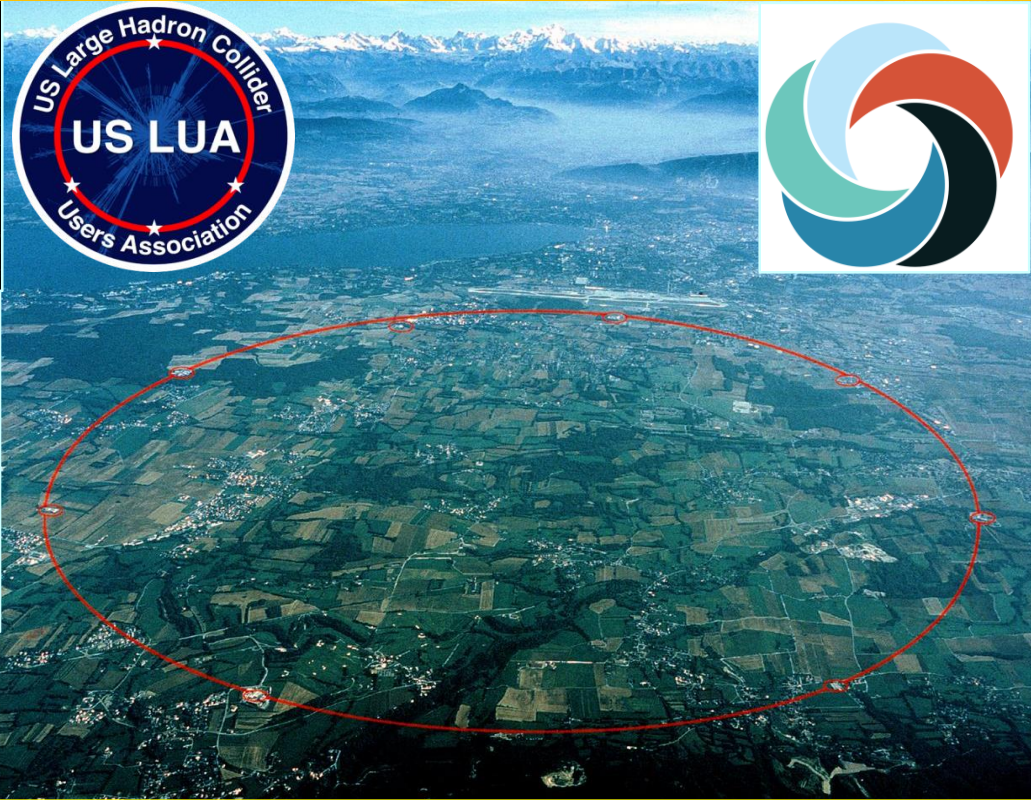
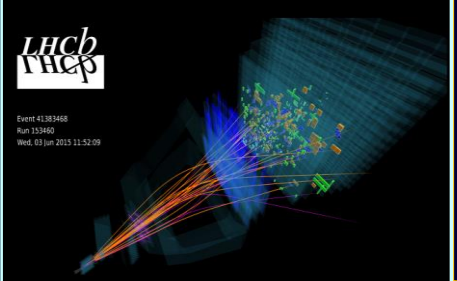
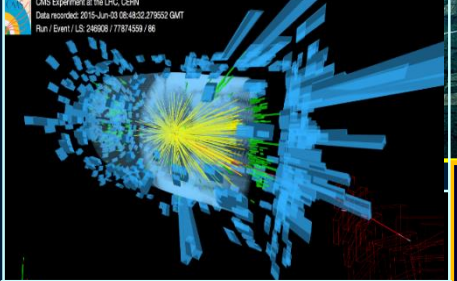
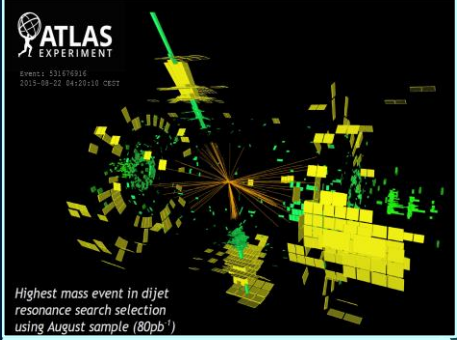
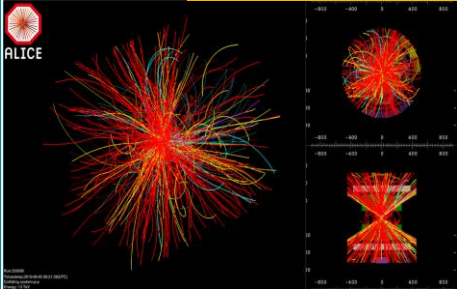




US LUEC Chair Report



**HEPAP Review,
Research Funding
and FAS Visit Notes**
Harvey Newman June 10 2019



High Energy Physics Advisory Panel
 Hilton Washington DC/Rockville
 1750 Rockville Pike
 Rockville, MD 20852
 May 30-31, 2019



<https://science.osti.gov/hep/hepap/Meetings/201905>

Thursday, May 30, 2019		
8:00	HEPAP Formalities (Closed Session)	
9:00	Convene	
9:00 – 9:15	Introductions	Panel
9:15 – 10:45	DOE Reports: Office of HEP, Program Status	Jim Siegrist * Glen Crawford
10:45 – 11:15	Break	
11:15 – 12:15	NSF Reports: Directorate of Mathematical and Physical Sciences	Denise Caldwell
12:15 – 1:30	Lunch on your own	
1:30 – 5:30	P5 Report Implementation Status Evaluation	
1:30 – 2:00	Evaluation Description and P5 Report Refresher	JoAnne Hewett *
2:00 – 3:30	Self-Assessment from the Agencies DOE NSF	Glen Crawford * Saul Gonzalez *
3:30 – 4:00	Break	
4:00 – 4:30	Discussion	
4:30 – 5:15	The Physics Landscape in 2019	Jesse Thaler
5:15	Adjourn	
Friday, May 31, 2019		
9:00	Convene	
9:00 – 9:30	Looking towards the next U.S. Strategic Planning	Young Kee Kim *
9:30 – 10:00	Future HEP Computing Needs	Eric Colby
10:00 – 10:30	Compact Accelerator BRN Preliminary Report	Michael Fazio
10:30 – 11:00	Break	
11:00 – 11:30	NSF Diversity Program	Robert Cosgrove
11:30 – 12:00	2019 Congressional Visit Report	Fernanda Psihas *
12:00	Adjourn	



U.S. DEPARTMENT OF
ENERGY

Office of
Science

High Energy Physics Program Status

HEPAP Meeting
May 30, 2019

Jim Siegrist

*Associate Director for High Energy Physics
Office of Science, U.S. Department of Energy*

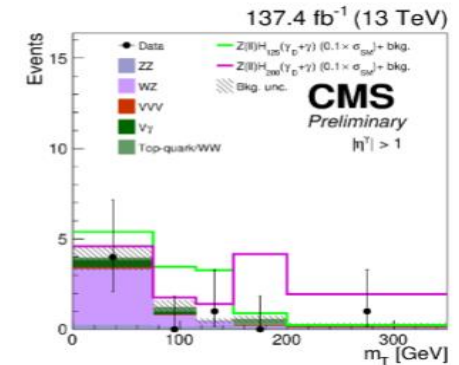
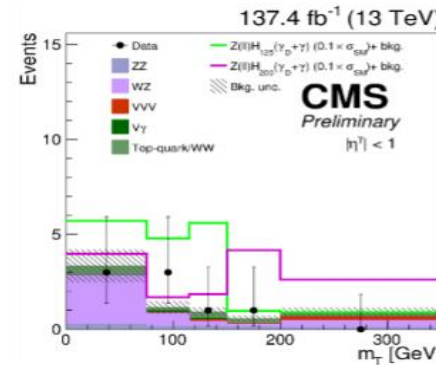
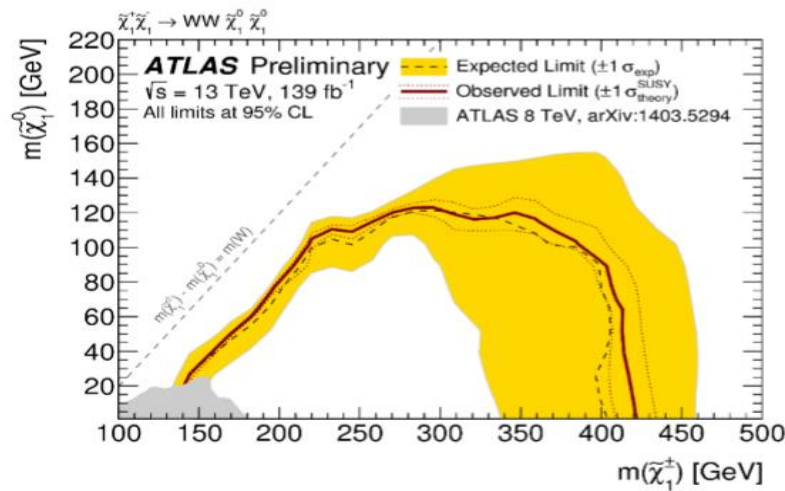
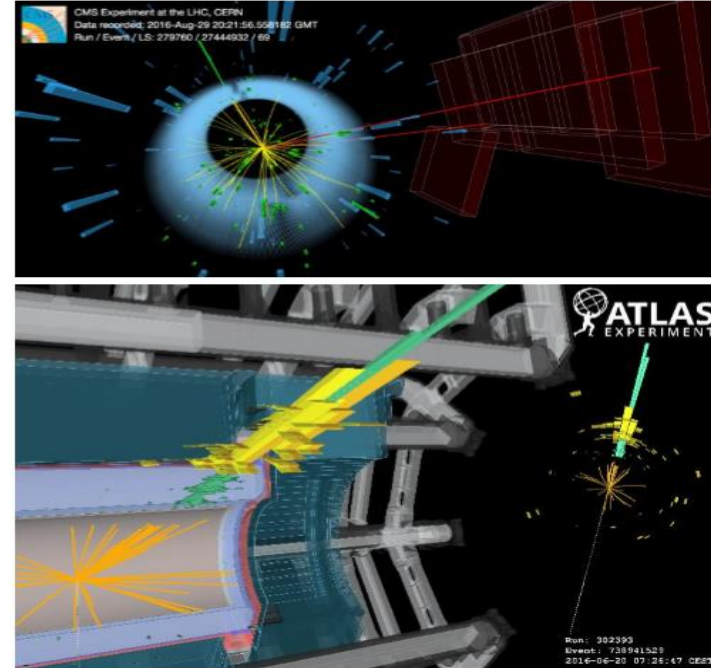


