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NUCLEAR ENERGY AGENCY  
ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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# Environmental impact assessments and long-term operation of nuclear power reactors: Increasing importance of environmental protection in the European Union?

by Sam Emmerechts and Pierre Bourdon\*

## 1. Introduction

Over the last decades, the world has become increasingly mindful of the potential impact of human activities on the environment and many governments have recognised the need to better assess the potential impacts of such activities prior to their authorisation. Legal requirements to perform environmental impact assessments (EIA) for activities likely to have environmental effects have been enacted under national, European and international law and have gained the status of international customary law.<sup>1</sup> Due to the nature of the risks posed by the civilian use of nuclear energy on human health and the environment, it has become a requirement in most – if not all – countries that an EIA be performed prior to authorising the construction and operation of any nuclear installation, including nuclear power reactors.

Many nuclear power reactors in the European Union (EU) have now reached the end of their design life. Such design life largely depends on the design of the concerned reactors and usually ranges between 30 to 40 years for the most commonly operating light-water and heavy-water reactors worldwide. Since investments in new nuclear reactors require large financial commitments and face long construction times and citizens have become more critical about building new nuclear power plants, an increasing number of national governments consider authorising extended operation of existing nuclear power reactors (most often for additional periods of ten years). This process, which can take different legal formats depending on the concerned countries, is often denominated “long-term operation” or “life extension” or “lifetime extension” or “refurbishment” or “licence renewal”.<sup>2</sup> This article uses the generic term “long-term operation (LTO)” to describe this process. LTO is defined by the International Atomic Energy Agency (IAEA) as the “Operation beyond an

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1. *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *Jurisdiction of the Court, Judgments*, ICJ Reports 2010, p. 14, para. 204; *Certain Activities Carried Out by Nicaragua in the Border Area (Costa Rica v Nicaragua)* and *Construction of a Road in Costa Rica along the San Juan River (Nicaragua v Costa Rica)*, *Jurisdiction of the Court, Judgments*, ICJ Reports 2015, p. 665, para. 104.
2. The difference of denominations is also influenced by the specific nuclear licensing approach of a country. There are basically two different approaches to the licensing of nuclear power reactors in the European Union: some countries issue operating licences with a specific, time-limited term (e.g. Finland, Hungary, Romania, Slovenia and Spain) while others grant operating licences for an indefinite duration (e.g. Belgium, Czech Republic, France, Germany, Netherlands, Slovak Republic and Sweden). The United Kingdom also adheres to the latter approach but is no longer a member state of the European Union since 1 February 2020.

established time frame defined by the licence term, the original plant design, relevant standards or national regulations”.<sup>3</sup>

One important question that arises in this regard is whether or not an EIA must be performed prior to authorising the LTO of nuclear power reactors, if such an authorisation is required. Until recently, the answer to that question was found to be either unclear or negative in EU member states, notably because their national legislative and regulatory frameworks appear to leave substantial room for interpretation. If the national legislation of an EU member state does require performing an EIA and the concerned nuclear power reactor is located near the national border, the question also arises whether there is a legal obligation to submit the EIA documentation for consultation to the national authorities and the public of the neighbouring country or of other member states of the European Union that may be affected by the nuclear power reactor prior to authorising LTO of the reactor – a process commonly referred to as “transboundary EIA”. This question is of particular importance in Europe, since several EU member states are located on a relatively small geographic area, with different languages being spoken in each of them, hence requiring the translation of EIA documents and consultation in languages other than that spoken in the country of origin.

After a short introduction to the legal framework relating to EIAs for nuclear power reactors in the European Union (Chapter 2), an overview will be provided of the legal and regulatory approaches to EIAs in relation to LTO-related processes for nuclear power reactors in the European Union (Chapter 3).<sup>4</sup> The following chapter addresses the changing landscape for EIA approaches in relation to LTO-related processes of nuclear power reactors under the auspices of the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)<sup>5</sup> (Chapter 4). This changing landscape is best illustrated by the recently endorsed “Guidance on the applicability of the [Espoo] Convention to the lifetime extension of nuclear power plants”.<sup>6</sup> A recent judgment of the Court of Justice of the European Union (CJEU) pertaining to the same issue will then be addressed (Chapter 5). After introducing the background of the case, the judgment of the Court is described and analysed, along with its potential effects on LTO approaches for nuclear power reactors in the European Union. The article concludes that many nuclear power countries in the European Union have for a long time opposed the organisation of EIAs prior to the LTO of nuclear power reactors but that they are now under increasing pressure to do so and may have to adapt their national nuclear and environmental legislation accordingly (Chapter 6).

## 2. Legal framework applicable to EIAs for nuclear power reactors in the European Union

An EIA is a procedure whereby the environmental consequences of a project or plan are assessed and integrated in written documentation that is then submitted for public

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3. IAEA (2018), *Ageing Management and Development of a Programme for Long Term Operation of Nuclear Power Plants*, IAEA Safety Standards, Specific Safety Guide, No. SSG-48, Vienna, p. 9, para. 2.30.
  4. For a recent overview that comprehensively addresses the legal and policy aspects of LTO of nuclear power reactors, see: NEA (2019), *Legal Frameworks for Long-Term Operation of Nuclear Power Reactors*, OECD Publishing, Paris. See also: Emmerechts, S., Raetzke, C. and Okra, B. (2011), “Legal and regulatory aspects of long-term operation of nuclear power plants in OECD member countries”, *Nuclear Law Bulletin*, No. 87, OECD Publishing, Paris, pp. 45-71; Raetzke, C. (2013), “Nuclear law and environmental law in the licensing of nuclear installations”, *Nuclear Law Bulletin*, No. 92, OECD Publishing, Paris, pp. 55-88.
  5. Convention on Environmental Impact Assessment in a Transboundary Context, (1991), 1989 UNTS 310, entered into force 10 Sept. 1997 (Espoo Convention).
  6. UNECE (2020), “Guidance on the applicability of the Convention to the lifetime extension of nuclear power plants”, ECE/MP.EIA/2020/9, Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context, Vilnius, 8-11 Dec. 2020.

participation. Public authorities must take due account of the EIA documentation in their decision to authorise a project or plan. An EIA serves several functions:

First, [an EIA] should provide decision-makers with information on the environmental consequences of proposed activities and, in some cases, programmes and policies, and their alternatives. Second, it requires decisions to be influenced by that information. And, third, it provides a mechanism for ensuring the participation of potentially affected persons in the decision-making process.<sup>7</sup>

In 2010, the International Court of Justice (ICJ) ruled that “[...] it may now be considered a requirement under general international law to undertake an environmental impact assessment where there is a risk that the proposed industrial activity may have a significant adverse impact in a transboundary context, in particular, on a shared resource.”<sup>8</sup> Since nuclear activities do pose a risk for the environment, various national and international legal instruments contain obligations on conducting EIAs prior to authorising such activities.<sup>9</sup> Many of these instruments provide for an EIA when authorising the construction or operation of “new” nuclear reactors, but most of them contain no clear, consistent or well-defined provisions or obligations to carry out an EIA for “existing” nuclear power reactors prior to entering the stage of LTO.

The Convention on Nuclear Safety contains a clear obligation for contracting parties to:

[consult] Contracting Parties in the vicinity of a proposed nuclear installation, insofar as they are likely to be affected by that installation and, upon request providing the necessary information to such Contracting Parties, in order to enable them to evaluate and make their own assessment of the likely safety impact on their own territory of the nuclear installation.<sup>10</sup>

However, this obligation to consult contracting parties does not amount to an obligation to carry out an EIA, as it is primarily limited to nuclear safety and therefore the radiological impact of the concerned nuclear installation. Furthermore, it only applies to the siting of a proposed nuclear installation and therefore does not apply to LTO.

The Espoo Convention contains an obligation to organise a transboundary EIA prior to authorising proposed activities that are likely to have a significant effect on the environment within an area under the jurisdiction of another party.<sup>11</sup> The list of proposed activities to which the Espoo Convention applies is detailed in Appendix I to the Convention and includes most civilian nuclear activities. The Espoo Convention specifies what has to be considered at an early stage of planning and lays down the obligations of the parties concerned to notify and consult each other and the public of such an activity. All EU member states, as well as the European Union, are contracting parties to the Espoo Convention.

The Espoo Convention contains a very detailed list of legal obligations that must be respected prior to authorising the aforementioned proposed activities. For example, a party that plans to build a new nuclear power reactor will need to prepare EIA documentation and notify other parties that may be affected by that reactor, including *inter alia* providing

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7. Sands, P., et al. (2018), *Principles of International Environmental Law*, Fourth Edition, Cambridge University Press, Cambridge, p. 657.
  8. *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, *Jurisdiction of the Court, Judgments, ICJ Reports* 2010, p. 14, para. 204.
  9. For an interesting overview of the impact of environmental law on nuclear activities, see Reyner, P. (2007), “Le droit nucléaire confronté au droit de l’environnement: autonomie ou complémentarité?” [Nuclear law confronted with environmental law: autonomy or complementarity], *Revue québécoise de droit international* [Quebec review of international law], pp. 149-186.
  10. Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293, entered into force 24 Oct. 1996 (CNS), Article 17(iv).
  11. Espoo Convention, *supra* note 5. See also NEA (2018), “The application of the Espoo Convention on environmental impact assessment in a transboundary context to nuclear energy-related activities”, *Nuclear Law Bulletin*, No. 97, OECD Publishing, Paris, pp. 63-69.

information on the nuclear power reactor and its possible transboundary environmental impact.<sup>12</sup> The minimum content of the EIA documentation must include a description of the proposed nuclear power reactor, a description of reasonable alternatives (locational and/or technological), a description of the environment likely to be significantly affected by the proposed reactor and its alternatives, a description of the potential environmental impact of the proposed installation and its alternatives, a description of mitigation measures to keep adverse environmental impact to a minimum, an explicit indication of predictive methods and underlying assumptions as well as the relevant environmental data used, an identification of gaps in knowledge and uncertainties encountered in compiling the required information and a non-technical summary to allow effective public consultation.<sup>13</sup> The party of origin will need to offer possibilities for consultation on the EIA documentation to affected parties and their public and take due account of their comments in the final decision authorising the construction of the nuclear power reactor.<sup>14</sup>

The Espoo Convention defines proposed activities as including new activities, but also “major changes” to existing activities, as long as such major changes are subject to a “decision of a competent authority in accordance with an applicable procedure” and provided that such major changes are “likely to cause significant adverse transboundary impact”.<sup>15</sup> It is undisputed that the Espoo Convention applies to new nuclear power reactors but, perhaps unsurprisingly, the situation appears more complex with regard to nuclear power reactors entering the stage of LTO. As further explained in Chapter 4, open questions remain as to whether entering the stage of LTO would trigger an obligation to conduct a prior transboundary EIA under the Convention.

Specific legislation at the EU level has also been adopted to ensure that the environmental consequences of projects are taken into account by decision makers. The Directive on the assessment of the effects of certain public and private projects on the environment (EIA Directive) obliges member states to conduct an EIA for a wide number of industrial projects, including the construction and dismantling or decommissioning of nuclear power reactors, installations for the reprocessing of irradiated nuclear fuel, installations designed for the production or enrichment of nuclear fuel and installations for radioactive waste management.<sup>16</sup> The EIA Directive does not contain explicit wording regarding the LTO of nuclear power reactors, but it provides that “[a]ny change to or extension of projects listed in [the] Annex” shall be made subject to an EIA, “where such a change or extension in itself meets the thresholds, if any, set out in [the] Annex”.<sup>17</sup> A similar question arises as under the Espoo Convention, namely whether the LTO of nuclear power reactors is to be considered as such a change.

The Directive on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) ensures the conservation of a wide range of rare, threatened or endemic animal and plant species in the European Union as well as some 200 rare and characteristic habitat types.<sup>18</sup> It was adopted in 1992 to help maintain biodiversity throughout the entire EU territory. It directs EU member states to take measures to maintain the so-called “favourable conservation status” of protected habitats and species.<sup>19</sup> It specifically obliges member states to conduct an EIA for all plans and

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12. Espoo Convention, *supra* note 5, Articles 3 and 4.

13. *Ibid.*, Appendix II.

14. *Ibid.*, Articles 2(6), 3(8), 5 and 6.

15. *Ibid.*, Articles 1(v) and 2(3).

16. Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014, *Official Journal of the European Union* (OJ) L 26 (28 Jan. 2012), p. 1.

17. *Ibid.*, Article 4(1) and Annex I, point 24.

18. Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206 (22 July 1992), p. 7.

19. *Ibid.*, Articles 2(2), 3(1) and 4(4).

programmes that are likely to have a significant effect on the conservation objectives of a protected site.<sup>20</sup> The Habitats Directive also applies to nuclear power reactors but does not contain specific provisions on the requirement to carry out an EIA prior to the LTO of a nuclear power reactor.

The lack of clarity and the absence of specific provisions in international, EU and national legal instruments on the need to conduct an EIA as part of LTO-related processes for nuclear power reactors and the fact that there was – until recently – no judgment by the CJEU to shed light on this question, made it very difficult for governments, regulators, operators and the public in the European Union to ascertain their rights and obligations.

### 3. Legal and regulatory EIA approaches for the LTO of nuclear power reactors in the European Union

European Union member states that operate nuclear power reactors must organise an EIA prior to authorising the siting, construction and operation of new nuclear power reactors and the decommissioning of existing nuclear power reactors. However, legal and regulatory approaches for conducting an EIA in relation to existing facilities as part of LTO-related processes differ extensively.

Some EU member states, such as Hungary and Slovenia, require the performance of a full environmental review as part of the LTO review process for nuclear power reactors, including an EIA.<sup>21</sup> This approach may be motivated by a desire to “compensate” for the fact that the nuclear power reactors on their national territory were constructed and started operating at a time when there was no requirement to conduct an EIA.<sup>22</sup>

Other EU member states, such as Belgium, France and the Netherlands, only require performing an environmental “screening” as part of the LTO review process to assess whether the LTO entails any physical modification to the nuclear power reactor that would require conducting a full EIA.<sup>23</sup> The underlying idea of this approach is that no EIA is required, as long as the environmental effects of operating the reactor do not exceed the limits that have been set at the initial licensing. This “screening” approach may be illustrated by the 2013 Ministerial Decision related to the LTO of the Borssele nuclear power plant, which is the sole operating nuclear power reactor in the Netherlands. The licence to operate this reactor was issued in 1973 for an indefinite duration, with periodic safety assessments conducted at least every ten years. However, a safety report for the concerned reactor was attached to its operating licence, and this report specified a technical design life of 40 years. Thus, when the operator of the Borssele nuclear power plant requested to continue operating this reactor beyond 40 years, an update of this safety report and consequently an amendment of the initial operating licence were required. This amendment was approved by the Dutch Minister of Economic Affairs by a decree issued in March 2013.<sup>24</sup> The licence itself kept its indefinite duration, but the reactor’s technical design life set out in the safety report was extended for an additional 20 years, i.e. until

20. *Ibid.*, Article 6(3) and (4).

21. NEA (2019), *supra* note 4, pp. 80 and 118.

22. See e.g. NEA (2019), *supra* note 4, p. 80.

23. *Ibid.*, p. 52, 73 and 98.

24. *Besluit van het Ministerie van Economische Zaken van 18 maart 2013 houdende wijziging van de kernenergiwetvergunning* (2013) [Decree of the Minister of Economic Affairs of 18 March 2013 regarding the modification of the nuclear licence], available at: [www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Correspondence\\_with\\_communicant/fmCommC104\\_19.09.2014/1.g\\_2013-03-18\\_LTO\\_permit.pdf](http://www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Correspondence_with_communicant/fmCommC104_19.09.2014/1.g_2013-03-18_LTO_permit.pdf).

2033.<sup>25</sup> Several environmental non-governmental organisations (NGOs) brought an action against the Minister of Economic Affairs before the Raad van State (Council of State, i.e. the highest administrative court in the Netherlands) seeking an annulment of the concerned decree. The environmental NGOs argued *inter alia* that this decree had to be declared void because it had not been preceded by an EIA.<sup>26</sup> The Minister pleaded that the screening of the activities related to the LTO of the nuclear power reactor had indicated that there was no need for an EIA because there was neither a modification of the plant nor any change of the licensed activity or of the operating conditions.<sup>27</sup> On 19 February 2014, the Raad van State rejected the claim by the NGOs because the Dutch legislation did not require the performance of an EIA in the absence of any physical alteration to the nuclear power plant.<sup>28</sup>

Other EU member states, such as the Slovak Republic and Sweden, do not require the consideration of environmental issues when evaluating LTO.<sup>29</sup> The underlying idea of this approach is that these issues need not be assessed, since the nuclear power reactor continues to operate under the conditions foreseen in the initial safety and/or environmental permits. It should be added that, for those countries that solely review the LTO of nuclear power reactors through periodic safety reviews (PSRs), such PSRs most commonly do not include a specific assessment of environmental issues comparable to an EIA. Often no specific documentation – or only limited documentation, at least compared to the one for a full-fledged EIA – related to environmental issues is required by the national regulatory body to make its determination as part of this process.

## 4. Changing landscape for EIA approaches for LTO of nuclear power reactors under the Espoo Convention

### 4.1 The Rivne nuclear power plant case

As stated above, all EU member states and the European Union are contracting parties to the Espoo Convention. While the Espoo Convention applies to a large number of activities beyond just nuclear activities, it is worth noting that such activities are some of the most discussed under the auspices of this Convention. In particular, the issue of the LTO of nuclear power reactors is a longstanding one, having been first considered within the framework of the Convention almost a decade ago regarding the two reactors of the Rivne nuclear power plant in Ukraine, located close to the border with Belarus and Poland.

All nuclear power reactors currently in operation in Ukraine are pressurised light-water reactors of Russian VVER design, with a typical initial designed life of 30 years. In accordance with the country's regulatory framework, operation licences for nuclear power reactors are granted with a specific term of 30 years, corresponding to their designed

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25. A design lifetime of 40 years was taken into account for the Borssele nuclear power plant in the plant's safety report. Political discussions and eventually the decision by the Minister of Economic Affairs led to an expected ultimate shutdown date after 60 years of operation. For a detailed description of the history of the case, see: United Nations Economic Commission for Europe (UNECE) (2019), "Findings and recommendations with regard to communication ACCC/C/2014/104 concerning compliance by the Netherlands: Adopted by the Compliance Committee on 4 October 2018", ECE/MP.PP/C.1/2019/3, Geneva, 11-15 Mar. 2019, pp. 3-5.

26. Raad van State, judgment of 19 February 2014; ECLI:NL:RVS:2014:517, para. 9. An unofficial translation of this ruling is available at: UNECE (2014), [www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Correspondence\\_with\\_communicant/fmCommC104\\_19.09.2014/1.h\\_2014-02-14\\_Judgement\\_Raad\\_van\\_State\\_eng.pdf](http://www.unece.org/fileadmin/DAM/env/pp/compliance/C2014-104/Correspondence_with_communicant/fmCommC104_19.09.2014/1.h_2014-02-14_Judgement_Raad_van_State_eng.pdf).

27. *Ibid.*, para. 94. See also Decree of the Minister of Economic Affairs (2013), *supra* note 24, pp. 45-46.

28. *Ibid.*, pp. 1-6.

29. NEA (2019), *supra* note 4, pp. 115, 130 and 147.

life. Among these reactors, the two reactors located at the Rivne nuclear power plant started operation in the early 1980s, with an initial design life expected to end around 2010. In 2010, the Ukrainian nuclear regulator adopted a decision to issue a new licence for the two reactors of the Rivne nuclear power plant, therefore authorising their LTO for an additional period of 20 years. No transboundary EIA was organised prior to this decision.

As Ukraine is a party to the Espoo Convention, a Ukrainian NGO decided to test the compliance mechanism under the Convention.<sup>30</sup> It therefore submitted a complaint to the Espoo Implementation Committee, arguing that Ukraine had breached its obligations under the Espoo Convention by not having organised a transboundary EIA prior to making its final decision on the LTO of the concerned reactors. The NGO further alleged that Ukraine had not notified potentially affected parties, in particular Belarus and Poland as the closest neighbouring countries to the Rivne nuclear power plant.<sup>31</sup>

Ukraine contested the claim of the NGO before the Espoo Implementation Committee. Paralleling the argument later raised by the Netherlands in the Borssele case (see *supra* Chapter 3), it argued that:

[t]he operational lifetime extension does not lead to any major changes in the operation of a nuclear facility determined by the license authorizing its activity at the life cycle stage called “operation of a nuclear facility”. The license extending the life time of the Rivne NPP units 1 and 2 was not subjected to a transboundary EIA procedure envisaged by the Espoo Convention ...<sup>32</sup>

According to Ukraine, the LTO decision was not a new licence, but a confirmation that the nuclear power reactors could continue to operate within the parameters defined in the original licence.

At its 30<sup>th</sup> session in February 2014, the Espoo Implementation Committee came to the conclusion “that no consideration [had been] given [by the Ukrainian authorities] at any stage to the changed environmental conditions since 1980 and the potential impact of the continued operation on the environment”.<sup>33</sup> The Committee also considered that:

if an EIA procedure was necessary only for the construction or demolition of physical parameters, such as buildings, of an NPP and was not necessary for the modernization and replacement of technical components for safety reasons, Parties would be able to continuously modernize and thus extend the lifetime of all existing nuclear installations, without ever carrying out an EIA procedure in accordance with the [Espoo] Convention.<sup>34</sup>

The Implementation Committee thus found that the “extension of the lifetime of reactors 1 and 2 of the Rivne nuclear power plant after the initial licence has expired, even in the absence of any works, is to be considered as a proposed activity under [Article 1(v)] of the

30. The Espoo Convention has a specific mechanism to help parties comply with its provisions. The so-called Implementation Committee reviews parties' compliance with their obligations under the Convention with a view to assisting them fully to meet their commitments. More information on the Implementation Committee and its functioning may be consulted at: UNECE (n.d.), “Implementation Committee”, <https://unece.org/environment-policy/environmental-assessment/implementation-committee> (accessed 15 Jan. 2021).

31. UNECE (2014), “Report of the Implementation Committee of the Convention on its thirtieth session”, ECE/MP.EIA/IC/2014/2, Implementation Committee, Geneva, 25-27 Feb. 2014, Annex, para.1. A copy of the communication is available at: UNECE (2011), [www.unece.org/fileadmin/DAM/env/documents/2019/ece/Restart/CI\\_Ukraine/2.\\_Supporting\\_Information\\_3.0\\_FINAL.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2019/ece/Restart/CI_Ukraine/2._Supporting_Information_3.0_FINAL.pdf), p. 2.

32. UNECE (2014), *supra* note 31, Annex, para. 3. An unofficial English translation of the reply itself is available at: UNECE (2011), [www.unece.org/fileadmin/DAM/env/documents/2019/ece/Restart/CI\\_Ukraine/Reply\\_by\\_Ukraine\\_110613\\_ENG\\_trans.pdf](http://www.unece.org/fileadmin/DAM/env/documents/2019/ece/Restart/CI_Ukraine/Reply_by_Ukraine_110613_ENG_trans.pdf).

33. UNECE (2014), *supra* note 31, p. 21, para. 54.

34. *Ibid.*

Espoo Convention] and is consequently subject to the provisions of the [Espoo] Convention”, including the obligation to perform a transboundary EIA beforehand.<sup>35</sup>

At its 6<sup>th</sup> session held in June 2014, the Meeting of the Parties to the Espoo Convention (MOP) endorsed the findings of the Implementation Committee that Ukraine was in breach of its obligations under Articles 2(2), 2(3), 4(1), 3 and 6 of the Espoo Convention with respect to LTO of reactors 1 and 2 of the Rivne nuclear power plant.<sup>36</sup> However, this endorsement came with limitations. Indeed, the MOP Decision solely applied to the Rivne nuclear power plant in Ukraine and thus did not make a general statement that an EIA must be conducted prior to any extension of the lifetime of nuclear power plants. In addition, contrary to the findings and recommendations of the Implementation Committee, this decision made no mention of an obligation to carry out a transboundary EIA even in the absence of works.<sup>37</sup>

The findings and recommendations of the Implementation Committee and subsequent decision of the MOP have led Ukraine to take several actions to ensure compliance with the Convention. The Ukrainian Parliament adopted the Law of Ukraine on Environmental Impact Assessment on 23 May 2017, which requires an applicant for LTO to organise an EIA and submit an EIA report to the nuclear regulator as a condition precedent for LTO approval.<sup>38</sup> Ukraine also notified potentially affected contracting parties to the Espoo Convention, namely Austria, Belarus, Hungary, the Republic of Moldova, Poland, Romania and the Slovak Republic regarding the LTO of reactors 1 and 2 of the Rivne nuclear power plant.<sup>39</sup> Notwithstanding these actions, in December 2020 the MOP expressed concern that Ukraine had “not yet fully complied with [the aforementioned] decision and that the transboundary environmental impact assessment procedure under the convention with respect to the activity [had] not yet been completed”.<sup>40</sup>

#### **4.2 The Good Practice Recommendations on the Application of the [Espoo] Convention to Nuclear Energy-related Activities**

In 2014, the MOP acknowledged that “nuclear energy-related activities imply special challenges due to, e.g., the potentially wide scope of severe impacts, great public concern and national interests” and that there was a need for special guidance on how to apply the Convention to such activities.<sup>41</sup> The MOP considered that “open discussion and sharing experiences” about practices in applying the Espoo Convention to nuclear activities would be beneficial for all parties and therefore decided to start specific discussions, with the

35. *Ibid.*, p. 22, para. 59.

36. UNECE (2014), “Decisions adopted by the Meeting of the Parties to the Convention”, “Decision VI/2, Review of compliance with the Convention”, ECE/MP.EIA/20.Add.1 – ECE/MP.EIA/SEA/4.Add.1, Meeting of the Parties to the Convention on its sixth session and of the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol on its second session, Geneva, 2-5 June 2014, p. 14, para. 70.

37. *Ibid.*, p. 14, paras. 68-71.

38. Law of Ukraine on Environmental Impact Assessment of 23 May 2017, No. 2059-VIII, available at: [www.cis-legislation.com/document.fwx?rgn=97762](http://www.cis-legislation.com/document.fwx?rgn=97762).

39. UNECE (2018), “Report of the Implementation Committee of the Convention on its forty-first session”, ECE/MP.EIA/IC/2018/2, Implementation Committee, Geneva, 13-16 Mar. 2018, p. 7, para. 21.

40. UNECE (2020), “Draft decision VIII/4e on compliance by Ukraine with its obligations under the Convention in respect of extension of the lifetime of the Rivne nuclear power plant”, Prepared by the Implementation Committee, ECE/MP.EIA/2020/15, Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context, Vilnius, 8-11 Dec. 2020, p. 2, para. 3 (as adopted by the MOP).

41. UNECE (2014), “Decisions adopted by the Meeting of the Parties to the Convention”, “Decision VI/7, Application of the Convention to nuclear energy-related activities”, ECE/MP.EIA/20/Add.1–ECE/MP.EIA/SEA/4/Add.1, Meeting of the Parties to the Convention on its sixth session and of the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol on its second session. Geneva, 2-5 June 2014, p. 24, para. 1(a).



objective of developing guidance and recommendations.<sup>42</sup> These discussions led in 2017 to the adoption by the MOP of the *Good Practice Recommendations on the Application of the Convention to Nuclear Energy-related Activities*, which “describe existing good practice regarding the application of transboundary [EIA] procedures in the field of nuclear energy” including on screening, notification duties, EIA documentation, examination of the information gathered, public participation, consultation and the final decision on the project.<sup>43</sup>

As mentioned in Chapter 2, the Espoo Convention itself does not mention explicitly whether its obligation to conduct a transboundary EIA also applies to the LTO of nuclear power reactors. While Article 1(v) implies that there must be a “major change” to a nuclear activity for potentially raising an obligation to conduct a transboundary EIA, there was no clear answer, aside from the Rivne nuclear power plant case, to whether any other LTO process would fall within the scope of application of the Convention. The *Good Practice Recommendations on the Application of the [Espoo] Convention to Nuclear Energy-related Activities* would have been a useful instrument to enhance legal certainty. Unfortunately, the lack of consensus among parties to the Convention and format of the document did not allow for the *Good Practice Recommendations* to provide clear elements of response to this question. Instead, this document simply notes that “the criteria and considerations for identifying a major change to nuclear energy-related activities are to be determined on a case-by-case basis” and that “[i]f upgrade works during the life cycle are planned, Parties are to be aware that these works may fall under ‘major change’ causing significant transboundary impacts”.<sup>44</sup> The *Good Practice Recommendations* only provide a brief reference to the Rivne nuclear power plant case, noting that this was “one specific case”.<sup>45</sup> Conducting an EIA prior to the LTO of a nuclear power reactor is not listed as one of the good practices identified by this document.

### **4.3 A growing number of LTO cases pending before the Espoo Implementation Committee**

While no clear answers to the questions of whether and how the Espoo Convention should be applied to the LTO of nuclear power reactors have been identified by the parties, the Implementation Committee was faced with a growing number of LTO-related cases following the adoption of its findings and recommendations in the Rivne nuclear power plant case, all of which remain pending without any findings and recommendations yet issued:

#### *The Netherlands (EIA/IC/INFO/15)*

After the judgment of 19 February 2014 by the Raad van State in the Netherlands (see *supra* Chapter 3), one of the plaintiffs, Greenpeace Netherlands, decided to seek a remedy outside court. It submitted a communication to the Espoo Implementation Committee arguing that the Dutch government had breached the Espoo Convention by not organising a transboundary EIA prior to approving the LTO for the Borssele nuclear power plant. In its communication, Greenpeace Netherlands focused on the absence of conducting a transboundary EIA prior to the Ministerial Decree of 18 March 2013.

#### *Belgium (EIA/IC/INFO/18)*

Two German federal states (North Rhine-Westfalia and Rhineland-Palatinate) submitted communications to the Espoo Implementation Committee regarding the absence of organising a transboundary EIA as part of the LTO approval process for reactors 1 and 2 of the Doel nuclear power plant and reactor 1 of the Tihange nuclear power plant in Belgium (see *infra* Chapter 5.1).

42. *Ibid.*, para. 1(b).

43. UNECE (2017), *Good Practice Recommendations on the Application of the Convention to Nuclear Energy-related Activities*, ECE/MP.EIA/24, United Nations, Geneva.

44. *Ibid.*, p. 12.

45. *Ibid.*

*Czech Republic (EIA/IC/INFO/19)*

In 2016, several NGOs submitted a communication to the Espoo Implementation Committee arguing that no transboundary EIA had been organised prior to LTO approval for several nuclear power reactors at the Dukovany nuclear power plant in the Czech Republic.

*Ukraine (EIA/IC/INFO/20)*

The Espoo Implementation Committee is currently also considering a communication submitted in 2016 by multiple NGOs in relation to LTO approval processes for several nuclear power reactors in Ukraine.

*Bulgaria (EIA/IC/INFO/28)*

A Romanian NGO submitted information regarding the LTO of two reactors at a Bulgarian nuclear power plant (Kozloduy) near the border with Romania.

#### **4.4 Guidance on the applicability of the Espoo Convention to the lifetime extension of nuclear power plants**

Due to this growing number of cases and with the expectation that additional cases are likely to be submitted to the Implementation Committee in the future because of the ageing of the nuclear fleet in many countries, the MOP decided in 2017 to establish an ad hoc working group composed of representatives of parties to draft terms of reference to provide guidance on the applicability of the Espoo Convention to the lifetime extension of nuclear power reactors.<sup>46</sup> The ad hoc working group completed the terms of reference in 2018 and was subsequently mandated by the Espoo Working Group on Environmental Impact Assessment and Strategic Environmental Assessment to draft guidance on the applicability of the Espoo Convention to the lifetime extension of nuclear power plants, which would be submitted to the MOP for adoption in late 2020.<sup>47</sup>

The ad hoc working group identified three key conditions that must be met for the Espoo Convention to apply to decisions authorising LTO of nuclear power reactors, derived from the text of Article 1(v) and 3(1) of the Convention:<sup>48</sup>

1. For the Espoo Convention to apply, LTO must qualify as a “proposed activity” under Article 1(v) of the Convention, which means that LTO should constitute either an activity or a major change to an activity listed in Appendix I to the Convention;
2. Pursuant to Article 3(1) of the Convention, a transboundary EIA procedure is only mandatory insofar as LTO is “likely to cause a significant adverse transboundary impact”; and

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46. UNECE (2017), “Decisions and the declaration adopted jointly by the Meeting of the Parties to the Convention and the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol”, Addendum to the “Report of the Meeting of the Parties to the Convention on its seventh session and of the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol on its third session”, “Decision VII/3-III/3, Adoption of the workplan”, ECE/MP.EIA/23.Add.1- ECE/MP.EIA/SEA/7.Add.1, Minsk, 13-16 June 2017.

47. UNECE (2018), “Report of the Working Group on Environmental Impact Assessment and Strategic Environmental Impact Assessment on its seventh meeting”, ECE/MP.EIA/WG.2/2018/2, Working Group on Environmental Impact Assessment and Strategic Environmental Assessment, Geneva, 28-30 May 2018, p. 9, para. 28.

48. See UNECE (2019), “Update on the progress in drafting a guidance on the applicability of the Convention to the lifetime extension of nuclear power plants”, ECE/MP.EIA/WG.2/2019/INF.6, Working Group on Environmental Impact Assessment and Strategic Environmental Assessment, Geneva, 26-28 Nov. 2019, para. 2.

3. In accordance with Article 1(v) of the Convention, LTO must be “subject to a decision of a competent authority in accordance with an applicable national procedure”.

After three years of work and discussions under the auspices of the ad hoc working group and the Working Group on EIA and SEA, the MOP endorsed the “Guidance on the Applicability of the [Espoo] Convention to the lifetime extension of nuclear power plants” (hereunder “the Guidance”).<sup>49</sup> This document, which was subject to intensive negotiations between the parties to the Espoo Conventions until late 2020, constitutes the most advanced attempt to answer the aforementioned questions and, as such, merits to be addressed in detail.

Regarding the notion of a lifetime extension, the Guidance acknowledges that the commonly used terminology, be it lifetime extension or LTO, does not have a legal definition in international law.<sup>50</sup> Noting that various elements (political, environmental, economic, safety-related, etc.) may limit the operational life of a nuclear power reactor,<sup>51</sup> the Guidance identifies five “situations” that could be covered by the Espoo Convention, namely:

- (i) the operation of a nuclear power reactor after the expiration of a time-limited licence;<sup>52</sup>
- (ii) the operation of a nuclear power reactor beyond the initial “design life of irreplaceable safety-critical structures, systems and components” in countries with licences of an indefinite duration;<sup>53</sup>
- (iii) the operation of a nuclear power reactor after a specific safety review, most often being the fourth decennial periodic safety review for light-water reactors;<sup>54</sup>
- (iv) modifications to a nuclear power plant that would require modifying the existing licence to operate;<sup>55</sup> and
- (v) the operation of a nuclear power plant beyond a time limit set by national legislation.<sup>56</sup>

The Guidance notes, however, that the aforementioned list of situations is not exhaustive and that the presence of one of these situations does not automatically mean that a transboundary EIA is required.<sup>57</sup> As a general point, the Guidance is intended to provide “principles and factors” to be considered by parties on a case-by-case basis.<sup>58</sup>

Regarding the first condition for the Espoo Convention to apply, namely that LTO is to be considered an activity or a major change to an existing activity under the Espoo Convention, the Guidance provides some valuable insights. It notes that nuclear energy-related activities that are listed in Appendix I to the Espoo Convention appear to cover the full life cycle of the concerned activities. In this regard, LTO must be “considered to be covered by the list of activities even though [it is] not explicitly mentioned.”<sup>59</sup> According to the Guidance, LTO represents a “prolongation of an existing activity rather than an activity in its own right”, therefore indicating that LTO would rather correspond to a major change to an existing activity than to a new activity.<sup>60</sup> The Guidance notes an exception for nuclear power reactors that would have had to terminate their operation, for example due to expiration of their licence, for which LTO “may be regarded as an activity in its own right.”<sup>61</sup>

49. UNECE (2020), Guidance, *supra* note 6.

50. *Ibid.*, paras. 21-23.

51. *Ibid.*, paras. 17-20.

52. *Ibid.*, paras. 25-26.

53. *Ibid.*, para. 27.

54. *Ibid.*, paras. 28-31.

55. *Ibid.*, para. 32.

56. *Ibid.*, para. 33.

57. *Ibid.*, para. 24.

58. *Ibid.*, para. 9.

59. *Ibid.*, para. 37.

60. *Ibid.*, para. 39.

61. *Ibid.*

In relation to the question whether LTO may constitute a major change to an existing activity, the Guidance notes that parties have the discretion to decide this question on the basis of a case-by-case screening.<sup>62</sup> The Guidance notes that “[a]n important factor to consider in this respect is whether the lifetime extension in question, taking account of its specific features, may cause significant adverse transboundary impact”.<sup>63</sup>

The Guidance identifies a number of factors that may lead to the conclusion that a lifetime extension should be considered a major change to an activity under the Espoo Convention. It notes that lifetime extension is considered a major change where it “is combined with major renovation works of a nature or scale that is comparable, with regard to their potential to cause significant adverse transboundary environmental impacts, to that when the plant was first put into service”.<sup>64</sup> In this regard, the text of the Guidance appears to adopt an approach similar to that of the CJEU in the case presented below. However, the Guidance explains that a lifetime extension could also amount to a major change to an activity even in the instance of “physical works or modifications in the operating conditions of a smaller scale”.<sup>65</sup> In this regard reference is made to the duration of the lifetime extension, which is identified as “one factor” that Parties should consider, as well as to a list of “illustrative factors” provided in its Annex II, including, *inter alia*, the “[i]ncreased use of natural resources as compared to the limits envisaged in the initial licence”, the “[i]ncreased production of waste or spent fuel as compared to the limits envisaged in the initial licence”, the “[e]xtent of upgrading works and/or safety upgrades or improvements, in particular those requiring significant alteration of the physical aspects of the site or substantial improvements arising from ageing components and/or obsolescence”, “[c]hanges in the surrounding environment such as those from climate change” or “[c]limate change adaptation and mitigation measures”.<sup>66</sup> While the Guidance notes that “it is unusual for lifetime extensions to be carried out without ... any associated physical works or modifications in the operating conditions”, it still foresees that a lifetime extension could qualify as a major change in the absence of such physical works or modifications, notably due to a “changing environment ... that may not have been considered in the initial authorization to operate”.<sup>67</sup> Similarly, the Guidance foresees that multiple minor changes to a nuclear power plant may amount to a major change under the Espoo Convention, where “there is a tangible link between the multiple minor changes and the lifetime extension, demonstrating that the minor changes are part of one complex activity undertaken with a demonstrable intent to extend the lifetime of the nuclear power plant”.<sup>68</sup>

On the contrary, the Guidance stresses that “changes covered by the existing authorization to operate do not trigger the application of the Convention”.<sup>69</sup> It also specifies that the Convention does not apply retroactively, which explains why parties eventually decided not to include the absence of an EIA carried out during the initial licensing of a nuclear power plant as a factor to determine whether a lifetime extension is a major change or not.<sup>70</sup> Finally, although the Guidance does not provide an explicit list of works that are not considered to amount to a major change, it notes that “physical works undertaken as part of regular maintenance work or ageing management are not usually regarded as major changes”.<sup>71</sup>

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62. *Ibid.*, para. 41.

63. *Ibid.*, para. 42.

64. *Ibid.*, para. 46.

65. *Ibid.*, para. 47.

66. *Ibid.*, para. 47 and Annex II(1).

67. *Ibid.*, para. 49.

68. *Ibid.*, paras. 50-51.

69. *Ibid.*, para. 43.

70. *Ibid.* An earlier draft of the Guidance featured a broader list of factors, see UNECE (2020), “Draft guidance on the applicability of the Espoo Convention to the lifetime extension of nuclear power plants”, ECE/MP.EIA.WG.2/2020/INF.12, Working Group on Environmental Impact Assessment and Strategic Environmental Assessment, Geneva, 24-26 Aug. 2020.

71. UNECE (2020), Guidance, *supra* note 6, para. 48.

Regarding the second condition to be covered by the Espoo Convention, namely that the lifetime extension of a nuclear power reactor is “likely to cause significant adverse transboundary impact”, the Guidance identifies two broad categories of impacts, most of which are actually similar to impacts considered for the licensing of a new reactor, namely: “(a) Impacts resulting from operational states, including normal operation and anticipated operational occurrences; [and] (b) Impacts resulting from accidents, including accidents within the design basis and within the design extension conditions as well as beyond design basis accidents.”<sup>72</sup> In general, the Guidance refers to the approach developed by the Implementation Committee in the Hinkley Point C case, later endorsed by the MOP as part of its 2019 Decision on General issues of compliance with the Convention (IS/1), which highlights the role of the precautionary principle and scientific evidence.<sup>73</sup> This approach indicates that:

[a]lthough the likelihood of a major accident, accident beyond design basis or disaster occurring for nuclear activities listed in appendix I to the Convention is very low, the likelihood of significant adverse transboundary environmental impact can be very high, if the accident occurs. Consequently, when assessing, for the purpose of notification, which Parties are likely to be affected by a proposed nuclear activity listed in appendix I, the Party of origin should make the most careful consideration on the basis of the precautionary principle and available scientific evidence.<sup>74</sup>

The Guidance specifies, however, that the determination of accident scenarios falls outside its scope and that “it is the responsibility of the competent authority to assess which accident scenarios are likely to cause significant adverse transboundary impacts and which accident scenarios can be excluded”, taking into account “internationally recognised nuclear safety and environmental standards”.<sup>75</sup> While the Guidance notes that it could be considered good practice for parties to engage in discussions regarding accident scenarios with potentially affected parties, the wording of the document highlights the difficulty for its drafters to reach consensus on the extent to which very severe accidents with a very low probability should be considered.<sup>76</sup>

The last condition, namely that the LTO of a nuclear power reactor must be “subject to a decision of a competent authority in accordance with an applicable national procedure”, appears to have been the subject of substantial discussions between some members of the ad hoc working group. This is not surprising, given the wide variety of legal and regulatory frameworks among parties to the Espoo Convention. For countries with time-limited licences for the operation of nuclear power reactors, it may be rather straightforward to identify a decision to authorise LTO, be it in the form of a decision to renew a licence, amend an existing one or issue a new one. However, several countries with licences for an indefinite duration have pointed to the fact that their respective legal and regulatory frameworks may not necessarily include a specific decision to authorise LTO, which itself is often not defined in their national law. This difference has led to a fundamental question of interpretation of Article 2 of the Espoo Convention, where some parties argue that the Convention requires parties to introduce a decision-making procedure for any major change to an activity,

72. *Ibid.*, paras. 58 and 63. The Guidance specifies that these terms are to be understood as defined in IAEA (2019), *The IAEA Safety Glossary: Terminology used in Nuclear Safety and Radiation Protection*, 2018 Edition, IAEA, Vienna.

