

2-12-2016

## Nuclear Power as an Alternative Green Fuel: Why Uprates to Commercial Nuclear Reactors Deserve to Be Eligible for Federal Loan Guarantees, and Why the DOE's Decision to Make Them So Warrants *Chevron* Deference

Marisa P. Kaley

*Boston College Law School*, [marisa.kaley@bc.edu](mailto:marisa.kaley@bc.edu)

Follow this and additional works at: <http://lawdigitalcommons.bc.edu/ealr>

 Part of the [Administrative Law Commons](#), [Energy and Utilities Law Commons](#), and the [Environmental Law Commons](#)

---

### Recommended Citation

Marisa P. Kaley, *Nuclear Power as an Alternative Green Fuel: Why Uprates to Commercial Nuclear Reactors Deserve to Be Eligible for Federal Loan Guarantees, and Why the DOE's Decision to Make Them So Warrants Chevron Deference*, 43 B.C. Envtl. Aff. L. Rev. 145 (2016), <http://lawdigitalcommons.bc.edu/ealr/vol43/iss1/6>

This Notes is brought to you for free and open access by the Law Journals at Digital Commons @ Boston College Law School. It has been accepted for inclusion in Boston College Environmental Affairs Law Review by an authorized editor of Digital Commons @ Boston College Law School. For more information, please contact [nick.szydowski@bc.edu](mailto:nick.szydowski@bc.edu).

# NUCLEAR POWER AS AN ALTERNATIVE GREEN FUEL: WHY UPRATES TO COMMERCIAL NUCLEAR REACTORS DESERVE TO BE ELIGIBLE FOR FEDERAL LOAN GUARANTEES, AND WHY THE DOE'S DECISION TO MAKE THEM SO WARRANTS *CHEVRON* DEFERENCE

MARISA P. KALEY\*

**Abstract:** Title XVII of the Energy Policy Act of 2005 (the “Act”) authorizes the Department of Energy (“DOE”) to provide loan guarantees to nuclear energy projects that avoid, reduce, or sequester greenhouse gas emissions while employing new or significantly improved technology. The agency’s decision to include uprates—projects that increase the amount of power an existing reactor produces—among those nuclear projects that may apply for a loan guarantee should survive a legal challenge under the deferential standard laid out in *Chevron*. A court should defer to the DOE’s interpretation of the Act because Congress failed to express its unambiguous intent regarding which types of projects qualify for the program, and the agency’s interpretation reflects a permissible construction of the statute. Consistent with Congress’s goal of combating global warming and climate change, the DOE’s interpretation of Title XVII encourages the growth of America’s commercial nuclear capacity in an effort to reduce reliance on fossil fuels to generate electricity.

## INTRODUCTION

The U.S. Energy Information Administration (“EIA”) estimates that America’s demand for electricity will increase almost thirty percent between 2012 and 2040.<sup>1</sup> Although natural gas will account for seventy-three

---

\* Senior Note Editor, BOSTON COLLEGE ENVIRONMENTAL AFFAIRS LAW REVIEW, 2015–2016.

<sup>1</sup> U.S. ENERGY INFO. ADMIN., U.S. DEP’T OF ENERGY, ANNUAL ENERGY OUTLOOK 2014 WITH PROJECTIONS TO 2040, at MT-16 (2014) [hereinafter ANNUAL ENERGY OUTLOOK 2014], [http://www.eia.gov/forecasts/aeo/pdf/0383\(2014\).pdf](http://www.eia.gov/forecasts/aeo/pdf/0383(2014).pdf) [<http://perma.cc/3HZR-CJGV>]. The EIA is the statistical and analytical agency within the U.S. Department of Energy. *About EIA Mission and Overview*, U.S. ENERGY INFO. ADMIN., [http://www.eia.gov/about/mission\\_overview.cfm](http://www.eia.gov/about/mission_overview.cfm) [<http://perma.cc/DK3W-5VXG>]. Despite increasingly efficient appliances and equipment, electricity usage is forecast to grow at just under 1% a year due primarily to increased commercial and residential

percent of the increase in electricity generation, nuclear power will make up only three percent of the additional capacity.<sup>2</sup> Some policymakers, however, seek to increase America's reliance on nuclear power, a more environmentally friendly energy source, by providing federal loan guarantees to private companies as an incentive to undertake new nuclear projects.<sup>3</sup>

Unlike power plants that burn coal, oil, or natural gas to generate electricity, nuclear plants do not release any carbon dioxide as a by-product of the generation process.<sup>4</sup> To the extent that nuclear power is a "clean" energy source, it is an attractive alternative to fossil fuels.<sup>5</sup> On the other hand, the costs associated with bringing a new nuclear power plant online and continued operation of existing plants present an obstacle to wider use.<sup>6</sup> This is where policymakers hope a federal loan guarantee program can be useful.<sup>7</sup>

Title XVII of the Energy Policy Act of 2005 (the "Act") provides an avenue for the growth of America's commercial nuclear power industry, and correspondingly our reliance on it, by providing financial incentives for new environmentally friendly energy technology.<sup>8</sup> Title XVII authorizes the

demand as people move to warmer climates that require more cooling. ANNUAL ENERGY OUTLOOK 2014, *supra*.

<sup>2</sup> ANNUAL ENERGY OUTLOOK 2014, *supra* note 1, at MT-17.

<sup>3</sup> See Press Release, White House Office of the Press Sec'y, Obama Administration Announces Loan Guarantees to Construct New Nuclear Power Reactors in Georgia (Feb. 16, 2010), <https://www.whitehouse.gov/the-press-office/obama-administration-announces-loan-guarantees-construct-new-nuclear-power-reactors> [<https://perma.cc/UGP6-24M7>]; *Air Emissions*, U.S. ENVTL. PROT. AGENCY [<http://perma.cc/E8DH-V54U>] (original hyperlink no longer active); *Costs: Fuel, Operation, Waste Disposal & Life Cycle*, NUCLEAR ENERGY INST., <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Costs-Fuel,-Operation,-Waste-Disposal-Life-Cycle> [<http://perma.cc/V56U-EJTT>]. Nuclear power plants do not emit several of the harmful pollutants that are released by plants that burn natural gas, coal, or oil, such as carbon dioxide, sulfur dioxide, nitrogen oxides, and methane. *Air Emissions*, *supra*.

<sup>4</sup> *Air Emissions*, *supra* note 3. Nor do they emit other harmful air pollutants associated with burning fossil fuels, including nitrogen oxides, sulfur dioxide and methane. *Id.*

<sup>5</sup> See *Environment: Emissions Prevented*, NUCLEAR ENERGY INST., <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/Environment-Emissions-Prevented> [<http://perma.cc/4TVY-5VDR>]. "However, fossil fuel emissions are associated with the uranium mining and uranium enrichment process as well as the transport of the uranium fuel to the nuclear plant." *Air Emissions*, *supra* note 3.

<sup>6</sup> *Infra* notes 42–52 and accompanying text.

<sup>7</sup> See Henry Fountain, *Nuclear: Carbon Free, but Not Free of Unease*, N.Y. TIMES (Dec. 22, 2014), [http://www.nytimes.com/2014/12/23/science/nuclear-carbon-free-but-not-free-of-unease.html?hp&action=click&pgtype=Homepage&module=second-column-region&region=top-news&WT.nav=top-news&\\_r=0](http://www.nytimes.com/2014/12/23/science/nuclear-carbon-free-but-not-free-of-unease.html?hp&action=click&pgtype=Homepage&module=second-column-region&region=top-news&WT.nav=top-news&_r=0) [<http://perma.cc/KNN6-JWF3>]; Nuclear Energy Inst., Comment Letter on Department of Energy's Draft Solicitation for Federal Loan Guarantees for Advanced Nuclear Energy Projects (Nov. 3, 2014) [hereinafter NEI Comment Letter] [<http://perma.cc/7VK8-RT7T>] (original hyperlink no longer active); Press Release, White House Office of the Press Sec'y, *supra* note 3; *infra* notes 8–11 and accompanying text.

<sup>8</sup> See Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1701–1704, 119 Stat. 594, 1117–22 (2005) (codified as amended at 42 U.S.C. §§ 15801–16524 (2012)); NEI Comment Letter, *supra* note 7; Press Release, White House Office of the Press Sec'y, *supra* note 3.

Secretary of the Department of Energy (“Energy Secretary”) to make loan guarantees for projects that use innovative technologies to reduce air pollution or greenhouse gas emissions.<sup>9</sup> After making the first round of loan guarantees to nuclear projects in 2010, the Department of Energy (“DOE”) announced in October 2014 that it was considering a second round of funding to encourage the expansion of nuclear power.<sup>10</sup> In its draft solicitation, the DOE indicated that it would allow power uprates—or projects to improve the output of existing nuclear reactors—to apply for loan guarantees.<sup>11</sup>

Critics of the loan program accuse the DOE of running afoul of the plain language of the Act by advancing an overly broad interpretation of the authorizing statute.<sup>12</sup> Specifically, detractors argue that uprates cannot qualify for loan guarantees because they cannot satisfy the threshold requirements: eligible projects must avoid, reduce, or sequester greenhouse gases and also employ new or significantly improved technology.<sup>13</sup>

After a public comment period, the DOE announced in December 2014 that it would proceed with an additional round of loan guarantees for nuclear projects worth \$12.5 billion.<sup>14</sup> The final text of the solicitation retained the draft language making uprates eligible for loan guarantees.<sup>15</sup> This

<sup>9</sup> See 42 U.S.C. §§ 15801(4), 16513(a).

<sup>10</sup> Agency Request for Comments on Draft Solicitation for Advanced Nuclear Energy Projects, 79 Fed. Reg. 59763, 59763 (Oct. 3, 2014); Press Release, White House Office of the Press Sec’y, *supra* note 3.

<sup>11</sup> See U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, LOAN GUARANTEE SOLICITATION ANNOUNCEMENT 2 (2014) [hereinafter DRAFT SOLICITATION], <http://energy.gov/sites/prod/files/2014/09/f18/Nuclear%20Solicitation%2009%2029%20final%20draft.pdf> [<http://perma.cc/896C-5ARQ>]. According to the DOE Loan Programs Office, a “solicitation” refers to “a funding opportunity issued by the DOE for which an applicant is invited to apply.” *Glossary of Terms*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/about-us/glossary-terms> [<http://perma.cc/F9YJ-2484>]. The process of “uprating” a nuclear reactor refers to modifying an existing reactor such that it can produce more thermal energy, which in turn produces more steam, which ultimately increases the amount of electricity that can be produced. *Background on Power Uprates*, U.S. NUCLEAR REGULATORY COMM’N, <http://www.NRC.gov/reactors/operating/licensing/power-uprates/about-power.html> [<http://perma.cc/CQW3-H6TH>] (last updated Oct. 23, 2014).

<sup>12</sup> See *infra* notes 148–181 and accompanying text.

<sup>13</sup> See *infra* notes 148–181 and accompanying text.

<sup>14</sup> Agency Request for Comments on Draft Solicitation for Advanced Nuclear Energy Projects, 79 Fed. Reg. at 59763; Peter W. Davidson, *Building an All-of-the-Above Portfolio with Loan Guarantees for Advanced Nuclear Projects*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE (Dec. 10, 2014, 9:00 AM), <http://energy.gov/lpo/articles/building-all-above-portfolio-loan-guarantees-advanced-nuclear-projects> [<http://perma.cc/EW44-WRPU>].

<sup>15</sup> Compare U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, LOAN GUARANTEE SOLICITATION ANNOUNCEMENT 2 (2014) [hereinafter FINAL SOLICITATION], [http://energy.gov/sites/prod/files/2015/05/f22/Advanced-Nuclear-Energy-Projects-Loan-Guarantee-Solicitation\\_COMPLETE\\_22...pdf](http://energy.gov/sites/prod/files/2015/05/f22/Advanced-Nuclear-Energy-Projects-Loan-Guarantee-Solicitation_COMPLETE_22...pdf) [[perma.cc/8C5K-XJTF](http://perma.cc/8C5K-XJTF)] (“An ‘Eligible Project’ under this Solicitation . . . [includes] c) Uprates. Projects consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifi-

Note argues that the decision to allow uprates to compete for Title XVII loan guarantees is one that is within the power of the DOE to make, and should survive a potential challenge pursuant to the *Chevron* doctrine.<sup>16</sup> In enacting the Energy Policy Act of 2005, Congress delegated to the DOE the authority to determine which types of projects, across a range of industries, would be eligible for loan guarantees.<sup>17</sup> In turn, the agency's decision to include uprates among those projects eligible for loan guarantees reflects a reasonable interpretation of Title XVII in light of the statutory language and the Act's underlying policy.<sup>18</sup>

## I. INTRODUCTION TO THE LAW AND ECONOMICS OF COMMERCIAL NUCLEAR POWER PLANTS IN THE UNITED STATES

Nuclear power plants are an attractive alternative to fossil fuel-fired plants because they can generate electricity without emitting greenhouse gases.<sup>19</sup> Once they are up and running, nuclear power plants can compete with their fossil fuel counterparts on the pricing of electricity, however, building a new plant or updating an existing one can be incredibly expensive.<sup>20</sup> In an effort to help plant operators overcome this financial obstacle and to encourage the growth of the nation's commercial nuclear power industry, Congress has provided assistance in the form of federal loan guarantees for certain new nuclear projects.<sup>21</sup> Tasked with distributing the nearly twenty billion dollars set aside for nuclear loan guarantees, the DOE is in the midst of its second solicitation of applicant projects.<sup>22</sup> The DOE's implementation of the nuclear loan guarantee program benefits from *Chevron* deference.<sup>23</sup>

---

cations will operate more efficiently.”), with DRAFT SOLICITATION, *supra* note 11, at 2 (“An ‘Eligible Project’ under this Solicitation . . . [includes] c) Uprates. Projects consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifications will operate more efficiently.”).

