U.S. DEPARTMENT OF ENERGY

INCITE

LEADERSHIP COMPUTING

2021 INCITE Proposal Writing Webinar

Our presentation will begin at 2:00 pm EDT

A few reminders:

- Please ensure your camera and microphone are both turned off.
- During the presentation, questions will be taken in the chat window. There will be a time for verbal questions near the end. You can temporarily unmute yourself either by pressing and holding the space bar while you speak.
- These slides and eventually a recording of this presentation can be downloaded from

http://www.doeleadershipcomputing.org/proposal/informational-webinars/

U.S. DEPARTMENT OF ENERGY
INCITE
LEADERSHIP COMPUTING

2021 INCITE Proposal Writing Webinar

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Objectives of INCITE Proposal Writing Webinar

- **Learn** to write a proposal to obtain significant allocations of compute time and resources at DOE's Leadership Computing Facilities
- **Describe** proposals sections, content and tips for new and renewal authors.
  - Proposal narratives consist of up to 15 pages describing
    - Description of high-impact science challenge
    - Description of methods, codes, and dependencies
    - Demonstration that computational tasks cannot be done anywhere else
    - Description of team qualifications
- **Timeline**
  - **New** Proposals are due June 19, 2020
  - PIs will be notified in November 2020
  - Awards begin on January 1, 2021

Today's Agenda

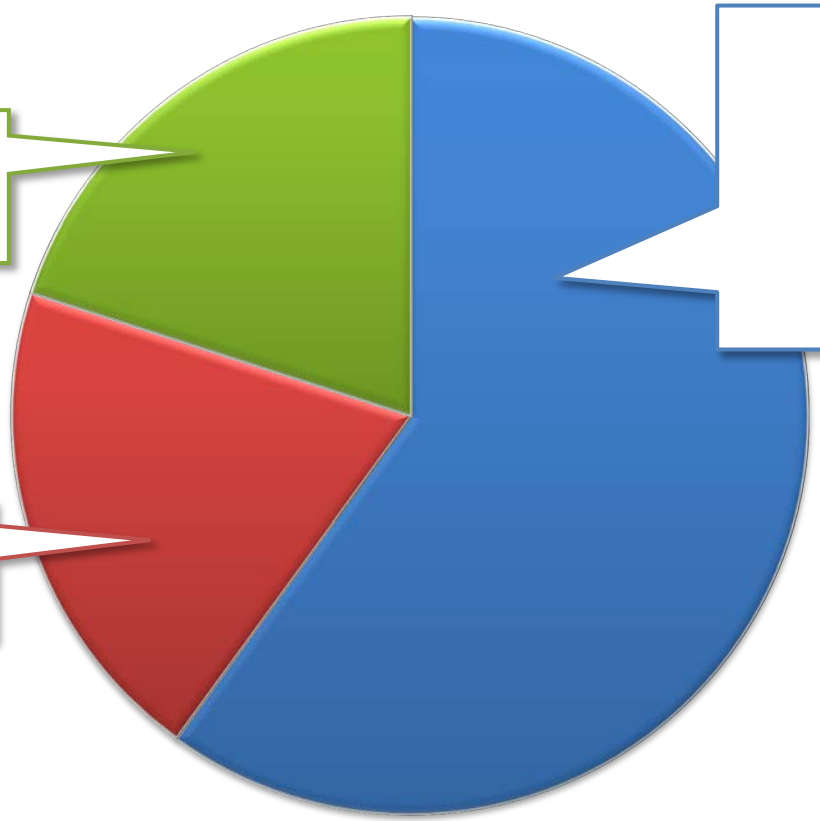
- Allocation programs [5]
- INCITE mission and recent stats [6 – 16]
- LCF computing systems [17 –22]
- Tips for applicants [23 – 44]
  - Common oversights
  - Requesting a startup account
  - Benchmarking data
- Q&A [45, open discussion]
- Conclusions [46 – 53]
  - Submittal, review, and awards decisions
  - Contact links

Changes to the Program / Proposal Submission

- **All** submission materials must be concatenated together into a single PDF file for submission. Individual files will not be permitted.
  - For new proposals, the required elements are Project Executive Summary, Project Narrative, Personnel Justification and Management Plan, a Milestone Table, Publications resulting from prior INCITE awards (if appropriate), and PI/Co-I biosketches
- The INCITE submission site now allows proposal contributors (Co-Is) to edit the proposal information in the submission system. The PI **must** still submit the proposal prior to the proposal submission deadline.

Primary ways for access to LCF
Current distribution of allocable hours

20% Director's Discretionary
(Includes LCF strategic programs, ECP)



Up to 60% INCITE

Leadership-class computing

20% ASCR Leadership Computing Challenge

DOE/SC capability computing

What is INCITE?

Innovative and Novel Computational Impact on Theory and Experiment

INCITE promotes transformational advances in science and technology through large allocations of computer time, supporting resources, and data storage at the Argonne and Oak Ridge Leadership Computing Facilities (LCFs) for **compute intensive and/or data intensive** large-scale research projects.

INCITE Seeks High-impact Research Campaigns

Examples of previous successful INCITE applications that advance the state-of-the-art across a broad range of topics and different mission priorities

Astro-Physics	• Glimpse into dark matter • Supernovae ignition
Chemistry	• Chemical catalyst design • Batteries • Solar Cells
Engineering	• Turbulent flow • Propulsor systems • Nanodevices
Earth Science	• Global climate • Carbon sequestration
Biology	• Protein structure • Creation of biofuels • Replicating enzyme functions • Membrane channels • Protein folding
Additional topic areas	• Data and AI • Computer Science • Plasma Physics • Quantum Physics • Materials Science/Engineering • Nuclear

INCITE Criteria

Access on a competitive, merit-reviewed basis*

1	**Merit criterion**
	Research campaign with the potential for significant domain and/or community impact
2	**Computational leadership criterion**
	Computationally demanding and/or data intensive runs that cannot be done anywhere else: *capability, architectural needs, data and AI at scale*
3	**Eligibility criterion**
	• Grant allocations **regardless of funding source** • Non-US-based researchers are welcome to apply