73. See UNECE (2020), Guidance, *supra* note 6, paras. 59 to 62.

74. UNECE (2019), “Decision by the Meetings of the Parties to the Convention”, addendum to “Report of the Meeting of the Parties to the Convention of the Meeting of the Parties to the Convention serving as the Meeting of the Parties to the Protocol on their intermediary sessions”. “Decision IS/1 General issues of compliance with the Convention”, ECE/MP.EIA/27/Add.1-ECE/MP.EIA/SEA/11/Add.1, Geneva, 5-7 Feb. 2019, p. 3, para. 4(b). See also UNECE (2020), Guidance, *supra* note 6, para. 59.

75. UNECE (2020), Guidance, *supra* note 6, para. 63.

76. *Ibid.* Two options were included for discussions as part of the drafting of the Guidance, however none of these options enabled Parties to reach a consensus on the final text of the Guidance; see UNECE (2020), Draft Guidance, *supra* note 70, paras. 90-91.

including LTO, while others are of the opinion that the existence of a decision-making procedure is rather a pre-condition for applying the Convention.<sup>77</sup> The Guidance appears to settle this issue by recalling the framework of the Espoo Convention, stating that “in accordance with article 2(2) of the [Espoo] Convention, Parties have committed themselves to having in place and taking all the legal, administrative and other measures necessary to implement the Convention effectively within the domestic legal order” and further highlighting that “a “final decision” on the proposed activity is one of the core obligations under the Convention, which Parties must implement in accordance with article 6”.<sup>78</sup>

The Guidance seems to indicate that the notion “decision by a competent authority” is to be interpreted broadly and that it is for each party “to determine ..., according to its national legislation, [what could be the administrative trigger for] the extension, continuation, renewal or modification of authorizations allowing previous operation.”<sup>79</sup> What is important to determine whether there is indeed a “decision by a competent authority” “is not the title (e.g. ‘licence’ or ‘permit’) but rather the authorizing function with regard to the rights or duties of the nuclear operator, equivalent to that of [an initial licence], consent or a permit.”<sup>80</sup> In this regard even an authorisation for LTO that is given by a legislator or a judicial body could qualify as a “decision by a competent authority”.<sup>81</sup> The Guidance also addresses the specific question of the relationship between PSRs and the notion of decision under the Espoo Convention. It indicates that these reviews, in themselves – including their findings – are not to be considered as decisions. However, PSRs may be followed by authorisations aimed at transposing their findings or requiring that the operator take specific action.<sup>82</sup> Such authorisations could meet the criteria to be considered as a decision linked with the LTO of a nuclear power reactor, albeit that the Guidance notes that there is “no systematic correlation between periodic safety reviews and the authorisation regime”.<sup>83</sup>

## 5. Changes initiated by the Court of Justice of the European Union

### 5.1 Background

On 29 July 2019, the CJEU rendered a landmark judgment relating to EIA and the approval of LTO for nuclear power reactors in the EU.<sup>84</sup> The case relates to two nuclear power reactors located in Belgium.

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77. See Letter from L. Tanner and C. Sangenstedt to the Meeting of the Parties to the Espoo Convention, 8<sup>th</sup> Session and Meeting of the Parties to the Protocol on SEA, 4<sup>th</sup> Session, Vilnius, Lithuania, 8-11 December 2020, “Letter of the Co-Chairs of the ad hoc working group on the applicability of the Espoo Convention to the lifetime extension of nuclear power plants”.

78. UNECE (2020), Guidance, *supra* note 6, paras. 80-84.

79. *Ibid.*, para. 88.

80. *Ibid.*, para. 90.

81. *Ibid.*, paras. 101-102.

82. *Ibid.*, para. 95.

83. *Ibid.*

84. Judgment of 29 July 2019, *Inter-Environnement Wallonie*, C-411/17, EU:C:2019:622 (“2019 CJEU Judgment”). The judgment is available at: [www.curia.europa.eu/juris/documents.jsf?num=C-411/17](http://www.curia.europa.eu/juris/documents.jsf?num=C-411/17). The CJEU is the judicial body of the European Union that ensures that EU law is respected and applied in the same way throughout all EU member states. It has two principal competences: first, ensuring compliance by the EU member states and EU institutions (essentially the EU Commission, the Council of the EU and the EU Parliament) with European law covering a vast area of domains including nuclear energy and secondly, clarifying EU law at the request of national courts and tribunals of the EU member states to ensure that it is applied uniformly throughout the European Union. The CJEU’s interpretation of EU law is binding in all EU member states.

At present, Belgium has seven nuclear power reactors, supplying approximately half of the country's electricity, four of which are located at Doel (Antwerp) and three at Tihange (Liège). The reactors started operating between 1975 and 1985. The CJEU case relates to the Doel 1 and Doel 2 nuclear power reactors.<sup>85</sup> Both reactors are located near areas that are protected under EU environmental legislation and are situated roughly 20 km from the Netherlands and 100 km from Germany.

In order to better understand the case, it is important to distinguish the roles of the national legislature and of the nuclear regulator (Federal Agency for Nuclear Control or FANC) in Belgium. The national legislature decides whether and under which conditions electricity may be generated. The nuclear regulator regulates the siting, design, construction, commissioning, operation and decommissioning of nuclear installations. Licences for nuclear installations are granted by the Belgian government on the basis of a Royal Decree on the positive advice of the nuclear regulator. Licences for nuclear power reactor operation in Belgium are granted for an indefinite duration. The operation of a nuclear power reactor beyond its original designed life is assessed through the decennial PSR and not through a renewal of the initial licence, which remains valid during the LTO period.<sup>86</sup>

In 2003, the Belgian national legislature adopted the Act of 31 January 2003 on the nuclear phase-out ("Nuclear Phase-Out Act").<sup>87</sup> This Act provided that no new nuclear facility was to be built and existing nuclear facilities had to stop operating after a lifetime of 40 years. Although operating licences of nuclear power reactors in Belgium are valid for an indefinite term, the adoption of the Nuclear Phase-Out Act meant in practice that all plants had to cease operating after 40 years. Since the Doel 1 and 2 nuclear power reactors started operating in 1975, the Nuclear Phase-Out Act allowed both installations to generate electricity until 2015.

From 2010 onwards, the national legislature became concerned that the nuclear phase-out would cause problems of security of electricity supply for the Belgian economy. In 2015, it was therefore decided to amend the date of the nuclear phase-out. The national legislature adopted the Act of 28 June 2015 ("Nuclear Life Extension Act") thereby prohibiting the Doel 1 and 2 nuclear power reactors from generating electricity beyond 2025.<sup>88</sup> The Nuclear Life Extension Act actually "extended" the lifetime of the Doel 1 and 2 reactors by ten years compared to their status under the Nuclear Phase-Out Act and tied the extension of the life to the condition that the operator would invest approximately EUR 700 million in the safety of the reactors.

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85. Over the last few years there has been interest regarding the hydrogen flakes that have been detected in the reactor vessels of some Belgian nuclear power plants. These hydrogen flakes have been denominated "cracks" in some media. Those nuclear power reactors (Doel 3 and Tihange 2 reactors) are different than the ones that are the subject matter of the case in the main proceedings.

86. An overview of the Belgian approach to LTO is available in NEA (2019), *supra* note 4, pp. 51-54. For additional information about the legislative and regulatory framework for nuclear safety in Belgium as well as the regulatory authority, see FANC (2016), *National Report: Seventh Meeting of the Contracting Parties to the Convention on Nuclear Safety*, available at: [www.iaea.org/sites/default/files/belgium-nr-7th-rm.pdf](http://www.iaea.org/sites/default/files/belgium-nr-7th-rm.pdf), pp. 24-47.

87. *Loi du 31 janvier 2003 sur la sortie progressive de l'énergie nucléaire à des fins de production industrielle d'électricité afin de garantir la sécurité d'approvisionnement sur le plan énergétique* [Act of 31 January 2003 on the gradual phasing out of nuclear energy for industrial electricity production in order to guarantee security of energy supply] (*Moniteur belge* of 28 Feb. 2003).

88. *Loi du 28 juin 2015 modifiant la loi du 31 janvier 2003 sur la sortie progressive de l'énergie nucléaire à des fins de production industrielle d'électricité afin de garantir la sécurité d'approvisionnement sur le plan énergétique* [Act of 28 June 2015 amending the Act of 31 January 2003 on the gradual phasing out of nuclear energy for industrial electricity production in order to guarantee security of energy supply] (*Moniteur belge* of 6 July 2015).

Several weeks after the adoption of the Nuclear Life Extension Act, the FANC decided that there was no need for an EIA since it was of the opinion that the LTO of the Doel 1 and 2 reactors would not lead to new negative radiological effects on the environment or to additional existing radiological effects on the environment and hence that there were no significant adverse effects on the environment.<sup>89</sup> The FANC later decided that there was no need for the operator to request a modification or extension of its operating licence because the planned work to the installations to enable LTO did not qualify as a major change to the installations under national legislation.<sup>90</sup>

Authorisations for nuclear energy projects are usually given by the nuclear regulator or the competent Ministry. In the Belgian case the situation was different since the authorisation for LTO of the Doel 1 and 2 reactors appeared not to have been given by the nuclear regulator or the competent Ministry but by the national legislature through the adoption of the Nuclear Life Extension Act. Moreover the decision on whether or not there was a requirement for an EIA was taken after the adoption of the LTO decision instead of prior thereto. Hence the national legislature could not have taken any EIA documentation into account since it only arrived after the adoption of the Nuclear Life Extension Act.

Two environmental NGOs brought an action before the Belgian Constitutional Court seeking annulment of the Nuclear Life Extension Act. The plaintiffs principally argued that the Belgian State had failed to ensure that an EIA was conducted prior to authorising LTO of the Doel 1 and 2 nuclear power reactors.<sup>91</sup>

In order to decide on the action for annulment of the Nuclear Life Extension Act, the Belgian Constitutional Court sought the interpretation of the CJEU on European environmental legislation applicable to LTO of nuclear power reactors.<sup>92</sup> Nine questions were referred by the Belgian Constitutional Court to the CJEU, which boil down to three central issues. The first issue essentially is whether or not an EIA must be organised prior to authorising LTO of a nuclear power reactor located in the European Union (hereunder: “EIA issue”). As mentioned under Chapter 2, organising an EIA has become an obligation under international law for licensing new nuclear power reactors but there is no clarity in the European Union whether such an obligation also applies as part of LTO approval processes. The second issue is whether the obligation to perform an EIA prior to authorising LTO of nuclear power reactors also applies when such authorisation is given by the national legislature (hereunder: “statutory measure issue”). It is common practice in the nuclear field that licences and authorisations are granted by the nuclear regulator or the competent Ministry but in the Belgian case the authorisation for LTO seemed to have been granted by the national legislature. The third issue is whether overriding public interests such as national security of electricity supply could allow an exemption of EIA obligations for LTO of nuclear power reactors (hereunder: “overriding public interest issue”).

## 5.2 Judgment of the CJEU

### A. EIA issue

On the EIA issue, the CJEU applied a two-step test to ascertain whether LTO approval of nuclear power reactors requires the prior conduct of an EIA. The Court first verified whether LTO of the nuclear power reactors qualifies as a “project” under EU legislation. It

89. FANC (2015), “MER Screening Nota Long Term Operation Doel 12”, available (in Dutch), at: [www.fanc.fgov.be/nl/system/files/2015-08-18-afcn.pdf](http://www.fanc.fgov.be/nl/system/files/2015-08-18-afcn.pdf).

90. FANC (2015). “Beslissing omtrent het LTO-actieplan van Doel 1&2 conform artikel 12 van het ARBIS” [Decision on the LTO action plan of Doel 1 & 2 in accordance with Article 12 of the ARBIS], available (in Dutch) at: [www.fanc.fgov.be/nl/system/files/2015-09-30-afcn-beslissing-lto-doel-1-2.pdf](http://www.fanc.fgov.be/nl/system/files/2015-09-30-afcn-beslissing-lto-doel-1-2.pdf).

91. Judgment of the Belgian Constitutional Court of 5 March 2020, Judgment 34/2020, p. 1, available (in French) at: [www.const-court.be/public/f/2020/2020-034f.pdf](http://www.const-court.be/public/f/2020/2020-034f.pdf).

92. Request for a preliminary ruling, OJ C 300/27 (11 Sept. 2017).



then examined whether LTO of the nuclear power reactors is likely to have significant effects on the environment by virtue of its nature, size or location.<sup>93</sup> The obligation to carry out an EIA only applies under EU legislation if both conditions are met.<sup>94</sup>

Article 1 of the EIA Directive states that: “For the purposes of this directive, [...] a ‘project’ means: (i) the execution of construction works or of other installations or schemes, (ii) other interventions in the natural surroundings and landscape including those involving the extraction of mineral resources”. It follows from the case law of the CJEU that this definition refers to work or interventions involving alterations to the physical aspect of the site.<sup>95</sup> Under the first step of the test, the CJEU thus examined whether the work to upgrade the nuclear power reactors and to ensure compliance with current safety standards qualifies as works or interventions that are likely to affect “the physical aspect of the site”.<sup>96</sup> The evidence available to the Court indicated that the work involves:

upgrading the containment structures of the Doel 1 and Doel 2 [reactors], renewal of the spent fuel storage pools, building a new pumping station and adaptation of the base to offer better protection ... against flooding. That work would not be limited to existing structures, but would also involve the construction of three buildings, two to host ventilation systems and a third as a fire protection structure.<sup>97</sup>

According to the CJEU “work of that nature is such as to alter the physical aspect of the sites in question, within the meaning of [its] case-law”.<sup>98</sup> Perhaps as importantly, the CJEU considered that the aforementioned work to upgrade the Doel 1 and 2 nuclear power reactors was “inextricably linked” to the decision made by the Belgian legislature to authorise the LTO, although the challenged legislation did not explicitly refer to such work and could therefore not be “artificially dissociated” from it.<sup>99</sup> This probably signals the intention of the Court to preclude any “salami-slicing” practice, where a series of decisions would be considered in isolation of their potential practical consequences.

The CJEU then passed to the second step of the test and assessed whether LTO approval of the nuclear power reactors is likely to have significant effects on the environment.<sup>100</sup> While the construction and dismantling or decommissioning of nuclear power stations and other nuclear power reactors is automatically considered to have significant effects on the environment, the EIA Directive does not contain clear wording on whether this also holds true for LTO of nuclear power reactors.<sup>101</sup> Annex I to the EIA Directive provides in general terms at its point (24) that “Any change to or extension of projects listed in this Annex where such change or extension in itself meets the thresholds, if any, set out in this Annex” should be considered as projects having significant impact on the environment under Article 4(1) of the Directive and is therefore automatically subject to an EIA. The CJEU thus examined “whether measures such as those at issue in the main proceedings, along with the work to which those measures are inextricably linked, may fall within the scope of point (24) of Annex I to the EIA Directive [...]”.<sup>102</sup> It found that, for projects listed in Annex I without a threshold, the aforementioned provision should be understood as including “any change or extension to a project, which by virtue of, inter alia, its nature or scale, presents risks that are similar, in terms of their effects on the environment, to those posed by the project itself”.<sup>103</sup> In the case at hand, the CJEU concluded that the activities

93. 2019 CJEU Judgment, *supra* note 84, para. 61-94.

94. Directive 2011/92/EU, *supra* note 16, Articles 1(2) and 2(1).

95. C-275/09 *Brussels Hoofdstedelijk Gewest and Others* (2009), ECR I-753.

96. 2019 CJEU Judgment, *supra* note 84, para. 66.

97. *Ibid.*

98. *Ibid.*

99. *Ibid.*, para. 71.

100. *Ibid.*

101. Directive 2011/92/EU, *supra* note 16, combined reading of Articles 2(1) and 4(1) along with Annex I to the EIA Directive.

102. 2019 CJEU Judgment, *supra* note 84, para. 77.

103. *Ibid.*, para. 78.

linked with the LTO of the Doel 1 and 2 nuclear power reactors, which have the effect of extending the duration of the licence to generate electricity by ten years, combined with major renovation works made necessary due to the ageing of those plants and the obligation to bring them into line with current safety standards, must be found to be “of a scale that is comparable, in terms of the risk of environmental effects, to that when those power stations were first put into service”.<sup>104</sup> The CJEU therefore found that the LTO of the Doel 1 and 2 nuclear power reactors must be considered to constitute a change or extension of the project that requires conducting an EIA.<sup>105</sup>

This reasoning is perhaps one of the main innovations of this judgment. Indeed, it could have a significant impact on all other projects listed in Annex I of the EIA Directive and that are without thresholds, including integrated chemical installations, the construction of motorways and express roads or waste disposal installations. For all these projects, any change or extension that would pose “risks that are similar, in terms of their effect on the environment, to those posed by the project itself” would require the prior carrying out of an EIA. It is also interesting to note, in this regard, that the Court does not appear to have followed the opinion of its Advocate General, who had argued that an EIA should have been conducted even in the absence of any work.<sup>106</sup>

Since the Doel 1 and 2 reactors are located close to the Netherlands, the Court decided that an EIA with transboundary consultation of the public and the public authorities of the Netherlands must be organised as required by Article 7 of the EIA Directive.<sup>107</sup> Surprisingly, the CJEU imposed no similar obligation for Germany or any other potentially affected countries.

In summary, the CJEU decided that the deferral by ten years of the date that was initially set by the national legislature for deactivating and ceasing industrial production of electricity by nuclear power reactors together with measures that entail work to upgrade the reactors such as to alter the physical aspect of the sites, “constitute a ‘project’, within the meaning of the [EIA] Directive, and subject to the findings that are for the [national] referring court to make, an [EIA] must, in principle, be carried out with respect to that project prior to the adoption of those measures”.<sup>108</sup> The CJEU arrived at the same conclusion with regard to the Habitats Directive.<sup>109</sup>

#### B. Statutory measure issue

On the statutory measure issue, the CJEU recalled that the EIA must be conducted prior to development consent.<sup>110</sup> The Court first analysed whether the Nuclear Life Extension Act could qualify as “development consent”. According to Article 1(2)(c) of the EIA Directive, “‘development consent’ means the decision of the competent authority or authorities which entitles the developer to proceed with the project”. The Court referred to its previous case law<sup>111</sup> and repeated that if the licensing procedure takes place in several stages with one of those stages being a main decision and the other one an implementing decision, “the effects that the project is likely to have on the environment must be identified and assessed at the time of the procedure relating to the principal decision”.<sup>112</sup>

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104. *Ibid.*, para. 79.

105. 2019 CJEU Judgment, *supra* note 84, para. 80.

106. Opinion of Advocate General Kokott, 29 November 2018, ECLI:EU:C:2018:972, para. 66. The CJEU is assisted by 11 Advocate Generals. The role of the Advocate General is to present a legal opinion to the Court. The opinion of the Advocate General is advisory and does not bind the CJEU.

107. 2019 CJEU Judgment, *supra* note 84, para. 81.

108. *Ibid.*, para. 94.

109. *Ibid.*, para. 145.

110. *Ibid.*, para. 82.

111. C-201/02 *Wells* (2004), ECR I-723.

112. 2019 CJEU Judgment, *supra* note 84, para. 85-86.

The CJEU found that the Nuclear Life Extension Act provides, “in a precise and unconditional manner”, for the deferral by ten years of the date initially set by the national legislature for the deactivation and the end of the electricity generation by the units Doel 1 and 2.<sup>113</sup> The Court therefore held that “[...] it would appear, prima facie, that the [Nuclear Life Extension Act] constitutes development consent, within the meaning of Article 1(2)(c) of the [EIA Directive], or at the very least, a first step in the process of obtaining consent for the project, as regards its essential characteristics”.<sup>114</sup> The CJEU seemed to indicate that legal obligations on conducting an EIA would be meaningless if it could simply be circumvented by having the licensing decision taken by the legislature.

The Court also verified whether the Nuclear Life Extension Act could be considered to fall outside the scope of application of the EIA Directive on the basis of Article 1(4).<sup>115</sup> This Article provides that “[t]his Directive shall not apply to projects the details of which are adopted by a specific act of national legislation, since the objectives of this Directive, including that of supplying information, are achieved through the legislative process”.

The CJEU emphasised that the exclusion from the scope of the EIA Directive is subject to two conditions. The first condition is that the project must be adopted by “a specific act of legislation that has the same characteristics as development consent. In particular, that act must grant the developer the right to proceed with the project”.<sup>116</sup> The legislative act must thus be worded:

in a sufficiently precise and definitive manner, so that the legislative act adopting the project must include, like a development consent, following their consideration by the legislature, all the elements of the project relevant to the [EIA]. The legislative act must demonstrate that the objectives of the EIA Directive have been achieved as regards the project in question.<sup>117</sup>

The second condition is that “the objectives of the [EIA] Directive, including that of making available information, are achieved through the legislative process”.<sup>118</sup> The Court held that “the essential objective of the [EIA] Directive is to ensure that projects likely to have significant effects on the environment by virtue, inter alia, of their nature, size or location are subject to an assessment with regard to their environmental effects before consent is given”.<sup>119</sup> These objectives, including the provision of information, must therefore be achieved through the legislative procedure.<sup>120</sup>

Consequently, the legislature must have sufficient information at its disposal at the time when the project [] is adopted. ... [T]he minimum information to be supplied by the developer is to include a description of the project comprising information on the site, design and size of the project, a description of the measures envisaged in order to avoid, reduce and, if possible, remedy significant adverse effects, the data required to identify and assess the main effects which the project is likely to have on the environment, an outline of the main alternatives studied by the developer and an indication of the main reasons for his choice, taking into account the environmental effects, and a non-technical summary of the above information.<sup>121</sup>

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113. *Ibid.*, para. 87.

114. *Ibid.*, para. 91.

115. *Ibid.*, para. 103-114.

116. *Ibid.*, para. 105.

117. *Ibid.*, para. 106.

118. *Ibid.*, para. 108.

119. *Ibid.*

120. *Ibid.*

121. *Ibid.*, para. 109.

According to the CJEU, “it is for the [national] court to determine whether those conditions have been satisfied”.<sup>122</sup> For that purpose, it must “tak[e] account both of the content of the legislative act adopted and of the entire legislative process which led to its adoption, in particular the preparatory documents and parliamentary debates”.<sup>123</sup> “However, having regard to the information brought to [its] attention”, it appeared to the Court that this information had not been made available to the Belgian legislature.<sup>124</sup> The CJEU therefore came to the conclusion that the Nuclear Life Extension Act does not meet the conditions of Article 1(4) of the EIA Directive.<sup>125</sup> Therefore, the fact that LTO approval for the Doel 1 and 2 nuclear power reactors has been granted by the national legislature instead of by a national regulator or competent Ministry does not exempt it from the EIA obligations under the EIA Directive.

### C. *Overriding public interest issue*

On the overriding public interest issue, the CJEU referred to Article 2(4) of the EIA Directive, which authorises member states, in exceptional cases, to exempt a specific project in whole or in part from the obligations of the EIA Directive. The Court held that:

[a]lthough it is conceivable that the need to ensure the security of the electricity supply to a Member State could amount to an exceptional case, within the meaning of the first subparagraph of Article 2(4) of the EIA Directive, which would justify exempting a project from an [EIA], it should be noted that [the provisions of the EIA Directive] impose specific obligations upon Member States wishing to rely on that exemption.<sup>126</sup>

In such a case, member states must consider:

whether another form of assessment would be appropriate, make available to the public concerned the information thereby obtained, and inform the Commission, prior to granting consent, of the reasons justifying the exemption granted, and provide it with the information, if any, made available to their own nationals.<sup>127</sup>

In its decision, the CJEU recalled that these obligations are not “mere formal requirements, but conditions designed to ensure that the objectives of the EIA Directive are met, as far as possible”.<sup>128</sup> The Court emphasised though that Belgium had not informed the EU Commission of any planned exemption of the EIA obligation with regard to the Doel 1 and 2 nuclear power reactors.<sup>129</sup> Belgium must also demonstrate “that the alleged risk to the security of the electricity supply is reasonably probable and that [the LTO of both reactors] is sufficiently urgent to justify not carrying out” an EIA.<sup>130</sup>

### D. *Maintenance of effects of long-term operation approval that infringes EU law*

The CJEU also addressed the question whether the effects of the Nuclear Life Extension Act could be maintained and thus whether units Doel 1 and 2 could continue to operate despite infringing EU environmental legislation. The Court recalled that:

under the principle of sincere cooperation laid down in Article 4(3) TEU, Member States are required to nullify the unlawful consequences of [an] infringement of EU law. The competent national authorities are therefore under an obligation to take

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122. *Ibid.*, para. 110.

123. *Ibid.*

124. *Ibid.*, para. 111.

125. *Ibid.*, para. 114.

126. *Ibid.*, para. 97.

127. *Ibid.*, para. 98.

128. *Ibid.*, para. 99.

129. *Ibid.*, para. 100.

130. *Ibid.*, para. 101.

all measures necessary, within the sphere of their competence, to remedy the failure to carry out an [EIA], for example by revoking or suspending consent already granted in order to carry out such an assessment.<sup>131</sup>

The Court admitted, however, that it has held in the past “that EU law does not preclude national rules which, in certain cases, permit the regularisation of operations or measures which are unlawful in the light of EU law”.<sup>132</sup> The CJEU imposed very strict conditions for maintaining the effects of the Nuclear Life Extension Act though. It held that national authorities may:

if domestic law allows it, [...] by way of exception, maintain the effects of measures, such as those at issue in the main proceedings, adopted in breach of the obligations laid down by the EIA Directive and the Habitats Directive, where such maintenance is justified by overriding considerations relating to the need to nullify a genuine and serious threat of rupture of the electricity supply in the Member State concerned, which cannot be remedied by any other means or alternatives, particularly in the context of the internal market. The effects may only be maintained for as long as is strictly necessary to remedy the breach.<sup>133</sup>

### **5.3 Potential effects of the CJEU judgment on the approach to LTO of nuclear power reactors in the European Union and personal reflexions**

Owing to the specificity of the case at hand and to the varying legal and regulatory frameworks for LTO among EU member states, it is a difficult task to determine the extent to which this decision will impact LTO-related procedures within the EU.

In its decision, the CJEU held that there was an obligation to conduct an EIA due to a combination of two factors, i.e.: (i) the extension “by a significant period of 10 years [for] the duration of consents to produce electricity” and (ii) “major renovation works necessary due to the ageing of [the] nuclear power stations and the obligation to bring them into line with safety standards,” which altered the physical aspect of the site.<sup>134</sup> The combination of these two elements is considered by the CJEU as presenting a risk of environmental effects of a comparable scale to that when the nuclear power reactors were commissioned.<sup>135</sup> This reasoning appears to balance the perhaps contradictory effects of the two aforementioned factors. While the major renovation works, as they include safety improvements, could be regarded as lowering the general risk profile of the concerned installations, the extension of operation of the reactors logically extends the time period during which these installations create a risk for the environment, in addition to the generation of additional radioactive waste and spent fuel.

Looking at the situation in EU member states, it appears very likely that the LTO of most nuclear power reactors will involve major renovation works. Indeed, LTO programmes generally consist of large-scale investments in the safety and operational features of the concerned reactors, often aimed at enabling these reactors to continue operating under up-to-date regulatory requirements and improved financial conditions for considerable periods of time. However, the situation appears slightly more difficult when it comes to identifying whether there has been an extension of time. In the aforementioned Doel 1 and 2 case, there was a prior decision by the Belgian legislature to limit the operation of those two reactors in time, such that there was no difficulty in identifying an extension by ten years of the consent to generate electricity when the same legislature decided to revisit its decision. In many – if not most – EU member states, this does not appear to be the case, as licences granted by the nuclear regulators are not limited in time and there appears to be no

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131. *Ibid.*, para. 170.

132. *Ibid.*, para. 173.

133. *Ibid.*, para. 182.

134. *Ibid.*, para. 79.

135. *Ibid.*

legislative or regulatory provision stating an end date for the operation of nuclear power reactors (with the noticeable exception of EU member states currently phasing out nuclear energy). For these countries, there remains legal uncertainty as to whether other types of decisions – typically decisions made by nuclear regulatory bodies to approve the major renovation works, notably following a PSR – could be seen by courts, including the CJEU, as extending the operation of the concerned nuclear power reactor, even in the absence of a prior end date. While some national courts in EU member states have held in the past that such decisions were only approving renovation works and not authorising the operation of reactors,<sup>136</sup> it remains uncertain whether the present judgment of the CJEU will change this situation.

The Court’s judgment also had an important influence on discussions held within the framework of the Espoo Convention regarding its applicability to the LTO of nuclear power reactors, even though the judgment did not consider the applicability of the Convention to LTO *per se*. In this regard, it is interesting to note that the “Guidance on the applicability of the [Espoo] Convention to the lifetime extension of nuclear power plants” makes reference to several criteria identified by the CJEU in that case. These references mostly concern the actual works foreseen as part of the LTO programme for the Doel 1 and 2 reactors as well as their cost, which could also be considered as a factor to identify the scale of the intended change under the Espoo Convention.<sup>137</sup> The CJEU decision also influenced the content of the Guidance regarding the possibility for the LTO of a nuclear power reactor to cause significant adverse transboundary impacts, as the Court held – in the context of the EIA Directive – that the LTO of the Doel 1 and 2 reactors presented, by virtue of its nature or scale, risks that are similar to the initial commissioning of the reactors.<sup>138</sup> However, it is noteworthy that the section of the Guidance dedicated to “lifetime extension *per se*” (i.e. lifetime extension without any works) does not refer to the CJEU decision. While the Guidance appears to open the door to the possibility that a “changing environment that occurs over the course of [a nuclear power plant’s] lifetime and that may not have been considered in the initial authorization to operate” could justify classifying the lifetime extension as a major change,<sup>139</sup> such an option appears to have been ruled out by the CJEU in the context of the EIA Directive. Indeed, the Court reaffirmed its case law that under the EIA Directive a “project” must involve physical alterations to the site.<sup>140</sup> As noted in the Guidance, such a scenario of an LTO without any physical works appears rather unlikely.<sup>141</sup> Nonetheless, in such case there could be a discrepancy between the interpretation of the Espoo Convention under the Guidance and the interpretation of the EIA directive by the CJEU.

## 6. Conclusion

There is, at present, a grey area in existing international and EU environmental law on whether or not an EIA must be performed prior to the LTO of nuclear power reactors located in the European Union. This grey area owes a lot to the fact that LTO is essentially not a legal concept with an agreed meaning, either in international, EU or domestic laws. Some EU member states have adopted national legislation or regulations that clearly require the conduct of some form of environmental review prior to making decisions that could be qualified as approving LTO. That review will generally address the impact of the required works and of extending the concerned reactor’s operation on the environment,

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136. See the Decision of the French Conseil d’État (highest administrative jurisdiction in France) regarding the third PSR of the Bugey 2 nuclear power reactor, Conseil d’État, 6<sup>ème</sup>/1<sup>ère</sup> SSR, 22 Feb. 2016, No. 373516, summarised in English in NEA (2016), *Nuclear Law Bulletin* No. 98, OECD Publishing, Paris, pp. 63-64.

137. UNECE (2020), Guidance, *supra* note 6, para. 46.

138. *Ibid.*

139. *Ibid.*, para. 49.

140. 2019 CJEU Judgment, *supra* note 84, para. 62.

141. UNECE (2020), Guidance, *supra* note 6, para. 49.

often including human health. However, most EU member states have no such clear provisions in their legislation or regulations, thereby raising questions as to whether such an assessment is required or not. This situation is the source of increased legal uncertainty, at a time when a large part of the nuclear power reactors currently operating within the EU are expected to soon enter the stage of LTO. Consequently, such legal uncertainty generates a growing number of disputes, be it in front of courts or other types of bodies, such as the Espoo Implementation Committee, involving additional costs and introducing further delays in important decisions for the energy policy of the concerned countries.

Although several countries in the EU have expressed the view that the requirement to conduct an EIA prior to the LTO of a nuclear power reactor is not provided for under the applicable international and EU legal frameworks, there has been a growing tendency in the regulatory and judicial environment over the last decade towards increased environmental scrutiny over the continued operation of nuclear reactors. In 2014, the Meeting of the Parties to the Espoo Convention decided in one specific case that an EIA should have been organised prior to renewing the licence of a nuclear power reactor, thereby extending its lifetime. Six years later, facing a rapidly increasing number of communications from NGOs and members of the public regarding LTO, the Meeting of the Parties completed a three-year long effort by endorsing the “Guidance on the applicability of the [Espoo] Convention to the lifetime extension of nuclear power plants”. And, in 2019, an equally important evolution was marked by the CJEU in the Doel 1 and 2 case. By deciding, owing to the specifics of this case, that an EIA should have been conducted prior to deciding to postpone the shutdown of these two reactors by ten years, the CJEU confirmed an ongoing trend: environmental procedural requirements for the LTO of nuclear power reactors are increasingly important. Whether this CJEU judgment will be fully applicable to LTO processes in other EU member states remains to be seen, taking into account the varying national legal frameworks. Similarly, the Guidance adopted under the auspices of the Espoo Convention does not provide definitive legal certainty as to whether specific LTO cases will require carrying out a transboundary EIA; but – at the very least – this non-binding instrument provides avenues for parties or domestic courts to reach such conclusion. The trend of increased environmental transparency will likely continue throughout the EU in the next decades.

Finally, from a broader perspective, the question of whether or not the environmental impacts of operating a facility should be reassessed after a certain period of operation should not be seen in the sole context of nuclear energy-related activities. At a time when combating climate change is at the forefront of public policy objectives in the field of environmental protection, especially within the EU, it will be interesting to see whether members of the public and other stakeholders could make use of the same notions and case law to reassess the environmental impacts of already licensed projects and activities at the source of large-scale carbon emissions or significant air pollution, such as coal and gas-fuelled power plants.





## Forging a clear path for advanced reactor licensing in the United States: Approaches to streamlining the NRC environmental review process

by Martin J. O'Neill\*

*“The agency expects to receive a number of complex applications for advanced reactor designs in the near future. Congress recently passed legislation seeking to streamline our safety review for such applications, suggesting that the efficient and effective review of these applications is a national priority. However, commenters remain concerned that without similar efforts to seek efficiency in our NEPA process, these efforts will prove ineffective. They note that the length and cost of our existing NEPA process pose a steep and potentially insurmountable obstacle to advanced reactors.”<sup>1</sup>*

The future of nuclear energy in the United States (US) hinges largely on the ability of the industry to develop, license and bring innovative reactor technologies to market in an economically competitive and expeditious manner. The industry’s ability to do so will require the positive confluence of numerous economic, political, technical and regulatory factors. One of these factors is the availability of a predictable and efficient licensing process for advanced reactors at the US Nuclear Regulatory Commission (NRC). This article focuses on one aspect of the NRC’s licensing review process: its environmental review under the National Environmental Policy Act (NEPA), as amended<sup>2</sup> and the NRC’s NEPA-implementing regulations at Part 51 of Title 10 of the *US Code of Federal Regulations* (CFR) (10 CFR Part 51, “Environmental Protection Regulations for Domestic Licensing and Regulated Functions”).<sup>3</sup>

This article consists of five parts. Part 1 briefly discusses the status of the current US operating nuclear reactor fleet as well as the various social, economic and political factors that are driving the surging interest in advanced nuclear reactor technologies in the United States. Part 2 provides an overview of NEPA’s requirements, as implemented through the Council on Environmental Quality’s (CEQ) recently-updated regulations; the NRC’s NEPA regulations in Part 51; and the US nuclear industry’s experience with the NRC’s environmental review process. Part 3 explores recent government-wide, industry and agency efforts to improve the timeliness and efficiency of the NRC’s environmental process under NEPA and Part 51. It also includes some related observations and recommendations. Part 4 discusses the need for the NRC to simplify its contested hearing process for

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1. Crow Butte Resources, Inc. (In Situ Leach Uranium Recovery Facility), CLI-20-8, 92 NRC \_\_, \_\_ (2020) (*slip op.*) (dissenting opinion of former NRC Chairman Kristine Svinicki and NRC Commissioner Annie Caputo, pp. 16-17).
2. NEPA, as amended, is codified at 42 *United States Code* (USC) sections 4321-4347. The USC is the consolidated publication of the general and permanent laws of the United States.
3. The CFR is multi-volume publication with 50 subject matter titles codifying the general and permanent rules of the US federal government.

environmental issues to align it with current statutory requirements, federal agency norms and congressional expectations. Finally, Part 5 summarises key issues and conclusions discussed in this article.

## **PART 1: THE CURRENT STATE OF US NUCLEAR GENERATION AND THE PUSH TO DEPLOY ADVANCED NUCLEAR REACTOR TECHNOLOGIES**

Before delving into the particulars of the NRC environmental review process, it is helpful to understand why the agency's licensing process is garnering considerable attention. In short, given the significant challenges facing the current US nuclear power reactor fleet, there is a widely perceived need to rapidly develop and deploy advanced nuclear technologies for environmental, economic and national security reasons. This recognition is manifest in the many private sector ventures and governmental initiatives aimed at fostering nuclear innovation. Although the deployment of new reactor technologies will depend upon myriad factors, the availability of an efficient NRC licensing scheme – which includes the agency's environmental review process – is imperative.

### **I. The current US nuclear power reactor fleet – A vital but challenged component of the electrical grid**

Continued US nuclear generation – both by the current fleet of large light-water reactors (LWRs) and next-generation advanced reactors – is crucial for many reasons. In 2019, nearly 20% of US total energy generation, and approximately 55% of the nation's carbon-free emissions electricity (more than all other sources combined) came from nuclear power plants.<sup>4</sup> US nuclear power plants also are high performers. According to US Energy Information Administration (EIA) data on power plant operations, nine of the ten US power plants that generated the most electricity in 2019 were nuclear plants.<sup>5</sup> US nuclear power plants also achieved their highest electricity generation in 2019, despite the recent premature plant shutdowns.<sup>6</sup> In fact, from 2014 to 2019, total US nuclear electricity generation increased from 797.2 to 809.4 billion kilowatt-hours.<sup>7</sup> The US nuclear power fleet also achieved its highest average capacity factor ever (93.4%) in 2019 and lowest average total electricity generating cost (USD 30.14 per megawatt-hour) since 2002.<sup>8</sup>

Nuclear power plants have a number of unique attributes relative to other energy sources, such as long asset lifetime and reliability, very high energy density and capacity, and long refuelling intervals.<sup>9</sup> They also help maintain grid stability and offset impacts of fluctuations in renewable energy production.<sup>10</sup> This is especially important as renewable energy sources (mainly solar and wind) continue to account for increasingly larger shares of the US electric generation portfolio.<sup>11</sup> In short, nuclear power is critical to the ability of

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4. Nuclear Energy Institute (NEI) (2020), *Nuclear by the Numbers*, NEI, Washington, DC, pp. 7, 11, available at [www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/nei-nuclear-by-the-numbers-092520-final.pdf](http://www.nei.org/CorporateSite/media/filefolder/resources/fact-sheets/nei-nuclear-by-the-numbers-092520-final.pdf).
  5. US Energy Information Administration (EIA) (2020), *Today in Energy*, “In 2019, 9 of the 10 highest-generating U.S. power plants were nuclear plants” (25 Sept. 2020), available at [www.eia.gov/todayinenergy/](http://www.eia.gov/todayinenergy/).
  6. NEI (2020), *supra* note 4, p. 9.
  7. *Ibid.*
  8. *Ibid.*, pp. 10, 12.
  9. Electric Power Research Institute (EPRI) (2018), *Exploring the Role of Advanced Nuclear in Future Energy Markets: Economic Drivers, Barriers, and Impacts in the United States*, Report 3002011803, p. 1-1, available at [www.epri.com/research/products/000000003002011803](http://www.epri.com/research/products/000000003002011803).
  10. Krikorian, S. (2019), “Nuclear and Renewables: Playing Complementary Roles in Hybrid Energy Systems”, International Atomic Energy Agency (IAEA), [www.iaea.org/newscenter/news/nuclear-and-renewables-playing-complementary-roles-in-hybrid-energy-systems](http://www.iaea.org/newscenter/news/nuclear-and-renewables-playing-complementary-roles-in-hybrid-energy-systems).
  11. EIA (2020), “Annual Energy Outlook 2020 with projections to 2050”, p. 62, available at [www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf](http://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Full%20Report.pdf).

the United States – which has re-joined the 2015 Paris Agreement – to provide a diverse and reliable source of baseload generation that can complement renewable energy sources by producing dispatchable, zero-emission electricity from a relatively small geographic footprint.<sup>12</sup>

Nuclear power plants also provide significant economic, technical and national security benefits. Because plant construction and operation require highly skilled workforces, they are catalysts for economic growth and job creation.<sup>13</sup> The United States also earns revenues from exporting fuel, equipment and technical services to other countries with nuclear power programmes.<sup>14</sup> These exports, in turn, “fortify US efforts to maintain international standards that ensure safe operation of nuclear power plants and leadership of global nonproliferation through deep and long-lasting trade relationships that enable US influence in key foreign policy areas.”<sup>15</sup> Additionally, maintaining a robust civilian nuclear energy programme helps ensure the availability of the technological expertise and infrastructure necessary for the United States to be a leader in nuclear technology innovation and compete in the global marketplace.<sup>16</sup>

Despite its vital contributions and consistently high performance levels, the US commercial nuclear industry faces challenges. Nearly half of the current fleet operates in deregulated “merchant” markets, where power is sold competitively on a short-term basis.<sup>17</sup> In these deregulated markets, regional transmission organisations (RTOs) and independent system operators (ISOs) operate the grid, using free-market auctions and longer-term power purchase agreements under federal arrangements and rules.<sup>18</sup> A glut of low-cost gas from shale gas production and subsidised wind and solar power with priority grid access have undercut nuclear power’s competitiveness in such markets.<sup>19</sup> The nearly 10% reduction in the number of operating nuclear units over the past 7 years (from 104 to 94 units) – and the looming prospect of other plant retirements – are testament to these inauspicious market conditions.<sup>20</sup>

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12. Atlantic Council Task Force on US Nuclear Energy Leadership (Atlantic Council) (2019), *U.S. Nuclear Energy Leadership: Innovation and the Strategic Global Challenge*, pp. 4, 8, available at [www.atlanticcouncil.org/wp-content/uploads/2019/05/US\\_Nuclear\\_Energy\\_Leadership-.pdf](http://www.atlanticcouncil.org/wp-content/uploads/2019/05/US_Nuclear_Energy_Leadership-.pdf). See also Luongo, K. and M. Korsnick (2019), *Advancing Nuclear Innovation: Responding to Climate Change and Strengthening Global Security*, Global Nexus Initiative, Washington, DC.
  13. EPRI (2018), *supra* note 9, p. 1-4.
  14. Atlantic Council (2019), *supra* note 12, p. 4.
  15. *Ibid.*
  16. *Ibid.*, pp. 4, 7.
  17. World Nuclear Association (WNA) (2020), “Nuclear Power in the USA”, [www.world-nuclear.org/information-library/country-profiles/countries-t-z/usa-nuclear-power.aspx](http://www.world-nuclear.org/information-library/country-profiles/countries-t-z/usa-nuclear-power.aspx).
  18. *Ibid.*
  19. *Ibid.* Some states have sought to establish climate policies and enact legislation that also compensate nuclear plants for their firm, carbon-free electricity (e.g. clean-energy standards that add nuclear energy to state renewable portfolio standards and zero-emissions credits). But those initiatives have encountered roadblocks at the federal level, insofar as they conflict with the Federal Energy Regulatory Commission’s (FERC) current approach to regulating US competitive wholesale power markets. See e.g. Stone, A. “Energy Regulator FERC Finds Itself Cornered Over Climate Change”, *Forbes* (1 Nov. 2020). Notably, FERC recently issued for a public comment a policy statement to encourage efforts to incorporate a state-determined carbon price in organised wholesale electricity markets. FERC, Carbon Pricing in Organized Wholesale Electricity Markets; Notice of Proposed Policy Statement, 85 Fed. Reg. 66965 (21 Oct. 2020). On 16 November 2020, the US nuclear industry provided comments on the proposed policy statement, expressing support for policies that appropriately value the carbon-free attribute of nuclear energy and emphasising that this includes properly designed and implemented wholesale market rules incorporating a state-determined carbon price. NEI (2020), “Nuclear Energy Institute Comments on the Commission’s Proposed Carbon Pricing Policy Statement”, FERC Docket No. AD20-14-000, NEI, Washington, DC.
  20. NEI (2020), *supra* note 4, pp. 4, 18, 19.

