

## Quick Reference

**Please note that you must read the full Call document for guidance before submitting your proposal**

### Tier-2 High Performance Computing Services

**Call type: Invitation for proposals**

**Closing date: 5 September 2019 at 16:00**

**Funding Available:** Up to £15 million capital and £2.5 million resource funding to support new and/or expanded Tier-2 HPC service provision.

**How to apply:** Complete the intent to submit form by 1 August 2019 and submit a full proposal *via* Je-S by 5 September 2019.

**Assessment Process:** The intent to submit is not being used to assess proposals, it is for planning and advising on remit. The assessment will be conducted by an expert panel. The panel will read the proposals and submit queries which will be answered by the PIs. Following this, the expert panel will interview the applicants and prioritise proposals based on the proposals, PI responses and the interviews.

#### Key Dates:

Activity	Date
Deadline for Intent to Submit	1 August 2019
Deadline for Full Proposals	5 September 2019
Panel queries distributed to PIs	15 October 2019
Deadline for PI responses	22 October 2019
Interview Panel	Week of 28 October 2019
Funding decision	Week of 28 October 2019

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Engineering and Physical Sciences  
Research Council

## **Tier-2 High Performance Computing Services**

**Call type: Invitation for proposals**

**Closing date: 5 September 2019 at 16:00**

**Related themes: Research infrastructure**

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## Summary

Tier-2 High Performance Computing (HPC) services are a significant feature in the UK's landscape of research and innovation infrastructure. Together with the national Tier-1 service, the network of Tier-2 services act as a distributed national resource that provides a diverse range of expertise and technological capability. Collectively, Tier-2 services act as the interface between the highest capability national and international HPC services and underpinning layer of local computing provision in universities. In addition, Tier-2 services play a key role in enabling multi-disciplinary computational science, building software engineering expertise, and ensuring the UK is at the forefront of new technologies.

EPSRC's strategy for Tier-2 provision therefore emphasises the need to support a diverse landscape of services that encompass a range of technologies, skills and expertise. By providing standardised and easy to access mechanisms, the Tier-2 services provide significant capacity to the UK research base.

This call is to invest in extending Tier-2 High Performance Computing (HPC) service provision, in recognition that the existing Tier-2 services may wish to seek a refresh or expansion of their hardware, and to support new services that address unmet user requirements or that will provide new capabilities for the UK research base.

All applications, whether relating to existing or new services, will be considered together and in competition with each other. They will be treated equally and assessed using the same assessment process and criteria. Applications are invited from individual institutions or consortia that have the capacity and capability to manage and operate HPC services. Funding is available to support Tier-2 services for a duration of 4 years. This consists of:

- **Up to £15m capital** is available for the purchase of capital assets required for HPC service provision, including computer hardware, associated maintenance, and essential elements such as operating systems.
- **Up to £2.5m resource** to support the operation of the capital assets referred to above, and as a contribution to service provision. This could include a contribution to power and systems administration costs, user support and software support.

Applicants will be asked to complete a short intent to submit form before submitting a full proposal. Full proposals will be assessed by an independent panel of experts. Bids will not be subject to postal peer review. Applications will be sent to the panel for their comments and questions; these comments will be returned to applicants for their response. Applicants will then be invited for an interview with the panel.

## Background

Researchers carrying out computational science and engineering need access to an HPC ecosystem that provides both capacity and diversity: the ability to move up, down and across tiers as the requirements of the research demands. Therefore, Tier-2 provision provides a vital component in meeting the

requirements of the UK research base, sitting between the local provision at universities and the national Tier-1 service.

Before preparing an application, applicants should familiarise themselves with the following documents:

1. EPSRC's E-Infrastructure Strategy, available at:  
<https://epsrc.ukri.org/files/research/einfrastructurestrategy2018/>
2. EPSRC's current investment in Tier-2 HPC and strategy for developing the Tier-2 landscape, available at:  
<https://epsrc.ukri.org/research/facilities/hpc/tier2/>

The objectives for this round of investment are to:

- Expand the capacity and scientific reach of the national network of Tier-2 provision by enhancing access to the UK research community, addressing the broader UKRI objectives of expanding the boundaries of human knowledge and understanding, delivering economic impact and creating social and cultural impact;
- Expand the architectural diversity of the national network of Tier-2 compute infrastructure, consistent with the diverse requirements of the research community and the emergence of new technologies;
- Provide access to computers containing new, cutting-edge technologies in processor, storage, memory, interconnect and HPC components in order to enable research communities to prepare for possible future architectures, future-proofing of codes, and in preparation for the arrival of exascale HPC;
- Enable more rapid migration of scientific research between compute Tiers and thus accelerate the time to impact for outputs and benefits;
- Integrate the new machines fully into the existing Tier-2 layer and into the wider HPC ecosystem across the UK;
- Promote and enhance computational science skills development;
- Establish collaborative relationships with academic and industrial partners in the UK and internationally that benefit the UK research and innovation community; and
- Encourage and support multi-disciplinary research endeavours.

