

Topical Discussions #1: University Issues

- Funding Trends.
- Impact of Forward Funding.
- Early Career vs. Comparative Review.
- Research Scientists.
- Research Support vs. Project or Operations support.
- Financial Assistance Limitations.
- “Stove-piping”.
- Not covered:
 - Technical infrastructure at universities. See Detector R&D talk by Glen Crawford.
 - Lab vs. University roles and responsibilities. This is under study now by HEPAP.
- Others? Bring up in Q&A at end.
 - See also talks by individual program managers and other topical discussion sessions scheduled today (Tuesday, June 17, 2014).



HEP Budget Impacts: FY2015

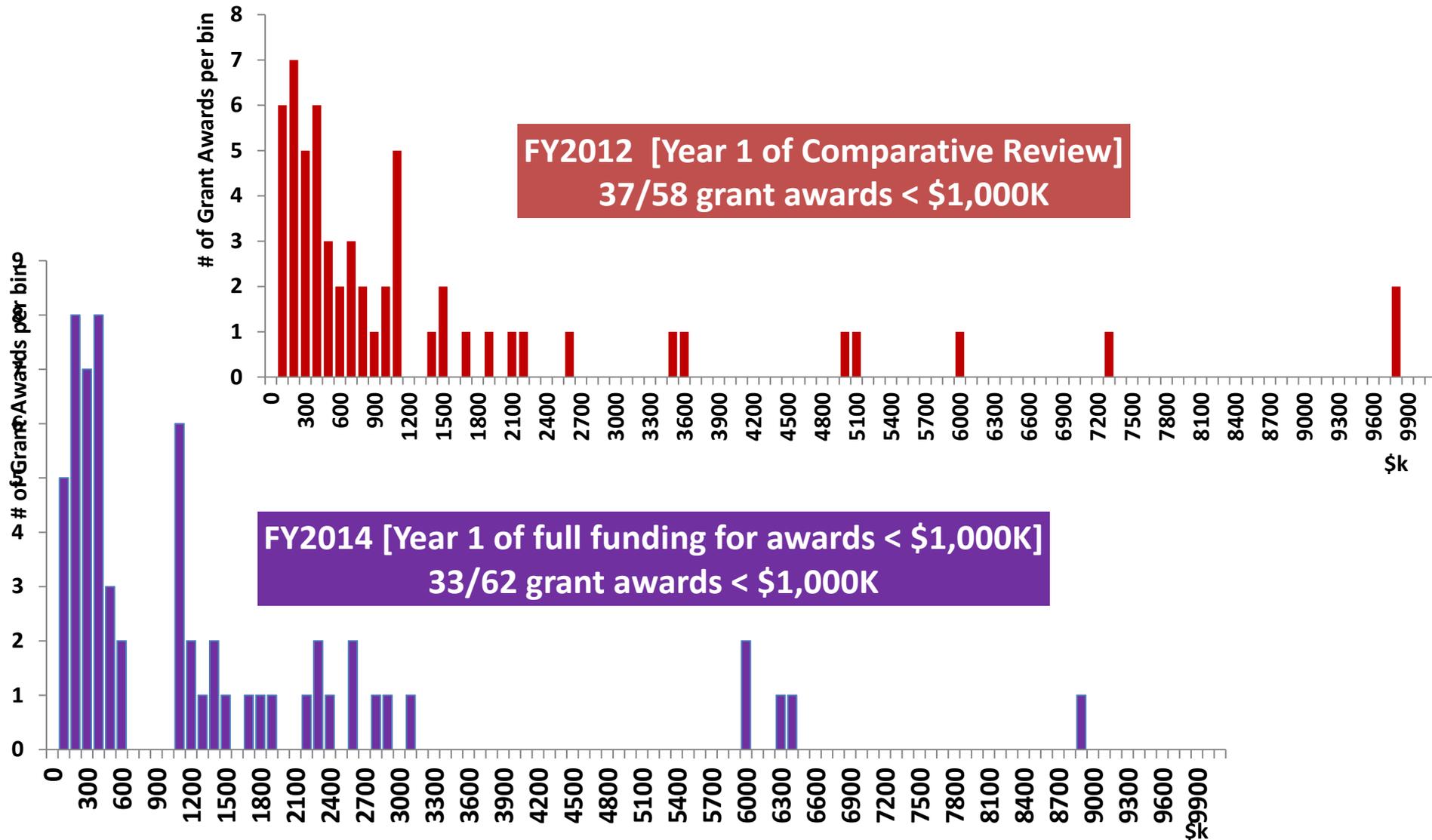
- **Note HEP FY15 Request was developed before P5 Plan was announced, so there was little ammunition available to argue for higher budget levels**
 - FY15 Request is slightly below P5 Scenario A level.
 - FY14 Appropriation is above Scenario B.
 - It is impossible at this stage to know which Scenario we are working in
- **But since we have already been working in this budget framework, only relatively small adjustments are needed for FY15 Request to “fit” P5 plans**
 - We have communicated these adjustments to Congress at their request
 - We have also made the arguments for Scenario B funding levels
 - We expect House and Senate mark-ups to be released soon
- **We hope P5 Plan + positive community reaction will help support more robust HEP budget generally**
 - Users groups and DPF have been very active in supporting the plan
 - How much of the near-term plan can be achieved will depend largely on FY15 Appropriation