The current fleet is also ageing. The average age of operating US reactors is 38 years, with a planned life expectancy of another 22 years (including 20-year extensions of the original 40-year licences).<sup>21</sup> If these plants retire after 60 years of operation (or sooner due to premature retirements), 22 GWe of new nuclear capacity would be needed by 2030 and 55 GWe by 2035 to maintain a 20% nuclear share.<sup>22</sup> While these forecasted needs may be offset to some degree by subsequent (i.e. second) licence renewals (SLRs) that allow some plants to operate up to 80 years,<sup>23</sup> and the addition of the new Vogtle Units 3 and 4 in the state of Georgia by the end of 2022, adding new nuclear capacity on this scale and time frame is a Herculean task.<sup>24</sup> Thus, unless the US expeditiously deploys new reactors, nuclear power's relative contribution to the grid will inevitably decline.

Such a decline in nuclear energy's relative contribution to the grid would have serious ramifications. While the EIA predicts that renewables' share of US electrical generation will double from 19% to 38% by 2050, forecasted reductions in nuclear and coal would necessitate a significant expansion of natural gas-fired generation.<sup>25</sup> This would undercut efforts to reduce greenhouse gas emissions and their adverse environmental and economic effects. In addition, the continuing erosion of the US nuclear power reactor fleet and associated workforce/technical infrastructure undermines the nation's ability to compete for new nuclear projects abroad, especially in emerging markets being targeted by Russia and China.<sup>26</sup> It also raises national security and geopolitical concerns, insofar as "the US capacity to protect and influence the international nuclear regulatory and export-control system will most likely decline", and "a robust civilian nuclear industry supports the nuclear elements of the national security establishment", including certain military and space-related applications of nuclear technologies.<sup>27</sup>

## II. The current push to develop and deploy advanced nuclear reactors

The foregoing concerns have led to a groundswell of private and governmental support for the development and commercialisation of advanced nuclear reactor technologies in the United States. As a result, advanced reactor development efforts have gained considerable

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21. EIA (2020), *Nuclear explained*, "U.S. Nuclear Industry", [www.eia.gov/energyexplained/nuclear/us-nuclear-industry.php](http://www.eia.gov/energyexplained/nuclear/us-nuclear-industry.php).
  22. WNA (2020), *supra* note 17.
  23. Almost all currently-operating units have secured initial licence renewals from the NRC, and four units already have obtained subsequent licence renewals from the NRC. Four other units have applications pending NRC review. Additional units are expected to seek subsequent licence renewals in the near future. NEI (2020), *supra* note 4, pp. 21-22; NRC (2020), "Status of Subsequent License Renewal Applications", [www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html](http://www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html); NEI (2020), "Second License Renewal Filings for U.S. Nuclear Power Plants", [www.nei.org/resources/statistics/second-license-renewal-filings-for-u-s-nuclea](http://www.nei.org/resources/statistics/second-license-renewal-filings-for-u-s-nuclea).
  24. While the NRC received 18 combined licence (COL) applications for construction and operation of advanced LWRs, 10 of those applications were withdrawn or suspended by the applicants. Further, while the NRC issued COLs for the remaining eight applications, only two new units are actually being built (Southern Company's Vogtle Units 3 and 4) and slated for near-term operation (by 2022). NRC (2020), "Combined License Applications for New Reactors", [www.nrc.gov/reactors/new-reactors/col.html](http://www.nrc.gov/reactors/new-reactors/col.html); Georgia Power, News Release, "Georgia Power completes Cold Hydro Testing on Vogtle Unit 3", [www.georgiapower.com/company/plant-vogtle/vogtle-news/2020-articles/completes-cold-hydro-testing-on-vogtle-unit-3.html](http://www.georgiapower.com/company/plant-vogtle/vogtle-news/2020-articles/completes-cold-hydro-testing-on-vogtle-unit-3.html) (18 Oct. 2020).
  25. EIA (2020), *Today in Energy*, "EIA expects U.S. electricity generation from renewables to soon surpass nuclear and coal" (30 Jan. 2020).
  26. See Atlantic Council (2019), *supra* note 12, p. 7-12.
  27. *Ibid.*, p. 14; National Aeronautics and Space Administration (NASA), Press Release, "NASA Supports America's National Strategy for Space Nuclear Power and Propulsion" (16 Dec. 2020) (expressing support for the new Space Policy Directive-6 (SPD-6), the Nation's Strategy for Space Nuclear Power and Propulsion).

momentum.<sup>28</sup> There are already more than 70 domestic ventures in next-generation nuclear technologies, and that number continues to increase.<sup>29</sup> Such efforts constitute a key component of the US Department of Energy's (DOE) Strategic Vision for advancing nuclear energy science and technology to meet US energy, environmental, and economic needs.<sup>30</sup> As Rita Baranwal, then-Assistant Secretary for the DOE's Office of Nuclear Energy noted last year: "We do see a lot of interest from venture capitalists, philanthropists, investing in the nuclear energy sector and we certainly need to continue to leverage and take advantage of it."<sup>31</sup> Announcements of new advanced reactor projects and related collaborations (both private and public-private partnerships) have become increasingly commonplace.<sup>32</sup> These projects involve an array of advanced reactor technologies, including small modular reactors (SMR), micro-reactors, liquid metal cooled fast reactors, high-temperature gas-cooled reactors, and molten salt reactors.

As evidenced by legislative initiatives and congressional appropriations, the US Government has sought to bolster private sector efforts to develop, license and commercialise advanced nuclear technologies. In September 2018, the Nuclear Energy Innovation Capabilities Act of 2017 (NEICA) was signed into law.<sup>33</sup> NEICA authorises testing and demonstration of advanced reactors with private and public funding (through DOE's Nuclear Reactor Innovation Center), DOE's construction of a versatile test reactor or VTR (a fast-spectrum test facility for advanced nuclear fuels and materials) and cost-share grants to help fund advanced reactor licensing activities.<sup>34</sup> It also seeks to ensure that the NRC "has sufficient technical expertise to support the evaluation of applications for licenses, permits, and design certifications and other requests for regulatory approval for advanced nuclear reactors."<sup>35</sup>

The Nuclear Energy Innovation and Modernization Act (NEIMA), which was signed into law in January 2019,<sup>36</sup> directs the NRC to develop a licensing process for advanced nuclear reactors within two years and to complete a "technology-inclusive" licensing framework for optional use by advanced reactor designers by 2027.<sup>37</sup> NEIMA also directs the NRC to

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28. See Hayunga, R. (2020), "What's Next for Nuclear Energy in 2021", NEI Blog – Climate, [www.nei.org/news/2020/whats-next-for-nuclear-energy-2021](http://www.nei.org/news/2020/whats-next-for-nuclear-energy-2021); Nichol, M. (2020), "Increased Buzz Around Advanced Reactors Signals More Momentum for Carbon-Free Energy", NEI Blog – Advanced Nuclear, [www.nei.org/news/2020/whats-next-for-nuclear-energy-2021](http://www.nei.org/news/2020/whats-next-for-nuclear-energy-2021).
  29. See Third Way (2018), "Keeping Up with the Advanced Nuclear Industry", <https://advancednuclearenergy.org/blog/keeping-up-with-the-advanced-nuclear-industry>; Gateway for Accelerated Innovation of Nuclear (GAIN) (2019), *Advanced Nuclear Directory*, Sixth Edition, Nov. 2019, Rev.06.23.2020, available at <https://gain.inl.gov/SitePages/Industry.aspx>.
  30. DOE (2021), "Office of Nuclear Energy: Strategic Vision", [www.energy.gov/sites/prod/files/2021/01/f82/DOE-NE%20Strategic%20Vision%20Web%20-%2001.08.2021.pdf](http://www.energy.gov/sites/prod/files/2021/01/f82/DOE-NE%20Strategic%20Vision%20Web%20-%2001.08.2021.pdf).
  31. Viegas Assumpcao, L. (2020), "Nuclear Key to the Clean Energy Transition – Conclusions of the 2020 IAEA Scientific Forum", IAEA, [www.iaea.org/newscenter/news/nuclear-key-to-the-clean-energy-transition-conclusions-of-the-2020-iaea-scientific-forum](http://www.iaea.org/newscenter/news/nuclear-key-to-the-clean-energy-transition-conclusions-of-the-2020-iaea-scientific-forum).
  32. See e.g. Redmond, E. (2021), "Reactor Developers Are Building a Pipeline of Carbon-Free Technology", NEI Blog – Advanced Nuclear, [www.nei.org/news/2021/reactor-developers-building-pipeline-carbon-free](http://www.nei.org/news/2021/reactor-developers-building-pipeline-carbon-free); Patel, S., "DOE Has Chosen Advanced Nuclear Reactor Demonstration Winners", *POWER* (8 Oct. 2020).
  33. Nuclear Energy Innovation Capabilities Act of 2017 (NEICA), P.L. 115-248 (28 Sept. 2018), available at: [www.congress.gov/bill/115th-congress/senate-bill/97](http://www.congress.gov/bill/115th-congress/senate-bill/97).
  34. *Ibid.*
  35. *Ibid.*, sec. 958(e)(1)(B).
  36. Nuclear Energy Innovation and Modernization Act (NEIMA), P.L. 115-439, 132 Stat. 5565 (14 Jan. 2019), available at [www.congress.gov/bill/115th-congress/senate-bill/512](http://www.congress.gov/bill/115th-congress/senate-bill/512).
  37. *Ibid.*, sec. 103(a)(4). The Commission has directed the NRC staff to issue the final rule required by NEIMA by October 2024. See Memorandum to M. Doane, Executive Director of Operations (EDO) from A. Vietti-Cook, Secretary of the Commission (2 Oct. 2020), "Staff Requirements – SECY-20-0032, Rulemaking Plan on 'Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (RIN-3150-AK31; NRC-2019-0062)'" (ADAMS Accession No. ML20276A293). ADAMS stands for Agencywide Documents Access and

revise its licensing-fee structure and train staff needed to review advanced reactor submissions, and authorises annual appropriations for these activities.<sup>38</sup>

More recently, the proposed American Nuclear Infrastructure Act of 2020 (ANIA) (S. 4897) seeks to re-establish US international competitiveness and global leadership in nuclear power. This draft bill contains numerous provisions that are relevant to advanced reactors and mirror certain objectives identified in DOE's recently-issued strategy to revive and expand the nuclear energy sector.<sup>39</sup> Among other things, the ANIA seeks to:

- empower the NRC to lead in international forums to develop regulations for advanced nuclear reactor designs;
- revise the Atomic Energy Act of 1954, as amended (AEA)<sup>40</sup> foreign ownership restriction to permit investment by allies in appropriate circumstances;
- create financial “prizes” to incentivise the successful licensing process of next-generation nuclear technologies and fuels;
- require the NRC to report to Congress on unique licensing issues related to the flexible operation of nuclear reactors and the use of advanced manufacturing processes and construction techniques;
- direct the NRC to enter into a memorandum of understanding with DOE to support the development and approval of advanced nuclear fuels referred to as high-assay, low-enriched uranium (HALEU); and
- require the NRC to consult with DOE and CEQ to identify potential ways to *streamline the environmental review process for advanced reactors*, including revising current regulations or issuing new regulations to establish a technology-inclusive, risk-informed environmental review process for advanced reactors.<sup>41</sup>

Congress has appropriated substantial funding for DOE-administered programmes aimed at fostering the development and demonstration of advanced reactor technologies. Chief among these programmes is the Advanced Reactor Demonstration Program (ARDP), which establishes the framework for public-private cost-sharing in several demonstration projects that will yield “reliable, cost effective, licensable, and commercially operational

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Management System, which is the NRC's official system for accessing publicly available documents. The documents referenced in this article with an ADAMS number can be accessed with the “Advanced Search” option and searching the “Accession Number” on the NRC's ADAMS website, at: <https://adams.nrc.gov/wba/>.

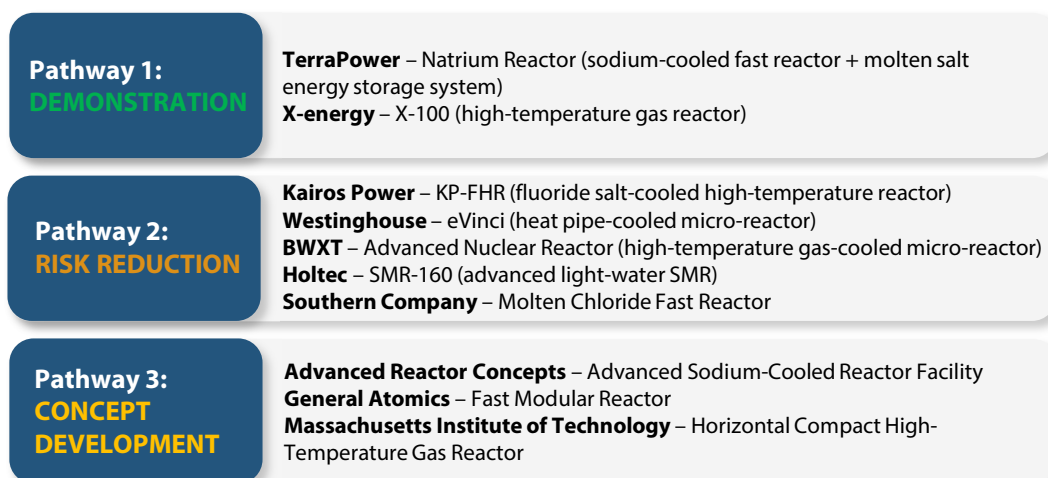
38. NEIMA, secs. 101, 102, 103(a)(5), (6).

39. DOE (2020), *Restoring America's Competitive Nuclear Energy Advantage*, Nuclear Fuel Working Group (23 Apr. 2020), available at [www.energy.gov/strategy-restore-american-nuclear-energy-leadership](http://www.energy.gov/strategy-restore-american-nuclear-energy-leadership).

40. Pub. L. No. 83-703, 68 Stat. 919 (original text of the 1954 Act). The AEA, as amended, is codified at 42 USC 2011-2021, 2022-2286i, 2296a-2297h-13.

41. Roma, A. (2020), “The American Nuclear Infrastructure Act provides bipartisan support for nuclear innovation in the United States”, Atlantic Council, [www.atlanticcouncil.org/blogs/energysource/the-american-nuclear-infrastructure-act-provides-bi-partisan-support-for-nuclear-innovation-in-the-united-states/](http://www.atlanticcouncil.org/blogs/energysource/the-american-nuclear-infrastructure-act-provides-bi-partisan-support-for-nuclear-innovation-in-the-united-states/). There are numerous other proposed bills related to advanced nuclear generation. Broadly speaking, these bills seek to require DOE to establish a programme to support the availability of HALEU as fuel for advanced reactors; establish and fund advanced nuclear research and development and demonstration programmes; establish a power purchase agreement programme for new reactors; and develop a nuclear energy strategic plan. These draft bills include, for example, the Nuclear Energy Leadership Act (S. 903/H.R. 3306), the Advanced Nuclear Energy Technologies Act (H.R. 3358), Nuclear Energy Renewal Act of 2019 (S. 2368), the Nuclear Energy Research and Development Act (H.R. 6097), Advanced Nuclear Fuel Availability Act (H.R. 1760).

designs.”<sup>42</sup> Under the ARDP, which has three “pathways”, DOE will invest a total of USD 3.2 billion over seven years (subject to the availability of future appropriations) with industry partners providing matching funds. On 13 October 2020, DOE announced that two reactor developers have each secured USD 80 million in funding under the first pathway to test, license and build operational reactors within 5-7 years: TerraPower LLC for its Natrium system, a sodium fast reactor paired with a molten salt energy storage system; and X-energy LLC for its high-temperature, gas-cooled reactor design, Xe-100.<sup>43</sup> Under the second pathway, DOE selected five advanced reactor teams to receive a total of USD 30 million in funding to support demonstration within 10-14 years.<sup>44</sup> Under the third pathway, DOE recently selected three teams to receive a total of USD 20 million funding to solidify concepts to mature technologies for potential demonstration in the mid-2030s. Figure 1 lists the ARDP award recipients and their associated technologies.<sup>45</sup>



**Figure 1. Companies Receiving US DOE Advanced Reactor Development Program Funding Awards**

Figure: M.J. O'Neill. Source of information presented: DOE (2021), “Advanced Reactor Demonstration Program”, [www.energy.gov/ne/nuclear-reactor-technologies/advanced-reactor-demonstration-program](http://www.energy.gov/ne/nuclear-reactor-technologies/advanced-reactor-demonstration-program).

42. DOE (2020), “U.S. Department of Energy Advanced Reactor Demonstration Program”, [www.id.energy.gov/NEWS/ARDFO/ARDFOopportunities/ARDFO.htm](http://www.id.energy.gov/NEWS/ARDFO/ARDFOopportunities/ARDFO.htm).
43. DOE, News Release, “U.S. Department of Energy Announces \$160 Million in First Awards under Advanced Reactor Demonstration Program” (13 Oct. 2020).
44. DOE, News Release, “Energy Department’s Advanced Reactor Demonstration Program Awards \$30 Million in Initial Funding for Risk Reduction Projects” (16 Dec. 2020).
45. DOE, News Release, “Energy Department’s Advanced Reactor Demonstration Program Awards \$20 million for Advanced Reactor Concepts” (22 Dec. 2020).

On 16 October 2020, DOE approved a USD 1.4 billion award to fund the Carbon Free Power Project (CFPP), a potential 12-module, 720 MWe NuScale SMR plant that the Utah Associated Municipal Power Systems (UAMPS) is developing for a site at an Idaho National Laboratory (INL) site in Idaho Falls, Idaho.<sup>46</sup> The first of CFPP's 12 modules is planned to begin operation in 2029, and the other 11 modules could begin operations in 2030. UAMPS reportedly plans to submit an application to construct and operate the plant to the NRC in 2023.

In addition to these projects and DOE's continued support of the VTR project, for which DOE recently issued a draft environmental impact statement,<sup>47</sup> DOE is backing other funding programmes for advanced nuclear technology developers.<sup>48</sup> For example, on 8 October 2020, DOE awarded USD 26.9 million (including industry cost-share contributions) to three nuclear technology projects, two of which aim to advance flexible operation of LWRs with integrated hydrogen production systems. These awards were made through the Office of Nuclear Energy's funding opportunity announcement (FOA) "U.S. Industry Opportunities for Advanced Nuclear Technology Development" in collaboration with the DOE's Hydrogen and Fuel Cell Technologies Office. DOE also continues to support the Gateway for Accelerated Innovation in Nuclear (GAIN) voucher programme based at the Idaho National Laboratory.<sup>49</sup>

In December 2020, then-President Trump signed into law an omnibus spending bill (the Consolidated Appropriations Act of 2021), which funds USD 900 billion in coronavirus relief and appropriates USD 1.4 trillion in government spending for fiscal year 2021 (1 October 2020 – 30 September 2021). The total appropriation for DOE is USD 42.04 billion, which includes USD 1.5 billion allocated for nuclear energy research, development and demonstration activities, including USD 280 million for the ADRP. Title II of the Energy Act of 2020 (located at "Division Z" of the spending bill) includes numerous programmes to support US innovation in the areas of fission and fusion.<sup>50</sup>

These initiatives have helped spur tangible progress on the advanced reactor licensing front. The NRC issued its final safety evaluation report for NuScale's SMR design certification application in August 2020.<sup>51</sup> The NRC currently is reviewing Oklo's Aurora micro-reactor licence application,<sup>52</sup> and at least six other non-LWR reactor designers are engaged in pre-application activities with the NRC.<sup>53</sup> In addition, as major US utilities announce plans to curtail or eliminate carbon emissions, they continue to identify advanced nuclear as a potential option.<sup>54</sup>

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46. DOE, News Release, "DOE Approves Award for Carbon Free Power Project" (16 Oct. 2020).  
 47. DOE, News Release, "U.S. Department of Energy Releases Draft Environmental Impact Statement for Versatile Test Reactor" (21 Dec. 2020).  
 48. See DOE (2020), "Funding Opportunities", [www.energy.gov/ne/initiatives/funding-opportunities](http://www.energy.gov/ne/initiatives/funding-opportunities).  
 49. See Gateway for Accelerated Innovation in Nuclear, <https://gain.inl.gov/SitePages/Home.aspx>.  
 50. See WNA (2020), "Congress approves nuclear energy funding for FY2021", [www.world-nuclear-news.org/Articles/Congress-approves-nuclear-energy-funding-for-FY2021](http://www.world-nuclear-news.org/Articles/Congress-approves-nuclear-energy-funding-for-FY2021); Desai, S. and A. Roma (2020), "Energy Act of 2020—Variety of Provisions for Fission and Fusion", Hogan Lovells – New Nuclear, [www.hlnuclear.com/](http://www.hlnuclear.com/).  
 51. NRC, News Release, "NRC Issues Final Safety Evaluation Report for NuScale Small Modular Reactor", NRC News Release No. 20-043 (28 Aug. 2020).  
 52. NRC (2020), "Combined License Application Documents for Aurora – Oklo Power Plant Application", [www.nrc.gov/reactors/new-reactors/col/aurora-oklo/documents.html](http://www.nrc.gov/reactors/new-reactors/col/aurora-oklo/documents.html).  
 53. NRC (2020), "Advanced Reactor Details – Pre-Application Activities", [www.nrc.gov/reactors/new-reactors/advanced/details.html#preAppAct](http://www.nrc.gov/reactors/new-reactors/advanced/details.html#preAppAct).  
 54. See e.g. St. John, J. (2020), "The 5 Biggest US Utilities Committing to Zero Carbon Emissions by 2050", Greentech Media, [www.greentechmedia.com/articles/read/the-5-biggest-u-s-utilities-committing-to-zero-carbon-emissions-by-mid-century](http://www.greentechmedia.com/articles/read/the-5-biggest-u-s-utilities-committing-to-zero-carbon-emissions-by-mid-century).



Due to foregoing developments, the industry and NRC have been considering ways to enhance both the safety and environmental components of the NRC's licensing process for advanced reactors.<sup>55</sup> This article focuses on the latter. Part 2 describes the NRC's current environmental review process (as shaped by the relevant statutory and regulatory requirements), and Part 3 discusses key actions aimed at improving that process.

## **PART 2: AN OVERVIEW OF NEPA'S REQUIREMENTS AND THE NRC'S ENVIRONMENTAL REVIEW PROCESS**

As a federal agency, the NRC is subject to NEPA and must assess the environmental effects of its proposed actions, including issuing reactor licences. The NRC complies with NEPA principally through its regulations in 10 CFR Part 51, "Environmental protection regulations for domestic licensing and related regulatory functions". This part provides an overview of NEPA's requirements, as implemented through CEQ regulations; the NRC's Part 51 regulations; and the US nuclear industry's experience with the NRC's environmental review process.

### **I. NEPA and CEQ regulations**

NEPA, which is sometimes called the "Magna Carta" of US environmental laws,<sup>56</sup> requires federal agencies to "include in every recommendation or report on ... major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on ... the environmental impact of the proposed action."<sup>57</sup> This environmental impact statement (EIS) serves two primary purposes: (1) to ensure that federal agencies take a "hard look" at the environmental consequences of a federal action, including alternatives thereto, before reaching major decisions; and (2) to inform the public, Congress and other agencies of those consequences.<sup>58</sup> NEPA is a procedural statute that does not mandate substantive results; i.e. "the statute is primarily information-forcing."<sup>59</sup> NEPA "directs agencies only to look hard at the environmental effects of their decisions, and not to take one type of action or another."<sup>60</sup>

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55. Related activities include, for example, the development of new policy documents, guidance documents and rulemakings. With regard to the safety portion of the licensing process (which is outside the scope of this article), key industry and NRC initiatives include: (1) the Licensing Modernization Project (LMP), a cost-shared initiative being led by the industry and supported by DOE; (2) the Technology-Inclusive Content of Applications Project (TICAP), an industry-led and DOE cost-shared effort to develop technology-inclusive guidance regarding the content for specific portions of the safety analysis report that would be used to support an advanced reactor application; (3) the NRC's Advanced Reactor Content of Application Project (ARCAP), which seeks to develop technology-inclusive, risk-informed and performance-based advanced reactor application guidance; and (4) the NRC's ongoing development of a new part to its regulations, 10 CFR Part 53, to provide a technology-inclusive regulatory framework for advanced nuclear reactors. See NRC (2020), "Advanced Reactors (non-LWR designs)", [www.nrc.gov/reactors/new-reactors/advanced.html](http://www.nrc.gov/reactors/new-reactors/advanced.html), for detailed information on these efforts.

56. Mandelker, D. (2020), *NEPA Law and Litigation*, Sec. 1:1 (2d ed. 2020), Thomson Reuters, Eagan, MN.

57. 42 USC 4332(2)(C)(i).

58. Private Fuel Storage L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-25, 56 NRC 340, 347 (2002) (citing *Robertson v. Methow Valley Citizens Council*, 490 US 332, 349 (1989); *Baltimore Gas and Electric Co. v. Natural Resource Defense Council, Inc.*, 462 US 87, 97 (1983); *Dubois v. US Department of Agriculture*, 102 F.3d 1273, 1291 (1st Cir. 1996)).

59. *Sierra Club v. FERC*, 867 F.3d 1357, 1367 (DC Cir. 2017). See also *Methow Valley Citizens Council*, *supra* note 58, pp. 350-351 ("[I]t is now well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process.").

60. *Sierra Club*, *supra* note 59, p. 1367 (quoting *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 194 (DC Cir. 1991)).

NEPA established the Council on Environmental Quality, or CEQ, within the Executive Office of the President to oversee NEPA's implementation by federal agencies, primarily through regulations and guidance it has issued interpreting NEPA's procedural requirements.<sup>61</sup> As set forth in CEQ's regulations, the preparation of an EIS, when required, is a multi-staged process that begins with the lead agency's publication of a notice of intent to prepare an EIS (NOI) in the *Federal Register*.<sup>62</sup> Among other things, the NOI describes the proposed action and the reasons therefor, describes the public scoping process (including any scoping meetings) and seeks public comments on related environmental issues.<sup>63</sup> The scoping process is used to determine the scope of significant issues to be analysed in depth in the EIS.<sup>64</sup>

The lead agency next prepares a draft EIS that analyses the potential environmental impacts of the proposed action and one or more alternative ways of achieving the desired outcome.<sup>65</sup> The draft EIS compares the impacts that are likely to result from the proposed action and each alternative, including the impacts that would result from maintaining the *status quo* (the "no action alternative").<sup>66</sup> The agency also solicits public comments on the draft EIS.<sup>67</sup> It then reviews and assesses those comments, revises the EIS as necessary, and responds to the comments as appropriate in the final EIS.<sup>68</sup> The agency also must publish a record of decision (ROD).<sup>69</sup>

Many federal actions do not involve significant environmental impacts and therefore do not require an EIS. In those instances, two other procedural options are available. First, NEPA authorises agencies to issue regulations specifying "categorical exclusions" – categories of actions that normally do not have a significant effect on the human environment.<sup>70</sup> Actions that fall within one of these categorical exclusions can be approved without an EIS, provided that the action does not involve "extraordinary circumstances" that cannot be mitigated.<sup>71</sup>

Second, actions that do not qualify for a categorical exclusion still may not require preparation of an EIS if a federal agency prepares an environmental assessment (EA) and determines that the proposed action would not cause significant impacts.<sup>72</sup> If projected impacts are not significant, then the agency may complete the NEPA review process by issuing a "finding of no significant impact" (FONSI).<sup>73</sup> In some cases, the agency may issue a "mitigated FONSI", which includes measures to reduce the impact of the proposed project to a level that is not significant.<sup>74</sup> Otherwise, an EIS is required. Figure 2 below illustrates the major steps in the NEPA review process.

61. See 42 USC 4321, 4341-4346b; 40 CFR Parts 1500-1508.

62. 40 CFR 1501.9(d), "Scoping"; 40 CFR 1508.1, "Definitions" (defining "notice of intent").

63. 40 CFR 1501.9(d)(1)-(8).

64. 40 CFR 1501.9(e). The scope "consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement." 40 CFR 1508.1(cc).

65. 40 CFR 1501.9(d); 40 CFR 1502.9(b), "Draft, final, and supplemental statements"; 40 CFR 1502.17, "Summary of submitted alternatives, information, and analyses".

66. 40 CFR 1501.9(e)(1), 40 CFR 1502.14, "Alternatives including the proposed action".

67. 40 CFR 1503.1(a), "Inviting comments and requesting information and analyses".

68. 40 CFR 1502.9(c); 40 CFR 1502.17, "Summary of submitted alternatives, information, and analyses"; 40 CFR 1503.4, "Response to comments".

69. 40 CFR 1505.2, "Record of decision in cases requiring environmental impact statements". If an agency identifies significant deficiencies in the EIS, substantial changes to the proposed action, or other significant new circumstances or information relevant to environmental concerns, it may prepare a revised or supplemental EIS.

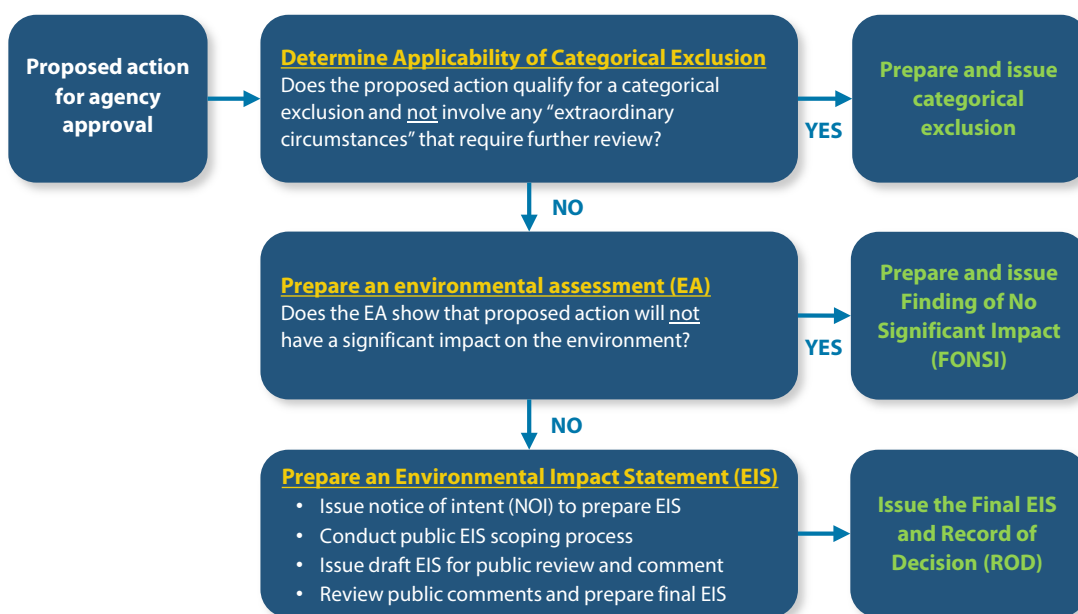
70. 40 CFR 1501.4, "Categorical exclusions"; 40 CFR 1507.3(e)(2)(ii), "Agency NEPA procedures"; 40 CFR 1508.1(d), "Definitions".

71. 40 CFR 1501.4(b)(1)-(2), "Categorical exclusions".

72. 40 CFR 1501.5, "Environmental assessments".

73. 40 CFR 1501.6(a), "Findings of no significant impact".

74. 40 CFR 1501.6(c), "Findings of no significant impact".



**Figure 2. Overview of the NEPA review process**

Figure: M.J. O’Neill. Source for information presented: CEQ and Advisory Council on Historic Preservation (ACHP) (2013), “NEPA and NHPA: A Handbook for Integrating NEPA and Section 106”, CEQ and ACHP, Washington, DC, p. 9, [www.achp.gov/sites/default/files/2017-02/NEPA\\_NHPA\\_Section\\_106\\_Handbook\\_Mar2013\\_0.pdf](http://www.achp.gov/sites/default/files/2017-02/NEPA_NHPA_Section_106_Handbook_Mar2013_0.pdf).

## II. The NRC’s environmental review process

As required by NEPA, the NRC has established an administrative process for evaluating the potential environmental impacts of proposed NRC licensing actions. It has been the NRC’s longstanding policy that, as an independent regulatory agency, it is not bound by those portions of CEQ’s regulations that “have a substantive impact on the way in which the Commission performs its regulatory functions.”<sup>75</sup> Nevertheless, the NRC looks to CEQ regulations for guidance and gives them “substantial deference.”<sup>76</sup>

To meet NEPA’s requirements, the NRC may prepare EAs or EISs in connection with certain proposed NRC licensing actions. The NRC prepares an EIS when it undertakes any action determined to be a “major Federal action significantly affecting the quality of the human environment.”<sup>77</sup> 10 CFR 51.20(b) identifies and sets forth criteria for NRC licensing and regulatory actions that *require* preparation of an EIS.<sup>78</sup> Those activities include a permit to construct a nuclear power reactor, testing facility, or fuel reprocessing plant (under Part 50) or an early site permit (ESP), operating licence, combined licence (COL), or licence renewal (under Part 52).<sup>79</sup>

75. Pacific Gas & Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 & 2), CLI-11-11, 74 NRC 427, 443-44 (2011) (citations omitted). See also 10 CFR 51.10(a).

76. See Dominion Nuclear North Anna, LLC (Early Site Permit for North Anna ESP Site), CLI-07-27, 66 NRC 215, 235-36 & n. 115 (2007); Powertech (USA) Inc. (Dewey-Burdock In Situ Uranium Recovery Facility), CLI-20-9, 92 NRC \_\_, \_\_ (2020) (*slip op.* at 9, 10) (noting that as an independent regulatory agency, the NRC is not bound by CEQ regulations unless they are adopted into 10 CFR Part 51).

77. 10 CFR 51.20(a)(1), “Criteria for and identification of licensing and regulatory actions requiring environmental impact statements”.

78. 10 CFR 51.20(b).

79. 10 CFR 51.20(b)(1)-(2).

For those actions that are not listed in 10 CFR 51.20(b) as requiring an EIS or are not covered by a categorical exclusion,<sup>80</sup> the NRC prepares an EA.<sup>81</sup> An EA documents the evaluation of whether an action constitutes a major federal action significantly affecting the quality of the human environment.<sup>82</sup> If the review documented in the EA demonstrates that the proposed action will not have a significant impact on the environment, then the NRC prepares a FONSI in accordance with the criteria of 10 CFR 51.32, and no EIS is required.<sup>83</sup> If the environmental review documented in the EA reveals that the proposed action will, or has the potential to, significantly affect the human environment, and mitigation of the impacts of concern is not viable, then the NRC must prepare an EIS.<sup>84</sup>

The NRC's environmental review process often begins before an entity submits a licence application to the NRC in the form of pre-application meetings and other interactions between the prospective applicant and NRC staff. NRC regulations encourage such pre-application activities, which allow the staff to become familiar with the proposed project and with the application's anticipated contents.<sup>85</sup> These activities also enable the staff to identify and secure the necessary expertise and resources for its NEPA review, estimate review times, provide information and feedback to prospective applicants regarding the agency's environmental review process, and determine whether the environmental portion of the application appears ready for submission.<sup>86</sup> In addition, before application submittal, the NRC staff may establish contacts with other federal, state and local agencies, and hold public outreach meetings.<sup>87</sup>

As part of its application, a licence applicant must prepare an environmental report "to aid the Commission in complying with section 102(2) of NEPA."<sup>88</sup> Section 51.45 describes the general requirements that are applicable to all NRC-required environmental reports; section 51.50 contains requirements that are specific to reactor construction permit, ESP and COL applications.<sup>89</sup> The NRC has issued detailed guidance for developing the format and content of environmental reports under Part 51 for applications for licences, permits and authorisations for new reactors pursuant to 10 CFR Parts 50 and 52.<sup>90</sup> That guidance, Regulatory Guide 4.2, focuses principally on large LWRs, but Appendix C thereto provides some additional guidance that is specific to the preparation of environmental reports for applications for SMRs and non-LWRs.<sup>91</sup> Applicant environmental reports typically are very robust documents, containing detailed technical information and spanning hundreds of pages.

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80. 10 CFR 51.22, "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review". If an action falls within the scope of a listed categorical exclusion in 10 CFR 51.22(c), then the NRC does not need to prepare an EA or EIS.

81. 10 CFR 51.21, "Criteria for and identification of licensing and regulatory actions requiring environmental assessments".

82. 10 CFR 51.30, "Environmental assessment"; 10 CFR 51.31, "Determinations based on environmental assessment".

83. 10 CFR 51.32, "Finding of no significant impact"; 10 CFR 51.34, "Preparation of finding of no significant impact".

84. 10 CFR 51.31, "Determinations based on environmental assessment".

85. 10 CFR 51.40, "Consultation with NRC staff". NRC pre-application activities may include a tour of the site, discussions with applicant personnel who are familiar with the proposed site and siting process and involved in developing the applicant's environmental report, and a records assessment of the environmental portions of the application (including, for example, the availability of relevant environmental studies and environmental information).

86. See *ibid.*

87. See *ibid.*

88. 10 CFR 51.14(a), "Definitions".

89. 10 CFR 51.45, "Environmental report"; 10 CFR 51.50, "Environmental report – construction permit, early site permit, or combined license stage".

90. NRC (2018), *Preparation of Environmental Reports for Nuclear Power Stations*, Regulatory Guide 4.28, Revision 3, NRC, Washington, DC.

91. *Ibid.*, Appendix C, "Small Modular Reactors and Non-Light Water Reactors".