- ▶ Chris Fall Confirmed as Director of DOE Office of Science on May 23, 2019
 - ▶ Previously served as Principal Deputy Director of Advanced Research Projects Agency–Energy (ARPA-E)
 - ▶ Also served in White House Office of Science and Technology (OSTP) and in the Office of Naval Research, including as acting chief scientist



Dark Matter Searches at the LHC

- ▶ LHC Experiments continue to set constraints on dark matter while using Higgs as a tool for discovery
- ▶ New ATLAS results set constraints on supersymmetric dark matter candidates
 - ▶ Bottom squark pairs to states with Higgs bosons, b-jets, missing transverse energy [ATLAS-CONF-2019-011]
 - ▶ Charginos and sleptons to two leptons and missing transverse momentum [ATLAS-CONF-2019-008]
- ▶ CMS explores Higgs boson as "messenger" between the standard model particles and dark matter
 - ▶ Higgs decays to photon and massless "dark photon"
 - ▶ <https://cms.cern/news/no-sign-dark-light-higgs-boson>



May 2019

HEP Program Status

5

Highlights: LHC, SuperKEKB, PIP II, DES, ADMX-G2, CMB-S4, HEP-QIS, International Cooperative Engagements

Recent International Cooperative Engagements



Japan

Response letter sent by DOE Under Secretary for Science in early-March 2019 to Diet Representative Kawamura expressing support for ILC should Japan decide to host the project, and invite discussions for Japanese collaborative engagement in the U.S.-hosted international neutrino program.



Germany

Letter sent by DOE Under Secretary for Science in Feb 2019 to BMBF State Secretary welcoming discussions for collaborative opportunities in the U.S.-hosted international neutrino program.

Response letter received in April indicating interest by Germany to discuss further.



Poland

Letter sent by DOE Under Secretary for Science in March 2019 to Minister of Science in Poland welcoming collaborative opportunities in the U.S.-hosted international neutrino program and PIP-II accelerator project.

Poland's Wrocław University of S&T expressing interest to participate in the collaborative program.



India

Request by HEP for DOE Under Secretary for Science to meet with Indian Ambassador at Embassy of India in D.C. to discuss U.S.-India partnerships; Invitation sent in May 2019 by DOE Under Secretary to India DST Secretary to visit DOE.

Meeting scheduled for June with Indian Ambassador; Response letter received from DST expressing interest to meet.



CERN

In April 2019, completed negotiations and signed a Future Circular Collider (FCC) Addendum ["MOU"] between Fermilab and CERN on high-field quadrupole magnet R&D studies for FCC design configurations.



Spain

Letter sent by DOE Under Secretary for Science in March 2019 to Minister of Science in Spain welcoming discussions for collaborative opportunities in the U.S.-hosted international neutrino program and PIP-II project.

Response letter received in May indicating interest by Spain in the program.



Peru

Letter sent in April 2019 by DOE Associate Director of Science for HEP to President CONCYTEC welcoming collaborative opportunities in, and pursuing written arrangements for, neutrino physics.

Response letter received in May expressing Peru's interest and to send DOE a draft written arrangement in summer of 2019.



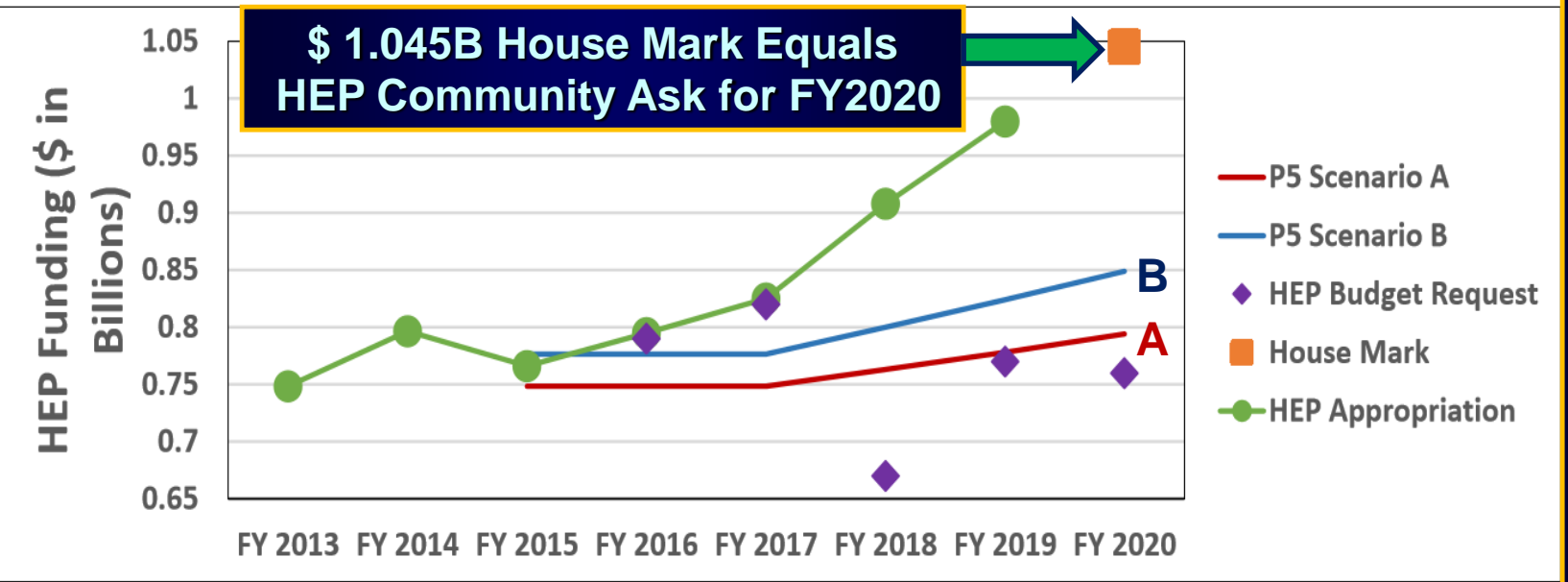
Israel

Ongoing coordination with U.S. State Department to pursue establishing U.S.-Israel Science & Technology Cooperation Agreement, and, in the interim, an international Cooperative R&D Agreement between Fermilab and Tel-Aviv University in neutrino science cooperation.

U.S. Congress Supports P5 Strategy

- ▶ Congressional appropriations reflect strong support for P5
- ▶ Recent appropriations reports include language recognizing community's efforts:
 - ▶ FY19 Senate EWD: "Four years into executing the P5, the Committee commends the Office of Science and the high energy physics community for achieving significant accomplishments and meeting the milestones and goals set forth in the strategic plan..."

Pressure on the Core Research Program Continues



This is an Issue Given the Large and Rising top line budget appropriations

At or above P5 Scenario C

FY 2020 House Marks

▶ DOE Office of Science: **\$6.87B**

Close to \$ 7B ES Coalition + HEP Community Ask

- ▶ \$285M above FY19 enacted and \$1.32B above FY20 request
- ▶ Supports Artificial Intelligence (AI)

▶ High Energy Physics: **\$1.045B**

Equals HEP Community Ask

- ▶ [*HEP Core Program*]
—Within available funds, the recommendation provides \$25,000,000 for the Sanford Underground Research Facility, not less than \$50,000,000 for Accelerator R&D, and \$97,975,000 for the HL-LHC Upgrade Projects.

The Committee strongly urges the Department to **maintain a balanced portfolio** of small, medium, and large scale experiments, and to **ensure adequate funding for research** performed at universities and the national laboratories. The Committee encourages the Department to fund facility operations at levels for **optimal operations**.