<sup>16</sup> See *infra* notes 182–267 and accompanying text.

<sup>17</sup> See *infra* notes 190–210 and accompanying text.

<sup>18</sup> See *infra* notes 211–267 and accompanying text.

<sup>19</sup> See *Air Emissions*, *supra* note 3.

<sup>20</sup> See *infra* notes 42–44 and accompanying text.

<sup>21</sup> See *infra* notes 42–68 and accompanying text.

<sup>22</sup> See *infra* notes 69–105 and accompanying text.

<sup>23</sup> See *infra* notes 106–147 and accompanying text.

### A. Brief Overview of Commercial Nuclear Power in the United States

The United States produces more nuclear power than any other country and accounts for over thirty percent of global generation.<sup>24</sup> Of the world's 441 fully operational nuclear reactors, about one hundred are located in the United States, nearly double the number operated by France, which occupies the number two spot.<sup>25</sup> Commercially operated nuclear reactors in the United States are “light water” reactors used to generate electricity, while the remaining “non-power” reactors are used for research and training purposes.<sup>26</sup>

Nuclear power plants use fission—the splitting of uranium atoms—to release energy that is used to make steam, which is ultimately converted to electricity.<sup>27</sup> The majority of commercial nuclear power plants in the United States use pressurized water reactors.<sup>28</sup> These reactors rely on a nuclear core powered by thousands of uranium rods to heat pressurized water that flows into a coolant loop to produce steam.<sup>29</sup> The steam is channeled into turbines that use the water vapor to produce electricity, and excess steam returns to a condenser before passing through the cycle again.<sup>30</sup>

---

<sup>24</sup> *Nuclear Power in the USA*, WORLD NUCLEAR ASS'N, <http://www.world-nuclear.org/info/country-profiles/countries-T-Z/USA—Nuclear-Power/> [perma.cc/KEW5-6X2V] (last updated Dec. 2015).

<sup>25</sup> *Operational & Long-Term Shutdown Reactors*, INT'L ATOMIC ENERGY AGENCY, <http://www.iaea.org/PRIS/WorldStatistics/OperationalReactorsByCountry.aspx> [perma.cc/3WCX-WJN4] (last updated Jan. 10, 2016). France currently operates 58 reactors. *Id.*

<sup>26</sup> See *Backgrounder on Research and Test Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/research-reactors-bg.html> [perma.cc/GG2N-6KPY] (last updated Aug. 5, 2015); *Power Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.nrc.gov/reactors/power.html> [perma.cc/M797-29WU] (last updated Nov. 6, 2015); *What Is a Nuclear Reactor?*, EUROPEAN NUCLEAR SOC'Y, <http://www.euronuclear.org/1-information/energy-uses.htm> [http://perma.cc/K8K4-9LLG]. Light water reactors use regular water (H<sub>2</sub>O) and heavy water reactors use water that contains a comparatively high proportion of heavy hydrogen (or deuterium) atoms to hydrogen atoms. *Heavy Water (D20)*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/reading-rm/basic-ref/glossary/heavy-water-d20.html> [perma.cc/NQ6M-24JJ] (last updated Dec. 17, 2015); *Power Reactors*, *supra*.

<sup>27</sup> *Nuclear Energy*, U.S. ENVTL. PROT. AGENCY [http://perma.cc/UMW9-UXSA] (last updated Sept. 24, 2015) (original hyperlink no longer active).

<sup>28</sup> *Boiling Water Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/reactors/bwrs.html> [http://perma.cc/X7G6-P48D] (last updated Jan. 15, 2015); *How Uranium Ore Is Made into Nuclear Fuel*, WORLD NUCLEAR ASS'N, <http://www.world-nuclear.org/nuclear-basics/how-is-uranium-ore-made-into-nuclear-fuel/> [http://perma.cc/R8V8-6HDN]; *Power Reactors*, *supra* note 26; *Pressurized Water Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/reactors/pwrs.html> [http://perma.cc/H4UG-WFPD] (last updated Jan. 15, 2015).

<sup>29</sup> *How Uranium Ore Is Made into Nuclear Fuel*, *supra* note 28; *Power Reactors*, *supra* note 26; *Pressurized Water Reactors*, *supra* note 28. Meanwhile, the 35 boiling water reactors in operation use a very similar process except the heat from the reactor's core produces a mixture of steam and water, which are then separated and the steam is directed to the turbine generator. *Boiling Water Reactors*, *supra* note 28; *Power Reactors*, *supra* note 26.

<sup>30</sup> *Pressurized Water Reactors*, *supra* note 28.

The first commercial nuclear power plant, the Shippingport Atomic Power Station in Pennsylvania, started generating electricity in 1957 and was retired in 1982.<sup>31</sup> America's nuclear plants, concentrated along the east coast and in the Midwest, generate about twenty percent of the nation's electricity (and sixty-three percent of the nation's electricity from non-carbon emitting sources).<sup>32</sup> Most of these plants were built between 1967 and 1990, with forty-seven reactors receiving approval before 1977 but not coming online until the late 1970s and 1980s.<sup>33</sup> There was no construction of new nuclear power plants between 1977 and 2013, due largely to competition from comparatively cheap natural gas.<sup>34</sup> The average lifespan of a nuclear plant is approximately sixty years, and as of early 2014 ten plants (encompassing thirteen reactors) were at risk of closure.<sup>35</sup> With each existing plant currently operating at about ninety percent capacity or more, additional production must come primarily from new reactors.<sup>36</sup>

As of October 2015, construction of a second reactor at the Tennessee Valley Authority's Watts Bar plant was nearing completion.<sup>37</sup> That reactor is expected to begin commercial operation in early 2016.<sup>38</sup> Meanwhile, four

<sup>31</sup> *A Brief History of Nuclear Power in the U.S.*, DUKE ENERGY (July 31, 2012), <http://nuclear.duke-energy.com/2012/07/31/a-brief-history-of-nuclear-power-in-the-us/> [<http://perma.cc/Q83W-QTGP>]; *U.S. Nuclear Power Plants*, NUCLEAR ENERGY INST., <http://www.nei.org/Knowledge-Center/Nuclear-Statistics/US-Nuclear-Power-Plants> [<http://perma.cc/K6CP-9UA5>].

<sup>32</sup> *Nuclear Power in the USA*, *supra* note 24. To put nuclear power's 19% contribution in context, in 2013 40% of the nation's electricity came from coal, 27% from natural gas, and the remainder from renewable sources like hydro, solar, wind, and geothermal. *See id.* In addition to the 100 commercial nuclear plants, there are 36 research and test reactors in the United States. *Operating Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/reactors/operating.html> [[perma.cc/P4XN-S2R6](http://perma.cc/P4XN-S2R6)] (last updated Nov. 6, 2015).

<sup>33</sup> *Nuclear Power in the USA*, *supra* note 24.

<sup>34</sup> *Id.* The accident at Three Mile Island in Pennsylvania also had a chilling effect on enthusiasm for nuclear power. *See Background on the Three Mile Island Accident*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/3mile-isle.html> [<http://perma.cc/V3NG-GNY4>] (last updated Dec. 12, 2014). As a result of "a combination of personnel error, design deficiencies, and component failures," one reactor experienced a partial meltdown in 1979. *Id.* However, the resulting "small radioactive releases had no detectable health effects on plant workers or the public" according to studies conducted by the Nuclear Regulatory Commission, the Environmental Protection Agency, the Department of Health, Education and Welfare (now the Department of Health and Human Services), the DOE, and the Commonwealth of Pennsylvania. *Id.*

<sup>35</sup> *Nuclear Power in the USA*, *supra* note 24.

<sup>36</sup> *See New Nuclear Energy Facilities*, NUCLEAR ENERGY INST., <http://www.nei.org/Issues-Policy/New-Nuclear-Energy-Facilities> [<http://perma.cc/N5DP-YD8L>]; *Nuclear Power in the USA*, *supra* note 24.

<sup>37</sup> U.S. DEP'T OF ENERGY, QUARTERLY NUCLEAR POWER DEPLOYMENT SUMMARY: OCTOBER 2015, at 1, 3 (2015) [hereinafter OCTOBER 2015 DEPLOYMENT SUMMARY], [http://www.energy.gov/sites/prod/files/2015/10/f27/DEPLOYMENT\\_SCORECARD\\_OCTOBER\\_2015.pdf](http://www.energy.gov/sites/prod/files/2015/10/f27/DEPLOYMENT_SCORECARD_OCTOBER_2015.pdf) [<http://perma.cc/2DRU-FXVH>].

<sup>38</sup> *Id.*

new nuclear reactors are under construction at two other nuclear power plants.<sup>39</sup> Southern Nuclear is adding two new reactors, which will come online in 2019 and 2020, respectively, to the Vogtle Electric Generating Plant in Georgia (the “Vogtle Plant”).<sup>40</sup> South Carolina Electric & Gas’s two additional reactors at its V.C. Summer facility are also scheduled to come online in 2019 and 2020, respectively.<sup>41</sup>

### *B. Financial Barriers to Commercial Nuclear Projects*

In the United States, one of the most significant barriers to the growth of nuclear energy is the enormous sum of money required to construct new or improve existing nuclear power plants.<sup>42</sup> A new nuclear power plant can cost between \$6 and \$8 billion to build.<sup>43</sup> Once construction is complete, nuclear power plants are capable of competing with plants that rely on fossil fuels for electricity generation, and depending on fuel prices, can even produce electricity more cheaply.<sup>44</sup>

The falling price of natural gas, a competing fuel, however, has strained nuclear power plants to the point that several have decided to cease operations.<sup>45</sup> For example, the Vermont Yankee reactor located in Vernon, Vermont was forced to close in December 2014, after operating for forty-

<sup>39</sup> *Id.*

<sup>40</sup> *Id.*

<sup>41</sup> *Id.*; *Nuclear Power*, SCE&G, <https://www.sceg.com/about-us/power-generation/nuclear> [<http://perma.cc/EGQ2-8RQ9>].

<sup>42</sup> See Fountain, *supra* note 7; NEI Comment Letter, *supra* note 7, at 2, 11–12.

<sup>43</sup> *FAQ About Nuclear Energy*, NUCLEAR ENERGY INST., <http://www.nei.org/Knowledge-Center/FAQ-About-Nuclear-Energy> [<http://perma.cc/6KKS-QLZT>] (expand “New Reactor Cost” drop-down for additional information). Post-September 11 enhanced security and post-Fukushima safety features account for an expanding portion of the cost. Fountain, *supra* note 7; Dave Gram, *Mixed Reaction as Vermont Yankee Plant Shuts Down*, BOS. GLOBE (Dec. 29, 2014), <http://www.bostonglobe.com/metro/2014/12/29/mixed-reaction-vermont-yankee-plant-shuts-down/yoDZwQtWidGhUyOdaQpGGL/story.html> [<http://perma.cc/9R6Y-3XJZ>]. For context, a study commissioned by the EIA determined that although a nuclear power plant cost about \$5,500 per kilowatt (kW) of capacity in 2012 dollars to build, a natural-gas-fired electric plant can cost as little as \$676/kW and a coal-fired plant as little as \$2,934/kW to build. U.S. ENERGY INFO. ADMIN., *UPDATED CAPITAL COST ESTIMATES FOR UTILITY SCALE ELECTRICITY GENERATING PLANTS 6 (2013)* [hereinafter *UPDATED CAPITAL COST ESTIMATES*], [http://www.eia.gov/forecasts/capitalcost/pdf/updated\\_capcost.pdf](http://www.eia.gov/forecasts/capitalcost/pdf/updated_capcost.pdf) [<http://perma.cc/9VKB-QSPY>].