Upon receiving a licence application, the NRC performs an acceptance review to determine if the application (including the environmental report) contains sufficient information for purposes of docketing and detailed technical review.<sup>92</sup> For those actions requiring an EIS (which, at present, include all new reactor applications), developing an EIS involves extensive public participation as well as co-ordination with other governmental agencies or entities. After publishing the NOI, the NRC conducts a “scoping” process that includes an opportunity for public comment and may involve public meetings.<sup>93</sup> Next, it prepares a draft EIS, which it makes available for public comment.<sup>94</sup> In practice, this opportunity for public comment on the draft EIS typically includes further public meetings. The NRC then prepares its final EIS, which includes responses to the comments that it receives on the draft EIS.<sup>95</sup>

The NRC is required under NEPA section 102(2)(c) to consult with and obtain comments from any federal agency that has jurisdiction by law or special expertise with regard to any environmental impact involved in the subject matter of an EIS.<sup>96</sup> Thus, while preparing an EIS, the NRC consults and co-ordinates with various federal, state, and local agencies as well as Tribal entities.<sup>97</sup> These consultations and interagency activities relate to a number of federal laws and policies, some of which may be implemented by states via federal delegations of regulatory authority. Key examples include the Endangered Species Act of 1973, as amended;<sup>98</sup> Magnuson-Stevens Fishery Conservation and Management Act of 1976, as amended;<sup>99</sup> the National Historic Preservation Act of 1966, as amended;<sup>100</sup> the Coastal Zone Management Act of 1972, as amended;<sup>101</sup> and the Clean Water Act of 1972, as amended.<sup>102</sup>

As reflected in Part 51, the NRC’s Rules of Practice in 10 CFR Part 2 provide an opportunity for adjudicatory hearings on NEPA-related issues.<sup>103</sup> Any person seeking to

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92. See NRC (2014), *Acceptance Review Process for Early Site Permit, Design Certification, and Combined License Applications*, NRR Office Instruction NRO-REG-100, NRC, Washington, DC. The NRC performs its detailed environmental review for nuclear reactors using guidance provided in its *Standard Review Plans for Environmental Reviews for Nuclear Power Plants: Environmental Standard Review Plan for New Site/Plant Applications*, NUREG-1555 (Revised Sections) (2007).
93. See 10 CFR 51.26, “Requirement to publish notice of intent and conduct scoping process”; 10 CFR 51.27, “Notice of intent”; 10 CFR 51.28, “Scoping – participants”; 10 CFR 51.29, “Scoping – environmental impact statement and supplement to environmental impact statement”.
94. 10 CFR 51.73, “Request for comments on draft environmental impact statement”; 10 CFR 51.75, “Draft environmental impact statement – construction permit, early site permit, or combined license”.
95. 10 CFR 51.91, “Final environmental impact statement – general”; 51.91, “Final environmental impact statement – contents”.
96. 42 USC 4332(2)(C)(v).
97. See NRC (2020), “Procedural Guidance for Categorical Exclusions, Environmental Assessments, and Considering Environmental Issues”, Office Instruction LIC-203, Revision 4, Office of Nuclear Reactor Regulation (NRR), NRC, Rockville, MD (ADAMS Accession No. ML20016A379) (hereinafter NRR Office Instruction LIC-203, Rev. 4).
98. 16 USC 1531-1544.
99. 16 USC 1801-1891d.
100. 54 USC 300101-307108.
101. 16 USC 1451-1466.
102. 33 USC 1251-1387.
103. See e.g. 10 CFR 2.309(f)(vii)(2), “Hearing requests, petitions to intervene, requirements for standing, and contentions” (new or amended contentions may be filed after final EIS); 10 CFR 51.94, “Requirement to consider final environmental impact statement” (final EIS “will be made a part of the record of the appropriate adjudicatory or rulemaking proceeding”); 10 CFR 51.104(a)(1), “NRC proceeding using public hearings; consideration of environmental impact statement” (addressing timing of hearing on contested environmental issues relative to issuance of final EIS).

obtain a hearing on a licence application must file a petition to intervene demonstrating standing and proffer at least one admissible contention (a specific issue of law or fact that the petitioner seeks to have adjudicated).<sup>104</sup> The Part 2 regulations permit the filing of proposed environmental contentions based on the applicant's environmental report, and amended environmental contentions based on the NRC staff's draft or final EIS, EA or any supplements to those documents.<sup>105</sup> If admitted by an NRC Atomic Safety and Licensing Board (ASLB),<sup>106</sup> such contentions are adjudicated using the same evidentiary hearing procedures applicable to matters of public health and safety that fall within the NRC's jurisdiction under the AEA.

Under the AEA, the Commission also must hold a "mandatory" hearing on reactor construction permit, ESP and COL applications, even in the absence of any admitted contentions.<sup>107</sup> These uncontested hearings, in which only the NRC staff and applicant participate, "are 'sufficiency' reviews, designed to assess the efforts of the NRC staff and determine whether the safety and environmental record is sufficient to support the license [or permit]."<sup>108</sup>

Any Commission decision for which an EIS is prepared must include or be accompanied by the ROD, which concludes the NEPA process.<sup>109</sup> If a hearing is held on the proposed action, then the initial decision of the presiding officer will constitute the ROD.<sup>110</sup> If the proposed action can only be taken by the Commissioners acting as a collegial body, then the final decision of the Commission will constitute the ROD.<sup>111</sup>

Section 51.103 of NRC regulations specifies the required contents of the ROD. Among other things, it requires that the ROD explain the NRC's decision, describe the alternatives considered, discuss potential environmental impacts, and summarise licence conditions and monitoring programmes adopted in connection with mitigation measures.<sup>112</sup> The ROD may be integrated into any other record prepared by the NRC in connection with an action, and may incorporate by reference material contained in the final EIS.<sup>113</sup> Figure 3 below shows how NRC environmental reviews and hearings fit into the overall licensing process.

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104. 10 CFR 2.309(a), (d), "Hearing requests, petitions to intervene, requirements for standing, and contentions".

105. 10 CFR 2.309(f)(2), "Hearing requests, petitions to intervene, requirements for standing, and contentions".

106. The ASLB conducts first-level administrative adjudicatory hearings for the NRC Commission. In hearings on environmental matters, the ASLBs are generally comprised of three administrative judges – most often two technical specialists and one legal specialist – selected from the judges of the broader ASLB Panel (ASLBP). See NRC (2020), "ASLBP Responsibilities", [www.nrc.gov/about-nrc/regulatory/adjudicatory/aslbp-respons.html](http://www.nrc.gov/about-nrc/regulatory/adjudicatory/aslbp-respons.html).

107. See AEA sec. 185b., 42 USC 2235(b); AEA sec. 189, 43 USC 2239(a).

108. *Blue Ridge Environmental Defense League v. NRC*, 716 F.3d 183, 199 (DC Cir. 2013). For a recent example of a proceeding in which the Commission conducted a mandatory uncontested hearing, see *Tennessee Valley Authority (Clinch River Nuclear Site Early Site Permit Application)*, CLI-19-10, 90 NRC 209 (2019).

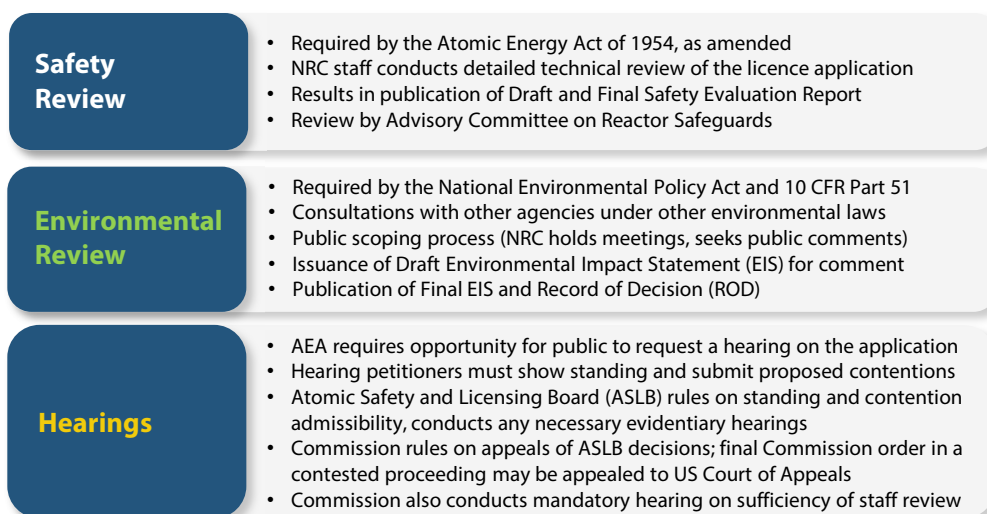
109. 10 CFR 51.102(a), "Requirement to provide a record of decision; preparation".

110. 10 CFR 51.102(c), "Requirement to provide a record of decision; preparation".

111. *Ibid.*

112. 10 CFR 51.103(a)(2)-(4), "Record of decision – general".

113. 10 CFR 51.103(b), (c), "Record of decision – general".



**Figure 3. Major components of the NRC licensing process**

Figure: M.J. O'Neill. Source of information presented. NRC (2020), "Backgrounder on Nuclear Power Plant Licensing Process", [www.nrc.gov/docs/ML0521/ML052170295.pdf](http://www.nrc.gov/docs/ML0521/ML052170295.pdf).

### III. The industry's experience with the NRC's NEPA review process

Despite its procedural nature, NEPA's implementation frequently has proven to be complicated, protracted and litigation-driven since the statute's enactment. This fact is evident from the sheer time required by agencies to complete their NEPA reviews and the voluminous nature of their environmental review documents, particularly EISs. In its most recent review, CEQ found that, across the US Federal Government, the average time for completion of an EIS and issuance of an ROD was 4.5 years and the median was 3.5 years, with one quarter of EISs requiring more than 6 years to complete (from the time of publication of an NOI to the publication of the ROD for the 2010-2018 period).<sup>114</sup> In contrast, in the 1970s, the average time for EIS completion was closer to two years.<sup>115</sup>

CEQ also found that across all federal agencies, draft EISs averaged 575 pages in total, with a median document length of 397 pages.<sup>116</sup> For final EISs, the average document length was 661 pages (a 15% increase in length from the draft EIS), the median document length was 447 pages, and one quarter of the final EISs were 748 pages or longer.<sup>117</sup> These page count data exclude the EIS appendices, which may exceed 1 000 pages due to the agency's written responses to comments on the draft EIS.

The NRC has not avoided these trends, especially in the new reactor licensing context. The NRC-specific data compiled and reviewed by CEQ indicate that the NRC's NEPA review time averaged almost 3.7 years, with a range of 1.1 years (decommissioning of an in-situ uranium recovery project in Wyoming) to 8 years or more for multiple COL applications for

114. CEQ (2020), "Environmental Impact Statement Timelines (2010-2018)", CEQ, Washington, DC, p. 1, [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Timeline\\_Report\\_2020-6-12.pdf](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Report_2020-6-12.pdf).

115. See Katz, D. (2018), "Time to Repeal the Obsolete National Environmental Policy Act (NEPA)", *Backgrounder* No. 3293 (14 Mar. 2018), The Heritage Foundation, Washington, DC, p. 2, available at: [www.heritage.org/sites/default/files/2018-03/BG3293\\_0.pdf](http://www.heritage.org/sites/default/files/2018-03/BG3293_0.pdf).

116. CEQ (2020), "Length of Environmental Impact Statements (2013-2018)", CEQ, Washington, DC, p. 1, available at [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Length\\_Report\\_2020-6-12.pdf](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Length_Report_2020-6-12.pdf).

117. *Ibid.*, p. 1.

advanced large LWRs.<sup>118</sup> For final NRC EISs, the average document length was 479 pages, and the median document length was 368 pages (excluding appendices).<sup>119</sup>

From 2007-2018, the NRC issued five ESPs and eight COLs for various advanced large LWR projects. The NRC review durations are shown in Figure 4 below. The time required for COL issuance (measured from the time of application submittal to COL issuance) ranged from four to more than eight years.<sup>120</sup> The NRC's associated environmental reviews ranged from two to seven years and averaged about four years. It is important to note that the final Vogtle and North Anna EISs were prepared as supplements to the NRC's previously-issued EISs for the ESPs for those sites and thus only required 1.5 and 2 years, respectively.<sup>121</sup> The EISs for these COL projects were especially lengthy. For example, the EIS for Southern Nuclear Company's Vogtle Units 3 and 4, a nearly-completed 2-unit expansion on an existing nuclear plant site, totalled over 1 500 pages (with appendices).<sup>122</sup>

Duration of NRC Reviews of ESP and COL Applications (in months from submittal of application)			
Early Site Permits (ESP)			
Site	Duration of NRC Environmental Review	Duration of NRC Safety Review	Duration for ESP Issuance
PSEG	63	61	69
North Anna	37	22	48
Grand Gulf	28	22	39
Clinton	32	27	40
Vogtle	22	28	35
Combined Licences (COL)			
Site	Duration of NRC Environmental Review	Duration of NRC Safety Review	Duration for COL Issuance
Fermi	50	72	77
Turkey Point 6 & 7	87	86	103
Summer	32	36	43
Vogtle 3 & 4	34	38	44
South Texas	38	94	98
North Anna	25	107	112
Levy	42	91	96
Lee	70	102	105

**Figure 4. Duration of NRC Reviews of ESP and COL Applications**

Chart: M.J. O'Neill. Sources for information presented: NRC (2020), "Combined License Applications for New Reactors", [www.nrc.gov/reactors/new-reactors/col.html](http://www.nrc.gov/reactors/new-reactors/col.html); NRC (2020), "Early Site Permit Applications for New Reactors", [www.nrc.gov/reactors/new-reactors/esp.html](http://www.nrc.gov/reactors/new-reactors/esp.html).

118. CEQ (2020), "Environmental Impact Statement Timelines (2010-2018)", *supra* note 114, p. 11; "EIS Timeline Data Excel Workbook" (Excel spreadsheet) (12 June 2020), available at [https://ceq.doe.gov/docs/nepa-practice/CEQ\\_EIS\\_Timeline\\_Data\\_2020-6-12.xlsx](https://ceq.doe.gov/docs/nepa-practice/CEQ_EIS_Timeline_Data_2020-6-12.xlsx).
119. CEQ (2020), "Length of Environmental Impact Statements (2013-2018)", *supra* note 116, p. 11.
120. See generally NRC, "Combined License Applications for New Reactors", [www.nrc.gov/reactors/new-reactors/col.html](http://www.nrc.gov/reactors/new-reactors/col.html) (providing links to previously-submitted COL applications and the agency's associated review schedules).
121. Under 10 CFR Part 52, the NRC has established an ESP process, whereby the NRC may approve a site for one or more future nuclear power facilities. During the early to mid-2000s, the NRC reviewed and approved ESP applications submitted by five utilities for planned advanced LWRs.
122. NRC (2011), *Final Environmental Impact Statement for Combined License (COL) for the Vogtle Electric Generating Plant Unit 3 and 4*, NUREG-1947, NRC, Washington, DC. The EIS for the Turkey Point Units 6 & 7 combined licence project (for 2 proposed nuclear power reactors) comprised 4 volumes totalling 2 340 pages (with appendices) and a 133-page supplement to the EIS.



Recent NRC approvals for some other significant reactor licensing actions suggest that the NRC is making progress in streamlining the NEPA review process. In 2019, the NRC issued an ESP to Tennessee Valley Authority for 2 or more SMR modules (up to 800 MWe) at the Clinch River Nuclear site in Tennessee. The entire ESP approval process (including a statutorily-required mandatory hearing on the ESP application) required approximately 3.5 years, and the NRC staff completed its environmental review in approximately 2 years.<sup>123</sup>

The NRC's recently-completed environmental reviews of several power reactor subsequent (i.e. second) licence renewal applications provide some additional data points. The NRC has established an optimised, 18-month review schedule for SLR applications. To date, five stations have submitted SLR applications, and the NRC has issued its final supplemental EISs for three of the applications: Turkey Point Units 3 and 4, Peach Bottom Units 2 and 3, and Surry Units 1 and 2.<sup>124</sup> The time required for the NRC to issue those EISs was 21 months for Turkey Point and 18 months for both Peach Bottom and Surry. It should be noted that these site-specific EISs were supplements to the NRC's Generic Environmental Impact Statement (GEIS) for licence renewal (NUREG-1437), which is specifically intended to improve the efficiency of the licence renewal process. The three supplemental EISs, nonetheless, averaged almost 550 pages in length (appendices included).

In conclusion, the implementation of NEPA – by federal agencies in general and the NRC in particular – has proven to be a time and resource-intensive endeavour. Based on the industry's experience with the Part 52 COL process, it appears that the NRC's AEA-mandated safety review is more likely to be the “critical path” to licence issuance for future advanced reactor projects (especially for novel non-LWR designs to which the current Part 52 process is not specifically geared). Nevertheless, that experience also teaches that the NRC's NEPA-mandated environmental review for new reactors can require three years or more to complete. If the NRC is to succeed in reducing that review time to 24 months or less – consistent with Congressional, industry and the NRC staff's own expectations (see Part 3, *infra*) – then it will need to make substantial improvements to its NEPA review process.

### **PART 3: CURRENT INITIATIVES AND RECOMMENDATIONS FOR IMPROVING THE ENVIRONMENTAL REVIEW PROCESS**

This portion of the article examines current government-wide, industry and agency efforts to improve the timeliness and efficiency of the NRC's environmental process under NEPA and 10 CFR Part 51. Government-wide initiatives have targeted the NEPA process more broadly and include legislation, executive orders and a major CEQ rulemaking. Nuclear industry and NRC actions have been directed at the NRC's environmental review process under NEPA and Part 51. They include industry reports, NRC staff internal process reassessments and organisational changes, the development of new guidance documents, and proposed NRC rulemaking activities.

#### **I. Federal Government initiatives to “reform” the NEPA environmental review process**

Both Congress and the White House long have recognised the need to improve the efficiency of the NEPA review process, which, as discussed above, has often proven unduly

123. See NRC, News Release, “NRC to Issue Early Site Permit to Tennessee Valley Authority for Clinch River Site” (17 Dec. 2019), No: 19-064; NRC, “Early Site Permit Application – Clinch River Nuclear Site”, [www.nrc.gov/reactors/new-reactors/esp/clinch-river.html](http://www.nrc.gov/reactors/new-reactors/esp/clinch-river.html).

124. See NRC (2020), “Status of Subsequent License Renewal Applications”, [www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html](http://www.nrc.gov/reactors/operating/licensing/renewal/subsequent-license-renewal.html).

time-consuming and costly.<sup>125</sup> That need has taken on greater urgency in recent years, as both branches of government have sought to foster infrastructure development and support the development of domestic energy resources, including advanced nuclear power. Some key government-wide efforts are discussed below.

#### A. Title 41 of the Fixing America's Surface Transportation Act

In 2015, Congress enacted the Fixing America's Surface Transportation Act ("FAST Act") to streamline permitting and increase agency accountability.<sup>126</sup> Although it is not specific to the nuclear industry, Title 41 of the FAST Act (FAST-41) includes provisions intended to improve the timeliness, predictability, and transparency of the environmental review and authorisation processes for infrastructure projects.<sup>127</sup> The ten "covered project" sectors include renewable energy and conventional energy production.<sup>128</sup> FAST-41-covered projects meet the following criteria: (1) they are likely to require an investment of more than USD 200 million, (2) they are subject to NEPA and (3) they do not qualify for abbreviated authorisation or environmental review processes under any applicable law.<sup>129</sup>

The FAST Act also created the Federal Permitting Improvement Steering Council (Steering Council), an interagency council chaired by a presidentially-appointed Executive Director, to oversee the implementation of FAST-41.<sup>130</sup> The NRC is one of 14 federal agencies with a representative on the Steering Council.<sup>131</sup> The Steering Council's main functions are to: (1) oversee agencies' implementation of FAST-41, (2) facilitate the co-ordination of environmental review and authorisation decisions for FAST-41 projects and (3) help federal agencies institutionalise best practices to improve their environmental review and authorisation processes.<sup>132</sup>

Among other things, FAST-41 establishes the respective responsibilities of the lead agencies, co-operating and participating agencies, and project sponsors for the process. FAST-41 requires that federal agencies develop a co-ordinated project plan that, among other things, outlines agency roles and responsibilities, permitting timetables, and outreach and co-ordination efforts for each project.<sup>133</sup> It also requires that the Office of the Executive Director and the Steering Council agencies publish and track the scheduled and completed federal agency environmental reviews and authorisations on the "Permitting

125. See e.g. Executive Order 11991, Relating to Protection and Enhancement of Environmental Quality, 42 Fed. Reg. 26967 (25 May 1977) (citing "the need to focus on real environmental issues and alternatives," and to "require [environmental] impact statements to be concise, clear, and to the point, and supported by evidence that agencies have made the necessary environmental analyses").

126. Pub. L. No. 114-94, 128 Stat. 1312 (2015). FAST-41 has been codified in Chapter 55 of Title 42 of the US Code (42 USC 4370m-4370m-12).

127. 42 USC 4370m-1(c)(2)(B)(ii)-(iv).

128. 42 USC 4370m(6)(A). The other eight sectors include electricity transmission, surface transportation, aviation, ports and waterways, water resource projects, broadband, pipelines, and manufacturing. *Ibid.*

129. 42 USC 4370m(6)(A)(i)(I)-(III).

130. 42 USC 4370m-1(a), (b)(1).

131. 42 USC 4370m-1(b)(2)(B). The other 13 agencies include the US Departments of Transportation, Defense, Homeland Security, and Housing and Urban Development; the General Services Administration; Environmental Protection Agency; Federal Energy Regulatory Commission; and Advisory Council on Historic Preservation. *Ibid.*

132. 42 USC 4370m-1(c). To these ends, FAST-41 mandates that the Permitting Council and the Executive Director complete three periodic reports concerning recommended best practices for environmental reviews and authorisations for infrastructure projects; the performance of federal agencies based on the recommended best practices; and recommended performance schedules for environmental reviews and authorisations. 42 USC 4370m-7.

133. 42 USC 4370m-2(c)(1)(B).

Dashboard” website, which tracks permitting and environmental review milestones to increase transparency and public involvement.<sup>134</sup>

### B. Executive Order 13807

NEPA was a key focus of the Trump Administration’s infrastructure-related regulatory reform initiatives. As reflected in recent Executive Orders (EO) and other administrative actions, the Trump White House sought to reduce regulatory burden and streamline federal agency licensing actions, including agencies’ implementation of NEPA.<sup>135</sup> These efforts are largely intended to foster infrastructure development and support the development of domestic energy resources, including nuclear power.

Perhaps most noteworthy is EO 13807, which set a government-wide goal of reducing, to two years, the average time for each agency to complete the required environmental reviews and authorisation decisions for major infrastructure projects (as measured from the date of publication of an NOI or other appropriate benchmark).<sup>136</sup> A number of federal agencies quickly took steps to implement the objectives of EO 13807. In April 2018, 12 federal agencies signed the One Federal Decision Memorandum of Understanding (MOU) on implementing EO 13807, committing to implement a co-ordinated NEPA process that facilitates completion of permitting decisions within 2 years.<sup>137</sup> While federal agencies have made significant progress in implementing EO 13807, the new Biden Administration expressly revoked EO 13807 in an Executive Order issued on 20 January 2021, and directed the Director of the Office of Management and Budget (OMB) and the Chair of the CEQ to jointly consider whether a replacement order should be issued.<sup>138</sup>

### C. The CEQ’s July 2020 final updated NEPA regulations

EO 13807 also directed CEQ to issue such regulations, guidance and directives as the Council may deem necessary to ensure that agencies “apply NEPA in a manner that reduces unnecessary burdens and delays as much as possible, including by using CEQ’s authority to interpret NEPA to simplify and accelerate the NEPA review process.”<sup>139</sup> CEQ

134. 42 USC 4370m-2(b). Acceptance of the project as a FAST-41 project by federal agencies and posting of the project on the Permitting Dashboard ([www.permits.performance.gov/](http://www.permits.performance.gov/)) marks the beginning of the FAST-41 process.

135. See e.g. EO 137777, Enforcing the Regulatory Reform Agenda, 82 Fed. Reg. 12285 (24 Feb. 2017); EO 13783, Promoting Energy Independence and Economic Growth, 82 Fed. Reg. 16093 (31 Mar. 2017); EO 13766, Expediting Environmental Reviews and Approvals for High-Priority Infrastructure Projects, 82 Fed. Reg. 8657 (30 Jan. 2017).

136. EO 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects, 82 Fed. Reg. 40463 (24 Aug. 2017). A “major infrastructure project” is one for which “multiple authorizations” by federal agencies will be required to proceed with construction, the lead federal agency has determined that it will prepare an EIS, and “the project sponsor has identified the reasonable availability of funds sufficient to complete the project.” *Ibid.*, 40464.

137. See “Memorandum of Understanding Implementing One Federal Decision Under Executive Order 13807” (9 Apr. 2018), available at [www.whitehouse.gov/wp-content/uploads/2018/04/MOU-One-Federal-Decision-m-18-13-Part-2-1.pdf](http://www.whitehouse.gov/wp-content/uploads/2018/04/MOU-One-Federal-Decision-m-18-13-Part-2-1.pdf). The MOU recommends the following intermediate milestones for use in developing a 2-year schedule for the environmental review process: (1) publication of the draft EIS within 14 months after publication of the NOI, (2) publication of the final EIS within 8 months after publication of a notice of availability of the draft EIS and (3) publication of the ROD within 2 months after publication of the Notice of Availability of the Final EIS.

138. Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (20 Jan. 2021), [www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/](http://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/20/executive-order-protecting-public-health-and-environment-and-restoring-science-to-tackle-climate-crisis/). President Biden also revoked EO 13783 and EO 13766, among other Executive Orders.

139. EO 13807, *supra* note 136, at 40467-68.

sought to implement that directive through its publication of a proposed rulemaking in January 2020 that would facilitate more “efficient, effective, and timely NEPA reviews” by federal agencies, including for major infrastructure projects.<sup>140</sup>

Six months later, on 16 July 2020, the CEQ published its final rule revising its NEPA regulations.<sup>141</sup> The final rule went into effect on 14 September 2020.<sup>142</sup> The rule provides that within 12 months of that date, each agency shall develop or revise, as necessary, proposed procedures to implement the revised CEQ regulations.<sup>143</sup>

CEQ’s final rule is substantial in terms of both its size and scope, as it includes numerous procedural and substantive changes to the Council’s longstanding NEPA regulations, which had not been comprehensively amended since 1978. The final rule, which spans 73 pages, includes a separate response to comments and regulatory impact analysis.<sup>144</sup> Key modifications to the CEQ’s regulations are summarised below.

- codification of the “One Federal Decision” policy: The final rule adopts elements of the since-revoked EO 13807’s “One Federal Decision” policy to improve interagency co-ordination of NEPA reviews. The final rule directs the lead agency in a multi-agency review to: (1) prepare a joint schedule, (2) develop procedures to address delays or disputes and (3) when practicable, prepare a single EIS or EA.<sup>145</sup>
- clarification of level of NEPA review required: The final rule clarifies the basis upon which an agency selects the appropriate level of NEPA review (categorical exclusion, EA or EIS) and modifies how agencies consider the “significance” of the effect of a proposed action on the environment. It replaces the previously-enumerated factors with a more flexible approach to allow agencies to use categorical exclusions and EAs “whenever appropriate”.<sup>146</sup>
- expanded use of categorical exclusions: CEQ’s prior rules prohibited reliance on categorical exclusions when a typically exempt action has significant impacts due to “extraordinary circumstances”. The new rule provides that an exclusion may apply despite such an extraordinary circumstance “if the agency determines that there are circumstances that lessen the impacts or other conditions sufficient to avoid significant effects.”<sup>147</sup>
- use of mitigated FONISs: The final rule codifies the use of “mitigated FONISs”, which prior CEQ regulations did not recognise despite their common use by agencies. A mitigated FONSI must state the authority for any mitigation adopted by the agency and any applicable monitoring or enforcement provisions for the mitigation measures, as well as any enforceable mitigation requirements or commitments that will be undertaken to avoid significant impacts.<sup>148</sup>

140. CEQ, Update to the Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act; Notice of Proposed Rulemaking, 85 Fed. Reg. 1684, 1685 (10 Jan. 2020).

141. CEQ, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act; Final Rule, 85 Fed. Reg. 43304 (16 July 2020).

142. *Ibid.*, 43372 (40 CFR 1506.13, “Effective date”).

143. *Ibid.*, 43373 (40 CFR 1507.3(b), “Agency NEPA procedures”).

144. See CEQ (2020), “CEQ NEPA Regulations”, <https://ceq.doe.gov/laws-regulations/regulations.html/> (providing links to CEQ’s final rule, regulatory impact analysis and response to comments).

145. Final Rule, *supra* note 141, at 43313.

146. *Ibid.*, 43321-22 (discussing 40 CFR 1501.3, “Determine the appropriate level of NEPA review”). These changes are intended to allow agencies to use categorical exclusions and EAs “whenever appropriate” so that they may focus their limited resources on those actions that are likely to require an EIS.

147. *Ibid.*, 43322 (discussing 40 CFR 1501.4, “Categorical exclusions”).

148. *Ibid.*, 43324-25 (discussing 40 CFR 1501.6, “Findings of no significant impact”).

- increased flexibility in the scoping process: Rather than requiring publication of an NOI as a pre-condition for scoping, the final rule permits federal agencies to begin scoping once the proposed action is ready for meaningful agency consideration. Scoping can include pre-application procedures or work conducted before publication of the agency's NOI.<sup>149</sup>
- use of presumptive time and page limits: The final rule imposes a “presumptive” one-year time limit for EAs and a two-year time limit for EISs. It also imposes page limits of 75 pages for EAs and 150 pages for EISs, and 300 pages are allowed for EISs that are of unusual scope or complexity. However, the time and page limits can be enlarged with the approval of a senior agency official.<sup>150</sup>
- expanded role for applicants in preparing EISs or EAs: The final rule allows applicants to assume a greater role in preparing environmental documents. Specifically, it allows project applicants (or contractors) to prepare both EAs and EISs under the supervision of the agency, provided that agencies retain ultimate responsibility for the documents' accuracy, scope and content.<sup>151</sup>
- use of existing studies, analyses and information: It also states that in developing their procedures, “agencies should strive to identify and apply efficiencies, such as use of applicable categorical exclusions, adoption of prior NEPA analyses, and incorporation by reference to prior relevant Federal, State, Tribal, and local analyses, wherever practicable.”<sup>152</sup>
- narrower definition of “effects” and removal of “cumulative impact” analysis: The final rule narrows the scope of effects that agencies must consider in reviewing proposed actions by eliminating the distinction between “direct” and “indirect” effects and the need for “cumulative impact” analysis.<sup>153</sup> Agencies must consider only effects that are “reasonably foreseeable” and have a “reasonably close causal relationship to the proposed action” (i.e. a “but for” causal relationship is insufficient to trigger federal agency obligations under NEPA).<sup>154</sup>
- new definition of “reasonable alternatives”: Codifying federal case law, the final rule provides a new definition of “reasonable alternatives”, specifying that such alternatives must be “technically and economically feasible, meet the purpose and need for the proposed action and, where applicable, meet the goals of the applicant.”<sup>155</sup> The final rule also clarifies that agencies shall “limit their consideration to a reasonable number of alternatives.”<sup>156</sup>
- tailoring the purpose and need statement to the applicant's goals: Codifying federal case law, the amended regulations provide that, “[w]hen an agency's statutory duty is to review an application for authorization, the agency shall base the purpose and

149. *Ibid.*, 43326, 43362 (discussing 40 CFR 1501.9, “Scoping”).

150. *Ibid.*, 43326, 43328 (discussing 40 CFR 1501.10, “Time limits” and 40 CFR 1502.7, “Page limits”).

151. *Ibid.*, 43337, 43371 (discussing 40 CFR 1506.5, “Agency responsibility for environmental documents”).

152. *Ibid.*, 43339.

153. *Ibid.*, 43343-44, 43375 (discussing the revised definition of “effects or impacts” in 40 CFR 1508.1(g)).

154. *Ibid.*, 43343-44 (citing *Metropolitan Edison Co. v. People Against Nuclear Energy*, 460 US 766, 776 (1983); *Department of Transportation. v. Public Citizen*, 541 US 752, 767-68 (2004)) (noting that the close causal relationship concept is analogous to proximate cause in tort law, such that effects are not significant if they are remote in time, geographically remote or the result of a lengthy causal chain).

155. *Ibid.*, 43351, 43376 (discussing definition of “reasonable alternatives” in 40 CFR § 1508.1(z)).

156. *Ibid.*, 43331, 43365 (discussing 40 CFR 1502.14(f), “Alternatives including the proposed action”).

need on the goals of the applicant and the agency's authority."<sup>157</sup> This modification "is consistent with the definition of reasonable alternatives, which must meet the goals of the applicant, where applicable."<sup>158</sup>

- changes related to public comment/participation process: The final rule requires that public comments be as specific as possible and submitted during the specified comment periods.<sup>159</sup> It further provides that agencies need only respond to "substantive" comments and that comments or objections not submitted will be deemed "forfeited as unexhausted."<sup>160</sup>

The foregoing rule revisions provide an effective roadmap for streamlining an agency's NEPA review process. However, both the legal status and practical effects of CEQ's amended regulations on agency NEPA reviews are presently uncertain. The final rule is considered a "major rule" for purposes of the Congressional Review Act (CRA),<sup>161</sup> which allows Congress to introduce a joint resolution for disapproval of a final rulemaking within 60 legislative days after a final rulemaking is reported to Congress.<sup>162</sup> Such a resolution requires a majority vote and presidential approval.<sup>163</sup> Given the timing of the rule's issuance, it could fall within the carryover period of the CRA, giving the next (and now Democrat-controlled) Congress the opportunity to review the Act. Furthermore, the new Biden Administration still could seek to undertake its own rulemaking to modify the CEQ's July 2020 final NEPA regulations, particularly given President Biden's revocation of EO 13807, the primary impetus for CEQ's July 2020 rulemaking. Moreover, President Biden's selection for the new CEQ Chairman, environmental attorney Brenda Mallory, reportedly has signalled her intent to pursue such changes.<sup>164</sup>

Additionally, environmental groups and states opposing aspects of CEQ's amended regulations have lodged judicial challenges in federal court.<sup>165</sup> Although a federal district court denied plaintiffs' request for a nationwide preliminary injunction or stay of the new regulations in one of the cases, the litigation is still in its early stages.<sup>166</sup> Thus, it is possible that a court could invalidate portions of CEQ's regulations and remand them to the agency.

Given these considerations, some federal agencies, including the NRC, may not rush to revamp their own NEPA-implementing regulations, despite CEQ's directive that each agency must develop or revise, as necessary, proposed procedures to implement the CEQ's amended regulations within 12 months of their effective date. As discussed above, the NRC does not view itself as being substantively bound by CEQ regulations. Nevertheless, as

157. *Ibid.* 43330, 43365 (discussing 40 CFR 1502.13 "Purpose and need"; citing *Citizens Against Burlington*, *supra* note 60, p. 196).

158. *Ibid.* 43330.

159. *Ibid.* 43318, 43333, 43367-68 (discussing 40 CFR 1503.3, "§ 1503.3 Specificity of comments and information").

160. *Ibid.* 43318, 43334, 43358 (discussing 40 CFR 1500.3(d) "NEPA compliance").

161. The CRA was enacted in 1996 as part of the Small Business Regulatory Enforcement Fairness Act, Title II, Subtitle E, P.L. 104-121. The CRA is codified at 5 USC 801-808.

162. CRA, 5 USC 802(d)(1), "Congressional Review".

163. CRA, 5 USC 801(a)(3)(B), "Congressional Review".

164. Brugger, K. (2020), "Biden CEQ pick signals NEPA changes", E&E News, [www.eenews.net/stories/1063721221](http://www.eenews.net/stories/1063721221).

165. See Holden, M. and M. Chertok (2020), "Council on Environmental Quality's New NEPA Regulations: An Analysis", Sive Paget & Riesel P.C., New York, NY, pp. 17-18 (providing overview of pending judicial challenges to CEQ's amended regulations as of early-October 2020); Mandelbaum, D. (2020), "TRANSITION THOUGHTS: The Presidential Transition, NEPA, and Project Review", Greenberg Traurig E2 Law Blog, [www.gtlaw-environmentalandenergy.com/2020/12/articles/climate-change/transition-thoughts-the-presidential-transition-nepa-and-project-review/](http://www.gtlaw-environmentalandenergy.com/2020/12/articles/climate-change/transition-thoughts-the-presidential-transition-nepa-and-project-review/).

166. *Opinion & Order on Motion for Preliminary Injunction* (11 Sept. 2020), *Wild Virginia et al. v. Council on Environmental Quality et al.*, No. 3:20-cv-00045 (W.D. Va., filed on 29 July 2020).

discussed below, the NRC should carefully consider the CEQ's rule modifications as part of its ongoing internal reassessment of its NEPA implementing regulations in 10 CFR Part 51.

## **II. Industry suggestions for streamlining NRC environmental reviews**

Over the past two years, industry-aligned organisations have submitted to the NRC specific recommendations for expediting NRC environmental reviews for advanced reactors. For example, in February 2019, ClearPath, a non-profit organisation that endorses clean energy solutions, submitted a white paper to the NRC advocating the use of a GEIS to streamline the NRC's NEPA procedures for prospective environmental reviews of advanced nuclear reactors.<sup>167</sup> A GEIS allows agencies to evaluate certain potential environmental impacts generically, thereby avoiding the need for case-by-case analyses of those issues in individual EISs. Insofar as certain potential impacts cannot be addressed generically, they can be evaluated on a facility-specific basis in a supplemental EIS.

In September 2019 and March 2020, respectively, the Nuclear Innovation Alliance and NEI submitted detailed reports to the NRC recommending actions that the NRC can take to simplify and optimise its environmental reviews.<sup>168</sup> Key recommendations in those reports included making greater use of EAs and categorical exclusions; using a GEIS(s) to address issues and impacts that are expected to be common to most, if not all, advanced reactor designs; maximising use of existing environmental analyses (e.g. through incorporation by reference); better leveraging environmental reports prepared by applicants as part of their licence applications; simplifying and narrowing the scope of alternative site analyses; and increasing efficiency of environmental reviews through targeted process-related improvements (e.g. more efficient or disciplined use of pre-application meetings, environmental audits and requests for additional information). The industry also has been actively participating in NRC public meetings concerning the environmental review process and submitting detailed comments to the NRC as opportunities permit.

## **III. NRC-sponsored initiatives to optimise the NRC review process**

In a 10 June 2020, letter responding to the NEI, the NRC staff noted that it is “working on multiple initiatives to enhance and streamline environmental reviews for advanced reactors” to better tailor them to anticipated smaller environmental impacts associated with advanced reactor designs.<sup>169</sup> These actions, some of which align with approaches used in CEQ's updated regulations, are discussed below. The author also presents some related observations and suggestions for improving the efficiency of the NRC's environmental review process.

### **A. NRC internal process improvements and organisational changes**

Recently, the NRC has taken concrete steps to optimise its advanced reactor environmental review process. In 2019, the NRC sought contractor technical assistance to evaluate the NRC's current environmental review process and provide recommendations for reducing the length of its NEPA reviews and supporting documentation while maintaining a high level of quality.<sup>170</sup> Last year, the NRC sought to facilitate greater efficiency and consistency

167. Merrifield, J. and R. Zarghamee (2019), *White Paper: Advocating the Use of Generic Environmental Impact Statements in Support of the Construction and Operation of Advanced Nuclear Reactors*, ClearPath, Washington, DC.

168. NEI (2020), *Recommendations for Streamlining Environmental Reviews for Advanced Reactors*, Washington, DC; Nuclear Innovation Alliance (2019), *Nuclear Innovation and NEPA: Streamlining NRC NEPA Reviews for Advanced Reactor Demonstration Projects While Safeguarding Environmental Protection*, Washington, DC.

169. Letter to D. True, NEI from J. Tappert, NRC (10 June 2020) (ADAMS Accession No. ML20147A540).

170. Schneidmiller, C., “NRC Aims to Streamline Environmental Reviews”, *ExchangeMonitor* (3 May 2019).

by consolidating the agency's environmental review staff under a new Environmental Center of Expertise (EnvCOE) in the Office of Nuclear Materials Safety and Safeguards.<sup>171</sup> The EnvCOE's overarching duties include: (1) ensuring that NRC complies with federal environmental laws and properly implements the requirements of 10 CFR Part 51; (2) supporting environmental reviews of agency actions as required by NEPA and other environmental laws, policies and regulations; and (3) developing, maintaining and implementing agency environmental review guidance and training.<sup>172</sup> The EnvCOE is responsible for preparing EISs for licensing actions involving operating reactors and proposed new reactors.

The NRC also has made progress in implementing various process-related improvements like those identified in the NEI's March 2020 white paper. Such process improvements include, for example, increased reliance on pre-application activities and co-ordination with applicants; an enhanced environmental audit process that includes more timely delivery of NRC questions/audit needs and results in comprehensive audit summary reports; earlier and better-defined site tours; and increased use of requests for confirmation of information process in lieu of formal requests for additional information. The NRC and its contractors also have used customised SharePoint collaboration sites to allow multiple agency environmental review teams to collaborate on documents simultaneously during key review stages.<sup>173</sup>

#### B. *The development of a GEIS for advanced nuclear reactors*

Perhaps the most important of the NRC's ongoing initiatives is the development of an advanced nuclear reactor GEIS (ANR GEIS). As noted above, in 2019, ClearPath and the Nuclear Innovation Alliance recommended that the NRC develop such a GEIS. Also, in a 25 June 2019 letter to then-NRC Chairman Kristine Svinicki, US Senators John Barrasso and Mike Braun urged the NRC to develop an ANR GEIS as "a critical step to facilitate the deployment of new nuclear technologies."<sup>174</sup> They noted that "[a] GEIS is another important action that aligns with NEIMA's advanced nuclear reactor requirements", and "will reduce cumbersome regulatory barriers, expedite the environmental review process, and enable market deployment of innovative nuclear technologies."<sup>175</sup> To that end, the senators suggested that the GEIS should acknowledge areas where common environmental impacts have already been effectively addressed in other elements of the NRC review; identify areas where issuance of other federal or state environmental permits can mitigate environmental impacts; and credit advanced reactor designs that minimise environmental impacts.<sup>176</sup>

The staff formally initiated the agency's effort in November 2019, when it announced that it was conducting an exploratory process and soliciting comments to determine the feasibility of developing an ANR GEIS.<sup>177</sup> The staff conveyed the results of the exploratory

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171. NRR Office Instruction LIC-203, Rev. 4, *supra* note 97, p. 3.

172. *Ibid.* Section 5.1 of NRR Office Instruction LIC-203, Rev. 4 delineates the specific roles and responsibilities of the EnvCOE. *Ibid.*, pp. 5-6.

173. News Release, Pacific Northwest National Laboratory, "Power Reactor Project is Model for Accelerated Site Review" (24 Apr. 2019) (discussing effective EIS-related process improvements for the Clinch River early site permit application).

