

FY 2014 DOE-NE Webinar and Specific Workslope Q&A

CINR FOA Webinar

Q: Are proposals addressing data needs restricted to those listed in appendix D?

A: Appendix D catalogs several identified data needs that we are interested in. Workscopes that outline additional data needs should be taken in to consideration if you are submitting into that workslope.

Q: As an applicant, are we expected to review other proposals in other areas if needed?

A: Yes, all participants in DOE-NE's FOAs, when identified, should provide technical reviews in other areas to the extent possible. All participants being willing to provide reviews enables all participants to have an excellent technical review of their application.

Q: Is a post-doc researcher allowed to submit pre-application or proposal as PI?

A: This depends on university policy and should be discussed with the appropriate university officials. DOE-NE does not restrict post-doc researchers from submitting as PI.

Q: How do you ensure that the review and competition processes are fair?

A: The Integration Office works hard to provide a fair and competitive process by using its strict processes outlined in the R&D presentation. Pre-applications are reviewed by federal program managers, national technical points of contact from a national laboratory, and a peer review for technical content. If a PI decides they could improve their uninvited proposal, they have the option to submit it during the full application phase. An uninvited proposal, if judged to be highly relevant, will then proceed in the review process, where it will receive 2 federal technical reviews and a minimum of 3 technical peer reviews. A panel is then convened to reconcile scoring differences, request additional technical reviews, etc.

Q: Can University adjuncts be PI applicants?

A: This depends on the university policy on adjunct professors. DOE-NE does not preclude university staff from submitting applications.

If yes, will there be any funding limit to a Co-PI?

A: You may submit as a Co-PI. The funding limitations would need to be reasonable considering the role of a Co-PI. We would not anticipate that a co-PI would receive more funding than the PI.

Q: When are proposals due?

A: R&D pre-applications are due December 2, 2013. Full applications for University-led R&D, NEET, IRP, General Scientific Infrastructure, and Rector Upgrades are due April 3, 2014.

Q: Can university faculty with DOE National Laboratory joint appointment be the PI of a proposal?

Yes, but it depends on the circumstances of the joint appointment and what workscope had been negotiated through that Joint Appointment. The amount of time available to spend on the project would need to be substantial in terms of employment at the university, as opposed to a National Laboratory.

Q: what is the difference between Co-PI and collaborator? Are listed collaborators interpreted as Co-PIs?

A: For our purposes, collaborator and Co-PI can be used interchangeably. Project limits will be applied in the same manner regardless of what title the collaborator is given. The one distinction would be that we would expect Co-PIs to receive some funding on the project, while collaborators may or may not.

Q: CASL list of needed experiments might not necessarily fit in the workscope of the FY14 NEUP, is this correct?

A: Yes, some items in the CASL program may not fit in a FY14 workscope. Appendix D should be leveraged where a PI finds a link between a data need and a proposed project.

Q: If part of the workscope is to be accomplished at a DOE site, is it essential that the student performing the work not be a foreign student say on an F-1 visa?

A: Security and admittance requirements will be determined by the DOE site where the work is being completed. Applicants are encouraged to work with national laboratory collaborators to ensure that students can be permitted to work in project facilities. The FOAs do not put restrictions on foreign student participation.

Q: Is maximum award size for each year or for the entire duration of the project?

A: Maximum award size refers to the entire duration of the project (i.e. \$800,000 project total would equal \$266,666 per year for three years).

Q: Can you please confirm whether an university applicant, who has one and only one existing DOE NE IRP project, can still apply as PI?

A: PIs that are leads on an IRP project are not permitted to submit applications until the IRP project is completed. You may apply as a Co-PI.

Q: Can the PI be a US resident? or have to be a US citizen?

A: PIs must be employed at a U.S. university or college and comply with all export laws. Whether an applicant is a U.S. permanent resident or a citizen is not of concern.

Q: Can you clarify the number limitations on PI and Co-PI for R&D projects? If someone is listed as collaborator, should the limitations be applied to that person?

A: You can be on 6 proposals total. You can be on up to three as a principal investigator, and up to 6 as a Co-PI or collaborator. There is a flowchart available on the neup.gov website to clarify these restrictions further.

https://inlportal.inl.gov/portal/server.pt/document/138396/cinr_foa_eligibility_workflow_pdf

Q: Other than export control concerns, are there other restrictions on grad student and postdoc nationality?

A: No, there are no restrictions outside of export control (i.e. denied party, etc.) for students and postdocs.

Q: So, are you stating that one organization can submit three proposals in each of the 6 NEET-2 areas totaling 18 possible proposals from one organization?

