

Report from the Executive Committee

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- USQCD All Hands' Meeting
- Jefferson Lab
- April 18-19, 2014



Activities and issues this year

- LQCD-ext is coming to end this year; LQCD-ext II is under review
- Budget profile
- SciDAC-3 for HEP ends in 2015, for NP in 2017
- USQCD organization
 - EC, SPC
 - SAB
 - Storage
- Evolving experimental and financial situation



LQCD-ext II project

- LQCD-ext, 2010-2014, is in its final year.
 - LQCD-ext + LQCD-ARRA: \$23 M over five years.
- LQCD-ext II is under review.
 - Proposal submitted, March 2013;
 - Science need review, November, 2013;
 - CD1 (preliminary cost and schedule), February, 2014;
 - CD 2/3 (final cost and schedule, permission to spend money), June, 2014.



LQCD-ext II project

- We were advised to request flat funding compared with LQCD-ext: \$23 M over five years, 2015-19.
- Reviews have been great.
 - “USQCD is unequaled in achievements in theoretical physics on a global scale.”, “case for continuing LQCD-ext is strong and [it] is well-aligned with the experimental programs.”, “a great experiment in the sociology of science.”, “recommendation is not to reduce the budget from the request.”

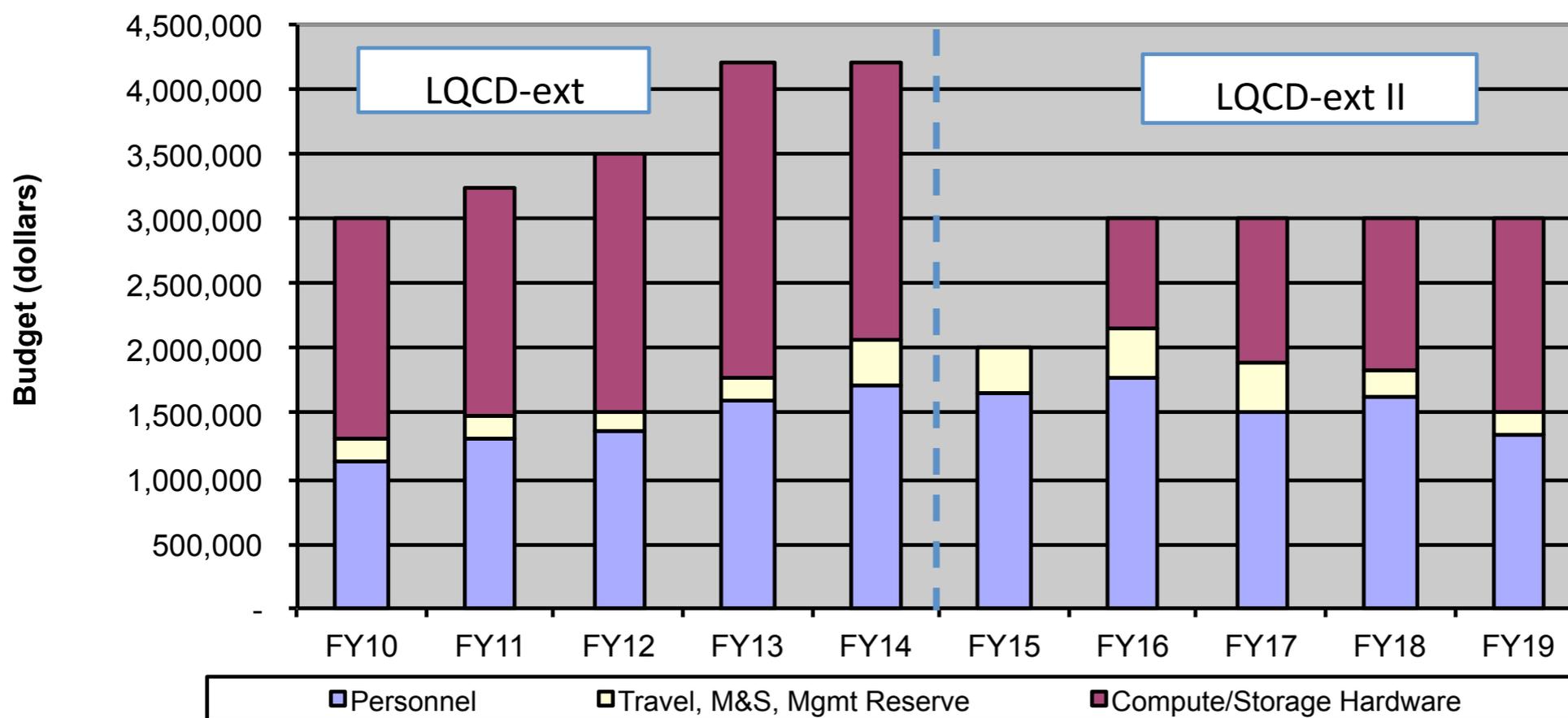


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- Result: budget will be reduced from the request:
 - Budget guidance, \$14-18 M.
- Not a complete shock
 - HEP is working to increase the size of its budget for projects; means research fraction has to decrease.
 - Painful consequences throughout HEP research.
 - NP budgets have also been bad for the last few years.



Combined Budget Profile (LQCD-ext & LQCD-ext II)



Budget scenarios

LQCD-ext II Budget and Computing Capacity Scenarios					
\$18M Total Project Cost					
	Hdwr Budget	Ops Budget	Total Budget	New Deployments	Delivered
Fiscal Year	\$M	\$M	\$M	TF	TF-years
2015	0.00	2.00	2.00	0	195
2016	1.61	2.39	4.00	107	185
2017	1.70	2.30	4.00	160	275
2018	1.84	2.16	4.00	244	475
2019	1.79	2.22	4.00	358	720
Total	6.94	11.06	18.00	869	1,850
\$14M Total Project Cost					
	Hdwr Budget	Ops Budget	Total Budget	New Deployments	Delivered
Fiscal Year	\$M	\$M	\$M	TF	TF-years
2015	0.00	2.00	2.00	0	195
2016	0.74	2.26	3.00	49	160
2017	0.99	2.01	3.00	93	190
2018	1.24	1.76	3.00	165	315
