U.S. DEPARTMENT OF ENERGY

Office of Science

DOE/HEP Funding Opportunities: General SC Solicitation, Comparative Reviews, Early Career, Accelerator Stewardship

DOE/HEP 2014 • Principal Investigator (PI) Meeting
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Outline

- Summary of Funding Opportunity Announcements (FOA)
- Annual Office of Science (SC) Solicitation
- FY2015 HEP Comparative Review Process
- Early Career Research Program
- Accelerator Stewardship Program and FY2015 FOA
- Summary

For additional info regarding these or any DOE FOAs, please visit:
www.grants.gov

Summary of DOE/HEP-based Solicitations

"FY 2014 Continuation of Solicitation for the Office of Science (SC) Financial Assistance Program" **[DE-FOA-0000995]**

- **Also known as the "general *or* open annual DOE/SC solicitation"**
  - **SC-wide FOA that invites applications in support of work in any of six SC offices, incl. HEP research**
- **Published annually, typically at the beginning of a fiscal year (October), and remains open until succeeded by another issuance by the Office of Science**

"FY 2015 Research Opportunities in High Energy Physics" **[DE-FOA-0000xxx; FY15 number: TBD]**

- **Also known as the "HEP Comparative Review FOA"**
  - **Issued for *new* or *renewing* grant applications for support of research programs in HEP, each processed through a comparative evaluation of applications with similar research scope**
- **Since FY12, published annually and typically issued in mid-June**
  - **Letter of Intent (LOI) is strongly encouraged; typical deadline in mid-July**
  - **Final applications deadlines in early-September**

"Early Career Research Program" **[DE-FOA-0000xxx; FY15 number: TBD]**

- **SC-wide solicitation, which includes DOE/HEP, and invites applications from junior investigators (within 10-years post PhD) from labs or universities**
  - **support the development of individual research programs of outstanding scientists early in their careers *and* to stimulate research careers in areas supported by the DOE/SC**
- **Pre-application (required) deadline typically in Sept., and final applications due in mid-Nov.**

"FY 2015 Research Opportunities in Accelerator Stewardship" **[DE-FOA-0001142; LAB-14-1142]**

- **Specifically for accelerator R&D which predominantly impacts non-HEP applications**
  - **LOI is required (by July 3, 2014), which will result in an encourage/discourage response by July 10**
  - **Eligibility will include academia, national labs, and industry**

GENERAL ANNUAL DOE OFFICE OF SCIENCE FUNDING SOLICITATION

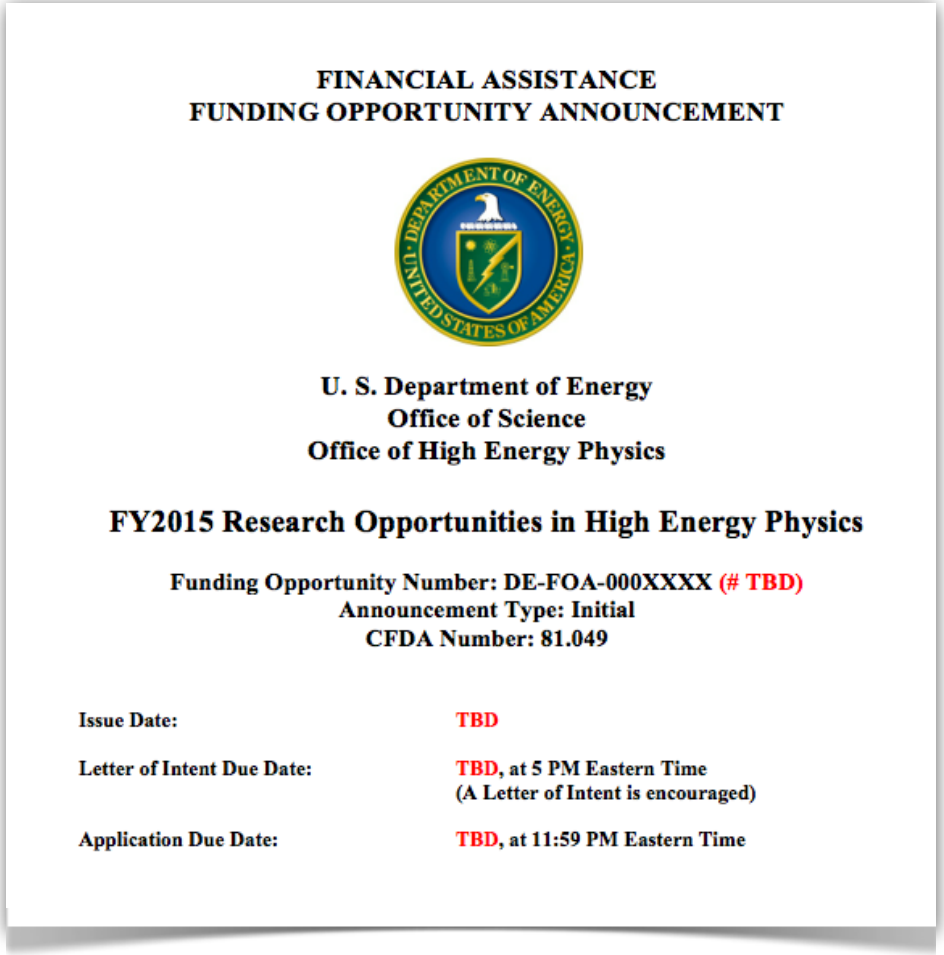
Annual SC Solicitation

- General DOE/SC solicitation invites applications in support of HEP research, which include, but are not limited to:
  - HEP-related conferences and/or workshops
  - Experimental operations, conceptual R&D, design or fabrication directed towards a specific project within the HEP scientific program
  - Responds to applications within seven HEP subprograms
    - Energy, Intensity, and Cosmic Frontiers
    - HEP Theory, Computational HEP, Accelerator Science and Technology R&D, and Detector R&D
- Proposals submitted to this solicitation are merit reviewed for scientific and technical merit
- Applications addressing *specific HEP research or technology development* activities in one or more of the above six research programs (excl. Computational HEP) are *strongly encouraged* to submit applications to either the annual HEP Comparative Review FOA or the Early Career Research Program FOA
  - Applicants may submit to this open solicitation but will likely be assigned a lower programmatic priority than those from the comparative review process
    - PIs of existing grants that are in direct support of HEP research typically submit proposals to this open solicitation to request supplemental support to their grants
- Requesting support for conferences and/or workshops, applicants should also visit:
  - *http://science.energy.gov/hep/funding-opportunities/physics-research-university-program-guidelines/conference-guidelines/*
  - Provides guidelines for proposals and important information regarding funding requests – *e.g.,*
    - Proposals must be submitted at least 6 months prior to start of conferences for proper review
    - Requests for support of entertainment or alcoholic beverages at conference not allowed, etc…

FY2015 HEP COMPARATIVE REVIEW PROCESS

FY15 HEP Comparative Review FOA

- **DE-FOA-000XXXX**
  - Expect to be issued in June 2014
- **Six HEP research subprograms**
  - Energy, Intensity, and Cosmic Frontiers
  - HEP Theory
  - Accelerator Science and Technology R&D
  - Detector R&D
- **Letter of Intent due ~mid-July**
  - Strongly encouraged
- **Final Proposal (*i.e.*, Application) deadline ~early-September by 11:59 PM Eastern Time**