Effects of Forward Funding

- **Congressional mandate as of 2014: all DOE Office of Science grants of \$1,000K or less over the entire project period of the grant award must be fully funded in the year the award is issued (“forward” or “full” funding).**
 - This includes university Early Career Research Awards.
- **This potentially leads to new funding stresses:**
 - Example 1: PI-A and PI-B each receive a \$900K (over the three-year period) individual grant in FY2014. The cost to HEP in FY2014 is \$1,800K.
 - Example 2: PI-C and PI-D together receive \$1,800K (over three-year period) in FY2014 via an “umbrella” (*i.e.*, a proposal with multiple research thrust). The cost to HEP in FY2014 is \$600K.
- **Stay or re-merge into an “umbrella” grant, or split into single PIs?**
 - HEP cannot require what type of proposal category (standalone vs. umbrella) PIs submit. In all cases, each proposal must comply with the requirements contained in the FOA in order to be reviewed.
 - PIs are encouraged to evaluate the type of proposal to submit in order to determine if the scientific and technical merits of the overall application can be strengthened as a result.



Distribution of Award Sizes in FY2012 vs. FY2014



Early Career vs. Comparative Review

- **All of these options are allowed for eligible faculty members:**
 1. Apply to Early Career and Comparative Review FOAs using the same proposal or different proposals while complying to requirements of each FOA.
 2. Apply to Early Career FOA only.
 3. Apply to Comparative review FOA only.
 4. Do any of the above items 1-3 plus submit an application to the NSF CAREER program, or any other federal or non-federal program, with the same proposal or different proposals.
- **Note that if the same proposal is submitted to several FOAs or other federal programs, only one instance of it can be funded (by law).**
- **Note that the success rate in the Early Career programs is 5-10%, and that at most three attempts can be made at winning one of these awards.**
 - It can be better to sit out a year if the time can be spent preparing a stronger proposal.
 - Most junior faculty will not be funded by an Early Career grant.
- **See Abid Patwa's talk on FOAs and Alan Stone's Q&A session on grants for additional details.**

Research Scientists (RS)

- **HEP has no policy, goal, or desire to systematically eliminate university research scientists through the comparative review process.**
- **The university research scientist community includes physicists who possess extraordinary ability and talent that support the HEP mission in many ways.**
- **However, the research scientist population is quite heterogeneous. The seniority of members of this community, term appointments, and the overall costs to HEP, warrant review at the individual level.**
 - Following a 2013 HEP COV recommendation, HEP is considering allowing the inclusion of a narrative for individual Research Scientists that does not count against the per-PI page limits.
 - See Abid Patwa's talk for more details.
- **HEP views that research scientists are expected to bring scientific capabilities to the program significantly beyond those provided by a post-doc.**
- **Funding decisions are made case-by-case, based on merit review, programmatic considerations, and financial constraints.**
 - This is true as well for PIs that are reviewed.
 - And as for PIs, funding commitments do not extend beyond the duration of a particular grant.