The services funded in this call will be required to:

- Provide a dedicated high performance computing service owned and managed by an institution or a consortium of institutions, with access mechanisms designed to permit a wide range of user access for scientific research, computational science and software development;
- Partner with EPSRC and other Tier-1 and Tier-2 service providers to develop and implement standardised mechanisms and processes for the

distribution and trading of compute cycles and resources in order to form an integrated national capability;

- Have a partnership and management structure that enables access to a broad range of users from academia and industry based on a suitable arrangements for free access, in-kind payment and/or direct reimbursement;
- Focus on one or more of the following: a research community, a geographical region, and/or a technology requirement, such that a broad community of users may have access to relevant and innovative e-infrastructure for their needs;
- Plan to develop and maintain a computational science and engineering function, either in concert with existing providers, or independently, such that software development and innovation may be part of the role of the service.

This call is not aimed at directly supporting research programmes that utilise HPC. Any resources requested, including investigator time, must relate to the provision of a Tier-2 HPC service rather than utilisation of that service.

For more information about EPSRC's portfolio and strategies, see our website: <https://epsrc.ukri.org/research/ourportfolio/>

## Funding available

Funding is available to support Tier-2 HPC services for a period of 4 years. This consists of:

- Up to £15m capital, for costs including the purchase of computer hardware and associated maintenance, and essential elements such as operating systems
- Up to £2.5m resource over a period of up to 4 years, as a contribution to maintaining and running the computing resource being requested (via a contribution to service provision costs, e.g. electricity, systems administration) and providing suitable software support from Research Software Engineers (RSEs) . **Request for resource funding are limited to a maximum of £500,000 for each proposal (this limit applies to both single institution and consortium proposals).**

The final capital spend profiles will be agreed with EPSRC, but applicants should plan on receiving the capital spend from EPSRC consistent with EPSRC's overall capital spend target, as per the table below:

<b>Q3 2019/20</b>	<b>Q4 2019/20</b>	<b>Q1 2020/21</b>	<b>Q2 2020/21</b>
(payment December 2019)	(payment March 2019)	(payment June 2020)	(payment September 2020)
25%	25%	25%	25%

Applicants should provide EPSRC with an indication of how they plan to address this spend profile in their proposal document (see the 'Guidance on Writing an Application' section for further details).

Applicants can request up to £500,000 in resource funding for the proposed Tier-2 service, alongside the request for capital funding. At the evaluation stage the evaluation panel will assess whether the resource funding requested from EPSRC will produce significant value to the research community above and beyond the resources that will be provided by the host institution. The level of resource funding awarded to successful applications may be subject to negotiation with EPSRC.

In return for contributions towards the capital assets and resource funding, EPSRC requires proposals to commit an explicit proportion of the compute time to be distributed *via* national access mechanisms that is proportionate to the investment being requested from EPSRC (see the 'Guidance on Writing an Application' section for further details).

## **Equality, Diversity and Inclusion**

The long term strength of the UK research base depends on harnessing all the available talent and the Research Councils have together developed the ambitious UK Research and Innovation Equality, Diversity and Inclusion Action Plan <https://www.ukri.org/files/legacy/skills/action-plan-edi-2016/>

In line with the UK Research and Innovation Diversity Principles, EPSRC expects that equality and diversity is embedded at all levels and in all aspects of research practice. We are committed to supporting the research community in the diverse ways a research career can be built with our investments. This includes career breaks, support for people with caring responsibilities, flexible working and alternative working patterns. With this in mind, we welcomes applications from academics who job share, have a part-time contract, need flexible working arrangements or those currently committed to other longer, large existing grants. Please see our Equality and Diversity webpages <https://epsrc.ukri.org/funding/equalitydiversity/> for further information.

In accordance with these commitments, successful applicants will be required to work with EPSRC and the wider network of Tier-1&2 services to ensure that the service's access arrangements are inclusive and incorporate good practice.