HEP (\$ in K)	FY19 Enacted	FY20 Request	FY20 House Mark	HM vs Request	HM vs Request	HM vs FY19 Enacted	HM vs FY19 Enacted
HEP Core Program	800,000	648,038	814,000	165,962	25.6%	14,000	1.8%
Line Item Construction	180,000	120,000	231,000	111,000	92.5%	51,000	28.3%
<i>PIP-II</i>	<i>20,000</i>	<i>20,000</i>	<i>60,000</i>	<i>40,000</i>	<i>200%</i>	<i>40,000</i>	<i>200%</i>
<i>LBNF/DUNE</i>	<i>130,000</i>	<i>100,000</i>	<i>171,000</i>	<i>71,000</i>	<i>71.0%</i>	<i>41,000</i>	<i>31.5%</i>
<i>Mu2e</i>	<i>30,000</i>	<i>.....</i>	<i>.....</i>	<i>.....</i>	<i>.....</i>	<i>-30,000</i>	<i>-100.0%</i>
Total	980,000	768,038	1,045,000	276,962	36.1%	65,000	6.6%



Core Research, LHC and Other Ops Budget Pressures and Issues (to discuss)

- **Causes of Pressures in spite of favorable Congressional allocations**
 - “Acceleration” of LBNF/DUNE Schedule vs. P5 and OMB Guidance
 - Project cost increases; rebalancing among the frontiers
 - Advocacy in Congress specific to the Intensity Frontier needs, versus community advocacy which covers all of HEP
 - Resulting specific Congressional earmarks that squeeze the rest of the program
- **Additional (Normal) Factor: Accommodating New Initiatives such as QIS**
- **Issue: Increased Difficulty and Increased Risk**
 - Meeting personnel and financial needs of the ongoing LHC, HL LHC and other programs
 - Managing the transition to the next generation(s), giving them the physics and career opportunities they require and deserve
 - Maintaining the health of the field, both in the US and globally
- **Rising Issues in Government Relations**
 - Natural presumptions in Congress that the young students they meet, who are among our best advocates, are well funded
 - Our claims that all our projects are “on time, and on budget”, and fit within Congress’ (relatively generous) funding allocations

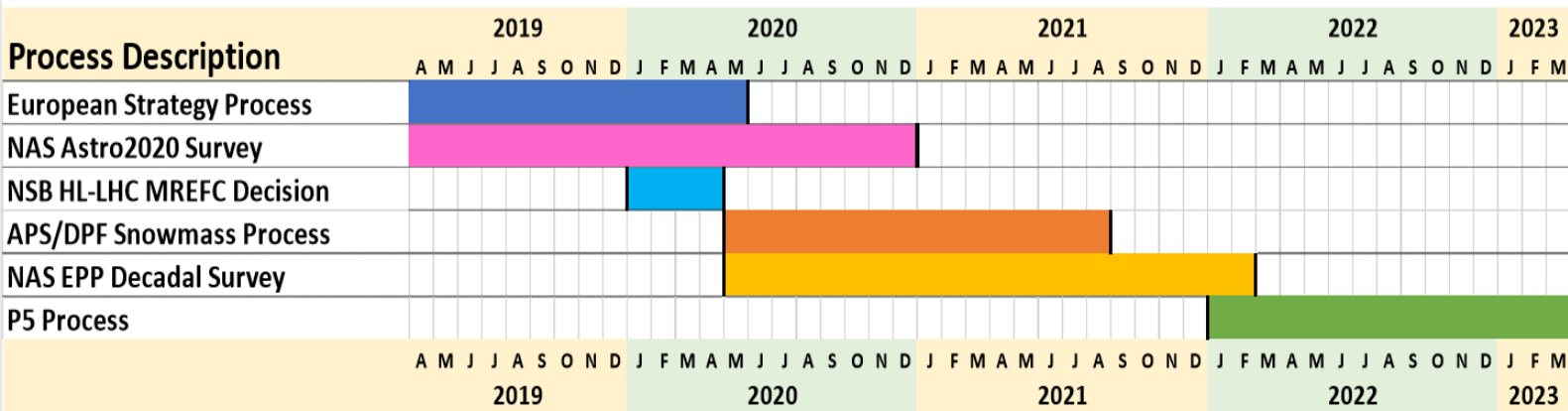
Timeline for Updating the U.S. Strategy

- ▶ **The May 2014 P5 report was successful because it was well informed by the science community**, including information from:
 - ▶ 2010 New Worlds, New Horizons in Astronomy and Astrophysics
 - ▶ 2012 Report of the Subcommittee on Future Projects of High Energy Physics (Japan)
 - ▶ 2013 European Strategy for Particle Physics Report
 - ▶ 2013 U.S. Particle Physics Community-driven “Snowmass” process
- ▶ The timeline of processes that impact the next strategic plan:
 - ▶ 2018-20: New NAS Astronomy and Astrophysics Decadal Survey
 - ▶ 2019: Start of European Strategy for Particle Physics process
 - ▶ 2019/20: Anticipated Japanese decision on ILC
 - ▶ 2020: Release of updated European Strategy for Particle Physics
 - ▶ 2020: Earliest opportunity for National Science Board to approve obligating HL-LHC MREFC
- ▶ **From a DOE perspective, the earliest that new APS/DPF Snowmass, NAS Elementary Particle Physics Decadal Survey, and P5 processes could begin is 2020**
 - ▶ **Relative timing of Snowmass, P5, and NAS EPP Decadal Survey to be determined**
 - ▶ **Enables receiving next P5 recommendations by March 2023, in time to inform FY 2025 budget formulation**



Possible Strategic Planning Timeline

- ▶ To provide timely input to the FY25 budget formulation, the next P5 report will be required by March 2023
- ▶ U.S. Community considering Snowmass process with major meeting occurring in summer 2021
- ▶ Potential timeline for the next NAS EPP Decadal Survey
 - ▶ Overlap with Snowmass could enable synergy with Snowmass processes and delivery of report as P5 process begins



Questions:

Is a March 2023 schedule for the next P5 Report early enough, given the requests for information from Congress?

Is a 3 year lag after the European Strategy Report acceptable ?

How will the next P5 interact with the 2020-22 NAS EPP Decadal Survey ?

Fernanda Psihas
University of Texas at Austin

*On Behalf of the Fermilab UEC,
US LHC UA, and SLAC UO*



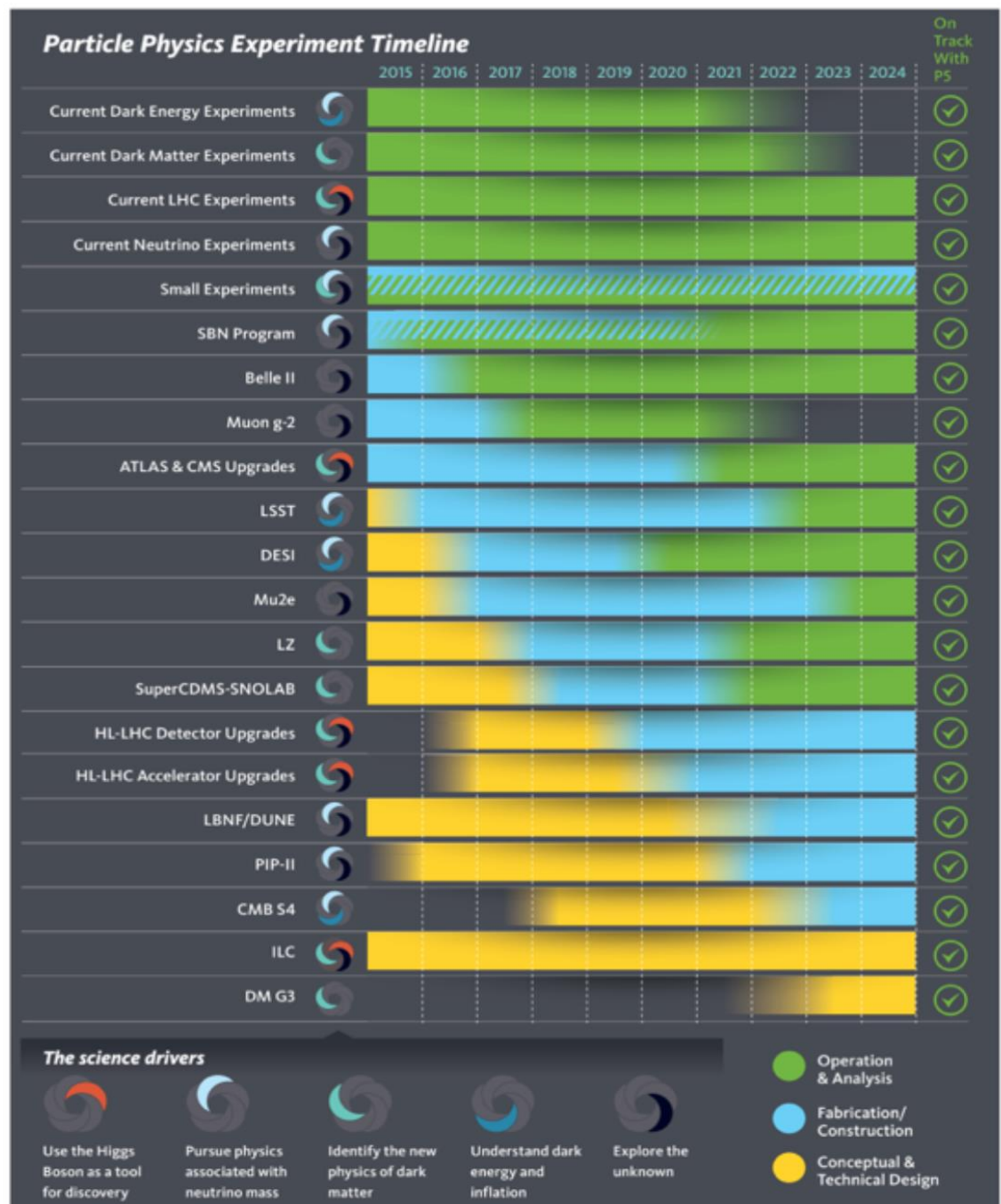
Report: 2019 HEP Advocacy Trip

This trip allows us to **address questions from Congress** by incorporating their feedback and answer questions with new materials and information.