Notes on Research vs. Project/Operations

- **HEP expects PIs to take responsibility for managing professional development opportunities and risks for university personnel associated with project/operations support.**
 - This applies especially to post-docs.
- **Project/Operations support is directed by project/operations needs as determined by PM/OM.**
 - Projects or Operations support should not be used as a vehicle to add extra post-docs or research scientists to a group.
 - No entitlements exist.
- **Research support is determined by comparative peer review process.**
 - Projects or Operations should not be used as a way to evade peer review outcomes for research scientists.
 - Transfer of research scientist or post-doc support from project to research requires HEP program manager concurrence.
 - No entitlements exist.



Research Support vs. Project/Operations Support

Project or Operations support flows through the HEP Facilities Division

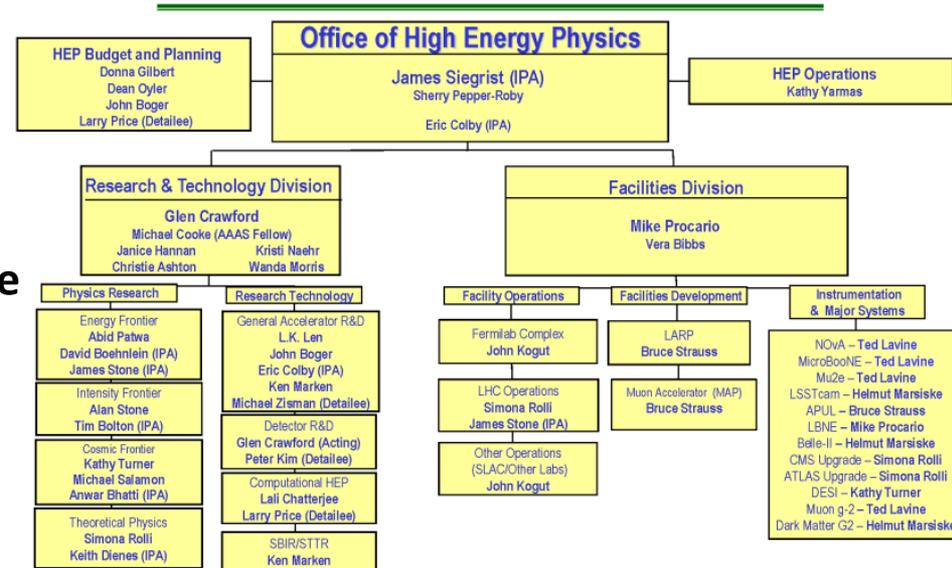
- A supported RS reports to a collaboration’s Project Manager (PM) or Operations Manager (OM).
- The PM/OM evaluates the RS contributions, guided by project/operations reviews supervised by a HEP Facilities Division Manager.
- The PM/OM makes funding decisions following budget guidance provided by HEP.

University research support flows through the HEP Research and Technology Division

- A supported RS reports to the university PI.
- The PI evaluates the RS contributions, guided by comparative peer reviews supervised by a HEP Research and Technology Division program manager.
- DOE Program Managers make funding decisions based on merit reviews, programmatic considerations, and budget constraints.

Research Scientist Support Example (Applies to all personnel receiving project support.)

HEP Organization Chart



Office of Science



U.S. DEPARTMENT OF
ENERGY

Office of
Science

Financial Assistance Limitations

- **Guidelines on budget priorities for comparative review process:**
 - HEP tries to optimize the number of research personnel supported by its financial assistance awards. As such, HEP intends to reduce support for PIs, co-PIs, and co-Investigators before considering any reduction in support for postdocs, graduate students, travel, or materials and supplies. Any recommended reduction in support will be made through a reduction in the supported level of effort with an attendant reduction in cost.
- **This means:**
 - HEP may not be able to provide two full months of summer salary .
 - If, for example, only 1.5 summer months support is provided, PIs may seek support from other entities for 0.5 summer month of support and adjust their FTE commitments accordingly.

