NEA
NUCLEAR ENERGY AGENCY

The NEA Small Modular Reactor Dashboard

Rolling and Annual Updates Guidelines

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NEA SMR DASHBOARD UPDATE STRATEGY

To ensure the NEA SMR Dashboard remains current and reflective of ongoing developments, the NEA employs two complementary update strategies:

- **Rolling Updates**: Rolling updates allow SMR developers to incorporate the latest progress into the NEA SMR Digital Dashboard. These updates are initiated by developers themselves, with the NEA issuing multiple reminders throughout the year to collect input. Both new and existing developers listed in the Dashboard are eligible to participate.
- **Annual Updates**: The annual update focuses on revising the PDF version of the NEA SMR Dashboard, including its analysis of global SMR trends. This process is initiated by the NEA through proactive outreach, gathering input from all identified SMR developers once a year.

PREPARE FOR THE FORM

To ensure that The NEA SMR Dashboard stays up to date we have designed a Microsoft form that allows you to directly engage with the NEA to include and update your SMR design assessment in The NEA SMR Dashboard.

Before starting the form, please take a few moments to read the guidelines below. If you have any questions or issues, please feel free to contact us via e-mail at NEA.SMR.Dashboard@oecd-nea.org.

The form has two objectives:

- To gather updated information about your organisation and your SMR design; and
- To receive your self-assessment of your SMR design's progress towards commercialisation and deployment across the six areas of assessment in the Dashboard as of the latest update date.

Please note that, all information on SMR designs submitted through the form is subject to independent verification and validation by NEA analysts. The NEA conducts its assessments based on its own evaluation processes, methodologies, and criteria. You will have the opportunity to review and provide feedback on the NEA assessment before it is finalised (see sections "Submitting your answers").

Please note that your answers to the form will be lost if you close it before submitting it.

We ask that you provide **verifiable public references** to support your statements regarding progress towards commercialisation and deployment.

Acceptable references include credible third-party sources, such as information published on websites from regulators, utility operators, site owners, engineering procurement construction companies, financiers, among others. For further detail see Table 2.

Guideline 1: Preparing all the relevant information for sections "Organisation information", "Reactor information" and "Fuel information" of the form

These sections focus on factual information about your organisation and your SMR design. Questions include:

- Company name and headquarter location;
- Reactor name, reactor description, SMR project objectives, reactor configuration, coolant, net power output (MWth, MWe), core outlet temperature (°C), neutron spectrum; and,
- Fuel cycle basis, Initial fissile material and its enrichment level (%), physical-chemical form, fuel composite architecture, fuel recycling, discharge burnup (GWd/t), and fuel cycle length (see Table 1 for a detailed description of NEA's fuel taxonomy).

Guideline 2: Completing sections "Self-assessment" of the form

In this section we invite you to self-assess your SMR design progress towards commercialisation and deployment across the six areas of assessment: Licensing, Siting, Financing, Supply chain, Engagement, and Fuel.

Before completing sections "Self-assessment" of the form, please carefully **read the definitions for each area given in Table 2 and for each criteria given in Table 3.**

We recognise it is difficult to compare the advancement of SMR technologies in different contexts and jurisdictions, characterised by unique regulatory structures and approaches, siting requirements, financial models and policy environments, among others. The NEA has defined objective criteria to reflect substantial progress irrespective of differences across contexts and jurisdictions.

For each area, you will also be invited to share key elements that support your assessment of your SMR design progress towards commercialisation and development. Please note that the description must be

strictly based on publicly available sources of information. Please refer to Table 2 for typically accepted sources of information for each area.

Guideline 3: Submitting your answers to the form

To submit the form please select “I consent” for the final question of the form: “Do you consent to submitting the form?” and then click “Submit”.

Once you have submitted your answers, you will be assigned an NEA analyst who will be your main point of contact for future exchanges with the NEA regarding the assessment of your SMR design. Please note that you will not receive an automated confirmation upon submission, and it may take a couple of days for the analyst to respond, depending on the volume of requests from SMR developers who wish to include their SMR designs in the Dashboard.