A: In the case of NEET-2, that is correct. The other NEET worksopes are restricted to 3 per institution.

Q: Will the DOE Nuclear Summer School for college students at Brookhaven National Lab and San Jose State University continue to be funded under the new consolidated funding structure?

A: The DOE Nuclear Summer School program is a different initiative from DOE-NE competitive awards. Funding for programs of that type are not supported in these funding opportunities.

Scientific Infrastructure Support FOA

Q: Where can I find the RRI list of reactors?

A: The RRI list of university reactors has been posted in the 'additional resources' section of the FOA announcement on the front page of neup.gov.

Q: For GSI applications, we submit to grants.gov? or are they submitted through NEUP like the project grants?

A: GSI and Reactor Upgrades proposals should be submitted to www.grants.gov. Remember that your university will need to register through grants.gov and fedconnect.net to submit an application.

Q: Other than export control concerns, are there other restrictions on grad student and postdoc nationality?

A: There are not in regards to infrastructure. These are dollars that go to the university.

Q: Are there application restrictions based on past performance for this FOA?

A: If you have had a past award and you have more than \$250,000 of work that has not been completed, you are ineligible to compete in this year's FOA.

Q: How many GSI applications can a university submit?

A: Universities can submit one GSI application that is not tied to a CINR R&D project. All other GSI applications must be tied to a CINR R&D project.

Q: Can we link multiple GSI applications to one R&D project?

A: No, it is a one-to-one relationship, with one GSI application being linked to one R&D application.

FC-1: Separations and Waste Forms

Q: What is the budget for this program?

A: The budget situation is quite unclear. There is still a lot of discussion about what FY 14 funding levels will be. Once a budget is decided, we will be dedicating 20% of the overall Fuel Cycle budget to university research.

Q: You mentioned uranium recovery from seawater as part of the separations scope. Should proposals for uranium in seawater be submitted in separations or in fuel resources (green uranium mining)?

A: We are classifying that as Fuel Resources. That is not part of this workscope but will be discussed in the MS-FC-2 workscope.

Q: With the high cost of experimental facilities that are necessary for this work, in your estimation what funding level would be reasonable for this workscope?

A: There is an \$800,000 funding limit for this workscope, any range within that limit seems reasonable. I can imagine very useful research proposals that do not require experimental effort. They may use modeling using existing data. The reasonableness of any proposal will be based upon its requirements, and where those requirements do indicate, for example, when a specialized experimental facility would be needed.

Also, you can buy equipment with your R&D funds, and more importantly, you can couple your proposal with the GSI proposal to maximize the amount of money available for a given project.

FC-2: Advanced Fuels

Q: So, advanced fuels are specifically for LWRs and transmutation, rather than next gen reactor designs?

A: That is the current focus. There is fuels work in a separate program for TRISO fuels for NGNP, but that is not included here. You could consider multiple reactor concepts for the transmutation fuel.

Q: Last year you have a specific section of nano-nuclear fuel. Is this still a topic of interest?

A: It is a topic of interest, but is not a separate workscope area. If there are innovative nano concepts they are welcome to be included here. Those nano concepts should still address the needs of the specific workscope.

FC-3: Nuclear Materials Control and Instrumentation

Q: What is the funding breakdown for this program?

A: We are currently operating under a continuing resolution so I would look at the results of the FY 2013 process and that should give you a pretty good idea of the overall funding level and how many projects were funded in each workscope.

Q: Where does more analytical concepts to improve the codes fit in?

A: For code development specific for material MPACT it would fit into the analysis of this program. The NEAMS program is focused on fuel development and reactor development, not to code development of safeguards technology. There is also a mission supporting workscope for fuel cycle in which code development could fit.

FC-4- Used Nuclear Fuel Disposition

Q: Regarding transportation, have all modes of transportation been studied?

A: The modes that we would be looking at are by rail and by perhaps heavy haul because as most people are aware, there is not a rail line that extends to many individual locations, heavy haul may be necessary. There may be a facility that needs to be used to transition fuel from rail to heavy haul. Significant study have been done in rail transportation, we are currently looking at the degree of 'shake' on casks and assemblies and whether there would be any degradation. There is consideration for lengthy heavy haul, or short transportation needs using barge transportation. These are just a few ideas based on where the used nuclear fuel would be coming from.

Q: For transportation task, by "advanced modeling approaches" do you mean mechanistic or also probabilistic?

A: Mechanistic mostly. We are looking at, 'what are the real world complications that we are going to have to deal with in actually executing a transportation program?' There is a great deal of machinery that would be involved as well as public interaction. These could include materials that would be involved and structural integrity, disruptive scenarios to relevant transportation, transportation behavior of high burn-up and advanced fuels.

media? Is there interest in models for prediction, experimental techniques for quantifying transport resistance of certain materials, or a combination?