Particle Physicists Deliver Discovery Science Through Collaboration

Particle physicists seek to discover the fundamental laws of nature by making observations at the largest and smallest distances ever probed by humans. To meet this challenge, particle physicists from the U.S. and around the world join together in large groups, called collaborations. These collaborations have been incredibly successful at developing highly complex experiments and delivering world-leading science.

New this year.
Brochure addressing questions about the P5 progress



March 2019 Attendees



68 trip attendees, (40 UEC, 20 USLUA, 8 SLUO)

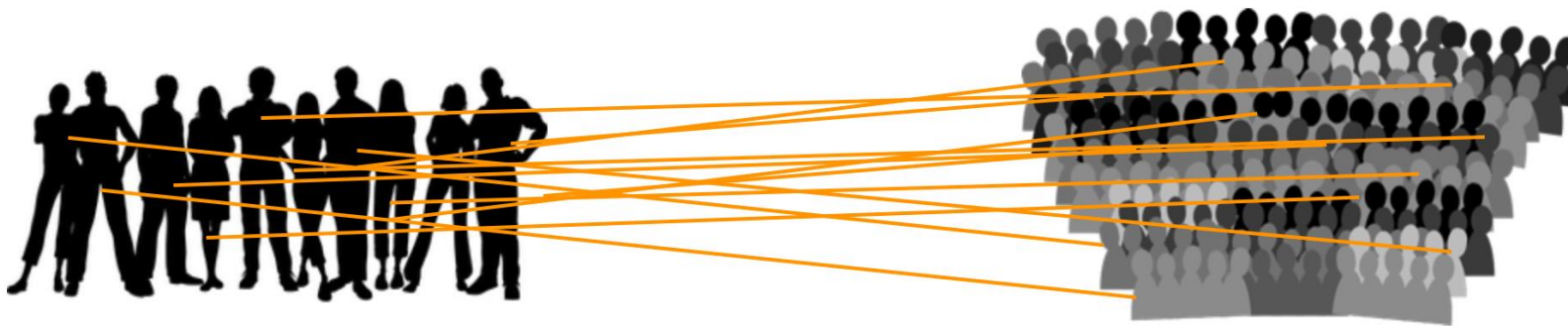
- 28 women (41%)
- 4 under-represented minorities* (10% of attending U.S. Citizens / 6% of All attendees)
- 33 early-career (grad students & postdocs, 48%)

*URMs are American citizens who are Blacks, Hispanics, and American Indians or Alaska Natives ([APS Reference](#))



Our Challenge

3 days 68 attendees 538 congressional offices
1,191 connections to congressional offices



WHIPS

Washington-HEP Integrated Planning System

Keeps attendee's schedules and connections.

Allows for live scheduling on the ground.

Provides a guide through scheduling progress and office information.

<https://www.uec-whips.org/> Justin Vasel and Fernanda Psihas

Your Full Schedule
Yellow - you are the primary.

Type	Meeting	Time	Location	Primary	Secondary
Legislator	Donnelly, Joe D-NC	2018-03-07 09:00:00	HS08 728	Justin Vasel	Fernanda Psihas
Legislator	Johnson, Ron R-ND	2018-03-07 10:30:00	HS08 328	Justin Vasel	
Legislator	Nolan, Rick R-ND	2018-03-07 12:00:00	RH08 2366		Justin Vasel
Legislator	Abraham, Ralph R-CA	2018-03-08 09:15:00	CH08 417		Justin Vasel
Legislator	Guthrie, Brett R-KY	2018-03-08 10:00:00	RH08 2434		Justin Vasel
Legislator	McClintock, Tom R-CA	2018-03-08 10:30:00	RH08 2312		Justin Vasel
Legislator	Burgess, Michael R-DC	2018-03-08 11:00:00	RH08 2336		Justin Vasel
Legislator	Beyer, Donald D-VA	2018-03-08 13:00:00	LH08 1119		Justin Vasel
Legislator	Gallagher, Mike R-ND	2018-03-08 14:00:00	LH08 1007		Justin Vasel
Executive	National Science Foundation	2018-03-08 16:30:00	NSF E-2038		[Multiple]
Legislator	Coste, Jim R-CA	2018-03-09 09:00:00	RH08 2081		Justin Vasel
Legislator	Hellingworth, Trey R-NM	2018-03-09 10:00:00	LH08 1641	Justin Vasel	

WASHINGTON-HEP INTEGRATED PLANNING SYSTEM (WHIPS) v0.10.1
LOGGED IN as Justin Vasel

Welcome to WHIPS!

There are **6 days** remaining until the trip. Contact your assignments!

31 meetings are still unassigned. Claim them [here](#).

MEETING #766 2019-MARCH
Rep. Bill Foster **D-IL 11** ✓ Packet Delivered!
Congressional Office Meeting - House

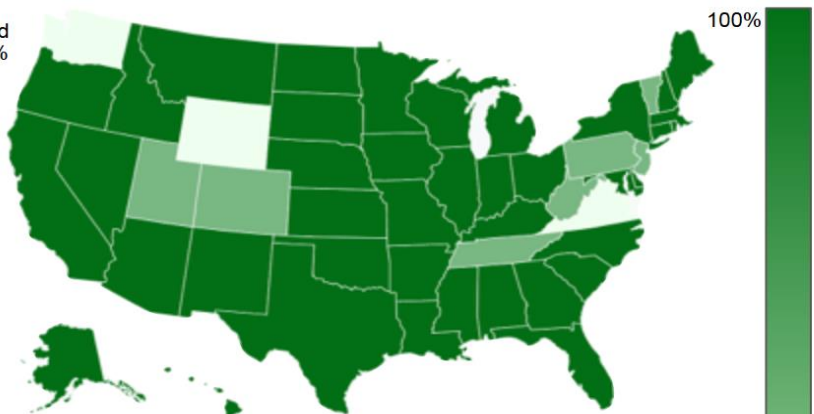
ASSIGNED CONTACT SCHEDULE FILE REPORT

Attendees
Primary: [Redacted] (UEC)
Secondary: None assigned

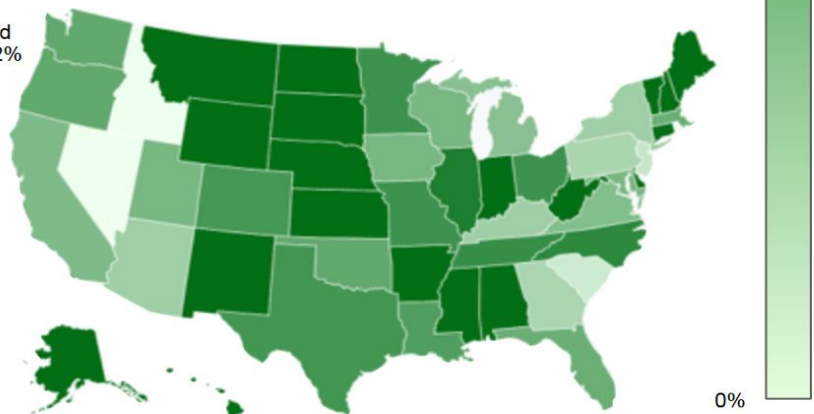
Coordinates
Time: 2019-03-19 14:00:00
Location: Rayburn House Office building 2366

Meeting with
Name & email: [Redacted]
<[Redacted]@mail.house.gov>
Position: Fellow

Offices Visited
Senate = 87%



Offices Visited
House = 79.2%



We increased the number of in-person meetings: 87% (79%) of all Senate (House) offices. Combined total = 80.1%

+ Agency and Executive Office Visits

DOE Office of Science HQ

Office of Management and Budget (OMB)

National Science Foundation

DOE Germantown

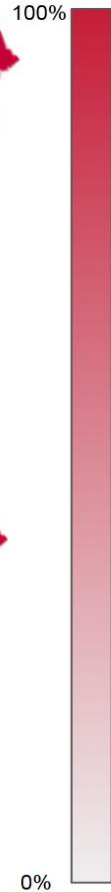
	2017	2018	2019	% change
Trip attendees	54	54	68	20%
Senate offices	72	84	87	↑ 4%
House offices	276	305	346	↑ 13%

March 2019

Offices Visited
Senate = 100%



Offices Visited
House = 100%



Materials Delivered in 2019

538 packets delivered

NEW RECORD!



	2018	2019	% change
Trip attendees	54	68	20%
Senate offices	84	100	↑ 16%
House offices	305	438	↑ 30%

We delivered our message to 100% of the 538 congressional offices.

Congressional committee meetings



Committee ↑↓

House Energy and Water Development, and Related Agencies

Senate Energy and Water Development

Senate Science, Oceans, Fisheries, and Weather

Senate Energy

House Energy

House Research and Technology

House Commerce, Justice, Science, and Related Agencies

These high-impact meetings provide us with valuable feedback for our message and give us an insight into the appropriations process for the coming fiscal year.