FINANCIAL ASSISTANCE
FUNDING OPPORTUNITY ANNOUNCEMENT

U. S. Department of Energy
Office of Science
Office of High Energy Physics

FY2015 Research Opportunities in High Energy Physics

Funding Opportunity Number: DE-FOA-000XXXX (# TBD)
Announcement Type: Initial
CFDA Number: 81.049

Issue Date:	TBD
Letter of Intent Due Date:	TBD, at 5 PM Eastern Time (A Letter of Intent is encouraged)
Application Due Date:	TBD, at 11:59 PM Eastern Time

Information presented here on HEP Comparative Review is not final and include those aspects being considered for the upcoming FY15 FOA

Frequently Asked Questions (FAQs)

- **FAQ for FY15 HEP Comparative Review**
  - Along with FOA, FAQ will be available at our DOE/HEP webpage
  - For reference, see FY14 Comparative Review FAQ: *http://science.energy.gov/~/media/hep/pdf/files/pdfs/Funding%20Opportunities/FY14_Comp_Review_FAQUPDATED_JULY11_2013.pdf*

- **In addition to information provided in FOA, FAQ addresses topics on:**
  - Eligibility requirements
  - Proposal types and scope of proposals being considered
  - Guidance for new faculty members and those without current HEP grants
  - Guidance for PIs with existing HEP grants
  - Letter of Intent
  - Proposal and Application requirements
  - Budgets information, including guidance on scope of request(s)
  - Information on overall scientific merit review process

Subprogram Review Panels

- **The Comparative Review process is very competitive and hard choices have to be made based on the reviews, as well as to fit into our limited funding availability**
  - **The process implies that certain proposals and PIs will be ranked at the top, middle, and bottom**

- **It is understood that the vast majority of people applying are working hard and their efforts are in support of the HEP program. Due to the rankings & comments by the reviewers and our constrained budgets, some people whose research activities and level of effort who are ranked lower in terms of priority and impact relative to others in the field will not be funded on the grant**
  - **This does not necessarily mean the person cannot continue working on the experiments; they are not being funded by the grant to do it. It could be that the person has a critical role in the program, but this did not come out in the proposal or review process.**
  - **This is why it is imperative to respond to the FOA solicitation and detail each person's efforts**

- **Members of subprogram review panels see all of the proposals and each member provides input and ranks proposals relative to the others. When a panel member is faced with comparing efforts, impacts and limited budgets, rather than rank the whole proposal low, he/she may provide guidance regarding details of the proposals**
  - ***e.g.,* current group size is okay, and therefore, do not add additional postdoc on this effort**

Project Narrative

- **Project Narrative comprises the *research plan* for the project**
  - Should contain enough background material in the introduction to demonstrate sufficient knowledge of the research
  - Devote main portion to a description and justification of the proposed project, include details of the methods to be used and any relevant results
  - Indicate which project personnel will be responsible for which activities
  - Include timeline for the major activities of the proposed project
- **Must not exceed 9 pages per senior investigator when printed on standard 8 ½" x 11" paper with 1-inch margins (top, bottom, left, and right). Font must not be smaller than 11 point.**
  - Senior investigator ≡ active tenured or tenure-track faculty member at the sponsoring institution
  - Non-tenure track faculty (*e.g.,* research faculty) or senior research staffs with term appointments are not included in the 9-page limit unless they are the sole senior investigator on the application
  - Faculty members at collaborating institutions listed on the proposal (if any) are not included
- **Encouraged to refer to Section IV of the FOA**
  - Includes useful information to help PIs in preparing better narratives – *for e.g.,*
    - What to address for the Background/Introduction
    - Multiple Investigators and/or Multiple Research Areas or Thrusts
    - Common narrative that provides overview of each group's activities in different research areas to describe synergies and connections between areas
    - Proposed Research Methods, Resources, Project Objectives
    - Timetable of activities, …

Cross-cut or Transitional Proposals

- **Applications where a PI is proposing to conduct research across multiple HEP research subprograms during the project period will be considered**

- **PIs are encouraged to submit only one application with a project narrative describing:**
  - **Overall research activity, including fractional time planned in each subprogram**
  - **Timeline for any transitions of effort (as appropriate)**

- **As part of their overview of the subprogram and review process, DOE PMs will provide the panel with details regarding such research plans across multiple HEP thrusts**

- **Reviewers with appropriate topical expertise in the research area(s) will assess the full scope, relevance and impact of the proposed research in the merit review process — *for e.g.,* merit review questions consider:**
  - **Are the plans for such cross-cutting efforts reasonably developed and will the proposed activities have impact?**
  - **Does the scope of the full proposed program provide synergy or additional benefits to the HEP mission beyond the individual thrusts?**
  - **Will PI's overall efforts across multiple thrusts add value in the context of HEP program goals and mission?**

As a PI, should I submit a "new" or "renewal" proposal?

- DOE will accept "new" and "renewal" applications under the FY15 comparative review FOA
- New applications
  - Proposal which creates new research grant that has not previously received DOE funding
  - Continued research from the same sponsoring institution as the current grant BUT with significant changes in scientific research thrust
  - Continue research performed under an existing DOE grant award BUT with a new sponsoring institution
- Renewal applications
  - Funds are requested for an award that was first awarded in 2012 or later and has no changes to:
    - Recipient/applicant's institution
    - Award's senior leadership
    - Research thrust(s)
    - Research scope(s)
  - If an institution received funds in support of a DOE/SC/HEP award first awarded in 2011 or earlier, a "new" application will need to be submitted
- Renewal applications compete for funds with all other peer-reviewed applications and must be developed as fully as though the applicant is applying for the first time

Proposal Review and Award Process

Pre-review

- **July: Letter of Intent (LOI) received from PI. Program planning at DOE/HEP.**
- **September: Proposal received. FOA compliance checks at DOE/HEP: PI qualifications, scope, page limits, budget pages, etc.**

Panel Review

- **Sept-October: Proposals assigned to at least three reviewers via Portfolio Analysis and Management System (PAMS);**
- **October-November: Reviewers input written reviews in PAMS.**
- **November: Panel discussion of all proposals and all senior personnel. Add additional reviews and make comparative reviews & evaluations.**

Post-review and award

- **December: Assessment of each proposal and each PI by DOE/HEP using merit review, grant monitor input, programmatic priorities, budget constraints.**
- **Early-to-mid January: Prioritized budget guidance sent to PIs and requests for revised budgets and budget justifications using proper DOE forms.**
- **End-January - March: Route proposal's procurement packages through DOE/SC and DOE Chicago Operations Office for approval.**
- **March-April: Awards to university from DOE Chicago Operations Office.**