A: Yes, there are several different parameters we are looking at. We are not currently looking at anything media specific, all media are open: clay, salt, shale, etc. The media has not been restricted because there is not an identified repository.

Q: Does transportation extend to transport of ions through concrete liner or barrier, or only through soils and rocks?

A: Yes, in the disposal section, transportation considerations extend to transport of ions through concrete liner or barrier such as waste containers/packages, buffers, seals because these could include a concrete liner or barrier. The transportation section of the workscope refers to transport of fuel casks, etc.

Q: Are economic analysis included in this study?

A: Economic analysis could be proposed, and would be very interesting. We do not know the location of a consolidated interim storage facility and we are looking at non-location specific. Any parametric studies would be considered. That would include costs, under Nuclear Waste Policy Act 180c, there are first responders that need to be notified and trained, and economic evaluations that would include those parameters would be considered.

Q: For FC 4.3, should the proposals involve both experimental and modeling (both together)? Or is experimental only or modeling only acceptable?

A: Both would be considered. Of course, modeling is encouraged and those type of proposals would be more attractive, more bang for the buck, but both will be considered.

Q: Is there a need for Computational Fluid Dynamics modeling and experimental validation for spent fuel thermal management under different environmental conditions?

A: Thermal loading in different geologic medium would be considered. There is a great deal of thermal loading in some geologic environments but not in all.

Q: For transportation task, what are high priority "disruptive scenarios"?

A: Disruptive scenarios could be the non-spectacular, like shaking of the assemblies that could cause degradation of the assemblies or casks. There could be non-design basis events, where you might have a train wreck, where the casks with transportation impact limiters would be subjected to crash loads, that sort of research. We would consider novel or innovative approaches in this area, but again, there is a great deal of research on crash tests.

Q: Will the funding be equally divided between Storage, Transportation, and Disposal?

A: I think the emphasis is primarily on storage because the current path forward involves extended storage. One of the things we are facing is transporting after extended storage. We have done a great deal of research of disposal in certain areas (deep bore holes is an example). This would be new approaches, and innovative approaches in any of the three areas. Although storage is the emphasis, innovative or good proposals in any of the three are welcome.

Q: Can you describe the prolonged storage needs a bit more?

This will be covered in more depth during the IRP-FC-1 presentation. Many existing utilities are going to dry cask storage, and it is necessary to monitor the health of that storage. We need to get an idea of how it is performing and how it is going to be performing in the future in a variety of locations that range from humid and salt-air seaside environments to dry desert locations. There would be a great interest in monitoring the integrity of the casks.

Q: For transportation task, are "advanced modeling approaches" focused on failure modes (of barriers) or on consequences (of atmospheric dispersal)?

A: It is a yes to both. There has been research done about atmospheric dispersal and in barriers. It would be up to the PI to do some background research to see what information is already available so that work is not duplicated. Both are open fields for proposals.

FC-5: Fuel Cycle Option Analysis

Q: in looking into gas prices factors, should the focus be on power and electricity sector or should this be linked more to the fuel cycle?

A: We are looking at the free market where nuclear power needs to be a viable option. Look at the features of gas, and see where it is not viable. Focus on entry points for nuclear power. What is the environment where nuclear power could happen on a large scale?

Q: Can you repeat the report name you recommend to look at? What is the author name as well?

A: The report is "Out of the Nuclear Closet" in Foreign Policy by Janet Lovering.

MS-FC-1: Mission Supporting: Fuel Cycle Technologies

Q: Is fuel reprocessing something that is included in this workscope?

A: Yes it would be, FC-1 would also be applicable based on what specific interests you have. If it doesn't fit within FC-1, it definitely fits here.

Q: Would research on degradation of fuel storage canisters be included in this work scope?

A: Yes it is, depending on the specific area of interest; it may be more appropriate for the used fuel worksopes. (FC-4, IRP-FC-1, IRP-FC-2). If it is innovative outside the interests in those areas, it would fit here.

MS-FC-2: Fuel Resources

Q: Is the MS-FC-2 workscope restricted to Seawater Uranium Extraction, or could other "green uranium mining" methods be considered?

A: Our current focus is uranium extraction from seawater, other technologies are not of interest.

Q: Is there interest in developing new technologies for uranium extraction; or only optimizing the Japanese technology?

A: Both, we are trying to improve the Japanese/German technology, but we are also open to other technologies that can accomplish the task.

Q: Seawater extraction has been an emphasis for many NEUP cycles. Does this mean you have not found a good solution yet?