2019	1.33	1.67	3.00	250	480
Total	4.31	9.69	14.00	557	1,340
\$23M Total Project Cost - Original (Proposal)					
	Hdwr Budget	Ops Budget	Total Budget	New Deployments	Delivered
Fiscal Year	\$M	\$M	\$M	TF	TF-years
2015	2.63	1.85	4.48	165	270
2016	2.63	2.02	4.65	233	410
2017	2.63	2.07	4.70	330	650
2018	2.63	2.13	4.76	467	1,040
2019	2.63	2.18	4.81	660	1,560
Total	13.15	10.25	23.40	1,855	3,930

- Doe asked for planning for three 5-year scenarios: \$23 M, \$18 M, \$14 M
- It looks like we'll be at the lowest one for now.
- The offices may do more later if they can.



Budget scenarios

- Most likely, there will be negligible expansion of USQCD hardware in 2015-16.
- How should this affect our program.
- In these days of desperate shortage of funds, it's essential to keep utilization at 100%.
 - If we don't, we look unserious to the people of whom we are asking more money.
 - We make our best friends in Germantown who are asking for more money for us look foolish.



SciDAC-3 software

- HEP SciDAC-3 three-year grant ends in 2015;
NP SciDAC-3 five-year grant ends in 2017.
- HEP SciDAC will be re-competed next year. HEP is weighing the possibilities.



Committee Members

- Current Executive Committee is Paul Mackenzie (chair), Rich Brower, Norman Christ, Frithjof Karsch, Julius Kuti, John Negele, David Richards, Martin Savage, and Bob Sugar.
 - The Executive Committee has been rotating at the rate of about one turnover/year for the last few years. We expect to more or less continue that rate.
- Current Scientific Program Committee is Robert Edwards (chair), Will Detmold, Taku Izubuchi, Doug Toussaint, Peter Petreczky, Ruth Van de Water, Anna Hasenfratz
 - Simon Catterall→Anna Hasenfratz



Science Advisory Board

- We appointed a Science Advisory Board for the first time this year.
 - Brendan Casey (Fermilab, g-2), Marina Artuso (Syracuse, LHC-b), Jesse Thaler (MIT), David Kaplan (U. Washington), Curtis Meyer (Carnegie Mellon, GlueX), Nu Xu (LBL, Star), Volker Koch (LBL).
- At the beginning of each year's allocation process, they will be asked to
 - Comment and suggest revisions of our general scientific goals as stated in our white papers and recent proposals.
 - Read and comment on the year's physics proposals and allocations. (They have just done this.)



