarily designed to address contamination in residential settings but may be adjusted for various non-residential settings. OSWER Draft Guidance, *supra*, at 2. For occupational settings, Occupational Safety and Health Administration (OSHA) will generally take the lead over the EPA in addressing vapor exposures. *Id.* at 3. In non-residential facilities where persons are in a non-working situation, the EPA recommends flexibility—allowing for certain

adjustments to the Draft Guidance model depending on relevant factors such as building-specific air volumes and air exchange rates. *See id.*

Structurally, the Draft Guidance is divided into a three-tiered approach: Primary Screening, Secondary Screening, and Site-Specific Pathway Assessment. OSWER DRAFT GUIDANCE, *supra*, at 7. Tier one, the Primary Screening phase, is designed to quickly identify the potential for vapor intrusion, *i.e.,* whether subsurface volatile chemicals are present at a specific site. *Id.* The user proceeds to tier two, the Secondary Screening stage, only if he determines 1) the existence of a potential risk; and 2) the risk does not necessitate immediate mitigating action. *Id.* at 8.

Tier two compares measured or reasonably estimated levels of volatile chemicals to specific numerical criteria to indicate whether a complete vapor-intrusion pathway exists. *Id.* Unless the results from the Secondary Screening support a determination that the pathway is incomplete, the user then proceeds to tier three. *Id.*

Tier three, Site-Specific Pathway Assessment, examines vapor migration and potential exposure in more detail to better understand their impact. The Draft Guidance recommends the direct measurement of foundation air and/or indoor air concentrations at this stage. OSWER DRAFT GUIDANCE, *supra*, at 8. In its review of the Draft Guidance, the EPA suggested that indoor air sampling may produce benefits if conducted earlier in the evaluation process. Valverde, *EPA to Seek Input*, *supra*. Possible benefits include improved public relations and clearer communication of the sampling results. *Id.*

The EPA plans to issue its final Guidance on vapor intrusion by November 30, 2012, and has re-opened a docket for public comment. Public Comment, 76 Fed. Reg. at 14,661. The EPA accepted comments until May 14, 2011, with another round of public comment scheduled for the spring of 2012. *Id.* Although the Draft Guidance is currently not finalized, it has gone through extensive agency review, and the EPA believes it to be a technically sound product. Valverde, *EPA to Seek Input*, *supra*.

Between January 31, 2011, and August 16, 2011, the EPA sought public input on whether to include a vapor-intrusion component in the Hazard Ranking System (HRS) mechanism used to place sites on the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) NPL. *Potential Addition of Vapor Intrusion Component to the Hazard Ranking System*, 76 Fed. Reg. 5,370, 5,371 (Jan. 31, 2011). This addition "would allow the HRS to directly consider the human exposure to contaminants that enter building structures through the subsurface environment and thus, enabling sites with vapor intrusion contamination to be evaluated for placement on the NPL." *Id.* It is important to note the EPA did not designate use of the Draft Guidance for determining whether, and to what extent, cleanup action is warranted at these sites. OSWER DRAFT GUIDANCE, *supra*, at 10.

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Water Quality and Utilities

Kirby Lake, Act IV: An Encore for Governmental Immunity Waivers under the Texas Local Government Code

I. Introduction

In 2005, the Texas Legislature amended the Texas Local Government Code to include provisions waiving the immunity of local government entities in certain breach of contract claims involving the provision of "goods or services." Tex. Loc. Gov't Code Ann. §§ 271.151–271.160 (Vernon 2005). Since then, courts across the state have issued opinions interpreting the extent of these waivers. *See, e.g., Ben Bolt-Palito Consol. Indep. Sch. Dist. v. Tex. Political Subdivs. Prop./Cas. Joint Self-Ins. Fund*, 212 S.W.3d 320 (Tex. 2006). The Texas Supreme Court recently contributed to this collection, adding its decision in the consolidated *Kirby Lake* cases. *Kirby Lake Dev., Ltd. v. Clear Lake City Water Auth.*, 320 S.W.3d 829 (Tex. 2010) (*Kirby Lake IV*). The supreme court held that, although the language in the Texas Water Code does not clearly and unambiguously waive governmental immunity when allowing water districts to sue and be sued, a water district's contract with residential developers to build facilities was subject to the Local Government Code provisions, under which immunity is waived. *Id.* at 840.

The Texas Local Government Code provides that "[a] local governmental entity that is authorized by statute or the constitution to enter into a contract and that enters into a contract subject to this subchapter waives sovereign immunity to suit for the purpose of adjudicating a claim for breach of the contract, subject to the terms and conditions of this subchapter. Tex. Loc. Gov't Code Ann. § 271.152 (Vernon 2005). A "contract subject to this subchapter" is a "written contract stating the essential terms of the agreement for providing goods or services to the local governmental entity that is properly executed on behalf of the local governmental entity. *Id.* § 271.151(2).

II. Water Districts

A general law water district is a type of governmental special district, a state political subdivision created to manage certain services locally that the general government does not provide. Special districts in Texas include water districts, school districts, hospital districts, housing authorities, rural fire prevention districts, and others. As state political subdivisions, water districts are entitled to governmental immunity from suit unless it is expressly waived. *Id.* § 271.151(3)(C).

Water districts commonly "contract with private developers to build and maintain water facilities." *Kirby Lake IV*, 320 S.W.3d at 836. These agreements are governed by Texas Commission on Environmental Quality (TCEQ) rules, which state that a water district is obligated to reimburse the developers for up to 70% of construction costs, but only if voters approve a bond sale to provide the funds. 30 Tex. Admin. Code § 293.47. A particular type of contract, the "prefunding agreement," allows developers to finance construction before a bond is formally approved. *Id.* § 293.46. In such a situation, the developer necessarily risks the possibility that funding may not ultimately be authorized. *Kirby Lake IV*, 320 S.W.3d at 836.

The *Kirby Lake* cases involved the Clear Lake City Water Authority ("Authority"), the largest water district in Texas. *Id.* The Authority contracted with four residential

developers (Kirby Lake Development, Ltd.; Miter Development Company, L.L.C.; Taylor Lake, Ltd.; and Friendswood Development Company, Ltd.) ("Developers") to construct water facilities. *Id.* at 832. The Developers agreed to finance construction, and the Authority agreed to reimburse them for 70% of the costs once voters approved a bond issue. *Id.* at 832-33. In the meantime, the Developers agreed to lease the facilities to the Authority without charge. *Id.* at 832. The agreements constituted a prefunding agreement under TCEQ rules. *Id.* at 836.