A: Why is there a renewed interest in this area? There are new nanotechnologies and computation technologies that could significantly improve the research from the 80s. We want to revisit this and see if we can make a quantum leap in this area. These projects build on to each other so we can see how far we can reach in this area.

Q: Is there a proliferation issue here?

A: No, mining is not a sensitive nuclear technology.

IRP-FC-1: Sensors and Delivery Devices for Dry Storage of Used Nuclear Fuel

Q: What is the temperature range for the fuel and the cast?

A: We are looking at, in terms of hot fuel that has been recently taken out of wet storage and moved to concrete overpacks to fuel that has been in storage in overpacks for an extended period of time, that would cover the gamut from 5-year old fuel to fuel that has been in storage for some time. So instead of a specific temperature, I would look at it from a time perspective.

IRP-FC-2: FHD/Vacuum Drying of Used Nuclear Fuel

Q: Are other drying system will be considered in this study?

A: Yes, innovative approaches to drying systems would be considered. Keep in mind; Reg. 1563 addresses methodologies that have been accepted so pay attention to those.

RC-1: Computational Methodologies for Gas-Cooled Reactors

(No questions)

RC-2: Advanced Technologies, Development and Demonstration

Q: what kind of components design you are looking at and in what kind of reactor systems?

We are looking for advanced reactor systems but they could also be for SMR or full-sized reactors. You can find this information in detail on slide 5 of the presentation.

Q: Are you looking for some work on new generation heat exchanger materials?

A: I am looking for work on materials for heat exchangers; we always have to be weary when we get those questions or expansions on materials, as they still have to qualify in ASME codes. We would more be looking for improvements on already certified materials.

Q: Is a component such as a pump for high-temperature molten salts an emphasized area?

A: Yes, that would be an acceptable component.

Q: Who were the winners of the last year award?

A: Winners of FY 2013 awards can be found at www.neup.gov

RC-3: Advanced Structural Materials

Q: What about SCWR (supercritical reactor)?

A: That reactor isn't our focus. The topic will be focused specifically on those listed in slide 3.

Q: I am hoping to study near atomic scale properties of high burn-up fuel structure (HBS) focusing on near rim region containing recrystallized surrounding rim bubbles. Which group would be possibly interested?

A: Cladding is usually grouped in the fuel cycle areas. Look at the sections of Fuel Cycle for more information.

Q: Are other structural materials (e.g. concrete) of interest in this call?

A: No, that is not included in the focus this year.

Q: How does RC-3.1 differ from the recently awarded \$5M IRP?

A: The difference is in the focus. This is looking at particular alloys for a particular application. The IRP was a much broader topic on neutron irradiations.

Q: In 2013 there are awarded proposals on Creep-Fatigue Interactions in 9Cr-1MoV Steel Welds and Alloy 617. Are these materials are still of interest in terms of creep-fatigue?

A: The creep fatigue interest is focused on the dissimilar metal welds. We do have other research going on in the program but dissimilar welds are our focus this year.

Q: It was noted that there is a need for proposals related to irradiation of SFR materials. You noted that surrogate irradiations with ions are requested. Will you accept proposals to analyze materials irradiated in reactors if it can be done within the budget?

A: Yes, as long as the focus is still understanding the correlation between ion and neutron irradiation is still there. So part of that understanding comes out of examining previously irradiated materials.

Q: Can modeling only work be supported or does there have to be associated with experimental work (including experimental elements)?

A: It would be challenging to meet the goals of the FOA without experimental work. There would have to be a strong case that the experimental data is already there to create a model.

Q: Is more emphasis placed on modeling or experimental approach for RC-3.2?

A: We encourage proposals to address all aspects of the DMW areas stated in the RC-3.2 scope, including tie-in to ASME Code rules and acceptance criteria for DMWs.

Q: I would like a clarification of the scope of RC-3.1 and the DOE ARC program that supported the down-selection of the two alloys called out in the FOA. A question on the availability of the two alloys of interest was raised.

The materials cannot be procured easily commercially in the small quantities that are needed for ion irradiation. The cognizant DOE-Lab (in this case ORNL) will provide the materials to the awardee(s) for ion irradiation experiment.

RC-4: Non-Destructive Evaluation of LWR Materials Under Extended Service

Q: Is a straight materials study of interest (i.e. radiation damage to concrete) or must NDT be also employed?

A: This call is focused on NDT and modeling simulation. Past years have had other focuses but that is not the focus.

Q: Will the high temperature NDE technique be of interests?

A: High temperature meaning light water reactor conditions, yes. High temperature for gas reactors would not be as relevant.

