

Department of Energy



HIGH ENERGY PHYSICS PROGRAM PLANNING

High Energy Physics Advisory Panel

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Making a roadmap

- We have a great program
 - At this meeting, we will hear about the resumption of operations at PEP-II, about the NUMI-MINOS startup, and progress at the Tevatron
- We have great opportunities
 - Large Hadron Collider
 - Good progress; strong U.S. participation
 - Linear collider
 - GDE now established
 - Neutrino physics
 - NuSAG is up and running; will meet at end of month
 - Dark matter/dark energy
 - Dark Energy Task Force
- However, resources to pursue these opportunities will only become available through redirection

Charge to P5

It is time to begin the task of making a new roadmap for the next decade

- Major opportunities ahead: LHC, ILC
- Various proposed projects: neutrino, dark energy, dark matter

Need to integrate input from various subpanels (NuSAG etc.)

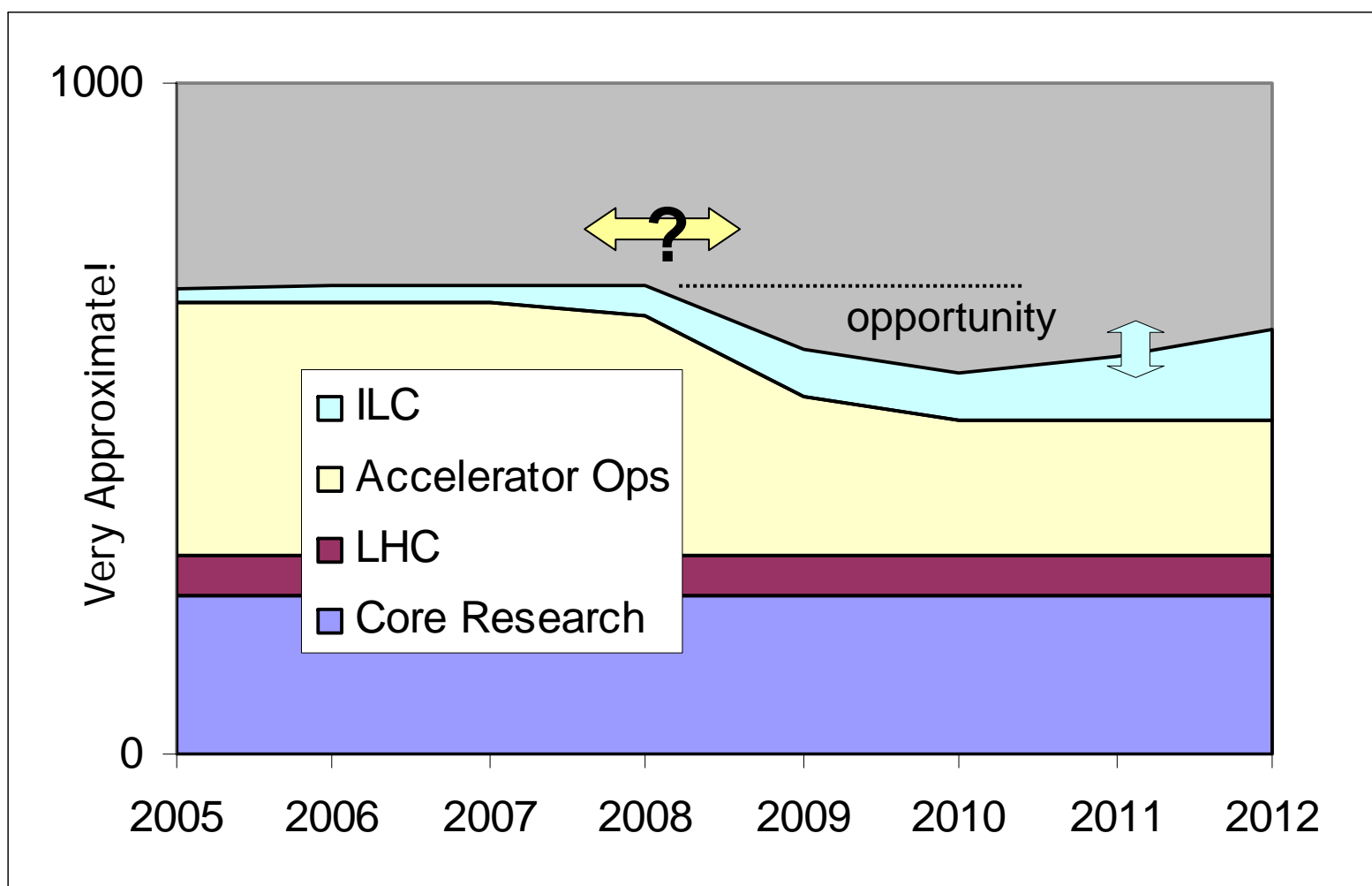
Must also consider:

Envelope of available funding will be dictated by the timeline of operations at the two currently world leading user facilities, Tevatron and PEP-II

Hence question for P5:

Q: At what time would the significant resources that are now invested in operations of these facilities have a greater scientific impact if they were to be deployed otherwise?

Opportunities



P5 Charge: Scenarios

Consider and comment on:

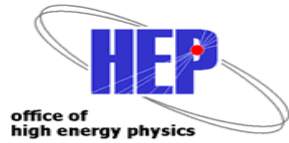
- **Scenario A: Run both facilities as long as is currently planned**
 - Tevatron until 2009, PEP-II until 2008
 - Assume that this implies very limited funding for any new initiatives and no significant ramp-up in ILC R&D until 2009
- **Scenario B: Stop both ASAP (end of FY 2006)**
 - Assume that all resources would go into new initiatives and ILC R&D ramp-up
- **Scenario C: Curtail PEP-II sooner than planned, while continuing to run Tevatron**
 - resources would go into new initiatives and ILC R&D ramp-up
- **Scenario D: Curtail Tevatron sooner than planned, while continuing to run PEP-II**
 - resources would go into new initiatives and ILC R&D ramp-up

P5 Charge: Context

- Consider within international context
 - what's planned at KEK-B and LHC
- Assume a constant funding level for overall US HEP program
- Do not assume that geographic and programmatic distribution of the funds must remain as now.
- Assume that making funds available through redirection will
 - Likely strongly impact our ability to carry out smaller initiatives within the roadmap (neutrino, dark energy, dark matter)
 - Likely only weakly impact the start date for ILC construction, since it will largely be determined by other factors

P5 Charge: deadlines

- Draft recommendation regarding two major facilities by end of September 2005
 - Final report by end of October 2005
- This will be important input to construct a roadmap: will ask P5 to consider this after the conclusion of the work being done by the various subpanels



HEPAP Charge: Review of Accelerator R&D Program

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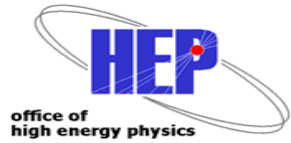


- Importance of Accelerator R&D program for our future
 - Needs no further elaboration
- Total support for accelerator R&D, including ILC R&D and LARP (LHC Accelerator Research Program): ~\$68M in FY05
- HEPAP to conduct a comprehensive review of all aspect of the accelerator R&D programs supported by DOE-HEP and NSF-EPP
 - Excluding ILC R&D and LARP
 - ILC R&D: coordinated by the GDE Director with own set of reviews
 - LARP: well defined scope with own set of agency reviews
 - But committee should understand and comment on overall balance, interfaces and relationship with ILC R&D and LARP

Review of Accelerator R&D Program

- *specific charges*

- **National Goals:** Describe the needs and goals required for a rich and productive future program in accelerator based particle physics
- **Scope:** Description of current program
- **Quality:**
 - Appraisal of scientific and technical quality of work being supported
 - How US effort rates relative to worldwide effort
- **Relevance:**
 - How well the work being supported matches the needs and goals of HEP program
 - Missing items? Over-emphasized or under supported areas?
- **Resources:**
 - Does the program have adequate resources to carry out the scope?
 - Does the program make most efficient use of available resources?
- **Management:**
 - How well program is managed both in the field and in the agencies
 - Setting goals, priorities, resource allocations, program balance & reporting
- **Training:** Is Training of future accelerator work force adequately addressed?



Review of Accelerator R&D Program

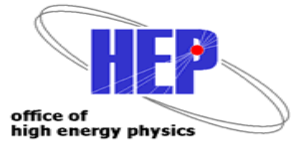
- *deadlines*

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- **Draft report by end of October 2005**
 - **Final report by end of December 2005**



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Backup

Advisory Committee Flow Chart