Related links

- The NEA Small Modular Reactor Dashboard: https://www.oecd-nea.org/smr-dashboard
- The NEA Small Modular Reactor Dashboard: Third Edition: https://www.oecd-nea.org/7737
- The NEA Small Modular Reactor Digital Dashboard: https://www.oecd-nea.org/smr-digital-dashboard

Table 1: NEA Fuel Taxonomy

I. FISSILE MATERIAL		
Attribute	**Possible values**	**Definition**
A. Fuel cycle basis	• Uranium ore • Thorium ore	Identifies the fertile base material of the fuel cycle – either uranium or thorium. This classification determines the long-term overarching cycle type and has implications for fuel supply, reactor design, potential reprocessing and waste composition.
B. Initial fissile material	• Uranium-235 • Plutonium • Uranium-233	Specifies the fissile isotopes present in the fresh fuel at the start of the cycle (e.g. U-235, Pu, U-233). This can define the startup strategy and licensing considerations. The following three subcategories allow to numerically specify the fissile percentage in the fuel. Specifies the fissile isotopes present in the fresh fuel at the start of the cycle (e.g. U-235, Pu, U-233). This can define the startup strategy and licensing considerations. The following three subcategories allow to numerically specify the fissile percentage in the fuel.
C. Percentage of initial fissile material	• Percentage of fissile plutonium (Pu-239 + Pu-241)	Indicates the percentage of fissile plutonium isotopes, which is particularly relevant for mixed oxide (MOX) fuel, fast reactors and recycled fuel cycles.
	• Percentage of uranium-233	Indicates the percentage of U-235 in the fuel, typically arising from thorium fuel cycles.
	• Percentage of uranium-235	Indicates the percentage of U-233 in the fuel. This directly impacts enrichment requirements.
D. Uranium-235 enrichment	• 5%: Low-enriched uranium • ≥ 5%, < 10%: Intermediate enrichment • ≥ 10%, < 20%: High-assay low-enriched uranium	Categorises U-235 enrichment into defined ranges which relate to different commercially available fuels and/or safeguard categories.

II. FUEL FORM

Attribute	Possible values	Definition
A. Physical-chemical form	• Ceramics • Metallic alloys • Molten salts • Other	Indicates the general material form of the fuel – oxide, metal, carbide, nitride, etc. – which influences fabrication, thermal conductivity and in-core performance.
B. Physical-chemical form specifics	• Uranium oxide ceramic • Uranium-carbide ceramic • Uranium-oxycarbide ceramic • Uranium-silicide ceramic • Uranium-nitride ceramic • MOX ceramic • Molten chlorides • Molten fluorides • Metal alloy: Specify	Provides specific families of physical or chemical forms of the fuel composition, differentiating uranium oxides (largely dominant today) from other forms.
C. Composite fuel architecture	• TRISO pebble • TRISO prismatic • TRISO-X pebble • Ceramic-metal (CERMET) • Ceramic-ceramic (CERCER) • Other inert matrix fuel (IMF) • (Not applicable)	Flags a more complex structural design of the fuel, useful to describe advanced composite fuels. Note that for conventional UO_2 fuels which do not have this composite structure this field is left blank (not applicable).

III. MINOR ACTINIDES

Attribute	Possible values	Definition
A. Presence of minor actinides in fresh fuel	• Yes • No	Flags whether minor actinides (e.g., neptunium, americium, curium) are deliberately incorporated in the fresh fuel, for transmutation or waste reduction strategies.

Table 2: Area Definitions

AREA	DESCRITPION	ACCEPTABLE SOURCES
Licensing readiness	*The licensing process is critical for any SMR to reach market, but there are currently no SMRs licensed to operate outside of the People's Republic of China (China) or Russia. Various nuclear safety regulators have been advancing efforts to get ready to regulate innovative SMRs. Many are working to develop new approaches and pathways for licensing, for example by collaborating to review an SMR design internationally from the earliest stages.* The progress criteria for licensing closely follows international licensing norms, including pre-licensing interactions with regulators, design approval, construction and the issuance of operating licenses. A bonus is given to SMRs with licensing activities in multiple jurisdictions at any level.	**Include**: information published on regulator and/or government websites. We will not accept announcements by SMR developers that cannot be corroborated with verifiable public third-party references.
Siting	*Siting requirements vary greatly between different SMR configurations: a multi-modular land-based reactor will have a very different process of finalising a site than a floating reactor design.* The grading scale reflects one unifying factor against which all SMR designers could be assessed: whether the site owner has publicly selected the SMR for their site. The next factor is whether the site has been licensed and is ready for that specific SMR to be constructed. A bonus is given to SMR technologies making progress at multiple sites at any level.	**Typically come from** site owners or credible third parties, which demonstrate the interest of site owners in hosting your reactor design. We will not accept announcements by SMR developers that cannot be corroborated with verifiable public third-party references
Financing	*Securing financing is critical for any SMR technology to reach market. However, transparency is understandably difficult to achieve, as information may be considered commercially sensitive. Different SMR projects are also likely to require different levels of financing. Different business models are possible and different SMR designers will pursue different strategies. There are numerous paths to success with a combination of public and private financing, including a range of*	**Typically come from** governments, private financiers, or credible third-party websites that mention specific public or private sources of finance for your SMR design. We will not accept announcements by SMR