U.S. DEPARTMENT OF ENERGY INCITE LEADERSHIP COMPUTING

*DOE High-End Computing Revitalization Act of 2004: Public Law 108-423

Twofold review process

	New proposal assessment	Renewal assessment
1 **Peer review: INCITE science panels + (when appropriate) Data/AI panel**	• **Scientific and/or technical merit** • Appropriateness of proposal method, milestones given • Team qualifications • Reasonableness of requested resources	• **Scientific and/or technical merit** • **Met milestones** • Change in scope • On track to meet future milestones
2 **Computational readiness review: LCF centers**	• Technical readiness • Appropriateness for requested resources	• Met technical/ computational milestones • On track to meet future milestones
Award Decisions	• INCITE Awards Committee comprised of LCF directors, INCITE program manager, LCF directors of science, senior management	

Some limitations on what can be done

- Federal law regulates what can be done on these systems
  - LCF systems have cyber security plans that bound the types of data that can be used and stored on them
- Some kinds of information we cannot have
  - Personally Identifiable Information (PII)
  - Classified Information or National Security Information
  - Unclassified Controlled Nuclear Information (UCNI)
  - Naval Nuclear Propulsion Information (NNPI)
  - Information about development of nuclear, biological or chemical weapons, or weapons of mass destruction

Proprietary Work

Proprietary use (e.g., using the resources to generate data or results that they wish to designate as proprietary) of the HPC resources is allowed and will include **full cost recovery through a proprietary user agreement.** The use of proprietary or export-controlled software applications or input data does not by itself constitute proprietary use of the facility. A single and standardized peer-review selection process and project reporting requirement, as described within the INCITE Overview and Policies, will be implemented for both proprietary and non-proprietary user proposals. Given the complexities associated with proprietary research, **individuals considering submittal of a proposal for proprietary research must contact the INCITE manager**, INCITE@DOEleadershipcomputing.org, before the call for proposals closes to discuss the policy on proprietary work.

[Reference: INCITE Overview and Policies.
See http://www.doeleadershipcomputing.org/proposal/call-for-proposals/]

TIP

Do not include proprietary and/or export controlled information in the proposal, whether or not the project itself is nonproprietary.

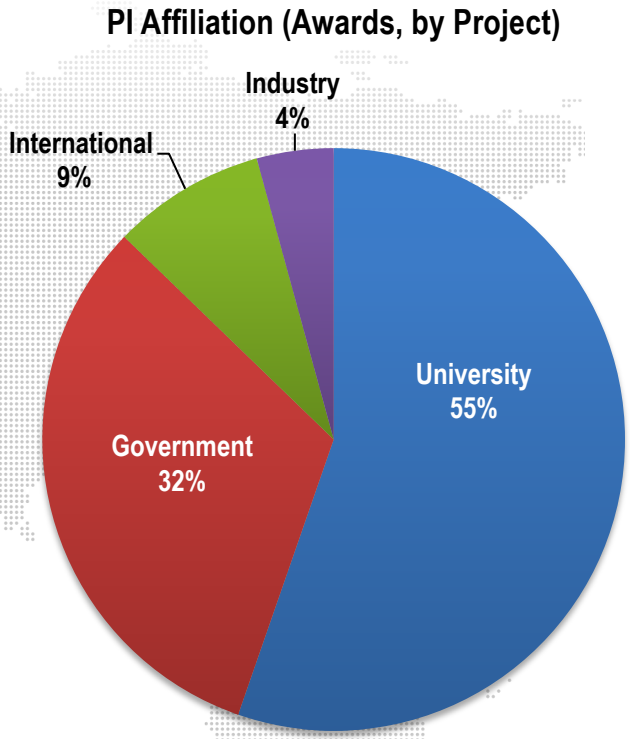
Community vs. Umbrella Proposals

The program encourages **community proposals** that reflect community consensus on, and participation in pursuing, a particular investigative strategy for addressing a grand-challenge-scale science problem. This consensus should be in large part reflected in the proposal's management plan, which describes how the problem will be tackled and the interrelationship of the activities of each of the proposal team investigators.

The program does not encourage **umbrella proposals**, which is defined to be a collection of individual proposals aimed at various aspects of a particular science problem but with no clearly articulated interrelationship of the activities of each of the proposal team investigators and/or that do not exploit the unique capabilities of the leadership facilities.

2020 INCITE Award Statistics

- Call for proposals closed June 21, 2019
- LCF resources were nearly three times over-subscribed based on requests
- 60% of allocable time on the LCF production resources (Summit and Theta) were awarded for CY 2020
- 47 projects awarded of which 17 are renewals
  - 1 proposal was an AI methodology proposal



Acceptance rates

31% of nonrenewal submittals were accepted.

Contact information

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INCITE@DOEleadershipcomputing.org

2020 Award Statistics

	Summit	Theta
Number of projects*	39	14
Average Project	482 K	1.41 M
Median Project	500 K	1.50 M
Total Awards (node-hours in CY2020)	18.8 M	19.7 M

* Total of 47 INCITE projects (6 projects received time on both Theta and Summit)
* All reported in node-hours native to each resource.