The relevant language from the contracts provided the following:

> It is expressly acknowledged and agreed by the parties here to, that the Authority has no existing voter authorization to issue any bonds to pay for the cost of the Facilities, and does not anticipate that funds will be available for such costs without a voter approved bond sale for such purchase. The Authority intends to call a bond election in the near future but is not obligated to do so, and the Authority cannot predict when, if ever, such an election and bond sale will occur, or when, if ever, the Authority will have other funds available and allocated for the purchase of the Facilities. The Authority shall have the right to purchase the Facilities with funds available from a source other than a bond sale for such purpose, but shall have no obligation to do so. The Authority does agree, however, that it shall include in any bond election it does hold subsequent to the effective date of this Agreement bond authorization in an amount sufficient to pay the purchase price of the Facilities? [sic]
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> . . . .
>
> The Authority shall have no obligation to obtain approval from the voters of bonds to finance purchase of the Facilities, but if such voter approval is obtained, the Authority shall sell Authority bonds for the purpose of purchasing the Facilities. . . . The Authority agrees to proceed with due diligence to consummate the issuance of such bonds and the acquisition of the Facilities under such circumstances.

Id. at 833.

KIRBY LAKE I

Pursuant to the agreements, the Authority included bond authorization proposals in two separate 1998 elections; both times, the voters rejected the measure. *Id.* at 832. Three of the Developers, all but Friendswood, sued the Authority, alleging that it was obligated to remit payment under the contract. *Clear Lake City Water Auth. v. Kirby Lake Dev., Ltd.*, 123 S.W. 3d 735, 741-42 (Tex. App.—Hous. [14th Dist.] 2003, pet. denied) (*Kirby Lake I*). The trial court ruled in favor of the Developers. *Id.* The Fourteenth District Court of Appeals, Houston. reversed on the grounds that voter approval was a condition precedent to the Authority's obligation to purchase the facilities. *Id.* at 756.

KIRBY LAKE II

The Authority held another bond election in 2004, which did not include the reimbursement proposition. The three Developers sued again, claiming that the Authority had breached its agreement to include an authorization measure in every

bond election held until the proposition passed. *Clear Lake City Water Auth. v. Kirby Lake Dev., Ltd.*, 274 S.W.3d 41 (Tex. App.—Hous. [14th Dist.] 2008 *rev'd*, 320 S.W.3d 829 (Tex. 2010) (*Kirby Lake II*). The court of appeals rejected the Authority's claim of governmental immunity from suit, stating that immunity had been waived under § 271.152. *Id.* at 41. The trial court granted summary judgment to the Developers and awarded damages. *Id.* at 42. The court of appeals again reversed, holding that the agreement unambiguously provided for only one election and that the Authority had therefore complied with its contractual obligations. *Id.* at 44.

Kirby Lake III

The Developers also alleged that the Authority's failure to pay for and its continued possession of the facilities constituted an illegal taking. The trial court granted the Authority's plea to the jurisdiction and dismissed the claim for lack of subject-matter jurisdiction. *Kirby Lake Dev. v. Clear Lake City Water*, 321 S.W.3d 1, 3 (Tex. App.—Hous. [14th Dist.] 2008 *aff'd sub nom, Kirby Lake Dev., Ltd. v. Clear Lake City Water Auth.*, 320 S.W.3d 829 (Tex. 2010) (*Kirby Lake III*). The court of appeals affirmed the dismissal, on the grounds that the Developers had consented to the alleged taking. *Id.* at 8.

Friendswood Cases

The fourth developer, Friendswood Development, filed a separate claim for breach of contract against the Authority. *Clear Lake City Water Auth. v. Friendswood Dev. Co., Ltd.*, 256 S.W.3d 735 (Tex. App.—Hous. [14th Dist.] 2008, pet. dism'd) (*Friendswood I*). The district court granted summary judgment to Friendswood. *Id.* at 739. The court of appeals affirmed in an interlocutory appeal, ruling that the Authority's governmental immunity had been waived. *Id.* at 751-52. In a subsequent appeal, the court of appeals reversed, rendering judgment that Friendswood take nothing. *Clear Lake City Water Auth. v. Friendswood Dev. Co.*, 2008 Tex.App. LEXIS 9127 (Tex. App.—Hous. [14th Dist.] 2008) (mem. op.) (*Friendswood II*).

Subsequent Developments and Consolidation

In November 2006, while the cases were pending in the trial court, the Authority held another bond election. The developers alleged that the board members "actively discouraged passage" of the reimbursement provisions, which failed again. *Kirby Lake IV*, 320 S.W.3d at 834.

In 2009, the Texas Supreme Court consolidated the *Kirby Lake II*, *Kirby Lake III*, and *Friendswood II* cases. *Kirby Lake Dev., Ltd. v. Clear Lake City Water Auth.*, 52 Tex. Sup. Ct. J. 788, 788-89 (May 29, 2009). The court granted the petition for review of the consolidated cases shortly afterward. *Kirby Lake Dev., Ltd. v. Clear Lake City Water Auth.*, 53 Tex. Sup. Ct. J. 15, 15 (Oct. 23, 2009).

III. Legal Issues and Analysis

The Texas Supreme Court's review addressed three distinct legal issues: whether the Authority's governmental immunity was waived, how to interpret the agreements, and whether the Authority's possession of the facilities constituted inverse condemnation. *Kirby Lake IV*, 320 S.W.3d at 834-35.

The Authority Waived Governmental Immunity.

The Developers argued that the Authority's immunity was waived under the Texas Water Code as well as under the Texas Local Government Code. The court determined that the Authority did not waive its governmental immunity under Section 49.066 of the Water Code, but instead concluded that it did so under Section 271.152 of the Local Government Code. *Id.* at 837-840; *see* TEX. WATER CODE ANN. § 49.066(a) (Vernon 2008) and TEX. LOC. GOV'T CODE ANN. § 271.152 (Vernon 2005).

The relevant Water Code provision states that a district "may sue and be sued in the courts of this state in the name of the district by and through its board" and that "a suit for contract damages may be brought against a district only on a written contract of the district approved by the district's board." TEX. WATER CODE ANN. § 49.066(a) (Vernon 2008). The court held that the "sue and be sued" language in the statute does not waive governmental immunity, but rather "merely anticipates" that a district may become subject to litigation. *Kirby Lake IV*, 320 S.W.3d at 837 (quoting *Harris Cnty. Hosp. Dist. v. Tomball Reg'l Hosp.*, 283 S.W.3d 838, 843 (Tex. 2009)). Similarly, the court also reject the argument regarding the provision regarding the "only" conditions of contract enforcement against a district. *Id.* at 837-38.