174. Letter to K. Svinicki, Chairman, NRC, from the Honourable J. Barrasso and Honourable M. Braun (25 June 2019) (ADAMS Accession No. ML19176A444).

175. *Ibid.* Relatedly, Senators Barrasso and Braun noted that EO 13807 and other laws, including the FAST Act, focus on improving the environmental permitting process and coordinating agency environmental reviews to meet ambitious deadlines. *Ibid.*, n. 1.

176. *Ibid.*, p. 2

177. NRC, Agency Action Regarding the Exploratory Process for the Development of an Advanced Nuclear Reactor Generic Environmental Impact Statement, 84 Fed. Reg. 62559 (15 Nov. 2019).



process to the Commission in a 28 February 2020 policy paper (SECY-20-0020).<sup>178</sup> The staff concluded that there was sufficient information for the agency to develop an ANR GEIS for small-scale advanced reactors that have the potential to generate up to approximately 30 megawatts thermal (MWt) per reactor with a correspondingly small environmental footprint.<sup>179</sup> However, it noted that the actual bounding thermal power level of the advanced reactor used in the ANR GEIS would be a topic for further engagement with external stakeholders during the scoping process.<sup>180</sup>

On 30 April 2020, the NRC published a notice of its intent to develop an ANR GEIS and to conduct an associated scoping process.<sup>181</sup> The staff reiterated its intent to develop a GEIS for advanced nuclear reactors with “a small generating output and correspondingly small environmental footprint” (i.e. about 30 MWt per unit).<sup>182</sup> It noted that because small-scale advanced reactors are not specific to only one reactor design and could be sited anywhere in the United States that meets NRC siting requirements, it had decided to pursue a technology-neutral approach using a plant parameter envelope (PPE).<sup>183</sup> The PPE would consist of a table of bounding values or parameters for different reactor designs located on a site.<sup>184</sup> The staff also planned to develop a table of values representing the site parameter envelope (SPE) (e.g. size of site, quantity of water used, demographics) to describe the affected environment.<sup>185</sup> The ANR GEIS would evaluate the impacts of a reactor that fits within the bounds of the PPE on a site that fits within the bounds of the SPE to determine the environmental impact.<sup>186</sup>

Under this approach, which the staff had proposed before it received scoping comments, an application that references the ANR GEIS would need to demonstrate that its project is bounded by the analysis in the ANR GEIS, and that there is no significant new information that affects the evaluation.<sup>187</sup> The application also would need to analyse the site-specific resource related issues not resolved generically in the ANR GEIS.<sup>188</sup> If the project is bounded by the ANR GEIS and there is no significant new information, the NRC would incorporate by reference the ANR GEIS in a supplemental EIS and no further analysis would be needed for generically-resolved issues.<sup>189</sup> At the time, the staff had not intended to codify the ANR GEIS findings in a rulemaking.

As a result of the scoping process, the staff decided to expand the use of performance-based plant parameters and assumptions that would reduce the reliance on a specified power level, because “most resource areas do not need the power level to evaluate the impacts on the resource.”<sup>190</sup> Thus, under this revised approach, a future advanced nuclear

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178. See Memorandum for the Commissioners from M. Doane, EDO (28 Feb. 2020), “Results of Exploratory Process for Developing a Generic Environmental Impact Statement for the Construction and Operation of Advanced Nuclear Reactors”, SECY-20-0020 (ADAMS Accession No. ML20052D175). A so-called “SECY paper” is a paper written by the NRC staff to the NRC Commission informing the Commissioners about policy, rulemaking and/or adjudicatory matters and often requesting a decision. The Commission’s decision is provided in a “Staff Requirements Memorandum” or “SRM”.

179. *Ibid.*, pp. 4, 7.

180. *Ibid.*, pp. 1-3.

181. NRC, Notice to Conduct Scoping and Prepare an Advanced Nuclear Reactor Generic Environmental Impact Statement, 85 Fed. Reg. 24040 (30 Apr. 2020).

182. *Ibid.*

183. *Ibid.*, p. 24041.

184. *Ibid.*

185. *Ibid.*

186. *Ibid.*

187. *Ibid.*

188. *Ibid.*

189. *Ibid.*

190. NRC (2020), *Environmental Impact Statement Scoping Process Summary Report – The Advanced Nuclear Reactor Generic Environmental Impact Statement Public Scoping Period*, NRC, Rockville, Maryland, p. 2 (hereinafter Scoping Summary Report).

reactor application for an NRC licence does not need to meet the assumptions and parameters for all the resource areas to incorporate by reference the ANR GEIS.<sup>191</sup> Instead, the application can reference the resource areas that bound their application and then evaluate the resource areas that are not bounded.<sup>192</sup>

In its scoping summary report, the staff noted that the intent of this approach “is to identify as many generic issues as possible and to provide generic analyses based on realistic assumptions, thereby streamlining subsequent site-specific project reviews.”<sup>193</sup> The staff explained its decision to use this approach as follows:

In developing the ANR GEIS, the NRC is leveraging the substantial information and analyses, as well as various best practices and lessons learned, which it has developed from the licensing NRC has completed to date. For example, the staff plans to incorporate by reference specific analyses from the License Renewal GEIS (NUREG 1437) ... for operational impacts and from recent new reactor EISs, where appropriate. The NRC recognises the impacts of renewing the license for an operating reactor that has essentially become part of the environmental baseline can be different from the impacts of operating a new reactor in a setting with no history of nuclear plant operation. As discussed in SECY-20-0020 ..., the NRC staff concluded that there is sufficient information about advanced reactor technologies to support development of an effective ANR GEIS for small-scale reactors but noted that the power level would be discussed during scoping. *Based on the comments received during scoping, the staff is expanding the use of performance-based plant parameters and assumptions that would reduce the reliance on a specified power level.* The staff has experience using this approach in other licensing actions, such as ESPs. Most resource areas do not need the power level to evaluate the impacts on the resource. *Therefore, an advanced reactor of any size that meets the performance measures and assumptions in the ANR GEIS can reference the ANR GEIS in an application.*<sup>194</sup>

The staff provided some specific examples. For instance, land use assumptions might include the need to be consistent with applicable zoning and land use plans and the absence of sensitive features such as wetlands and floodplains.<sup>195</sup> Water use assumptions would be based on the amount of water used by the project versus the amount of water available (as determined, in part, by state water permits).<sup>196</sup> Regarding the latter, the staff noted that it “is developing an SPE that will evaluate the amount of water being used versus a conservative estimation of the amount of water that is available (such as during low-flow periods for surface water resources) at the proposed site or within the region.”<sup>197</sup>

The NRC staff also identified certain resource areas that, in its view, likely would not lend themselves entirely to generic treatment in the ANR GEIS. For instance, it noted that generic determination of the “purpose and need” for individual advanced reactor projects may not be feasible given the varied uses and functions that are possible with advanced reactor technologies (e.g. desalinating water, providing process heat or providing power to a remote community).<sup>198</sup> For non-power generation applications, the staff “would also conduct a second ‘needs analysis’ for the end product,” such that each purpose and need would be specific to the project and accordingly analysed in the site-specific licence application and in the NRC’s supplemental EIS.<sup>199</sup>

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191. *Ibid.*

192. *Ibid.*

193. *Ibid.*, p. 7.

194. *Ibid.*, p. 5 (emphasis added).

195. *Ibid.*, p. 7.

196. *Ibid.*

197. *Ibid.*, p. 8.

198. *Ibid.*, p. 12.

199. *Ibid.*

Relatedly, the staff noted that the issue of energy alternatives is dependent on the purpose and need for the project and must be addressed in a supplemental EIS.<sup>200</sup> However, it explained that the ANR GEIS will provide examples of purpose and need statements and how they can affect the analysis of energy alternatives in the supplemental EIS.<sup>201</sup> The staff emphasised that when it prepares a supplemental EIS for an advanced reactor application, it will consider energy alternatives that meet the project's purpose and need.<sup>202</sup>

Other issues that the NRC staff intends to discuss in the ANR GEIS, but which are expected to require further analysis in a site-specific supplemental environmental impact statement (SEIS), are historic and cultural resource impacts, socioeconomic impacts, and environmental justice impacts (i.e. potentially disproportionate impacts to minority and low-income communities).<sup>203</sup> Additionally, the staff stated that it will discuss advanced nuclear fuel cycle impacts (including the impacts of storage, transportation, and disposal of nuclear fuels and wastes) in the ANR GEIS, to determine if the impacts can be addressed generically or would require a site-specific analysis in an SEIS.<sup>204</sup>

On 21 September 2020, the Commission issued a Staff Requirements Memorandum (SRM) in which it approved the NRC staff's development of an ANR GEIS "using a technology-neutral, plant parameter envelope (PPE) approach."<sup>205</sup> The Commission also approved future codification of the ANR GEIS in NRC regulations, avoiding the need for subsequent Commission approval of a rulemaking plan.<sup>206</sup> The SRM notes that "[a]ny experience gained in completing site-specific reviews should inform the staff's GEIS efforts."<sup>207</sup> It further directed the staff to: (1) consider, as part of the scoping process, a PPE that is inclusive of as many ANR technologies as possible; and (2) ensure that any power level used as a "bounding term" (if the NRC staff opts to use one) be based on a "risk-informed and performance-based analysis that thoroughly incorporates input from external stakeholders."<sup>208</sup>

The NRC's decision to proceed with the development of the ANR GEIS that makes use of performance-based parameters, assumptions, and mitigation measures and leverages previous NRC environmental analyses is a significant positive development. In this regard, it is consistent with the industry's scoping-related recommendations<sup>209</sup> and Congress's expectation that "[a] GEIS for advanced nuclear reactors will demonstrate NRC's

200. *Ibid.*

201. *Ibid.* Interestingly, the staff indicated that it is developing a white paper that "provides comparative information regarding the common energy alternatives, and this paper would be referenced in the ANR GEIS." *Ibid.*, p. 6. This information, which is updated periodically, is intended to assist staff reviewers when considering energy alternatives for supplemental EISs that reference the ANR GEIS. *Ibid.*

202. *Ibid.*, pp. 12-13.

203. *Ibid.*, pp. 8-9.

204. *Ibid.*, pp. 10-11. On a related note, the NRC already has commissioned two reports by Pacific Northwest National Laboratory (PNNL) to assist it in assessing non-LWR fuel cycle and transportation-related impacts. Those reports were issued in final form on 30 September 2020 and are available at ADAMS Accession Nos. ML20267A157 and ML20267A217.

205. Memorandum to M. Doane, EDO, from A. Vietti-Cook, Secretary (21 Sept. 2020), "Staff Requirements – SECY-20-0020 – Results of Exploratory Process for Developing a Generic Environmental Impact Statement for the Construction and Operation of Advanced Nuclear Reactors", p. 1 (ADAMS Accession No. ML20265A112).

206. *Ibid.*

207. *Ibid.*

208. *Ibid.*

209. Letter to NRC Office of Administration from M. Nichol, Senior Director, New Reactors (30 June 2020) regarding "NEI Comments on Scoping of an Advanced Nuclear Reactor Generic Environmental Impact Statement [Docket ID: NRC-2020-0101]" (ADAMS Accession No. ML20183A009).

commitment to adherence and innovate.”<sup>210</sup> As the staff noted, it also is consistent with the goals of recent Federal directives such as FAST-41 and EO 13807.<sup>211</sup>

The Commission’s directive to codify the ANR GEIS’s findings in NRC regulations, similar to the codification of the NRC License Renewal GEIS’s<sup>212</sup> findings in Part 51, also is important because it helps ensure that the full value of the GEIS will be realised. As the staff noted, codifying the environmental findings in the ANR GEIS via rulemaking would limit the potential issues that would be raised during the adjudicatory hearing process on advanced reactor applications. This approach is consistent with longstanding NRC practice,<sup>213</sup> as well as controlling US Supreme Court precedent holding that “[t]he generic method chosen by the [NRC] is clearly an appropriate method of conducting the ‘hard look’ required by NEPA.”<sup>214</sup>

By simplifying and focusing the NRC’s site-specific reviews, the ANR GEIS – if properly developed and implemented – should lead to shorter environmental review times and EISs.<sup>215</sup> Notably, in her written comments for SRM-SECY-20-0020, Commissioner Caputo underscored the GEIS’s importance in this respect. She noted that the NRC’s “established process of lengthy environmental reviews resulting in voluminous environmental impact statements is a disservice to the public and contrary to the intent of [NEPA]”, and that “[d]eveloping an ANR GEIS is a step in the right direction to reversing this troubling trend.”<sup>216</sup>

### C. Interim staff guidance for micro-reactor application environmental reviews

In October 2020, the NRC issued Interim Staff Guidance (ISG) document COL-ISG-029 to modify and augment existing guidance to assist the NRC staff in determining the scope and scale of environmental reviews of micro-reactor licence applications.<sup>217</sup> The ISG highlights unique considerations for micro-reactors in each resource area covered in the NRC’s environmental review; provides guidance on identifying approaches to simplify and shorten the environmental reviews for micro-reactors relative to large LWR environmental reviews; and outlines what the NRC staff views as an appropriate scope and level of detail for specific aspects of micro-reactor environmental reviews.<sup>218</sup> Importantly, the ISG recognises that because a micro-reactor may have limited impact during the facility’s

210. Letter to K. Svinicki, *supra* note 174.

211. Scoping Summary Report, *supra* note 190, pp. 5, 13, 14.

212. NRC (1996), *Generic Environmental Impact Statement for License Renewal of Nuclear Plants (GEIS)*, NUREG-1437, NRC, Washington, DC.

213. To date, the NRC has prepared GEIS documents for at least five types of conditions or activities: (1) the relicensing of nuclear power plants (NUREG-1437), (2) the handling and storage of spent nuclear fuel (NUREG-2157), (3) the decommissioning of nuclear facilities (NUREG-0586), (4) licence termination (NUREG-1496), and (5) in-situ uranium recovery facilities (NUREG-1910). See NRC (2020), “National Environmental Policy Act at the NRC – Generic NEPA Reviews”, [www.nrc.gov/about-nrc/regulatory/licensing/nepa.html](http://www.nrc.gov/about-nrc/regulatory/licensing/nepa.html) (providing electronic links to the referenced NRC GEISs).

214. *Baltimore Gas & Electric Co. v. NRDC*, 462 US 87, 101 (1983) (citation omitted). See also *Massachusetts v. United States*, 522 F.3d 115, 127 (1st Cir. 2008); *Massachusetts v. NRC*, 708 F.3d 63, 68 (1st Cir. 2013); *Natural Resources Defense Council v. NRC*, 823 F.3d 641, 653 (DC Cir. 2016).

215. In SECY-20-0020, the staff posited that an advanced reactor licence application referencing a GEIS could facilitate a review schedule and cost savings of 25%. SECY-20-0020, *supra* note 178, pp. 4-5. (“The reason for reduction in schedule is that the staff would only need to develop a supplemental EIS to consider Category 2 site-specific issues, which could shorten the review period by 6 months or more.” *Ibid.*, p. 4.)

216. Response Sheet from Commissioner A. Caputo to A. Vietti-Cook, Secretary (3 Sept. 2020), p. 2 (ADAMS Accession No. ML20252A163) (providing Commissioner Caputo’s on SECY-20-0020).

217. NRC (2020), *Micro-Reactor License Application COL-ISG-029, Environmental Considerations Associated with Micro-Reactors*, Final Interim Staff Guidance (28 Oct. 2020), NRC, Rockville, MD (ADAMS Accession No. ML20252A076) (hereinafter COL-ISG-029).

218. *Ibid.*, pp. 1-3.

construction and operation phases, streamlined documentation and reduced review times should be possible.<sup>219</sup> It also recommends that applicants “scale their level of effort appropriately when preparing ERs, commensurate with the significance of the impact on the resource area being addressed.”<sup>220</sup> The ISG further underscores the importance of pre-application interactions in determining the appropriate scope and scale of the applicant’s environmental report and the NRC’s EIS.<sup>221</sup>

D. *Draft NRC guidance on pre-application activities for advanced reactor applicants*

Relatedly, the NRC staff also has issued a draft white paper that touts the benefits of “robust preapplication engagement” and proposes “a set of pre-application activities that, if fully executed, will enable staff to offer more predictable and shorter schedules and other benefits during the review of an advanced reactor license application.”<sup>222</sup> One section of the draft paper specifically addresses pre-application environmental activities and refers to “[e]arly and frequent pre-application interactions” as “a key component of federal directives outlined in FAST-41 and Executive Order 13807 to streamline the environmental review process.”<sup>223</sup> To that end, it provides a list of topics that the NRC staff expects to be discussed at meetings or audits during pre-application interactions.<sup>224</sup>

Of particular note, the draft white paper recommends that applicants submit white papers on key and novel approaches to environmental topics for staff assessment and feedback during the pre-application phase.<sup>225</sup> The staff identifies the following key topics as potential white paper topics:

- unique or novel methodologies and issues (e.g. any novel environmental methodology that has not previously been analysed by the staff; a unique purpose and need for the project such as uses other than electricity production);<sup>226</sup>
- alternatives to the proposed project (e.g. the site selection process; project alternatives that may be unique depending on the specific purpose and need for the project or electrical output);<sup>227</sup>
- cooling water availability (e.g. information on water consumption for the proposed facility and status obtaining the necessary permits; need for pre-application meetings with water permitting agencies);<sup>228</sup>
- status of permits and authorisations for the proposed project (e.g. advanced applicant interactions with other permitting agencies; status of and timeline for obtaining all needed project authorisations, permits, licences and approvals; copies of available correspondence with other agencies).<sup>229</sup>

All of these topics are important; however, early engagement with non-NRC permitting agencies is particularly crucial. The NRC and applicants are sometimes delayed in their

219. *Ibid.*, p. 2.

220. *Ibid.*

221. *Ibid.*, pp. 3-4.

222. NRC (2020), “Preapplication Engagement to Optimize Application Reviews” (Draft White Paper) (Oct. 2020), NRC, Rockville, MD, p. 1 (ADAMS Accession No. ML20281A761). The NRC issued an updated version of this white paper on 12 January 2021. It is available at ADAMS Accession No. ML21014A267.

223. *Ibid.*, p. 7.

224. *Ibid.*, pp. 8-9.

225. *Ibid.*

226. *Ibid.*, pp. 7-8.

227. *Ibid.*, p. 8.

228. *Ibid.*

229. *Ibid.* (citing NEI (2013), *Industry Guideline for Effective Interactions with Agencies Other Than NRC During the Early Site Permit Process*, NEI 10-07 [Revision 1], NEI, Washington, DC (ADAMS Accession No. ML13028A392)).

own activities because they must await actions by other agencies with key authority over non-radiological aspects of the project review, but with no direct stake in the project itself. Therefore, it is important that the NRC use its available authorities and processes (including pre-application activities) to avoid or mitigate such delays to the extent practicable. Indeed, for that reason, the NRC has incorporated detailed guidance in NRR Office Instruction LIC-203, Rev. 4 on the various interagency consultation processes. This is consistent with CEQ's efforts to "ensure optimal interagency coordination, including through a concurrent, synchronized, timely, and efficient process for environmental reviews and authorization decisions."<sup>230</sup>

#### E. Other NRC actions aimed at expediting the environmental review process

Although the NRC does not view itself as being substantively bound by CEQ regulations as an independent regulatory agency, it is the NRC's "announced policy to take account of the regulations" of the CEQ and "[e]xamine any future interpretation or change to the Council's NEPA regulations."<sup>231</sup> Moreover, the NRC staff has acknowledged that "closer adherence to the streamlining principles in the CEQ regulations could result in environmental documents that provide a clearer, more focused discussion of environmental impacts that would benefit both NRC decisionmakers and interested members of the public."<sup>232</sup> As a result, the NRC staff has been closely monitoring CEQ activities<sup>233</sup> and "working diligently to streamline and enhance [its] environmental review process".<sup>234</sup>

To that end, the NRC staff recently issued a policy paper (SECY-21-0001) that requests Commission approval to initiate a rulemaking to revise and update the NRC's Part 51 regulations.<sup>235</sup> According to SECY-21-0001, the NRC staff plans to streamline and enhance the flexibility of the agency's NEPA review process, update certain provisions in Part 51 to reflect NRC staff practice as well as consideration of the recent changes to CEQ regulations, and provide greater alignment between the environmental review process and the safety reviews for advanced nuclear reactors that may be conducted under the NRC's future Part 53 regulations.<sup>236</sup> SECY-21-0001 cites FAST-41, EO 13807, NEIMA, CEQ's NEPA regulation updates, and the NRC's self-initiated Transformation Initiative as key drivers for the proposed rulemaking.<sup>237</sup> This section discusses some of the potential improvements identified by the NRC staff as part of recent initiatives, up to and including the SECY-21-0001 rulemaking plan.

##### ▪ 1. Establishing schedule and page limits for EISs and EAs

One of the avowed purposes of the NRC staff's Part 51 rulemaking plan is to allow "faster, shorter, and less expensive environmental reviews without compromising NRC's NEPA responsibilities."<sup>238</sup> In view of that goal, the staff is considering the possible inclusion of

230. Final Rule, *supra* note 141, at 43313 (emphasis added).

231. 10 CFR 51.10(a), "Purpose and scope of subpart; application of regulations of Council on Environmental Quality".

232. Memorandum for the Commissioners from V. McCree, EDO, "Achieving Modern Risk-Informed Regulation" (23 May 2018), Enclosure 5, "Additional Detail on Areas of Transformation", p. 7 (ADAMS Accession No. ML18110A403).

233. Letter to D. True, NEI, from J. Tappert, NRC (10 June 2020), *supra* note 169, p. 2; Scoping Summary Report, *supra* note 190, p. 5.

234. *Ibid.*

235. See Memorandum for the Commissioners from M. Doane, EDO, NRC (31 Dec. 2020), "Rulemaking Plan – Transforming the NRC's Environmental Review Process", SECY-21-0001 (ADAMS Accession No. ML20212L393); Lighty, R. and P. Pennella (2021), "NRC Staff Proposes Rulemaking to Update Environmental Regulations", *Up & Atom*, Morgan Lewis, [www.morganlewis.com/blogs/upandatom/2021/01/nrc-staff-proposes-rulemaking-to-update-environmental-regulations](http://www.morganlewis.com/blogs/upandatom/2021/01/nrc-staff-proposes-rulemaking-to-update-environmental-regulations).

236. *Ibid.*, p. 1.

237. *Ibid.*, pp. 2-4

238. *Ibid.*, p. 9.

firm schedule and page limits in Part 51, consistent with the updated CEQ regulations discussed above.<sup>239</sup> The staff notes that while such limits and other environmental review process improvements may be implemented through guidance, codifying them would “ensure internal compliance, greater rigor, and consistency between staff elements for a given process improvement”.<sup>240</sup>

▪ 2. Increasing the use of tiering, incorporation by reference and adoption

As discussed above and in the NRC’s Scoping Summary Report for the proposed ANR GEIS, the NRC plans to use both “tiering” and incorporation by reference as part of its environmental reviews for future advanced reactor application.<sup>241</sup> It also is exploring other opportunities to increase use of incorporation by reference, including utilising information from previous environmental analyses.<sup>242</sup> This approach is consistent with CEQ’s updated regulations, which seek to increase the use of tiering, incorporation by reference, and adoption of existing analyses to reduce bulk, avoid repetitive discussions, and focus NEPA analyses on previously-unaddressed issues.<sup>243</sup>

The NRC staff’s ISG for micro-reactor application environmental reviews includes guidance on the use of incorporation by reference. Specifically, Appendix A to COL-ISG-209 encourages staff reviewers “to incorporate by reference any relevant information from other publicly available documents”, including from “the NRC, *applicant documents submitted for the record*, or any other reputable source, such as *other governmental entities or academic institutions*.”<sup>244</sup> It emphasises that under NRC regulations (10 CFR 51.41), the staff must evaluate and verify the reliability of the information that it incorporates by reference in an EIS.<sup>245</sup> Appendix A also clarifies that incorporating material from an applicant’s environmental report and safety analysis report may be appropriate, but the staff should not incorporate by reference conclusions from the applicant’s environmental report.<sup>246</sup>

The staff’s expanded use of incorporation by reference would help conserve agency resources and avoid duplication of effort. As explained above, NRC licence applicants already are required to submit detailed environmental reports prepared pursuant to NRC guidance, which the NRC then reviews and augments through requests for additional information before generating an entirely new document in the form of a draft EA or EIS. This invariably leads to some duplication of effort (and associated regulatory service fees that are ultimately charged to the applicant). The NRC staff’s new guidance, however, stops short of what is permitted by CEQ’s updated regulations, which provide that “[a]n agency also may direct an applicant or authorize a contractor to prepare an environmental document under the supervision of the agency.”<sup>247</sup> The agency is required to provide guidance to the applicant or contractor, participate in the document’s preparation, and independently evaluate and retain responsibility for the accuracy, scope, and contents of

239. *Ibid.*, p. 5.

240. *Ibid.*, p. 8.

241. See Scoping Summary Report, *supra* note 190, pp. 2, 4, 5, 7, 13, 14. Tiering refers to the coverage of general matters in broader EISs or EAs with subsequent narrower statements or environmental analyses incorporating by reference the general discussions and concentrating solely on the issues specific to the statement subsequently prepared.

242. *Ibid.*

243. See 40 CFR 1501.11, “Tiering”; 40 CFR 1501.12, “Incorporation by reference”; 40 CFR 1506.3, “Adoption”.

244. COL-ISG-029, Appendix A, “Incorporation by Reference Guidance for an Environmental Impact Statement”, p. A-1, *supra* note 217 (emphasis added).

245. *Ibid.*

246. *Ibid.*

247. 40 CFR 1506.5(b), “Agency responsibility for environmental documents”.

the environmental review document (i.e. EA or EIS).<sup>248</sup> In the author's view, the NRC should consider allowing a greater role for applicants in preparing EAs, EISs or EIS supplements, consistent with CEQ's updated regulations. Notably, SECY-21-0001 indicates that the staff is considering the possibility of "allowing applicants to prepare an environmental assessment or environmental impact statement".<sup>249</sup>

Although the NRC has expressed its willingness to incorporate by reference relevant information from public sources, it included an important clarification in its ANR GEIS Scoping Summary Report. Specifically, it noted that the "mere existence" of federal, state or local environmental permits does not obviate the NRC's duty to analyse the potentially adverse environmental impacts of a proposed licensing action.<sup>250</sup> Consequently, the staff will consider compliance with such environmental permits in addition to other considerations in reaching impact determinations for resources analysed in the ANR GEIS and site-specific supplemental EISs.<sup>251</sup>

NEPA and NRC regulations certainly require the NRC to independently evaluate the information on which it relies in assessing the impacts of a proposed licensing action.<sup>252</sup> However, this obligation does not mean that the NRC must "perform a wholly independent analysis from scratch", or that it must "reinvent every wheel or duplicate competent and professional environmental data and studies that have already been done".<sup>253</sup> Also, when conducting a NEPA review, the staff may rely heavily upon another agency's analysis where the agency has regulatory authority over the subject matter and relevant expertise.<sup>254</sup> The "critical factor" is whether the staff exercised "independent judgment with regard to its ultimate conclusions about the environmental impacts of the project."<sup>255</sup> The staff can meet this obligation by "independently review[ing] and find[ing] relevant and scientifically reasonable any outside reports or analyses on which it intends to rely."<sup>256</sup>

248. Other federal agencies have implemented such an approach. For instance, FERC allows applicants under the Natural Gas Act to prepare their own draft EA in addition to submitting a highly detailed ER. See FERC (2017), "Guidance Manual for Environmental Report Preparation for Applications Filed Under the Natural Gas Act", Vol. 1, 4-1 to 4-2, 5-1, Office of Energy Projects, Washington, DC.

249. SECY-21-0001, *supra* note 235, p. 5.

250. Scoping Summary Report, note 190, p. 5.

251. *Ibid.*

252. See *Airport Impact Relief, Inc. v. Wykle*, 192 F.3d 197, 208 (1st Cir. 1999) (CEQ regulations allow agencies to rely on information provided by others so long as they independently evaluate it and are responsible for its accuracy; it is not the intent of NEPA that work be redone, but rather that it be verified by the agency.); 10 CFR 51.41 ("The Commission will independently evaluate and be responsible for the reliability of any information which it uses."); 10 CFR 51.70(b) ("The NRC staff will independently evaluate and be responsible for the reliability of all information used in the draft environmental impact statement.").

253. *Progress Energy Florida, Inc. (Levy County Nuclear Power Plant, Units 1 and 2)*, LBP-13-4, 77 NRC 107, 213 (2013) (citing *Philadelphia Elec. Co. (Limerick Generating Station, Units 1 and 2)*, ALAB-785, 20 NRC 848, 868 n. 65 (1984)).

254. *Carolina Power & Light Co. (Shearon Harris Nuclear Power Plant, Units 1, 2, 3, and 4)*, ALAB-490, 8 NRC 234, 241 (1978); see also *Public Service Co. of New Hampshire (Seabrook Station, Units 1 and 2)*, CLI-77-8, 5 NRC 503, 527 (1977). The staff also may properly assume that a licensee will comply with concrete and enforceable conditions and requirements imposed by competent federal, state or local governmental entities. *Levy County, LBP-13-14*, 77 NRC at 217-18 (citing *Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2)*, CLI-03-2, 57 NRC 19, 29 (2003)).

255. *Limerick*, ALAB-785, 20 NRC at 868 n. 65; see also *Shearon Harris*, ALAB-490, 8 NRC at 241.

256. *Louisiana Energy Services, L.P. (National Enrichment Facility)*, LBP-06-8, 63 NRC 241, 259 (2006) (emphasis added).



▪ 3. Expanding the use of categorical exclusions and environmental assessments

As discussed in Part 2, *supra*, CEQ's updated regulations allow for broader use of categorical exclusions as a way to streamline NEPA reviews, principally by allowing categorical exclusions to be applied when an "extraordinary circumstance" is present, but mitigating circumstances or conditions are sufficient to avoid significant effects.<sup>257</sup> Again, while the NRC has not undertaken a rulemaking specifically to address the new CEQ regulations (it proposes to do so in the SECY-21-0001 rulemaking plan), there are some recent developments worth noting here.

In July 2020, the NRC staff requested Commission approval to initiate a rulemaking to establish new, and amend existing, categorical exclusions in 10 CFR 51.22(c).<sup>258</sup> One of the stated goals of the rulemaking (which would take into account the ten years of licensing experience since the last update to 10 CFR 51.22(c)) is to "provide for more streamlined and effective regulatory decision making and reduce regulatory burden for any applications subject to the new categorical exclusion by decreasing environmental information requirements for applicants and the need for staff review of this information."<sup>259</sup> The staff noted that by identifying those actions that do not meet the threshold for an EA or EIS, it will ensure that it is focused on those actions with possibly new or significant environmental impacts and that the NRC's programme is more aligned with CEQ's best practices.<sup>260</sup>

This proposed rulemaking is another positive development and will afford the industry and other stakeholders the opportunity to submit comments. However, its effect on advanced reactor licensing may be limited absent a broader, more aggressive approach by the NRC staff. The discussion in SECY-20-0065 suggests that the NRC staff is focused on licensing actions such as spent fuel storage cask certificate of compliance renewals and amendments and licence terminations where no construction has been done.

While the proposed rulemaking's scope may be largely fixed at this point, moving forward, the staff should consider modifying its Part 51 regulations to be consistent with CEQ's regulation in 40 CFR 1501.4(b)(1). As noted above, that regulation provides that when extraordinary circumstances are present, agencies may consider whether mitigating circumstances or other conditions are sufficient to avoid significant effects. NRC regulations do not permit such an approach. In fact, they preclude the use of a categorical exclusion when "special circumstances" are present.<sup>261</sup> Recently-updated NRC guidance reinforces this preclusion by stating that the "[u]se of a [categorical exclusion] would not be appropriate in those situations in which special circumstances are present; the staff must prepare an EA, or if necessary, an EIS."<sup>262</sup> The guidance defines special or extraordinary circumstances as "those in which a normally excluded action has the potential to have a significant environmental effect."<sup>263</sup>

257. 40 CFR 1501.4(b)(1), "Categorical exclusions".

258. See Memorandum for the Commissioners from M. Doane, EDO, NRC (20 July 2020), "Rulemaking Plan – Categorical Exclusions for Environmental Reviews", SECY-20-0065 (ADAMS Accession No. ML20021A160). By SRM dated 30 November 2020, the Commission approved the staff's recommendation to initiate a rulemaking to amend the categorical exclusions in Part 51. See Memorandum to M. Doane, EDO, from A. Vietti-Cook, Secretary (30 Nov. 2020), "Staff Requirements – SECY-20-0065 – Rulemaking Plan – Categorical Exclusions from Environmental Review" (ADAMS Accession No. ML20336A009).

259. *Ibid.*, p. 2.

260. *Ibid.*, p. 3.

261. 10 CFR 51.22(b), "Criterion for categorical exclusion; identification of licensing and regulatory actions eligible for categorical exclusion or otherwise not requiring environmental review".

262. NRR Office Instruction LIC-203, Rev. 4, *supra* note 97, Appendix B, "Preparation and Use of Categorical Exclusions", p. B-1.

263. *Ibid.*

Thus, the NRC's current regulations and guidance are in tension with CEQ's updated regulation. Furthermore, as CEQ explained in its July 2020 final rule, the use of "mitigated categorical exclusions" reflects current practice for some agencies and is consistent with a line of court decisions that have upheld the use of this concept.<sup>264</sup> The NRC, like numerous other agencies, already allows the use of "mitigated FONSI's", a concept that is similar to the mitigated categorical exclusion. Specifically, NRC guidance states: "If the EA demonstrates that the proposed action will, or has the potential to, significantly affect the environment, but can be mitigated to the point where the action will no longer have a significant impact, ... this scenario may involve the preparation of a 'mitigated' FONSI[.]".<sup>265</sup>

Although the NRC may prefer to first accrue licensing and operational experience for certain types of advanced reactors, the agency should consider the future use of mitigated categorical exclusions and FONSI's for such technologies. This practice could expedite advanced reactor projects while still avoiding or minimising adverse environmental impacts, and further incentivise developers of advanced nuclear technologies to incorporate environmental considerations into their designs. However, implementing this practice would require changes to another Part 51 regulation. Namely, section 51.20 requires that the NRC prepare an EIS for 11 listed categories of actions, which include permits/licences to construct and operate a nuclear power reactor, testing facility or fuel reprocessing plant under 10 CFR Part 50 or Part 52.<sup>266</sup>

Consequently, under the current regulation, an advanced reactor *demonstration* project might be presumed to require an EIS. That presumption is based on outdated regulatory analyses and overlooks the environmental "lessons learnt" from the current generation of LWRs – lessons that are being incorporated into advanced reactor designs to further minimise the risk of offsite radiological impacts (e.g. through smaller source terms, more passive safety features and new fuel designs).<sup>267</sup> Further, advanced reactor designs are expected to entail smaller construction-related impacts, consume less water and generate less used fuel. Accordingly, the NRC should consider modifying its decisional framework to permit consideration of such factors on a project-specific basis rather than treating entire categories of licensing actions as requiring an EIS.

These recommendations are consistent with CEQ's updated regulations and a draft bill introduced in the US House of Representatives on 29 July 2020. The proposed Modernize Nuclear Reactor Environmental Reviews Act directs the NRC to submit a report to Congress concerning the possible expanded use of categorical exclusions, EAs and GEISs to expedite environmental reviews.<sup>268</sup> It also directs the NRC to consider increased reliance on other federal, state, or local permits in preparing EISs and EAs; opportunities to co-ordinate the development of EIS and EAs with other federal agencies; and new categorical exclusions that could be applied to actions involving advanced reactors. The proposed law also directs the NRC to amend 10 CFR 51.20 to eliminate the requirement that an EIS be prepared for all new reactor licensing actions.

Significantly, in an October 2020 SECY paper discussing licensing topics and potential policy issues related to micro-reactors, the NRC staff noted that, as part of a broader, longer-term effort, it was considering developing a rulemaking plan to address potential

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264. See 85 Fed. Reg. at 43322 (citing 36 CFR 220.6(b)(2) (Forest Service categorical exclusions); 23 CFR 771.116-771.118 (surface transportation categorical exclusions)).

265. NRR Office Instruction LIC-203, Rev. 4, *supra* note 97, p. 7. Mitigation measures could include such things as design alternatives that would reduce emissions, construction impacts, land disturbances, aesthetic intrusion, etc. *Ibid.*, Appendix C, "Content of NRR Environmental Assessments", p. C-4.

266. 10 CFR 51.20(b)(1)(2), "Criteria for and identification of licensing and regulatory actions requiring environmental impact statements".

267. See Nuclear Innovation Alliance (2019), *supra* note 168, pp. 19-20.

268. See Modernize Nuclear Reactor Environmental Reviews Act, H.R. 7817, 116<sup>th</sup> Congress, Second Session, available at: [www.govinfo.gov/content/pkg/BILLS-116hr7817ih/pdf/BILLS-116hr7817ih.pdf](http://www.govinfo.gov/content/pkg/BILLS-116hr7817ih/pdf/BILLS-116hr7817ih.pdf).

changes to Part 51, “including the use of [EAs] to document environmental reviews instead of an EIS, as currently required by 10 CFR 51.20.”<sup>269</sup> That rulemaking plan is the one presented in SECY-21-0001. The staff notes therein that preparation of an EA may be sufficient to meet NEPA requirements to evaluate and disclose the environmental impacts for some categories or subcategories of licensing actions presently falling within the scope of 10 CFR 51.20(b), such as licence renewals for current power reactors.<sup>270</sup> Consistent with the recommendation above, the staff also is considering revising Part 51 to allow for the use of EAs for advanced reactors and non-power production and utilisation facilities (NPUFs). As it explains in SECY-21-0001:

Additionally, due to its experience with environmental reviews of large LWRs, the staff has determined that an EA may be appropriate for some advanced reactor and NPUF applications with limited environmental impacts, such as those involving the deployment and operation of micro-reactors. Furthermore, some regulations in 10 CFR Part 51, such as 10 CFR 51.51(a) (Table S-3) and 10 CFR 51.52 (Table S-4) [relating to fuel cycle impacts], are premised upon large light-water power reactors being the primary technology used by the industry. The staff recommends considering amendments to make these regulations technology-inclusive to support environmental reviews of current or potential advanced reactor and NPUF applications. This change would allow the staff to make a determination on a case-specific basis whether an EA is appropriate.<sup>271</sup>

- 4. Limiting “reasonable alternatives” considered under NEPA to those that meet the unique purpose and need for the proposed action

In correspondence with the industry, the NRC staff stated that it will base its NEPA evaluation of alternatives “on the potentially unique purpose and need for the project.”<sup>272</sup> In doing so, it recognised that “an advanced reactor applicant may request licensing for purposes other than electric power production, and alternatives that have been considered for large light water reactor licensing may not be appropriate.”<sup>273</sup> The Scoping Summary Report for the ANR GEIS contains similar statements.<sup>274</sup>

The NRC staff’s statements are consistent with the CEQ’s updated regulations as well as federal and NRC case law addressing the need and purpose statement under NEPA. The courts have held that “project alternatives derive from an [EIS’s] Purpose and Need section, which briefly defines ‘the underlying purpose and need to which an agency is responding in proposing the alternatives [to] the proposed action.’”<sup>275</sup> An agency need follow only a “rule of reason” in preparing an EIS, and this rule of reason “governs both *which* alternatives the agency must discuss, and the *extent* to which must discuss them.”<sup>276</sup> The Commission has summarised the relevant principles as follows:

The applicant’s stated purpose defines the correlating range of alternatives that should be considered: while different from the specific proposal, the alternatives

269. See Memorandum for the Commissioners from M. Doane, EDO, NRC (6 Oct. 2020), “Policy and Licensing Considerations Related to Micro-Reactors”, SECY-20-0093, Enclosure 1, “Technical, Licensing, and Potential Policy Issues for Micro-Reactors”, p. 15 (ADAMS Accession No. ML20254A363).

270. SECY-21-0001, *supra* note 235, p. 4.

271. *Ibid.*, pp. 4-5.

272. Letter to D. True, NEI, from J. Tappert, NRC (10 June 2020), *supra* note 169, p. 2.

273. *Ibid.*

274. Scoping Summary Report, *supra* note 97, pp. 6, 12-13.

275. *Citizens Against Burlington*, *supra* note 60, p. 198. See also *Friends of Southeast’s Future v. Morrison*, 153 F.3d 1059, 1066-67 (9th Cir. 1998).

276. *Citizens Against Burlington*, *supra* note 60, p. 195 (citing *Natural Resources Defense Council v. Morton*, 458 F.2d 827, 834, 837; quoting *Alaska v. Andrus*, 580 F.2d 465, 475 (DC Cir.), vacated in part as moot sub. nom. *Western Oil & Gas Association v. Alaska*, 439 US 922 (1978)) (emphasis in original).

that should be considered must still accomplish the underlying purpose of the proposed action ...

The adequacy of the alternatives analysis is judged on the substance of the alternatives rather than the sheer number of alternatives examined. So long as all reasonable alternatives have been considered and an appropriate explanation is provided as to why an alternative was eliminated, the regulatory requirement is satisfied. ... [T]he regulation does not impose a numerical floor on alternatives to be considered. The consideration of alternatives is bounded by a notion of feasibility. Alternatives that do not advance the purpose of the [project] will not be considered reasonable or appropriate.<sup>277</sup>

An important corollary to these settled legal principles is that “[w]hen an agency is asked to sanction a specific plan, ... the agency should take into account the needs and goals of the parties involved in the application.”<sup>278</sup> Therefore, “[a]n agency cannot redefine the goals of the proposal that arouses the call for action; it must evaluate alternative ways of achieving its goals, shaped by the application at issue and by the function that the agency plays in the decisional process.”<sup>279</sup> Importantly, the NRC has followed this same approach in its licensing proceedings:

Where the federal government acts, not as a proprietor, but to approve ... a project being sponsored by a ... private applicant, the Federal agency is necessarily more limited. ... When reviewing a discrete license application filed by a private applicant, a federal agency may appropriately accord substantial weight to the preferences of the applicant and/or sponsor in the siting and design of the project. The agency thus may take into account the economic goals of the project’s sponsor.<sup>280</sup>

In addition to the economic goals of an applicant, an agency also can and should consider any *congressional or other national policy considerations* cited by an applicant in its statement of purpose and need.<sup>281</sup> As staff guidance notes, such additional purposes or needs for the project may provide greater insight into the benefits of the proposed project and assist the NRC staff in defining reasonable alternatives to the proposed project.<sup>282</sup> Additional purposes could include, for example, compliance with environmental regulations and the reduction of air pollution (e.g. criteria pollutants and greenhouse gas emissions); replacing existing plants; meeting federal or state energy policy goals; increasing diversity and reliability in the generation fleet; energy independence and national security; demonstration of technological capabilities; and by-production of other commercial products (e.g. steam, hydrogen).<sup>283</sup>

277. Pa’ina Hawaii, LLC (Materials License Application), CLI-10-18, 72 NRC 56, 77-78 (2010) (internal quotation marks and citations omitted).