<sup>44</sup> See *UPDATED CAPITAL COST ESTIMATES*, *supra* note 43. A 2012 EIA study estimated that, in 2012 dollars, it cost \$2.14 to generate a megawatt-hour (MWh) of electricity using nuclear power, compared to \$10.37/MWh and \$4.47/MWh using natural gas and coal, respectively. *Id.*

<sup>45</sup> See Jess Bidgood, *Vermont Yankee Nuclear Plant Begins Slow Process of Closing*, N.Y. TIMES (Jan. 4, 2015), [http://www.nytimes.com/2015/01/05/us/vermont-yankee-nuclear-plant-begins-slow-process-of-closing.html?\\_r=0](http://www.nytimes.com/2015/01/05/us/vermont-yankee-nuclear-plant-begins-slow-process-of-closing.html?_r=0) [<http://perma.cc/VX3U-88SD>]; Fountain, *supra* note 7; Naureen S. Malik, *U.S. Nuclear Plants Squeezed by Cheap Gas, Uranium Costs*, BLOOMBERG (Dec. 2, 2014, 10:33 AM), <http://www.bloomberg.com/news/articles/2014-12-02/u-s-nuclear-plants-squeezed-by-cheap-gas-uranium-costs> [<http://perma.cc/Y8AZ-BVHL>]. Between 2008 and December 2014 natural gas prices dropped by 70%. *Id.*



two years, because competition from natural-gas-fired electric plants eroded its profitability.<sup>46</sup> Likewise, the operator of Pilgrim Nuclear Power Station in Plymouth, Massachusetts announced it will shutter the plant by June 2019, citing “poor market conditions, reduced revenues and increased operational costs.”<sup>47</sup> Since 2012, four other reactors have permanently shut down for financial reasons.<sup>48</sup>

Natural gas prices will not remain at their current levels forever, but will inevitably rise to a point that makes nuclear power more cost-effective than natural gas.<sup>49</sup> A potential problem, however, is that by the time the pendulum swings back toward nuclear power, the infrastructure necessary to support renewed demand may not exist without the addition of new nuclear capacity.<sup>50</sup> The loan guarantee program laid out in Title XVII of the Energy Policy Act of 2005 is one way that the federal government can encourage investment in commercial nuclear power.<sup>51</sup> Non-carbon-emitting nuclear power is capable of replacing harmful fossil fuels to meet our nation’s future demand for electricity.<sup>52</sup>

### *C. Energy Policy Act of 2005 and Authorization for Federal Loan Guarantees*

Congress enacted the Energy Policy Act of 2005 to encourage the growth of “secure, affordable, and reliable energy” in the future and to create jobs in the process.<sup>53</sup> The law encompasses support for a wide variety of methods of energy production in the United States.<sup>54</sup> It addresses energy efficiency, renewable energy, oil, gas, coal, nuclear power, ethanol, motor vehicles, hydrogen, hydropower, geothermal energy, climate change technology, and tax incentives.<sup>55</sup>

<sup>46</sup> Bidgood, *supra* note 45; Fountain, *supra* note 7.

<sup>47</sup> Benjamin Swasey, *43-Year-Old Pilgrim Nuclear Plant in Plymouth to Close Permanently*, WBUR (Oct. 13, 2015, 2:30 PM), <http://www.wbur.org/2015/10/13/pilgrim-nuclear-plant-plymouth-close> [<http://perma.cc/JUZ8-X2Q3>].

<sup>48</sup> Fountain, *supra* note 7.

<sup>49</sup> *See Need for New Nuclear Energy Facilities*, NUCLEAR ENERGY INST., <http://www.nei.org/Issues-Policy/New-Nuclear-Energy-Facilities/Need-for-New-Nuclear-Facilities> [<http://perma.cc/KL4W-YY9N>].

<sup>50</sup> *See New Nuclear Energy Facilities*, *supra* note 36.

<sup>51</sup> *See Energy Policy Act of 2005*, Pub. L. No. 109-58, §§ 1701–1704, 119 Stat. 594, 1117–22 (2005) (codified as amended at 42 U.S.C. §§ 15801–16524 (2012)); NEI Comment Letter, *supra* note 7.

<sup>52</sup> *See* 119 Stat. at 1117–22; NEI Comment Letter, *supra* note 7.

<sup>53</sup> *See* 119 Stat. at 594.

<sup>54</sup> *See Summary of the Energy Policy Act*, U.S. ENVTL. PROT. AGENCY, <http://www2.epa.gov/laws-regulations/summary-energy-policy-act> [[perma.cc/6FUJ-U5QT](http://perma.cc/6FUJ-U5QT)] (last updated Nov. 17, 2015).

<sup>55</sup> *Id.*

Title XVII of the Act concerns “Incentives for Innovative Technologies” and establishes a federal loan guarantee program aimed at accomplishing two main goals: “to encourage commercial use in the United States of new or significantly improved energy-related technologies and to achieve substantial environmental benefits.”<sup>56</sup> The statute authorizes the Energy Secretary to provide a loan guarantee for up to eighty percent of the cost of projects that “(1) avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases; and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.”<sup>57</sup> A “loan guarantee” is defined as “any guarantee, insurance, or other pledge with respect to the payment of all or a part of the principal or interest on any debt obligation of a non-Federal borrower to a non-Federal lender.”<sup>58</sup> Projects in a variety of industries are eligible for loan guarantees, including nuclear power.<sup>59</sup>

In 2009, Congress appropriated \$47 billion to guarantee loans made under Title XVII of the Act.<sup>60</sup> Of that amount, \$18.5 billion was reserved for nuclear power facilities.<sup>61</sup> A year later, the DOE finalized two agreements after its first round of soliciting applications for nuclear projects.<sup>62</sup> The first consisted of a \$2 billion loan guarantee to support a uranium enrichment facility in Idaho.<sup>63</sup> The second was to guarantee an \$8.33 billion loan to finance construction of the first new nuclear power plant in the United States in nearly thirty years.<sup>64</sup> President Barack Obama applauded the loan guarantee agreement, saying:

To meet our growing energy needs and prevent the worst consequences of climate change, we need to increase our supply of nuclear power and today’s announcement helps to move us down that path. But energy leaders and experts recognize that as long as producing carbon pollution carries no cost, traditional plants that use fossil fuels will be more cost-effective than plants that use

---

<sup>56</sup> 42 U.S.C. §§ 16511–16513; Loan Guarantees for Projects That Employ Innovative Technologies, 72 Fed. Reg. 60116, 60116 (Oct. 23, 2007) (codified at 10 C.F.R. pt. 609 (2015)).

<sup>57</sup> 42 U.S.C. §§ 15801(4), 16512(c), 16513(a).

<sup>58</sup> 2 U.S.C. § 661a(3) (2012); 42 U.S.C. § 16511(4)(A).

<sup>59</sup> 42 U.S.C. § 16513(b)(4).

<sup>60</sup> Omnibus Appropriations Act, 2009, Pub. L. No. 111-8, 123 Stat. 524, 619 (2009).

<sup>61</sup> *Id.*

<sup>62</sup> See *AREVA*, U.S. DEP’T OF ENERGY LOAN GUARANTEE OFFICE, <http://energy.gov/lpo/areva> [<http://perma.cc/EDJ5-JSBK>]; *Georgia Power Company (GPC)*, *Oglethorpe Power Corporation (OPC)*, *Municipal Electric Authority of Georgia (MEAG)*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE [hereinafter *Georgia Power Company*], <http://energy.gov/lpo/georgia-power-company-gpc-oglethorpe-power-corporation-opc-municipal> [<http://perma.cc/8H5Y-8TYD>].

<sup>63</sup> *AREVA*, *supra* note 62.

<sup>64</sup> Press Release, White House Office of the Press Sec’y, *supra* note 3; *Georgia Power Company*, *supra* note 62.

nuclear fuel. That is why we need comprehensive energy and climate legislation to create a system of incentives to make clean energy profitable.<sup>65</sup>

The project, located at the Vogtle Plant, will create approximately 3500 construction jobs and 800 permanent jobs.<sup>66</sup> Upon their completion in 2019 and 2020, respectively, the two new reactors will be able to generate over seventeen million megawatt hours of electricity per year, which is enough to power more than 1.5 million homes.<sup>67</sup> The nuclear plant will avoid the release of millions of tons of carbon dioxide and thousands of tons of nitrogen oxides and sulfur dioxide that would otherwise be emitted by a similarly-sized coal plant.<sup>68</sup>

#### *D. 2014 Department of Energy Solicitation's Emissions and Technology Requirements*

On December 10, 2014, the DOE announced a second and final solicitation of nuclear projects seeking federal loan guarantees under Title XVII of the Energy Policy Act of 2005.<sup>69</sup> The release of the final solicitation came about two months after the DOE made a draft of the solicitation available for public comment.<sup>70</sup> Applicants are invited to apply for a portion of the total \$12.5 billion available for loan guarantees “to support innovative nuclear energy projects as a part of the Administration’s all-of-the-above energy strategy.”<sup>71</sup> According to the DOE, the program’s two primary functions are to encourage wider commercial use of innovative energy technology and to provide a benefit to the environment.<sup>72</sup> The agency believes that increased reliance on new or improved nuclear reactor technology will “help sustain and promote economic growth, produce a more stable and

<sup>65</sup> Press Release, White House Office of the Press Sec’y, *supra* note 3.

<sup>66</sup> *Georgia Power Company*, *supra* note 62.

<sup>67</sup> OCTOBER 2015 DEPLOYMENT SUMMARY, *supra* note 37; *Georgia Power Company*, *supra* note 62.

<sup>68</sup> Press Release, White House Office of the Press Sec’y, *supra* note 3.

<sup>69</sup> See *Department of Energy Issues Final \$12.5 Billion Advanced Nuclear Energy Loan Guarantee Solicitation*, U.S. DEP’T OF ENERGY (Dec. 10, 2014, 9:01 AM), <http://energy.gov/articles/department-energy-issues-final-125-billion-advanced-nuclear-energy-loan-guarantee> [perma.cc/F25G-CEEN].

<sup>70</sup> Agency Request for Comments on Draft Solicitation for Advanced Nuclear Energy Projects, 79 Fed. Reg. 59763, 59763 (Oct. 3, 2014); *Department of Energy Issues Final \$12.5 Billion Advanced Nuclear Energy Loan Guarantee Solicitation*, *supra* note 69.

<sup>71</sup> *Department of Energy Issues Final \$12.5 Billion Advanced Nuclear Energy Loan Guarantee Solicitation*, *supra* note 69.

<sup>72</sup> See *id.*

secure energy supply and economy for the United States, and improve the environment.”<sup>73</sup>

Of the \$12.5 billion, \$2 billion is reserved for “front-end” activities such as uranium conversion and enrichment.<sup>74</sup> The remaining \$10.5 billion is available for nuclear power facilities, including the construction of standard and small modular reactors as well as certain modifications to existing reactors.<sup>75</sup> To be eligible for a loan guarantee, a nuclear project must meet the following two threshold requirements:

- (a) Avoid[], reduce[], or sequester[] anthropogenic emission of greenhouse gases; and
- (b) Employ[] New or Significantly Improved Technology as compared to Commercial Technology in service in the United State [sic] at the time the Term Sheet is issued.<sup>76</sup>

In its final solicitation, the DOE indicated several particular types of projects—uranium conversion and enrichment, fabrication of nuclear reactor components, or construction of brand new reactors, for example—that would be eligible to apply for loan guarantees as long as they met these two threshold requirements.<sup>77</sup> Included in the DOE’s list were projects to uprate existing nuclear reactors.<sup>78</sup>

According to the final solicitation, an uprate refers to a project “consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifications will operate more efficiently.”<sup>79</sup> In other words, an uprate functions to increase the plant’s output of electric power.<sup>80</sup> To increase its output, a reactor will typically need to use more highly enriched uranium or a fresh batch of fuel rods.<sup>81</sup> Because the reactor is now producing more energy, the rest of the plant’s components sometimes have to be modified to ensure that they can withstand the increased operating temperature and additional steam produc-

<sup>73</sup> See Loan Guarantees for Projects That Employ Innovative Technologies, 74 Fed. Reg. 63544, 63544 (Dec. 4, 2009) (codified at 10 C.F.R. pt. 609 (2015)).

<sup>74</sup> FINAL SOLICITATION, *supra* note 15, at 2.

<sup>75</sup> *Id.*

<sup>76</sup> *Id.* For purposes of the solicitation, the term “greenhouse gases” includes carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O). See *Attachment C Summary Greenhouse Gas Emissions Data Final*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/downloads/attachment-c-summary-ghg-emissions-data-final-0> [<http://perma.cc/F4KB-B4BP>] (follow “Attachment-C-Summary-GHG-Emissions-Data-FINAL.xlsx” hyperlink).

<sup>77</sup> FINAL SOLICITATION, *supra* note 15, at 1–2.

<sup>78</sup> *Id.* at 2.

<sup>79</sup> *Id.*

<sup>80</sup> *Background on Power Uprates*, *supra* note 11.

<sup>81</sup> *Id.*

tion.<sup>82</sup> This could mean modifying or replacing components such as pipes, valves, pumps, heat exchangers, or electrical transformers and generators.<sup>83</sup> The Nuclear Regulatory Commission (“NRC”) recognizes three different types of uprates: measurement uncertainty recapture (used to achieve a reactor power increase of two percent or less), stretch power (a maximum increase of seven percent), and extended power (as much as a twenty percent increase in reactor power).<sup>84</sup>

## 1. Solicitation Terminology

Neither the Act nor its companion regulations define “avoid,” “reduce,” or “sequester.”<sup>85</sup> The available guidance consists of projects that have already received loan guarantees under the Title XVII program.<sup>86</sup> Because no applicant has yet received loan guarantees for uprates, the Vogtle Plant’s successful loan guarantee application for construction of new nuclear reactors effectively illustrates the agency’s interpretation of “avoid, reduce, or sequester.”<sup>87</sup> The Vogtle Plant received the loan guarantee to add two new reactors to the existing two reactors it already operates at the site.<sup>88</sup>

The DOE’s February 2014 response to a comment from the Blue Ridge Environmental Defense League (“BREDL”) indicates that the agency believes that the new reactors at the Vogtle Plant would meet the first threshold requirement.<sup>89</sup> In response to the DOE’s announcement regarding the Vogtle Plant loan guarantee, BREDL argued that the design of the two new reactors would fail to avoid, reduce, or sequester greenhouse gas emissions.<sup>90</sup> The DOE responded that its review of the Vogtle Plant’s application

<sup>82</sup> *Id.*

<sup>83</sup> *Id.*

<sup>84</sup> *Types of Power Uprates*, U.S. NUCLEAR REGULATORY COMM’N, <http://www.NRC.gov/reactors/operating/licensing/power-uprates/type-power.html> [<http://perma.cc/88MW-8AV9>] (last updated Oct. 23, 2014).