## Eligibility

A list of eligible organisations to apply to EPSRC is provided at:  
<https://www.ukri.org/funding/how-to-apply/eligibility/>

For information on the eligibility of organisations and individuals to receive EPSRC funding, see the EPSRC Funding Guide:  
<https://epsrc.ukri.org/funding/applicationprocess/fundingguide/>

Please ensure sufficient time to create Je-S accounts for Investigators who do not currently have one.

## How to apply

### Submitting an application

Proposals may be submitted by single institutions or consortia of institutions. A lead institution must be identified for each consortium.

Institutions are **only permitted to lead a single proposal (as a single institution or consortium lead) but may be named as a partner on up to three additional proposals.**

**Proposals must identify a Director.** The Director will be responsible for successful operation of the proposed Tier-2 service and will be recognised as the main point of contact with EPSRC. The Directors will be expected to work with EPSRC and other Directors in the development of an integrated national HPC capability.

We expect the Director to be the Principle Investigator of the application. However, if the proposed Director is not eligible to receive EPSRC funding (e.g. they are not an academic employee) then a suitable alternative Principle Investigator may be identified.

Applicants must complete an intent to submit by completing the form at:

<https://www.smartsurvey.co.uk/s/H8Z7C/>

by **1 August 2019.**

In order to complete the intention to submit form applicants must provide details of:

- The institution(s) involved in the proposal and, where relevant, the lead institution.
- The Director (and the Principle Investigator if not also the Director).
- A summary of the concept for the proposed service (max. 500 words).

- An initial estimate of the amount of capital and resource to be requested, and a statement on how the applicant intends to work within the spend profile provided in the funding available section of this call document.

The Intent to Submit stage will be used by EPSRC to advise applicants on any potential remit issues (such as ensuring the work supported is majority within EPSRC remit and proposals are within the scope of the call) before a full application is prepared, to assist with financial planning and to gauge demand.

## Full Proposal Submission

Following the intent to submit you should prepare and submit your proposal using the Research Councils' Joint electronic Submission (Je-S) System (<https://je-s.rcuk.ac.uk/>).

When adding a new proposal, you should select:

- Council 'EPSRC'
- Document type 'Standard Proposal'
- Scheme 'Standard'
- On the Project Details page you should select the 'Tier-2 High Performance Computing Services' call.

Note that clicking 'submit document' on your proposal form in Je-S initially submits the proposal to your host organisation's administration, not to EPSRC. Please allow sufficient time for your organisation's submission process between submitting your proposal to them and the call closing date. EPSRC must receive your application by **16:00 on 5 September 2019**.

Guidance on the types of support that may be sought and advice on the completion of the research proposal forms are given on the EPSRC website (<https://epsrc.ukri.org/funding/applicationprocess/>) which should be consulted when preparing all proposals.

## Guidance on writing an application

Your application must include the following:

**Case for Support (8 pages in total)**. To include the following sections:

- **Capability and capacity of the proposed service:** this should include details of the track record of both the Director (and key members of their team) and the institution(s) in managing and delivering HPC services. Please indicate lead and partner members of a consortium, and explain what each will contribute to the consortium.
- **Contribution to the UK's research and innovation landscape:** Please detail the compute resource you will procure and give a comprehensive justification of why the service you will provide through utilising this resource will contribute to research and innovation in the UK. Describe how the service



will enable new science, be reactive to emerging research areas and support new user communities.

- **Business case:** Please provide a clear and comprehensive narrative on how your service will operate, its strategic approach and how it fits within the wider e-infrastructure landscape. The business case should:
  - Explain how the proposed service contributes to EPSRC's strategic goals for Tier-2 services, as detailed in the summary and background sections of this document.
  - Propose a proportion of the overall computer time, broken down by architecture if appropriate, which will be dedicated to EPSRC's national Tier-2 service. This time will be distributed *via* EPSRC approved mechanisms including the HEC Consortia, the Open Access to Tier 2 call and on grants as requested by EPSRC;
  - Evidence of the anticipated demand on the service. Indicate how current, new and additional users of the service will be identified and encouraged to apply for time. This should be with the aim of maximising utilisation whilst ensuring that the resource is being used to study high-quality science and such that a high standard of service can be maintained;
  - Give a clear description of the proposed governance and management of the service, where relevant this should include details of how the consortium will be managed;
  - Detail how the service's sustainability will be developed throughout the period of funding and beyond. If you are implementing a charging model for access, you must describe how this will operate and how charges will be recovered and used;
  - Include a brief risk analysis, and suggestions of key performance metrics with which progress on your stated objectives can be measured;
  - Describe partner contributions, and in particular how they will add value.