The Local Government Code allow for the waiver of governmental immunity from a suit for breach of "a written contract stating the essential terms of the agreement for providing goods or services to the local governmental entity." *Id.* at 838 (quoting TEX. LOC. GOV'T CODE ANN. §§ 271.152, 271.151(2) (Vernon 2009)). The court held that the agreements were indeed "written contracts stating their essential terms." *Id.* at 838. It then went on to consider whether they concerned provision of "goods or services" to the Authority. *Id.* It determined that the term "services" tends to be interpreted broadly, and that services do not have to be the agreement's primary purpose for it to fall under the statute. *Id.* at 839. The court concluded that the agreements do entail the provision of services. *Id.* Consequently, the court held that Section 271.152 did apply, waiving the Authority's governmental immunity from suit. *Id.*

Interpretation Issues

"Any" means "every"

The court went on to discuss the use of the term "any." The agreements state that the Authority "shall include in any bond election it does hold subsequent to the effective date of this Agreement bond authorization in an amount sufficient to pay the purchase price of the Facilities." *Id.* at 840. The Authority claimed that "any bond election" meant one ballot only, whereas the Developers maintained that the phrase included every future election until the authorization is approved. *Id.* The *Kirby Lake II* court ruled for the Authority, but the Texas Supreme Court reversed, based on a contextual analysis of the contract's grammatical structure. *Id.* The supreme court concluded that the overall structure and purpose of the agreements, "to construct facilities that the Authority would ultimately purchase," was best effectuated by adopting the Developers' position. *Id.* The court also noted that the agreements do not mention "the parties' obligations in the event the bond measure does not pass," noting the lack of express release from the Authority's obligation. *Id.* Finally, the court pointed out the improbability that the Developers had intended to forfeit their interests in the facilities they had financed and built, an inevitable result under the Authority's

interpretation, further noting that contracts are construed to avoid forfeiture when possible in Texas. *Id.* at 841-42.

The agreements are not perpetual contracts

Alternatively, the Authority argued, the *Kirby Lake II* holding was appropriate because the agreements did not contain an express time limit and "the law disfavors perpetual contracts." *Id.* at 842. The court rejected this claim, distinguishing between contracts of "infinite duration" and contracts that "specify determinable events." *Id.* The agreements refer to an "ascertainable fact or event" marking the end of the agreement's terms, *i.e.,* the Authority's purchase of the facilities; consequently, they are not perpetual contracts. *Id.* Therefore, the rule that a contract of infinite duration may be terminated at will after a reasonable time is irrelevant and does not apply. *Id.*

The agreements do not violate the reserved powers doctrine

The Authority also argued that an ongoing obligation to include bond authorization provisions on its election ballots would violate the reserved powers doctrine by impeding its substantive governmental operations. *Id.* at 843. The court rejected this argument as well, reasoning that the Authority's contractual obligation neither cedes its governmental powers nor affects the performance of its public duties. *Id.*

Developer's Consent Precluded Inverse Condemnation Claim

The Authority's possession of the facilities does not constitute inverse condemnation. Inverse condemnation occurs when the government has not actually claimed the property's title, but still takes over its use and value. *Id.* at 844. The Texas Constitution's analog to the United States Constitution's Fifth Amendment prohibits the taking of property for public use without just compensation, unless by consent, and applies to inverse condemnation as well as traditional takings claims. *Id.*; *see* Tex. Const. art. I, §17. The *Kirby Lake III* court barred the Developer's inverse condemnation claim, holding that they consented to the alleged taking by allowing the Authority to lease the facilities without charge until purchase. *Id.* The Texas Supreme Court agreed, further stating that the Authority did not have the requisite intent for an intentional taking violation because it was acting under the color of contractual rights, not its powers of eminent domain. *Id.*

IV. Conclusion

The Texas Legislature added the immunity waiver provisions in Sections 271.151–271.160 of the Local Government Code to address the contractual relationship between governmental and private entities. The *Kirby Lake* cases indicate that these Local Government Code sections, and the Texas Supreme Court's interpretation of these sections, will most certainly affect how water districts and developers contract with each other regarding improvements for development. As the curtain falls on the *Kirby Lake IV* stage, the immunity waiver provisions indeed seem to be serving their purpose.

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WATER RIGHTS

A SUMMARY OF *SOS ALLIANCE, INC. V. CITY OF DRIPPING SPRINGS*, 304 S.W.3D 871 (2010) (TEX. APP.—AUSTIN 2010, PET DENIED).

In February 2010, the Court of Appeals, Third District, Austin, withdrew its July 2009 opinion and judgment, and issued a new opinion that affirmed a judgment against the Save Our Springs Alliance ("SOS Alliance") by the 207th Judicial District Court of Hays County. *Save Our Springs Alliance, Inc. v. City of Dripping Springs*, 304 S.W.3d 871, 875 (Tex. App.—Austin 2010, pet denied). The SOS Alliance brought this case to prevent development on tracts of land that it alleged would affect the Barton Springs segment of the Edwards Aquifer. The defendants included the City of Dripping Springs ("City") and Mak Foster Ranch, L.P. The district court granted summary judgment to the defendants, their pleas to the jurisdiction on several issues, and finally awarded them attorneys' fees. *Id.* The appellate court affirmed the judgment of the district court and denied the plaintiff's motion for rehearing *en banc*. *Id.* at 875-876. This case is particularly of interest on the standing issue.

In April 2001, the City entered into development agreements with landowners Mak Foster Ranch, L.P., and Cypress-Hays, L.P. *Id.* at 876. The agreement allowed Mak Foster Ranch and Cypress-Hays to develop the land for "residential, recreational, and commercial" purposes. *Id.* The City rests on the Edwards Aquifer's "contributing zone." *Id.* Creeks carry water east from the City and ultimately deposit it into the "recharge zone" of the aquifer. *Id.* From there the water moves into the ground and ultimately deposits into the aquifer itself. *Id.* This particular zone of the aquifer feeds into Barton Springs in Austin. *Id.*

The SOS Alliance is an organization working to protect the Barton Springs segment of the aquifer. In 2002, the SOS Alliance first claimed the City lacked the authority to enter into the development agreements and challenged the sufficiency of its public notice and information sessions before entering into the agreement. *SOS Alliance*, 304 S.W.3d at 876-77. The 2003 Texas Legislature addressed this issue by enacting legislation that gave the City the power to enter into the development agreements. *Id.* at 877. The SOS Alliance then filed a claim asserting that the City had violated the Texas Constitution and the Texas Open Meetings Act. *Id.* The SOS Alliance justified its constitutional claims saying that the development agreements "[impinged] on the right of local self government, [impaired] the preservation of a republican form of government, and [contracted] away legislative powers." *Id.* The SOS Alliance's Open Meetings Act violation claim was based on the inadequacy of the public notices that were supposed to explain the development agreements. *Id.* The district court ruled on

behalf of the defendants granting their plea to the jurisdiction to all claims with the lone exception of the Texas Open Meetings Act claim. *Id.* After a hearing on the Texas Open Meetings Act claim, the court granted summary judgment for the defendants. *Id.* It also awarded attorneys' fees to Mak Foster Ranch. *SOS Alliance* 304 S.W.3d at 877.