<sup>85</sup> See 42 U.S.C. §§ 16511–16516 (2012); 10 C.F.R. §§ 609.1–609.18 (2015).

<sup>86</sup> See *Section 1703 Loan Program*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/services/section-1703-loan-program> [<http://perma.cc/8KXG-W96K>]; *infra* notes 87–101 and accompanying text. The DOE’s Loan Programs Office lists two entries under the heading “Sample 1703 Projects” on its website: Georgia Power Company (GPC), Oglethorpe Power Corporation (OPC), and the Municipal Electric Authority of Georgia (MEAG)’s project to build two new reactors; and AREVA Enrichment Services, LLC’s project to provide uranium enrichment services. *Section 1703 Loan Program, supra*.

<sup>87</sup> See *Georgia Power Company, supra* note 62; *Portfolio Projects*, U.S. DEP’T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/portfolio-projects> [[perma.cc/8NDE-KAB6](http://perma.cc/8NDE-KAB6)]. The uranium enrichment facility that received a \$2 billion loan guarantee in 2010 is not categorized as an uprate. See FINAL SOLICITATION, *supra* note 15, at 2; *AREVA, supra* note 62.

<sup>88</sup> *Georgia Power Company, supra* note 62.

<sup>89</sup> See *infra* notes 90–93 and accompanying text.

<sup>90</sup> Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. 10510, 10512–13 (Feb. 25, 2014).

included an NRC comparison of emissions from a nuclear power plant to those from a similarly-sized fossil fuel plant.<sup>91</sup> The NRC concluded “that the nuclear plant has approximately 1/10th the annual CO<sub>2</sub> emission rate of a natural-gas-fired power plant and 1/20th the emissions of a coal-fired power plant.”<sup>92</sup> It is clear from its response that the DOE accepted that the new nuclear reactors would avoid, reduce, or sequester greenhouse gas emissions.<sup>93</sup>

Likewise, by approving the Vogtle Plant’s application, the DOE recognized that the reactor design that both new reactors will use (Westinghouse AP1000 Generation III+) constitutes a “New or Significantly Improved Technology,” pursuant to 10 C.F.R. § 609.2.<sup>94</sup> That plant will be the first in the United States to use this reactor design, which boasts a more efficient operation due to redesigned components and safety improvements.<sup>95</sup> Although the Act does not define New or Significantly Improved Technology, the regulations make it clear that “Commercial Technology” and New or Significantly Improved Technology are mutually exclusive.<sup>96</sup> The latter encompasses technology related to the production, consumption, or transportation of energy that has either: “(1) Only recently been developed, discovered or learned; or (2) Involves or constitutes one or more meaningful and important improvements in productivity or value, in comparison to Commercial Technologies in use in the United States at the time the Term Sheet is issued.”<sup>97</sup>

According to the statute, “[C]ommercial technology’ means a technology in general use in the commercial marketplace” and does not include technology in use solely in a demonstration project funded by the DOE.<sup>98</sup> The regulations promulgated by the DOE indicate that a given technology is in “general use” if it is: (1) being used in at least three domestic commercial projects “in the same general application as in the proposed project”; and

<sup>91</sup> *Id.*

<sup>92</sup> *Id.*

<sup>93</sup> *See id.* at 10510, 10513.

<sup>94</sup> *See* 10 C.F.R. § 609.2 (2015); Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. at 10510, 10512; *Georgia Power Company*, *supra* note 62.

<sup>95</sup> *See AP1000 Nuclear Power Plant*, WESTINGHOUSE, <http://www.westinghousenuclear.com/New-Plants/AP1000-PWR> [<http://perma.cc/QCD9-R3CA>]; *Georgia Power Company*, *supra* note 62; *Overview*, WESTINGHOUSE, <http://www.westinghousenuclear.com/New-Plants/AP1000-PWR/Overview> [<http://perma.cc/4N9D-P5BL>].

<sup>96</sup> 10 C.F.R. § 609.2; Loan Guarantees for Projects That Employ Innovative Technologies, 72 Fed. Reg. 60116, 60117 (Oct. 23, 2007) (codified at 10 C.F.R. pt. 609). “New or Significantly Improved Technology means a technology concerned with the production, consumption or transportation of energy and that is not a Commercial Technology.” § 609.2.

<sup>97</sup> § 609.2.

<sup>98</sup> 42 U.S.C. § 16511(1)(A) (2012).

(2) has been operating in each project for at least five years.<sup>99</sup> All projects that have already received Title XVII loan guarantees are automatically counted toward this three commercial project minimum threshold.<sup>100</sup> If a proposed project involves technology that is deemed to be Commercial Technology at the time the DOE issues the term sheet for a loan guarantee, then the project is not eligible under Title XVII.<sup>101</sup>

## 2. Application Process

When the DOE reviews applications, it applies “the criteria set forth in Title XVII of [the Act], the implementing regulations in 10 C.F.R. Part 609, and the applicable solicitation issued by DOE.”<sup>102</sup> Applications are submitted in two parts, with the first (“Part I”) functioning primarily to establish that the project meets the two eligibility requirements under Title XVII, in addition to conditions such as being located in the United States and not benefitting from certain other federal assistance.<sup>103</sup> The DOE will invite eligible projects, as determined from Part I, to proceed with a second part (“Part II”) submission, which involves a more detailed review of various programmatic, technical, and financial factors.<sup>104</sup> For example, the DOE will assess the likelihood that a project will actually repay all debt, whether or not guaranteed by the DOE during the Part II phase.<sup>105</sup>

### *E. The Chevron Doctrine and Judicial Deference to Agency Interpretation*

The DOE’s Loan Guarantee Solicitation Announcement reflects the agency’s interpretation of Title XVII of the Energy Policy Act of 2005.<sup>106</sup> The United States Supreme Court affords a significant amount of deference

<sup>99</sup> See 10 C.F.R. § 609.2. The regulation states: “The five-year period shall be measured, for each project, starting on the in service date of the project or facility employing that particular technology. For purposes of this section, commercial projects include projects that have been the recipients of a loan guarantee from DOE under this part.” *Id.*

<sup>100</sup> 10 C.F.R. § 609.2.

<sup>101</sup> *Id.* A “term sheet” is “an offering document issued by DOE that specifies the detailed terms and conditions under which DOE may enter into a Conditional Commitment with the Applicant.” *Id.*

<sup>102</sup> Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. 10510, 10512 (Feb. 25, 2014).

<sup>103</sup> FINAL SOLICITATION, *supra* note 15, at 7. The DOE plans to evaluate three separate rounds of applications, with the option to add additional rounds. *Id.* at 13. The first, second, and third round deadlines for Part I are March 18, 2015, September 16, 2015, and March 16, 2016, respectively. *Id.* The corresponding Part II due dates are October 14, 2015, April 13, 2016, and October 19, 2016. *Id.*

<sup>104</sup> *Id.* at 8.

<sup>105</sup> *Id.* at 9.

<sup>106</sup> See *infra* notes 187–267 and accompanying text.

to agency interpretation of statutory language, often referred to as “*Chevron* deference.”<sup>107</sup>

*Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.* is the seminal case regarding a federal agency’s discretion to interpret the statute it is administering.<sup>108</sup> Justice Stevens articulated a two-step process by which a court should review an agency’s interpretation of a statute.<sup>109</sup> First, a court must determine whether Congress has already “directly spoken to the precise question at issue.”<sup>110</sup> If congressional intent is clear, both the agency and the court “must give effect to the unambiguously expressed intent of Congress”; the issue is settled, and the court need not continue its inquiry.<sup>111</sup> Only when Congress has not spoken on the issue at hand should a court proceed to step two: assessing whether the agency’s answer to the question “is based on a permissible construction of the statute.”<sup>112</sup>

In *Chevron*, the United States Supreme Court held that because Congress did not specifically address the question at issue in the statute or its legislative history, the legislature implicitly delegated the power to interpret the statutory language to the agency.<sup>113</sup> Because of the agency’s unique expertise and sound reasoning, the Court upheld the agency’s interpretation.<sup>114</sup> The Court stated that unless regulations are arbitrary, capricious, or in conflict with the statute, they will remain in force.<sup>115</sup>

---

<sup>107</sup> See *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 982, 1003 (2005); *Barnhart v. Walton*, 535 U.S. 212, 214–15, 222 (2002); *Pension Benefit Guar. Corp. v. LTV Corp.*, 496 U.S. 633, 647–48, 651–52, 656 (1990).

<sup>108</sup> See 467 U.S. 837, 840 (1984); *supra* note 107 and accompanying text. The case centered on a dispute over the Environmental Protection Agency’s regulations implementing the Clean Air Act Amendments of 1977. See *Chevron*, 467 U.S. at 840.

<sup>109</sup> See *Chevron*, 467 U.S. at 842–43. Justice Stevens wrote:

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.

*Id.*

<sup>110</sup> *Id.* at 842.

<sup>111</sup> *Id.* at 842–43.

<sup>112</sup> *Id.* at 843.

<sup>113</sup> *Id.* at 842–44, 851.

<sup>114</sup> *Id.* at 865–66.

<sup>115</sup> *Id.* at 844.



In the decades following *Chevron*, the Court has further clarified its analysis with respect to whether a statutory provision is ambiguous.<sup>116</sup> Subsequent cases indicate that a court should not consider a statutory provision in isolation when applying the first step of its *Chevron* analysis.<sup>117</sup> This is because “the meaning—or ambiguity—of certain words or phrases may only become evident when placed in context.”<sup>118</sup> Reading a provision in the proper context requires the court to consider how it fits within “the overall statutory scheme,” reading the statute (including the provision in question) as a “harmonious whole.”<sup>119</sup> The proper context also includes taking account of other statutes that may affect the meaning of the provision in question, especially when another statute is more specific.<sup>120</sup> A court should be guided by common sense regarding how likely Congress was to delegate a particular policy decision to an agency in light of its economic and political importance.<sup>121</sup>

Also, whether the statutory language is such that an agency is left to determine how to implement legislative policy is of help to a court in determining whether ambiguity exists.<sup>122</sup> Ambiguity exists because the statute either does not provide specific terms, or terms are provided but do not exhaust the possible scenarios that may arise.<sup>123</sup> Congress leaves a gap in a statute knowing that it will be implemented by an agency precisely because it wants and expects that agency to fill it.<sup>124</sup> This is particularly common when the legislation involves complicated regulatory schemes or requires specialized knowledge to implement.<sup>125</sup> The fact that an agency, rather than a court, possesses the relevant know-how “is one of the principal justifica-

<sup>116</sup> See *infra* notes 117–127 and accompanying text.

<sup>117</sup> *FDA v. Brown & Williamson Tobacco Corp.*, 529 U.S. 120, 132 (2000); see *Brown v. Gardner*, 513 U.S. 115, 118 (1994) (“Ambiguity is a creature not of definitional possibilities but of statutory context.”), *superseded by statute*, 21 U.S.C. § 387 (2012), as recognized in *Bullitt Fiscal Ct. v. Bullitt Cty. Bd. of Health*, 434 S.W.3d 29 (Ky. 2013).

<sup>118</sup> *Brown & Williamson Tobacco Corp.*, 529 U.S. at 132.

<sup>119</sup> *Id.* at 133 (quoting *Davis v. Mich. Dep’t of Treasury*, 489 U.S. 803, 809 (1989); *FCC v. Mandel Bros., Inc.*, 359 U.S. 385, 389 (1959)).

<sup>120</sup> *Id.*

<sup>121</sup> *Id.*

<sup>122</sup> See *United States v. Hagggar Apparel Co.*, 526 U.S. 380, 392–93 (1999).

<sup>123</sup> See *id.*

<sup>124</sup> See *Smiley v. Citibank (S.D.), N.A.*, 517 U.S. 735, 740–41 (1996) (stating that there is a “presumption that Congress, when it left ambiguity in a statute meant for implementation by an agency, understood that the ambiguity would be resolved, first and foremost, by the agency, and desired the agency (rather than the courts) to possess whatever degree of discretion the ambiguity allows.”).