These meetings happen every year, organized and led by Professor Breese Quinn.

Professor Quinn's Notes from the past several years:

The most frequent and strongest communicated messages from subcommittee staff and members *with our comments and recommendations*

1. A budget agreement precedes appropriations decisions. We are encouraged to advocate for budget agreements.
2. Committees would like to understand the biggest threats to our funding/program (e.g. sequestration, President's requested cuts, etc.)
3. Many in these committees would like to better understand the breakdown of our funding programs. *(between U.S. and international funding as well as the role and funding level of university groups and overall)*
4. Given the current priorities of the House of Representatives, HEP "should be prepared for the budget increases of the past years to decline". *(from the head of the Democratic staffers)*



Professor Quinn's Notes from the past several years:



The most frequent and strongest communicated messages from subcommittee staff and members *with our comments and recommendations*

5. Repeatedly, we have been asked how we evaluate P5. Specifically, how we review the ongoing P5 program and how the science we learn continues to improve and inform the ongoing priorities (*from the Democratic majority, E&W appropriations and SST authorization subcommittees*)

Breese's Conclusions:

We have worked hard to successfully earn the reputation of being the "gold standard" of program planning, not just in science, but more broadly. We have profited from that reputation immensely.

Members commenting on point 5 above feel that this request has not been answered for a couple of years now.

If we don't respond to this request in a credible manner by next March latest, we will go a long way to laying down that mantle along with the goodwill and funding benefits that have come with it.

The P5 Report is a HEPAP Report

JoAnne Hewett, HEPAP Chair
P5 Refresher and Evaluation

From the HEPAP Charter

The Panel activities include:

periodic reviews of the program and recommendations of any changes considered desirable on the basis of scientific and technological advances or other factors such as current projected budgets and status of other international high energy physics efforts

The charter empowers HEPAP to review the progress on implementing the recommendations contained in the P5 report

Criteria for Assessment

Based on progress of implementation of the P5 recommendations

- Realization of science impact
- Engagement of global partners
- Sustained productivity – science results and construction of projects
- Balance of project scales
- Balance of components: research, operations, & projects

Evaluation Process

HEPAP will conduct the evaluation in two stages:

1. Self-assessment by the agencies of the implementation status
 - Spring 2019
2. Assessment of the physics landscape in 2019
 - Spring 2019
3. Assessment by the community
 - Fall 2019

HEPAP will transmit a letter of the panel's findings to the agencies
in Fall 2019

Most of the recent HEP budget growth is in Projects, without similar increases in Operations and Research

- ▶ HEP-style Projects depend heavily on Research and Ops support for R&D, QA/QC, integration, installation, and commissioning
- ▶ Given that there is a lot of current Research and Ops effort committed to active experiments, this is not optimal for successful project execution
- ▶ Balancing Research and Ops with the needs of current and future projects will require careful prioritization

This is a complex interlocking problem with many contributing factors

- ▶ Cannot simply “trim the big projects” (or other “simple” solutions) without having impacts elsewhere
- ▶ HEP PMs work on this ~every day



Compounding Effects of Success

- ▶ A number of smaller issues have created a cumulative effect that impacts the Core Research program
 - ▶ Cost of doing business has increased significantly, year by year, reducing the buying power of research dollars
 - ▶ The community has grown, which adds more competitors to the pool for comparative review
 - ▶ Research efforts necessary to support large projects are increasing as the projects ramp up
 - ▶ Operations costs necessary for experiments are increasing as P5 projects are successfully completing and starting to take data
- ▶ These effects are tied to the high level of support received through appropriations based on the very successful execution of the P5 strategy so far
 - ▶ FY 2020 House Marks and Report language suggest that the message is getting through that healthy growth of the program requires Research and Operations growth in addition to Project support



HEP Research Priorities

- ▶ Broadly speaking, focus will be (not necessarily in priority order):
 - ▶ Research activities critical to executing the upcoming P5 projects;
 - ▶ Supporting initial data taking and analysis from new experiments coming on-line;
 - ▶ Continued analysis of ongoing experiments highly recommended to address the P5 science drivers; and
 - ▶ Supporting young investigators





Implementing P5 at NSF

Saul Gonzalez, NSF EPP P5 Self Assessment

- In order to map these 29 P5 recommendations to the NSF/Physics context, the Physics Division charged the MPS Advisory Committee (MPSAC) to address:
 - Based on the P5 science drivers, how should NSF optimize its investments so that they maximize the impact and visibility of NSF-funded research?
 - What criteria should the Physics Division use to balance support between small-scale, mid-scale, and large projects?
 - How should the Physics Division define a unique role in areas of common interest with DOE?
- A subpanel of NSF MPS AC was formed representing all MPS disciplines, including Materials Research, Chemistry, Mathematics, Astronomy, and Physics. (Chair: Young-Kee Kim, University of Chicago)

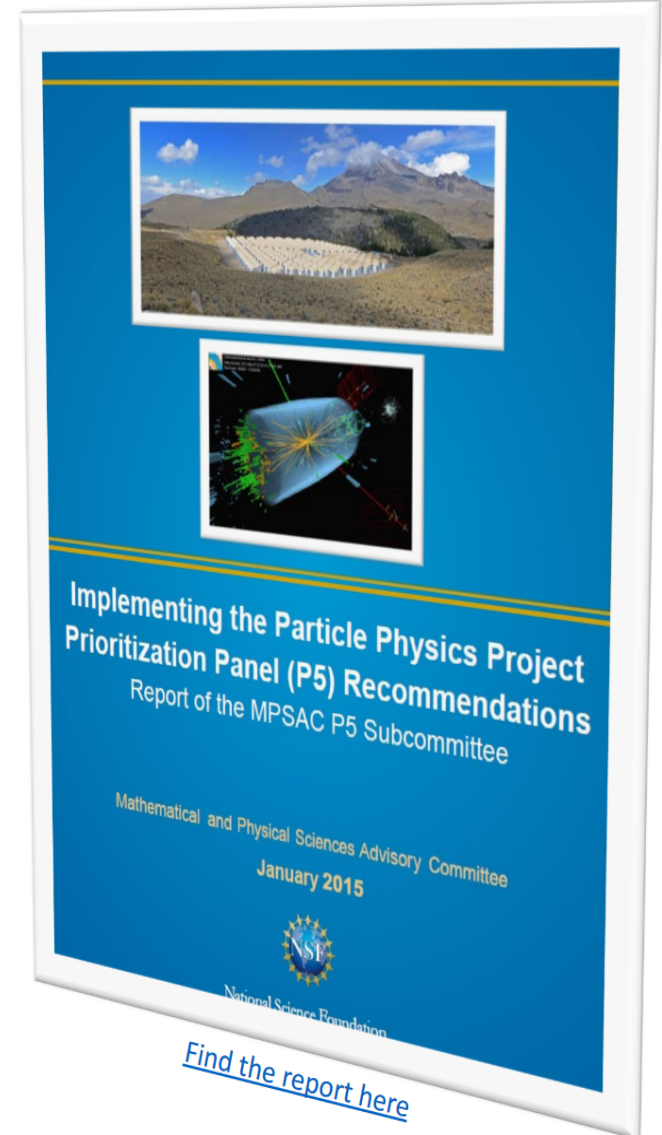
See his HEPAP Talk for NSF Response and Comments on Each P5 Recommendation



MPS Advisory Committee Report

(January, 2015)

- Maintain M&O for ongoing facilities and R&D for future projects at about one-third of particle physics budget
- Use following criteria to balance support between small-scale, mid-scale, and large projects:
 - 1) Scientific impact
 - 2) Enables NSF-supported groups to play distinctive and visible roles
 - 3) Training of next generation of scientists
 - 4) Significant broader impacts
 - 5) Feasibility of project execution within budget
 - 6) Budgetary impact on PI-driven research awards
- Contribute to areas of common interest with DOE when NSF investment:
 - Similar to 1) to 4) above
- “the subcommittee strongly supports NSF investment in the LHC phase-2 upgrades...”