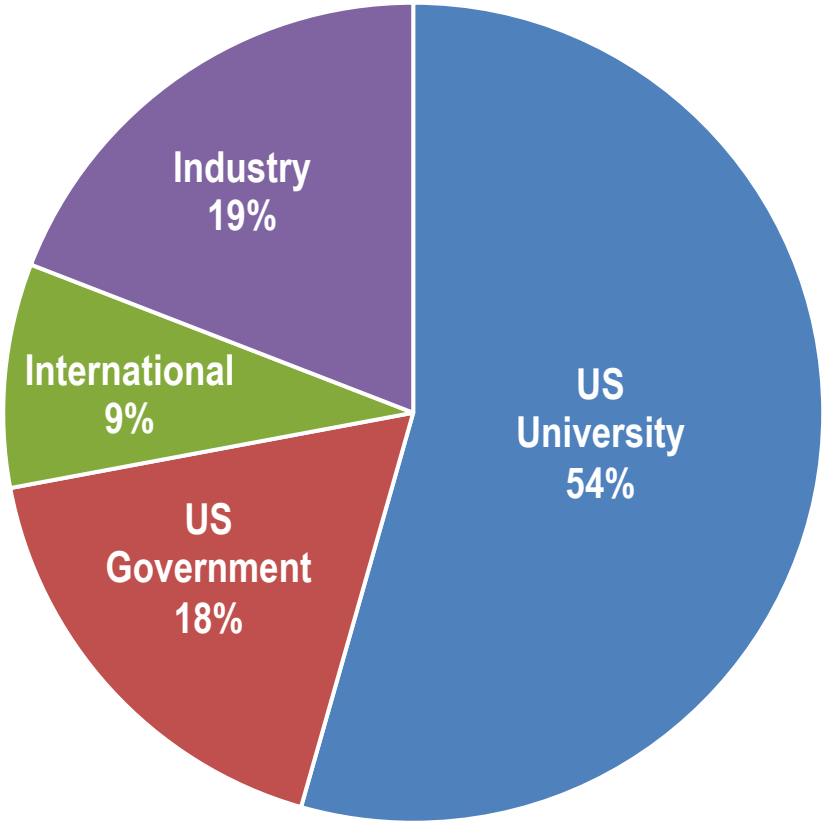
2020 New Proposal Statistics

- 31% of the PI's had never before led an INCITE proposal
  - 97 new proposals, 30 led by new PI's
- 20% of non-renewal projects awarded to new PI's
  - 30 new projects awarded, 6 led by new PI's

INCITE actively engages with new research teams through outreach such as workshops, email distributions, and individual networking.

2020 INCITE Science Panels

- 71 science experts
- Diverse panels of reviewers including Society Fellows (AAAS, APS, IEEE, etc.), NSF or DOE Early CAREER scientists, Laboratory Fellows, National Academy members, Department Chairs or Full Professors
- Significant carryover from year to year to promote continuity
- When appropriate, proposals may also be assessed by a separate Data and AI Panel



2020 INCITE
Reviewer Affiliation

OLCF Resources - Summit

Summit Specs	
Peak Performance	200 PF
Compute Nodes	4,608
Node	2 IBM Power9 Processors + 6 NVIDIA Volta GPUs
Node Performance	42 TF
Memory per node	512 GiB DDR4 + 96 GiB High Bandwidth Memory (HBM2)
NV Memory per node	1,600 GB
GPU Link	NVLink 2.0
Total System Memory	> 10 PB (DDR4 + HBM2 + Non-volatile)
Interconnect	Mellanox Non-blocking Fat Tree, Dual Rail EDR-IB (23 GB/s)
File System Performance	250 PB, 2.5 TB/s, GPFS

https://docs.olcf.ornl.gov/systems/summit_user_guide.html

OLCF Resources - Summit

- Compilers supporting OpenMP or OpenACC
  - IBM XL, PGI, LLVM, GNU, NVIDIA
- Libraries
  - IBM Engineering and Scientific Subroutine Library (ESSL)
  - FFTW, ScaLAPACK, PETSc, Trilinos, BLAS-1,-2,-3, NVBLAS
  - cuFFT, cuSPARSE, cuRAND, NPP, Thrust
- Debugging
  - Allinea DDT, IBM Parallel Environment Runtime Edition (pdb)
  - Cuda-gdb, Cuda-memcheck, valgrind, memcheck, helgrind, stacktrace
- Profiling
  - IBM Parallel Environment Developer Edition (HPC Toolkit)
  - VAMPIR, Tau, Open|Speedshop, nvprof, gprof, Rice HPCToolkit
- Development Support
  - HIP, ROCm
- Machine/deep learning (ML/DL), workflow
  - Popular frameworks (TensorFlow, PyTorch, etc.,) Python libraries, NVIDIA Rapids, Watson ML, etc.
  - Visualization: Paraview, Visit, SIGHT, etc.
  - OLCF Slate Workflow Cluster, Pegasus, Radical Toolkit, Flux, etc.;

https://docs.olcf.ornl.gov/systems/summit_user_guide.html

OLCF Resources - Frontier

The system will be based on Cray's new Shasta architecture and Slingshot interconnect with high-performance AMD EPYC CPU and Radeon Instinct GPU technology. The new accelerator-centric compute blades will support a 4:1 GPU-to-CPU ratio with high-speed links and coherent memory between them within the node. With Frontier, scientists will be able to pack in more calculations, identify new patterns in data, and develop innovative data analysis methods to accelerate the pace of scientific discovery.

Frontier Specs	
Peak Performance	> 1.5 EF
Footprint	> 100 cabinets
Node	1 HPC and AI Optimized AMD EPYC CPU 4 Purpose Built AMD Radeon Instinct GPU
CPU-GPU Interconnect	AMD Infinity Fabric Coherent memory across the node
System Interconnect	Multiple Slingshot NICs providing 100 GB/s network bandwidth Slingshot dragonfly network which provides adaptive routing, congestion management and quality of service.
Storage	2-4x performance and capacity of Summit's I/O subsystem. Frontier will have near node storage like Summit.

https://www.olcf.ornl.gov/frontier

ALCF Resources - Theta

Many core architecture – Vendor: Intel (Prime) / Cray (Integrator)

- Transition and data analytics system
- 11.69 PF peak performance
- 4,392 nodes with 2nd Generation Intel® Xeon Phi™ processor
  - Code name Knights Landing (KNL), 64 compute cores
- Memory on each node:
  - 192 GiB DDR4
  - 16 GiB MCDRAM
  - 128 GiB SSD
- Cray Aries high speed interconnect in dragonfly topology
- 10 PB Lustre file system, 200 GB/s throughput

