



Department for  
Business, Energy  
& Industrial Strategy

# Nuclear Fuel Fund

Request for Information

July 2022



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# Introduction

Low-carbon nuclear supplies approximately 15% of UK electricity as a steady source of electricity generation complementing intermittent renewables<sup>1</sup>. Nuclear is the only form of reliable, low-carbon generation which has been deployed at scale to date.

As announced on 7th April 2022 in the British Energy Security Strategy (BESS), the government's long-term ambition is to increase our plans for the deployment of civil nuclear power in Great Britain to up to 24GW by 2050, around 25% of our projected 2050 electricity demand<sup>2</sup>.

With developments in Light Water Reactors, (LWRs) Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs), the latter two having been bolstered through the £385m Advanced Nuclear Fund<sup>3</sup>, it is likely that a range of different reactor types will make up the UK's future civil nuclear fleet.

Nearly all the UK's historic and existing nuclear reactors have been fuelled using a UK-led supply chain for uranium enrichment and fuel fabrication. This has led to a domestic capability spanning nuclear fuel R&D through to modern, well-invested enrichment and fabrication capabilities, and spent fuel management, all underpinned by a highly skilled workforce.

As the UK expands its civil nuclear fleet and moves towards the possibility of a greater range of reactor types, the nuclear fuel sector becomes even more important. A secure, resilient supply of fuel for our reactors can support them to maximise their contribution to the UK's energy system.

To help realise the sector's potential, up to £75m capital was confirmed at the 2021 Comprehensive Spending Review to establish a Nuclear Fuel Fund.

We are now developing the Nuclear Fuel Fund's design, to make sure it has the best prospect of meeting the UK's future energy needs, the sector's opportunities for growth, and delivering Value for Money (VFM) for taxpayers.

Through this Request for Information (RFI), we ask interested parties to register their interest in bidding for funding. This is to gauge interest only and bids will not be limited to those who register interest through this process. We also ask all interested stakeholders, including those who do not expect to bid for funding, to share their views and evidence on the challenges and opportunities facing the UK nuclear fuel sector, and the potential responses (project types) that could be supported through the Nuclear Fuel Fund.

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<sup>1</sup> [BEIS Energy Trends report](#), 2020-2021 (provisional)

<sup>2</sup> <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

<sup>3</sup> <https://www.gov.uk/government/publications/advanced-nuclear-technologies/advanced-nuclear-technologies>

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# The UK nuclear fuel sector

The UK was one of the first countries to develop and build front end fuel cycle capabilities; in 1948 Springfields fabricated its first uranium fuel<sup>4</sup> and in 1952 the domestic enrichment of uranium commenced at Capenhurst<sup>5</sup>. Located in the Northwest of England, these sites and the wider UK supply chain have been supplying safe and reliable fuel and uranium products to customers in the UK and overseas for decades. They make a significant contribution to the UK economy, providing direct employment for around 1600 people and indirect employment for a further 2300 people in the wider supply chain<sup>6</sup>.

The UK has previous experience in the manufacture of a variety of fuel types, including unenriched metallic Magnox fuel, enriched Advanced Gas-cooled Reactor (AGR) and Light Water Reactor (LWR) fuel, fast reactor fuels and coated particle fuels. This historic capability supports the nuclear fuel research and development currently being carried out in the UK.<sup>7</sup>

The UK's Advanced Gas-cooled Reactor (AGR) fleet continues to be supplied by our own domestic enrichment and fabrication capabilities. In 2019 alone, 12 million AGR pellets were manufactured at Springfields, providing enough energy to power every journey made by the UK's 31 million cars (if they were all electric) in that year.<sup>8</sup>

The 2021 report "*Fuelling Net Zero: Advanced Nuclear Fuel Roadmaps for a Clean Energy Future*"<sup>9</sup> highlighted that "Although the relative numbers remain low, the UK is internationally recognised as having world-leading capability across the fuel cycle...to build capability and capacity, the UK will need to invest in programmes that make use of its world-leading infrastructure and continue to develop a significant skill base".

As we look to secure an even greater percentage of our electricity – up to 25% – from nuclear power by 2050, the value of our front-end fuel cycle capabilities in ensuring our energy security will only increase.<sup>10</sup>

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<sup>4</sup> <https://www.neimagazine.com/features/featurespringfields-what-next-7911185/>

<sup>5</sup> <https://world-nuclear.org/information-library/country-profiles/countries-t-z/appendices/nuclear-development-in-the-united-kingdom.aspx>

<sup>6</sup> Nuclear Sector Deal 2018

<sup>7</sup> <https://afcp.nnl.co.uk/wp-content/uploads/sites/3/2021/06/AFCP-Advanced-Nuclear-Roadmaps.pdf>

<sup>8</sup> <https://info.westinghousenuclear.com/blog/springfields-at-75>

<sup>9</sup> BEIS and NNL through the Advanced Fuel Cycle Programme, June 2021. <https://afcp.nnl.co.uk/wp-content/uploads/sites/3/2021/06/AFCP-Advanced-Nuclear-Roadmaps.pdf>

<sup>10</sup> <https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy>

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# Other relevant BEIS funds for nuclear

The Nuclear Fuel Fund will be an independent competition, which complements and reinforces this Government's wider support for nuclear.