<sup>125</sup> See *PUD No. 1 of Jefferson Cty. v. Wash. Dep’t of Ecology*, 511 U.S. 700, 704, 712 (1994) (deferring to the Environmental Protection Agency’s (“EPA”) knowledge of “the complex statutory and regulatory scheme that governs our Nation’s waters”); *Chem. Mfrs. Ass’n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 125, 134 (1985) (deferring to the EPA’s “understanding of this very ‘complex statute’”).

tions behind *Chevron* deference.”<sup>126</sup> Legislation that “has produced a complex and highly technical regulatory program requiring significant expertise” may be taken as evidence of Congressional intent to delegate broad policymaking discretion to the agency.<sup>127</sup>

Once a court determines that Congress has not spoken directly on the question at issue, it must next assess whether the guidance provided by the agency is based on a permissible construction of the statute.<sup>128</sup> Generally, a “rational” or “reasonable” interpretation of a statute will be entitled to *Chevron* deference.<sup>129</sup> A rational or reasonable agency interpretation does not contradict the language of the statute itself, but instead is consistent with the intent of Congress and the underlying purpose of the statute.<sup>130</sup> Compared to Congress, an agency’s higher level of expertise in the subject matter of the legislation means that it is uniquely equipped to administer it, and the Supreme Court has repeatedly indicated that agency judgments that further the policy goals of the statute deserve deference.<sup>131</sup>

An agency’s interpretation is valid when it is based on “a” permissible construction, rather than “the” permissible construction.<sup>132</sup> Subsequent cases confirm that a particular interpretation adopted by the implementing agency will not be struck down, as long as it is rational, just because there are competing permissible interpretations.<sup>133</sup> Moreover, the agency’s interpretation need not even be the “best” interpretation to be upheld, so long as it is reasonable.<sup>134</sup> It is not enough for an opponent to simply argue that its

---

<sup>126</sup> See *Pension Benefit Guar. Corp. v. LTV Corp.*, 496 U.S. 633, 651–52 (1990).

<sup>127</sup> *Pauley v. BethEnergy Mines, Inc.*, 501 U.S. 680, 697 (1991); see *United States v. Mead Corp.*, 533 U.S. 218, 227 (2001) (“Delegation of such authority may be shown in a variety of ways, as by an agency’s power to engage in adjudication or notice-and-comment rulemaking, or by some other indication of a comparable congressional intent.”).

<sup>128</sup> *Chevron*, 467 U.S. at 843.

<sup>129</sup> See *Nat’l Cable & Telecomms. Ass’n v. Gulf Power Co.*, 534 U.S. 327, 333 (2002); *Chem. Mfrs. Ass’n*, 470 U.S. at 125.

<sup>130</sup> See *United States v. Hagggar Apparel Co.*, 526 U.S. 380, 392 (1999).; *Nat’l R.R. Passenger Corp. v. Bos. & Me. Corp.*, 503 U.S. 407, 417–18 (1992) (“If the agency interpretation is not in conflict with the plain language of the statute, deference is due.”).

<sup>131</sup> See *Nat’l Cable & Telecomms. Ass’n v. Brand X Internet Servs.*, 545 U.S. 967, 980 (2005); *Pension Benefit Guar. Corp.*, 496 U.S. at 651–52, 656; *Chevron*, 467 U.S. at 865–66.

<sup>132</sup> See *Chevron*, 467 U.S. at 843.

<sup>133</sup> See *Holly Farms Corp. v. NLRB*, 517 U.S. 392, 398–99 (1996) (“When the legislative prescription is not free from ambiguity, the administrator must choose between conflicting reasonable interpretations.”); *Chem. Mfrs. Ass’n*, 470 U.S. at 125 (“This view of the agency charged with administering the statute is entitled to considerable deference; and to sustain it, we need not find that it is the only permissible construction that EPA might have adopted but only that EPA’s understanding of this very ‘complex statute’ is a sufficiently rational one to preclude a court from substituting its judgment for that of EPA.”).

<sup>134</sup> *Brand X Internet Servs.*, 545 U.S. at 980 (“If a statute is ambiguous, and if the implementing agency’s construction is reasonable, *Chevron* requires a federal court to accept the agency’s

interpretation of an ambiguous statutory provision is different than, or even superior to, the implementing agency's interpretation.<sup>135</sup> The challenger's burden is to prove that the agency's interpretation of the statute is unreasonable based on the statute's underlying policy.<sup>136</sup>

It is especially difficult to convince a court that an agency's interpretation is invalid when the agency has arrived at its interpretation through formal administrative proceedings, such as notice-and-comment rulemaking.<sup>137</sup> Rulemaking is not limited to the process of promulgating regulations; rather, the term "rule" has a broader meaning that "means the whole or a part of an agency statement of general or particular applicability and future effect designed to implement, interpret, or prescribe law or policy or describing the organization, procedure, or practice requirements of an agency."<sup>138</sup> Notice of a rulemaking is published in the Federal Register so that interested parties may be informed of the time, place, and nature of the proceedings, the legal authority for the proposed rule, and a description of the proposed rule or the relevant subjects and issues involved.<sup>139</sup> Interested parties can then participate in the rulemaking process by submitting written comments to the agency, sometimes with the opportunity for oral presentation.<sup>140</sup>

When Congress delegates to an agency the authority to make rules carrying the force of law, the agency's interpretation of a particular statutory provision is entitled to *Chevron* deference, as long as it is promulgated in the exercise of that rulemaking authority.<sup>141</sup> Congress may choose to delegate this rulemaking power to an agency charged with administering a statute that is particularly technical, complex, or dynamic precisely because it wants the agency to apply its expertise through a formal procedure.<sup>142</sup> In

construction of the statute, even if the agency's reading differs from what the court believes is the best statutory interpretation."').

<sup>135</sup> See *id.*; *Nat'l Cable & Telecomms. Ass'n v. Gulf Power Co.*, 534 U.S. 327, 333 (2002); *Chemical Mfrs. Ass'n*, 470 U.S. at 125.

<sup>136</sup> See *Gulf Power Co.*, 534 U.S. at 333; *Chevron*, 467 U.S. at 863.

<sup>137</sup> See *United States v. Mead Corp.*, 533 U.S. 218, 226–27 (2001); *United States v. Haggart Apparel Co.*, 526 U.S. 380, 390 (1999) ("Particularly in light of the fact that the agency utilized the notice-and-comment rulemaking process before issuing the regulations, the argument that they were not intended to be entitled to judicial deference implies a sufficient departure from conventional contemporary administrative practice that we ought not to adopt it absent a different statutory structure and more express language to this effect in the regulations themselves.").

<sup>138</sup> See 5 U.S.C. § 551(4) (2012).

<sup>139</sup> *Id.* § 553(b).

<sup>140</sup> *Id.* § 553(c).

<sup>141</sup> *Mead Corp.*, 533 U.S. at 226–27 ("We hold that administrative implementation of a particular statutory provision qualifies for *Chevron* deference when it appears that Congress delegated authority to the agency generally to make rules carrying the force of law, and that the agency interpretation claiming deference was promulgated in the exercise of that authority.").

<sup>142</sup> See *supra* notes 122–127 and accompanying text.

such a case, a court is justified in deferring to an agency interpretation.<sup>143</sup> The notice-and-comment procedure helps to ensure that the rulemaking process is fair and legitimate.<sup>144</sup> It provides notice of the agency's intent to interested parties who can then confront and help resolve potential issues.<sup>145</sup> The comment process creates a public record in support of the agency's reasoning and demonstrates how it arrived at its conclusions.<sup>146</sup> To defeat a regulation promulgated by an agency through its rulemaking power, an opponent must convince a court that the regulation is "procedurally defective, arbitrary or capricious in substance, or manifestly contrary to the statute."<sup>147</sup>

## II. CONTROVERSY SURROUNDING THE DEPARTMENT OF ENERGY'S NUCLEAR LOAN GUARANTEE SOLICITATION ANNOUNCEMENT

In response to its October 3, 2014 notice announcing a "potential future solicitation for Federal Loan Guarantees for Advanced Nuclear Energy Projects," the Department of Energy's ("DOE") Loan Programs Office ("LPO") received comments from thirty-seven interested organizations.<sup>148</sup> The comments urged the DOE to either abandon the nuclear loan guarantee program altogether, or at a minimum, make substantial changes to the draft solicitation before distributing a second round of loan guarantees.<sup>149</sup> Regardless of its position on nuclear power from a safety or environmental perspective, each group focused on the potential illegality of the program and emphasized the financial perils associated with the LPO's draft solicitation.<sup>150</sup> In particular, the confusion surrounding the meaning of certain requirements included in the authorizing statute and solicitation prompted commentators to question how uprates—a project category identified by the DOE as a potential applicant—could receive loan guarantees without violating the terms of the Energy Policy Act of 2005 (the "Act").<sup>151</sup>

### *A. Joint Comments from Thirty-Five Groups in Opposition to the Department of Energy's Loan Guarantee Solicitation*

Thirty-five environmental, public health, and anti-nuclear groups ("Joint Commentators") submitted joint comments to the LPO in which

<sup>143</sup> See *Mead Corp.*, 533 U.S. at 226–27.

<sup>144</sup> See *Sprint Corp. v. FCC*, 315 F.3d 369, 373 (D.C. Cir. 2003).

<sup>145</sup> *Id.*

<sup>146</sup> See *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 863 (1984).

<sup>147</sup> See *Mead Corp.*, 533 U.S. at 227.

<sup>148</sup> Agency Request for Comments on Draft Solicitation for Advanced Nuclear Energy Projects, 79 Fed. Reg. 59763, 59763 (Oct. 3, 2014); see *infra* notes 152–181 and accompanying text.

<sup>149</sup> See *infra* notes 152–181 and accompanying text.

<sup>150</sup> See *infra* notes 152–181 and accompanying text.

<sup>151</sup> See *infra* notes 152–181 and accompanying text.

they threatened to litigate a final solicitation that preserved the language of the draft solicitation related to uprates that they believe violates the Act.<sup>152</sup> They asserted that the DOE's draft solicitation constitutes an impermissible interpretation of the Act.<sup>153</sup> The Joint Commentators stated that the loan guarantee program "could be used to fund projects in violation of 42 U.S.C. 16513," a section of the Act that describes which projects are eligible for government "Incentives for Innovative Technologies," or loan guarantees.<sup>154</sup> The Joint Commentators are opposed to the inclusion of uprates among the project categories the DOE indicated might be eligible to apply.<sup>155</sup> They argued that the category "must be dropped from this and any future solicitation," because it encompasses projects related to nuclear reactors that already exist, as opposed to brand new reactors to be constructed in the future.<sup>156</sup>

Simply put, the Joint Commentators argued that it would be impossible to further reduce the level of greenhouse gases emitted by an existing nu-

---

<sup>152</sup> See Nuclear Info. & Res. Serv., Comment Letter on Department of Energy Loan Guarantee Solicitation Announcement [hereinafter NIRS Comment Letter], <http://www.nirs.org/neconomics/doelgcomments.pdf> [<http://perma.cc/YSA9-LFHJ>]. Organizations that advocate a future without nuclear power, such as the Nuclear Information and Resource Service and Beyond Nuclear, are among the signatories to the Comments on Department of Energy Loan Guarantee Solicitation Announcement ("Joint Comments"). See *id.*; *About Beyond Nuclear*, BEYOND NUCLEAR, <http://www.beyondnuclear.org/about/> [<http://perma.cc/TY4G-P5KF>]; *About NIRS*, NUCLEAR INFO. & RES. SERV., <http://www.nirs.org/about/nirs.htm> [<http://perma.cc/MG92-E7WJ>]. Several regional environmental groups that focus on campaigning against nuclear energy in particular parts of the country, including the New England Coalition on Nuclear Pollution, Indian Point Safe Energy Coalition, Green Delaware, Ecology Party of Florida, Don't Waste Arizona, and Cape Downwinders, are also represented. See NIRS Comment Letter, *supra*; *About*, INDIAN POINT SAFE ENERGY COAL., <https://closeindianpoint.wordpress.com/about/> [<http://perma.cc/G68C-SNNL>]; *About Cape Downwinders*, CAPE DOWNWINDERS, <http://capedownwinders.org/about/> [<http://perma.cc/6SLW-HJZT>]; *About Don't Waste Arizona*, DON'T WASTE ARIZ., INC., <http://dontwasteazizona.org/about.html> [<http://perma.cc/G22Q-PXQS>]; *About Green Delaware*, GREEN DEL., <http://www.greenadel.org/about/> [<http://perma.cc/4AJD-CGYA>]; *About Us*, NEW ENG. COAL. ON NUCLEAR POLLUTION, <http://necnp.org/about-us/> [<http://perma.cc/L7CV-A3PB>]; *No Nukes*, ECOLOGY PARTY OF FLA., [<http://perma.cc/XE66-4HXW>] (last updated Jan. 12, 2009) (original hyperlink no longer active). Other groups, such as Washington Physicians for Social Responsibility, the Institute of Neurotoxicology & Neurological Disorders, and Oregon Physicians for Social Responsibility, are primarily focused on issues related to public health, including nuclear power. Steven Gilbert, *The Institute of Neurotoxicology and Neurological Disorders*, INST. OF NEUROTOXICOLOGY & NEUROLOGICAL DISORDERS, <http://www.toxipedia.org/pages/viewpage.action?pageId=6003543> [<http://perma.cc/3NFZ-LZ87>] (last updated Mar. 3, 2015); *Oregon About*, PHYSICIANS FOR SOCIAL RESPONSIBILITY, <http://www.psr.org/chapters/oregon/about.html>; *Washington About Us*, PHYSICIANS FOR SOCIAL RESPONSIBILITY, <http://www.psr.org/chapters/washington/about/>.

<sup>153</sup> See NIRS Comment Letter, *supra* note 152.

<sup>154</sup> See 42 U.S.C. § 16513 (2012); NIRS Comment Letter, *supra* note 152.

<sup>155</sup> NIRS Comment Letter, *supra* note 152.