Standing on the Basis of Environmental Interests

On appeal, the SOS Alliance challenged the district court's decision to grant the pleas to the jurisdiction, insisting that the court did have subject-matter jurisdiction and that the SOS Alliance alleged facts sufficient to demonstrate it. *Id.* The SOS Alliance claimed environmental injury to Barton Springs in arguing that it had standing to bring the suit. *Id.* at 878. It cited injury to members of the alliance who enjoy Barton Springs recreationally or who study its plant and wildlife and whose interests would be harmed by pollution to the aquifer. *Id.* at 879. The court of appeals disagreed that this interest alone would confer standing. It distinguished the cases that the SOS Alliance cited in support of deriving its standing to bring suit on the basis of "environmental, scientific, and recreational interests." *Id.* The SOS Alliance substantially relied on *Texas Rivers Protection Ass'n v. Texas Natural Resource Conservation Commission*. *Id.* (citing *Texas Rivers Protection Ass'n v. Texas Natural Resource Conservation Commission*, 910 S.W.2d 147 (Tex. App.—Austin 1995, writ denied). In that case, the court wrote that "an injury need not affect 'vested' property rights to confer standing; the harm may be economic, recreational, or environmental." *Id.* The appellate court distinguished the *Texas Rivers* case, however, by noting that plaintiffs have to be able to assert an injury "sufficiently particularized so as to distinguish the harm from that experienced by the general public." *SOS Alliance*, 304 S.W.3d at 879. Although the court agreed that environmental or recreational interests may be enough to confer standing on their own, they were not sufficient by themselves to support a claim of injury. *Id.* at 879-880. Riparian property interests, the court concluded, were necessary to confer standing in the *Texas Rivers* case, and thus, a property interest in Barton Springs was necessary to establish standing in this case. *Id.* at 880.

The SOS Alliance could not produce a member with property interests in Barton Springs, so it also produced federal cases that supported standing to bring suit on the basis of environmental harm. *Id.* Once again, the appellate court distinguished those cases by acknowledging that although many courts have allowed harm to aesthetic and environmental value of sites to be enough of an injury to support standing, the federal cases the plaintiffs cited involved federal statutes that specifically prohibit the kind of conduct challenged in those suits. *Id.* Thus, the interests sought to be protected in those cases were legitimate on the grounds that they were protected explicitly by federal statutes. *SOS Alliance*, 304 S.W.3d at 880-881. Because the SOS Alliance could not assert an interest protected by a statute or protection of a property right, the court found that "Texas authority [does not exist] for the proposition that the type of injury alleged by the SOS Alliance in this case . . . is the type of interference with a legally protected interest or injury that confers standing as a matter of state law." *Id.* at 882.

In Footnote No. 7, the court of appeals distinguished a Texas case that the SOS Alliance cited because in that case, a state statute provided standing. *Id.* at n.7 (citing *Save Our Springs Alliance, Inc. v. Lowry,* 934 S.W.2d 161 (Tex.App.—Austin 1996, orig. proceeding)). That case, *Save Our Springs Alliance, Inc. v. Lowry,* involved standing based

on a statute—the Texas Open Meetings Act, which allows an "interested person" to file suit. *Id.*; *see also* TEX. GOV'T CODE ANN. § 551.142(a) (West 2004). The court also distinguished a Texas case that the San Marcos River Foundation, an amicus curiae, relied upon because in that case, standing was based on a section of the Texas Water Code. *SOS Alliance*, 304 S.W.3d at n.7 (citing *City of San Marcos v. Texas Commission on Environmental Quality*, 128 S.W.3d 264, 266 (Tex.App. —Austin 2004, pet. denied)).

The SOS Alliance also produced two landowners with property near the proposed development site whose land could be affected by the pollution, but because the SOS Alliance failed to show that their land lay downstream of the pollution, those landowners' injuries were not "more than speculative." *Id.* at 883.

TEXAS CONSTITUTION CLAIM

The court also rejected the SOS Alliance's claim that the development agreements "impinge on the right of local self-government, impair the preservation of a republican form of government, and contract away legislative and police owners." *Id.* at 884. The court said that this sort of "procedural injury" to the residents of Dripping Springs because their local government contracted with private parties to develop land has been recognized in the past only when a statute specifically provides these procedural rights. *Id.* at 885. The federal cases cited by the SOS Alliance relied on federal statutes that protected this procedural right. *Id.* The SOS Alliance did not cite similar Texas statutes, and so again the court found the plaintiffs lacked standing on the basis of righting a procedural injury. *SOS Alliance* 304 S.W.3d at 885.

TAXPAYER STANDING

The SOS Alliance tax-paying argument also failed, and it was unable to convince the court that it had taxpayer standing because the developers' had contracted to reimburse the City for expenses of the law suit. *Id.* Thus the monetary burden of the project would never shift to the taxpayers of Dripping Springs. *Id.* at 886.

NON-WATER RELATED INJURIES

The court of appeals dismissed the non-water-related injuries that the SOS Alliance claimed on behalf of citizens who would be affected by the construction because they were not interests that were "germane to the organization's purpose." *Id.* The SOS Alliance exists "for the purposes of protecting the Edwards Aquifer with particular emphasis on preventing further pollution of Barton Springs and reversing the water quality degradation of Barton Springs that has already occurred." *Id.* Injuries like impairing the view for neighbors to the construction, noise from truck travel, etc. were too unrelated to the purposes of the SOS Alliance. *Id.* at 887.

TEXAS OPEN MEETINGS ACT

The court reviewed de novo the district court's granting of summary judgment to the defendants on the claim that the City gave insufficient notice to the public of the decision to make the development agreements. *Id.* at 888. It noted that that in the past Texas cases have not required a high degree of detail and specificity in notices as the SOS Alliance asserted is necessary for compliance. *Id.* at 889. The SOS Alliance argued that the omissions about details in the notice varied from the City's standard

practice, but the court found the plaintiffs had not shown any well-established customs that would support this contention. *Id.* at 889-890.

Attorneys' Fees

The SOS Alliance appealed the awarding of attorney's fees to Mak Foster. *Id.* at 891. The appellate court found first that the trial court had the discretion to award attorneys fees for a Uniform Declaratory Judgment Act claim. *Id.* The court also found that Mak Foster did not have a duty to segregate between its defense against the SOS Alliance and the Friendship Alliance, a plaintiff who had settled, because the "causes of action are dependent upon the same set of facts or circumstances and are intertwined to the point of being inseparable." *Id.* at 892. Further, the court disagreed with the SOS Alliance's claims that Mak Foster had not presented enough evidence to support an award of attorney's fees and that the award was unjust to require of a nonprofit organization. *SOS Alliance*, 304 S.W.3d at 893.

Dissenting Opinion

The dissenting opinion, issued by Justice Patterson and joined by Justice Henson, on the court of appeals' denial of the SOS Alliance's motion for en banc consideration, took issue with the court's "narrowing the class of claimants with common law standing to assert recreational, scientific, and environmental harm" to claimants with property rights in the land. *Id.* at 894. The dissent referred to the *Texas Rivers Protection Association* case, quoted above, that explicitly says a claimant does not need a vested property interest to establish standing. *Id.* The dissent rejected the court's holding that claimants must have a property interest in the land to have standing. *Id.* It quoted language in *Lujan v. Defenders of Wildlife* in which the Supreme Court noted, "of course, the desire to use or observe an animal species, even for purely aesthetic purposes, is undeniably a cognizable interest for the purpose of standing." *Id.* at 895 (citing *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 562 (1992)). As the dissent explains, in *Lujan*, the claimants failed to show "actual or imminent" injury because the claiming member did not have any plans "to visit an area affected by the rule." *Id.* Here, the dissent concluded that it would have granted the SOS Alliance's motion for *en banc* consideration because of the inconsistent approach of the majority court. *SOS Alliance,* 304 S.W.3d at 896.