Funded through the BEIS £505m Energy Innovation Programme, the Advanced Fuel Cycle Programme<sup>11</sup> run by NNL is investigating the role of advanced nuclear fuels and fuel cycles for a Net Zero future, in addition to developing future fuel technologies such as Coated Particle Fuels and Accident Tolerant Fuels (ATF).

The Ten Point Plan for an Industrial Revolution<sup>12</sup> announced the £385m Advanced Nuclear Fund to invest in the next generation of nuclear technologies. This includes up to £215 million for Small Modular Reactors (SMRs) to develop a domestic smaller-scale power plant technology design, and up to £170 million for a research and development programme to deliver an Advanced Modular Reactor (AMR) demonstration, including fuel, by the early 2030s.

The Future Nuclear Enabling Fund (FNEF)<sup>13</sup> is an up to £120m fund confirmed in the Net Zero Strategy that aims to help mature potential nuclear projects ahead of any government process to select the next nuclear projects. It expects to open for bids in summer 2022.

## Overview of the Nuclear Fuel Fund

### Purpose

The Nuclear Fuel Fund aims to preserve the UK front-end nuclear fuel cycle capability, to support our ambition to increase civil nuclear deployment to up to 24GW by 2050.

We understand that commercial operators are unlikely to invest in new capabilities until they have confidence that they can secure revenues – but that their customers may not award them contracts until they have confidence that the capabilities will be built.

The Nuclear Fuel Fund will address this barrier to investment. It will make targeted de-risking investments into projects that can enable the UK's nuclear fuel capability to meet future demand. In doing so, it will unlock private sector investment, support companies to access new markets (domestically and internationally) and preserve and create skills and knowhow.

This will help to ensure a secure, resilient supply of fuel for the reactors of today and tomorrow, and to deliver on the British Energy Security Strategy's strategy ambition to "ensure the UK is one of the best places in the world to invest in nuclear".

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<sup>11</sup> <https://www.nnl.co.uk/innovation-science-and-technology/collaborations/advanced-fuel-cycle-programme/#:~:text=An%20advanced%20fuel%20cycle%20comprises,the%20UK's%20clean%20energy%20mix.>

<sup>12</sup> <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>

<sup>13</sup> <https://www.gov.uk/government/publications/future-nuclear-enabling-fund-fnef>

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## Objectives

By 31<sup>st</sup> March 2025, the Nuclear Fuel Fund aims to:

- Deploy up to £75m towards UK-based projects alongside private sector co-investment, subject to all relevant approvals and Value for Money assessments.
- Prioritise market-led solutions with a path to commercialisation that will minimise government intervention in the long-term.
- Bring forward a portfolio of projects that can meet the range of potential UK fuel needs.
- Prioritise support for projects that generate Social Value, including measures to increase supply chain resilience and capacity, and create new jobs and skills.
- Monitor and evaluate funded projects to maximise learning and measure progress.

## Scope

The Nuclear Fuel Fund has up to £75m to deploy as capital spend across the UK, subject to all relevant approvals and Value for Money assessment. The funding needs to be disbursed, with all funded activities completed, before 31<sup>st</sup> March 2025, subject to an annual spend profile.

## Delivery Approach

We expect that the majority of funding will be deployed through grants to support capital projects. Subject to further consideration, and the learnings from this RFI process, the expected structure for the grant awards is as follows:

- Funding categories:
  - Fuel for the Reactors of Today: proposals supporting the preservation of UK capability to manufacture fuels for LWRs, including PWRs; and
  - Fuel for the Reactors of Tomorrow: proposals supporting the development of new fuels for SMRs and AMRs.
- Types of activities that could potentially receive support by way of funding (examples are illustrative and not exhaustive):
  - Development proposals: such as analysis, experimental development, feasibility and pre-FEED/FEED studies into capital projects; and
  - Deployment proposals: Projects ready to move to delivery stage, such as licensing preparation, demonstration or pilot scale activities, procurement of capital equipment, or construction.
- Max funding per award:
  - Up to £500k for each Development proposal;

- No individual limit for Deployment proposals, potentially subject to an overall cap for these types of projects.

BEIS may determine that a portfolio approach should be taken to ensure at least one proposal from each funding category is selected to achieve portfolio benefits. Payments are expected to be phased, with staged payments linked to completion of milestones for Deployment awards. Further details would be set out in the call for applications and supporting guidance.