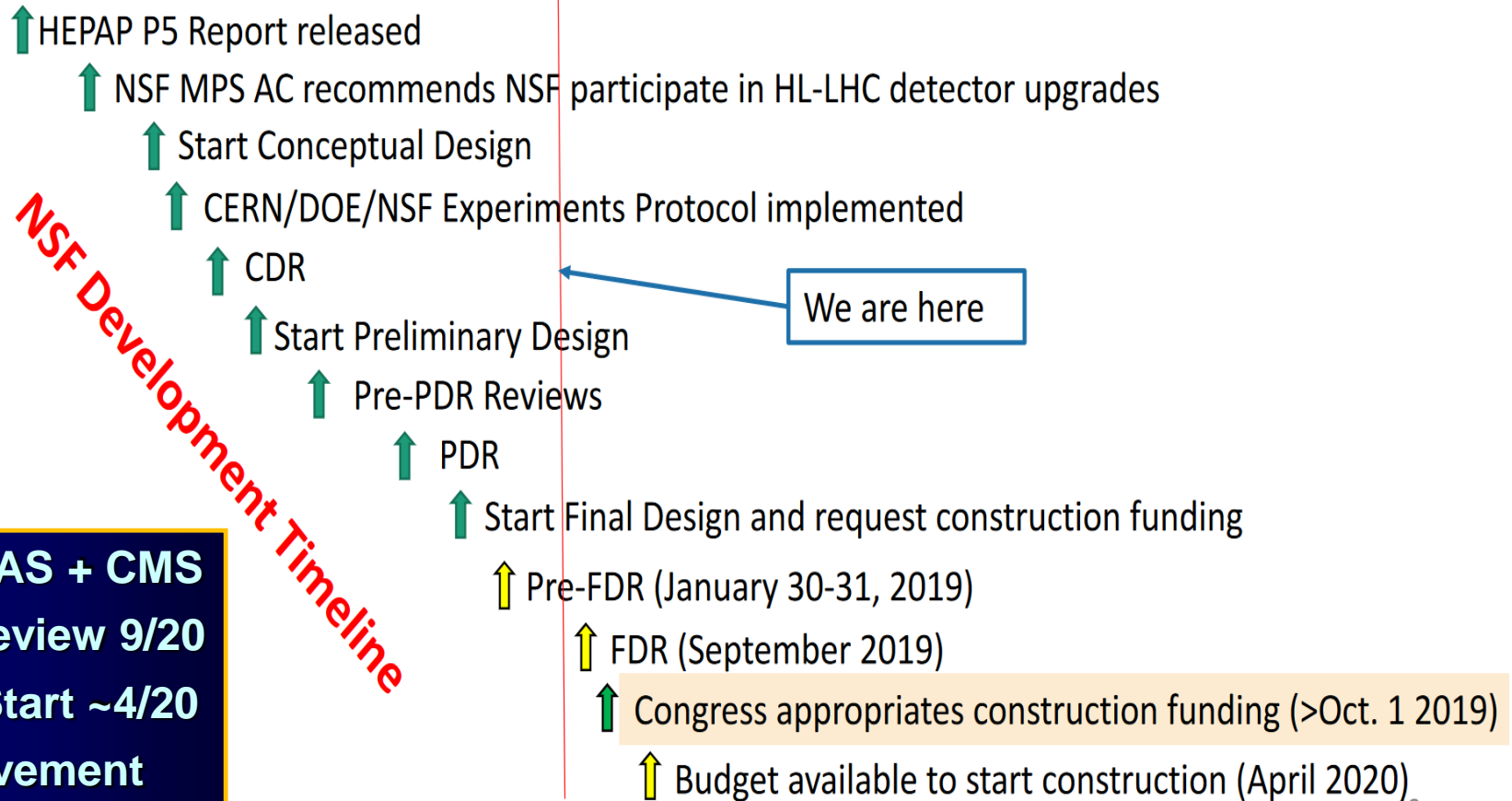
https://www.nsf.gov/mps/advisory/mpsac_other_reports/subcommittee_report_p5_recommendations_final.pdf



Example, Rec. 10: HL LHC Upgrades

**NSF MRE-FC for
US ATLAS and US CMS**

LHC											HL-LHC			
LS12		Run 2				LS2		Run 3			LS3		Run 4	
2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027



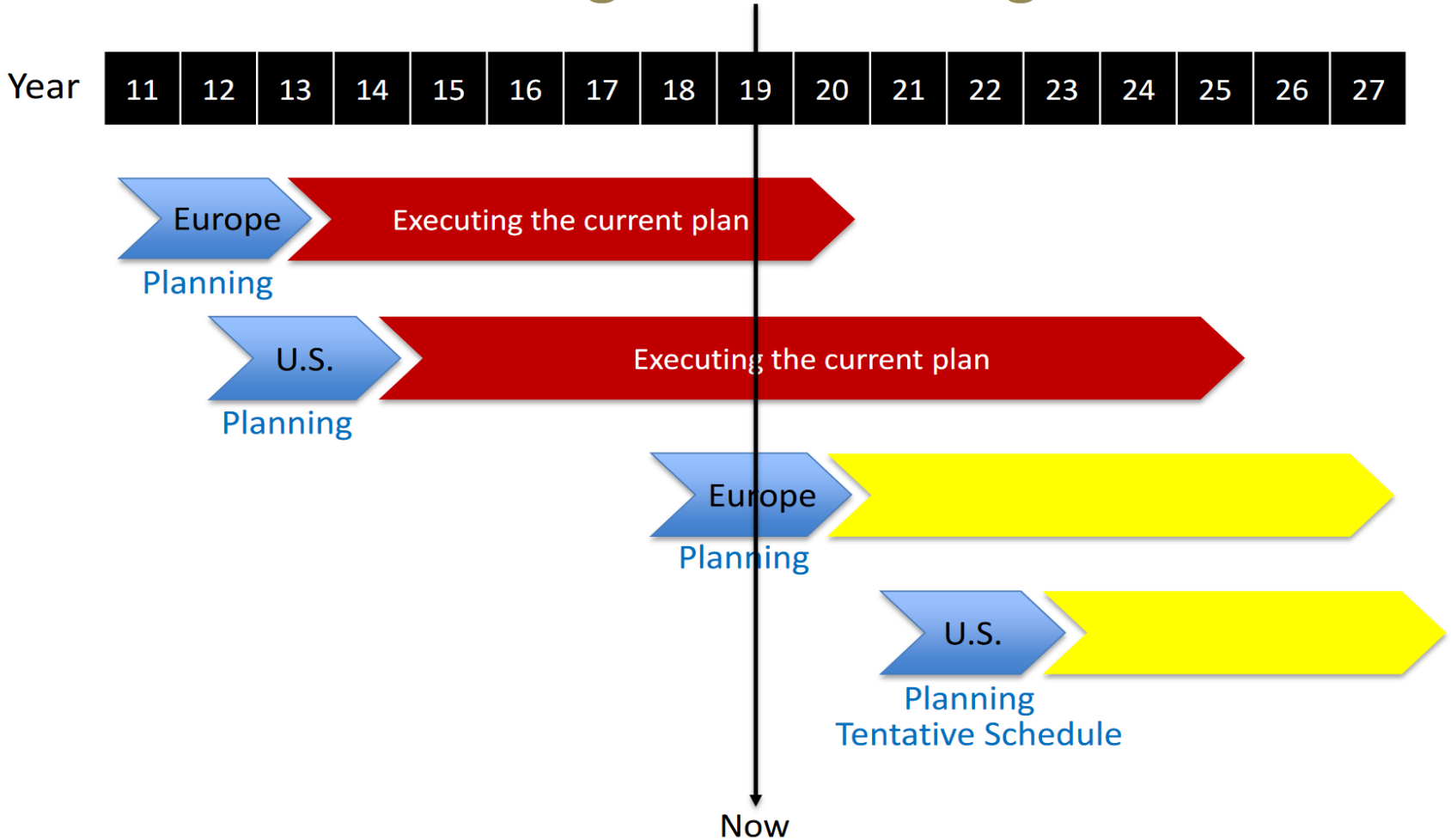
\$ 150M for ATLAS + CMS
Final Design Review 9/20
Construction Start ~4/20
Major Achievement



Looking Towards the Next U.S. Strategic Planning

Young-Kee Kim, DPF Chair

Planning and Executing



U.S. Community Submission to ESG

- DPF white papers

- Developed by the DPF Executive Committee and the group of editors. Input was solicited from the community.
- Recent progress on the 2014 P5 recommendations
 - The 2014 P5 strategy has been tremendously successful
- Research interests in the U.S. community beyond the P5 timescale
- Activities within the U.S. and global communities on theory, accelerator development, computing, and detector R&D

APS Division of Particles and Fields Response to European
Strategy Group Call for White Papers:
Community Planning and Science Drivers

DPF Executive Committee and Strategy Whitepaper Editing Group
dpfstrategy@fnal.gov

December 18, 2018

Abstract

This white paper describes the community strategic planning process organized by the DPF, and summarizes U.S. particle physics community input on activities and aspirations. This is the first of two documents, covering the five P5 Science Drivers.

(Input# 149) Progress on P5;
Research interests beyond the P5 timescale

(Input# 150) Activities on theory,
accelerator, computing, detector R&D

APS Division of Particles and Fields Response to European
Strategy Group Call for White Papers:
Tools for Particle Physics

DPF Executive Committee and Strategy Whitepaper Editing Group
dpfstrategy@fnal.gov

December 18, 2018

Abstract

The U.S. particle physics strategy process is summarized in a companion white paper that also describes U.S. activities related to the five P5 science drivers. Additional activities within the U.S. particle physics program that are critical to progress in our field are described here.

Plus many individual submissions on future programs covered in Young-Kee's talk



Visit to Ali Nouri, Federation of American Scientists 1112 16th Street NW, June 5, 2019

FAS

Federation
of American
Scientists



Google Custom Search



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About FAS

The **Federation of American Scientists (FAS)** provides science-based analysis of and solutions to protect against catastrophic threats to national and international security. Specifically, FAS works to reduce the spread and number of nuclear weapons, prevent nuclear and radiological terrorism, promote high standards for nuclear energy's safety and security, illuminate government secrecy practices, as well as prevent the use of biological and chemical weapons.

Founded in November 1945, as the Federation of Atomic Scientists, by scientists who built the first atomic bombs during the Manhattan Project, FAS is devoted to the belief that scientists, engineers, and other technically trained people have the ethical obligation to ensure that the technological fruits of their intellect and labor are applied to the benefit of humankind. In early 1946, FAS rebranded as the Federation of American Scientists to broaden its network of supporters to include all caring citizens like you who want to reduce the risks to humanity from global catastrophes.