“Stove-piping”

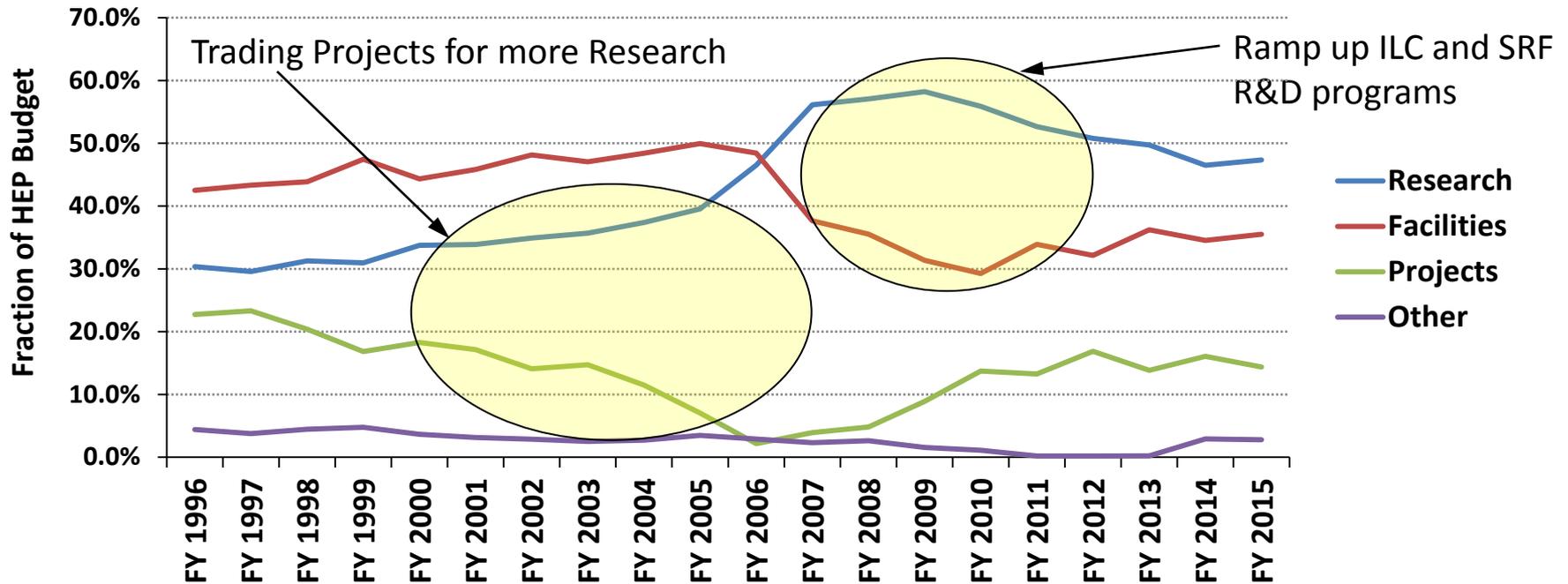
- **Some in the HEP community believe that the frontier organization forces PIs towards over-specialization (“stove-piping”, a.k.a. “cylinders of excellence”).**
- **Real evidence for this effect is sparse. Most PIs appear to self-organize into the HEP frontiers, and those that try to cross frontiers do OK.**
 - For example, in FY2014 comparative review under the Intensity Frontier subprogram, only 9/57 PIs applied through proposals across two different HEP frontiers;
 - And 6/9 of these received funding from both frontiers
 - It is possible (but not known) that more PIs may feel discouraged from trying multi-frontier areas than this example indicates.
- **A challenge for HEP in addressing this issue is that the peer review panels tend to weight full-time effort in a particular research area or thrust very highly.**
- **The new “science driver” based description of the program from P5 should help, but the review process will continue to be organized by frontiers.**
 - Individual subpanels will continue to include experts from cross-frontier research areas, and HEP PMs will provide relevant details to subpanels on any PI planning to conduct research across multiple areas. See Abid Patwa’s FOA talk.
 - PIs planning to conduct research across multiple research areas should refer to the guidelines in the FOA in narrating the full scope of such plans and any relevant timelines.