Q: Is High Burn-up Fuel Structure of interest?

A: HBS is not relevant to the materials pathway.

Q: Is modeling the only thing you are looking for?

A: No, I think modeling is an important part of that and is an important part of understanding sensor performance but experimental sensor development would be of interest as well.

Q: Is a major focus on micro-scale modeling and simulation mandatory?

A: I would not say major focus or even micro-scale, it can be a larger scale. The understanding of large grain structure in cast stainless steel piping or components would not require micro or lower scale evaluation of modeling.

RC-5: Economic Valuation Techniques for Integration with Safety Margin Characterization

Q: Can other RISMCMC toolkit codes be used? E.g., Relap 5 with best estimate and uncertainty techniques that incorporate economics?

A: Yes, we can call Relap 5 within the toolkit we have developed. The research would be how to extract the economic information if you had that kind of coupling.

Q: How can I obtain documentation giving details of the MOOSE framework?

A: We have a couple of things. We have MOOSE training material, you can send an e-mail to curtis.smith@inl.gov, and we can get you information about the MOOSE platform and some tools we have built on that platform.

Q: In order to be compatible, do we need to be detailed at software level in RC-5? Do we need to address the software level connection in pre-application?

A: Generally, the more detail you can describe in the proposal the better off that reviewer can understand the proposed approach. To obtain more information on RISMCMC and the RISMCMC Toolkit, please visit the LWR INL website.
https://inlportal.inl.gov/portal/server.pt/community/lwr_sustainability_program/442/introduction

Q: How should we collaborate with INL, and how should we address this in the application?

A: The primary way to interact with INL is to obtain a copy of the MOOSE platform. The point of contact for MOOSE is Derek Gaston (Derek.Gaston@inl.gov).

Q: Is NEUP looking for economic valuation techniques by using just PRA and excluding all the deterministic methods?

A: We are looking to integrate into PRA.

Q: What type of economic results are expected from NEUP: power generation loss (electrical generation), capacity factor decrease, dollar amount of failed components, etc?

A: All of the economic impacts should be considered.

RC-6: Performance of Joint Human-Machine Systems

Q: So the focus is on Hybrid control room and not new digital control rooms?

A: Yes, that's correct. There is already a lot of analysis on fully electronic control rooms. We are really interested in the hybrid model.

Q: Does this call assume collaboration with Duke Energy and if so, does it assume part funding from Duke?

A: It anticipates that the awardee would participate in the pilot plant project with Duke Energy, I would not anticipate any funding through Duke Energy, the university would probably get their funding through the NEUP program, not a joint arrangement.

Q: Will the material aging from thermal and irradiation in welds or cast be considered?

A: Not in this call. That question relates to some other topic.

Q: Is experimental validation essential?

A: The intent of developing these methods and measures is for experimental validation. It can come as pilot projects that we are carrying out, they don't necessarily need to be carried out separately but there needs to be a technical basis for each of the performance methods and measures that are proposed for joint human-machine system performance.

Q: Where are these facilities?

A: The Idaho National Laboratory facilities would be where you can perform validation. Duke Energy could provide operators for use in research in Idaho as part of a larger project.

Q: Will experimental results and V&V in the Training Simulator instead of the MCR be acceptable?

A: Yes.

RC-7: RCIC Performance Under Severe Accident Conditions

Q: Where can we find the documents referenced in the presentation?

A: They can be found on the www.neup.gov front page under "CINR Reference Documents"
https://inlportal.inl.gov/portal/server.pt/community/neup_home/600/fy14_CINR_reference_documents

Q: Does the RC-7 scope allow an experiment on flow regimes in RCIC turbine?

A: This was anticipated to be a computer effort. On the other hand, there will be a cost ceiling associated with this so I wouldn't rule out experimentation. We are specifically soliciting computer analysis, not experimentation.

Q: Is the data available at the proposal/pre-application stage? Or after the award is made?

A: The data is available at the pre-application phase, although there may be additional information available. Current data can be found on the www.neup.gov front page under "CINR Reference Documents"
https://inlportal.inl.gov/portal/server.pt/community/neup_home/600/fy14_CINR_reference_documents

Q: What is the time frame DOE expect this task be completed?

A: All projects are expected to have a 3-year timespan. Awards will occur at the end of this fiscal year/beginning of next fiscal year.

Q: Can we collaborate with Japanese researchers with their matching fund?

A: Yes, that is a possibility. Foreign collaborators can receive money from their country, but not from the U.S. funding that is provided under NEUP.

Q: Are there ongoing activities in national laboratories on that university can collaborate with?