Because of generous supporters like you, FAS returned to its roots in 2013 with a new network model that brings together experts from science, engineering, political science, law, and policy, including many younger to mid-career experts. Through task forces, these experts have been shining spotlights on how to make government more accountable and reduce global catastrophic risks. FAS has also strengthened its highly regarded and effective [Government Secrecy Project](#) and [Nuclear Information Project](#).

[Supporters](#) at any donation level are welcome. FAS is a 501(c)(3) nonprofit organization, so any donations are considered tax-deductible to the extent allowed by law because there will be no exchange of goods or services. You will receive notices by email of FAS activities and events. You will always have the option to unsubscribe to those emails.

FAS hosts a wide range of events, including briefings and symposiums, with government officials, policy experts, scientists, and engineers on issues related to international and national security.

FAS convenes awards ceremonies to recognize and commend contributions by outstanding scientists and political leaders to science and international security. The awards include the FAS Public Service Award, the Hans Bethe Award, and the Richard L. Garwin Award.

FAS staff and adjunct fellows comprise a highly skilled and dedicated team with professional experience in aeronautical engineering, biology, biochemistry, chemistry, environmental science, law, nuclear engineering, physics, and political science. Members of the Board of Sponsors, including over 60 Nobel laureates, are influential figures from the scientific and international communities who endorse FAS's mission. Advisory Board members work with FAS staff on projects of mutual interest, share professional expertise, and provide other methods of support to enhance the organization's mission and programs.



Visit to Ali Nouri, Federation of American Scientists

- **Follow up on Ali Nouri's Visit to CERN last April**

Meeting Subjects:

- **Funding avenues and roles for US LUA:**
 - **Possible Foundation Sources: Moore, Schmidt, etc.;**
FAS Contacts
 - **Science Policy-related mission and study of issues**
 - **International meetings and workshops, white papers**
 - **Possible closer engagement with Congressional committees**
dealing with science policy
 - **Possible joint work with FAS, compatible with US LUA's mission**
 - **US LUA subcommittee ?**
- **Bill in Grassley's Senate Finance Committee that day (June 5):**
on a panel representing the funding agencies, CIA and FBI that would
aim to develop common strategies for controlling research
- **Follow up with Ali by HN, Yangyang and others in the US LUEC**



Backup Slides Follow



US LUA Executive Committee: Now 15 Members

2019 Membership (2 Year Terms)

<u>Name</u>	<u>Institution</u>	<u>Collaboration</u>	<u>Term Expires</u>
<input type="checkbox"/> Darin Acosta	Florida	CMS	2020
<input type="checkbox"/> Kevin Black	Wisconsin	CMS	2020
<input type="checkbox"/> Zeynep Demiragli	Boston	CMS	2020
<input type="checkbox"/> Eva Halkiadakis	Rutgers	CMS	2020
<input type="checkbox"/> Jane Nachtman	Iowa	CMS	2020
<input type="checkbox"/> Louise Skinnari	Cornell	CMS	2020
<input type="checkbox"/> Michael Williams	MIT	LHCb	2020
<input type="checkbox"/> David W. Miller (Observer)	U. Chicago	ATLAS	
<input type="checkbox"/> Viviana Cavalieri	BNL	ATLAS	2019
<input type="checkbox"/> Yangyang Cheng	Cornell	CMS	2019
<input type="checkbox"/> Verena Martinez Outschoorn	U. Mass	ATLAS	2019
<input type="checkbox"/> Corrinne Mills	UIC	CMS	2019
<input type="checkbox"/> Harvey Newman (Chair)	Caltech	CMS	2019
<input type="checkbox"/> Gianluca Sabbi (Secretary)	LBL	LARP	2019
<input type="checkbox"/> Anthony Timmins	U. Houston	ALICE	2019
<input type="checkbox"/> Gordon Watts (Treasurer)	Washington	ATLAS	2019
<input type="checkbox"/> <u>Totals:</u> CMS 9, ATLAS 3, LHCb 1, ALICE 1, LARP 1; 1 Observer			
<input type="checkbox"/> <u>Ex-Officio:</u> US ATLAS and CMS PMs, Deputies, CB Chairs, IB Chairs;			



US LUEC Sub-Committees 2018

- **Quality of Life:** Usha Mallik (Chair and ACCU Representative); Darin Acosta, Verena Martinez Outschoorn, Viviana Cavaliere, Harvey Newman, Corrinne Mills, Toyoko Orimoto, Anthony Timmins
- **Gov't Relations:** Yangyang Cheng (Chair), Jahred Adelman, Harvey Newman, Usha Mallik, Verena Martinez Outschoorn, Corrinne Mills, Gianluca Sabbi, Anthony Timmins
- **Outreach:** Verena Martinez Outschoorn (Chair), Jahred Adelman, Harvey Newman, Toyoko Orimoto, Gianluca Sabbi, Julia Gonski, Jane Nachtmann
- **Web Presence:** Viviana Cavaliere (Chair), Gordon Watts, Darin Acosta, Jane Nachtmann, Toyoko Orimoto
- **Finance, Fund Raising:** Gordon Watts (Chair), Harvey Newman
- **Communications:** Darin Acosta (Chair), Yangyang Cheng, Toyoko Orimoto, Gordon Watts, Julia Gonski
- **Annual Meeting TF:** H. Newman (Chair); Corrinne Mills, Verena Martinez, Anthony Timmins
- **Rules & Elections Taskforce:** Jahred Adelman (Chair); Gianluca Sabbi, Usha Mallik, Harvey Newman, Sheldon Stone



HEP DC Trips: Joint Effort of UEC, US LUA, SLUO with DPF on Behalf of Entire US HEP Community

- ❑ Communicate the nature, excitement, importance of the physical sciences, and the key roles of HEP in particular
 - ❑ To science, education, innovations and to the leadership of the nation
 - ❑ Visit as many Congressional Offices as possible; build upon or develop as strong ongoing connections as possible
 - ❑ Establish and develop the foundation that leads to the funding needed by HEP
 - ❑ Also in hard or controversial times: promote the value of the long term science mission
- ➔ Boosted by our unity (the P5 Report), the grand breakthroughs in science (LIGO and past Nobel Prizes among them)
- ➔ Inspiring the young to fulfill their aspirations



**Running for ~36 Years
US LUA for 12 Years**



Strategy for Success

With thanks to
Sal Rappoccio

- ❑ **Who we are:** 6000 scientists, engineers and technologists from 180 universities and laboratories working in the US and overseas
- ❑ **The Science we do is exciting;** drives innovation, and trains the workforce
 - ➔ Remind / inform them of previous and present successes
 - ➔ Tell them what is coming in the next 5-10 years
- ❑ **Don't make it political**
 - ➔ Strong bipartisan support for HEP (really)
 - ➔ The bills containing our budget passed unanimously in the House in 2017
- ❑ **We are succeeding: "On time and on budget"**
 - ➔ Say it Every. Single. Meeting.
 - ➔ We went through strong a community-wide planning exercise
 - ➔ We agreed on the priorities; made hard decisions about what to fund
 - ➔ Long term projects need sustained support to succeed
- ❑ **We need, are worthy of public funding**
- ➔ **There is no guaranteed return for the private sector; our goals are long term**
- ❑ **We drive tomorrow's technologies, but we cannot predict what they will be**
- ❑ **They love the pins. Bring lots of pins. Don't forget the pins.**





2019 Trip Attendees

Xuan Chen
 Harvey Newman
 Mariel Pettee
 Savannah Thais
 Breese Quinn
 Thomas Warburton
 Salvatore Rappoccio
 Justin Vasel
 Rob Fine
 Saptaparna Bhattacharya
 Andrea Albert
 Leonidas Aliaga Soplin
 Adi Ashkenazi
 Brian Nord

Gavin Davies
 Fernanda Psihas
 Aaron Dominguez
 Joseph Zennamo
 Louise Suter
 Cindy Joe
 Joseph Haley
 Sergei Gleyzer
 Mathew Muether
 Kirsty Duffy
 Anne Norrick
 Sarah Demers
 Julia Gonski
 Georgia Karagiorgi

Andrew Furmanski
 Barbara Yaeggy
 Mike Wallbank
 Deepika Jena
 Michael Baumer
 Corrinne Mills
 Eva Halkiadakis
 Duncan Wood
 Eli Rykoff
 Maris Arthurs
 Kirk Barrow
 Justin May
 Randy White
 Emma Castiglia

Corrinne Mills
 Titas Roy
 Blake Forland
 Constantin Weisser
 Matthew Feickert
 Rachel Bartek
 Bryan Ramson
 Erika Catano Mur
 Lauren Yates
 Meenakshi Narain
 Samantha Sword-Fehlberg
 Mandy Rominsky
 Adam Anderson
 Jane Nachtman

Mike Baumer
 Jacob Pasner
 Zachary Williams
 Brendan Kiburg
 Andre De Gouvea
 Adam Moren
 Micah Groh
 Will Flanagan
 Alexx Perloff
 Amber Johnson
 Herman White
 Dylan Frizzell
 Gordan Krnjaic
 Scarlet Norberg

New this year. Automated, district-specific grant and procurement information

District-specific materials provide direct links between the appropriated funds local economic benefits.