Process Logistics

- **Post-FOA deadline**
  - All applications are pre-screened for compliance to FOA, includes:
    - verification of senior investigator status
    - compliance with proposal requirements: *e.g.,* page limits, appendix material, use of correct DOE budget and budget justification forms, …
    - responsive to subprogram descriptions
  - Prior to submission, all PIs should carefully follow guidelines in FOA (and read FAQ)
- **For review process, experts of panelists selected**
  - Each panelist assigned to review 3-5 proposals
    - minimum 3 reviews per proposal, additional reviewers added depending on the size of a research group and scope of research activities
      - Mail-in reviewers assigned per subprogram for topical expertise
    - Panel convenes (in ~November) to discuss *each* proposal and *each* senior investigator, provide additional reviews for proposals, and for comparative evaluation of proposals & PIs
      - Size of each subprogram's panel & length of a panel meeting depends on # of proposals to review
- **Post-Review process**
  - Assess reviews at DOE/HEP on *each* proposal and *each* senior investigator in order to develop guidance and funding levels
    - in addition to reviews, solicit input from other DOE Program Managers & Grant Monitors
  - PIs given [prioritized] guidance and funding levels (~early-to-mid January 2015) and request Revised Budgets and Justifications $\Rightarrow$ route through DOE/SC and Chicago Office
- **Funded grants to begin 1st year: on or about April 1, 2015**

HEP Research Activities Supported

- **What DOE supports**
  - Research efforts (mainly scientists) on R&D, experiment design, fabrication, data-taking, analysis-related activities
  - Theory, simulations, phenomenology, computational studies
  - Some engineering support may be provided in the Detector R&D subprogram
    - support depends on merit review process and programmatic factors
  - Consider funding efforts that are in direct support of our programs
- **Faculty support**
  - Based on merit reviews and budgetary constraints, support for up to 2-months summer salary
  - Summer support should be adjusted according to % time the faculty is on research effort
    - associated funding (post-docs, travel) should also be adjusted accordingly
- **Research Scientists**
  - Support may be provided, but due to long-term expectations, need to consider case-by-case on merits: whether the roles and responsibilities are well-matched with individual capabilities and cannot be fulfilled by a term position
  - Efforts are related towards research; not long-term operations and/or project activities

× **What's not supported by research grants**

  - Any significant operations and/or project-related activities:
    - Engineering, major items of equipment, consumables for prototyping or production
  - Non-HEP related efforts
    - Gravity waves (LIGO), Heavy Ion (RHIC), AMO Science, etc…

Research Scientists (RS)

- Efforts of RS that have support requested in a proposal is evaluated by the panel
- Guidance to PIs given in Q&A of FAQ…
  - Requests to support RS dedicated full-time (and long-term) to operational and/or project activities for an experiment will not be supported by respective frontier research areas
  - If RS conducting physics research-related activities, requests [scaled to % of time on such efforts] can be included
    - any final support will be based on the merit review process
- Common [past] reviewer comments that result in unfavorable merit reviews:
  - 'RS conducting scope of work typically commensurate at the postdoctoral-level…'
  - 'RS involved in long-term operation/project activities with minimum physics research efforts…'
    - such efforts may review well in a DOE review of the operation/project program but not as well in a review of the experimental research program
- What is physics research-related activities?
  - Object reconstruction/algorithm development, performance studies, data taking and analysis, and mentorship of students & postdocs in these areas
  - Scientific activities in support of detector/hardware design and development
- From the research program, cases become an issue when operations/projects become the *dominant* activity long-term
  - A well-balanced portfolio that includes physics research-related activities is encouraged

Appendix Narrative for Research Scientists

- **Per recommendation of 2013 HEP Committee of Visitors (COV), the FY15 FOA is considering to request a supporting narrative of *named* Research Scientist(s) listed in the proposal**
  - **Narrative will be part of Appendix material of the application**
    - **Must not exceed 2 pages per Research Scientist**
  - **Narrative should include brief background info as well as description of roles, responsibilities, and scope of research efforts to be conducted by the scientist**
  - **Scope should support the research activities described in proposal's project narrative**
  - **Narrative will be limited to describe scope of activities for Research Scientist(s) only and is not to be used by PIs to extend the length of the main project narrative**

- **In addition to the above "appendix narrative", the FOA is considering to request each *named* Research Scientist to provide a brief, 1-page biographical sketch**
  - **Info for the sketch includes:**
    - **Education & Training**
    - **Research and Professional Experience**
    - **List up to 5 publications most closely related to the proposed project**
    - **List any graduate student and/or postdoctoral mentorship that supported the RS' research activities**

Programmatic Considerations

- Generally very useful to have head-to-head reviews of PIs working in similar areas, particularly for large grants
- Lots of discussion of relative strengths and weaknesses of individual proposals and PIs
- Many factors weigh into final funding decisions
  - Compelling research proposal for next ~3 years
    - ☑ Interesting? Novel? Significant? Plausibly achievable?
    - ☒ Incremental? Implausibly ambitious? Poorly presented?
  - Significant *recent* contributions in last 3-4 years
    - Synergy and collaboration within group (as appropriate)
    - Contributions to the research infrastructure of experiments
  - Alignment with programmatic priorities

- Supportive of excellent people, including excellent *new* people, even when times are tough!

Example of info panelists are provided

- **Beginning of each panel session, DOE PMs provide info to reviewers — *for e.g.,:***
  - Summary of program scope, future directions, and budgetary factors
  - Logistics of the review process including agenda, non-disclosure, COIs, panelist workflow and deadlines, format for the panel closeout – similar to some slides presented here (or in backup)
  - Summary of type of proposals, scope, and incoming PIs
    - Brief description of proposals across multiple research thrusts ("umbrella")
    - Info on PIs requesting funding to do research on more than one frontier
    - Info on PIs requesting funds for less than the typical 3 years to align with rest of their university group's HEP grant
    - History/status of "first-time" applicants and/or previously reviewed PIs not funded by DOE/HEP
  - List of Research Scientists and FTE requests from research in the batch of the proposals reviewed
  - Per 2013 HEP COV, guidelines on COLA rates established by experiments (if available)
- **Overall total budget requests in the batch of research proposals being reviewed:**

Fiscal Year	FY15 ($)	FY16 ($)	FY17 ($)
Total Budget Request	***x*M**	***y*M**	***z*M**

- **Estimated available funds under Subprogram's Comp. Review in FY15 is: ~$*a*M**
- **Please consider level of support needed to accomplish research goals of each application**
  - Prior level funding should not be a factor
  - Are the requests reasonable and appropriate for the research grant?
- **Please consider what type of impact, if any, on the Subprogram's science program, current experiment and/or future project would occur if this proposal was not funded**

Comparative Merit Review Criteria

(In descending order of importance)

1) **Scientific and/or Technical Merit of the Project**
   For e.g., What is the scientific innovation of proposed effort? What is the likelihood of achieving valuable results? How might the results of the proposed research impact the direction, progress, and thinking in relevant scientific fields of research? How does the proposed research compare with other research in its field, both in terms of scientific and/or technical merit and originality? *Please comment individually on each senior investigator.*

2) **Appropriateness of the Proposed Method or Approach**
   For e.g., how logical and feasible is the research approach of each senior investigator? Does the proposed research employ innovative concepts or methods? Are the conceptual framework, methods, and analyses well justified, adequately developed, and likely to lead to scientifically valid conclusions? Does the applicant recognize significant potential problems and consider alternative strategies?