Conclusion

The Austin Court of Appeals' decision could make it more difficult for environmental groups to bring claims against developers. If members of organizations will be required to have a property interest in the land the environmental changes will affect to show standing, purely conservationist efforts will fail.

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CASENOTES: FEDERAL

THE SIGNIFICANCE OF A NEXUS: FURTHER DEVELOPMENTS POST-*RAPANOS*

The Fourth Circuit of the United States Court of Appeals recently held that under Section 1344(a) of the Clean Water Act (CWA), Precon Development Corporation does not need to obtain a permit from the United States Army Corps of Engineers ("Corps") to fill 4.8 acres of wetlands. *Precon Development Corp. v. United States Army Corps of Engineers*, 633 F.3d 278 (4th Cir. 2011). Precon is the developer of the Edinburgh Planned Unit Development ("Edinburgh PUD") in Chesapeake, Virginia. *Precon Development*, 633 F.3d at 281. In 2007, Precon applied to the Corps under Section 1344(a) of the CWA, 33 U.S.C. § 1344(a) (frequently referred to as "Section 404") for a permit to fill 4.8 acres of wetlands ("Site Wetlands"). *Id.* at 282. The wetlands in question "are in the southwest quadrant of the Edinburgh PUD," and are adjacent to a 2,500-foot, man-made seasonal ditch ("2,500-Foot Ditch"), which joins a larger, perennial drainage ditch ("Saint Brides Ditch"). *Id.* An additional 161 acres of wetlands are within the Edinburgh PUD and are adjacent to the 2,500-Foot Ditch and the first 3,000 feet of the Saint Brides Ditch. *Id.* The Saint Bridges Ditch continues south of the Edinburgh PUD and connects with a second perennial tributary 2.5 to 3 miles downstream. *Id.* An additional 282 acres of non-Edinburgh PUD wetlands are adjacent to this portion of the Saint Bridges Ditch. *Id.* at 284. "These merged tributaries flow into the Northwest River three to four miles downstream." *Id.* at 282.

The Corps determined that it had jurisdiction over the Site Wetlands because they were adjacent to the ditches, and subsequently denied Precon's request for a permit. *Id.* at 282-83. Because it was an administrative decision, Precon sought judicial review. The United States District Court granted the Corps' motion for summary judgment, upholding the Corps' jurisdictional determination and its permit denial. *Id.* at 280. On appeal to the Fourth Circuit, Precon challenged only the jurisdictional finding. *Id.*

Under the CWA, the Corps has jurisdiction over "waters of the United States." CLEAN WATER ACT, 33 U.S.C. § 1344(a). However, in *Rapanos*, the U.S. Supreme Court was divided about what exactly is included in "waters of the United States." *See Rapanos v. United States*, 547 U.S. 715 (2006). In a concurring opinion that several circuits have since adopted in some form, Justice Kennedy outlined a case-by-case "significant nexus" test: wetlands adjacent to non-navigable tributaries are navigable waters "if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of waters more readily understood as 'navigable.'" *Precon*, 633 F.3d 288 (quoting *Rapanos*, 547 U.S. at 780 (Kennedy, J., concurring)). Both Precon and the Corps agreed that the "significant nexus" test governs the issue of whether the Corps has jurisdiction over the Site Wetlands. *Id.* at 288. Because the "significant nexus" test allows the Corps to consider lands similarly situated to the wetlands at issue, the test has two main prongs: 1) identify the similarly situated lands; and 2) determine whether the wetlands at issue, together with similarly situated lands, form a significant nexus to navigable waters. In this case, the Fourth Circuit held that the Corps satisfied the first prong but failed to

satisfy the second because a "significant nexus" did not exist between the wetlands and a navigable river located approximately seven miles away. *Id.* at 278. The discussion in the *Precon* case marks the first time the Fourth Circuit has addressed this issue, and the Fifth Circuit, which includes Texas, has yet to comment on this uncertain area of law under the Clean Water Act.

1. Similarly Situated Lands

After the issuance of the *Rapanos* decision, the Corps (along with the Environmental Protection Agency) issued a non-binding guidance document (the Rapanos Guidance) for the Corps and general public to, *inter alia*, flush out the concept of similarly situated lands. Envtl. Prot. Agency and the United States Army, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States* (Dec. 2008), *available at* http://www.usace.army.mil/CECW/Documents/cecwo/reg/cwa_guide/cwa_juris_2dec08.pdf. The Rapanos Guidance interprets "similarly situated" lands to mean "all wetlands adjacent to the same tributary." *Id.* A tributary is defined as "the entire reach of the stream that is the same order (*i.e.,* from the point of confluence, where two lower order streams meet to form the tributary, downstream to the point such tributary enters a higher order stream)." *Id.* Thus, to satisfy the first prong of the "significant nexus" test, the Corps had to: (1) determine the reach of the relevant tributary, (2) determine the location of the wetlands adjacent to this reach, and (3) do so in a manner that was consistent with the test.

"The Corps identified the relevant tributary as the 2,500-foot Ditch and the Saint Brides Ditch, collectively, down to the point where the Saint Brides Ditch converged with the second perennial tributary." *Precon,* at 290-91. Because the two tributaries converged, the Corps considered them as one. *Id.* at 291. The Fourth Circuit acknowledged that the non-binding guidance memo did not contemplate a situation where multiple tributaries could be included within a relevant reach, and therefore, its decision was reasonable and consistent with the "significant nexus" test. *Id.*

Once the Corps established the relevant reach, it identified 448 acres of adjacent wetlands. This acreage included the 4.8 acres of Site Wetlands, 61 acres of wetlands within the Edinburgh PUD adjacent to the 2,500-Foot Ditch and the first 3,000 feet of the Saint Brides Ditch, and the additional 282 acres of non-Edinburgh PUD wetlands adjacent to the remaining 2.5 to 3 miles of the Saint Brides Ditch. *See id.* at 282, 291-92. Pusuant the guidance memo, the adjacent wetlands are considered "similarly situated." The Corps added an additional rationale: "[T]he Site Wetlands and 166 acres of PUD wetlands are part of a 'physical, chemical, and biological connection of wetlands and streams' that exists, and 'has always existed,' in the area." *Id.* at 284.

Although the *Precon* Court had little trouble in accepting the Corps' expansive interpretation of the relevant reach of the tributary, it was more hesitant to accept the Corps' decision to include these 448 acres of adjacent wetlands as similarly situated land. Although the Fourth Circuit did not hold that the Rapanos Guidance approach was inconsistent with the broad nature of Justice Kennedy's "similarly situated" requirement, it did imply that adjacency to the relevant reach does not in itself establish a similarly situated wetland. *Id.* at 292.