A: There are a number of analyses that are underway or anticipated and the universities could participate through the typical national laboratory process.

Q: Will there be multiple awards?

A: There may be, but I would not anticipate it.

Q: Are you considering CFD multiphase codes or only 1D codes like TRACE?

A: We are open to any computational codes. It can be 1D, it can be CFD, or something of your own invention, as long as it meets the requirements of the workscope.

Q: I would like more information about the work done at the Fukushima Accident. Where can I find the most up to date information?

A: The most recent data regarding TEPCO and MELCOR modeling results are available on the NEUP homepage under Additional Information.
https://inlportal.inl.gov/portal/server.pt/community/neup_home/600/fy14_CINR_reference_documents Look for the RC-7 Section.

Q: Would it be possible to do some experimental work in RC-7?

A: Yes, but within limits. For example, some experimentation may be required to develop and validate codes. However, experimentation is not to be the main focus of the workscope.

MS-RC-1: Reactor Concepts R&D

Q: What are two candidate alloys for advanced materials?

A: The ones we are currently looking at is 709 alloy and grade 92 steel are the ones that we have down selected in that field.

Q: Are supercritical water reactors considered?

A: The only design we are not considering is a standard LWR, so supercritical would fall under the advanced category.

Q: What about a LWR Small Modular Reactor?

A: No, when I was referring to advanced SMR's I was referring to non-light water reactor designs.

MS-RC-2: Radioisotope Power Systems R&D

Q: Are there any particular insulating materials we should take under consideration?

A: No, the current state of the art is Microtherm and Min-K, so that's a good reference of how much kinetic energy we absorb and the various thermal characteristic. Any readily available material that improves on those would be considered.

Q: there was mention in the earlier part of this webinar of this type of research to be transferred to NASA. Can you comment?

A: Both NASA and the DOE do research on this topic, as well as conducting basic research necessary. We also leverage what other agencies are doing.

IRP-RC: Integrated Approach to Fluoride High Temperature Reactor (FHR) Technology and Design Challenges

Q: To what degree should this proposal maintain a wide range of FHR design options, versus looking one of the more specific design concepts?

A: There are a few design concepts such as the AHTR concept that can be considered, but some of the basic characteristics such as 700 degrees C and liquid salt environment should be broadly considered.

Q: Can you explain more on how carbon fiber composites are needed? What type of research is encouraged: Modeling or optimization?

A: Carbon fiber composite are especially useful for in core structural elements. They give slightly better moderation than a silicon carbide fiber element. So for example, a fuel assembly supports would be a useful thing to make with a carbon fiber composite. Things that are near the core but are not as important for moderation, things like upper and lower core support plates, and top and bottom support structure, a silicon carbide composite could be more appropriate.

MS-NE-1: Integral Benchmark Evaluations

Q: What does the note mean on the final slide? Will this workscope cover nuclear data measurements or evaluations not explicitly outlined if it has sufficient importance to future programs?

A: That was the point I was trying to make with "filling the gaps". You don't necessarily need to tie the needs to a specific NE program. There are gaps that could support multiple programs, or could be good general knowledge.

Q: Are thermal spectrum gas cooled reactor benchmarks of interest?

A: The highlighted items at the end of the presentation are what the focus is, but anything that could be improved in benchmarking is welcome here. I am avoiding saying, 'this is in, and this is not' because as a Mission Supporting area, this is open to novel and innovative ideas in the topic area. If it's a strong gap and you feel it needs to be addressed, please submit an application.

Q: About how long does an IRPhEP evaluation take to complete?

A: The duration depends on the complexity of the system and the number of measurement types. Simple systems can be evaluated by student in 3 to 4 months with knowledgeable oversight. More complex systems may take experienced evaluators 6 to 8 months.

Q: Are applicants required to search for the data or is there a way to get help with this task?

A: Researching or mining the data is an essential part of the effort. No one will be supplying data. However, you can strategically select a collaborator that can help if the data are available in the U.S. It is my understanding that funding cannot be sent to institutes outside the U.S. In this case, you will need to make arrangements to collaborate with the non-U.S. institute at no cost to the project.

Q: Are the experimental data already available and will be provided or it is within the work scope to collect and organize these data to create a benchmark case?

A: Collection of data must be included in your proposal. We are always willing to help the best we can, but we can't do it for you. Generally, you would start by identifying the relevant experiment(s) you wish to evaluate and search the published literature. You must then attempt to make contact with experiments or those who may have been associated with the experiments in some way to gain access to unpublished data.

Q: Are the small sample worth measurements made in RPI's pool-type TRIGA reactor for nuclear data validation of interest?