- Cray XC system
- Cray software stack
- ~2.6 MW peak power

https://www.alcf.anl.gov/support-center/theta/theta-machine-overview

ALCF Resources - Theta

Cray Programming Environment

- Programming models:
  - Distributed memory: MPI, SHMEM, GA
  - Shared Memory: OpenMP 3.1, OpenACC 2.0
- Compilers
  - Cray Compiling Environment (CCE), GNU, Intel, LLVM/Clang
- Optimized Libraries
  - BLAS, LAPACK, ScaLAPACK, FFTW, Cray PETSc, Cray Trilinos, Iterative Refinement Toolkit
  - I/O: NetCDF, HDF5
- Tools
  - Debuggers & Tools: Allinea DDT, lgdb, ATP, STAT
  - Performance Analysis: CrayPat, Cray Apprentice2
  - Porting Tools: Reveal, CCDB
- Machine/Deep Learning & workflow software
  - Deep learning frameworks including Intel Optimized Tensorflow and PyTorch, Keras, and Horovod
  - Python distributions (Anaconda and Intel) as well as machine learning and analytics packages including Sci-kit learn, numpy, scipy, etc…
  - Optimized with Intel MKL and MKL-DNN
  - Support for Singularity containers, JupyterHub, Spark-based Apache BigData stack, Databases such as MongoDB, Postgres, R-based analytics, workflows including Balsam, DeepHyper and NAS
  - Visualization: ParaView

https://www.alcf.anl.gov/support-center/theta

ALCF Resources - Aurora

Exascale architecture designed for Simulation, Data & Learning

- Sustained performance of ≥1EF
- >10 PB of aggregate memory
- Compute nodes with 2 Intel Xeon CPUs and 6 X^e GPUs with unified shared memory
- Cray Slingshot™ fabric in Dragonfly topology with 8 endpoints per node
- ≥230 PB of Distributed Asynchronous Object Storage (DAOS) with ≥ 25 TB/s throughput
- Global file systems with over 200 PB of storage and ~1.3 TB/s throughput

- Cray Shasta™ software stack, Intel software, and Data & Learning frameworks
  - Optimized PyTorch, TensorFlow, Python-based ML and analytics such as OneDAL
- Programming models include OpenMP 5, SYCL/DPC++, OpenCL, Kokkos, and Raja

https://aurora.alcf.anl.gov

Key Questions to Ask Yourself

- Is both the scale of the runs and the time demands of the problem of LCF scale?
  - Yes, I can't get the amount of time I need anywhere else.
  - Yes, my applications are too large to run on other systems.
- Do you need specific LCF hardware or systems?
  - Yes, the very large memory and I/O available here are necessary for my work.
  - Yes, my application requires mixed/reduced precision accelerator hardware.
- Do you have the people ready to do this work?
  - No, I'm waiting to hire a postdoc.
  - Yes, I have commitments from the major participants.

TIPS

Do answer these questions in the proposal. This is especially helpful for the computational readiness reviewers.

Key Questions to Ask Yourself (cont.)

- Do you have large data/AI needs?
  - Yes, my data-intensive needs require the LCF resources.
- Do you have a workflow solution?
- Do you have a post-processing strategy?
- Do you use ensemble runs and need LCF resources?
  - My ensembles can run under the direction of a large job or workflow manager, with I/O scaling on a parallel file system -> possible yes
  - My ensemble expects to run millions of serial batch jobs on nodes with local disk available -> probably no
- Do you understand the life cycle of your data?

Note: Some of these characteristics are negotiable, so make sure to discuss atypical requirements with the centers.

Proposal Form: Outline

0	Project title
1	Principal investigator and co-principal investigators
2	Project information (Research category, Project Summary)
3	INCITE allocation request; Other funding/computing support
4	**Project narrative, other materials**
	(A) Executive summary (1 page)
	(B) Project narrative including impact of the work, objectives, benchmarking (15 pages)
	(C) Personnel justification & management plan
	(D) Milestone table
	(E) Publications resulting from INCITE Awards
	(F) PI / Co-I Biographical Sketches
5	Software applications and dependent packages
6	Wrap-up Questions (Proprietary and sensitive information, Export Control)
7	Outreach and suggested reviewers

Getting Started: Know Your Audience

- Remember, INCITE is very broad in scope
  - Computational-science-savvy senior scientists/engineers drawn around the world from national labs, universities, and industry
  - They will be assessing potential impact of this work versus other proposals submitted

TIPS

Don't assume that your audience is familiar with your work through other review programs (ex. funding agencies). INCITE is very broad in scope and you may be competing against a diverse set of proposals.

Do look at the reviewer questionnaires, posted on the INCITE Call for Proposals site

Narrative: Impact of the Work

This is the principal determinant of a successful submittal!

- What is the scientific challenge and its significance
- Impact of a successful computational campaign — the big picture
- Reasons this work needs to be done now, on the resources requested

TIPS

Do give a compelling picture of the impact of this work, both in the context of your field and, where appropriate, beyond.

Do explain why this work cannot be done elsewhere. Reviewers scrutinize whether another allocation program may be a better fit.

Narrative: Objectives and Milestones

- Successful submittals must also very clearly
  - Describe approach to solving the problem, its challenging aspects, preliminary results
  - Tie to the resources requested your key objectives, key simulations, and project milestones in your milestone table

TIPS

Do clearly articulate your project's milestones for each year. Reviewers have downgraded proposals that don't show that the PI has a well thought out plan for using the allocation and LCF resources.

Do bear in mind that the average INCITE award of time for a single project is equivalent to several million dollars.

Narrative: Computational Approach

Provide the basic foundation

- Describe the underlying formulation
  - Don’t assume reviewers know all the codes
  - Do show that the code you plan to employ is the correct tool for your research plan
  - Do explain the differences if you plan to use a private version of a well-known code
- List programming languages, libraries and tools used
  - Check that what you need is available on the system
- List required software (noting that users may need to build some software themselves)

Narrative: Computational Approach

Provide the basic foundation

- Data Management
  - Requirements for bringing input data, storage & movement of data
  - Describe how long data needs to remain on spinning disk & archive and how those times were determined
  - Describe the long term use of data (e.g. publicly available)
  - Describe tools or infrastructure required to support data needs
- Data and AI, and Workflows
  - Describe any AI, analytics and viz that are part of the project, and how you intend for that work will be done
  - If appropriate, describe workflow tools that will be used to facilitate the volume of work

Narrative: Computational and/or Data Intensive Campaign

- Describe the kind of runs you plan with your allocation
  - L exploratory runs using M nodes for N hours
  - X big runs using Y nodes for Z hours
  - P analysis runs using Q nodes for R hours

- Big runs often have big output and/or big I/O
  - Show you can deal with it and understand the bottlenecks
  - Understand the size of results, where you will analyze them, and how you will get the data there

The details are important!