2. A Significant Nexus

On the second main prong of the "significant nexus" test, the Fourth Circuit Court of Appeals held that the Corps failed to establish a significant nexus between the ditch, waters, and the wetlands. Specifically, because the administrative record did not contain sufficient physical (quantitative or qualitative) evidence of the effects of the nexus on the Northwest River, the court held that the Corps failed to meet the eponymous "significant nexus" requirement that the nexus be significant as opposed to merely speculative or insubstantial. *Id.* at 294.

The Fourth Circuit reasoned that the Corps' rationale was insufficient to establish a significant nexus amongst these watercourses. First, the record did not contain any measurements of actual flow. *Id.* at 294. Second, and more importantly, even if the record had sufficiently documented flow, it did not explain the significance of that flow on the Northwest River. In other words, given that the significant nexus test is a comparative relationship between the wetlands at issue, their adjacent tributary, and traditional navigable waters, it is necessary to look at all the factors involved in this relationship. *See id.* at 294-95. Since the record did not establish that the Northwest River, which was located seven miles from the Site Wetlands, suffers from high levels of nitrogen or sediment, or is prone to flooding, the court held that the nexus was necessarily incomplete. *Id.* at 295.

As a result, the court reversed the District Court's grant of summary judgment and remanded this case back to the District Court with instructions to remand it to the Corps for further consideration consistent with its opinion.

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CASENOTES: STATE

Opportunity Gone Dry: Homeowner Sues the LCRA over a Lowered Lake Travis

When the water level in Lake Travis falls drastically in a drought, who is to blame? Hot summer days, or the Lower Colorado River Authority (LCRA)? Robert L. Wynne sought injunctive relief against the LCRA, alleging the LCRA was responsible for low lake levels on Lake Travis that thwarted Wynne's recreational and aesthetic use of the lake at his lakefront home. A Travis County district court dismissed Wynne's claims in ruling on a jurisdictional plea by the LCRA, which raised a governmental immunity defense and challenged Wynne's standing. *Wynne v. Lower Colorado River Authority*, No. 03-10-00402-CV, 2010 WL 5020062 at *1 (Tex. App. —Austin 2010, pet. filed) (mem-op.). Wynne appealed the decision of the 201st District Court of Travis County

to the Third Court of Appeals. The court of appeals affirmed the district court's jurisdictional dismissal. *Id.*

On appeal, the Third Court reviewed Wynne's live pleading to determine whether a basis for jurisdiction existed that governmental immunity did not bar. *Id.* Wynne argued that the LCRA exceeded its constitutionally-mandated obligations by engaging in commercial activities befitting a for-profit, non-governmental body. *Id.* As a result of these activities by the LCRA, Wynne claimed Lake Travis was drained in contravention of the LCRA's duty to maintain a level at which recreational activities can be sustained. *Id.*

The Third Court affirmed the district court's dismissal on governmental immunity grounds. It observed that Wynne's suit sought to require the LCRA to comply with statutory and constitutional provisions, making it a challenge to the LCRA's allegedly *ultra vires* conduct. *Wynne*, 2010 WL 5020052, at *2. The Third Court found that such suits can be maintained only against public officials in their official capacity, and not against a governmental entity itself that enjoys governmental immunity. *Id.* Although the court did not reach the issue of Wynne's standing, the arguments raised on that issue are worthy of note.

In addition to asserting immunity, the LCRA challenged Wynne's suit on the basis that Wynne was not "affected by the LCRA's actions . . . in a sufficiently particularized way for him to have standing to sue." Brief of Appellant Robert Wynne, *Wynne v. Lower Colorado River Auth.*, 2010 WL 4021639 at *1 (Appellant's Brief). The LCRA argued that Wynne did not adequately demonstrate that he was affected personally, and that his aesthetic and recreational interests do not alone constitute injuries-in-fact, and therefore, he lacked standing to sue. Brief of Appellee LCRA, *Wynne v. Lower Colorado River Auth.*, 2010 WL 4361362 at *8-11 (Appellee's Brief). Wynne challenged these arguments in his reply brief, in which Wynne characterized the LCRA's argument as one that essentially made the LCRA immune from "any complaint from any private citizen over what it does with the water in Lake Travis, no matter what its constitutional boundaries may be." Reply Brief of Appellant Robert Wynne, *Wynne v. Lower Colorado River Auth.*, 2010 WL 4361363 at *11-12 (Appellant's Reply Brief). Wynne asserted that Texas case law allows private citizens to sue governmental bodies if the action "affects" them in a way "distinct from the public at large." *Id.* at *12.

Wynne contended that as a homeowner along Lake Travis, he was among a particularized group that had been peculiarly injured. *Id.* His injuries could not be suffered by anyone who was *not* a homeowner along Lake Travis. *Id.* Specially, access to the cove on his property was rendered unusable which meant that Wynne was forced to take his boat out of a private marina, and was forced to purchase another property with a boat ramp able to reach the then-substantially lower Lake Travis. Appellant's Brief at *4-5. Even via the ramp on the new property, at the time of the appeal, Wynne claimed he could not adequately reach Lake Travis. *Id.* These particularized injuries, Wynne believed, proved that he had standing to bring his claims against the LCRA. Wynne supported his standing claims with authorities in which homeowner plaintiffs were deemed to possess standing to sue governmental organizations that blocked access to water. *See* Appellant's Reply Brief at *3-6 (citing *Lake Medina Conservation Soc., Inc./Bexar-Medina Atascosa Countries WCID No. 1 v. Texas Natural Res. Conservation Comm'n*, 980 S.W.2d 511 (Tex. App—Austin 1998, pet. denied)).

Having disposed of Wynne's appeal on immunity grounds, the Third Court did not need to address the standing issue presented. The decision leaves open the door for similar suits in the future that seek injunctive relief and name entity personnel in their individual capacities. As demands for surface water increase, the likelihood of similar suits in the future is high.

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PUBLICATIONS

LYNN L. BERGESON AND CHARLES M. AUER, *NANO DISCLOSURES: TOO SMALL TO MATTER OR TOO BIG TO IGNORE?*, NAT RES. & ENV'T 26 (WINTER 2011).