Outside the grant awards, a portion of the Nuclear Fuel Fund may be used to procure services to support the Fund’s aims and objectives, through BEIS commercial frameworks.

## Indicative Process

This is an outline process and subject to change. BEIS reserves the right to modify this approach based on policy development or the output of this RFI process.

Summer 2022	Conclude RFI process and reflect outcomes in NFF design.
Autumn 2022	Open the NFF for applications.
Early Spring 2023	Announce preferred bidder(s), following a bid evaluation exercise.
Spring 2023	Due diligence (DD), including any requirements which must be met under the Subsidy Control Act 2022, and contracting with preferred bidder(s). The extent of DD will be linked to the size of the award (more extensive for Deployment than for Development proposals).

## Proposed Eligibility and Evaluation Criteria

The NFF will focus on the aspects of the UK capability deemed at greatest need of investment to support the UK’s nuclear deployment plan. It will therefore seek proposals that support the front end of the nuclear fuel cycle (excluding mining and milling) for fission reactors (LWRs, SMRs, AMRs).

Consortium bids are welcomed and guidance on how these partnerships should apply would be issued with any call for applications.

The NFF is expected to be eligible for bids that are led by or include consortia members from outside the UK, noting that successful funded projects would need to demonstrate how they would preserve the UK front end nuclear fuel cycle capability. The contracting bidder(s) would need to be registered in the UK under the Companies Act 2006.

Bidders would need to submit an application, through which they self-certify that they do not meet grounds for mandatory or discretionary exclusion (to be set out in the guidance).

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It is anticipated that bids that meet these initial criteria and submit all the information required for assessment would be subject to an evaluation process, where bids are scored by a panel against pre-agreed criteria with funding allocated to the highest scoring proposal(s). The proposed criteria are:

- **Policy Alignment:** the bid demonstrates clearly, with evidence, how the funded project would help to preserve the UK front-end nuclear fuel cycle capability. To include qualitative and quantitative details, including revenues, product volumes, and staffing generated by the project.
- **Path to Commercialisation:** evidence of projected demand for the project.
- **Deliverability:** readiness of the project to be taken forward, with sub-criteria considering each of
  - siting<sup>14</sup>;
  - safety, security and regulatory requirements;
  - technological readiness (with a minimum TRL to be stipulated);
  - bidder financial resources to deliver project<sup>15</sup>; and
  - timeline (a credible plan that would see the NFF grant deployed by 31/3/25).
- **Co-Investment:** amount of private sector funding to be unlocked by the Nuclear Fuel Fund grant (subject to a minimum of 1:1 match funding).
- **Value for Money:** cost-effectiveness of the proposed project and the grant, based on an assessment of the bottom-up costings provided with the bid.
- **Additionality:** how the grant would achieve something that would not happen otherwise.
- **Social Value:** additional benefits that would be leveraged by the project to enhance the capacity and resilience of the front-end nuclear fuel cycle skills and supply chain.

The weighting between the criteria is under consideration. Recognising the challenges in comparing projects at different stages, the proposals may be segmented into categories (fuel for reactors of today, and of tomorrow) and scored within those categories.

It is anticipated that the weightings and scores would also be adjusted between Development proposals and Deployment proposals, to reflect the different scopes and outputs of the two funding categories. Further guidance would be issued with any call for applications.

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<sup>14</sup> BEIS anticipates that bidders for Deployment proposals will need to demonstrate that their selected site is capable of supporting the proposed facility within the existing regulatory and legal frameworks. Where a proposal relates to land which is not owned by the bidder, bidders will need to demonstrate a credible plan for acquiring ownership of the site, or rights to use the site for the intended purpose. BEIS may require input from the current owner(s) of the land as part of the bid.

<sup>15</sup> BEIS reserves the right to seek a Parental Undertaking Guarantee (PUG), following completion of financial due diligence on preferred bidder(s).

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# Request for Information

## Aims of this engagement

Through this RFI, we aim to better understand:

- the barriers to investment in the UK front-end nuclear fuel cycle, supply chain and capability, which risk the government's energy policy objectives if not addressed – including, where available, evidence to support these views and international context;
- the potential projects that could be brought forward subject to these investment barriers being overcome or reduced, to preserve the capability; and
- how the Nuclear Fuel Fund can best be designed and delivered to support the most promising project(s), maximise learnings and measure success.

We particularly welcome feedback from participants across the nuclear fuel sector, including operators, technology designers and vendors, customers including utilities, wider supply chain participants, advisors and consultants, research bodies, national laboratories, and academia.

## Process for responding

Responses can be provided in writing to [nuclearfuelfund@beis.gov.uk](mailto:nuclearfuelfund@beis.gov.uk) by no later than 4<sup>th</sup> August 2022.