<sup>156</sup> *Id.* The Joint Commentators did not dispute the legality of awarding DOE loan guarantees to projects to build new nuclear reactors, and in fact they stated that projects in that category are "both legal and theoretically, at least, viable." See *id.*

clear reactor by making the sort of improvement or modification that would constitute an uprate.<sup>157</sup> Based on that fact, no uprates would be able to satisfy the first loan guarantee eligibility requirement, which permits the Secretary of the Department of Energy to make guarantees “only for projects that avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases.”<sup>158</sup> Because the two requirements expressed in 42 U.S.C. § 16513 are conjunctive, if uprates cannot satisfy the first requirement, then they will never meet the Act’s eligibility threshold and therefore cannot legally receive loan guarantees under the DOE’s program.<sup>159</sup>

The Joint Commentators argued that any existing nuclear reactor has already realized its full potential for avoiding, reducing, or sequestering its greenhouse gas emissions.<sup>160</sup> Although they did not elaborate much on this point, their argument was supported by the fact that nuclear power plants do not emit any greenhouse gases as a by-product of the electricity they generate.<sup>161</sup> In contrast to a power plant that generates electricity using coal, oil, or natural gas—which can incrementally reduce the total amount of greenhouse gases it releases because such plants do not start at zero emissions—a nuclear power plant begins with a baseline emission level of zero.<sup>162</sup> Therefore, they allege that it is impossible for existing nuclear reactors to further reduce their greenhouse gas emissions through uprates.<sup>163</sup>

The thirty-five groups also asserted that uprates would be unable to meet the second requirement for loan guarantee eligibility indicated by the Act.<sup>164</sup> The second prong of 42 U.S.C. § 16513(a) states that eligible projects must “employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.”<sup>165</sup> Their criticism was focused on the impossibility of uprates utilizing such technology.<sup>166</sup> The Joint Commentators identified the four nuclear reactors currently under construction as the standard by which “new or significantly improved” should be measured, and concluded that “no uprates . . . to existing reactors can be defined as either newer or significantly improved from those.”<sup>167</sup>

---

<sup>157</sup> See *id.*

<sup>158</sup> See § 16513(a); NIRS Comment Letter, *supra* note 152.

<sup>159</sup> See § 16513(a); NIRS Comment Letter, *supra* note 152.

<sup>160</sup> See NIRS Comment Letter, *supra* note 152.

<sup>161</sup> See *id.*; *Life-Cycle Emissions Analyses*, NUCLEAR ENERGY INST., <http://www.nei.org/Issues-Policy/Protecting-the-Environment/Life-Cycle-Emissions-Analyses> [<http://perma.cc/E4MV-HLX6>].

<sup>162</sup> *Air Emissions*, *supra* note 3; *Life-Cycle Emissions Analyses*, *supra* note 161.

<sup>163</sup> See NIRS Comment Letter, *supra* note 152.

<sup>164</sup> See *id.*

<sup>165</sup> 42 U.S.C. § 16513(a) (2012).

<sup>166</sup> See NIRS Comment Letter, *supra* note 152.

<sup>167</sup> *Id.*

The Joint Commentators argued that the DOE's inclusion of uprates as a category of projects eligible for loan guarantees was "nothing more than an attempt to prop up—at taxpayer risk—current reactors that have become uneconomical due to age-related deterioration, poor reactor design, or simply lower-cost competition from electricity generation sources like solar and wind power."<sup>168</sup> They accused the DOE of issuing the draft solicitation "in an obvious effort to use up" the \$10.6 billion Congress authorized to finance investment in nuclear reactors "whether or not it serves the original purpose of the creating legislation."<sup>169</sup> The groups demanded that the DOE therefore abandon its nuclear loan guarantee program altogether and either channel the remaining billions into loan guarantees for renewable energy projects, or return the funds to the Treasury.<sup>170</sup>

### B. Comments from the Nuclear Energy Institute

The Nuclear Energy Institute ("NEI") represents the interests of the American nuclear industry.<sup>171</sup> The organization, which describes itself as "responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including regulatory, financial, technical and legislative issues," responded to the DOE's request for feedback on the draft solicitation.<sup>172</sup> The NEI counts among its members "all companies licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, [and] materials licensees" (for example, hospitals that use radioactive drugs or imaging devices).<sup>173</sup>

The NEI met the DOE's second solicitation for nuclear loan guarantees with measured praise.<sup>174</sup> Although the NEI commended the DOE "for seeking to expand the universe of projects that might avail themselves of the loan guarantee program," it was highly skeptical as to how likely the draft solicitation would be to meet this goal, in part because of uprates' questionable ability to satisfy the statutory requirements.<sup>175</sup>

<sup>168</sup> *Id.*

<sup>169</sup> *See id.* The Joint Commentators cited Congress's vision of a nuclear renaissance as the purpose of the legislation creating the DOE loan guarantee program. *Id.*

<sup>170</sup> *See id.*

<sup>171</sup> NEI Comment Letter, *supra* note 7, at 1.

<sup>172</sup> *See id.*

<sup>173</sup> *Id.*; see *Medical Uses of Nuclear Materials*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/materials/miau/med-use.html> [<http://perma.cc/63LD-PXMU>] (last updated Nov. 12, 2014). "Fuel cycle facilities" refers to facilities that mill, convert, and enrich uranium. *Fuel Cycle Facilities*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.NRC.gov/materials/fuel-cycle-fac.html> [<http://perma.cc/468J-46D4>] (last updated Mar. 27, 2014).

<sup>174</sup> *See* NEI Comment Letter, *supra* note 7.

<sup>175</sup> *See id.* at 2, 7.

Like the Joint Commentators, the NEI was dissatisfied with the DOE's treatment of uprates.<sup>176</sup> It noted that uprates can range in cost from "less than \$500 million to over \$1 billion," depending on the size of the reactor.<sup>177</sup> Even though some companies finance less expensive uprates out of pocket, they might want to take advantage of the loan guarantee program when undertaking a sufficiently expensive uprate, such as the one completed by a Florida nuclear plant in 2013 at a cost of \$3.4 billion.<sup>178</sup> The NEI questioned how power uprates could qualify for the program, given that they "typically do not employ 'new or significantly improved technology' defined narrowly," even though they result in potentially significant improvements to the nuclear power plant.<sup>179</sup> The organization asked the DOE to clarify exactly how it would apply the "new or significantly improved technology" standard to power uprates.<sup>180</sup>

Despite the opposition discussed above, the DOE proceeded with its solicitation for nuclear loan guarantees and released the final solicitation on December 10, 2014, without making any changes to the language regarding uprates.<sup>181</sup>

### III. THE DEPARTMENT OF ENERGY'S DECISION TO ALLOW UPRATES TO APPLY FOR NUCLEAR LOAN GUARANTEES IS WORTHY OF *CHEVRON* DEFERENCE

According to the Energy Policy Act of 2005 (the "Act"), regardless of whether the energy source is solar, wind, fossil fuels, or nuclear, any application for a Title XVII loan guarantee from the Department of Energy ("DOE") must meet two threshold conditions.<sup>182</sup> First, an eligible project must "avoid[], reduce[], or sequester[] . . . anthropogenic emissions of greenhouse gases."<sup>183</sup> Second, it must "employ[] new or significantly improved" technology.<sup>184</sup> As the DOE prepares to consider applications for the over \$12 billion set aside for loan guarantees for nuclear energy projects,

<sup>176</sup> *See id.* at 4–5, 7.

<sup>177</sup> *Id.* at 4.

<sup>178</sup> *See id.*

<sup>179</sup> *See id.* at 7.

<sup>180</sup> *Id.*

<sup>181</sup> Compare FINAL SOLICITATION, *supra* note 15, at 2 ("An 'Eligible Project' under this Solicitation . . . [includes] c) Uprates. Projects consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifications will operate more efficiently."), with DRAFT SOLICITATION, *supra* note 11, at 2 ("An 'Eligible Project' under this Solicitation . . . [includes] c) Uprates. Projects consisting of improvements and/or modifications to an existing reactor that is operating but that due to such improvements and/or modifications will operate more efficiently.").

<sup>182</sup> *See* 42 U.S.C. § 16513 (2012).

<sup>183</sup> *Id.*

<sup>184</sup> *Id.*



supporters and opponents of the program alike have questioned how certain project categories identified by the DOE, including uprates, will fit into the statutory scheme.<sup>185</sup> In fact, the confusion surrounding project eligibility is so great that some groups have threatened to sue the DOE for illegally funding certain nuclear projects, should it proceed.<sup>186</sup>

Such litigation, however, should prove fruitless for opponents because the DOE's decision to include uprates among the projects eligible for nuclear loan guarantees should survive a *Chevron* challenge.<sup>187</sup> In failing to narrowly define "eligible project," Congress implicitly delegated to the DOE the authority to implement the Title XVII loan guarantee program across a range of industries.<sup>188</sup> A court should defer to the agency's interpretation of the Act—which allows uprates to apply for loan guarantees—because it is reasonable and consistent with both the language of the statute and its underlying policy.<sup>189</sup>

*A. The Ambiguity Concerning Nuclear Projects in the Energy Policy Act of 2005 Indicates a Congressional Delegation of Authority to the Department of Energy*

In *Chevron, U.S.A., Inc. v. Natural Resources Defense Council, Inc.*, the United States Supreme Court explored when a court should defer to an agency's interpretation of a statute.<sup>190</sup> The first consideration is whether Congress has already "directly spoken to the precise question at issue," for if it has then both the agency and the court are bound to act in accordance with the "unambiguously expressed intent of Congress."<sup>191</sup>

It is clear from the text of the Act that Congress did not express its unambiguous intent with respect to the eligibility of any specific type of project in any industry, including nuclear uprates.<sup>192</sup> Although it limited the Secretary of the Department of Energy's ("Energy Secretary") ability to make loan guarantees to projects that "avoid, reduce, or sequester" emissions of greenhouse gases and "employ new or significantly improved technologies," the Act did not explain the meaning of any of these terms.<sup>193</sup>

<sup>185</sup> See *supra* notes 69–105, 148–181 and accompanying text.

<sup>186</sup> See NIRS Comment Letter, *supra* note 152 ("Should the DOE proceed with this idea, it will be litigated (yet another waste of taxpayer money), and it is highly unlikely DOE will prevail given the plain language of the Act.").

<sup>187</sup> See *infra* notes 190–267 and accompanying text.

<sup>188</sup> See *infra* notes 190–210 and accompanying text.

<sup>189</sup> See *infra* notes 211–267 and accompanying text.

<sup>190</sup> See 467 U.S. 837, 843 (1984); *supra* notes 108–115 and accompanying text.

<sup>191</sup> *Chevron*, 467 U.S. at 843.

<sup>192</sup> See *infra* notes 193–203 and accompanying text.

<sup>193</sup> 42 U.S.C. § 16513(a)(1) (2012) (setting forth eligibility requirements); see Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1701–1704, 119 Stat. 594, 1117–22 (2005) (codified as

Nowhere in the approximately 550-page Act did Congress directly address how it intended these terms to apply to potential projects across a diverse range of industries, let alone specific projects within the nuclear sector.<sup>194</sup> The omission renders Congress's intent with respect to uprates ambiguous.<sup>195</sup> Congress did not indicate which types of nuclear projects it envisioned would be eligible for DOE loan guarantees, instead leaving that decision to the agency.<sup>196</sup>

The Act presents the two requirements in an incredibly broad outline of the program, which makes no reference to the eligibility of specific projects like uprates to nuclear facilities.<sup>197</sup> The same section of the statute that lays out the two eligibility requirements also contains a list of ten categories from which projects shall be eligible.<sup>198</sup> This means that there are potentially ten different contexts through which to interpret the two requirements given the DOE's practice of issuing solicitations by industry based on Congressional appropriations.<sup>199</sup> The statute does not distinguish what, for example, is necessary in order for an oil refinery, renewable energy system, or advanced nuclear energy facility to achieve avoidance, reduction, or sequestration of emissions despite the fact that they utilize different raw materials, equipment, and processes.<sup>200</sup> Congress did not provide any guidance at all related to which kinds of projects within each industry or method of power generation would satisfy the first requirement of Title XVII.<sup>201</sup> Nor did Congress elaborate on what constitutes "new or significantly improved technology" or identify which types of projects would satisfy this second requirement.<sup>202</sup> The fact that Congress took the opportunity to define "commercial technology" while omitting any definition of "new or significantly improved technology" implies that it deliberately left this gap.<sup>203</sup>

---

amended at §§ 42 U.S.C. 15801–16524) (failing to define or further explain the eligibility terminology).

<sup>194</sup> See Energy Policy Act §§ 1701–1704.

<sup>195</sup> See *id.*; *Chevron*, 467 U.S. at 843, 851, 861, 865–66 (finding ambiguity where the statute did not contain a specific definition of the term "stationary source").

<sup>196</sup> See Energy Policy Act §§ 1701–1704; *Chevron*, 467 U.S. at 843–44, 851; *infra* notes 197–210.

<sup>197</sup> See § 16513(a).

<sup>198</sup> See § 16513.

<sup>199</sup> See *id.*; *Title XVII Open Solicitations*, U.S. DEP'T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/title-xvii-open-solicitations> [perma.cc/6W6Q-6HR6]. "Title XVII does not require, but on the other hand does not prohibit, different treatment for different eligible technologies or projects in the Title XVII program." Loan Guarantees for Projects That Employ Innovative Technologies, 72 Fed. Reg. 60116, 60117 (Oct. 23, 2007) (codified at 10 C.F.R. pt. 609 (2015)).