3) **Competency of Research Team and Adequacy of Available Resources**
   For e.g., what are the past performance and potential of each senior investigator? How well qualified is the research team to carry out the proposed research? Are the research environment and facilities adequate for performing the research? Are PIs or any members of the group leaders on proposed effort(s) and/or potential future leaders in the field? Does the proposed work take advantage of unique facilities and capabilities? For PIs proposing work across multiple research thrusts, are the plans for such cross-cutting efforts reasonably developed and will the proposed activities have impact?

4) **Reasonableness and Appropriateness of the Proposed Budget**
   Are the proposed resources and staffing levels adequate to carry out the proposed research? Are all travel, student costs, and other ancillary expenses adequately estimated and justified? Is the budget reasonable and appropriate for the scope?

5) **Relevance to the mission of the DOE Office of High Energy Physics (HEP) program**
   For e.g., How does the proposed research of each senior investigator contribute to the mission, science goals and programmatic priorities of the subprogram in which the application is being evaluated? Is it consistent with HEP's overall mission and priorities? For PIs proposing to work and/or transition across multiple research thrusts during the project period, will their overall efforts add value in the context of HEP program goals & mission? How likely is the research to impact the mission or direction of the overall HEP program?

6) **General Comments and Overall Impression**
   Include any comments you may wish to make on the overall strengths and weaknesses of the proposal, especially as compared to other research efforts in this area. If there are significant or unique elements of the overall proposal, including institutional setting and resources, synergies with other relevant subprograms, or other broader considerations not noted above please include them here.

Comparative Merit Review Criteria (cont.)

For Reviewers/Panelists

- The merit review criteria items and corresponding questions are given to all reviewers to input their reviews in DOE's Portfolio Analysis and Management System (PAMS)
  - Serves as a guide for reviewers to address each review criteria for written reviews
- Are highlighted by DOE PMs at the beginning of panel deliberations
- Are presented and discussed by individual panelists for each proposal

For Principal Investigators

- The merit review criteria items and corresponding questions are given in Section V of the FOA
- Serves as an additional guide for PIs to address in their proposal's project narratives
  - Do not just write an explicit paragraph answering each question-by-question, but instead, PIs should integrate and adapt these (as appropriate) when narrating the group's activities and research plans

Proposal Tiers: Merit vs. Funding (Example Matrix)

- **During a subpanel's closeout, after reviewing *all* proposals and *all* senior investigators, panels deliberated by**
  - **Categorizing proposals in 2-dimensional Tiers based on its: Merit Review *vs.* Funding Request**
  - **Treat the reasonableness of funding requests independent from the science merits**

CLOSEOUT: PROPOSAL TIERS	Merit Tier 1 (Outstanding)	Merit Tier 2 (Above Average)	Merit Tier 3 (Average)	Merit Tier 4 (Below Average)	Merit Tier 5 (Poor)
Funding Tier 1 (require minimum budget adjustment)	University A	University D	University H		
Funding Tier 2 (require average budget adjustment)	University B University C	University E University F	University I University J University K University L	University O	
Funding Tier 3 (require maximum budget adjustment)		University G	University M University N		University Q *(e.g., term soft-landing)*
Tier 4: No Fund				University P	University R University S

- **Panelists were asked to consider the level of support needed to accomplish research goals of each application**
  - **Make "comparisons": are the *budget requests* submitted by the PIs reasonable and appropriate for carrying out the research when compared to other applications with similar scope?**
  - **No consensus was taken and members of panel encouraged to voice individual opinions (and noted)**
    - **the above matrix served as a 1st order guide when DOE PMs later made funding decisions**

Full Funding of Multi-Year Grants

- **On January 17, 2014, the President signed the 2014 Consolidated Appropriations Act (CAA): Section 310(D) requires full funding of multi-year grants and/or cooperative agreements received from academic institutions with total cost less than $1M.**
  - **"Full funding" implies funds for the *entire award* for the proposal's project period is obligated at the time the award is made, instead of funding year-by-year.**
- **Logistics on full funding:**
  - **Process applies to new, renewal, or supplemental grant awards that are made after the merit review process.**
  - **No other exemptions from this provision apply other than grants and cooperative agreements are of total cost less than $1M – integrated over the project period approved for the proposal.**
- **During the submission of a proposal along with conducting its merit review and making decisions on the award:**
  - **There will be no change to how an applicant applies for a grant or cooperative agreement.**
  - **There will be no change to the merit review process.**
  - **There will be no change to DOE Program Managers requesting revised budgets from PIs.**
- **DOE Program Managers (PM) will continue to have oversight of the research program by requiring PIs to submit an annual research performance progress report that must be approved by the PM prior to any funds being accessed by the PI the following year.**
- **SC program offices, including HEP, will aim to carry out the transition in a way that minimizes impacts on the scientific community and the mission needs served by the office.**

EARLY CAREER RESEARCH PROGRAM (ECRP)

Early Career (EC): Next Round in FY15

- **FY15 FOA expected to be posted mid-July 2014 at the Early Career website:**
  - http://science.energy.gov/early-career/
- **Read the FY15 FAQ, also will be on above web site**
  - addresses most of the common Q&A collected over the last 4 years
- **Features of FY15**
  - Entering 6th year
    - some population of candidates will no longer be eligible due to the "3-strikes rule"
  - Mandatory Pre-application requirement. Two pages.
    - Deadline: TBD (typically early-September 2014)
    - all interested PIs encouraged to register as soon as possible in DOE/SC Portfolio Analysis and Management System (PAMS) for submission [link provided in EC website]
  - Full proposals due: TBD (typically mid-November 2014)
    - candidates normally have more than 3 months to develop a plan, write a narrative, and submit an application
- **Presidential Early Career Awards for Scientists and Engineers (PECASE)**
  - PECASE-eligible candidates are selected from the pool of Early Career awardees
    - http://science.energy.gov/about/honors-and-awards/pecase/

HEP Early Career General Observations

- **Reviewers often look for innovative proposals**
  - Usually something a bit off the beaten track that the PI can claim as their own
    - during preparation, PIs should address "why is it critical that I carry-out this research?"
  - Somewhat speculative but not too risky
  - Provide unique capabilities. What does not get done?
  - As awards span support for 5-years, address research plan over project period plus future directions
- **In experimental HEP proposals that are submitted to ECRP FOA**
  - Looking for a ***balanced*** program
    - strong physics effort and hardware project attached to an experiment (*e.g.,* Phase-1 upgrades or Phase-2 upgrade R&D, each aligned with U.S. program for LHC)
  - For searches, discuss discovery reach and not just "in the absence of signal, limit will be set."
- **Many lab and some university proposals suffered from "isn't the lab/project going to do that anyway?"**
  - Some proposals were clear efforts to start funding some project or R&D that HEP has not yet approved – "the camel's nose under the tent"
  - The theory lab proposals were questioned on cost-effectiveness
- **Prior to submission, applicants may want to seek guidance from senior faculty and/or staff while preparing proposals (including budget material)**
- **Because different reviewers weigh the criteria differently (or have their own physics biases) there is a larger spread in panel rankings**

Early Career Selection Procedure

- FY14 Early Career program had 75 HEP proposals submitted
- Implemented two-step merit review process during FY14:
  - Stage 1: three or four specialized written reviews collected for all candidates, followed by down-select of up to top five (some flexibility allowed) per research thrust
    - Energy, Intensity, and Cosmic Frontiers, Advanced Accelerator R&D, Detector R&D, and Theory
  - Stage 2: panel review of top 26 proposals, with a single panel evaluating all proposals together. Each panel member provided DOE HEP with his or her top ten proposals across all research thrusts.
- Changes relative to the previous year [FY13]:
  - Lab and university proposals reviewed together
  - Theory, accelerator, and experimental HEP thrusts reviewed together
  - Common two-step procedure employed for all thrusts
  - All proposals reviewed, but only "top third" received panel consideration. Panel pool ~ 5× award total.