278. *Citizens Against Burlington*, *supra* note 60, p. 196; *Louisiana Wildlife Federation v. New York*, 761 F.2d 1044, 1048 (5th Cir. 1985) (per curiam) (“Indeed, it would be bizarre if the Corps were to ignore the purpose for which the applicant seeks a permit and to substitute a purpose it deems more suitable.”); *Roosevelt Campobello International Park Commission v. Environmental Protection Agency*, 684 F.2d 1041, 1046-47 (1st Cir. 1982) (“EPA’s choice of alternative sites was focused by the primary objectives of the permit applicant.”).

279. *Citizens Against Burlington*, *supra* note 60, p. 199 (emphasis in original).

280. *Hydro Resources, Inc.* (P.O. Box 15910, Rio Rancho, NM 87174), CLI-01-4, 53 NRC 31, 55-56 (2001) (quoting *Citizens Against Burlington*, *supra* note 60, p. 197; *City of Grapevine v. Department of Transportation*, 17 F.3d 1502, 1506 (DC Cir.), cert. denied, 513 US 1043 (1994)).

281. See *ibid.* p. 55 (noting that the purpose of a proposed uranium mining project was “to help maintain the viability of a dwindling domestic uranium mining industry,” and that “[t]he viability of the industry is a Federal concern, aimed at assuring a dependable, ongoing domestic source of uranium.”) (internal citations and quotation marks omitted).

282. *Regulatory Guide 4.2, Rev. 3*, *supra* note 90, p. 27.

283. *Ibid.*, pp. 27, 164.

While these might sound like arcane legal precepts, their rigorous application to future advanced reactor licensing actions is critically important. The length and cost of a NEPA review generally increases as the scope of the agency's alternatives analysis expands. The NRC's alternatives analyses for large LWR COL applications are illustrative. For example, for the Vogtle Units 3 and 4 COL application, the NRC staff evaluated more than ten different technologies as alternatives to nuclear power, even though Vogtle already is an operating nuclear power station. The NRC acknowledged that a number of other alternatives (e.g. the use of wood and municipal solid waste for power as well as possible combinations of multiple sources) were not reasonable, yet discussed those alternatives at some length. The NRC also performed extensive analyses of three different sites that had no tangible impact on the applicant's decision to build the new units at the existing Vogtle nuclear station site or the NRC's approval thereof.

In short, analysing a large number of alternatives, particularly where it is clear that only a few alternatives would be economically and technically feasible and realistically implemented by the applicant, diverts limited agency resources. It also is inconsistent with one of the core principles discussed above. As one court aptly put it: "When the purpose is to accomplish one thing, it makes no sense to consider the alternative ways by which another thing might be achieved."<sup>284</sup> Notably, the NRC staff's recently-issued rulemaking plan (SECY-21-0001) indicates that the staff is considering revising Part 51 to "establish[] a definition for reasonable alternatives that includes consideration of technical and economic feasibility", which would be consistent with CEQ's revised definition of that same term.<sup>285</sup>

- 5. The potential use of hearing orders for individual licensing proceedings to address applicable review standards, special instructions or guidance

In two recent advanced reactor policy papers, the NRC staff has referred to the possible use of hearing orders<sup>286</sup> to "build additional procedural flexibility into the licensing process"<sup>287</sup> and "defin[e] the applicable license review standards and any special standards or instructions."<sup>288</sup> As the staff explained in SECY-20-0093, such hearing orders could improve efficiency by memorialising and implementing NRC staff resolution of certain issues through the pre-application process discussed above:

Following receipt of an application and staff development of the proposed criteria for granting the license, the Commission could issue a hearing order. This approach would likely allow for the greatest flexibility and most efficient review (including particular instructions associated with an effective and efficient hearing process) following issuance of the order, but the overall efficiency would depend on the degree of early engagement between the applicant and the staff to develop the standards for issuance of the license that would be presented to the Commission for possible inclusion in the order. A hearing order could provide a focused regulatory structure and offer perhaps the most flexibility, but it would require substantial time and interaction between the applicant and the staff before

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284. Citizens Against Burlington, *supra* note 60, p. 195.

285. SECY-21-0001, *supra* note 235, p. 5.

286. At the outset of a licensing proceeding, and in accordance with its hearing procedures in 10 CFR Part 2, the NRC issues a notice of opportunity to request a hearing and file a petition to intervene. Given its general supervisory authority over NRC licensing adjudications, the Commission also may provide substantive and procedural guidance in the form of a hearing order issued contemporaneously with the hearing notice.

287. Memorandum for the Commissioners from M. Doane, EDO, NRC (13 Apr. 2020), "Rulemaking Plan on 'Risk Informed, Technology-Inclusive Regulatory Framework for Advanced Reactors (RIN-3150-AK31; NRC-2019-0062)'" , SECY-20-0032, p. 5 (ADAMS Accession No. ML19340A056).

288. Memorandum for the Commissioners from M. Doane, EDO, NRC (6 Oct. 2020), "Policy and Licensing Considerations Related to Micro-Reactors", SECY-20-0093, Enclosure 2, "Possible Near-Term Licensing Approaches for Micro-Reactors", p. 1 (ADAMS Accession No. ML20254A366).

submittal and acceptance of an application, and approval of the approach (including issuance of a hearing order) by the Commission.<sup>289</sup>

The Commission has issued a number of hearing orders over the years in different types of licensing proceedings, including initial licence renewal proceedings (e.g. Calvert Cliffs, Turkey Point),<sup>290</sup> the mixed oxide fuel (MOX) fabrication facility licensing proceeding<sup>291</sup> and numerous uranium enrichment facility licensing proceedings.<sup>292</sup> Hearing orders can address substantive safety and environmental issues as well as procedural matters. In the aforementioned uranium enrichment facility proceedings, the Commission provided procedural and substantive guidance aimed at expediting the conduct of those proceedings. For example, the hearing orders identified applicable rules and regulations; delineated the specific matters of fact and law to be decided in the proceedings; reserved certain rulings for the Commission (e.g. rulings on standing and the admissibility of environmental justice contentions); identified applicable legal precedent from prior proceedings; endorsed NRC staff use of EISs prepared by the Department of Energy; directed the licensing board to certify novel legal and policy issues to the Commission for resolution; provided substantive legal guidance on key topics (e.g. depleted uranium disposition, financial qualifications, foreign ownership, etc.); and directed the presiding officer and parties to develop a hearing schedule based on specific procedural milestones incorporated by the Commission into the hearing orders.<sup>293</sup>

The National Enrichment Facility proceeding is especially noteworthy, insofar as the NRC completed review of the application, the contested and uncontested mandatory hearings, and issued the facility licence in 30 months.<sup>294</sup> The Commission's guidance in the hearing order was crucial, as it served to focus both the staff's review of the application and the licensing board's disposition of contentions. Another crucial factor was the Commission's clearly stated expectation for "prompt and efficient resolution of contested issues" and elimination of "unnecessary delays in the NRC's review and hearing process."<sup>295</sup> In the hearing order, the Commission set forth a 30-month schedule, with detailed milestones for completing the proceeding, including specific time frames for discovery, summary disposition, evidentiary hearings and key licensing board decisions. In addition, consistent with the Commission's directive, the ASLB promptly certified novel legal or policy issues to the Commission for early consideration. In short, the direction and oversight provided by the Commission in the hearing order proved integral to the efficient conduct of the NRC's licensing and adjudicatory reviews.

289. *Ibid.*

290. See Baltimore Gas & Electric Co. (Calvert Cliffs Nuclear Power Plant, Units 1 and 2), CLI-98-14, 48 NRC 39, 41, motion to vacate denied, CLI-98-15, 48 NRC 45 (1998), *aff'd sub nom. National Whistleblower Center v. NRC*, 208 F.3d 256 (DC Cir. 2000), cert. denied, 531 US 1070 (2001) (providing guidance to the ASLB on the scope of the proceeding as well as discovery management and a proposed schedule); Florida Power & Light Co. (Turkey Point Nuclear Generating Plant, Units 3 and 4), CLI-00-23, 52 NRC 327, 329 (2000) (same).

291. Duke Cogema Stone & Webster (Savannah River Mixed Oxide Fuel Fabrication Facility), CLI-01-13, 53 NRC 478, 484-86 (2001) (providing guidance on the scope of the proceeding and a proposed schedule).

292. See e.g. Notice of Receipt of Application for License Notice of Availability of Applicant's Environmental Report; Notice of Consideration of Issuance of License; and Notice of Hearing and Commission Order; Louisiana Energy Services, LP; Claiborne Enrichment Center, 56 Fed. Reg. 23310 (21 May 1991); Louisiana Energy Services, L.P. (National Enrichment Facility); Notice of Receipt of Application for License; Notice of Availability of Applicant's Environmental Report; Notice of Consideration of Issuance of License; and Notice of Hearing and Commission Order, 69 Fed. Reg. 5873 (6 Feb. 2004); GE-Hitachi Global Laser Enrichment LLC; (GLE Commercial Facility); Notice of Receipt of Application for License; Notice of Consideration of Issuance of License; Notice of Hearing and Commission Order, 75 Fed. Reg. 1819 (13 Jan. 2010).

293. See Curtiss, J. and M. O'Neill (2006), "Speeding Up the Process at the NRC", *LegalTimes*, Vol. XXIX, No. 24, Week of 12 June 2006, ALM Properties, Washington, DC.

294. *Ibid.*

295. 69 Fed. Reg. at 5875, 5876.

The NRC should consider making similar use of hearing orders in future advanced reactor licensing proceedings. For example, the Commission could provide guidance on the applicability of certain NRC environmental and safety regulations and NRC/industry guidance documents (both final and draft) in a particular proceeding; provide guidance on the applicability of environmental evaluations done by other agencies (e.g. DOE or state agencies); address unique legal or policy questions identified and assessed by the industry/staff during the pre-application process (e.g. scope of project alternatives to be considered); and identify clear schedule milestones and an overall time frame for completion of the entire proceeding. These are some examples of issues or topics that might be addressed in a hearing order for a given proceeding, with the overarching goal of expediting the environmental review and overall licensing processes.

#### **PART 4: THE NEED TO SIMPLIFY THE NRC'S HEARING PROCESS FOR CONTESTED ENVIRONMENTAL ISSUES**

As described above, the NRC is implementing measures to enhance and streamline its environmental reviews for new reactor licensing actions. However, there is one significant issue that remains unaddressed, at least in any recent public forum or correspondence: the agency's hearing process for contested environmental issues. That process, which offers pleading-intensive and trial-type evidentiary proceedings on such issues, is unduly complex and can be the source of substantial costs and delays for applicants. And, as discussed below, it is not required by law. Accordingly, the NRC should re-examine – and substantially simplify – the current hearing process to bring it line with statutory requirements, federal agency norms and congressional expectations.

##### **I. *The NRC's environmental hearing process is a federal agency outlier and source of added complexity and costs in the licensing process***

For major federal actions requiring an EIS, federal agencies conduct scoping, provide for public notice and comment on the draft EIS, review and respond to comments, and then issue a final EIS along with an ROD on the project under review. As noted above, the NRC conducts this same type of public notice, comment, and response process, but also provides an opportunity to seek a trial-type hearing during which third parties can challenge both safety and NEPA issues before an ASLB. Consequently, the issues raised during the public comment process also may be (and often are) raised *again* during these proceedings.

Petitioners seeking to intervene in NRC licensing proceedings frequently submit proposed environmental contentions based on the applicant's environmental report. Substantial applicant and agency resources are required just to address the admissibility of those contentions, which are subject to the NRC's contention admissibility standards in 10 CFR 2.309(f)(1). Specifically, the applicant and NRC staff must prepare written answers to the proposed contentions (safety and NEPA contentions), prepare for and participate in oral arguments, and frequently file other related motions. The ASLB must then issue a decision on contention admissibility that, in turn, is subject to appeals before the Commission. Issuance of the ASLB's ruling usually occurs many months after initiation of the hearing. And, if any contentions are admitted, that is just the initial phase of the NRC's contested hearing process.

An ASLB's admission of one or more contentions triggers a spate of additional adjudicatory activities, including the "mandatory disclosure" and NRC staff hearing file processes, which, while preferable to formal discovery (e.g. interrogatories, requests for production, depositions), can nevertheless be very resource intensive.<sup>296</sup> Petitioners also may submit new and/or amended contentions in response to the draft EIS that require

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296. See 10 CFR 2.336, "General discovery"; 10 CFR 2.1203, "Hearing file; prohibition on discovery".

further expenditures of applicant and agency resources.<sup>297</sup> NRC rules provide for evidentiary hearings on admitted environmental contentions that are not otherwise dispositioned (e.g. via withdrawal, settlement or summary disposition).<sup>298</sup>

Under current NRC regulations, such evidentiary hearings may not be held until after the NRC staff issues its final EIS.<sup>299</sup> Thus, the hearings are by design “back-loaded” – i.e. they occur later in the overall environmental review process. These hearings, which are conducted by ASLBs, involve the preparation of extensive written filings (e.g. statements of position by legal counsel and pre-filed written testimony by experts), evidentiary exhibits, related procedural motions, proposed cross-examination questions, and post-hearing proposed findings of fact and conclusions of law.<sup>300</sup> The entire process can take many months (and sometimes years) to complete, depending on the number and nature of the admitted issues.

Further, both ASLB contention admissibility and post-hearing merits rulings (which may come in the form of multiple “partial” and final initial decisions on admitted contentions) are often appealed to the Commission.<sup>301</sup> The NRC’s appellate review process can add many months to more than a year to the adjudicatory process – and still be subject to further review by the US Court of Appeals under the Hobbs Act.<sup>302</sup> Thus, final disposition of an admitted NEPA contention can literally require years.

The author provides one example (and there are others) to illustrate these points. In the initial licence renewal proceeding for the since-closed Pilgrim Nuclear Power Station, the NRC staff completed its review of the application in approximately 20 months. Following a hearing on a safety contention, the intervenor in that proceeding appealed both the ASLB’s decision on the safety contention and an earlier ASLB summary disposition of an environmental contention. Seventeen months later, the Commission reversed and remanded the ASLB’s summary disposition of the environmental contention. It then took the ASLB another 16 months to complete the hearing and issue a decision on the remanded environmental issue. That decision was also appealed to the Commission. In addition, the intervenor filed eight other motions to reopen/requests for hearing on late-filed issues, all of which were eventually rejected.<sup>303</sup> As a result, the renewed licence for Pilgrim was not issued until the end of May 2012 – almost 6.5 years after the application was submitted and more than 4 years and 8 months after the NRC’s issuance of its final EIS.<sup>304</sup>

## **II. The NRC’s hearing process on environmental issues has its genesis in the long-outdated 1971 Calvert Cliffs court decision**

Before explaining how the current NRC environmental hearing process far exceeds statutory requirements, it is helpful to understand the origins of that process. The NRC’s practice of providing trial-type hearing opportunities on NEPA issues dates back five decades and was driven principally by the DC Circuit’s 1971 decision in *Calvert Cliffs’ Coordinating Committee, Inc. v. US Atomic Energy Commission*, 449 F.2d 1109 (DC Cir.

297. See 10 CFR 2.309(c)(1), (f)(2), “Hearing requests, petitions to intervene, requirements for standing, and contentions.”

298. See 10 CFR Part 2, “Subpart L – Simplified Hearing Procedures for NRC Adjudications”.

299. See 10 CFR 2.332(d), “General case scheduling and management”; 10 CFR 51.104(a)(1), “NRC proceeding using public hearings; consideration of environmental impact statement”.

300. See e.g. 10 CFR 2.1208, “Process and schedule for a hearing consisting of written presentations”; 10 CFR 2.1209, “Findings of fact and conclusions of law”.

301. See e.g. 10 CFR 2.341, “Review of decisions and actions of a presiding officer”.

302. Administrative Orders Review Act (Hobbs Act), ch. 1189, 3 64 Stat. 1129, 28 USC 2341-51.

303. See e.g. *Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station)*, CLI-12-21, 76 NRC 491 (2012); *Entergy Nuclear Generation Co. (Pilgrim Nuclear Power Station)*, CLI-12-15, 75 NRC 704 (2012).

304. *Entergy Nuclear Operations, Inc., Pilgrim Nuclear Power Station; Record of Decision and Issuance of Renewed Facility Operating License No. DPR-35 for an Additional 20-Year Period*, 77 Fed. Reg. 35080 (12 June 2012).



1971).<sup>305</sup> In that case, the court rejected a rule issued by the Atomic Energy Commission (AEC) (the NRC's predecessor) that excluded NEPA issues from the scope of mandatory hearings on uncontested issues and suggested that NEPA required the AEC and other agencies to consider environmental issues just as they consider other matters within their mandates. As a result, the AEC (and later the NRC) opted to include NEPA issues within the scope of all AEA-mandated licensing hearings – both uncontested and contested.<sup>306</sup> That practice has continued to this day.

In rejecting the AEC rule that excluded NEPA issues from the scope of mandatory hearings on uncontested issues, the court in *Calvert Cliffs* stated: “Perhaps the greatest importance of NEPA is to require the [AEC] and other agencies to consider environmental issues just as they consider other matters within their mandates.”<sup>307</sup> Because NEPA requires an EIS to accompany proposals through the agency review process, the court held that in the uncontested proceeding (where the presiding officer was required by the Commission's rules to determine whether the application and the record in the proceeding contained sufficient information and whether the review by Commission's regulatory staff has been adequate to support affirmative findings on various non-environmental factors), NEPA requires at least as much automatic consideration of environmental findings.<sup>308</sup>

The legal landscape has changed dramatically since the *Calvert Cliffs* decision was issued in 1971. The US Supreme Court has since held that NEPA is a purely procedural statute that does not impose substantive mandates on agencies.<sup>309</sup> Thus, in addition to being criticised at the time,<sup>310</sup> the *Calvert Cliffs* decision may be based on a view of NEPA as imposing requirements that are more substantive than the procedural requirements recognised under current case law.<sup>311</sup>

Furthermore, the contested adjudicatory process is very different from the mandatory hearing on uncontested issues addressed in the *Calvert Cliffs* case. In contested

305. *Calvert Cliffs' Coordinating Committee, Inc. v. US Atomic Energy Commission*, 449 F.2d 1109 (DC Cir. 1971).

306. See Burns, S. (2017), “Looking Backward, Moving Forward: Licensing New Reactors in the United States”, *Nuclear Law Bulletin*, No. 99, OECD Publishing, Paris, p. 10, n. 14 (“The AEC initially resisted the application of NEPA to its licensing activities but ultimately conceded its application in the face of an adverse court decision in *Calvert Cliffs Coordinating Comm. v. AEC*”). As Mr. Burns explains in his 2017 article, the mandatory hearing requirement, derives from a 1957 amendment to the AEA that required hearings at both stages; a 1962 amendment pulled back this requirement to mandate such hearings only at the construction permit stage. *Ibid.*, n. 15 (citing Pub. L. 85-256, Sec. 7, 71 Stat. 579, amended by Pub. L. 87-615, Sec. 2, 76 Stat. 409).

307. *Calvert Cliffs*, *supra* note 305, p. 1112.

308. *Ibid.*, pp. 1117-18.

309. *Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council*, 435 US 519, 558 (1978) (“NEPA does set forth significant substantive goals for the Nation, but its mandate to the agencies is essentially procedural.”); *Methow Valley Citizens Council*, *supra* note 58, p. 350 (“[I]t is now well settled that NEPA itself does not mandate particular results, but simply prescribes the necessary process.”).

310. See Murphy, A. (1972), “The National Environmental Policy Act and the Licensing Process: Environmentalist Magna Carta or Agency Coup De Grace?”, *Columbia Law Review*, Vol. 72, No. 6 (pp. 963-1007), Columbia Law Review Association, Inc., New York, p. 968 (noting that NEPA had received a remarkably “liberal” construction in the courts thus far). Commentators at the time also noted that, “[t]he opinion in *Calvert Cliffs* is characterized by what one can fairly term hostility to the AEC,” but refused to speculate as to whether that contributed to the court overstating its views of NEPA. *Ibid.*

311. See e.g. *Calvert Cliffs*, *supra* note 305, p. 1123 (stating that NEPA mandates a case-by-case balancing analysis “to ensure that, with possible alterations, the optimally beneficial action is finally taken”); *ibid.*, p. 1114 (“Only in this fashion is it likely that the most intelligent, optimally beneficial decision will ultimately be made”); *ibid.*, p. 1112 (the “general substantive policy” of NEPA “leaves room for a responsible exercise of discretion and may not require particular substantive results in particular problematic instances”) (emphasis added).

proceedings, the presiding officer (typically the ASLB) does not conduct a broad review of the sufficiency of the NRC staff's review or whether there is adequate support for the NRC staff's required findings, as is the case in a mandatory hearing.<sup>312</sup> Instead, the presiding officer may decide only those matters put in controversy by the parties, unless otherwise approved by the Commission.<sup>313</sup> Nothing in Calvert Cliffs prohibits the NRC from employing different hearing procedures for different types of issues. Indeed, NRC rules already allow different hearing procedures to be used in a proceeding.<sup>314</sup>

### III. **The NRC is not statutorily required to hold adjudicatory hearings on contested environmental issues**

Since the DC Circuit issued the Calvert Cliffs decision nearly 50 years ago, the courts have made it clear that neither NEPA nor the AEA requires the NRC to hold contested adjudications on environmental issues. Indeed, in a 2016 decision, the DC Circuit itself stated unequivocally: "The Supreme Court has been clear that the only procedural requirements imposed by NEPA are those stated in the plain language of the Act. *NEPA does not mandate particular hearing procedures and does not require hearings.*"<sup>315</sup> Other US circuit courts have reached the same conclusion.<sup>316</sup> These decisions are consistent with the US Supreme Court's holding in *Baltimore Gas & Electric* that "NEPA does not require agencies to adopt any particular internal decisionmaking structure."<sup>317</sup>

NEPA, as such, does not require hearings on its own, but instead relies on the procedures in the agency's underlying or organic statute. The NRC's adjudicatory process arises from the AEA. Specifically, section 189a. of the AEA provides that in any NRC proceeding for the "granting, suspending, revoking, or amending" of a licence, the Commission must grant a hearing "upon the request of any person whose interest may be affected by the proceeding".<sup>318</sup>

Importantly, "neither the AEA nor NEPA guarantees an absolute right to a hearing and neither dictates how the Commission should determine who receives a hearing".<sup>319</sup> Moreover, trial-type, evidentiary hearings are not mandated by the statutory language in the AEA as Congress did not "clearly indicate its intent to trigger the formal, on-the-record

312. See e.g. *Southern Nuclear Operating Co. (Vogtle Electric Generating Plant, Units 3 and 4)*, CLI-12-2, 75 NRC 63, 74-75 (2012).

313. 10 CFR 2.340(a).

314. See 10 CFR 2.310(d).

315. *Natural Resources Defense Council*, *supra* note 214, p. 652 (internal quotation marks and citation omitted; emphasis added). See also *Union of Concerned Scientists v. NRC*, 920 F.2d 50, 57 (DC Cir. 1990) ("While NEPA clearly mandates that an agency fully consider environmental issues, it does not itself provide for a hearing on those issues.").

316. *Beyond Nuclear v. NRC*, 704 F.3d 12, 18-19 (1st Cir. 2013) ("NEPA does not mandate particular hearing procedures and does not require hearings."); *San Luis Obispo Mothers for Peace v. NRC*, 635 F.3d 1109, 1115 (9th Cir. 2011) ("NEPA contains no hearing requirement."); *Kelley v. Selin*, 42 F.3d 1501, 1512 (6th Cir. 1995).

317. *Baltimore Gas & Electric Co.*, *supra* note 214, p. 100.

318. 42 USC 2239(a)(1)(A). Clearly, when Congress enacted section 189 of the AEA, it could not have intended that the section 189 hearing opportunity would encompass NEPA issues, as NEPA did not then exist.

319. *Natural Resources Defense Council*, *supra* note 214, p. 652.

hearing provisions of the APA” in either the AEA itself or its legislative history.<sup>320</sup> Although the courts have not directly ruled on this issue in the context of reactor licensing proceedings, the Commission has long construed AEA section 189.a as not requiring “on the record” hearings for reactor proceedings.<sup>321</sup>

Finally, the Administrative Procedure Act (APA), which applies to executive branch and independent agencies, does not establish a substantive right to an NRC formal hearing on NEPA issues.<sup>322</sup> Instead, the APA specifies minimum procedures for hearings when another statute or legal authority mandates a hearing opportunity.<sup>323</sup> As one court put it: “The APA lays out only the most skeletal framework for conducting agency adjudications, leaving broad discretion to the affected agencies in formulating detailed procedural rules.”<sup>324</sup>

Under the APA, hearings “required by statute to be determined on the record after opportunity for an agency hearing” are governed by sections 554, 556 and 557 of the APA.<sup>325</sup> Those provisions establish a process for formal “on-the-record” (i.e. trial-type) hearings, including witness testimony, cross-examination and independent presiding officers. While the APA itself does not use the term “informal adjudication”, that term is generally used as a residual category that includes all agency actions that are not rulemaking and that need not be conducted through “on the record” hearings described in APA section 554.<sup>326</sup>

As the US Court of Appeals for the First Circuit explained in *Citizens Awareness Network v. United States*, if hearings are not required to be “on the record”, then the procedures of sections 556 and 557 are not triggered; the only section of the APA applicable to the proceedings is section 555, titled “Ancillary matters”.<sup>327</sup> Section 555(b) entitles a party

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320. *City of West Chicago, Illinois v. NRC*, 701 F.2d 632, 641 (7th Cir. 1983) (“We find no such clear intention in the legislative history of the AEA, and therefore conclude that formal hearings are not statutorily required for amendments to materials licenses.”); *Union of Concerned Scientists v. NRC*, 735 F.2d 1437, 1448 (DC Cir. 1984) (“[W]e find that [AEA] section 189(a)’s hearing requirement does not unduly limit the Commission’s wide discretion to structure its licensing hearings in the interests of speed and efficiency.”); *Vermont Yankee*, *supra* note 309, pp. 424-25 (noting that the AEA gives the NRC “exceptionally wide latitude in designing its own proceedings” and “broad power to organize its licensing process efficiently,” particularly in “[t]he absence of statutory procedural requirements”).
321. See e.g. *Changes to Adjudicatory Process*, 69 Fed. Reg. 2182, 2183 (14 Jan. 2014) (“The key, statutory provision, Section 189.a. of the AEA, declares only that ‘a hearing’ (or an opportunity for a hearing) is required for certain types of agency actions. It does not state that such hearings are to be on-the-record proceedings. Furthermore, the legislative history for the AEA provides no clear guidance whether Congress intended agency hearings to be formal, on-the-record hearings.”); *ibid.* 2192 (“[T]he Commission continues to believe that formal, on-the-record hearings are not required by the AEA, except for the initial licensing of the construction and operation of a uranium enrichment facility under Section 193 of the AEA.”).
322. *Administrative Procedure Act*, P.L. 79-404, 60 Stat. 237 (1946). The APA is codified at 5 USC 500-596.
323. *See American Trucking Associations, Inc. v. United States*, 627 F.2d 1313, 1321 (DC Cir. 1980) (“The Administrative Procedure Act ... prescribe[s] certain procedures that must be followed by the [agency]; beyond that, procedural regulations are generally within the discretion of the agency.”); Koch Jr., C. and R. Murphy (2019), *Administrative Law and Practice*, 3d, Thomson West, sec. 2:33 (“The APA merely requires that a licensing hearing be completed in an expeditious and judicious manner. The nature of the hearing itself is determined by other statutes.”).
324. *Citizens Awareness Network v. United States*, 391 F.3d 338, 349 (1st Cir. 2005) (citing *American Trucking Associations*, *supra* note 323, p. 1321 (noting that “operating procedures ... are uniquely within the expertise of the agency”).
325. See 5 USC 554(a), “Adjudications”; 5 USC 556, “Hearings; presiding employees; powers and duties; burden of proof; evidence; record as basis of decision”; 5 USC 557, “Initial decisions; conclusiveness; review by agency; submissions by parties; contents of decisions; record”.
326. See 5 USC 551(6), (7), “Definitions”; *Izaak Walton League of America v. Marsh*, 655 F.2d 346, 362 n. 37 (DC Cir. 1981).
327. *Citizens Awareness Network*, *supra* note 324, p. 356.

to be represented by a lawyer; section 555(c) entitles people who have submitted data or evidence to retain copies of their submissions; and section 555(e) requires agencies to give prompt notice when they deny a petition made in connection with a proceeding and to give a brief statement of the grounds for denial.<sup>328</sup>

AEA section 189.a contains no reference to “on the record” hearings or to APA section 554.<sup>329</sup> (In contrast, AEA section 193, which applies to uranium enrichment facilities, does specify “on the record” hearings.) As noted above, the Commission’s longstanding view is that the NRC is not required to conduct “on the record” hearings for reactor construction permit and operating licence proceedings. Nevertheless, as the court noted in Citizens Awareness Network, even the NRC’s “informal” or “simplified” procedures in 10 CFR Part 2, Subpart L, “Simplified Hearing Procedures for NRC Adjudications”, which govern most NRC proceedings (including reactor construction permit and operating licence proceedings), meet the APA requirements for an “on the record” or “formal” hearing.<sup>330</sup> By logical extension, the NRC’s current Subpart L “informal” procedures far exceed what is required by APA section 555 (the applicable provision).

#### **IV. The NRC should use its broad discretion under the AEA and APA to simplify its hearing process for NEPA issues**

It is clear that NEPA does not require agencies to hold adjudicatory evidentiary hearings on environmental contentions. Even when “hearings” are required by other statutes, agencies are entitled to a great deal of flexibility and deference in setting their own procedures.<sup>331</sup> This deference applies to an agency’s selection of “hearing” requirements: “the courts are ‘obliged to defer to the operating procedures employed by an agency when the governing statute requires only that a ‘hearing’ be held.’”<sup>332</sup>

The NRC is no exception. In the Citizens Awareness Network case, the First Circuit highlighted the NRC’s latitude in crafting its hearing procedures.<sup>333</sup> In that case, the petitioners challenged the NRC’s 2004 rulemaking to adopt a more streamlined, less formal hearing process in 10 CFR Part 2, Subpart L.<sup>334</sup> In upholding the NRC’s revised Subpart L rules, the court emphasised that the APA gives agencies “broad authority” in formulating their procedural rules:

[A]gencies have broad authority to formulate their own procedures – and *the NRC’s authority in this respect has been termed particularly great*. A necessary corollary of this authority is the freedom to experiment with different procedural formats. Consequently, tinkering with rules is by no means a forbidden activity. ... In this case, the NRC has determined that its existing rules of practice lead to hearings that are cumbersome, unnecessarily protracted, and wasteful of the resources of the parties and the Commission. *This determination warrants a high degree of deference.*<sup>335</sup>

328. *Ibid.*, pp. 356-57. Additionally, subsections (c) and (d) require that process, subpoenas and other investigative demands be made in accordance with law. These “informal” hearings must also comply with basic due process requirements. *Ibid.*, p. 357.

329. See Union of Concerned Scientists, *supra* note 315, p. 53 (noting that AEA section 189.a “nowhere describes the content of a hearing or prescribes the manner in which this ‘hearing’ is to be run”).

330. Citizens Awareness Network, *supra* note 324, p. 351.

331. See Vermont Yankee, *supra* note 309, p. 524; Union of Concerned Scientists, *supra* note 315, p. 53.

332. Kelley, *supra* note 316, p. 1511 (citing Union of Concerned Scientists, *supra* note 315, p. 54); see also Vermont Yankee, *supra* note 309, pp. 535-49.

333. Citizens Awareness Network, *supra* note 324, p. 353.

334. *Ibid.*, p. 360. Among other changes, that rulemaking eliminated formal discovery (in favour of mandatory disclosures) and cross-examination as of right. *Ibid.*, pp. 345-46.

335. *Ibid.*, p. 352 (citations omitted; emphasis added).

The court explained that agencies can revise their rules in response to subsequent legal or factual developments: “An agency’s rules, once adopted, are not frozen in place. The opposite is true: an agency may alter its rules in light of its accumulated experience in administering them.”<sup>336</sup> An agency must, however, “offer a reasoned explanation for the change ... to demonstrate that the agency fully considered its new course.”<sup>337</sup> “It is enough that the agency reasonably determines that existing processes are unsatisfactory and takes steps that are fairly targeted at improving the situation.”<sup>338</sup>

The NRC can and should simplify its hearing procedures for contested environmental issues in light of both recent developments and the agency’s “accumulated experience” with the current process. As NEIMA’s enactment makes clear, Congress expects the NRC to “reduce cumbersome regulatory barriers [and] expedite the environmental review process” to avoid unnecessarily hindering market deployment of innovative nuclear technologies.<sup>339</sup> Streamlining the environmental hearing process (coupled with the other enhancements discussed in Part 3 above) also would align with Congressional and Executive Branch efforts to facilitate more efficient environmental permitting and licensing reviews. Finally, the Commission itself long has recognised the need to avoid unnecessary delays in its licensing review and hearing processes.<sup>340</sup>

Although specific proposed revisions to NRC regulations are beyond the scope of this article, the NRC has a range of options. On one end of the spectrum, the NRC could seek to make global changes to its hearing rules in 10 CFR Part 2 to allow use of informal (non-trial-type) procedures for safety and environmental issues for all types of licensing proceedings.<sup>341</sup> This approach would require a more extensive Part 2 rulemaking that likely would involve substantial time and agency resources to complete. On the other end, the NRC could take a much narrower or targeted approach by amending its regulations to create a simpler, streamlined hearing process for future applicants seeking to obtain advanced reactor licences under the NRC’s newly-proposed 10 CFR Part 53, which the NRC staff is now developing in response to NEIMA and endeavouring to issue in final form by October 2024.

At a minimum, the NRC should strongly consider the latter option, particularly as it pertains to *contested* environmental issues that might arise during the NRC’s review of advanced reactor licence applications submitted under the future 10 CFR Part 53 licensing framework.<sup>342</sup> Specifically, the NRC should modify its procedures to allow the existing notice and comment provisions for an EIS to qualify as an “informal” hearing under the APA. This approach would satisfy any “hearing” requirement that may exist from the confluence of section 189 of the AEA and NEPA, without providing an additional opportunity to essentially

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336. *Ibid.*, p. 351 (citation omitted).

337. *Ibid.*

338. *Ibid.*, p. 352.

339. Letter to K. Svinicki, Chairman, NRC, from the Honourable J. Barrasso and Honourable M. Braun (25 June 2019), *supra* note 174.

340. See Statement of Policy on the Conduct of Adjudicatory Proceedings, CLI-98-12, 48 NRC 18, 24-25 (1998).

341. It bears mention that the NRC regulations already permit the use of simpler, less formal hearing procedures in certain contexts. For example, Subpart N, “Expedited Proceedings with Oral Hearings” in 10 CFR Part 2 provides “simplified procedures for the expeditious resolution of disputes among parties in an informal hearing process.” 10 CFR 2.1400, “Purpose and scope of subpart N”. Subpart N hearings include an expedited oral hearing and oral motions, and strict limits on written submissions and responses thereto. With certain specified exceptions, the Subpart N “fast track” procedures are available for all NRC adjudications in which the parties agree to use Subpart N and the hearing is expected to last less than two days.

342. In this regard, the scope of and procedure for conducting mandatory (i.e. uncontested) hearings for proceedings in which such hearings are required by the AEA would remain unchanged (and thus also remain consistent with the specific holding in the 1971 Calvert Cliffs decision). That is, absent a change to the AEA itself, the Commission still would consider the sufficiency of the staff’s NEPA review in mandatory uncontested hearings.

“re-adjudicate” NEPA issues previously analysed by the NRC staff in its EIS. In other words, the NRC should take credit for its NEPA review process, which has been in effect for decades, as providing both the requisite “hard look”<sup>343</sup> at the proposed NRC action and satisfying any hearing opportunity that may apply in any proceeding in which an EIS is prepared.<sup>344</sup>

This approach is not only permissible under the AEA, NEPA and the APA, it is consistent with the longstanding practices of other federal agencies, which do not routinely offer trial-type adjudicatory proceedings on contested environmental (and other) issues.<sup>345</sup> It also is consistent with CEQ regulations addressing public participation in the environmental review process. Section 1506.6 includes detailed provisions directing agencies to facilitate public involvement, including by providing the public with notice regarding actions, holding or sponsoring public hearings, and providing notice of NEPA-related hearings, public meetings and other opportunities for public involvement, as well as the availability of environmental documents.<sup>346</sup> Section 1501.9 requires agencies to issue a public scoping notice regarding proposed actions for which the agencies will be preparing an EIS and to include specific information for, and to solicit information from the public regarding, such proposed actions.<sup>347</sup> Section 1503.1 provides direction to agencies regarding inviting comments on the draft EIS from the public and requesting information and analyses.<sup>348</sup> The NRC’s current Part 51 regulations meet all of these public participation requirements. As discussed above, no formal adjudicatory process (i.e. trial-type evidentiary hearing) is required by applicable law.

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343. Methow Valley Citizens Council, *supra* note 58, 353 (citations omitted). NEPA does not impose a substantive duty on agencies to mitigate adverse environmental effects or to include in each EIS a fully developed mitigation plan. Rather, federal agencies are required to take a “hard look” at environmental consequences and provide for broad dissemination of relevant environmental information. *Ibid.*, pp. 332, 350 (citing *Kleppe v. Sierra Club*, 427 US 390, 410 (1976)).

344. Given that there is not the same opportunity for a hearing through notice and comment on an EA and FONSI as there is with an EIS, the NRC might consider keeping the decision to issue a FONSI rather than prepare an EIS (based on its EA) within the current contested adjudicatory process. This approach would allow petitioners to challenge the adequacy of the EA (which may later result in an EIS) and allow applicants the opportunity to present evidence in the proceeding to supplement the EA. See e.g. *Florida Power & Light Co. (Turkey Point Nuclear Generating Units 3 and 4)*, CLI-16-18, 84 NRC 167, 170 (2016) (upholding an ASLB decision that evidence developed during the adjudicatory proceeding cured the identified deficiencies in the EA obviated the need for the NRC staff to further revise the EA).

345. For example, FERC routinely holds paper hearings on contested matters (including NEPA issues) rather than an in-person, trial-type hearings. Both FERC and the federal courts have concluded that such hearings are sufficient where the paper record provides a sufficient basis for resolving the relevant issues. See e.g. *Moreau v. FERC*, 982 F.2d 556, 568 (DC Cir. 1993); *Transcontinental Gas Pipeline Co.*, 158 FERC 61125 at 8 (3 Feb. 2017) (“Although our regulations provide for a hearing, neither section 7 of the [Natural Gas Act] nor our regulations require that such hearing be a trial-type evidentiary hearing. When, as is usually the case, the written record provides a sufficient basis for resolving the relevant issues, it is our practice to provide for a paper hearing.”) (citing *Minisink Residents for Environmental Preservation and Safety v. FERC*, 762 F.3d 97, 114 (DC Cir. 2014) (stating “FERC’s choice whether to hold an evidentiary hearing is generally discretionary.”)). In this regard, FERC has noted that trial-type evidentiary hearings are necessary only where there are material issues of fact in dispute that cannot be resolved on the basis of the written record. See e.g. *Florida Southeast Connection LLC*, 154 FERC 61080 at 15 (2 Feb. 2016). As discussed above, with very limited exceptions, the NRC holds similarly broad discretion under the AEA and APA in formulating its hearing procedures for both environmental and safety issues.

346. 40 CFR 1506.6, “Public Involvement”.

347. 40 CFR 1501.9, “Scoping”.

348. 40 CFR 1503.1, “Inviting Comments and Requesting Information and Analyses”.

## PART 5: CONCLUSION

The US commercial nuclear power industry has reached another critical juncture in its long history. Although the current US nuclear fleet provides more than half of the nation's carbon-free emissions electricity and continues to set performance records, it is ageing and faces significant market-driven economic challenges. Those challenges are evidenced by the premature retirement of nearly a dozen reactors over the past seven years. Thus, for nuclear power to remain an integral component of the US electrical generation portfolio in the long term, the deployment of next-generation reactors is imperative.

The industry, US Government and other entities have recognised this reality, as well as the importance of a robust civilian nuclear industry to key US economic, environmental and geopolitical objectives. As a result, they have undertaken efforts to usher in a new era in US nuclear power generation by pursuing and promoting the development of advanced reactor technologies and facilitating their commercialisation. Those efforts are manifest in numerous private sector ventures, public-private partnerships, bipartisan legislation supportive of advanced reactor technologies and related federal funding opportunities. These efforts are generating tangible results, as evidenced by the rapid emergence of dozens of viable advanced reactor technologies and the NRC's recent, ongoing, and anticipated future reviews of numerous advanced reactor licensing requests.