<sup>200</sup> See Energy Policy Act of 2005, Pub. L. No. 109-58, §§ 1701–1704, 119 Stat. 594, 1117–22 (2005) (codified as amended at §§ 42 U.S.C. 15801–16524).

<sup>201</sup> See *id.*

<sup>202</sup> See *id.*

<sup>203</sup> See § 16511(1); Energy Policy Act §§ 1701–1704.

Implicit in these omissions is Congress's desire to let the agency responsible for implementing the Title XVII loan guarantee program determine how these standards will be applied across a range of different modes of power generation and which types of projects will be eligible.<sup>204</sup> The text of the Act provides only very general guidance with respect to project eligibility, without any instructions to the agency that are more specific than the two threshold requirements.<sup>205</sup> Given the complexity of the loan guarantee program, this is evidence that Congress wanted and expected the DOE to supply these missing details.<sup>206</sup> As Justice Antonin Scalia wrote in *Smiley v. Citibank (South Dakota)*:

We accord deference to agencies under *Chevron*, not because of a presumption that they drafted the provisions in question, or were present at the hearings, or spoke to the principal sponsors; but rather because of a presumption that Congress, when it left ambiguity in a statute meant for implementation by an agency, understood that the ambiguity would be resolved, first and foremost, by the agency, and desired the agency (rather than the courts) to possess whatever degree of discretion the ambiguity allows.<sup>207</sup>

A system for distributing billions of dollars in federal loan guarantees is necessarily a highly complicated one.<sup>208</sup> Indeed, administering the Title XVII loan guarantee program requires extensive financial expertise and specialized technical knowledge of each sector in which a loan guarantee may be made, including the nuclear energy industry.<sup>209</sup> Congress delegated that power to the DOE because the agency has the expertise required to

<sup>204</sup> See *United States v. Haggard Apparel Co.*, 526 U.S. 380, 392–93 (1999).

<sup>205</sup> See Energy Policy Act §§ 1701–1704.

<sup>206</sup> See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 708 (1995); *Pauley v. BethEnergy Mines, Inc.*, 501 U.S. 680, 697 (1991); *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 865 (1984); *Receive Testimony on the U.S. Department of Energy's Loan Guarantee Program and its Effectiveness in Spurring the Near-Term Deployment of Clean Energy Technology: Hearing Before the S. Comm. on Energy & Nat. Res.*, 111th Cong. 2 (2010) [hereinafter *Testimony on the U.S. Department of Energy's Loan Guarantee Program*] (statement of Sen. Jeff Bingaman, Chairman, S. Comm. on Energy & Nat. Res.). Throughout a congressional hearing regarding the loan guarantee program, assorted representatives of both the United States Government and the energy industry reaffirmed the complexity of the program. *Testimony on the U.S. Department of Energy's Loan Guarantee Program*, *supra*, at 3, 21, 30, 54–55, 67–68, 70.

<sup>207</sup> *Smiley v. Citibank (S.D.)*, N.A., 517 U.S. 735, 740–41 (1996).

<sup>208</sup> See *Testimony on the U.S. Department of Energy's Loan Guarantee Program*, *supra* note 206; FINAL SOLICITATION, *supra* note 15, at 1–17.

<sup>209</sup> See 42 U.S.C. § 16513 (2012); *Testimony on the U.S. Department of Energy's Loan Guarantee Program*, *supra* note 206; FINAL SOLICITATION, *supra* note 15, at 1–17; *About Us Home: Investing in American Energy*, U.S. DEP'T OF ENERGY LOAN PROGRAMS OFFICE, <http://energy.gov/lpo/about-us-home> [perma.cc/A34L-GM78].

competently assess financial and operational risks associated with potential applicants across a range of industries, and thus has the ability to competently identify appropriate candidates for loan guarantees.<sup>210</sup>

*B. A Court Should Defer to the Department of Energy's Interpretation of the Eligibility Requirements That Includes Uprates Because It Is Based on a Permissible Construction of the Energy Policy Act of 2005*

Having determined that Congress did not express an unambiguous intent regarding which types of projects will be eligible for Title XVII loan guarantees, and likewise did not address whether uprates to nuclear facilities are among them, a court should conclude that Congress implicitly delegated the power to interpret the language of Title XVII to the DOE as the implementing agency.<sup>211</sup> A court would thus proceed to the second prong of its *Chevron* analysis and assess whether inclusion of uprates in the category of eligible projects “is based on a permissible construction of the statute.”<sup>212</sup> In this case, a court would likely find that the agency’s inclusion of uprates reflects a permissible interpretation of the statute because it is consistent with both the language of Title XVII and its underlying policy.<sup>213</sup> Therefore, in line with previous applications of *Chevron* to agency interpretations of statutes involving complex technology and complicated implementation schemes, a court should defer to the DOE’s interpretation of the Title XVII eligibility requirements that permits applications seeking loan guarantees for uprates to existing nuclear facilities.<sup>214</sup>

The United States Supreme Court has repeatedly held that an agency’s interpretation is a permissible construction of a statute if it is reasonable or rational, meaning that it does not contradict the statutory language and is consistent with the policies Congress sought to further.<sup>215</sup> As discussed below, the DOE’s interpretation of Title XVII satisfies this test.<sup>216</sup>

---

<sup>210</sup> See § 16513; *Pauley*, 501 U.S. at 697.

<sup>211</sup> See *supra* notes 190–210 and accompanying text.

<sup>212</sup> See *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984). See generally FINAL SOLICITATION, *supra* note 15 (indicating that the DOE’s interpretation of the Act includes uprates as projects eligible for loan guarantees).

<sup>213</sup> See *infra* notes 217–260 and accompanying text.

<sup>214</sup> See *infra* notes 215–267 and accompanying text.

<sup>215</sup> See *Nat’l Cable & Telecomms. Ass’n, v. Gulf Power Co.*, 534 U.S. 327, 333 (2002); *United States v. Haggard Apparel Co.*, 526 U.S. 380, 392 (1999); *Nat’l R.R. Passenger Corp. v. Bos. & Me. Corp.*, 503 U.S. 407, 417–18 (1992); *Chem. Mfrs. Ass’n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 125 (1985).

<sup>216</sup> See *infra* notes 217–260 and accompanying text.

## 1. Uprate Eligibility Does Not Contradict the Plain Language of the Energy Policy Act of 2005

Despite contrary assertions by the signatories of the Comments on Department of Energy Loan Guarantee Solicitation Announcement (the “Joint Commentators”) and the Nuclear Energy Institute (“NEI”), distributing Title XVII loan guarantees to uprate projects does not contradict the language of the Energy Policy Act of 2005 because uprates can satisfy the two threshold eligibility requirements laid out in 42 U.S.C. § 16513.<sup>217</sup> The statute requires that all eligible projects satisfy two threshold conditions: (1) avoid, reduce, or sequester emissions of greenhouse gases, and (2) employ new or significantly improved technologies as compared to commercial technologies in service in the United States at the time the guarantee is issued.<sup>218</sup> The Joint Commentators asserted that it is impossible for any pre-existing nuclear reactor to further avoid or reduce greenhouse gas emissions.<sup>219</sup> They argued that once a reactor begins operating, for the remainder of its life it does not have the ability to ever increase the amount of greenhouse gas emissions it is avoiding or reducing beyond the amount it avoided or reduced when it first came online.<sup>220</sup> This assertion is incorrect.<sup>221</sup>

Just as a newly constructed nuclear reactor can satisfy the first threshold requirement, so too can an uprate to an existing nuclear reactor.<sup>222</sup> In their comments, the Joint Commentators did not dispute that a brand new nuclear reactor coming online is able to avoid, reduce, or sequester greenhouse gas emissions, and accordingly they did not accuse the DOE of illegally funding the two new reactors at the Vogtle Electric Generating Plant in Georgia (the “Vogtle Plant”).<sup>223</sup> The approved project at the Vogtle Plant indicates that efforts to produce additional electricity using nuclear generation—whether from brand new reactors or increased generation capacity achieved through uprates of existing reactors—satisfy the first requirement of Title XVII.<sup>224</sup> When it announced its approval of the Vogtle Plant project, the DOE explained how it satisfied the requirement that eligible projects must avoid, reduce, or sequester greenhouse gas emissions:

---

<sup>217</sup> See *supra* notes 149–180 and accompanying text; *infra* notes 218–245 and accompanying text.

<sup>218</sup> 42 U.S.C. § 16513(a) (2012).

<sup>219</sup> See NIRS Comment Letter, *supra* note 152.

<sup>220</sup> See *id.*

<sup>221</sup> See *infra* notes 222–233 and accompanying text.

<sup>222</sup> See *infra* notes 223–233 and accompanying text.

<sup>223</sup> See NIRS Comment Letter, *supra* note 152.

<sup>224</sup> See 42 U.S.C. § 16513 (2012); FINAL SOLICITATION, *supra* note 15, at 2; *Georgia Power Company*, *supra* note 62.

This alternative offers environmental benefits consistent with the statutory objectives of Title XVII of [the Act], which include reductions in greenhouse gas emissions. Compared to coal-fired and natural-gas-fired sources producing the same amount of base-load power, annual carbon dioxide (CO<sub>2</sub>) emission rates from nuclear power plants (including the fuel cycle processes) are considerably less.<sup>225</sup>

The DOE and Joint Commentators appear to agree that building a new reactor, like those at the Vogtle Plant, is an acceptable way to avoid, reduce, or sequester greenhouse gas emissions.<sup>226</sup> The DOE noted that this is because the new reactors are producing additional power without emitting anywhere near the level of greenhouse gases that alternative fuel sources like natural gas or coal do.<sup>227</sup> Because an uprate is a project to expand a reactor's output of electric power, potentially by as much as twenty percent, the same logic can apply.<sup>228</sup>

An uprated reactor will generate more electricity than the same reactor prior to the uprate.<sup>229</sup> Both a brand new reactor and an existing reactor that has been uprated will produce more electricity compared to an un-built or un-uprated reactor, respectively.<sup>230</sup> The more electricity that is produced using nuclear power, the less necessary it is to rely on coal-fired and natural-gas-fired plants to produce electricity, resulting in a greater avoidance, reduction, or sequestration of greenhouse gas emissions.<sup>231</sup> Therefore, the Joint Commentators' argument that only newly-constructed nuclear reactors, and not uprates, are able to avoid, reduce, or sequester greenhouse gases is illogical.<sup>232</sup> The DOE's conclusion that uprates may satisfy the first eligibility requirement of Title XVII is consistent with the language of 42 U.S.C. § 16513(a)(1), and therefore is a rational interpretation of the statute deserving of deference.<sup>233</sup>

---

<sup>225</sup> Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. 10510, 10510–11, 10513 (Feb. 25, 2014).

<sup>226</sup> See *id.*; NIRS Comment Letter, *supra* note 152.

<sup>227</sup> See Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. at 10510–11, 10513.

<sup>228</sup> See *Background on Power Uprates*, *supra* note 11; *Types of Power Uprates*, *supra* note 84; *supra* note 227 and accompanying text.

<sup>229</sup> See *Background on Power Uprates*, *supra* note 11.

<sup>230</sup> See *id.*

<sup>231</sup> See Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. 10510, 10510–11, 10513 (Feb. 25, 2014); Press Release, White House Office of the Press Sec'y, *supra* note 3.

<sup>232</sup> See *supra* notes 219–231 and accompanying text.

<sup>233</sup> See *supra* notes 217–232 and accompanying text.

Likewise, the DOE's interpretation that uprates can employ new or significantly improved technology in satisfaction of the second threshold requirement of Title XVII does not contradict the language of the statute and is therefore deserving of judicial deference.<sup>234</sup> The Joint Commentators argued that just as uprates cannot satisfy the first threshold requirement of Title XVII, they also cannot satisfy the second requirement of employing new or significantly improved technology.<sup>235</sup> They stated, "The 'new or significantly improved technologies' are represented by the four reactors now under construction. No uprates or upgrades to existing reactors can be defined as either newer or significantly improved from those."<sup>236</sup>

The DOE must disagree with the assertion that uprates will never utilize a technology that is "new or significantly improved," otherwise it would not have included them in its solicitation.<sup>237</sup> The Joint Commentators did not provide any support for the idea that innovation in the nuclear power industry has been exhausted.<sup>238</sup> The very fact that the DOE has already issued a loan guarantee to a nuclear power facility (the project at the Vogtle Plant) is evidence that technological advancements have been made in the thirty years since the last nuclear reactor was built in the United States.<sup>239</sup> Moreover, as of October 2015 three reactor designs certified by the Nuclear Regulatory Commission ("NRC") are under consideration for future use in the United States, and an additional design is undergoing NRC review.<sup>240</sup>

The Supreme Court has indicated that an agency's expertise is worthy of *Chevron* deference when it is interpreting statutes that deal with complex or technical subject matter that is beyond Congress's practical capability.<sup>241</sup> The DOE's decision to include uprates in its solicitation reflects the conclusion of an agency with tremendous expertise in nuclear technology.<sup>242</sup>

<sup>234</sup> See *infra* notes 235–245 and accompanying text.

<sup>235</sup> See NIRS Comment Letter, *supra* note 152.

<sup>236</sup> *Id.*

<sup>237</sup> See FINAL SOLICITATION, *supra* note 15, at 2.