TIPS

Do clearly emphasize the relationship between the proposed runs and the major milestones. This helps the Awards Committee maximize your milestones, if they can't grant the full award requested.

Code Performance Overview

Performance data should support the required scale

- Use similar problems to what you will be running
- Show that you can get to the range of nodes required
- Demonstrate efficient use of nodes and node specific hardware (e.g. GPUs on Summit, HW threads on Theta)
- Best to run on the same machine, but similar size runs on other machines can be useful
- Be clear about the number of nodes, MPI ranks, threads and GPUs (if applicable) being used in runs
- Include production style I/O in benchmarks (checkpoint/restart, analysis)
- Describe how you will address any scaling deficiencies

TIPS

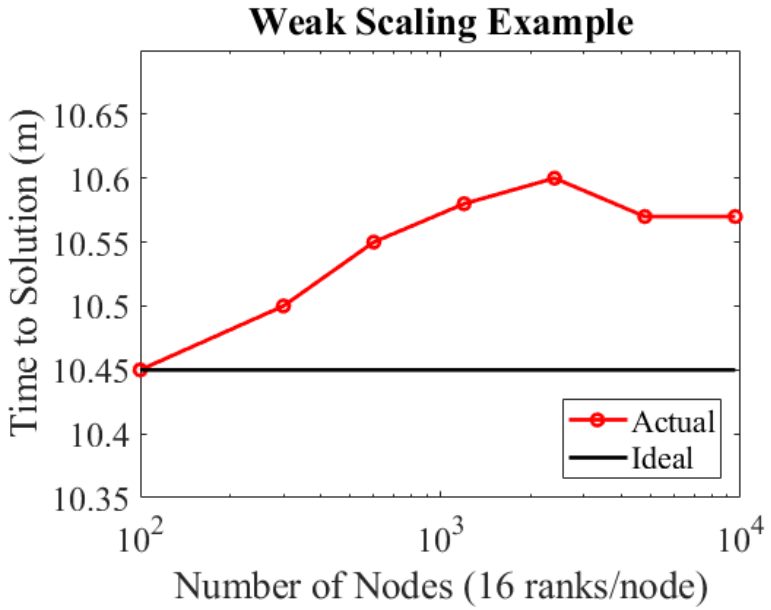
Do provide performance data in the requested format.

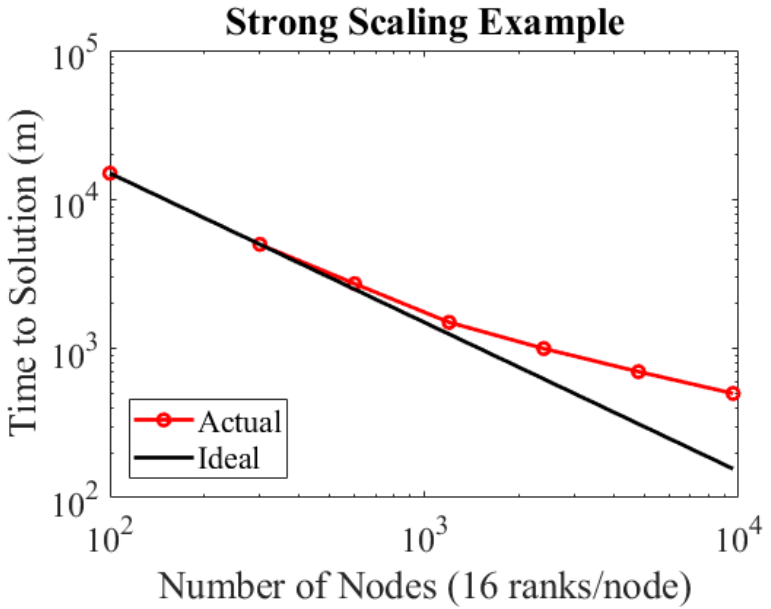
Do provide performance of the scaling baseline, not just scaling efficiency

Parallel Performance: Direct Evidence

WEAK SCALING, which is defined as how the solution time varies with the number of nodes for a fixed problem size *per node:*	STRONG SCALING, which is defined as how the solution time varies with the number of nodes for a fixed *total* problem size:
Increase problem size as resources are increased	Increase resources (nodes) while doing the same computation

Pick the approach(es) relevant to your work and show results





Note: the axes could be samples per second or throughput versus number of nodes. For Data and AI applications, show the scaling (e.g., for convergence) dependence on factors such as hyperparameters and discuss scientific impact.

More About our Ensemble Policy

"Can I meet the computationally intensive criterion by loosely coupling my jobs?"

- Possibly "yes"
  - If you require large numbers of discrete or loosely coupled simulations where time-to-solution is an untenable pacing issue, **and**
  - If a software workflow solution (e.g., pre- and post-processing scripts that automate run management and analysis) is provided to facilitate this volume of work.
- Probably "no"
  - If by decoupling the simulations the work could be effectively carried out on a smaller resource within a reasonable time-to-solution.

TIPS

Do examine the Frequently Asked Questions (#29)

Data and AI Applications

In addition to traditional computationally intensive simulation campaigns, INCITE encourages Data and AI projects.

- Strong aspects of scalable data processing and/or AI.
- Example areas
  - Machine and/or Deep learning
  - Data-intensive computing
  - Experimental/observational/simulation data analytics
  - Complex and interactive workflows
  - Streaming/real-time data analysis
  - Statistical methods
  - Graph analytics
  - Uncertainty quantification
  - Hyper-parameter optimization
  - Pattern recognition and classification
  - Machine learning integrated with applications and/or steering simulations.
  - Methodological advances in data science that require use of the LCF capabilities.
- 11% of proposals in 2019 reviewed by Data/AI panel

Data and AI Applications

In addition to traditional computationally intensive simulation campaigns, INCITE encourages Data and AI projects.