HEP Early Career FY10-14 Demographics

L = National Laboratory Proposal; U = University Proposal

Subprogram Awards	FY10 (L/U)	FY11 (L/U)	FY12 (L/U)	FY13 (L/U)	FY14 (L/U)	Total (L/U)
Energy	3 (1/2)	3 (1/2)	1 (0/1)	2 (0/2)	2 (1/1)	11 (3/8)
Intensity	2 (1/1)	1 (0/1)	3 (2/1)	1 (0/1*)	1 (1/0)	8 (4/4)
Cosmic	2 (0/2)	3 (2/1)	3 (1/2)	2 (1/1)	1 (0/1)	11 (5/6)
HEP Theory	6 (1/5)	4 (0/4*)	3 (0/3)	3 (1/2)	1 (0/1)	17 (2/15)
Accelerator	1 (1/0)	2 (2/0)	2 (1/1)	1 (0/1)	1 (1/0)	7 (5/2)
HEP Awards	14 (4/10)	13 (5/8)	12 (4/8)	9 (2/7)	6 (3/3)	54 (18/36)
Proposals	154 (46/108)	128 (43/85)	89 (34/55)	78 (29/49)	75 (35/40)	524 (187/337)

* Funded by DOE Office of Basic Energy Sciences (BES) as an EPSCoR [Experimental Program to Stimulate Competitive Research] award with grant monitored by DOE Office of High Energy Physics (HEP).

- **Early Career Research Program has become even more competitive**
  - Congress enacted legislation requiring SC grants of less than $1,000K to be fully funded in the year the award is issued
    - required university Early Career grants awarded this year to be fully-funded from FY14 budget
  - Award rate across Office of Science is now ~5%
- **Given reduced success rates, PIs also encouraged to apply to comparative review FOA**
  - May submit proposals with similar research scope to both FOAs while complying with requirements of each FOA — *for e.g.,* page limits, appendix material, …

ACCELERATOR STEWARDSHIP FOA

How Does Accelerator R&D Stewardship fit in HEP?

- Accelerator R&D develops basic science and technologies needed to design, build, and operate state-of-the-art accelerators
  - accelerators are essential for making new discoveries in HEP
  - and for serving a broader community
    - discovery science
    - industry
    - medicine
    - defense and security
    - energy and environment

$\Rightarrow$ **Stewardship**

- HEP has historically considered the broader needs of discovery science in defining its R&D portfolio
  - but not so much the other communities
- Nonetheless, there is already a strong connection between current R&D thrusts and broader stewardship program needs

Mission of Accelerator Stewardship

- **Mission:** to support fundamental accelerator science and technology development of relevance to many fields and to disseminate accelerator knowledge & training to the broad community of accelerator users and providers.
- Carrying out this new mission (*in addition to carrying out the present HEP programmatic R&D effort*) will be accomplished through:
  - Facilitating access to national laboratory accelerator facilities and infrastructure for both industrial and other U.S. government agency users/developers of accelerators and related technology
  - Working with accelerator user communities and industrial accelerator providers to develop innovative solutions to critical problems
    - to the benefit of both the broader user communities and the DOE discovery science community
  - Serving as a catalyst to broaden and strengthen the community that relies on accelerators and accelerator technology
- Strategic Plan sent to Congress October 2012

Accelerator Stewardship Program Startup

- **In its initial year (FY 2014), Accelerator Stewardship begins with redirected funding**
  - **selected university grants having broad impact beyond HEP**
  - **support for Brookhaven-ATF user facility**
  - **some limited new activities**
    - ***e.g.,* facilitating access to SC accelerator test facilities by "non-traditional" users**

- **In FY 2015 and beyond**
  - **new grant applications will be sought, particularly along the Stewardship thrusts**
    - **Laser Technology**
    - **Ion-Beam Technology for medicine**
    - **Energy & Environment applications**
  - **applications invited through FY15 Accelerator Stewardship FOA**
    - **LOI [required] Due Date: July 3, 2014 at 5 pm**
    - **Encourage/Discourage Response: July 10, 2014 at 5 pm**
    - **Application Due Date: September 4, 2014 at 11:59 pm**

Five Criteria for "Good" Accelerator Stewardship Activities

- **The application must involve accelerators *or* accelerator-related technologies having synergy with and benefitting the primary HEP mission**
- **There must be non-trivial intellectual involvement of the institution**
  - ***Good*: Build an accelerator technology component (usually Work For Others)**
  - ***Better*: Design an accelerator technology component (possibly Work For Others)**
  - ***Best*: Design, build, and test an accelerator technology component (Stewardship)**
- **The activity must be reasonably consistent with the mission of the institution, and minimally impact the primary SC program**
  - ***Good*: Activity maintains**
  - ***Better*: Activity expands**
  - ***Best*: Activity develops new**

  } core skill or facility needed for the mission
- **The institution must arguably be the best provider* of the capability or service**
  - ***Good*: Institution's capability is not unique, but institution is close to customer**
  - ***Better*: Institution's capability is leading, and institution is close to customer**
  - ***Best*: Institution is the only possible provider**
- **The customer benefiting from the stewardship activity must endorse the goals**
  - ***Good*: Customer participates in discussion of task definition, writes letter of support**
  - ***Better*: Customer and institution partner, some cost sharing from customer (*e.g.,* 1:10)**
  - ***Best*: Customer and institution partner, significant cost sharing from customer (*e.g.,* 1:1)**