<sup>238</sup> See NIRS Comment Letter, *supra* note 152.

<sup>239</sup> See Press Release, White House Office of the Press Sec'y, *supra* note 3; *Georgia Power Company*, *supra* note 62.

<sup>240</sup> See OCTOBER 2015 DEPLOYMENT SUMMARY, *supra* note 37; *Design Certification Applications for New Reactors*, U.S. NUCLEAR REGULATORY COMM'N, <http://www.nrc.gov/reactors/new-reactors/design-cert.html> [perma.cc/PG8Y-76JV] (last updated July 9, 2015). "By issuing a design certification, the [NRC] approves a nuclear power plant design, independent of an application to construct or operate a plant." *Id.*

<sup>241</sup> See *Babbitt v. Sweet Home Chapter of Cmty. for a Great Or.*, 515 U.S. 687, 708 (1995).

<sup>242</sup> See FINAL SOLICITATION, *supra* note 15, at 2; *Manhattan Project*, U.S. DEP'T OF ENERGY, <http://energy.gov/management/office-management/operational-management/history/manhattan-project> [perma.cc/3WMA-QTKP]. Indeed, what is now known as the Department of Energy began as an organization called the Manhattan Engineer District, set up during World War II to develop the atomic bomb. *Id.* The DOE became the twelfth cabinet-level department in 1977. *A Brief History of the Department of Energy*, U.S. DEP'T OF ENERGY, <http://energy.gov/management/office->

Therefore the agency, rather than the courts, is in the best position to define technology standards as they apply to a range of sectors, including the nuclear power industry.<sup>243</sup> The Court has adopted the position that when an agency is charged with “fashioning appropriate standards,” and that process “requires an expertise and attention to detail that exceeds the normal province of Congress,” it is reluctant to substitute its views for that of the agency.<sup>244</sup> Previous decisions in which courts have deferred to the DOE’s expertise in matters related to nuclear energy reflect this approach, which a court should likewise adopt in this case.<sup>245</sup>

## 2. Uprate Eligibility Is Consistent with the Energy Policy Act of 2005’s Underlying Policy

Furthermore, the Supreme Court has determined that an agency’s expertise is worthy of deference when its interpretation is consistent with the underlying policy of the statute it is charged with administering.<sup>246</sup> The DOE’s decision to include uprates to existing nuclear reactors among the projects eligible for Title XVII loan guarantees therefore deserves deference because awarding loan guarantees to such projects helps advance the goals Congress imputed to the Energy Policy Act of 2005.<sup>247</sup> The DOE’s decision has important consequences in the context of halting global warming and climate change.<sup>248</sup> The Act instructs the DOE to make loan guarantees to projects that further the policies embodied by its preamble and the two threshold requirements set forth in Title XVII, meaning projects that “accelerate the commercialization of innovative, environmentally-friendly tech-

---

management/operational-management/history/brief-history-department-energy [http://perma.cc/DR6C-GM9D]. The DOE continues to operate seventeen National Laboratories throughout the country that “conduct research of the highest caliber in physical, chemical, biological, and computational and information sciences,” of which three (Los Alamos, Lawrence Livermore, and Sandia) specialize in nuclear energy. *About the National Labs*, U.S. DEP’T OF ENERGY, <http://energy.gov/about-national-labs> [http://perma.cc/L44W-LFVU]; see *Nuclear Deterrence and Stockpile Stewardship*, LOS ALAMOS NAT’L LAB. (Apr. 12, 2012), <http://www.lanl.gov/mission/nuclear-deterrence.php> [http://perma.cc/8592-P5E7].

<sup>243</sup> See *Babbitt*, 515 U.S. at 708; *Chevron U.S.A., Inc. v. Nat. Res. Def. Council, Inc.*, 467 U.S. 837, 865 (1984); *Tennessee v. Herrington*, 806 F.2d 642, 643, 653 (6th Cir. 1986); *Gen. Elec. Uranium Mgmt. Corp. v. U.S. Dep’t of Energy*, 764 F.2d 896, 897–98 (D.C. Cir. 1985).

<sup>244</sup> *Babbitt*, 515 U.S. at 708.

<sup>245</sup> See *Herrington*, 806 F.2d at 643, 653 (deferring to the DOE’s interpretation of the Nuclear Waste Policy Act of 1982 partially as a result of the agency’s specialized knowledge); *Gen. Elec. Uranium Mgmt. Corp.*, 764 F.2d at 897–98 (deferring to the DOE’s interpretation of the Nuclear Waste Policy Act of 1982 in part because the DOE was acting in an area of its expertise).

<sup>246</sup> See *United States v. Haggard Apparel Co.*, 526 U.S. 380, 393 (1999); *Chem. Mfrs. Ass’n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 125–26 (1985).

<sup>247</sup> See FINAL SOLICITATION, *supra* note 15, at 2; *infra* notes 248–256 and accompanying text.

<sup>248</sup> See *infra* notes 249–256 and accompanying text.



nologies that will support clean, affordable, and reliable supplies of energy.”<sup>249</sup> By appropriating funds specifically for loan guarantees to projects using nuclear power, Congress has demonstrated its belief that the nuclear power industry is capable of putting forth projects that can help achieve this goal.<sup>250</sup> The DOE has applied its expertise in proceeding to identify uprates as a particular type of project that can use innovative technology to produce electricity in a more environmentally friendly manner.<sup>251</sup>

The agency has already established that using nuclear power to generate electricity “offers environmental benefits consistent with the statutory objectives of Title XVII” because doing so emits “considerably less” carbon dioxide than comparable coal or natural-gas-fired plants.<sup>252</sup> Because uprates enable an existing reactor to produce even more electricity by increasing its capacity by as much as twenty percent, this type of project can reduce reliance on coal and natural-gas-fired electric plants in the same way that other eligible projects—such as the new reactors at the Vogtle Plant—do.<sup>253</sup> Simply put, the more uprates that receive loan guarantees, the more electricity that can be produced from comparatively cleaner sources of energy.<sup>254</sup> As of November 2015 the NRC reported four pending applications for uprates, with another seven expected to apply in 2017.<sup>255</sup> With the cost of performing an uprate ranging from hundreds of millions to several billion dollars, the DOE presumably sees uprates as a category of eligible projects that are both costly enough to prompt reactor owners to apply for loan guarantees, and effective enough in increasing the amount of electricity generated by environmentally friendly sources to be consistent with Title XVII.<sup>256</sup>

---

<sup>249</sup> See 42 U.S.C. § 16513(a) (2012); Energy Policy Act of 2005, Pub. L. No. 109-58, § 1703, 119 Stat. 594, 594, 1120 (2005) (codified as amended at §§ 42 U.S.C. 15801–16524 (2012)); Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. 10510, 10513 (Feb. 25, 2014). The preamble of the Act reads, “An Act to ensure jobs for our future with secure, affordable, and reliable energy.” Energy Policy Act, 119 Stat. at 594.

<sup>250</sup> See Omnibus Appropriations Act, 2009, Pub. L. No. 111-8, 123 Stat. 524, 619 (2009).

<sup>251</sup> See § 16513(a)(2); FINAL SOLICITATION, *supra* note 15, at 2.

<sup>252</sup> See Issuance of Loan Guarantees to Various Applicants for the Vogtle Electric Generating Plant—Units 3 and 4 in Burke County, GA, 79 Fed. Reg. at 10511.

<sup>253</sup> See *id.*; Press Release, White House Office of the Press Sec’y, *supra* note 3; *Background on Power Uprates*, *supra* note 11; *Types of Power Uprates*, *supra* note 84.

<sup>254</sup> See *supra* notes 252–253 and accompanying text.

<sup>255</sup> *Expected Applications for Power Uprates*, U.S. NUCLEAR REGULATORY COMM’N, <http://www.nrc.gov/reactors/operating/licensing/power-uprates/status-power-apps/expected-applications.html> [perma.cc/TM8V-MREA] (last updated Nov. 17, 2015); *Pending Applications for Power Uprates*, U.S. NUCLEAR REGULATORY COMM’N, <http://www.nrc.gov/reactors/operating/licensing/power-uprates/status-power-apps/pending-applications.html> [perma.cc/T64J-PVPA] (last updated Nov. 16, 2015).

<sup>256</sup> See *supra* notes 177–178, 252–255 and accompanying text.

The fact that others may not share the agency's view, and may in fact espouse alternative permissible constructions of the statute, is not necessarily an indication that a court should refuse to defer to the agency.<sup>257</sup> The Joint Commentators and the NEI have expressed conflicting opinions regarding the eligibility of uprates, yet as long as a court finds the DOE's position to be rational and reasonable it need not be the "best" of all possible interpretations.<sup>258</sup> In *Chemical Manufacturers Ass'n v. National Resources Defense Council, Inc.*, the United States Supreme Court concluded:

This view of the agency charged with administering the statute is entitled to considerable deference; and to sustain it, we need not find that it is the only permissible construction that [the agency] might have adopted but only that [the agency's] understanding of this very "complex statute" is a sufficiently rational one to preclude a court from substituting its judgment for that of [the agency].<sup>259</sup>

As discussed above, the DOE's interpretation of Title XVII is rational and reasonable, and therefore deserves deference despite the contrary interpretations put forth by the Joint Commentators and the NEI.<sup>260</sup>

### 3. The DOE's Decision to Include Uprates Carries the Force of Law

Finally, the fact that the DOE issued the final version of its solicitation only after seeking public comment on its published draft reinforces the conclusion that the agency's interpretation is worthy of *Chevron* deference.<sup>261</sup> In *United States v. Mead Corp.*, the United States Supreme Court singled out agency interpretations that Congress expected to carry the force of law as "a category of interpretive choices distinguished by an additional reason for judicial deference."<sup>262</sup> Justice David Souter explained, "It is fair to assume generally that Congress contemplates administrative action with the effect of law when it provides for a relatively formal administrative procedure tending to foster the fairness and deliberation that should underlie a pronouncement of such force."<sup>263</sup> The Court recognizes notice-and-

---

<sup>257</sup> See *Holly Farms Corp. v. NLRB*, 517 U.S. 392, 398–99 (1996) ("When the legislative prescription is not free from ambiguity, the administrator must choose between conflicting reasonable interpretations."); *Chem. Mfrs. Ass'n v. Nat. Res. Def. Council, Inc.*, 470 U.S. 116, 125 (1985).

<sup>258</sup> See *Nat'l Cable & Telecomms. Ass'n v. Brand X Internet Servs.*, 545 U.S. 967, 980 (2005).

<sup>259</sup> 470 U.S. at 125.

<sup>260</sup> See *supra* notes 211–259 and accompanying text.

<sup>261</sup> See *United States v. Mead Corp.*, 533 U.S. 218, 226–27 (2001).

<sup>262</sup> *Id.* at 229.

<sup>263</sup> *Id.* at 230.

comment rulemaking, of the type in which the DOE engaged with respect to its solicitation, as one of several such formal administrative procedures.<sup>264</sup>

Congress has authorized the Energy Secretary to engage in formal rulemaking procedures.<sup>265</sup> The agency's decision to retain uprates among the types of projects it identified as eligible for Title XVII loan guarantees in its final solicitation, published following the receipt of comments from over thirty-five groups, constitutes an exercise of this delegated authority to which a court should defer.<sup>266</sup> Judicial deference is warranted because Congress intended for the DOE to exercise policymaking responsibilities, and it has done so here via an avenue that the Court has concluded carries the force of law.<sup>267</sup>

### CONCLUSION

As the United States faces a future in which the demand for electricity is forecast to grow even as society and government take steps to halt global warming, it makes sense that alternatives to fossil fuels are becoming increasingly attractive. Power plants that rely on nuclear energy rather than coal or natural gas have the ability to generate electricity without emitting any carbon dioxide, yet the cost to build and maintain them can be enormous. Title XVII of Energy Policy Act of 2005 (the "Act"), which authorizes the Secretary of the Department of Energy ("DOE") to make loan guarantees for certain nuclear projects, can help encourage wider commercial use of new energy technology to benefit the environment.

The DOE's interpretation of the statute—which permits uprates to existing nuclear reactors to apply for loan guarantees—can provide financial assistance to projects that are less dramatic than the construction of brand new reactors yet still capable of benefitting the environment through increased nuclear generation capacity. Critics stand ready to accuse the DOE of illegally funding nuclear projects should it extend a loan guarantee to an uprate project because they believe that such projects cannot satisfy the two threshold eligibility requirements of Title XVII. The DOE clearly believes, however, that there are uprates that can avoid, reduce, or sequester greenhouse gases while employing new or significantly improved technology. For that reason, combined with Congress's failure to address the eligibility of particular projects in the statute and the fact that the DOE's interpretation is consistent with the underlying policy of the Act, a court should defer to

---

<sup>264</sup> See *id.* at 240; Agency Request for Comments on Draft Solicitation for Advanced Nuclear Energy Projects, 79 Fed. Reg. 59763, 59763 (Oct. 3, 2014); FINAL SOLICITATION, *supra* note 15, at 1–22.

<sup>265</sup> See 42 U.S.C. § 7191 (2012).

<sup>266</sup> See *supra* notes 77–78, 149–265 and accompanying text.

<sup>267</sup> See *supra* notes 190–210, 261–266 and accompanying text.

the DOE's decision to include upgrades to existing nuclear reactors among the projects that are eligible for Title XVII loan guarantees.