**Workplan (1 page):** A clear timeline of the procurement process. Include a suggested spend profile for the capital investment taking account of EPSRC's capital spend requirements as described in the funding available section.

**Justification for Resources (up to 2 A4 pages):** Use this to make your financial case. Please give a summary of how the proposed capital and resource investment will be made to access technology appropriate to your objectives. You should describe how the funding will enable delivery of your objectives and strategy. You must give a clear indication of the levels of commitment to be provided from your home institution(s) and other partners. If requesting resource funding, then you should describe how such funding will produce significant value to the research community above and beyond the resources that will be provided by the host institution.

**Pathways to Impact (up to 2 pages):** Use this to explain how evidence of benefits and impacts will be collected by the service at regular intervals, and how you will manage outreach to users.

**Project Partner Letters of Support (up to 1 page):** where applicable, from all named industrial project partners.

**Host organisation statement (up to 2 sides A4):** including details of institutional commitment to host and operate the proposed HPC service.

Applicants should use the Ethical Information section on the Je-S form to demonstrate to peer reviewers that they have fully considered any ethical issues concerning the material they intend to use, the nature and choice, current public perceptions and attitudes towards the subject matter or research area. EPSRC will not fund a project if it believes that there are ethical concerns that have been overlooked or not appropriately accounted for. All relevant parts of the Ethical Information section must be completed. If the research will involve human participation or the use of animals covered by the Animals (Scientific Procedures) Act 1986 it is recommended that applicants pay particular attention to the guidance highlighted below. EPSRC reserves the right to reject applications prior to peer review if the Ethical Information sections are not completed correctly.

Further guidance on completing the Je-S form can be found at <https://je-s.rcuk.ac.uk/Handbook/pages/GuidanceonCompletingaStandardG/EthicalInformation.htm>. Other relevant guidance includes: EPSRC's policy on animal use in research (<https://www.epsrc.ukri.org/about/standards/animalresearchpolicy/>) and the Responsible Innovation Framework (<https://epsrc.ukri.org/research/framework/>).

Please note that on submission to EPSRC **all** non-PDF documents uploaded onto Je-S are converted to PDF, the use of non-standard fonts may result in errors or font conversion, which could affect the overall length of the document.

For advice on writing proposals see:

<https://epsrc.ukri.org/funding/howtoapply/preparing/>

## **Assessment**

### **Assessment process**

The full proposals will be assessed by an independent panel of experts with oversight by EPSRC.

Applications will be examined by the panel. The panel's comments and queries will be returned to applicants for their response. The comments and queries are for:

- Clarifications and technical queries for the purpose of ensuring the proposals are fully understood before the interview panel.

- Questions to assist the panel in judging the proposal against the assessment criteria.

Following the applicant's responses they will then be required to attend an interview by the same expert panel that produced the queries.

In the event of this call being substantially oversubscribed as to be unmanageable, EPSRC reserve the right to modify the assessment process.

## Assessment criteria

The criteria for assessment of the full proposal at the interviews are:

1. **Quality** (primary): the contribution of the proposed service to EPSRC's strategy to develop the UK's landscape of Tier-2 HPC services. Evidence that the proposed service will expand the capacity and scientific reach of the national network of Tier-2 provision through: the provision of cutting-edge technologies that enable excellent research; the provision of a unique capability and/or the capacity to address areas of acute demand; the ability to respond to new and emerging research areas and support new communities of practice; and building capacity in computational science skills.
2. **Feasibility and value-for-money** (secondary major): clear descriptions of operational, charging and allocation approaches; governance and management arrangements; benefits realisation. A clear and realistic work plan. A suitable Justification for Resources which represents value for money. The appropriateness of the proposed proportion of computer time dedicated to EPSRC's national Tier-2 service relative to the investment. If resource funding is requested, whether this further investment will produce significant value to the research community above and beyond the resources that will be provided by the host institution.
3. **Applicant (track record)** (secondary): the breadth and depth of skills within the institution or consortium to deliver an effective and efficient Tier-2 HPC service.
4. **Impact** (secondary): clear descriptions of activities to enable outreach to users, support multidisciplinary research, benefits realisation, and plans for collecting evidence of the impact of the service.

## Feedback

All applicants that proceed to the interview stage will receive summarised feedback from the evaluation panel.