Through the Nuclear Energy Innovation and Modernization Act and other vehicles, Congress has made clear that it expects the NRC to improve the efficiency, timeliness and cost-effectiveness of licensing reviews of commercial advanced nuclear reactors. Consequently, the NRC and industry are engaged in a multitude of activities aimed at enhancing and streamlining both the safety and environmental review components of the NRC licensing process. This article focused on the latter, i.e. the NRC's environmental review under NEPA and 10 CFR Part 51. As discussed above, to date, the NRC's environmental reviews for new LWR projects (i.e. ESP and COL) have averaged about four years and culminated in voluminous EIS documents – a trend that has been observed across US federal agencies.

This trend has precipitated various government-wide, industry and agency efforts to improve the timeliness and efficiency of the NRC's environmental process under NEPA and Part 51. Government-wide initiatives have targeted the NEPA process more broadly and include FAST-41, EO 13807 and CEQ's updated regulations. Nuclear industry and NRC actions have been directed at the NRC's environmental review process under NEPA and Part 51. They include industry reports, NRC staff internal process reassessments and organisational changes, the development of new guidance documents, and proposed NRC rulemaking activities.

Substantial progress is being made. The NRC staff has implemented certain process-related improvements that already have paid dividends in the form of more efficient environmental reviews for reactor-related licensing projects, including the Clinch River ESP and several subsequent licence renewals. It also is working on numerous other initiatives to enhance and streamline environmental reviews for advanced reactors. They include, for example, the development of a GEIS for advanced nuclear reactors that uses a technology-neutral, plant parameter envelope approach; issuance of interim staff guidance to assist the NRC staff in determining the scope and scale of environmental reviews of micro-reactor licence applications; detailed guidance to inform and optimise applicant and agency pre-application environmental review activities; increased use of tiering, incorporation by reference and adoption; the potential expanded use of categorical exclusions and environmental assessments; and guidance on project need and purpose statements and the consideration of reasonable project alternatives. The NRC also is assessing the potential use of other streamlining principles embedded in the CEQ's updated NEPA regulations and recently issued an associated rulemaking plan for Commission approval.

One significant issue that the NRC has not squarely addressed is the need to simplify its hearing process for contested environmental issues. The NRC's current trial-type evidentiary hearing process for environmental issues unnecessarily extends and complicates the NEPA review process, without providing demonstratively commensurate

benefits. Indeed, it is redundant given the NRC staff's NEPA-mandated detailed environmental review (which allows for ample public participation) and the Commission's statutorily-mandated "sufficiency" review for new reactor licensing actions. Moreover, no statute – including NEPA, the AEA or the APA – requires the NRC to hold formal, adjudicatory hearings on environmental issues. The US federal courts repeatedly have recognised this fact in controlling decisions involving NRC licensing actions. They also have held that the relevant statutes give the NRC exceptionally wide latitude in designing and organising its licensing proceedings.

Accordingly, the NRC should consider amending its regulations to adopt informal hearing procedures that are satisfied by the notice-and-comment process customarily associated with agency NEPA reviews and already implemented by the NRC as part of the EIS preparation and publication processes. The NRC's current trial-type adjudicatory process is not necessary for the agency's compliance with NEPA's dual purposes of: (1) ensuring that federal officials fully consider the environmental consequences of federal actions before reaching major decisions and (2) informing the public, Congress and other agencies of those consequences. Those purposes can be met (and routinely are met) through the NRC's preparation of high-quality EISs and EAs and good faith consideration and disposition of public comments. Implementing this recommendation would facilitate a timelier and more efficient NEPA review process for future advanced reactor licence applications.



## Slovak legal system for ensuring feasible nuclear back-end system implementation

### Part 1: Description of the current status

*by Martin Macášek, Vladimír Slugeň and Michal Šnírer\**

In the 70-plus years of peaceful uses of nuclear energy, the nuclear industry has reached a mature awareness of its importance, influence and responsibility for and towards the world. Not only does it dutifully regulate itself in technical aspects, making the use of nuclear energy stricter and safer by any and all means possible, it also establishes policies, backed by legislation, for its decades-long activities. Thus, the industry has recognised the need to systematically approach and solve the issue of complete dismantling of its (previously operating) facilities and final disposal of the operational and decommissioning waste (including spent nuclear fuel (SNF)<sup>1</sup>). This sought end state must be reached both by technical means as well as by creating a sound system for today's continuous accumulation of funds, needed for the future implementation of the selected technical solution (including final disposal of SNF).

Strictly perceived through the perspective of implementation, all existing nuclear facilities can be decommissioned by today's technical means. As is usually the case with large-scale infrastructure projects, money is the issue. Each country sets up different systems to ensure financing and implementation of these projects. The adoption of various nuclear back-end strategies results from each country's different legal system, economic ability and the national nuclear industry's historic development.

The Slovak Republic currently has ten nuclear facilities in two different locations – Jaslovské Bohunice and Mochovce – owned by two different companies, Jadrová a vyradovacia spoločnosť, a.s. (JAVYS) and Slovenské Elektrárne, a.s. (SE). The facilities range from nuclear power reactors under construction (two units), nuclear power plants in operation (two, each with two units) and undergoing decommissioning (two, with three units in total), as well as non-reactor facilities for radioactive waste (RAW) treatment, storage and disposal (four) and SNF storage (one). An overview of these facilities is provided in Figure 1:

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1. In accordance with the terminology used in the Atomic Act, this article uses the term “spent nuclear fuel”. However, legislation reacts more slowly and has yet to incorporate the commonly accepted situation that the material referred to as SNF is, as perceived by the owner-operator, still an energy source that can potentially be converted into MOX fuel or used in the future in GenIV reactors. Until its owner-operator declares that this material (SNF) is indeed a non-usable product of the fission reaction, one should respect the operator's ownership rights to this material, including the right to convert it to whatever form deemed valuable for future use. Thus, the more appropriate term would be “irradiated fuel”. But, because the Slovak legal system does not use this term, this article continues to use the term SNF.

Name of the facility	Site	In operation since – to	Owner
Bohunice A1 (one heavy water gas-cooled reactor)	Jaslovske Bohunice	1972-1977	JAVYS
V1: Bohunice 1 and 2 (two VVER 440 model [V230 type] reactors)	Jaslovske Bohunice	1978-2006 and 1980-2008	JAVYS
V2: Bohunice 3 and 4 (two VVER 440 model [V213 type] reactors)	Jaslovske Bohunice	1984- and 1985-	SE
Mochovce 1 and 2 (two VVER 440 model [V213 type] reactors )	Mochovce	1998- and 1999-	SE
Mochovce 3 and 4 (two VVER 440 model [V213 type] reactors)	Mochovce	Under construction	SE
Interim Spent Fuel Storage	Jaslovske Bohunice	1987-	JAVYS
RAW Treatment Centre	Jaslovske Bohunice	2000-	JAVYS
National RAW Repository	Mochovce	2001-	JAVYS
Liquid RAW Treatment	Mochovce	2007-	JAVYS
Interim Storage of RAW	Jaslovske Bohunice	2017-	JAVYS

**Figure 1. Nuclear facilities in the Slovak Republic**

Each facility will be safely decommissioned once it stops operation. The natural exception from this rule represents the National RAW Repository in Mochovce, which, by default, will not be decommissioned. Instead, once its operations are shut down, it will be closed and institutional surveillance will be established.

The Slovak Republic established its nuclear back-end system (NBES) through three different legislative acts and one governmental decree:

- Atomic Act (Act No. 541/2004 Coll.), which regulates the primarily technical (i.e. nuclear and radiological) safety of the operation of nuclear facilities, their decommissioning, as well as transport of RAW and SNF and overall management of nuclear facilities.
- Act on Radiation Protection (Act No. 87/2018 Coll.) (Act on RP), which regulates activities leading to radiation exposure of the workforce, as well as of general public.
- Act on the National Nuclear Fund (Act No. 308/2018 Coll.) (NNF), which ensures long-term financial safety and stability for implementation of the NBES over a fifty-to one hundred-year time span. Also, it creates a system (including its financing) for the education of future generations of experts necessary for NBES activities. The Act on the NNF is organically linked with both previous acts.
- Governmental Decree No. 387/2015, which approved the National Policy and National Programme on Treatment of Spent Nuclear Fuel and Radioactive Waste in the Slovak Republic (hereinafter “National Policy” or “National Programme”). The National Policy and National Programme<sup>2</sup> were designed in the framework required by Council Directive 2011/70/Euratom.<sup>3</sup> The National Policy and National Programme thus represent a long-term plan for safe and financially stable NBES activities in the Slovak Republic.

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2. The current National Policy and National Programme are based on its predecessor, approved by the Slovak Government in 2008 and 2014 respectively. The Slovak Republic is currently preparing a new revision of the National Policy and National Programme, which is to be approved in 2021.
  3. Council Directive 2011/70/Euratom of 19 July 2011 establishing a Community framework for the responsible and safe management of spent fuel and radioactive waste, *Official Journal of the European Union* (OJ) L 199 (2 Aug. 2011) (Waste Directive)

This legislative framework aims to provide a sound and functional system, taking into account technical, fiscal and legislative conditions, to ensure safe and timely implementation of all NBES goals.

### **Act No. 308/2018 Coll. on the National Nuclear Fund**

Of the three acts described, the Act on the NNF has the greatest impact on the feasibility of NBES implementation. Passed by the Slovak Parliament in 2018, it represents a direct continuation of the two preceding acts from 1994 and 2006. Therefore, it follows up on the NBES financing scheme that was set up in 1994 by the first Act on the National Nuclear Fund (Act No. 254/1994 Coll., in effect 1995-2006).

Although the second Act on the National Nuclear Fund (Act No. 238/2006 Coll., in effect 2006-2018) transposed all provisions of the Waste Directive, some of these changes, along with other amendments, showed that it would be more practical and efficient to prepare a new act, rather than continue to amend the 2006 act. The new Act on the NNF thus incorporates all international and domestic developments and also takes into account the relevant changes in the Slovak Republic. And, most importantly, it contains the same rights and duties of the previous acts, including the accumulated funds for future NBES activities.

The new Act on the NNF's goal was to improve the then-existing system of responsibility sharing and financial security for implementation of the NBES so as to address the following aims as best as possible:

- to split responsibility for individual steps in the NBES to entities that are bound to execute these steps;
- to explicitly define the Slovak Republic's ultimate responsibility for all activities in the NBES, including long-term storage, decommissioning and disposal of SNF and RAW. As such, an entity 100% owned by the Slovak Republic was determined to be the only authorised entity to implement all of these activities on behalf of the Slovak Republic, while the financial responsibility to fund all of the NBES activities has remained with the operators of the nuclear facilities;
- define means, conditions and deadlines for transfer of a nuclear facility from the "operating" company to the "decommissioning" company so that safety and economic efficiency remain during the decommissioning stage;
- accumulate additional future decommissioning funds by increasing the group of mandatory contributors to the NNF, such that not only operators of commercial nuclear power reactors contribute, but all other non-reactor nuclear facilities' licence holders (operators) contribute as well;
- define a new, efficient, transparent and fair formula for setting up and re-evaluating the financial contributions to the NNF (up to 60 years of operation) by all operators, independent of actual market values of wholesale electricity price (as was the case with the prior acts on the NNF);<sup>4</sup> and
- explicitly specify categories of expenses that are eligible to be covered from the NNF for NBES activities.

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4. However, all three systems so far have been set to accumulate necessary decommissioning funds in time (including funds for respective SNF and RAW storage, treatment and disposal) only to 100% of today's cost estimation calculations, without any margin for error. Accumulation of greater than 100% of today's estimated decommissioning costs for contingency purposes is still a subject of discussion.

## Changes brought by the new Act on the NNF

While drafting the Act on the NNF, the legislature had the challenge of ensuring that whatever changes are made, the continuity and usability of funds accrued by the two previous acts is ensured. The other challenges of the new Act on the NNF were to draft the new legislation so that the regulated subjects would not have major new responsibilities, the role and duties of the NNF would stay the same, and that the continuity with the previously established system would remain.

A few principles remained between all three acts on the NNF. The first is the establishment of the NNF as a “state fund”, which was defined under the first NNF in 1995. The “state fund” is a specific legal entity, established by law and owned by the state. This was selected to ensure its long-term survivability, since the founder is the state. Also, by law, all state funds must keep their finances in the National Treasury, a state bank that handles the state budget as well as the finances of all state agencies and bodies. This structure is meant to guarantee that the funds will not be mismanaged or that the financial institution would go bankrupt or cease to exist.

A second principle that has transcended all three acts is that the costs of the decommissioning-related SNF and RAW management (i.e. storage, treatment and disposal) are considered as part of the whole “decommissioning costs”. The operators are thus bound to estimate not only the costs of the decommissioning and dismantling works, but also of the associated SNF and RAW management and disposal.

There are a number of differences, however, between the previous and current Act on the NNF. The new Act on the NNF clearly distinguishes the responsibilities of nuclear facility operators (as producers of SNF and RAW) and the Slovak Republic, which has the ultimate responsibility for safe management of SNF and RAW, including up until disposal at a dedicated facility, under international treaties. The “polluter pays” principle remains firmly embedded in the system as operators’ responsibility (i.e. the producers of SNF and RAW).

Further, the new Act on the NNF, for the first time, explicitly names the main values and principles of NBES financing, though they were already implemented in the previous acts, just not listed. By naming them as general principles for all aspects of the Act on the NNF, all necessary and consecutive activities are to be understood and implemented accordingly and all entities bound to adhere to them. The principles and values are:

- NBES financing lies with the licence holders whose nuclear facilities produce the SNF and RAW;
- licence holders’ NBES financing duty is fulfilled when they have paid the full overall value for the facility’s decommissioning (including resulting SNF and RAW management and disposal), as set by the NNF for the given facility;
- nuclear facilities’ licence holders are not responsible for the financial management of the NNF;<sup>5</sup>
- the NNF’s duty is to provide financing for NBES implementation in a sufficient amount and in due time, in accordance with the National Programme;
- the NNF manages, allocates and distributes the funds in a non-discriminatory and transparent way; and
- the NNF ensures the appropriate safe optimisation of the funds under its management.

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5. This is executed by and is the responsibility of the Board of Governors of the NNF.

All nuclear facilities are now required to contribute to the NNF (not just nuclear power reactor facilities), fixing a financial and legislative omission. The Slovak Republic now has a unified approach to all nuclear facilities and further increased the assurance of sufficient financial means for decommissioning and RAW (and SNF) treatment and disposal, when the need arises.

There was a level of industry-wide uncertainty present in the previous acts on the NNF, as they did not set exact rules for the calculation of mandatory contributions to the NNF and the amount was set by Parliament via amendments to the previous acts on the NNF. However, the new Act on the NNF made a major change by stating that the amount of mandatory contributions (the main source of NNF income for financing of future NBES activities) will be calculated jointly by the Board of Governors of the NNF and representatives of the concerned nuclear facilities. These calculations must be made according to planned future activities and their scope. Also, the structure of the costs must be in accordance with the National Policy and National Programme. Based on the calculations made, the amount of contributions is published by Government Resolution. This has increased transparency in the process, as well as ensured expert input in setting the contributions.

For better use of the accumulated funds, the new Act on the NNF specified in greater detail the structure and scope of eligible expenses that can be financed from the NNF. In addition to “standard” activities (like decommissioning; management (and, if eligible, disposal) of SNF, RAW and institutional RAW and radioactive materials of unknown origin; purchasing land for research and construction of repositories; and payment of the decommissioning company’s third party liability insurance), the new Act on the NNF defined a relatively revolutionary new eligible expense: use of NNF funds for “support in education, increasing of qualification and mastership for the purpose of maintaining and accumulating knowledge and to support research and development”<sup>6</sup> (for decommissioning activities in the future). In order to maximise the legal certainty envisioned under the new Act on the NNF, it has explicitly stated that drawing on the NNF resources is limited to only those activities defined in the National Policy and National Programme. Naturally, these activities can be financed only up to the limit of the accrued funds.

Through the Act on the NNF, the National Policy and National Programme have thus become the key strategic, economic, legal and technical tools for all concerned parties (especially regulatory bodies and operators/owners). They also outline the end-state of the current nuclear facilities and their sites, thus defining not only today’s shape, but also the future shape of the nuclear industry in the Slovak Republic.

### **Act No. 87/2018 Coll. on Radiation Protection**

The Act on RP was passed by Slovak Parliament early in 2018 to incorporate all national, but primarily EU, legislative changes, which took place since 2007, when the previous Act on Radiation Protection was approved. The new Act on RP continues to provide a holistic legislative framework for radiation protection in all areas related to the use of ionising radiation.

The Act on RP is organically intertwined with the Act on the NNF. The main impact that the Act on RP has on the Act on the NNF is that the Act on the NNF stipulates that “positions of the relevant authorities in the field of radiation protection” are an inseparable part of the National Policy and National Programme. Additionally, the acts take a co-operative approach on emitters where a human exposure is anticipated or with radioactive materials of unknown origin. For example, the Act on RP requires that every applicant requesting permission to handle high-activity emitters is legally obligated to first put down a deposit with the NNF to cover all potential costs related to collection, sorting, storing, treatment and disposal of unused high-activity emitters when it becomes

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6. Act on the NNF, No. 308/2018 Coll., Art. 12, para 1(j).

radioactive waste. This obligation can be omitted only if the applicant provides at the time of the request the following:

- a contract for the return pickup of the emitter by its producer or importer; or
- a contract for commercial insurance to cover expenses for the emitter's liquidation and disposal in the case of insolvency of the applicant at the time when the emitter will cease to be in use or should it become "abandoned"; or
- a contract for disposal of the emitter with an entity licensed to collect, sort, store, treat and dispose unused institutional RAW at the time such emitter will become unusable.<sup>7</sup>

The Act on RP thus provides provisions for the NNF to step in as the last resort in terms of protection of human health and environment against ionising radiation if there is need to seek out, treat and dispose of such emitters safely. Also, if the emitter's owner is unknown, the cost of its safe treatment is borne by the Slovak Republic through the use of funds accumulated in the NNF. But, to balance the owner's responsibility of ensuring proper handling and later disposal of highly active emitters, the Act on RP stipulates that once the owner hands over the emitter to an entity licensed to treat such emitter, or returns the emitter to the producer or importer, the NNF must return the deposit in full. An exception to this rule is that the deposit will not be returned (but also a new deposit will not be required) if the owner (or importer) exchanges the old emitter for a new emitter of equal type.

## **National Policy and National Programme of the Slovak Republic**

In 2006, Slovak legislation stipulated that the then-NNF, along with other ministries, regulators and operators, must prepare, implement and update the so-called "Strategy for the back-end cycle of the peaceful use of nuclear energy". Based on the 2006 Act on the National Nuclear Fund, the Slovak Government approved this strategy on 21 May 2008. An update to this strategy was approved on 15 January 2014.

The Waste Directive was incorporated into Slovak legislation by amendments in 2013 to the Atomic Act and the Act on the NNF. The amendment redefined that instead of a national strategy, the European Commission's unified format of a National Policy and National Programme shall be used. In accordance with the implementation deadline of the Waste Directive, the national strategy was transformed into the National Policy and National Programme, which were both approved by the Slovak Government on 8 July 2015.

As in previous legislation, the Act on the NNF stipulates that the National Policy and National Programme is drafted by the NNF's Board of Governors (in co-operation with the concerned authorities and licence holders). The Ministry of Economy (as the relevant ministry overseeing national energy policy) reviews it and submits to the Slovak Government for its final and formal approval.

The National Policy and National Programme reflect fundamentals set by international treaties and EC law, which are binding on the Slovak Republic. These fundamentals are also explicitly listed in the Act on the NNF as the National Policy's principles:

- The Slovak Republic has the ultimate responsibility for management of SNF and RAW that are produced within its territory.
- The Slovak Republic is also responsible for the safe and timely disposal of any and all SNF and RAW inventory sent for reprocessing abroad, including their reprocessing by-products (unless a valid international treaty stipulates otherwise).

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7. Act on RP, No. 87/2018 Coll., Art. 30, para 9.

- RAW production is to be kept to a technically feasible minimum amount, both in terms of volume and activity.
- Due attention must be paid to all interconnections and dependencies in all activities regarding SNF and RAW production and treatment.
- All activities regarding management of SNF and RAW, now and in the future, must be safe. The safety of repositories must be ensured such that no active involvement will be necessary once they reach the end of their operation.
- Implementation of all steps is subject to a graded approach.
- Costs of SNF and RAW management are paid by the producer.
- The decision process in all SNF and RAW activities and management is based on scientific evidence.

Although the Act on the NNF has explicitly defined the principles of the National Policy, it failed to define its goals. The goals are thus currently defined only in the National Policy itself and include: safe and reliable decommissioning, minimisation of RAW, selection of a suitable fuel cycle, safe storage and management of SNF and RAW, ensuring nuclear safety and the polluter pays principle.

The National Policy and National Programme thus include not only treatment of SNF and RAW, but also all other possible aspects connected to the nuclear back-end cycle in the Slovak Republic, including decommissioning of nuclear facilities; handling of institutional RAW and radioactive materials of unknown origin; and construction, operation and closure of repositories.

## Conclusion

The present Slovak legislation creates a sufficiently robust, but also a sufficiently flexible, system to implement activities of the nuclear back-end cycle. Its most important feature is uninterrupted continuity in accumulation and management of funds, necessary for future nuclear back-end cycle activities, since 1 January 1995. Provision of the realistic and durable conditions stabilises the whole of the Slovak nuclear industry and provides a reasonable sense of stability to all stakeholders: the state, operators and population.

Naturally, a system created to last for a century must continue to evolve and update. The tasks for the immediate future will be to focus on:

- adding the circular economy principle to the list of key principles of the Act on the NNF and thus of the NBES as well;
- legally mandating that all decommissioning cost estimates are prepared in the same format and under the same methodology;
- including missing incentives for cost minimisation;
- fixing the current absence of any financial buffer in estimated decommissioning costs;
- defining a deadline up until which the nuclear facility has to accrue the whole sum for its future decommissioning; and
- inclusion of a more detailed legal call for preparation, construction and operation of the deep geological repository. At the moment, the Act on the NNF only states that the construction of the deep geological repository is eligible for financing, but neither the Act nor the National Programme provides any feasible roadmap. Therefore, the currently calculated costs for its construction and operation has significant margin for uncertainty.

Two years after the implementation of the new Act on the NNF, the relevant stakeholders believe that the changes have fulfilled their purpose and that the new Act creates a solid and workable solution for the industry's needs. Naturally, the efficiency of the new system is subject to its constant evolution and updating. Although a need for further improvements has already been identified, the overall system is set up in an efficient way, allowing for its future advancement. There is no simple solution to effectuating the improvements, as there are many different considerations for every aspect, depending on the concerned parties. In the planned second instalment to this article, the authors will present their, as unbiased as possible, opinion on some of possible future improvements to the listed areas.



## CASE LAW

### Belgium

#### ***Ruling by the Court of First Instance in Brussels, 3 September 2020, regarding Tihange 2***

In 2016, a claim was introduced before the Court of First Instance in Brussels (Nederlandstalige rechtbank van eerste aanleg te Brussel) by several private persons and local governments from Germany, Luxembourg and the Netherlands against the Federal Agency for Nuclear Control (FANC), the Belgian State and the operator (Electrabel, the Belgian unit of the French utility Engie). The claim was based on FANC's 17 November 2015 decision allowing Tihange 2 to restart after hydrogen flakes were discovered in the reactor vessel in 2012 while the unit was shut down for periodic maintenance.

After the discovery, Tihange 2 was not allowed to restart. FANC determined that the operator had to provide the necessary evidence that the safety of the reactor vessel could be guaranteed. The operator provided a substantive safety case, which was then thoroughly examined by the FANC and additional teams composed of national and international experts. Based on all available information and analyses, the examination provided sufficient certainty that the presence of the hydrogen flakes did not pose an unacceptable impact on the safety of Tihange 2. The FANC then decided, after three years, that Tihange 2 could be restarted on 17 November 2015.

The plaintiffs sued the FANC on the basis of its civil liability. In their reasoning, the FANC's decision to restart was made based on an insufficient examination and was without due consideration for the possible consequences of the unsafe operation of Tihange 2 caused by the presence of the hydrogen flakes. The plaintiffs also contended that the FANC had not acted in a transparent way and had intentionally withheld information from the public with regard to the examinations of the safety case. They claimed to be suffering damage caused by the operation of Tihange 2, which among others was the claim of a psychological burden due to the constant fear of an imminent severe accident because of the presence of the hydrogen flakes.

On the 3 September 2020, the court ruled in favour of the FANC. In the first place, the court found that the plaintiffs had a sufficient legal interest. The court found there to be a personal interest in the proceedings for the private persons. The public persons also provided for a demonstrable interest in the linkage with a possible impact on their assets and reputations. For the involved non-governmental organisation (NGO), the court referred to the existing case law of the Court of Justice of the European Union<sup>1</sup> stating that NGOs, with a goal aimed at environmental protection, should have the opportunity to challenge before a court a decision taken following administrative proceedings liable to be contrary to environmental law.

Secondly, after the finding of sufficient legal interest of the plaintiffs, the court analysed whether the FANC acted as a diligent regulator when examining and evaluating the hydrogen flakes situation and ultimately when deciding that Tihange 2 could be restarted

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1. Judgment of the Court (Grand Chamber) of 8 March 2011, *Lesoochránárske zoskupenie VLK v Ministerstvo životného prostredia Slovenskej republiky*, C-240/09. EU:C:2011:125.

with no impact on nuclear safety. In its ruling, the court stated that based on all the presented evidence, the FANC had acted as a diligent regulator. The court's decision stated clearly that the FANC had acted immediately after the discovery in 2012 and consequently had taken every possible measure to ensure that a thorough examination, by itself and by other national and international experts, of the impact of the presence of the hydrogen flakes on the safety of the reactor vessel was done. Moreover, the court confirmed that no legal framework exists (national or international) with regard to the phenomena of hydrogen flakes and nothing excludes the safe operation of a reactor vessel in this case. The plaintiffs did not provide any argument to convince the court of the contrary.

Furthermore, the court found that the FANC had communicated to the public in an open and transparent way about the case by providing a specific page on its website (where all the necessary reports and opinions were available) and giving regular updates as well as press releases about the situation.

In concluding, the court said that there could be no accountability of FANC as it was clear that the FANC had acted as a diligent regulator and that the decision of 17 November 2015 did not put economic or other interests above the safety of the public.

## Japan

### ***Request for injunction against prior consent to restart nuclear power plant***

After the Fukushima Daiichi nuclear power plant accident, many legal cases were brought by residents living near nuclear power plants demanding an injunction against plant operations.<sup>2</sup> Their main concern was the safety of the nuclear reactors in the event of an earthquake or volcanic activity. Until recently, residents often pursued deficiencies in reactor safety against nuclear operators in the case of injunctions based on personal rights. But, in a recent case, a local government's prior consent to restarting a nuclear power plant became an issue. In this case, the residents tried to prevent the reactor's restart by blocking the local government's prior consent. Thus, it can be inferred that there are more ways to request injunctions against reactor operations than in the past.

#### 1. *The Japanese system in this case*

##### ▪ 1.1 Two prior consent procedures related to reactor restart

In operating a nuclear power plant, it is essential that the operator obtains the understanding of the local residents and in particular the local government that represents them. Two types of prior consent procedures are followed (collectively referred to as "this consent").

The first procedure is consent based on nuclear safety agreements. In this, the local government in the area where a nuclear power plant is sited enters into a "Nuclear Power Safety Agreement" with the nuclear power plant operator to ensure the safety of the plant and verify its implementation of safety measures on behalf of the local residents of the area. Since this agreement is formulated in a negotiation with the operator, it is flexible and allows for the incorporation of region-specific content. It may also include provisions that require the operator to consult with the local government and obtain consent in advance when a new reactor is to be constructed or modified.

This agreement is voluntarily entered into between the operator and the local government, and there is no requirement in the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (Reactor Regulation Act) stipulating the

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2. Recent decisions have been discussed in NEA (2020), "Update on the situation regarding preliminary injunctions against nuclear power plant operations since the Fukushima Daiichi nuclear power plant accident", *Nuclear Law Bulletin*, No. 104, OECD Publishing, Paris, pp. 10-12.

nuclear power plant's safety measures. But, there have been no cases in which operations were resumed without the prior consent of the local government, as operators have been effectively restrained from doing so.

The second consent procedure is based on an expression of understanding and consent to the restart to the Minister of Economy, Trade and Industry (METI). With Japan's Basic Energy Plan,<sup>3</sup> nuclear power plant safety is left to the Nuclear Regulation Authority's (NRA) determination. The Plan stipulates that the government will follow the NRA's judgment and proceed with the restart of the nuclear power plants when the NRA confirms that the nuclear power plants have abided by all the new regulatory requirements. In addition, the central government will make best efforts to obtain the understanding and co-operation of the host municipalities and other relevant parties. Specifically, to restart a nuclear power plant, METI requires the local governments to find the idea suitable and give its consent. If the local government consents to the nuclear power plant's restart, it must do so expressly.

### ▪ 1.2 Injunction requests for infringement of personal rights

Affected individual may seek an injunction against the infringing act based on their personal rights.

## 2. Case summary

In this particular case, based on their personal rights, residents living near the Onagawa nuclear power plant, which is owned by Tohoku Electric Power Co., Inc. (Tohoku EPCO), sought a preliminary injunction against the restarting of nuclear power plant operations by its prefectural governors. The residents claimed that:

- consent is an indispensable condition of restart;
- if any serious accident should occur on restart, residents will be at the risk of serious injury or hazard;
- procedures other than this consent are mere formalities and this consent, which is the most crucial condition for restart, poses a threat to the lives and health of residents as well as the operation of the nuclear reactor itself.

However, on 6 July 2020, the Sendai District Court rejected the petition, saying that there were no specific hazards of infringement on personal rights as claimed by the residents.<sup>4</sup>

## 3. The court's decision

In this case, the main issue was whether there was a tangible danger to the residents due to the consent to restart. As mentioned, consent is not a legal procedure necessary for reactor restart. Even if Tohoku EPCO determines in fact the restart supposing this consent, the restart decision ultimately rests with the entity that established the nuclear power plant.

In addition, besides consent, there are procedural regulations that the NRA must carry out in the form of safety examinations, as stipulated by the Reactor Regulation Act. Residents, however, have not presented *prima facie* evidence that these regulations are a mere formality. Furthermore, as Tohoku EPCO has not completed the legal procedures required for restarting, it is clear that the restart will take another two years or more. Accordingly, it cannot be said that the Onagawa nuclear power plant will immediately restart operations based on this consent, and thus the consent *per se* is not an instrument causing the specific hazard of releasing radioactive materials.

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3. The Basic Energy Plan is a "basic plan for energy supply and demand" based on Article 12(1) of the Basic Energy Policy Act established by the government "to encourage long-term, comprehensive and systematic promotion of energy supply and demand measures".
  4. In response to this, residents immediately filed an appeal with the Sendai High Court on 10 July 2020.

Based on the above, it cannot be said that if this consent is not suspended there is risk of significant danger to the residents, and thus an injunction against the consent is not warranted. As such, with regards to the allegations, *prima facie* evidence of infringement on personal rights or the need to suspend this consent was not presented, and thus the court saw no reason to suspend the consent. Therefore, all claims in this case were rejected.

## European Union

### **Court judgment in Austria v. Commission, in Case C-594/18 P (Hinkley Point C)**

On 22 October 2013, the United Kingdom of Great Britain and Northern Ireland notified measures in support of the Hinkley Point C nuclear power station (Hinkley Point C). After a formal investigation procedure launched on 18 December 2013, the European Commission adopted on 8 October 2014 a decision declaring the state aid compatible (“the Commission’s Decision”). Austria challenged the Commission’s decision before the General Court of the European Union. It considered that supporting nuclear energy was not an objective of common interest as it went against certain environmental objectives or principles. It also challenged the assessment made by the Commission of the necessity and proportionality of the measure.

With its judgment of 12 July 2018 in case T 356/15, the General Court dismissed all the arguments put forward by Austria and maintained the Commission’s decision. It notably concluded that the Commission was right in considering that the measures to support Hinkley Point C were necessary to fulfil the objective of public interest of promotion of nuclear energy set out in the Euratom Treaty.

Austria appealed the General Court judgment to the Court of Justice of the European Union (CJEU). All intervening member states at first instance also participated in the procedure before the CJEU: Luxembourg in support of Austria, the Czech Republic, France, Hungary, Poland, Romania, the Slovak Republic and the United Kingdom in support of the Commission.

In May 2020, Advocate General Gerard Hogan issued his opinion proposing to the Court to dismiss Austria’s action and to uphold the General Court judgment and the Commission’s decision to approve the aid measures in question. In his decision, Advocate General Hogan noted that the Euratom Treaty has the same standing as the Treaty on European Union (TEU) and the Treaty on the Functioning of the European Union (TFEU) as far as the primary law of the EU is concerned and that these two treaties apply in all areas of EU law that have not been dealt with by the Euratom Treaty. He found that there is nothing in the Euratom Treaty dealing with the issue of state aid and added that he deems it appropriate that rules contained in the TFEU concerning competition and state aid should apply to the nuclear energy sector when the Euratom Treaty does not contain specific rules. The Advocate General then noted that the Euratom Treaty provisions necessarily envisage the development of nuclear power plants. He concludes that the argument advanced by Austria to the effect that those provisions of the Euratom Treaty do not cover either the building of further nuclear power plants or the replacement and modernisation of ageing plants by more modern, already developed technologies cannot be accepted.

He found further that the development of nuclear power is, as reflected in the Euratom Treaty, a clearly defined objective of EU law, and that objective cannot be subordinated to other objectives of EU law, such as the protection of the environment. Additionally, he noted that the clear words of the Treaty plainly acknowledge the right of each member state to choose between different energy sources and “the general structure of its energy supply” and that right necessarily extends to the right of each member state to develop nuclear power as part of its energy supply sources.

In the Advocate General’s view, the requirement adopted by the General Court in a series of recent cases whereby any state aid approved pursuant to the TFEU must serve a common interest is not specified in the text of the relevant treaty article. It follows, therefore, that there is no requirement that the aid has to fulfil any purposes beyond those

specifically set out in the said article. According to its wording and the position of the provision in the TFEU, aid, in order to be compatible with the Treaty, neither has to pursue an “objective of common interest” nor an “objective of public interest”. It only has to “facilitate the development of certain economic activities” and it must not “adversely affect trading conditions to an extent contrary to the common interest”.

Advocate General Hogan noted that, in any event, by accepting the objectives of the Euratom Treaty, all member states have clearly signified their unqualified acceptance in principle of the right of other member states to develop nuclear power plants on their own territories should they wish to do so. A clearly stated Treaty objective of this kind must be capable of constituting an objective of common interest for the purposes of the application of the state aid rules.

Insofar as the analysis by the General Court is concerned, Advocate General Hogan deemed that it was fully entitled to find that there was abundant evidence before the Commission that the market was either unwilling or even incapable of coming up with finance for Hinkley Point C absent the guarantees and other forms of aid provided by the UK. He found that the General Court did not err when it concluded that the production of nuclear energy was the relevant economic activity for the purposes of state aid rules.

In September 2020, the Court rejected the appeal and confirmed the General Court judgment and the Commission decision. The Court notably stated that the Commission rightly identified the development of nuclear energy production as an economic activity, which can be supported by a state aid measure. The Court also confirmed the Commission’s assessment that the aid measures adopted by the United Kingdom in support of Hinkley Point C were proportionate and did not distort trading conditions beyond the common interest.

In line with the reasoning proposed by the Advocate General, the Court also established that the compatibility of state aid under Article 107(3)(c) of the TFEU does not depend on whether the aid measure pursues an objective of common interest. In accordance with that article, state aid compatibility assessment should focus on the analysis as to whether a given aid facilitates the development of certain economic activities without adversely affect trading conditions to an extent contrary to the common interest.

The Court also stated that state aid for an economic activity falling within the nuclear energy sector cannot be declared compatible with the internal market when it is shown upon examination that it contravenes rules of EU law on the environment. Finally, the Court acknowledged that, under Article 194 TFEU, a member state is free to determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply, including as regards the choice of nuclear energy.



## NATIONAL LEGISLATIVE AND REGULATORY ACTIVITIES

### Algeria

#### **General legislation, regulations and instruments**

*Law No. 19-05 of 17 July 2019 on nuclear activities, published in the Official Gazette of the Algerian Republic No. 47 of 25 July 2019*

This law, which is the first nuclear legislation framework in Algeria, lays down the general provisions for activities related to the use of nuclear energy and nuclear technology for peaceful purposes and to sources of ionising radiation. Law 19-05 provides for:

- the protection of persons, property and the environment;
- the nuclear safety and security of nuclear facilities and nuclear materials; and
- the safety and security of radioactive sources.

To this end, all aspects of nuclear safety and security, protection against ionising radiation, nuclear non-proliferation, safeguards, authorisations for activities involving nuclear materials and radiation sources, the transportation of nuclear material, radiological emergencies, the inspection system, public information, the management of radioactive waste, and finally the criminal law provisions in the event of infringement of the provisions of the law are subject to rigorous legislation, in accordance with Algerian law and Algeria's international commitments. The law is divided into several chapters, which provide in particular for:

- Creation of a Nuclear Safety and Security Authority (Autorité Nationale de Sûreté et de Sécurité Nucléaires) with the necessary powers and requisite independence.
- The law requires prior authorisation before any natural or legal person can carry out an activity involving nuclear materials and sources of ionising radiation. These authorisations are issued, exclusively, by the Nuclear Safety and Security Authority and cover all stages of activities related to nuclear materials and sources of ionising radiation. This enables the state, through the Authority, to verify, control and take the necessary measures to ensure that activities are conducted legally, safely and responsibly.
- Nuclear safety to protect persons, society and the environment from potential radiological risks by establishing and maintaining appropriate and effective arrangements in nuclear installations.
- Nuclear security to protect installations, nuclear materials and radioactive sources from sabotage, unauthorised removal and other malicious acts.
- Authority is granted to the Nuclear Safety and Security Authority to inspect at any time and on its own initiative all nuclear installations and those housing nuclear materials and sources of ionising radiation. The inspections shall be conducted by a team of inspectors created for this purpose.
- The criminal law provisions have been designed to incorporate both the coercive and dissuasive measures necessary in the event of a violation of the provisions of the law and of obligations under the legal instruments to which Algeria is a party.

## Belgium

### *Licensing and regulatory infrastructure*

#### *Modification of Belgian regulation regarding the licensing of nuclear installations*

The Belgian general legal framework concerning the protection of the population and the environment against the dangers of ionising radiation underwent a modification triggered by the need to implement the European Union (EU) EIA Directive.<sup>1</sup> The first step in the modification process was passing the Law of 6 December 2018 modifying the Law of 15 April 1994 for the protection of the population and the environment against the dangers of ionising radiation and the Federal Agency for Nuclear Control (FANC) (“Law of 15 April 1994”).<sup>2</sup> The most important step was the introduction of a new chapter (IIIter) in the Law of 15 April 1994 regarding the environmental impact assessment (EIA), limited to the impact linked to ionising radiation. The guiding explanation annexed to this law framed the basic principles behind the modification:

- clarification of all the different steps in the licensing process of nuclear installations;
- centralising the organisation of the public consultation, expanding the methods of announcing the consultation and enhancing the accessibility of the information regarding the licence application; and
- clarifying the role of the FANC in the EIA process.

To provide the necessary procedural framework, Royal Decree of 20 July 2001 regarding the general regulation for the protection of the population, employees and the environment against the danger of ionising radiation (hereinafter, “General Regulation”) was modified by Royal Decree of 29 May 2020.<sup>3</sup> The guiding principles outlined in the Law of 15 April 1994 were implemented in the following ways.

Article 6 of the General Regulation was entirely replaced to provide a clearer step-by-step approach for the licensing procedure. The first step of the licensing procedure, before the introduction of a licence application, is determining if the proposed project falls within the scope.<sup>4</sup> The determination of the obligation to either perform a screening or undertake an EIA report is based on the list of projects defined by EIA Directive.<sup>5</sup> If deemed necessary by the applicant, the General Regulation provides a procedural framework for the applicant to receive an opinion about the scope of the EIA<sup>6</sup> or to already have an evaluation by the FANC of the provided EIA report.<sup>7</sup> On the basis of the new legal framework, only those who have received a licence by the FANC can draft the EIA report. These persons receive a licence for a maximum of five years so that the FANC can monitor their competence when they apply for an extension.<sup>8</sup>

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1. Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, *Official Journal of the European Union (OJ)* L 124 (25 Apr. 2014) (EIA Directive).
  2. *Moniteur belge* [Belgian Official Journal], 16 Jan. 2019.
  3. Royal Decree of 29 May 2020 modifying the Royal Decree of 20 July 2001 regarding the general regulation for the protection of the population, employees and the environment against the danger of ionising radiation concerning the licensing system for nuclear installations of class I and the Royal Decree of 27 October 2009 determining the amounts and payment methods for the retributions imposed in application of the regulation concerning the protection for ionising radiation, *Moniteur belge*, 11 June 2020.
  4. General Regulation, Article 6.1bis.
  5. Law of 15 April 1994, Article 27/4 and General Regulation, Article 6.1bis1 and Annexes X and XI.
  6. General Regulation, Article 6.1bis4.
  7. Law of 15 April 1994, Article 27/6 and General Regulation, Article 6.1bis6.
  8. Law of 15 April 1994, Article 27/9 and General Regulation, 73/1-73/3.