A: Yes, measurements that are made in support of nuclear data refinement are very beneficial to most of DOE's NE's reactor applications and there are certainly no possible duplication of effort issues in this case.

Q: Have the EBR-II Inherent Safety Test been evaluated and are they are relevant?

A: They have not been evaluated, but they are of high priority for Fast Reactor Safety. The physics tests fall under the existing IRPhEP. There is international interest (OECD NEA) in starting a program similar to the IRPhEP and ICSBEP for Thermal Fluids, but such a program does not currently exist.

Q: If I understand correctly the expectation is to evaluate existing experimental data and not to create new experiments, is that correct?

A: You are correct in that the scope is to evaluate existing experimental data and not to perform new experiments; however, if a new experiment is performed under some other scope, it becomes existing data and may be evaluated under the MS-NE-1 scope.

Q: Is there a possibility to collaborate with INL?

A: If you will to discuss possible collaborations with INL, please contact John Bess.

Q: The web-seminar suggests that some evaluations are already on going. Which are the areas that are already covered and which are those that need coverage in the near future?

A: Please refer to the most recent addition of the IRPhEP or ICSBEP Handbook for existing evaluations. Once you have selected experiments in which you are interested, please contact me and I can tell you whether or not your particular choice is currently being evaluated or planned for near future evaluation. Please refer to the examples given in the NEUP presentation for MS-NE-1. OECD NEA has collected data for some experimental programs and those data can be made available to you. Included in their archives are DRAGON Project Reports, OECD LOFT Reports, and the SINBAD Data Base. Please look for experiments that support current or future DOE NE Missions or support basic nuclear data testing and improvement efforts.

Q: What about HTGR applications?

A: HTGR applications are of interest, but you should review the data that are already in the IRPhEP Handbook to ensure that you are not proposing something that has already been completed? You should also focus on DOE NE's mission in this area.

Q: Is a proposal to develop a sensitivity/uncertainty analysis method to design experiments relevant?

A: It may be relevant to some other task under the FOA, but it is not relevant to MS-NE-1.

Q: What is entailed with an IRPhEP evaluation?

A: Details of an IRPhEP evaluation is given in the IRPhEP content and format guide that is distributed with the IRPhEP Handbook (copies may be requested at <http://irpheap.inl.gov>). We discussed the details of an evaluation and I am available to have similar discussions with all other applicants who may want to discuss this topic.

IRP-NE-1: Transient Testing R&D

Q: What time scale are you interested for transient testing?

A: The immediate time scale we are looking at 2018 and the driver for that testing is the accident tolerant fuels program, which is on a 10-year demonstration cycle schedule that was started a few years ago. The goal was in 10 years to demonstrate a lead test rod of an accident tolerant fuel.

Q: I assume the transient testing with advanced instrumentation is to be at ATR or some similar operating reactors?

No, it would not be at ATR. One of the problems is this is such a high-energy event that it could damage a test reactor. We are trying to restart a reactor, like TREAT at Idaho National Laboratory, was historically where transient testing has taken place, but ACRR at Sandia is another option that could meet our needs. Options are being evaluated now.

NEAMS-1: Nuclear Energy Modeling & Simulation

Q: Can you post links to the BISON documents you mentioned?

A: We can do that. We would like to make them available as widely as possible.

NEET-1: Advanced Methods for Manufacturing

Q: Concrete seems to be a major focus, are you interested in improved methods for other materials such as steel/HDPE piping?

A: We are interested in those materials. I will reiterate, we are not looking for basic science research for these materials. We are looking for new manufacturing techniques.

Q: Are you interested in technologies that might increase the repeatability and reduce the cost of factory produced components?

I want to say yes. I may be hearing the questions wrong. If you have specific questions, please send them by e-mail to alison.krager@nuclear.energy.gov and jacklanc@gmail.com.

NEET-2: Advanced Instrumentation and Controls

Q: Could you clarify your comment about the number of proposals that can be submitted by the same organization?

A: For NEET workscopes, 3 applications can be submitted per workscope. NEET-1 and NEET-3 have one workscope each; NEET-2 has 6 workscopes.

Q: How many awards will be awarded under NEET Advanced Sensors and Instrumentation?

A: Five awards are expected, with a sixth award pending available funding (one for each area).

Q: The Advanced Concepts of Operations topic is not included. Is this one of the R&D areas that is dependent on availability of additional funding?

A: That area is not included this year, but may be included in future calls. There is a related topic under RC-6.

Q: Is there any photonic instrumentation or technology envisioned?