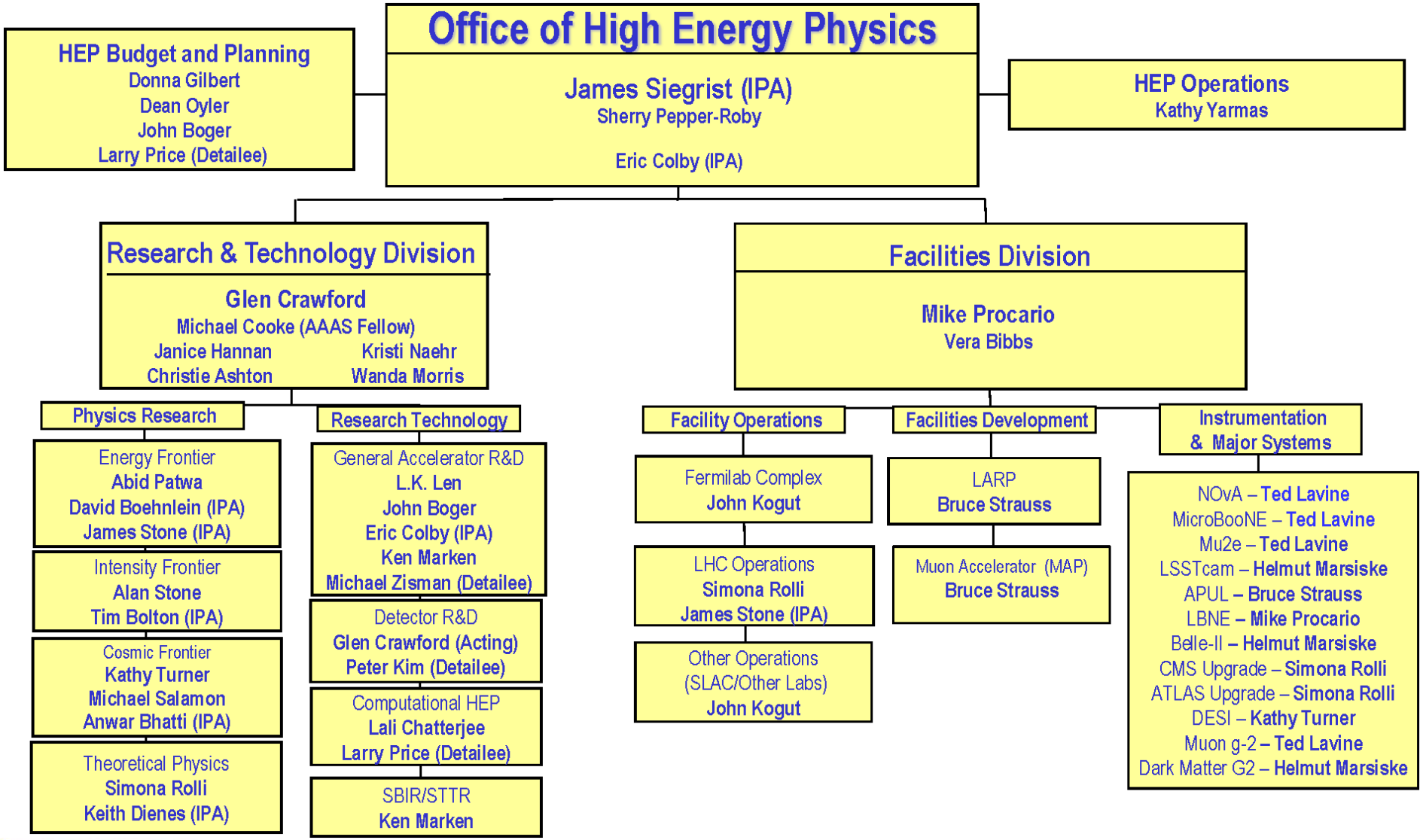
*and must not compete with an existing business

Closing Remarks

- Different opportunities exist for PIs to apply for a grant award through DOE/HEP
- For funding to support HEP research programs, emphasis is placed on applying through the annual comparative review process
  - In all cases, encourage PIs to read and comply with the requirements and information — including the program scope — contained in the FOAs
- For the individual FOAs, DOE also encourages PIs to register in all systems as soon as possible
  - *E.g.,* in Portfolio Analysis and Management System (PAMS)
  - PIs are also encouraged to submit letters of intent (where applicable) and applications well before the deadlines
- While working with your institution's Sponsored Research Office (SRO) during submission of proposal, please ensure that application is submitted to correct FOA #
- Due to the limited time here, encourage PIs to view statistics of grant awards and declinations from the FY14 Comparative Review process — provided in back-up slides
- For programmatic questions, feel free to discuss further with individual DOE PMs

REFERENCE SLIDES

DOE Office of HEP Organization



Windows of Opportunity to Apply

PIs Prepare/Submit Early Career Research Program (ECRP) Applications

PIs Prepare/Submit Comp. Review (CR) Application

Comp. Review Applications Processed at DOE for Review

General Annual SC Solicitation [Open FOA]

General Annual SC Solicitation [Open FOA]

July 14

Su	M	Tu	W	Th	F	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August 14

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31						

September 14

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October 14

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November 14

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December 14

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14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

ECRP Applications Reviewed/Processed at DOE

CR Award *or* Decline Decisions and PIs Submit Revised Budgets to DOE

CR Grant Begins

Supplements from General SC Solicitation Processed at DOE

General Annual SC Solicitation [Open FOA]

January 15

Su	M	Tu	W	Th	F	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February 15

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15	16	17	18	19	20	21
22	23	24	25	26	27	28

March 15

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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 15

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12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 15

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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 15

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21	22	23	24	25	26	27
28	29	30				

ECRP Grant Begins

PIs Prepare Next Year's ECRP Applications

PIs Prepare Next Year's CR Applications *(if applicable)*

General Annual SC Solicitation [Open FOA]

July 15

Su	M	Tu	W	Th	F	Sa
			1	2	3	4
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August 15

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16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

Sept 15

Su	M	Tu	W	Th	F	Sa
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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

- Given timeline for PIs to prepare applications and for DOE to process these, institutions typically receive grant awards during months of ~April–June of a given fiscal year
  - Research supplements are typically processed after Comparative Review applications, and hence, during the ~end-April– July period
  - PIs will need to plan appropriately; or proposals may end up being considered for the following fiscal year

Purpose

- In FY2012, DOE/HEP started a process of comparative grant reviews for research grants which were scheduled for renewal (+ any new proposals as desired)
- Previously all HEP proposals responding to the general Office of Science (SC) call were individually peer-reviewed by independent experts.
- This change in process has been recommended by several DOE advisory committees, most recently the 2010 HEP Committee of Visitors (COV):
  - *"In several of the cases that the panel read, proposal reviewers expressed negative views of the grant, but only outside of their formal responses. Coupled with the trend in the data towards very little changes in the funding levels over time, this suggests that grants are being evaluated based on the historical strength of the group rather than the current strength or productivity of the group. This is of particular concern when considering whether new investigators, new science, or high-risk projects can be competitive. Comparative reviews can be a powerful tool for addressing these issues and keeping the program in peak form."*
  - Recommendation (2010 COV): Use comparative review panels on a regular basis.
  - Recommendation (2013 COV): Continue comparative reviews. Augment with independent mail-in reviews.
- Currently with the upcoming FY15 FOA, we will be in the 4th round of annual comparative review process
  - Implies that those with typical 3-year grant will be reviewed twice since initiating the process
- The goal of this effort is to improve the overall quality and efficacy of the HEP research program by identifying the best proposals with highest scientific impact and potential

FY2014 HEP COMPARATIVE REVIEW STATISTICS

FY14 Submitted Proposals

- For the FY 2014 cycle, 141 proposals requesting support totaling $196.138M in one or more of the 6 HEP subprograms were received by the September 9, 2013 deadline in response to the Funding Opportunity Announcement (FOA) *"FY 2014 Research Opportunities in High Energy Physics"* [DE-FOA-0000948].