SAB comments on program

Summary is posted on the USQCD web site at <http://www.usqcd.org/documents/14SABcomments.pdf>

- Board members to a large extent reported favor with our program.
- Some reviewers had very specific recommendations that were useful
 - as food for thought. E.g., the lattice HEP program would be stronger if it reflected more faithfully the HEP experimental program of the next few years,
 - or because they reflected a need to improve our message.
- It doesn't seem that getting the input of the SAB will revolutionize our program, but it helps us get a formal record of the opinions of outsiders about what we are doing and it helps interested outsiders learn in more detail what we are up to, so it seems a worthwhile exercise to do regularly.



SAB comments on proposals

- “I find the proposals I read mostly pretty well written, with a science justification in the intro, the abstracts are all remarkably of the same format: brief science justification, goals, requested allocation, which is pretty accessible (without being asked to judge whether the project is realistic)...I do not actually imagine that the SAB is going to have much useful feedback for you, but sharing this information might impress the people on the board about what a diverse and active community this is.”
- [Reading the proposals] “was useful to me because it indicated the level of detail that is put into things, the level of long term planning, and the level of resource optimization that seems to be underway...I don't think I have any useful feedback to the authors though.”
- “ It was interesting for me to learn more about these BSM investigations, especially to learn something about the technical challenges. In my quick reading, I found the scientific justifications for the proposed research to be sound, though I don't really feel qualified to judge the technical merits of the proposals.”



Storage

- We are spending a growing fraction of our hardware budget on storage.
 - Disk was a few % of our budget, then 5%, in FY14 8% and growing.
 - Eigenvector methods, for example, are very demanding.
- The projects have historically done a very poor job of estimating their needs.
- We should be aware that we have already sacrificed nearly 10% of our new incremental capacity in flops for storage, and should be asking whether this is what we want to be doing.
 - Are we storing propagators that could just as easily be regenerated?
 - Are we forgetting to delete data that's needed only for a short time?
 - Are we storing more multiple ensembles than necessary? (Gauge fixed...)
 - Should we be pushing the supercomputing centers to have better storage?



Organizational odds and ends

- Users survey.
 - DoE mandates that the project team take a user survey every year.
 - Only way for DoE to judge if users are happy with project management.
 - Logging in to a USQCD computer during the year constitutes an agreement to complete the survey.
 - Can be done rapidly.
- Travel funds
 - The SciDAC grants contain a small amount of funds for travel. This is mainly for sending software workers on software business, occasionally have a little extra available for worthy projects, such as sending young people without travel funds on physics trips to report on the USQCD physics program.



The evolving experimental landscape

- The 2013 Intensity frontier white paper examined needs for lattice QCD in the coming HEP experimental program.
 - The good news: there are needs for lattice QCD throughout almost the entire program: $g-2$, neutrino physics, μ to e conversion, proton decay, at a high-luminosity ILC.
 - The bad news: the great success of lattice QCD in CKM physics and weak matrix elements has much less clout in the future experimental landscape than it did in the past.
- HEP seems more focused on the needs of particular facilities that it has been in the past. (NP is also very sensitive to the needs of its facilities.)
 - Should/How should this affect our program?



USQCD program on a tighter budget

- It looks as if we will be conducting our physics program with a much smaller computing budget than we optimistically assumed in our planning.
 - USQCD hardware will increase by a factor of 2 or 3 in the next five years instead of a factor of 10 as it did in the last five.
 - DoE leadership class facilities will not increase in size until ~2018.
- Should/How should our program respond?
 - E.g., how should projects with strict deadlines (g-2, Gluex) fare compared with projects with longer term deadlines?

Discussion at 5:10 this afternoon.



END