A: That will depend upon the proposal. The general approach for all of this is to discuss the parameter that the sensor applies to. Talking about its measurement characteristics, accuracy, time-space and resolution and other properties and compare that to the existing baseline technologies that it would replace or would address in a new reactor or fuel cycle facility. We are welcoming all different types of technology.

Q: You indicated that topic 2.6 is new and funding of projects in this area is contingent on the budget. Are you still looking for proposals in this area in spite of the uncertainty in funding level?

A: Yes, the idea was that we had additional funding that became available at the end of the year. We didn't want to leave the area out. If we don't fund it this year, we will bring it up again as a topic next year.

Q: Where do we find the reference ANL/NE-12-57 (NEET 2.3)? The INL one is available, but could not find the ANL one.

A: All reference documents for NEET-2 can be found on the neup.gov website front page, under "CINR Workscope Reference Documents".

Q: Does a proposal has to have a national laboratory partner? For a proposal that does not have a national laboratory partner, will it affect the review negatively?

A: Applications do not have to have a national laboratory partner. DOE-NE encourages effective partnerships that leverage unique capabilities regardless of who those partners are.

Q: Regarding NEET 2.6, are there any specific measurement parameters that are preferred (i.e. temperature, fission gas composition, etc.)?

A: We are asking for innovative state of the art technologies. We don't have any specifically targeted for 2.6. We would like researchers to suggest to us new and novel techniques to enhance measurement accuracy and even to permit finer control or improve safety and efficiency of future systems.

Q: you said that approximately 5 awards will be awarded. Doe that mean you plan on funding five different topics or can a topic have multiple awards?

A: We plan on funding one from each of the first five topic areas, but that depends on the quality of the proposals in each area.

Q: Which of the areas are dependent on additional funding availability?

A: 2.6 is the only one that is dependent on additional funding.

Q: Are there any priority for sensor type? i.e. between sensor for temperature, hydrogen, pressure, neutron flux, etc.

A: We are looking for different types of sensors. Temperature is of special interest since it needs to survive the nuclear environment.

Q: Can a proposal fit both NEET 2.1 and NEET 2.6?

A: An application can only be submitted to one workscope, therefore, the PI would have to decide which workscope is most appropriate for the project.

Q: Why are some of the reports dated 2012 (were no reports issued in some topics in FY13)?

A: There were some reports for FY 2013, but they are still under review. The 2012 reports give the basic information needed for these worksopes. We will post additional reports as necessary.

Q: Are proposals that include industrial partners viewed as more beneficial than single proposer?

A: We would like to encourage participation by multiple organizations, but that depends on the merit of each individual proposal.

Q: If a proposal for Topic 6 is ranked much higher than proposals in Topics 1 through 5, could Topic 6 be funded instead of items in Topics 1 through 5?

A: Right now the 2.1-2.5 have priority because we have invested some funding already in those topics and we don't want to lose that momentum. We will see as the proposals come in if there is a compelling reason to do that.

Q: I've read the description for the particular sub area of NEET 2 that I am considering submitting a pre-application to and have also reviewed the reference material. I am considering submitting a pre-application that differs in its approach from that described in the reference material. Is that allowable?

A: Yes. The reference material is supplied to inform interested parties of prior work that was performed in each NEET 2 sub area. You are not required to follow the same approach or to employ the same ideas or technologies as long as it meets the sub area requirements.

Q: For NEET 2.5 (High Temperature Fission Chamber), can you give me some idea of the fluence of an advanced reactor?

A: The fluence of the VHTR design concept is 4×10^{21} n/cm².

NEET-3: Reactor Materials

Q: How many awards are expected for this NEET-3 call?

A: Although the budget is not final, we are expecting four to five awards.

Q: Are details of material combinations for joining etc. available in some report?

A: No, we don't have any specifics. However, each of the program offices for the different reactor concepts that NE is interested in, do have more information on what types of materials are of interest on each reactor type.

Q: Will high burn-up fuel of UO₂ studying nano-chemical and mechanical properties determination be considered in this group?

A: No, that seems like the topic on fuel-clad interaction and that is not a joining issue. That is not of interest for NEET-3. Fuel cladding is covered in the Fuel Cycle workscopes.

Q: is there a particular interest in dissimilar metal joints?

A: There is an interest, but it does have to be crosscutting. RC 3.2 has a topic on dissimilar welds, so it may fit there as well. But if it is a crosscutting issue for more than one reactor then yes, it would fit here.

Q: Is there a "TRL" level associated with this call?

A: No, there is not a technology readiness level associated with this workscope. We have not put constraints on TRL's.

Q: Are there any metrics for the joint e.g. strength, creep rupture etc.?

A: The particular properties would need to be defined by the application; therefore, there are no constraints in the workscope itself.