- Successful proposals must
  - Clearly articulate the objectives and dependencies of the end-to-end research campaign e.g. training data requirements and generation; deep learning/data-driven model selection and validation; model embedding to augment simulations etc.
  - List the application requirements, including databases, machine learning/deep learning frameworks, workflow software, containers, etc.
  - Demonstrate that the software can run efficiently on the resources requested.
- Proposals which target the convergence or interleaving of simulation, data analytics and AI are also encouraged

TIPS

Do examine the Frequently Asked Questions for these and other topics. (#30 & #31)

Narrative: Development Work –

- Developmental Work
  - Describe any additional development required to execute any of your milestones. Identify any dependencies and how you will validate.
  - Estimate the computational resources required for this work and when it will be completed.

Narrative: Management Plan

- Experience and credibility
  - List the scientific and technical members and their experience as related to the proposed scientific or technical goals
  - Successful proposal teams demonstrate a clear understanding of petascale computing and can optimally use these resources to accomplish the stated scientific/technical goals
- Transparent use of time
  - Projects involving multiple teams or different thrust areas should clearly state how the allocation will be distributed and managed

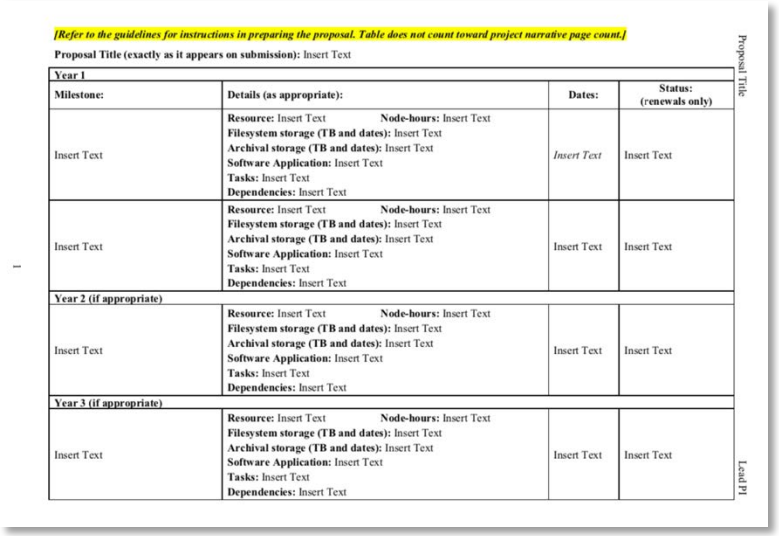
TIPS

Do include in "Personnel Justification" a brief description of the role of each team member. Although not a requirement, proposals with application developers or clear connections to development teams are favorably viewed by readiness reviewers.

Narrative: Milestone Table

Note:
The Milestone Table is a **required** document. Proposals without it will not be accepted for review.

- Clearly state the scientific and technical milestones for each year of your proposed work.
  - Milestones should be appropriate for the size and duration of the requested award. Future modifications in scope will be tracked through this table.
  - As appropriate, details to provide for each milestone:
    - Computing resource and allocation request (node-hours).
    - Filesystem and archival storage, and duration.
    - Software application employed.
    - Summary of the computational tasks (e.g., computational runs, data analysis, data reduction).
    - Dependencies on or between other milestones.
    - Expected start, target completion date and status.



[Refer to the guidelines for instructions in preparing the proposal. Table does not count toward project narrative page count.]

Proposal Title (exactly as it appears on submission): Insert Text

Milestone:	Details (as appropriate):	Dates:	Status: (renewals only)
Year 1			
Insert Text	**Resource:** Insert Text **Node-hours:** Insert Text **Filesystem storage (TB and dates):** Insert Text **Archival storage (TB and dates):** Insert Text **Software Application:** Insert Text **Tasks:** Insert Text **Dependencies:** Insert Text	*Insert Text*	Insert Text
Insert Text	**Resource:** Insert Text **Node-hours:** Insert Text **Filesystem storage (TB and dates):** Insert Text **Archival storage (TB and dates):** Insert Text **Software Application:** Insert Text **Tasks:** Insert Text **Dependencies:** Insert Text	Insert Text	Insert Text
Year 2 (if appropriate)			
Insert Text	**Resource:** Insert Text **Node-hours:** Insert Text **Filesystem storage (TB and dates):** Insert Text **Archival storage (TB and dates):** Insert Text **Software Application:** Insert Text **Tasks:** Insert Text **Dependencies:** Insert Text	Insert Text	Insert Text
Year 3 (if appropriate)			
Insert Text	**Resource:** Insert Text **Node-hours:** Insert Text **Filesystem storage (TB and dates):** Insert Text **Archival storage (TB and dates):** Insert Text **Software Application:** Insert Text **Tasks:** Insert Text **Dependencies:** Insert Text	Insert Text	Insert Text