Nanotechnology, with potential applications ranging widely from Alzheimer's diagnosis and treatment to solar panel optimization, is, in the words of the National Nanotechnology Initiative, "going to change the world and the way we live." *Applications and Products: Putting Technology to Use*, NATIONAL NANOTECHNOLOGY INITIATIVE, http://www.nano.gov/html/facts/nanoapplicationsandproducts.html (last visited Apr. 3, 2011). Invisible to the naked eye, powerful, and soon to be ubiquitous, these nanoscale materials raise novel, complex disclosure issues that Lynn L. Bergeson and Charles M. Auer conclude, in their article "*Nano Disclosures: Too Small to Matter or Too Big to Ignore?*," are "fluid and ill-defined" and growing in number. Lynn L. Bergeson and Charles M. Auer, *Nano Disclosures: Too Small to Matter or Too Big to Ignore?*, NAT RES. & ENV'T 26 (Winter 2011). The article outlines the EPA's disclosure requirements under the authority of the Toxic Substances Control Act (TSCA, 15 U.S.C. §§ 2601–2629) and the Federal Insecticide, Fungicide, and Rodentcide Act (FIFRA, 7 U.S.C. §§ 136–136Y), as well as Security Exchange Commission (SEC) requirements under Regulation S-K (17 C.F.R. §§229.10–229.1208). What emerges is a picture of the barriers to a clear, cohesive, and stable regulatory scheme for governing this potentially revolutionary new field. *Id.*

The first barrier one might consider is the definitional one. The EPA generally defines nanoscale materials as "materials having structures with dimensions in the nanoscale and that may have properties different than the same chemical substances with structures at a larger scale." *Id.* The difficulty is that neither this definition nor any other has so far won complete support in the EPA or the federal government more broadly. *Id.* This state of affairs has "invite[d] commercial, legal, and compliance uncertainties . . . and possible complexities for regulators as well." *Id.* For example, in 2008 the EPA issued the TSCA *Inventory Status of Nanoscale Substances–General Approach*, which describes how the EPA determines whether a substance is "existing" or "new," the latter triggering a set of disclosure obligations. *Id.* at 26-27. Under the

TSCA, a distinct substance is one that has a "particular molecular identity." *Id.* at 27 (quoting TSCA §3(2), 15 U.S.C. §2602(2)). This standard, insensitive to particle size, is in uncomfortable tension with the above definition. Nanoscale materials have properties, and potential risks, that may differ from their chemically macro counterparts. Bergeson, *supra*, at 27.

To address this tension in the case of one category of nanoscale materials, carbon nanotubes (CNTs), the EPA issued a policy statement specifying the treatment of CNTs, despite the TSCA standard, as distinct substances from similar existing chemical structures. *Id.* The Safe Chemicals Act of 2010, pending legislation introduced in Congress in April 2010, seeks to move beyond such ad hoc solutions by incorporating into the TSCA consideration of "special substance characteristics" in addition to molecular identity. *Id.* (citing Safe Chemicals Act of 2010, S. 3209, 11th Cong. (2010)). Additionally, a number of gap-filling safety provisions are within the TSCA, such as Subsections 8(e) and 8(c), which trigger disclosure obligations based on health and environmental hazards known to be associated with certain nanoscale materials. *Id.* In an apparent effort to simplify and integrate these approaches, "pending TSCA reauthorization legislation would, if enacted, potentially treat all nanoscale chemical substances as 'new' chemicals and require that they be submitted to [the] EPA for review based on any 'special substance characteristics' that [the] EPA determines may significantly affect the material's risk/toxicological profile." *Id.* (citing Safe Chemicals Act of 2010, *supra*).

Although regulation of nanoscale materials is less active under FIFRA, the EPA's guidance and vision under this Act is clearer than under the TSCA. Fundamentally, instead of the inventory status approach of the TSCA looking for a distinct molecular identity, FIFRA's regulatory fulcrum involves weighing the benefits and risks of a particular pesticide. *Id.* at 28. In April 2010, the EPA confirmed that, given the unique set of risks and benefits of nanopesticides, even nanoscale versions of *existing* pesticides are "new" and require registration under FIFRA, Section 3 "regardless of whether a non-nanoscale form of the same active or inert ingredient is already formulated in a product registered under FIFRA." *Id.*

Bergeson and Auer point out the fear among some people that the vigilant categorical approach such as the one adopted under FIFRA will "stigmatize all uses of nanotechnology in pesticides and possibly in other commercial applications." *Id.* They specifically note the potential danger of stigmatization when outside observers confuse mere information disclosures with disclosures that are signs of risk. *Id.* For example, the EPA uses its authority under FIFRA, Section 6(a)(2) (7 U.S.C. §136d(a)(2)) to gather fact information about the industry without regard to risk. *Id.* However, unreasonable adverse effects disclosure requirements also fall under Section 6(a)(2) authority. *Id.* "Even with attempts by [the] EPA to state clearly that submission of such information *per se* is no indication of risk, such information will be described by some, and particularly in litigation contexts, as adverse effect reports that will be used against registrants and others." *Id.*

Bergeson and Auer's article goes on to discuss the unresolved issues around the application of the SEC's own set of disclosure obligations under Regulation S-K to the nanotechnology industry. Regulation S-K Item 101, 103, 503(c), and 303 (17 C.F.R. §§229.101, 229.103, 229.503(c), 229.303, respectively) require publicly traded companies to disclose the effects that environmental laws, legal proceedings, significant

risk factors, and trends, respectively, may have on the health of the company and the riskiness of an investment in it. *Id.* at 29. The article's authors, having reviewed the SEC filings regarding nano matters, find "a range of disclosure practices" followed by companies that manufacture or apply nanotechnology and nanomaterials. *Id.*

For example, Arrowhead Research Corporation's 2009 Annual Report disclosure noted many of the special risks associated with nanostructures and the "regulatory and research efforts addressing the safety and risks of nanomaterials" and that regulations may stop the "commercialization of nanotechnology-enabled products or substantially increase their costs, which would impair the company's ability to achieve revenue from the license of nanotechnology applications." *Id.* at 30 (citing Arrowhead Research Corporation, Annual Report (Form 10-K) (Dec. 22, 2009)). In contrast, other entities report only on the *benefits* of their nanomaterials and products without mention of risks or uncertainties, while some entities engaged in nanotechnology do not submit any relevant disclosures at all. *Id.*

These examples illustrate the speculative nature of disclosure under the SEC Regulation, which itself represents a state of uncertainty mirrored in many ways in the different regulatory approaches the EPA is evolving under the TSCA and FIFRA. It is vitally important that these uncertainties are resolved so this nascent and possibly revolutionary new field has the proper foundations to flourish. As Bergeson and Auer conclude their article, "the success of industry, regulators, and other stakeholders in meeting these challenges . . . will do much to determine the role that nanotechnology and the products which it can yield will contribute to the United States and its future national competitiveness." *Id.*

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WASHINGTON UPDATE

PRESIDENT OBAMA'S RECENT ENERGY POLICIES

In President Barack Obama's 2011 State of the Union Address, which aired on January 25, he discussed his administration's approach to environmental regulation of various energy sectors as well as the need to develop clean energy technologies. President Barack Obama, State of the Union Address (Jan. 25, 2011), http://www.whitehouse.gov/the-press-office/2011/01/25/remarks-president-state-union-address. As noted in his speech, one of the administration's first actions relating to clean energy was enactment of the 2009 American Recovery and Reinvestment Act. The "Recovery Act" included a large-scale investment in the renewable and clean energy economy, which, in part, intended to decrease the United States' dependence on foreign oil and fossil fuels. Energy & Environment, The White House, http://www.whitehouse.gov/issues/energy-and-environment (last visited Feb. 19, 2011).