Next, the licence application requirements were updated to take into account the necessary information regarding the EIA and to be in conformity with the requirements specified in Royal Decree of 30 November 2011 on the safety requirements of nuclear installations.<sup>9</sup> Following FANC's finding that the application is complete, the FANC submits the application to an independent safety evaluation and transfers the subpart of the application on nuclear waste to the National Institute for Radioactive Waste and Enriched Nuclear Fuel. When these two elements are added to the application, the application is submitted to the Scientific Council<sup>10</sup> for its opinion. If the applicant has no remarks on the opinion of the Scientific Council, the public consultation on the application can begin.<sup>11</sup>

A consultation of the necessary authorities, public administrations and concerned public is provided for.<sup>12</sup> In the case of likely significant transboundary impacts, a procedure in conformity with the Convention on Environmental Impact Assessment in a Transboundary Context<sup>13</sup> is followed.<sup>14</sup>

When the application is annexed with an EIA report, after the public consultation is closed and all the necessary opinions are received, the FANC makes a decision on the report. The decision takes into account the opinions received and the arguments put forward during the public consultation (with regard to the EIA report).<sup>15</sup> The decision of the FANC constitutes an integral part of the decision that the licensing authority will take at a later stage.<sup>16</sup>

As was the case prior to the modification of the legal framework, the application, amended with all the opinions received and arguments put forward during the public consultation, is then transferred for the second opinion by the Scientific Council.<sup>17</sup> Finally, on the basis of the second opinion of the Scientific Council, the FANC proposes a decision on the application and transfers this to the Minister for Internal Affairs. The final decision to approve the licence is made by the Minister for Internal Affairs and validated by Royal Decree.<sup>18</sup>

## Brazil

### **General legislation, regulations and instruments**

#### *New Brazilian nuclear regulatory authority*

After a long period of discussion, Brazil is now working to separate out the nuclear regulatory function from the National Nuclear Energy Commission (Comissão Nacional de Energia Nuclear – CNEN), which currently holds both the regulatory and promotional functions, and create a new, independent regulatory body for nuclear activities: the National Authority of Nuclear Safety (Autoridade Nacional de Segurança Nuclear – ANSN). Having the regulator and the regulated entity within the same organisation has been determined to be improper, not least of which, because of the potential for conflicts of interest. Thus, in compliance with the guidelines of the international community – especially those of the International Atomic Energy Agency (IAEA) – and also of Brazilian oversight bodies, the discussions advancing towards the creation of ANSN.

9. General Regulation, Article 6.2.

10. The Scientific Council is an independent body created to give advice to the FANC. Law of 15 April 1994, Article 37.

11. General Regulation, Article 6.3.1.

12. Law of 15 April 1994, Articles 27/5 and 27/6 and General Regulation, Articles 6.3.3 and 6.3.4.

13. Convention on Environmental Impact Assessment in a Transboundary Context (1991), 1989 UNTS 310, entered into force 10 Sept. 1997 (Espoo Convention).

14. Law of 15 April 1994, Article 27/5 and General Regulation, Article 6.4.

15. Law of 15 April 1994, Article 27/6 and General Regulation, Article 6.5.

16. Law of 15 April 1994, Article 27/7 and General Regulation, Article 6.7.

17. General Regulation, Article 6.6.

18. General Regulation, Article 6.7.

There is already a draft legal text in the final phase of approval by the five ministries involved: Ministry of Science, Technology and Innovations; Ministry of Mines and Energy; Ministry of External Relations; Institutional Security Office; and Civil House of the Presidency of the Republic. The Ministry of Economy is currently conducting studies related to the ANSN's general expenses and staffing. There is some concern about the restructuring of the CNEN, which will be hurt by the spin-off to create the ANSN. The next step will be to forward the legal draft to the President of the Republic to approve and send to the Brazilian National Congress.

Some important highlights of the current legal draft are:

- The ANSN will not be a regulatory agency, technically speaking. It will be a federal authority operating in a special regime. The Directors will not have a defined mandate and the Authority will be subordinated to a Ministry (most likely, the Ministry of Mines and Energy) without financial autonomy, etc. On the other hand, and importantly, the ANSN will have technical and administrative independence.
- The legal competences will be divided between the ANSN and the CNEN. Thus, the regulatory function will remain with ANSN, while CNEN will be responsible for activities related to research, development and innovation in the nuclear field.
- An important provision is related to market regulation. The ANSN will not regulate economic aspects concerning nuclear and related activities, e.g. medical radioisotopes, industry and agriculture. Thus, ANSN's regulation will deal only with nuclear and radiological safety aspects in a purely technical sense.
- The ANSN will retain the authority to issue opinions regarding international instruments relating to nuclear activities in general and to collaborate with international organisations and international regulatory bodies in nuclear safety and security and all nuclear related activities.
- The import of radioactive waste will be prohibited.
- The Sanctioning Law will be strengthened with the provision of new administrative violations and heavier penalties.
- A legal provision establishes the Brazilian Navy as the regulatory authority for the construction of the Brazilian nuclear submarine. This is an exception to the ANSN's regulatory authority. It means that Brazil will have a specific regulatory body for an exclusive nuclear installation.

In fact, it is likely that the draft legal text will undergo some changes, especially considering that the text is still being analysed by the Ministry of Economy. After this analysis, the text will be sent to the President of the Republic and then to the Brazilian National Congress, where the text will be discussed and, eventually, modified. Once the law is published, the Brazilian President will issue a Decree to regulate the law and establish the structure and functioning of the ANSN, as well as rules on its personnel, assets and budget. According to the official agenda, the new Brazilian nuclear regulatory authority should be ready to work in the next year, likely in the first half.

## France

### Nuclear installations

Decree No. 2020-336 of 25 March 2020 amending the Decree No. 2007-534 of 10 April 2007 authorising the creation of the basic nuclear installation referred to as Flamanville 3, comprising an EPR type nuclear reactor, on the Flamanville site (Manche département)<sup>19</sup>

Adopted on the basis of Article R. 593-48 of the French Environmental Code, which allows the provisions of a decree authorising a basic nuclear installation (BNI) to be amended, this decree amends the decree authorising the creation (DAC) of the Flamanville 3 EPR in the Manche département in order to extend the commissioning period to 17 years (instead of 13), from the date of publication of the DAC (i.e. by 12 April 2024 at the latest).

## Luxembourg

### Liability and compensation

*Law of 6 July 2020 on third party liability for nuclear damage*<sup>20</sup>

Unlike its neighbouring countries, the Grand Duchy of Luxembourg has not ratified the Paris Convention<sup>21</sup> or the Brussels Supplementary Convention.<sup>22</sup> Until the adoption of the Law of 6 July 2020 on Third Party Liability for Nuclear Damage, there was no national legislation regulating this field. In this situation, where the above-mentioned Conventions were not ratified and no specific law on the compensation of victims of nuclear accidents existed, general tort law would apply.

Determined to improve the legal situation of Luxembourg victims of a nuclear accident, Luxembourg lawmakers decided to establish a specific nuclear liability regime that is based on the operator's strict liability and that does not provide disparate treatment favouring the operator as under the international nuclear liability regime. Like general tort law, the Law of 6 July 2020 provides for unlimited liability of the operator and a 30-year statute of limitation starting from the date when the damage occurred or when the victim became aware of it. Following the amendment to the Modified Law of 20 April 2009 on Environmental Liability, an imminent threat or damage caused to the environment (damage to soil, nature or water) by nuclear activities can now trigger appropriate compensation.

19. *Journal officiel "Lois et Décrets"* [Official Journal of Laws and Decrees] (J.O.L. et D.), 27 Mar. 2020, Text No. 7, No. 2020-03.

20. *Loi du 6 juillet 2020 sur la responsabilité civile en matière de dommages en relation avec un accident nucléaire et modifiant 1) la loi modifiée du 20 avril 2009 relative à la responsabilité environnementale en ce qui concerne la prévention et la réparation des dommages environnementaux ; 2) la loi modifiée du 21 avril 1989 relative à la responsabilité civile du fait des produits défectueux* [Law of 6 July 2020 on third party liability for damage related to a nuclear accident and amending 1) the modified law of 20 April 2009 on environmental liability with regards to the prevention and compensation of environmental damage; and 2) the modified law of 21 April 1989 on third party liability for defective products], *Journal officiel du Grand-Duché du Luxembourg* [Official Journal of the Grand Duchy of Luxembourg], Mémorial A, No. 578, 9 July 2020.

21. Convention on Third Party Liability in the Field of Nuclear Energy of 29<sup>th</sup> July 1960, as amended by the Additional Protocol of 28<sup>th</sup> January 1964 and by the Protocol of 16<sup>th</sup> November 1982 (1960), 1519 UNTS 329 (Paris Convention).

22. Convention of 31<sup>st</sup> January 1963 Supplementary to the Paris Convention of 29<sup>th</sup> July 1960, as amended by the Additional Protocol of 28<sup>th</sup> January 1964 and by the Protocol of 16<sup>th</sup> November 1982 (1963), 1041 UNTS 358 (Brussels Supplementary Convention).

Luxemburg courts have jurisdiction, on the condition that the territory of Luxembourg, or residents or people staying on Luxembourg territory at the time of the harmful event, are affected. As far as European Union member states are concerned, judgments of Luxembourg courts shall be recognised and enforced in other member states pursuant to Brussels I bis Regulation.<sup>23</sup> As regards the member countries of the European Free Trade Association (EFTA), recognition and enforcement of judgments shall be based on the rules of the Lugano Convention.<sup>24</sup> The dispositions of the Convention on exception to enforcement will not apply to compensation in civil proceedings.

Luxemburg lawmakers opted for a free-standing definition of the term “nuclear accident” as an event due to either the radioactive, toxic, explosive or otherwise hazardous properties of nuclear fuels or uranium hexafluoride, or ionising radiations from any other radiation source located in a nuclear facility, or transported from or to a nuclear facility. The law covers personal damage, damage to goods, loss of income as well as the cost of preventive measures.

## United States

### **General legislation, regulations and instruments**

#### *Regulatory actions taken in response to the COVID-19 public health emergency*

On 31 January 2020, the United States (US) Department of Health and Human Services declared a public health emergency (PHE) for the United States to aid the nation’s healthcare community in responding to COVID-19. On 11 March 2020, the COVID-19 outbreak was characterised as a pandemic by the World Health Organization. The NRC received numerous exemption requests from its licensees as a result of the PHE and, in addition, NRC staff proactively identified areas of NRC regulation that could pose challenges to licensees during the PHE and the areas where temporary flexibilities, such as exemptions, would not compromise the ability of licensees to maintain the safe and secure operation of NRC-licensed facilities.

The NRC staff established and communicated additional criteria describing the conditions under which it would expedite consideration of licensee requests for relaxation of, or exemption from, certain regulatory requirements. However, the agency’s standards for granting such regulatory relief remain unchanged (the NRC generally may only grant exemptions that do not present an undue risk to public health and safety, are consistent with common defence and security, are authorised by law, and are in the public interest) and each request is reviewed on a case-by-case basis.

For operating reactors, the NRC staff issued letters outlining the process for requesting expedited regulatory relief in areas related to:

- work-hour controls (10 *Code of Federal Regulations* (CFR) 26.205(d)(1)-(d)(7));
- owner activity reports (10 CFR 50.55a(b)(2)(xxxii));
- respiratory protection requirements (10 CFR 20.1703(c)(5)(iii) and (c)(6)); and
- for operators licensed under 10 CFR Part 55:

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23. Regulation (EU) No 1215/2012 of the European Parliament and of the Council of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters, OJ L 351/1 (20 Dec. 2012).

24. Convention on jurisdiction and the recognition and enforcement of judgments in civil and commercial matter, Lugano, 16 September 1988 (88/592/EEC), OJ L 319/9 (25 Nov. 1988).

- the 24-month requalification programme (10 CFR 55.59(c)(1)),
- biennial medical examinations (10 CFR 55.21 and 10 CFR 55.53(i)), and
- security training and qualification requirements (10 CFR Part 73, Appendix B).

For materials licensees, the NRC staff issued letters outlining the process for requesting regulatory relief in areas related to:

- special nuclear material physical inventory schedule (10 CFR 74.19) and
- medical evaluation frequency and fit-testing frequency (10 CFR 20.1703(c)(5)(iii) and 10 CFR 20.1703(c)(6)).

The NRC also indicated it was prepared to consider, on an expedited basis, requests for exemptions from the biennial emergency plan exercise requirements that are specified in 10 CFR 30.32(i)(3)(xii), 10 CFR 40.31(j)(3)(xii), 10 CFR Part 50, Appendix E.IV.F, 10 CFR 70.22(i)(3)(xii), and 10 CFR 72.32(a)(12)(i) and (ii).

Additionally, the NRC staff implemented an oversight strategy that takes into consideration both plant status and local health conditions in an effort to ensure the safety and security of the plants without conflicting with federal, state, or local guidelines for protecting the health of onsite personnel and NRC inspectors. To that end, the NRC issued guidance to its staff on the use of enforcement discretion during the COVID-19 PHE. Further, when not onsite, NRC resident inspectors began, and continue, to independently monitor licensee activities remotely using technology, where available, to access plant information necessary to conduct the agency's independent oversight role.

Also, in response to the COVID-19 PHE, the NRC deferred fees that the agency would have billed to licensees during the third quarter of fiscal year 2020 (1 April through 30 June), moving the billing to the fourth quarter. The fee deferral applied to both fees-for-service, under 10 CFR Part 170, and annual fees, under 10 CFR Part 171.

Between 31 March 2020 and 20 June 2020, the NRC issued 132 licensing actions related to the ongoing PHE. These licensing actions granted temporary flexibilities to maintain the safe and secure operation of nuclear reactor and nuclear materials licensees. More information on these licensing actions, as well as the NRC's general response to the COVID-19 PHE, is available on the NRC public website at [www.nrc.gov/about-nrc/covid-19/](http://www.nrc.gov/about-nrc/covid-19/).

## **Nuclear installations**

### *Oklo Power, LLC combined licence application*

On 11 March 2020, Oklo Power, LLC (Oklo) submitted a combined licence application to build and operate a 4-megawatt thermal micro-reactor, called the Aurora, on the site of the Idaho National Laboratory. The proposed Aurora design would use heat pipes to transport heat from the reactor core to a power conversion system, which then would be used to generate electricity. On 5 June 2020, the NRC staff accepted the application for docketing and is currently proceeding with its detailed safety and environmental reviews.

The NRC staff plans to complete its review of Oklo's application in a two-step process. In Step 1, the NRC staff plans to engage Oklo in public meetings, conduct regulatory audits and issue requests for additional information to align on four key safety and design aspects of the licensing basis. Step 2 will include review by the independent Advisory Committee

on Reactor Safeguards (ACRS),<sup>25</sup> issuance of the staff's final safety evaluation report and holding a mandatory hearing.<sup>26</sup>

#### *Honeywell licence renewal*

On 24 March 2020, the NRC renewed the operating licence of Honeywell International's uranium conversion plant in Metropolis, Illinois for an additional 40 years. The renewed licence expires on 24 March 2060. The facility is currently in a "ready-idle" status, i.e., all uranium conversion processing remains shut down, with a reduced amount of material on site.

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25. The ACRS is an independent panel of experts created by section 29 of the Atomic Energy Act, as amended (AEA). 42 *United States Code* (USC) § 2039. The AEA requires the ACRS to, among other things, "advise the Commission with regard to the hazards of proposed or existing reactor facilities" and review each power reactor application. AEA § 29, § 182(b), 42 USC §§ 2039, 2232(b)).
  26. The AEA requires the NRC to hold a mandatory hearing on each application to construct a nuclear power plant. AEA § 189a., 42 USC § 2239(a). The purpose of a mandatory hearing is to determine whether the NRC staff's review of the application is adequate to support the necessary regulatory findings (both safety and environmental).

## INTERGOVERNMENTAL ORGANISATION ACTIVITY

### European Atomic Energy Community

#### ***The Euratom Supply Agency Advisory Committee Report on Nuclear Fuel Availability at EU Level from a Security of Supply Perspective<sup>1</sup>***

The Working Group on Prices and Security of Supply, which represents utilities, suppliers and intermediaries in the European Union (EU), updated the Risk Analysis for Security of Supply in the Nuclear Fuel Cycle that was published in 2015. The new report identifies threats and restrictions that could potentially jeopardise the availability of nuclear fuel and the provision of electricity at affordable prices to all EU consumers. In order to provide a more accurate analysis of the different risks, this report offers a new methodology for evaluating risk that takes into account the duration of impact on supply.

The most common way for utilities to secure their supply of nuclear fuel is to have a diversified portfolio of suppliers at every step of the nuclear fuel cycle (natural uranium, conversion, enrichment and fabrication) and keep an appropriate level of strategic inventory of nuclear fuel material on site. However, situations of overcapacity in both the natural uranium market and the conversion market and low prices have led to the temporary closure of some of these facilities in order to bring production down to the level of demand.

The Working Group recommended that the Euratom Supply Agency, through its established market observatory role and in regular dialogue with the Advisory Committee, review the identified risks and include references in its annual report so that all parties concerned may be made aware in order to take appropriate action to mitigate relevant risks.

### International Atomic Energy Agency

#### ***Nuclear safety***

##### *Convention on Nuclear Safety*

Due to national and international measures taken to limit the spread of the virus causing COVID-19, the Eighth Review Meeting of the Convention on Nuclear Safety,<sup>2</sup> scheduled from 23 March to 3 April 2020, was postponed by a consensual decision of the contracting parties. The Review Meeting will now be held in Vienna, Austria, from 15 to 26 March 2021.

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1. Euratom Supply Agency Advisory Committee Working Group on Prices and Security of Supply (2020), *Analysis of Nuclear Fuel Availability at EU Level from a Security of Supply Perspective: Report*, Publications Office of the European Union, Luxembourg, available at: [https://ec.europa.eu/euratom/docs/2020\\_Security\\_report\\_2.pdf](https://ec.europa.eu/euratom/docs/2020_Security_report_2.pdf).
  2. Convention on Nuclear Safety (1994), IAEA Doc. INFCIRC/449, 1963 UNTS 293, entered into force 24 Oct. 1996 (CNS).

### *Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*

Also, due to the international measures to curb the spread of the COVID-19 pandemic, contracting parties to the Joint Convention<sup>3</sup> decided by consensus to postpone the Organisational Meeting of the Joint Convention to prepare for the Seventh Review Meeting of Contracting Parties to the Joint Convention, scheduled from 28 to 29 May 2020, and to hold it as a virtual meeting from 28 to 30 September and 2 October 2020.

At the Organisational Meeting, contracting parties *inter alia* elected Mr Hans Wanner (Switzerland) as President and Ms Mina Golshan (United Kingdom) and Mr Thiagan Pather (South Africa) as the two Vice-Presidents of the Seventh Review Meeting of the Joint Convention. Contracting parties also established eight country groups, agreed on a process to elect the country group officers proposed by the Presidency of the Sixth Review Meeting of the Joint Convention and elected them accordingly, decided to hold during the Seventh Review Meeting a topical session on stakeholder engagement relating to the management of radioactive wastes from decommissioning and legacy facilities and agreed on the draft provisional agenda and timetable for the Seventh Review Meeting.

### *Meeting of the Representatives of Competent Authorities identified under the Early Notification Convention and the Assistance Convention*

The Agency held the Tenth Meeting of the Representatives of Competent Authorities Identified under the Early Notification Convention<sup>4</sup> and the Assistance Convention<sup>5</sup> in June 2020. For the first time in its 20-year history, this gathering of representatives of competent authorities also took place virtually.

The purpose of the meeting was to share information on national emergency preparedness and response (EPR) arrangements and challenges. At the meeting, participants also discussed the implementation of the Early Notification Convention, the Assistance Convention, the safety requirements dealing with notification and information exchange, the provision of international assistance, and communication with the public contained in the Agency's safety standards. In addition, participants became familiar with the latest EPR documents and tools and exchanged information on international EPR co-operation and learnt from past emergencies and exercises as well.

## **Nuclear security**

### *Webinar on the Convention on the Physical Protection of Nuclear Material and its Amendment*

On 30 July 2020, the IAEA hosted a webinar to promote adherence to and implementation of the CPPNM<sup>6</sup> and its Amendment.<sup>7</sup> The webinar was aimed at parties to the CPPNM that have not yet adhered to the Amendment and at member states who are not yet party to the CPPNM or its Amendment. Information was provided on the scope and obligations of,

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3. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (1997), IAEA Doc. INFCIRC/546, 2153 UNTS 357, entered into force 18 June 2001 (Joint Convention).
  4. Convention on Early Notification of a Nuclear Accident (1986), IAEA Doc. INFCIRC/335, 1439 UNTS 276, entered into force 27 Oct. 1986 (Early Notification Convention).
  5. Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency (1986), IAEA Doc. INFCIRC/336, 1457 UNTS 134, entered into force 26 Feb. 1987 (Assistance Convention).
  6. Convention on the Physical Protection of Nuclear Material, (1980), IAEA Doc. INFCIRC/274 Rev. 1, 1456 UNTS 125, entered into force 8 Feb. 1987 (CPPNM).
  7. Amendment to the Convention on the Physical Protection of Nuclear Material (2005), IAEA Doc. INFCIRC/274/Rev.1/Mod.1, entered into force 8 May 2016 (Amendment).



as well as the benefits of joining, the CPPNM and its Amendment, and states were invited to exchange views and experiences with respect to adherence and implementation.

### *IAEA General Conference side event on the importance of a strong international legal framework for nuclear security*

The IAEA organised a virtual side event during the 64<sup>th</sup> General Conference focused on emphasising, *inter alia*, the importance of universal adherence to and full implementation of the CPPNM and its Amendment.

## **Nuclear liability**

During the reporting period, the IAEA continued to assist member states, upon request, in their efforts to adhere to the relevant nuclear liability instruments in the context of its overall legislative assistance programme.

In June 2020, the Director General sent letters to selected member states encouraging them to adhere to relevant nuclear liability treaties, notably to those states that already operate nuclear power plants, or are considering, or working towards, introducing nuclear power, but are currently not party to any nuclear liability convention. Letters were also sent to states that are party to either the Paris Convention on Third Party Liability in the Field of Nuclear Damage<sup>8</sup> or the Vienna Convention on Civil Liability for Nuclear Damage,<sup>9</sup> with a view to enhancing treaty relations among states party to different nuclear liability conventions, in line with the recommendations on how to achieve a global nuclear liability regime adopted in 2012 by the IAEA International Expert Group on Nuclear Liability (INLEX) under the IAEA Action Plan on Nuclear Safety (GOV/2011/59GC(55)/14).

The 20<sup>th</sup> regular meeting of INLEX, which was opened by the Director General, took place as a virtual meeting in June 2020 to hear about new developments and activities by the Secretariat in the field of civil liability for nuclear damage and to discuss future outreach activities.

## **IAEA events**

### *64<sup>th</sup> session of the IAEA General Conference*

The 64<sup>th</sup> regular session of the IAEA General Conference was held in a hybrid format in Vienna, Austria, from 21 to 25 September. This year, around 500 delegates registered to attend the General Conference from 141 of the IAEA's 172 member states and from international organisations, non-governmental organisations and the media. A total of 39 side-events took place online during the week, highlighting the innovative work underway at the IAEA and in member states using nuclear techniques.

### *Resolutions of the Conference*

A number of resolutions were adopted by the Conference. As in previous years, resolution GC(63)/RES/9 on Nuclear and Radiation Safety, as well as resolution GC(63)/RES/10 on Nuclear Security, include sections that are of legal relevance. All resolutions adopted during the 64<sup>th</sup> regular session of the General Conference are available on the IAEA website at [www.iaea.org/gc-archives/gc/gc/gc64](http://www.iaea.org/gc-archives/gc/gc/gc64).

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8. Convention on Third Party Liability in the Field of Nuclear Energy of 29<sup>th</sup> July 1960, as amended by the Additional Protocol of 28<sup>th</sup> January 1964 and by the Protocol of 16<sup>th</sup> November 1982 (1960), 1519 UNTS 329 (Paris Convention).
  9. Vienna Convention on Civil Liability for Nuclear Damage (1963), IAEA Doc. INFCIRC/500, 1063 UNTS 266, entered into force 12 Nov. 1977 (Vienna Convention).

### *Nuclear and Radiation Safety (GC(64)/RES/9)*

Regarding the CNS, the General Conference urged “all Member States that have not yet done so, especially those planning, constructing, commissioning or operating nuclear power plants, or considering a nuclear power programme, to become Contracting Parties to the CNS”. Concerning the Joint Convention, the Conference likewise urged “all Member States that have not yet done so, particularly those managing radioactive waste or spent fuel, to become Contracting Parties to the Joint Convention”. The Conference stressed “the importance of CNS and Joint Convention contracting parties fulfilling their respective obligations stemming from these Conventions and reflecting these in their actions to strengthen nuclear safety and in particular when preparing National Reports, and actively participating in peer reviews for CNS and Joint Convention Review Meetings”. In addition, the Conference requested “the Secretariat to provide full support for the CNS and Joint Convention Review Meetings, and to consider addressing their outcomes in the Agency’s activities, as appropriate and in consultation with Member States”.

The Conference further urged “all Member States that have not yet done so to become Contracting Parties to the Early Notification Convention and the Assistance Convention”, and stressed “the importance of Contracting Parties fulfilling the obligations stemming from these Conventions, and actively participating in regular meetings of the Representatives of Competent Authorities”. In this context, the Conference requested “the Secretariat, in collaboration with regional and international organizations and Member States, to continue its activities to promote the importance of conventions concluded under the auspices of the IAEA and to assist Member States upon request with adherence, participation and implementation as well as strengthening of their related technical and administrative procedures”.

With respect to the Code of Conduct on the Safety and Security of Radioactive Sources, its Guidance on the Import and Export of Radioactive Sources, and its Guidance on the Management of Disused Radioactive Sources, the General Conference encouraged “all Member States to make political commitments to the non-legally binding Code of Conduct on the Safety and Security of Radioactive Sources, and its Guidance on the Import and Export of Radioactive Sources, and its Guidance on the Management of Disused Radioactive Sources, and to implement these, as appropriate, in order to maintain effective safety and security of radioactive sources throughout their life cycle”. The Conference also requested “the Secretariat to continue supporting Member States in this regard”. Similarly, the Conference encouraged member states “to apply the guidance of the Code of Conduct on the Safety of Research Reactors at all stages in their life, including planning” and “to freely exchange their regulatory and operating information and experience with regard to research reactors”. In this context, the Conference requested the Secretariat “to continue to support Member States, upon request, in [the] application of the guidance of the Code of Conduct on the Safety of Research Reactors”.

With regard to civil liability for nuclear damage, the General Conference encouraged “Member States to give due consideration to the possibility of joining the international nuclear liability instruments, as appropriate, and to work towards establishing a global nuclear liability regime”. In this context, the Conference requested “the Secretariat, in coordination with the OECD/NEA when appropriate, to assist Member States, upon request, in their efforts to adhere to any international nuclear liability instruments concluded under the auspices of the IAEA or the OECD/NEA, taking into account the recommendations of the INLEX in response to the IAEA Action Plan on Nuclear Safety”. In addition, the Conference recognised “the valuable work of INLEX”, took note “of its recommendations and best practices on establishing a global nuclear liability regime, including through the identification of actions to address gaps in and enhance the existing nuclear liability regimes”, encouraged “the continuation of INLEX, especially for its support for the IAEA’s outreach activities to facilitate the achievement of a global nuclear liability regime” and requested “that INLEX, via the Secretariat informs Member States on a regular and transparent basis about the work of INLEX and its recommendations to the Director General”.

### *Nuclear Security (GC(63)/RES/10)*

In the context of nuclear security, the Conference affirmed “the central role of the Agency in strengthening the nuclear security framework globally and in coordinating international activities in the field of nuclear security, while avoiding duplication and overlap”. The Conference called upon the Secretariat “to continue to organize [International Conference on Nuclear Security: Sustaining and Strengthening Efforts] ICONS every four years”. In addition, the Conference welcomed “the ongoing preparatory process for the 2021 Conference, which is being convened in accordance with article 16.1 of the CPPNM, as modified by its 2005 Amendment”, and encouraged “all States Parties and EURATOM to engage actively”.

The Conference also encouraged “all Parties to the CPPNM and its 2005 Amendment to fully implement their obligations thereunder” and encouraged “States that have not yet done so to become party to this Convention and its Amendment”. It further encouraged “the Agency to continue efforts to promote further adherence to the Amendment with the aim of its universalization”. The Conference welcomed “the organization by the Secretariat of CPPNM meetings” and encouraged “all Parties to the Convention to participate in relevant meetings” as well as reminded “all Parties to inform the depositary of their laws and regulations which give effect to the Convention”.

### *IAEA Treaty Event*

The 10<sup>th</sup> Treaty Event took place during the 64<sup>th</sup> regular session of the Agency’s General Conference. It provided member states with a further opportunity to deposit their instruments of ratification, acceptance or approval of, or accession to, the treaties deposited with the Director General, including those related to nuclear safety, security and civil liability for nuclear damage. At the Treaty Event, Angola deposited an instrument of accession to the CNS and an instrument of accession to the CPPNM and of ratification of its 2005 Amendment. Côte d’Ivoire deposited instruments of ratification of the Early Notification and Assistance Conventions.

### **Legislative assistance**

The Agency continued to provide legislative assistance to its member states to support the development of adequate national legal frameworks and to promote adherence to the relevant international legal instruments. Specific bilateral legislative assistance was provided to several member states through written comments and advice on drafting national nuclear legislation. The COVID-19 pandemic put face-to-face meetings on hold resulting in the postponement of several workshops and missions focused on enabling officials in member states in gaining more broadly a better understanding of the relevant international legal instruments. In addition, the 10<sup>th</sup> session of the Nuclear Law Institute (NLI) was postponed to October 2021.

In response to the disruption caused by the pandemic and due to the postponement of face-to-face activities, several virtual legislative assistance missions were held, and others are scheduled and planned. The Agency also launched a Webinar Series on Nuclear Law comprising nine webinars and commencing on 5 October through to mid-December 2020. The webinar series, implemented within the framework of the Agency legislative assistance programme, is open to officials with a policy, legal, regulatory and/or technical background from all IAEA member states. In response to the interest received in the webinar series, the Agency will hold a Webinar on Nuclear Law open to the public on 15 December 2020. It will provide an opportunity for individuals and organisations, including from industry, law firms, non-governmental organisations, civil society and academia, to engage with Agency staff and international experts on the subject.

## OECD Nuclear Energy Agency

### **International School of Nuclear Law: Hot topics, expert views**

While the 2020 edition of the International School of Nuclear Law (ISNL) was cancelled due to the ongoing COVID-19 pandemic, the NEA hosted a virtual roundtable discussion on 1 October 2020 to celebrate what would have been the 20<sup>th</sup> anniversary of this unique course. The event brought together ISNL lecturers, representing the NEA, the International Atomic Energy Agency (IAEA), public and private sectors, and academia, who discussed recent developments in international nuclear law.

The roundtable addressed some of the hottest topics in international law and nuclear law today, including the current and emerging issues in the fundamental nuclear safety conventions and the standardisation and harmonisation of the licensing and regulation of SMRs and advanced reactors. The nature and role of environmental conventions in the licensing of nuclear energy-related activities – in particular lifetime extensions – were discussed. The speakers exchanged about the challenges of ensuring nuclear security and safeguards compliance during the COVID-19 pandemic. Discussions also touched on the new developments in the field of civil nuclear liability and insurance, as well as on the role of nuclear law experts in a clean and sustainable energy future.

A video recording of the expert roundtable is available here: <https://youtu.be/7W8sQQVWCVw>.

### **The role of nuclear energy during COVID-19 and beyond**

The coronavirus (COVID-19) pandemic has had significant impacts on the global economy and energy sector. It has also underlined the importance of electricity reliability and resilience during major disruptions. With governments considering a broad range of options for economic recovery and job creation, it is becoming increasingly clear that stimulus packages have the opportunity to support energy systems that both fulfil these criteria while meeting long-term environmental goals and energy security.

The NEA is examining the regulatory and operational impacts of the crisis, and working closely with its members to enable exchanges of policy approaches and best practices around the world. As part of these efforts, the Agency issued four policy briefs and hosted a series of discussions around these policy briefs to explore the role that nuclear energy can play in the post-COVID-19 recovery, whilst also supporting the path towards a truly sustainable and environmentally responsible energy future. Video recordings of these discussions are available on the NEA's YouTube channel. More information, as well as the NEA's policy recommendations, are available at: [oe.cd/nea-covid-19-3](http://oe.cd/nea-covid-19-3).

### **NEA publications of interest**

Since the publication of *Nuclear Law Bulletin* No. 104, the NEA has issued a number of publications of interest. The NEA has released a new report with recommendations to unlock meaningful cost reductions for future nuclear new build construction projects. This NEA report, entitled *Unlocking Reductions in the Construction Costs of Nuclear: A Practical Guide for Stakeholders*, focuses on potential cost and project risk reduction opportunities for contemporary Generation III reactor designs but that are also applicable to small modular reactors (SMRs) and advanced reactor concepts for deployment in the longer term. The study identifies longer-term cost reduction opportunities associated with the harmonisation of codes and standards and licensing regimes. It also explores the risk allocation schemes and mitigation priorities at the outset of well-performing financing frameworks for new nuclear that require a concerted effort among government, industry and the society as a whole.

Radioactive waste results from many different activities in health care, industry, research and power production. All such waste must be managed safely, with the protection of human health and the environment as the highest priority. After decades of

research, the international scientific community is now confident that placing high-level radioactive waste in deep geological repositories (DGRs) is both safe and effective. The government of each country has the absolute right and responsibility to implement the energy and environmental policies it believes are best. In the case of the disposal of radioactive waste, it is paramount that these debates should be informed by objective facts. The NEA report *Management and Disposal of High-Level Radioactive Waste: Global Progress and Solutions* and policy brief provide factual information regarding the management of high-level radioactive waste in DGRs. These documents highlight that countries around the world have great confidence that the use of DGRs is a safe and effective method to protect people and the environment from long-lived radioactive waste materials.

The reports and policy brief are available for free online at: [www.oecd-nea.org/jcms/rni\\_6629/news-and-resources](http://www.oecd-nea.org/jcms/rni_6629/news-and-resources).



**OFFICIAL JOURNAL  
OF THE GRAND DUCHY OF LUXEMBOURG**

OFFICIAL JOURNAL A  
No. 578 of 9 July 2020

**Law of 6 July 2020 on third-party liability for damage related to a nuclear incident and amending**

- (1) the Law of 20 April 2009 on environmental liability with regard to the prevention and remediation of environmental damage, as amended; and**
- (2) the Law of 21 April 1989 on civil liability for defective products, as amended.**

We Henri, Grand Duke of Luxembourg, Duke of Nassau,

Having heard the opinion of our Council of State;

With the consent of Parliament;

Having regard to the decision of Parliament of 26 May 2020 and that of the Council of State of 16 June 2020 dispensing with a second vote;

*Have ordered and do hereby order that:*

**Article 1. Scope**

The present law lays down the third-party liability regime for the compensation of nuclear damage caused by a nuclear incident.

**Article 2. Definitions**

For the purposes of the present law:

1. “nuclear incident” means any occurrence or succession of occurrences having the same origin which causes nuclear damage provided that such occurrence or succession of occurrences, or any of the damage caused, arises out of or results either from the radioactive properties, or a combination of radioactive properties with toxic, explosive, or other hazardous properties of nuclear fuel or nuclear waste or uranium hexafluoride, or from ionising radiations emitted by any source of radiation coming from, originating in, or sent to, a nuclear installation;
2. “nuclear damage”:
  - (a) means loss of life or personal injury,
  - (b) loss of or damage to property,
  - (c) loss of income,
  - (d) the cost of preventive measures and any further loss or damage caused by such measures, any other economic loss;
3. “preventive measures” means measures taken in the event of a nuclear incident in order to prevent or minimise nuclear damage;

4. “nuclear fuel” means any material which is capable of producing energy by a process of nuclear fission;
5. “nuclear waste” means radioactive material, including nuclear fuel that has been irradiated in the core of a reactor or extracted from such fuel;
6. “operator” means any person with the power to make decisions concerning the operation of a nuclear installation and who benefits economically from the operation of a nuclear installation; the holder of the operating licence for the nuclear installation shall, in all cases, be regarded as an operator;
7. “nuclear installation” means any installation used in the production of nuclear energy, or in the production, use, storage, disposal of nuclear waste, the processing or reprocessing of nuclear fuel, including research reactors.

### **Article 3. Operator’s liability**

- (1) The operator shall be liable, irrespective of fault on his part, for any nuclear damage caused by a nuclear incident.
- (2) The operator shall also be liable, irrespective of fault on his part, for any damage caused by a nuclear incident that involves the transport of nuclear fuel, nuclear waste or uranium hexafluoride, whenever such transport:
  1. comes from their nuclear installation and liability has not yet been assumed by the operator of another nuclear installation pursuant to the terms of a written contract, or
  2. is bound for their nuclear installation and they have assumed liability pursuant to the terms of a written contract.
- (3) Where more than one person are operators within the meaning of Article 2(6), they shall be jointly and severally liable for the damage referred to in paragraphs (1) and (2).
- (4) The operator may be absolved only where they can prove fault on the victim’s part.
- (5) The provisions of the present law shall not prejudice the rights that the victim of damage may rely upon by way of ordinary law on contractual or non-contractual liability or by way of other special arrangements governing liability.

### **Article 4. Statute of limitations**

Any person who claims to have suffered nuclear damage and who has brought proceedings for compensation within the period applicable pursuant to Article 2262 of the Civil Code may amend their claim to take into account any aggravation of the damage, even after the expiry of that period, provided that final judgment has not been entered.

### **Article 5. Jurisdiction**

The courts of Luxembourg shall have jurisdiction to hear proceedings concerning nuclear damage arising from a nuclear incident provided that such actions involve Luxembourg territory, or residents or persons on Luxembourg territory at the time of the events giving rise to the damage.

### **Article 6. Applicable law**

In the event of a nuclear incident, proceedings concerning civil liability shall be governed by Luxembourg law.



**Article 7. Amending provisions**

- (1) The Law of 20 April 2009 on environmental liability with regard to the prevention and remediation of environmental damage, as amended, is amended as follows:
1. Article 5(4) is repealed;
  2. Annex V is repealed.
- (2) Article 2(4)(a) of the Law of 21 April 1989 on third-party liability for defective products, as amended, is replaced by the following provision:
- “(a) damage resulting from nuclear incidents covered by the Law of 6 July 2020 on third-party liability for damage related to a nuclear incident;”

**Article 8. Reference for citation**

References to the present Law may be made by using the following title: “Law of 6 July 2020 on third-party liability for nuclear damage”.

We instruct and order that this law be inserted into the Official Journal of the Grand Duchy of Luxembourg in order to be enforced and complied with by all those concerned.

Minister for the Environment, Climate and  
Sustainable Development,  
**Carole Dieschbourg**

Minister for Foreign and European Affairs,  
**Jean Asselborn**

Minister for Health,  
**Paulette Lenert**

Minister for Justice,  
**Sam Tanson**

Cabasson, 6 July 2020.  
**Henri**



## NEWS BRIEFS

### 24<sup>th</sup> Nuclear Inter Jura Congress, Washington, DC, 2021

The International Nuclear Law Association (INLA) Congress 2020 that was expected to take place in Washington, DC in October 2020 was cancelled as a result of the coronavirus pandemic. This cancellation affects an important function of INLA, which is to enable its members and other experts to meet, to share information, to confront ideas and to discuss fine points of nuclear law, not to mention the opportunity for direct social contacts between professionals. It is therefore of great importance that in spite of current uncertainties, the Association remains committed to preparing a Nuclear Inter Jura for October 2021 that will be a success both in terms of its scientific programme but also with a large attendance.

Thus the INLA Secretariat and INLA US Chapter are reactivating the preparation of the scientific programme, after several months of suspension. The INLA Congress 2021 will be held in Washington, DC, from Sunday 24 to Thursday 28 October 2021, in the Willard InterContinental Washington, in the heart of Washington. As the principal INLA gathering, held every two years, the Congress serves as the leading international conference for representatives involved in nuclear law through professional, academic and other fields of specialisation. The location of the Congress is just blocks from the White House, and near the Congress and the Supreme Court of the United States. The term “lobbying” is said to have originated with discussions between interest groups and members of the government in the Willard lobby. Being held one year after the US Presidential election, and with an increasing focus around the globe on the role of nuclear power in carbon reduction efforts, the timing of Congress 2021 will be perfect for discussions of such matters as we look to nuclear in the next 50 years. In addition, the ongoing construction in the United States of two new reactors and the ongoing licensing of a small modular reactor design, point to an opportunity to turn the corner for nuclear power going forward.

The theme of the Congress is “INLA and The Nuclear Industry: The Next 50 Years” and thus the goal of the 2021 Congress is to draw into the discussions that theme as part of individual papers and presentations. The library of the abstracts previously submitted remains in place and confirmation and updates will be pursued directly with the authors. New proposals for additional contributions, reflecting new developments and subjects, are welcome and the focus continues to be providing insights as to how each topic represents or will be influenced by developments impacting nuclear power’s future. Such factors may reflect a positive contribution, or potentially detract from, the evolution of key aspects of nuclear power’s role in our societies throughout the world. The Congress will present an opportunity for in-depth discussions with peers, and to appreciate the dynamics of the nuclear community going forward in an international context.

The revised first announcement is available at: <http://aidn-inla.be/content/uploads/2020/10/inla-congress-2021-washington-dc-first-announcement.pdf>. Specific details of the event will be given in the Second Announcement in the spring.



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## **NEA PUBLICATIONS AND INFORMATION**

The full catalogue of publications is available online at [www.oecd-nea.org/pub](http://www.oecd-nea.org/pub).

In addition to basic information on the Agency and its work programme, the NEA website offers free downloads of hundreds of technical and policy-oriented reports. The professional journal of the Agency, *NEA News* – featuring articles on the latest nuclear energy issues – is available online at [www.oecd-nea.org/nea-news](http://www.oecd-nea.org/nea-news).

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The *Nuclear Law Bulletin* is a unique international publication for both professionals and academics in the field of nuclear law. It provides readers with authoritative and comprehensive information on nuclear law developments. Published free online twice a year in both English and French, it features topical articles written by renowned legal experts, covers legislative developments worldwide and reports on relevant case law, bilateral and international agreements as well as regulatory activities of international organisations.

Feature articles and studies in this issue include: "Environmental impact assessments and long-term operation of nuclear power reactors: increasing importance of environmental protection in the European Union?", "Forging a clear path for advanced reactor licensing in the United States: approaches to streamlining the NRC environmental review process" and "Slovak legal system for ensuring feasible nuclear back-end system implementation".