- 8 proposals were withdrawn by the respective sponsoring institutions:
  - 7 were duplicate submissions + 1 was withdrawn at request of the PI

- After pre-screening all incoming proposals for responsiveness to the subprogram descriptions and for compliance with the proposal requirements, 9 were declined before the competition:
  - 2 proposals declined without review for reasons of exceeding page limits
    - hard page limits and other requirements for application are given in FOA; Proposals not respecting the page limits or other requirements were NOT reviewed.
  - 3 were outside the scope of DOE/HEP supported research
  - 4 proposals were non-responsive
    - 3 proposals on development of future earth and human ecosystems ($0 requested)
    - 1 proposal on starting a non-profit organization ($0 requested)

- PIs with proposals that were rejected for "technical" reasons could re-submit to general annual DOE/SC solicitation

FY14 Reviewers & Panels

- For the FY14 HEP Comparative Review process, 124 proposals were reviewed, evaluated and discussed by several panels of experts who met in the:

Research Subprogram	Panel Deliberations	# of Total Proposals Reviewed [includes proposals containing multiple subprograms]
Intensity Frontier	November 12-13, 2013	26
HEP Theory	November 13-15, 2013	33
Accelerator Science and Technology R&D	November 14-15, 2013	29
Particle Detector R&D	November 18-19, 2013	14
Energy Frontier	November 19-20, 2013	20
Cosmic Frontier	November 20-22, 2013	28

- 16 of the proposals requested research support from two or more of the six sub-programs, e.g. “umbrella” proposals, in which case the proposal was sent in its entirety to all relevant panels.
  - However, the panels were asked to explicitly compare and rank only the section(s) of the proposal relevant to the sub-program they were reviewing.
- Each proposal which satisfied the requirements of the solicitation was sent out for review by at least three experts.
  - 127 reviewers participated in the review process. In cases where there were proposals on similar topics, reviewers were sent multiple proposals.
  - 571 reviews were completed with an average 4.6 reviews per proposal

FY14 Review Data — by Proposal

	HEP Subprogram						HEP Total
	Energy	Intensity	Cosmic	Theory	Acc. R&D	Det. R&D	
Received	20	26	29	33	31	16	129
Declined Without Review	0	0	1	0	2	2	5
Reviewed	20 (7)	26 (11)	28 (14)	33 (17)	29 (20)	14 (4)	124 (71)
Funded	16 (4)	17 (3)	19 (5)	16 (1)	11 (4)	7 (0)	62 (17)
Declined	4 (3)	9 (8)	9 (9)	17 (16)	18 (16)	7 (4)	62 (54)
"Success Rate" (%) (Previous/New)	80	65	68	48	38	50	50 (85/24)

NOTES:

- **Single proposals with multiple research thrusts are counted multiple times [1 /thrust]**
- ( ) indicates number of proposals from research PI/groups that did not receive DOE HEP funding in FY13.
- "Success Rate" is = # Funded/ # Reviewed.
- Most proposals are not fully funded at the "requested" level.
- About 43% of the proposals reviewed were from research groups that received DOE HEP funding in FY13.
- Overall success rate of reviewed proposals for previously (newly) funded groups was 85% (24%).
- *For Ref:* FY13 Comp. Review proposal success rate was 62%; previously (newly) funded was 78% (34%).

FY14 Declined Proposals

- **Based on the reviewers' assessments, the comparison and ranking of the proposals by the panel(s) within the subprogram(s), evaluations of the needs of the HEP research program by the respective program managers, the potential impact of the proposed work, the proposals' responsiveness to the FY14 HEP Comparative Review FOA:**
  - **62 proposals were recommended for declination**
  - **declinations primarily due to**
    - **proposals and/or senior investigators received poor merit reviews and/or reviewers noted that the proposed research would not have high impact when compared to others in the same subprogram**
    - **proposals were seeking support for research currently not within the DOE/HEP program**
    - **budgetary constraints**

FY14 Review Data — by Senior Investigator

	HEP Subprogram						HEP Total
	Energy	Intensity	Cosmic	Theory	Acc. R&D	Det. R&D	
Received	51	57	40	89	40	29	285
Declined Without Review	0	0	2	0	2	4	8
Reviewed	51 (9)	57 (20)	38 (19)	89 (21)	38 (24)	25 (6)	277 (97)
Funded	46 (6)	41 (9)	25 (6)	62 (5)	11 (4)	14 (2)	178 (31)
Declined	5 (3)	16 (11)	13 (13)	27 (16)	27 (20)	11 (4)	99 (66)
"Success Rate" (%) (Previous/New)	90	72	66	70	29	56	64 (82/32)

NOTES:

- ( ) indicates number of senior investigators that did not receive DOE HEP funding in FY13.
- "Success Rate" is = # Funded/ # Reviewed.
- Overall success rate for previously (newly) funded DOE HEP PIs was 82% (32%).
- *For Ref:* FY13 Comp. Review overall PI success rate was 73%; previously (newly) funded PIs was 85% (35%).

FY14 Review Data

Jr. Faculty and Research Scientists (RS)

	Junior Faculty		Research Scientists	
	Total # Jr. Faculty Reviewed (New)	# Jr. Faculty Funded (New)	Total # Res. Scientists Reviewed (New)	# Res. Scientists Funded (New)
Energy Frontier	11 (8)	8 (6)	8 (0)	6 [a] (0)
Intensity Frontier	14 (7)	11 (4)	9 (2)	5 (0)
Cosmic Frontier	9 [b] (9)	1 (1)	9 (0)	7 (0)
Theory	4 (4)	2 (2)	1 (1)	0 (0)
Accelerator R&D	2 (2)	1 (1)	37 [c] (19)	9 (1)
Detector R&D	1 (1)	1 (1)	6 (3)	4 (1)
HEP Total:	41 (31)	24 (15)	70 (25)	31 (2)

NOTES:

[a] DOE worked with US-CMS or US-ATLAS management and the university PIs to provide guidance on the scope and FTE levels related to Research Scientists prior to PI's submission of application to the FOA. (Of the 2 RS not funded, 1 is planned to be supported in FY14 through the LHC Operations program.)

[b] Several Jr. PIs did not review well due to not having an established track record and/or were not fully engaged in the collaboration model of the proposed experiment/DOE Cosmic Frontier research program.

[c] Includes multiple proposals each with different research scope submitted by certain institutions, which contained multiple corresponding requests for support of the same RS.

FY14 Proposals *vs.* FY13 Status

	New Proposals		Efforts funded in FY13				
	Fund	Decline	Up	Flat	Down	No-Fund	Total
Energy Frontier	4	3	9	0	3	1	20
Intensity Frontier	3	8	7	1	6	1	26
Cosmic Frontier	5	9	8	2	4	0	28
Theory	1	16	1	1	13	1	33
Accelerator R&D	4	16	4	0	3	2	29
Detector R&D	0	4	4	0	3	3	14
HEP Total:	**17**	**54**	**21**	**4**	**20**	**8**	**124**

- **HEP Total is weighted since single proposals with multiple research thrusts ("umbrella") are counted multiple times [1 /thrust].**

- New/Fund = HEP research effort was not funded at this institution in FY13 but is funded in FY14.
- New/Decline = HEP research effort was not funded at this institution in FY13 and is not funded in FY14.