The Recovery Act was enacted to build a foundation for economic growth by creating jobs, which in the process "has laid the groundwork for a new clean energy economy." The Recovery Act, The White House, http://www.whitehouse.gov/recovery (last visited Feb. 19, 2011). Coupling clean-energy initiatives in an act for economic recovery comports with President Obama's previously stated belief that "the transition to clean energy has the potential to grow our economy and create millions of jobs...." President Barack Obama (Jun. 15, 2010), speech quoted at http://www.whitehouse.gov/ issues/energy-and-environment.

The energy component of the Recovery Act reflects the administration's understanding that the way Americans currently produce and consume energy is not sustainable. One of the energy-related goals of the Recovery Act is to create a "smarter, more reliable" energy grid. To that end, $3.4 billion of Recovery Act funds were invested for this purpose. Jesse Lee, *The Smart Grid: Creating Jobs, Saving Energy, and Cutting Electric Bills*, The White House Blog (Oct. 27, 2009, 3:34 PM), http://www.whitehouse.gov/blog. The administration claims that Smart Grid technology will create tens of thousands of jobs, reduce power outages, cut electricity bills, and "put Americans on the path to generating 20 percent or more of our energy from renewable sources by 2020." *Id.*

The first step toward promoting clean-energy projects is the regulation of existing energy sectors. The Obama administration has approached environmental regulation of various energy sectors by implementing a number of programs and standards to which the industries must comply. The administration set stricter efficiency standards with respect to fluorescent and incandescent lighting. It also created incentives for automobile manufacturers to develop cleaner, more efficient vehicles. Press Release, President Barack Obama, Remarks by the President on Energy (Jun. 29, 2009) http://www.whitehouse.gov/the_press_office/Remarks-by-the-President-on-Energy/. The administration has encouraged the use of smart technologies, such as solar panels and geothermal power in residential and commercial properties. *Id.* The federal government instituted most of these programs in 2009, which is when President Obama offered the Recovery Act, which Congress passed for his signature.

The Obama administration has established more stringent energy-efficient standards for appliances. Energy & Environment, *supra*. President Obama said these new standards would "spark innovation, save consumers money, and reduce energy demand." Remarks by the President on Energy, *supra*.

Also in 2009, President Obama signed an Executive Order on Federal Sustainability, which stated that the Federal Government would lead by example by reducing its "greenhouse gas emissions by 28% before 2020, increase energy efficiency and reduce fleet petroleum consumption." Energy & Environment, *supra*; *see also* Press Release, President Barack Obama, President Obama signs an Executive Order Focused on Federal Leadership in Environmental, Energy, and Economic Performance (Oct. 5, 2009), http://www.whitehouse.gov/the_press_office/ President-Obama-signs-an-Executive-Order-Focused-on-Federal-Leadership-in-Environmental-Energy-and-Economic-Performance.

President Obama has also announced "the first-ever joint fuel economy/greenhouse gas emissions standards for cars and trucks in 2009." Energy & Environment, *supra*. In addition, Vice President Joe Biden has announced the administration's plans to make homes more energy efficient through the Recovery Through Retrofit program,

which is intended to eliminate key barriers in the home retrofit industry "by providing consumers with access to straightforward information about their home's energy use, promoting innovative financing options, and developing national standards to ensure that workers are qualified and consumers benefit from home retrofits." *Id.*; *see also* Vice President Biden Releases Recovery through Retrofit Report, The White House, http://www.whitehouse.gov/photos-and-video/video/vice-president-biden-releases-recovery-through-retrofit-report (last visited Feb. 19, 2011).

President Obama emphasized his position on clean and renewable energy the day after the State of the Union Address, by traveling to Manitowoc, Wisconsin, to visit the headquarters of Orion Energy Systems, a solar power and energy-efficient technology company. Press Release, President Barack Obama, Remarks by the President on the Economy in Manitowoc, Wisconsin (Jan. 26, 2011), http://www.whitehouse.gov/the-press-office/2011/01/26/remarks-president-economy-manitowoc-wisconsin. There, he again discussed the 2035 goal, adding to it the incentive to have one million electric vehicles on the road by 2015. *Id.* President Obama said, "The nation that leads the world in clean energy will lead the global economy in the 21st century...." *Id.* While President Obama was visiting the Orion plant, Vice President Biden took a trip to Greenfield, Indiana, to tour the Ener1, Inc., battery factory, where electric vehicles are manufactured, noting the Obama administration's goal of being the first country to have one million advanced-technology vehicles on the road. Brian Levine, *Our Plan to Put One Million Advanced Technology Vehicles on America's Roads*, THE WHITE HOUSE BLOG (Jan. 26, 2011, 6:37 PM), http://www.whitehouse.gov/blog. After the State of the Union Address, President Obama also traveled to Pennsylvania State University, where he announced the "Better Buildings Initiative," a program aimed at achieving a "20 percent improvement in energy efficiency by 2020, reduce companies' and business owners' energy bills by about $40 billion per year, and save energy by reforming outdated incentives and challenging the private sector to act." Jesse Lee, *Winning the Future Through Innovation and 'Better Buildings,'* THE WHITE HOUSE BLOG (Feb. 3, 2011, 5:47 PM), http://www.whitehouse.gov/blog.

To support entrepreneurs in the development of clean-energy and energy-efficient technologies, the Department of Commerce is focused on increasing the U.S. market share in the global clean-energy sector and advancing the nuclear trade initiative. Gary Locke, Secretary of Commerce, *Empowering American Clean Energy and Efficiency Businesses*, THE WHITE HOUSE BLOG, (Jan. 28, 2011, 3:30 PM), http://www.whitehouse.gov/blog. To increase the U.S. share in the global clean energy sector, the Department of Commerce is focusing on Obama's National Export Initiative, which "aims to double U.S. exports by 2014, in support of millions of American jobs." *Id.* In its efforts to advance the nuclear trade initiative, the Department of Commerce "led a group of U.S. civil nuclear companies to central and eastern Europe and facilitated the signing of nuclear energy cooperation agreements with Italy, the Czech Republic, and Poland." *Id.* Additionally, Secretary of the Interior Ken Salazar recently announced plans to achieve Obama's energy-efficiency goals by accelerating the development of offshore wind energy. Ken Salazar, Secretary of the Interior, Smart From the Start: Building a Clean Energy Future, THE WHITE HOUSE BLOG, (Feb. 10, 2011, 5:09 PM), http://www.whitehouse.gov/blog. The Atlantic Coast is the current focus of potential wind energy areas. Wind energy leases could spring up in Virginia, New Jersey, Delaware, and/or Maryland by the end of 2011. *Id.*

President Obama's stated clean and renewable energy goals are ambitious. The administration has demonstrated dedication to meeting those goals by taking these and other actions to improve the United States' energy efficiency through developing new or revised regulatory programs, promoting the development of clean-energy technologies, and implementing energy-efficient incentives.

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