The Nuclear Industry Association’s application to justify new nuclear power stations

Institute of Physics response to a Department of Energy and Climate Change consultation

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23 March 2009
Dear Mr Jenkins

The Nuclear Industry Association’s application to justify new nuclear power stations

The Institute of Physics is a scientific charity devoted to increasing the practice, understanding and application of physics. It has a worldwide membership of over 36,000 and is a leading communicator of physics-related science to all audiences, from specialists through to government and the general public. Its publishing company, IOP Publishing, is a world leader in scientific publishing and the electronic dissemination of physics.

The Institute welcomes the opportunity to respond to the Department of Energy and Climate Change’s consultation on the Nuclear Industry Association’s application to justify new nuclear power stations.

The attached annex highlights the key issues of concern to the Institute in response to the specific questions listed in the consultation document. This response was prepared with input from the Institute’s Energy Sub-group, which includes a range of leading physicists working across the energy sector. The Sub-group reports to the Science Board of the Council.

If you need any further information on the points raised, please do not hesitate to contact me.

Yours sincerely

Professor Peter Main
Director, Education and Science
The Nuclear Industry Association’s application to justify new nuclear power stations

Question 1: Do you agree with the Government’s preliminary view that, following the application submitted by the NIA, the decisions by the Secretary of State and the Justifying Authority should be by reference to four classes or types of practice, based on:

(a) The generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, water moderated thermal reactor known as ACR1000 designed by Atomic Energy of Canada Ltd.
(b) The generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, water moderated thermal reactor known as AP1000 designed by Westinghouse Electric Company LLC of the USA.
(c) The generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, water moderated thermal reactor known as EPR designed by AREVA NP of France and Germany.
(d) The generation of electricity from nuclear energy using oxide fuel of low enrichment in fissile content in a light water cooled, water moderated thermal reactor known as ESBWR designed by GE-Hitachi of the USA, and that these qualify as new classes or types of practice. If not, why not?

We do not object to this approach being adopted. However, we would have preferred a simpler application, where the four candidate designs were considered within a single envelope.

The benefits of new nuclear power stations are substantial and broadly independent of the specific reactor designs being considered. Likewise, the detriments are broadly similar between all four designs and, in all cases, are very small in comparison to the benefits.

It is important that this four-track approach does not introduce delay to the overall time frames for new nuclear build. If it appears that the four applications cannot be processed in parallel without introducing delay, then priority should be given to the two PWR designs that are currently being looked at as part of the Generic Design Assessment – the Areva EPR and the Westinghouse AP1000.
Question 2: Does the NIA application contain sufficient information to enable the Justifying Authority to make an assessment of
   a) these classes or types of practice and
   b) the preferred class or type of practice in the NIA application?
   In either case, if not, what further information is needed?

Yes – the application is sufficiently detailed and thorough to provide more than enough information to allow a Justification decision to be made.

It is notable that in other countries, such as Finland and France, this process has only been done with a very high-level assessment of the relative benefits and detriments, if at all. Therefore, the UK is already taking a much closer and more detailed look at this issue than other EU nations.

Question 3: Do you have any comments on the arguments or evidence in the NIA’s application? Are there any additional arguments or evidence which the Justifying Authority should consider?

We believe that all of the issues which might impact on a Justification decision are addressed in the application. No further information is needed.

Question 4: Do you have any other comments on the Government’s preliminary view of the classes or types of practice, on the approach preferred by the NIA, or any other options?

No further comments. We noted in our response to question 1 that we would have preferred a single application, rather than four separate ones.

Question 5: Do you have any comments on how best the Government might accommodate changes or developments of the named reactors in its classes or types of practice?

Justification is intended to be a high-level assessment, not to be concerned with the specific details of reactor design. The balance of benefits (in particular, carbon emissions avoided and improved security of energy supply) against detriments (such as radiation doses to workers and the wider public) is unlikely to be significantly impacted by design changes or modifications to the operational regime of the power stations.

Any changes which are made will need to be approved by the appropriate regulatory bodies, and as such are unlikely to be detrimental to public or worker health and safety. Therefore, any impact of the Justification decision is likely to be – at worst – neutral, and more likely to increase the case for a positive decision.
Question 6: Do you have any suggestions about the way in which the Government proposes to engage with the public in the later stage of the consultation process?

We refer again to the fact that Justification should be a high-level evaluation of the benefits and detriments. Any consultation should look at this level, and not explore detail which is unlikely to affect the overall balance of benefits and detriments.

Whilst it is very important for the public and other stakeholder bodies to have the opportunity to engage in the process, the level of engagement should be appropriate and proportionate to the level of overall public interest.
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