- **Up = FY14 funding level +2% or more compared to FY13.**
- **Flat = FY14 funding level within ±2% of FY13.**
- **Down = FY14 funding -2% or more compared to FY13.**
- **No-Fund = No funding is provided in FY14. This effort was funded in FY13.**

FY14 Review Data — Full Forward Funding

Research Subprogram	# Proposals Reviewed	# Proposals Funded	# Multi-Year Grant Awards Fully Forward Funded (Period > 1 year)	$k TOTAL: FY14 (1st year of project period)	$k TOTAL: FY14 (over *entire* multi-year project period for Fully Forward Funded grants)
Energy Frontier	20	16	1	113	230
Intensity Frontier	26	17	2	302	722
Cosmic Frontier	28	19	9	810	1,970
Theory	33	16	2	390	780
Accelerator R&D	29	11	7	1,330	2,910
Detector R&D	14	7	2	236	486
HEP Total:	124	60	23	3,181	7,098

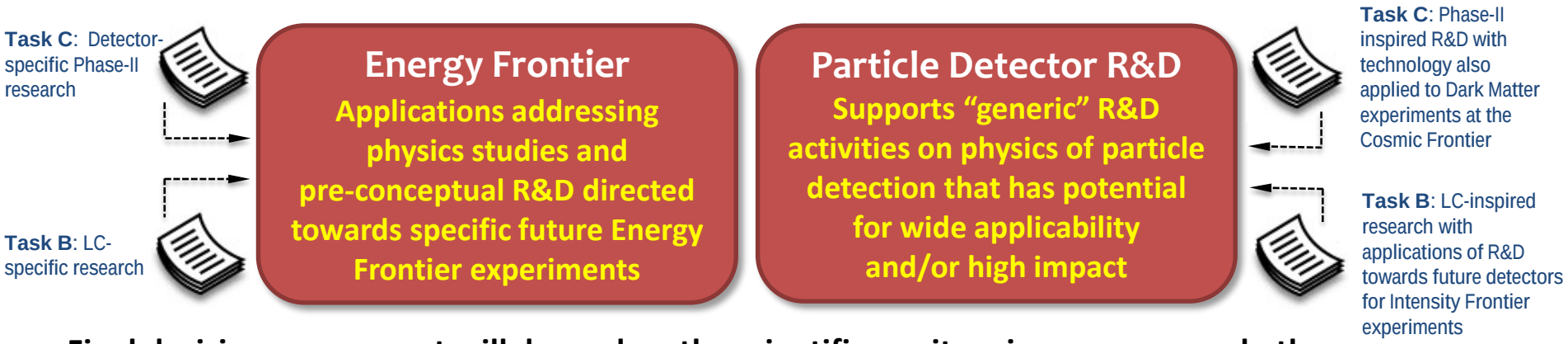
NOTES:

- **# Multi-Year Grant Awards Fully Forward Funded** = total number of funded proposals that received a HEP comparative review grant where Section 310(D) of 2014 Consolidated Appropriations Act (CAA) applies. The approved project period for a grant is greater than 1 year.
- **$k TOTAL: FY14 (1st year of project period)** = funds applied only towards the 1st year of the project period. Reflects the total amount allocated for up to 12-months of Fiscal Year 2014 for these multi-year grant awards.
- **$k TOTAL: FY14 (over entire multi-year project period for Fully Forward Funded grants)** = total amount provided from the FY14 HEP budget for fully forward funded grants for the entire duration of the multi-year project period.

- **Section 310(D) of 2014 CAA applied to ~38% of the proposals funded in the FY14 HEP Comparative Review process.**
- **Difference between the last two columns provides a measure of the "effect" of FY14 fully forward funded HEP comparative review grant awards = $3.917M total.**
- ***For Ref:*** **Out of 124 proposals, total # of incoming multi-year proposals with *budget requests* over a project period < 1M$ was 77 proposals.**

Future Lepton Colliders and LHC Phase-II

- **Guidance for proposals on e.g., future lepton colliders (LC) and/or LHC Phase-II detector upgrades**
  - **General approach to such R&D proposals, where LC and Phase-II are common examples**
  - **Proposals in such research areas may be submitted in addition to a group's research activities on one of the LHC experiments (CMS or ATLAS)**
  - **If so, proposals encouraged to address project narrative separately – one for each research area as part of an "umbrella" proposal on multiple research tasks**
    - ***for e.g.,* Task A devoted to ATLAS research efforts, Task B on LC, etc…**
    - **as specified in Section IV of FOA, list all PIs and budget info for *each* area in the 'Cover Page Supplement for Proposals with Multiple Research Areas or Thrusts' material of the proposal**
    - **proposal must comply with all FOA requirements, including page limits**
  - **Detector R&D may support some level of engineering/M&S whereas Energy Frontier typically does not**
  - **Depending on scope of work described in these tasks, DOE Program Managers will assess which Panel (*i.e.,* Energy Frontier or Particle Detector R&D) to solicit reviews**



- **Final decisions on support will depend on the scientific merit review process, and other programmatic and budgetary factors**

Programmatic Elements of Stewardship

- Immediately augment existing programs to provide opportunities for industrial and other federally funded users at DOE facilities by increasing support staff and funding for test facilities
  - 2012: Completed survey of available national lab infrastructure and capabilities

- In the mid-term (2–5 years), identify a few topical areas with high impact for focused work. Anticipated areas are:
  - improved particle beam delivery and control for cancer therapy facilities
  - laser development addressing the needs of the accelerator community — *i.e.,* high peak power, high average power, and high electrical efficiency
  - energy and environmental applications of accelerators. Each topical area will have a stakeholder board.

- In the longer term (5–10 years), select additional topical areas for focused work
  - new stakeholder boards will be created as topics are identified

- In steady state, SC/HEP goal is to support at least 3 topical areas at any given time

Stewardship, SBIR/STTR, and WFO

	Accelerator Stewardship	SBIR/STTR & TTO	WFO
Mission	• Open Lab Facilities • Apply accelerators to solve challenging problems	• Move technology towards market • Stimulate small businesses	• Customer-defined, as consistent with lab's mission
Technical & Manufacturing Readiness	TRL 1-6 MRL none	Phase I: TRL 2-3 Phase II: TRL 3-4/MRL 1-4	TRL ~2 to 9 MRL 1 to ~8
Time Horizon	Up to ~10 years	9 mos/24 mos	Customer-defined
Topic Selection	Stakeholder Boards	Institution input, DOE selects	Institution Selects
Progress Review	Community Workshops Grant Reports Contact with users (UECs)	Grant Reports	Customer-defined metrics
Funding Mechanism	Peer-reviewed FOAs	Peer-reviewed FOAs	WFOA/CRADA
Intellectual Involvement of Lab	Significant	(no requirement)	(no requirement)