	approaches to private financing e.g. through debt, equity or bonds, or by becoming publicly traded. The NEA SMR Dashboard does not aim to audit any designer or validate the scale of financing required to bring a technology to market. Instead, public announcements on financing an SMR are used to indicate progress in this category. The progress criteria are based on the number or size of announcements in the public domain. The financing category therefore has two pathways for accession through the progress criteria: there are a significant number of financing announcements in the public realm for a particular SMR, or there are public announcements indicating the designer has raised significant funding. The pathways converge when it can be easily verified from public announcements that an SMR first-of-a-kind is considered fully financed, irrespective of the size of investments.	developers that cannot be corroborated with verifiable public third-party references.
Supply chain	*In most cases, a designer is not alone in developing an SMR – there are exceptional cases where the designer themselves can provide the full set of required engineering, procurement, and contracting. Contracts and partnerships must be in place to develop a supply chain for designing, constructing and operating the reactor. This category maps the maturity of the supply chain for each reactor through public announcements by suppliers and partners. Announcements from suppliers, engineering, procurement and construction organisations are all considered, as are announcements from universities, labs and research institutions when they are supplying research and development services to an SMR project.* The progress criteria are based on an increasing level of commitment of memoranda of understanding, binding contracts, and formal partnerships, joint ventures or consortia. A supply chain is considered mature when construction of	**Come from**: engineering procurement and construction companies, national laboratories, or credible third-party sources showing relevant stakeholders involved to provide research and development services for your SMR design. We will not accept announcements by SMR developers that cannot be corroborated with verifiable public third-party references.

	the first-of-a-kind SMR is ongoing, and a well-developed supply chain is indicated by the construction of an 'nth-of-a-kind' (NOAK) SMR.	
Engagement	*Engagement with communities is vital to the success of an SMR. In some regions, a project cannot advance without building strong engagement with Indigenous communities from the onset.* The progress criteria reflect the number of engagements made with communities associated with the SMR project. Memoranda of understanding, endorsements, town hall meetings and benefit-sharing agreements will be considered from the following stakeholder groups: • National governments • Subnational governments • Indigenous governments • Labour unions • Non-governmental organisations • Civil society organisations • Community organisations • Universities • End users and customers Advisory boards	**Typically include** evidence of engagement with any of the aforementioned stakeholders (such as journal interviews, live interviews, podcasts, etc.). Multiple engagement activities within the same type of scalable media—such as multiple podcasts, interviews, or presentations to the general public—are counted as one 'engagement activity' for that specific media type in our assessment process. For example, if an individual participates in three separate podcast episodes, these will collectively count as one engagement activity under the media type 'podcast'. Contact with other players within the nuclear sector is not considered as Engagement. We will not accept announcements by SMR developers that cannot be corroborated with verifiable public third-party references.
Fuel	*The majority of light water reactor SMR designers plan to use low-enriched uranium fuel in the same form that is currently commercially available. Many other SMRs plan to use fuels that span a range of compositions and levels of enrichment, with enormous variation within those categories. Most such fuels have never been licensed to operate in a reactor or are not commercially*	**Come from** nuclear fuel suppliers, research laboratories, or credible third-party source that mention the participation of relevant stakeholders for the development of your SMR design fuel.

	available. There are multiple steps to achieving fuel qualification, and they differ between regulators. There are nevertheless clear indicators of the progress of an SMR towards a safe and secure supply of licensed and qualified fuel for operation. The SMR progress criteria is based on progress towards commercial supply of qualified fuel. Once a licensed and operating fuel fabrication facility exists for a fuel, it is considered alongside others already being used in operating plants. For SMRs at this level of maturity, the next stages include contracts for fuel supply and a license to operate the reactor with the specific fuel.	