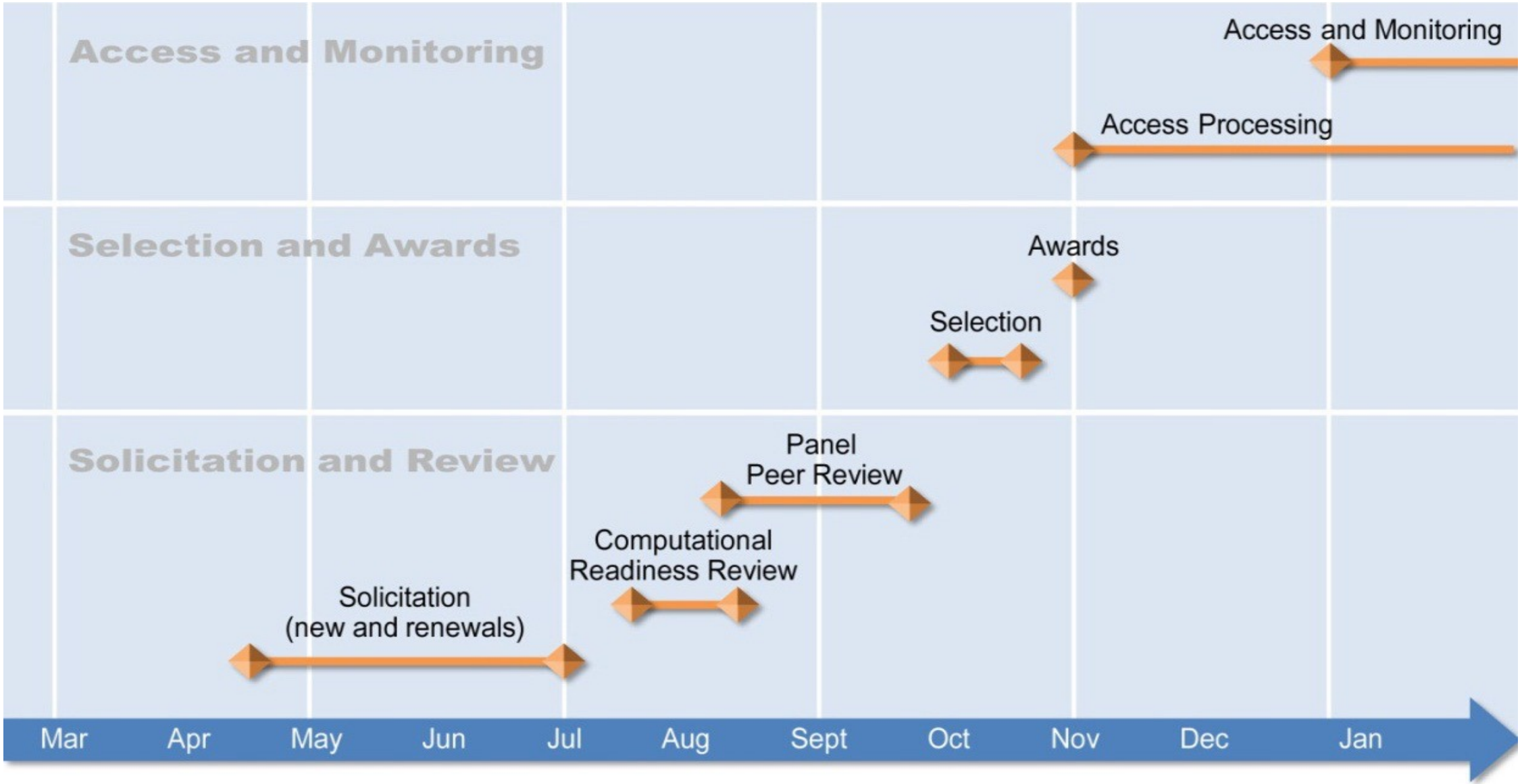
Proposal Title

Lead PI

Narrative: INCITE Publications

- Publications resulting from **INCITE** awards
  - To show impact of the INCITE program, we ask authors to list the publications, **including DOIs when available**, resulting from previous INCITE awards to this project team for work related to the proposal under consideration.
  - All publications that were enabled by an INCITE project should include an acknowledgement of the INCITE program and/or the LCF.
  - Include only publications with INCITE acknowledgements.

INCITE Annual Timeline



Are You Ready to Apply Now?

- Port your code before submitting the proposal
  - Check to see if someone else has already ported it
  - Request a startup account if needed (see next slide)
- Provide compelling benchmark data
  - Prove application scalability in your proposal
  - Run example cases at proposed production scale
  - If you cannot show proof of runs at the proposed production scale, then provide a very tight story about how you will succeed