## Grant additional conditions

Grants will be subject to the standard UK Research and Innovation grant conditions however the following additional grant conditions will be added to this call and EPSRC reserves the right to modify or add to these on award as required:

- GAC 1 Management Structure

The Grant Holder should have established an appropriate management structure with clear lines of responsibility and authority to oversee the day-to-day running of the project. This should be in place within six months of the start date of the grant. The terms of reference and management structure, including the Director, co-Director and senior investigators must be approved by EPSRC in advance. As must any changes to this structure. The Project Officer will be EPSRC's main contact with the project, and must receive all meeting minutes of the management committees. EPSRC reserve the right to attend any meetings. EPSRC will require the grant holder to design and present to EPSRC for approval, a plan which includes suitable metrics, performance indicators or other measures of outputs/impacts that demonstrate a clear benefit of the investment.

- GAC 2 Reporting

In addition to the requirements set out in the standard UKRI grant condition RGC 7.4.3, the Grant Holder is responsible for providing annual progress reports against non-financial performance metrics. A detailed list of performance metrics and instructions for reporting will be agreed with the Grant Holder upon commencement of the grant.

- GAC 3 Review

In addition to the requirements set out in standard UKRI grant conditions RGC 7.4 Research Monitoring and Evaluation, 7.5 Disclosure and Inspection, EPSRC reserve the right to instigate a review of all or part of the grant at any stage during the lifetime of the award as well as after the grant has finished. EPSRC will give the Grant Holder due notice of the date of any review and will provide details of the Terms of Reference and documentation required. Any review will be conducted by an expert panel, which will make recommendations to EPSRC for the grant's future.

- GAC 4 Consortia

Notwithstanding RGC 4 Use of Grant, funds may be transferred between related grants but must remain within the same fund heading. For funds charged across the indicated consortia grants, respective Final Expenditure Statements must match the awarded funds for the grant as on the Offer Letter.

- GAC 5 National Computational Resource

Prior to award of a grant successful applicants will agree with EPSRC an explicit proportion of the computational resource to be dedicated to EPSRC's National Tier 2 Service. Grant holders are required to adopt and implement mechanisms by which this resource is distributed to users, and adjust the proportion awarded through each mechanism, on request from EPSRC. These arrangements will be reviewed when necessary at the Tier 2 Directors meetings.

## Repeatedly Unsuccessful Applicant Policy

Submissions to this call will **not** count towards the Repeatedly Unsuccessful Applicants Policy. Further information about the policy can be found at:

<https://epsrc.ukri.org/funding/howtoapply/basics/resubpol/rua/>

### Key dates

Activity	Date
Deadline for Intent to Submit	1 August 2019
Deadline for Full Proposals	5 September 2019
Panel queries distributed to PIs	15 October 2019
Deadline for PI responses	22 October 2019
Interview Panel	Week of 28 October 2019
Funding decision	Week of 28 October 2019

\*EPSRC aims to adhere to the key dates as published, however there may be exceptions where the interview meeting may have to change due to panel member availability.

### Contacts

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## Change log

Name	Date	Version	Change
Kieran Jarrett	16/01/19	1	N/A
Kieran Jarrett	05/07/19	2	Substantial changes to text throughout the call. Incorporating comments from Peer Review and the theme lead.
Kieran Jarrett	07/07/19	3	Adjusted GAC 5. Final revisions.

## Appendices (includes Attachment Checklist and Fund Headings)

### Je-S attachments Check List

Attachment Type	Maximum Page length	Mandatory/Optional	Extra Guidance
Case for Support	Eight pages	M	Comprising up to two A4 sides for a track record, and six A4 sides describing proposed research and its context.
Pathways to Impact	Two pages	M	
Workplan	One page	M	
Justification for Resources	Two pages	M	
CVs	Two pages each	Optional	For researcher co-investigators and additional staff or investigators who have relevant experience only.
Project Partner Letters of Support	No page limits	M	Must be included from all named project partners. Must be on headed paper, and be signed and dated within six months of the proposal submission date.

Host organisations letters of Support	No page limits	M	In exceptional circumstances a maximum of three letters can be submitted.
Equipment Quotes	No page limits	M	Applicants should contact EPSRC if there is difficulty providing such a quotation.
Proposal Cover Letter	No page limit	Optional	The cover letter can be used to highlight any important information to EPSRC. This attachment type is not seen by reviewers or panel members.
Other attachment	No page limit	As required, at EPSRC request only	This can be used for a document that does not fit under any of the headings above. This attachment type is not seen by reviewers or panel members.

Please ensure you adhere to the above attachment requirements when submitting your proposal. Any missing, over length or unnecessary attachments may result in your proposal being rejected.