Table 3: Criteria Definitions

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6
Licensing	No information	Pre-licensing	Licence/construction/design certification application submitted	Design approved	Licence to construct approved	Licence to operate approved
	* Bonus for multiple jurisdictions					
Siting	No information	Non-binding agreements/MOUs/ non-binding announcements	Site owner has shortlisted the technology	Site owner has selected the technology	Received permit(s) and or licence(s) for construction on the site	Construction has started/been completed on the site
	* Bonus for multiple sites					
Financing[1]	No information	At least one announcement	Five or more announcements or USD 100 million	Ten or more announcements or USD 500 million	FOAK is fully financed	FOAK financed + progress for NOAK finance
Supply chain[2]	No information	Supplier days/ events/workshops/ trade shows/ non-binding agreements/MOUs/ non-binding announcements	Binding contracts for services & materials	Partnerships/joint ventures/consortia/in-house capabilities for EPC services	FOAK construction ongoing/ complete	NOAK construction ongoing
Engagement[3, 4]	No information	One or more engagements	Three or more engagements	Five or more engagements	Seven or more engagements	Ten or more engagements
Fuel	No information	Non-binding agreements & studies with national labs for RDD/Lab-scale production of fuel	Contracts/agreements with fuel supply chain (uranium/conversion/enrichment/ fabrication)	Operating fabrication facility producing fuel, or uses same fuel as existing/generation-III commercial reactors	Contracts for fuel for FOAK	Fuel loading has begun/been completed

(1) **Types of financing announcements in scope**: Funding from private investors; government grants; loans; loan guarantees; cost sharing agreements; public-private partnerships; equity partnerships; announcements of becoming publicly traded; announcements of sizeable investments; power purchase agreements; financing approval from rate payers; export credit financing; bank financing; multilateral development bank financing.

(2) **Types of suppliers of interest in scope**: Engineering, procurement and construction organisations; universities, labs and research institutions when they are supplying research and development services to an SMR project.

(3) **Types of stakeholders for 'Engagement' in scope**: Subnational governments; Indigenous governments; labour unions; non-governmental organisations; civil society organisations; community organisations; universities; end users and customers; advisory boards.

(4) **Types of announcements for 'Engagement' in scope**: Memorandums of understanding; endorsements; town hall meetings; benefit-sharing agreements.

Questions and Answers

Q1: Can my SMR assessment be included or updated if I do not complete the form and submit my answers?

Answer:

No, your SMR assessment will only be included or updated if you participate in the form. Do not forget to submit your answers.

Q2: Who should I reach out to if I have a question?

Answer:

You should contact us via e-mail at NEA.SMR.Dashboard@oecd-nea.org.

Once you have completed the form, you will be assigned an NEA analyst who will be your contact point for any questions.

Q3: What is the timeline for my updates to be included in The NEA SMR Digital Dashboard?

Answer:

The NEA plans to implement multiple rolling updates throughout the year to keep the SMR Digital Dashboard current. The update schedule will be finalised based on the volume of input received from SMR developers.

Q4: Is there a cut-off date for information to be considered in the update of my SMR design assessment?

Answer:

Yes, the cut-off date for information to be considered in the assessment of your SMR design is specified in the latest reminder published by the NEA. Only information announced on or before this date will be included in the assessment.

Q5: Can I edit my responses after I have submitted the form?

Answer:

You cannot edit your responses once you have submitted the form. However, an analyst will be liaising with you on further steps, and you will have the opportunity to share further information or updates for consideration with them.

Q6: Is there an opportunity to review and provide feedback on the NEA assessment before the publication?

Answer:

Yes, you will have the opportunity to review and provide feedback on your updated assessment before it is published. The NEA analyst assigned to you will facilitate the process.

Q7: My organisation works on several SMR designs, should I complete one form for each?

Answer:

Yes, assessments are specific to one design. Please complete a new form for each design.

Q8: The source of information I have does not exactly match the requirements mentioned in Table 2. Should I still share it?

Answer:

Yes, please share all publicly available sources of information you consider useful to support your assessment. We will contact you if another source is required, after reviewing the assessments internally.

Q9: My reactor design is engaged at different stages in different licensing processes in different countries, which licensing track should be considered to select the right licensing criteria?

Answer:

The criteria that shows your SMR progress towards licensing should be the highest one it has reached in at least one of the licensing tracks it is engaged in. Please refer to Table 3 for all criteria definitions.

Q10: Different site owners at different locations are considering deploying my SMR design reactor, which one should I consider to select the right Siting criteria?

Answer:

The criteria that shows progress of your SMR towards siting should match the highest one your design has reached with at least one of the site owners. Please refer to Table 3 for all criteria definitions.