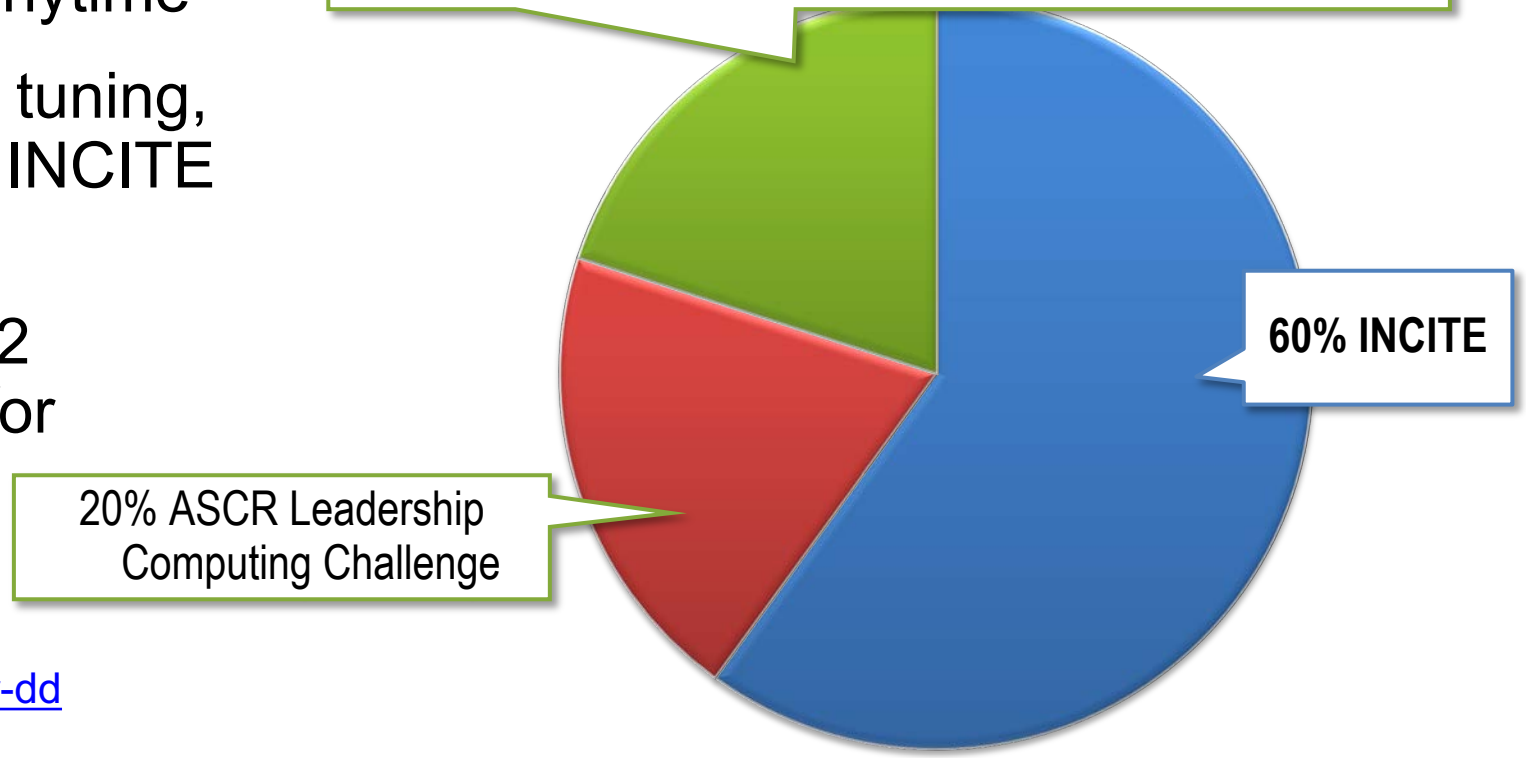
TIPS

Do make the benchmark examples as similar to your production runs as possible, or, make it clear why another benchmark example is valid for your proposed work.

Request a Start-up Account Now

- Director's Discretionary (DD) requests can be submitted anytime
- DD may be used for porting, tuning, scaling in preparation for an INCITE submittal
- Submit applications at least 2 months before INCITE Call for Proposals closes

- Director's Discretionary Proposals considered year-round
- Awards up to thousands of node-hours
- Allocated by LCF center directors



Argonne DD Program:
http://www.alcf.anl.gov/getting-started/apply-for-dd

Oak Ridge DD Program:
https://www.olcf.ornl.gov/for-users/documents-forms/olcf-directors-discretion-project-application/

Proposal Form: Final Check

0	Project title
1	Principal investigator and co-principal investigators
2	Project information (Research category, Project Summary)
3	INCITE allocation request; Other funding/computing support
4	**Project narrative, other materials**
	(A) Executive summary (1 page)
	(B) Project narrative including impact of the work, objectives, benchmarking (15 pages)
	(C) Personnel justification & management plan
	(D) Milestone table
	(E) Publications resulting from INCITE Awards
	(F) PI / Co-I Biographical Sketches
5	Software applications and dependent packages
6	Wrap-up Questions (Proprietary and sensitive information, Export Control)
7	Outreach and suggested reviewers

Q&A

Open discussion on what authors should include in their proposal

Reminder: The INCITE program has significantly changed its proposal submission site. Please allow extra time to create an account on this site and submit your proposal.

Submitting Your Proposal or Renewal

- You may save your proposal at any time without having the entire form complete
- Required fields must be completed for the form to be successfully submitted
  - An incomplete form may be saved for later revisions
- After submitting your proposal, you **will** be able to edit and resubmit it up until the submission deadline

INCITE Awards Committee Decisions

- The INCITE Awards Committee is comprised of the LCF center directors, INCITE program manager, LCF directors of science and senior management.
- The committee identifies the top-ranked proposals by a) peer-review panel ratings, rankings, and reports; and b) additional considerations, such as the desire to promote use of HPC resources by underrepresented communities.
- Computational readiness review is used to identify whether the top-ranked proposals are “ready” for the requested system.

INCITE Awards Committee Decisions

- A balance is struck to ensure
  - each awarded project has sufficient allocation to enable all or part of the proposed scientific or technical achievements
  - a robust support model for each INCITE project
- When the centers are oversubscribed, each potential project is assessed to determine the amount of time that may be awarded to allow the researchers to accomplish significant scientific goals.
- Requests for appeals can be submitted to the INCITE manager or LCF center directors. If an error has occurred in the decision-making process (e.g. procedural, clerical), consideration is given by the INCITE management and an award may be granted. Assessment of the relative scientific merit is not considered in appeals.

2021 INCITE Award Announcements

- Awards will be announced by INCITE Manager, Judith Hill, in November 2020
  - Welcome and startup information from centers
  - Agreements to sign: Start this process as soon as possible!
  - Getting started materials: Work closely with the center
- Centers provide expert-to-expert assistance to help you get the most from your allocation
  - Scientific “Liaisons” (OLCF) and “Catalysts” (ALCF)

PI Responsibilities

- Provide quarterly status updates (on supplied template)
  - Milestone reports
  - Publications, awards, journal covers, presentations, etc., related to the work
- Provide highlights on significant science/engineering accomplishments as they occur
- Submit annual renewal request
- Complete annual surveys
- Encourage your team to be good citizens on the computers
  - Use the resources for the proposed work

Let us know your achievements and challenges

PI Responsibilities (cont.)

- Encourage your team to attend the center's user meeting
- All INCITE users are expected to acknowledge the center and the program in publications resulting from their award:
  - An award of computer time was provided by the Innovative and Novel Computational Impact on Theory and Experiment (INCITE) program.

and either

  - This research used resources of the Oak Ridge Leadership Computing Facility located in the Oak Ridge National Laboratory, which is supported by the Office of Science of the Department of Energy under Contract DE-AC05-00OR22725.
  - This research used resources of the Argonne Leadership Computing Facility at Argonne National Laboratory, which is supported by the Office of Science of the U.S. Department of Energy under contract DE-AC02-06CH11357.

It is a Small World…

- Let the science agency that funds your work know how significant the INCITE program and the Leadership Computing Facilities will be to your work
- Contact us if you have questions; we want to hear from you

Contacts

For details about the INCITE program:

www.doeleadershipcomputing.org
INCITE@DOEleadershipcomputing.org

For details about the centers:

www.olcf.ornl.gov
help@olcf.ornl.gov, 865-241-6536
https://www.olcf.ornl.gov/for-users/documents-forms/olcf-directors-discretion-project-application/

www.alcf.anl.gov
support@alcf.anl.gov, 866-508-9181
www.alcf.anl.gov/getting-started/apply-for-dd