Backup



Funding Trends



- **P5 Recommendation 5: Increase budget fraction invested in the construction of projects to 20-25% range to enable new initiatives (e.g., HL-LHC upgrades, LSST, LBNF, ...).**
- **In its prioritization process, P5 adopted a guideline to limit reductions in research by not letting its budget fraction fall below 40% of the total HEP budget .**
 - Project support has been increased gradually to ~16% in part by reducing support in research at universities and labs to enable new experimental capabilities.
- **The strategy will be re-evaluated as HEP aligns with the P5 recommendations and out-year budgets are appropriated.**

Funding by Subprogram: HEP Energy Frontier

Funding (in \$K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request	Comment
Research	86,172	81,579	79,132	Redirect research to LHC detector upgrades
Facilities	63,274	73,108	74,507	
LHC Operations	56,912	56,774	55,522	US-CMS and US-ATLAS Operations Program
Projects	3,000 (a)	12,000 (a)	15,000	CMS and ATLAS Phase-1 Upgrades
<i>CMS Upgrade</i>	1,500	6,000	7,500	<i>First TEC request in FY15 (non-add)</i>
<i>ATLAS Upgrade</i>	1,500	6,000	7,500	<i>First TEC request in FY15 (non-add)</i>
Other	3,362	4,334	3,985	IPAs, Detailees, Reviews
TOTAL Energy Frontier	149,446	154,687	153,639	

TEC = Total Estimated Cost (typically refers to Capital Equipment expenses)

- **Reductions in research funding due to:**
 - **Completion of the Tevatron research program.**
 - **Reductions in research activities to support current and future experimental capabilities**
- **Offset by increase in funding for Phase-1 LHC detector upgrade activities (ATLAS, CMS).**

HEP Intensity Frontier

Funding (in \$K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request	Comment
Research	52,860	52,562	51,459	
Facilities	158,058	185,481	174,816	
<i>Expt Ops</i>	7,354	7,245	6,986	Offshore and offsite Ops
<i>Fermi Ops</i>	132,928	156,438	152,096	Full ops for NOvA
<i>B-factory Ops</i>	1,594	4,600	0	End of BaBar disassembly
<i>Homestake*</i>	14,000	15,000	15,000	
<i>Other</i>	2,182	2,198	734	GPE & waste management
Projects	63,494	37,000	24,970	
<i>Current</i>	52,794	27,000	19,970	Belle II ramp down
<i>Future R&D</i>	10,700	10,000	5,000	
TOTAL Intensity Frontier	274,412	275,043	251,245	

- **Reductions dominated by:**
 - Ramp-down of funding associated with current projects (particularly NOvA).
 - SLAC B-factory operations funding eliminated as planned disassembly work completed.
- **Partially offset by increase in funding for:**
 - Initial operations of upgraded NuMI beam for NOvA.
 - Refurbishment of portions of Fermilab accelerator complex
 - Support for R&D/fabrication of current/future experiments.

HEP Cosmic Frontier

Funding (in \$K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request
Research	48,652	62,364	48,553
Facilities	12,252	12,022	11,692
Projects	19,159	24,694	41,000
<i>Current</i>	9,500	23,200	41,000
<i>Future R&D</i>	9,659	1,494	0
TOTAL Cosmic Frontier	80,063	99,080	101,245

- Funding increases dominated by:
 - Ramp-up of the LSSTcam Major Items of Equipment (MIE) according to planned profile.
- Funding for research activities decreases
 - Redirected to R&D and planning efforts for next generation dark matter and dark energy experiments.



HEP Theory and Computation

Funding (in \$K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request	Comment
Research	63,198	59,670	57,850	
<i>Theory</i>	54,621	51,196	49,630	Follows programmatic reductions in Research
<i>Computational HEP</i>	8,577	8,474	8,220	As above
Projects	3,200	3,200	1,000	Transition year
TOTAL Theory and Comp.	66,398	62,870	58,850	

- Funding for Theoretical and Computational HEP research is reduced to offset increased investments in future facilities.



HEP Advanced Technology R&D

Funding (in \$K)	FY 2013 Actual	FY 2014 Enacted	FY 2015 Request	Comment
Research	110,802	105,141	96,849	
<i>General Accel R&D</i>	60,705	57,694	47,620	Shift effort to directed R&D
<i>Directed Accel R&D</i>	22,692	23,500	26,000	Need to meet deliverables
<i>Detector R&D</i>	27,405	23,947	23,229	
Facility Operations	31,489	17,150	17,393	
TOTAL Advanced Technology	142,291	122,291	114,242	

- Includes General Accelerator R&D (GARD), Directed Accelerator R&D, and Detector R&D.
- Research activities reduced to offset:
 - Increased project funding.
 - Shift towards more directed R&D activities to develop future experimental capabilities.