There is an option to request direct engagement with BEIS if you have additional information to share (please note limited availability for this). We will not respond to individual responses.

Please send any to questions [nuclearfuelfund@beis.gov.uk](mailto:nuclearfuelfund@beis.gov.uk)

## Questions for respondents

### Background

- Name and contact details of respondent.
- Do you wish to register interest in applying for the Nuclear Fuel Fund?
- If yes, please provide a brief comment on the reason for your interest.
- If yes, would this be as a sole applicant or as part of a consortium?
- If yes, please provide a statistical breakdown of your workforce by the following protected characteristics: age; disability; gender reassignment; marriage or civil partnership; pregnancy and maternity; race; religion or belief; sex; and sexual orientation. If you do not collect this data, please discuss what is available and the barriers which exist for you in collecting this information.

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## Understanding the Problem

- What is the current outlook (risks and opportunities) for the UK front-end nuclear fuel cycle capability, across domestic and export markets? Are there any particularly fragile or strategically significant capabilities or skills?
- What gaps/barriers exist that may prevent these opportunities being realised? Are there activities/needs with known bottlenecks, or gaps in capacity and capability, or other economic or commercial challenges?
- What investment or action is needed to realise opportunities?
- What evidence, and data, is there to support your views? What evidence gaps exist?

## Possible Projects

- What project(s) could be undertaken to 31st March 2025 to most effectively preserve and develop the UK capability, and why?
- Please provide a high-level overview of your proposed project(s), up to 750 words plus supporting diagrams/tables per project as needed, to include:
  - The nature of the project (Development or Deployment) and if it would be considered an innovation or a capital programme
  - The total estimated funding requirement, by year and by phase/activity (with details of what proportion would be sought from the NFF and how the balance would be funded). What, if any, non-financial support would also be sought?
  - What could the project(s) deliver by 31/3/25, and beyond? What would be needed beyond 2025 to realise the benefits?
  - What 'additionality' could be unlocked by NFF funding (including co-investment), and what would be the UK impact?
  - If proposing several projects ideas, how would you prioritise them?
  - Do you expect the project to support, disadvantage, or have no impact on a) eliminating discrimination, harassment and victimisation; b) advancing equality of opportunity between those who share a protected characteristic and those who do not<sup>16</sup>; and, c) fostering good relations, particularly in relation to those who share a protected characteristic and those who do not? Please provide a brief narrative response to explain your view. Please note that this information is sought to support policy development and will not be scored or evaluated.

## Nuclear Fuel Fund design and delivery approach

Do you have any feedback on the outline design and delivery approach outlined in this RFI document (scope, design approach, timeline, eligibility and evaluation criteria)?

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<sup>16</sup> Protected characteristic means the following: age; disability; gender reassignment; marriage or civil partnership; pregnancy and maternity; race; religion or belief; sex; and sexual orientation.

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## Next Steps

We intend to consider the responses to this Request for Information and issue requests for further information, in writing, as required to inform the further development of the Nuclear Fuel Fund. At this stage, any information provided to BEIS is submitted on an indicative basis and is solely for the purpose of policy development. The Nuclear Fuel Fund is in the design phase and all potential approaches are subject to change. BEIS reserves the right to change any or all of the details discussed in this RFI or to not proceed with the programme.

Participating in this RFI will not alter a respondent's prospects of securing funding through the Nuclear Fuel Fund when it is launched. It also does not influence or affect any bids submitted to other BEIS programmes, including but not limited to the AMR RD&D and FNEF.

Assessment processes for any award made via NFF will ensure VfM and that government support is both required and likely to be effective. As an indication of the type of material that may be required at this later stage, information typically needed to appraise and scrutinise proposals includes detailed technical specifications of proposals and envisaged commercial models and project plans. Applicants will normally also need to share detailed financial information to confirm their current financial position and that they would have the necessary resources to deliver any proposed project(s). Background and suitability checks would also be required to be satisfactorily undertaken on preferred bidder(s).

The Nuclear Fuel Fund may require subsidy assessments to be undertaken and further information will be communicated in due course.

## Confidentiality and information sharing

All information provided throughout all parts of this process may be considered by BEIS and other government departments and their advisors for use in policy development. In providing the information requested in this document you confirm that you are providing written consent that the information provided may be shared with other departments, agencies, public bodies and subsidiaries owned by the above, and their advisors.

Information you provide in response to this Request for Information, including personal information, may be disclosed in accordance with any applicable law (including the Freedom of Information Act 2000 and the Environmental Information Regulations 2004), by order of a court or as required by any body or inquiry which has the power to compel disclosure.

We will process your personal data in accordance with all applicable data protection laws. Our privacy policy is available at [gov.uk](https://www.gov.uk). If you want the information that you provide to be treated as confidential please tell us but be aware that we cannot guarantee confidentiality in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not be regarded by us as a confidentiality request.