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 Fermi National Accelerator Laboratory
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 Batavia, IL 60510
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 E-mail: fernanda.psihas@gmail.com*

March 25, 2019

Dear Senator Cruz:

The DOE Office of Science and NSF Directorate for Mathematical and Physical Sciences (MPS) directly support scientists, engineers, and students in all 50 States, the District of Columbia, and Puerto Rico through research grants to academic institutions and contracts to supporting industries. In fiscal year 2018, the Department of Energy (DOE) Office of Science had a budget of \$908 million for High Energy Physics, and the National Science Foundation (NSF) had a budget of \$7.7 billion.

Texas State

- Baylor University
- Rice University
- Sam Houston State University
- Southern Methodist University
- Texas A&M University
- Texas Tech University
- University of Houston
- University of Texas at Arlington
- University of Texas at Austin
- University of Texas at Dallas
- University of Texas Rio Grande Valley

Institutions receiving DOE HEP grants during FY18

Please find below specific information about grants and contracts that were awarded by the DOE Office of Science and NSF to institutions and businesses in your State during FY18 and preceding years.

Texas State

In the past 6 years, this district has been awarded:

• DOE Office of Science HEP research grants totaling: <i>Grants to researchers in your State from the DOE Office of High Energy Physics</i>	\$47,507,892
• DOE Office of Science contracts totaling: <i>Contracts with companies in your State, primarily related to the operation of DOE National Laboratories</i>	\$61,000
• NSF MPS research grants totaling: <i>Grants to researchers in your State from the NSF Directorate for Mathematical and Physical Sciences</i>	\$332,561,769

Fernanda Psihas
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March 25, 2019

Omar
 of Representatives
 e Office Building
 15

Omar:

2018, Fermilab spent \$183.5 million in the United States to purchase goods and services in 44 t of Columbia. Please find below specific information about goods and services purchased r State or district during this time.

\$1,000 - \$100,000 Alabama, Delaware, Hawaii, Idaho, Maine, Montana, Nevada, North Dakota, Oklahoma, South Carolina, Vermont	\$100,000 - \$500,000 Arizona, Connecticut, Georgia, Missouri, Nebraska, New Hampshire, Tennessee, Utah
\$500,000 - \$1 million Iowa, Kansas, Kentucky, Maryland, North Carolina	\$1 million - \$2 million Florida, Indiana, Michigan, New Mexico, Oregon, Rhode Island
\$2 million - \$5 million Colorado, District of Columbia, Massachusetts, Minnesota, New Jersey, Ohio, Pennsylvania, Texas, Washington, Wisconsin	More than \$5 million California, Illinois, New York, South Dakota, Virginia

Minnesota's 5th Congressional District

Vendor	ZIP Code	Amount (\$)
Minnesota, University Of	55455	2,366,234
Minnesota, University Of	55455	74,000
Itasca Consulting Group Inc	55401	20,000
Minco Products Inc	55432	9,302
Best Buy Inc	55423	6,008
Twin City Plating Inc	55413	1,950

Developers:
Rob Fine
Michael Baumer
 Justin Vasel
 Fernanda Psihas

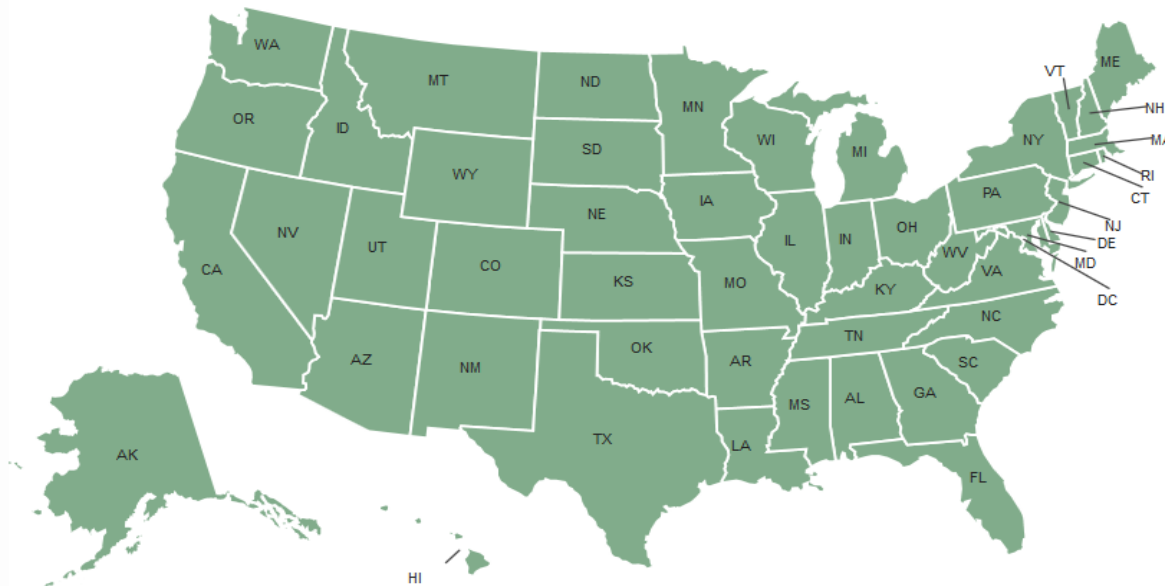


Where is High Energy Physics Funding Spent ? By State, District, Institution, Agency

1/31/18: Updated Members of Congress, committee assignments, and HEP spending data (complete for FY17, partial for FY18).

High-energy physics (HEP) research has wide-ranging impacts on technology, innovation, and education in the United States. In addition to HEP's national importance, Congressional offices are also concerned with the local economic impact of federal HEP spending in their respective districts and states.

Select your state below for both statewide and district-level summaries of HEP-related spending. Please read the [FAQ](#) for descriptions of and caveats to interpreting the data.



Powered by [Create a Clickable Map](#)

HEP Grants

In the past 6 years, this state has received:
226 HEP grants, totalling \$138,632,598.71

Institution	Amount (\$)
University of California - Los Angeles	14701000.00
California Institute of Technology	12225000.00
University of California - Irvine	10248000.00
University of California - Santa Cruz	9920903.00
University of California - Santa Barbara	9556695.71
University of California - Davis	9401000.00
U. OF CALIFORNIA AT LOS ANGELES	8728000.00
CALIFORNIA INST. OF TECHNOLOGY	7997000.00
University of California - San Diego	6584000.00
Stanford University	5794000.00
and 16 other institutions.	

SC Contracts

In the past 6 years, this state has received:
640 Office of Science contracts, totalling \$7,689,251,100.60

vendorname	Amount (\$)
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA (1741)	4.850727e+09
STANFORD UNIVERSITY	2.834702e+09
LARTA, INC	2.100000e+06
HUMAN POTENTIAL CONSULTANTS, L.L.C.	7.440448e+05
OUTSOURCE CONSULTING SERVICES, INC.	6.545591e+05
LOCKWOOD HILLS FEDERAL, LLC	1.887000e+05
IMPRES TECHNOLOGY SOLUTIONS, INC.	6.179639e+04
ANNUAL REVIEWS, INC.	3.555200e+04
HIRSCH ELECTRONICS LLC	3.066012e+04
COACHING COMMITMENTS	2.760000e+04
and 13 other firms.	

NSF MPS Grants

In the past 6 years, this state has received:
3142 NSF MPS grants, totalling \$1,131,545,117.00

Institution	Amount (\$)
CALIFORNIA INSTITUTE OF TECHNOLOGY	358547889.0
REGENTS OF THE UNIVERSITY OF CALIFORNIA, THE	106359743.0
UNIVERSITY OF CALIFORNIA, SANTA BARBARA	90285814.0
UNIVERSITY OF CALIFORNIA, LOS ANGELES	73729796.0
UNIVERSITY OF CALIFORNIA, SAN DIEGO	65950208.0
LELAND STANFORD JUNIOR UNIVERSITY, THE	64516207.0
UNIVERSITY OF CALIFORNIA, IRVINE	64112116.0
SRI INTERNATIONAL	48099379.0
UNIVERSITY OF CALIFORNIA, DAVIS	40427542.0
MATHEMATICAL SCIENCES RESEARCH INSTITUTE	33093899.0
and 107 other institutions.	

California Example

With Thanks to Michael Baumer (Stanford)

WHIPS Washington-HEP Integrated Planning System

In 2018-2019 we incorporated a new web-based organizational platform

Goals:
Automate trip logistics to increase our effectiveness.

Maintain a database of connections to districts and potential trip attendees.

Most efficiently utilize resources on the trip.

Create performance metrics to provide feedback from the trip.



US LUA



We have come a long way;
we have a long way to go.
We will need your support.

If your group members or colleagues involved
in the LHC Program are not already US LUA
Members, **ask them to please sign up at**
www.uslua.org

US LHC Users Association



Particle Physics in the United States

Alabama

The University of Alabama
University of Alabama Birmingham

Alaska

University of Alaska—Anchorage

Arizona

Arizona State University
University of Arizona

California

California Institute of Technology
California Polytechnic State University
California State University
California State University—Fresno
Harvey Mudd College
Lawrence Berkeley National Lab
Occidental College
San Francisco State University
SLAC National Accelerator Lab
Stanford University
University Enterprises, Incorporated
University of California—Berkeley
University of California—Davis
University of California—Irvine
University of California—Los Angeles
University of California—Riverside
University of California—San Diego
University of California—Santa Barbara
University of California—Santa Cruz
University of Southern California
University of the Pacific

Colorado

Aspen Center For Physics
Colorado School of Mines
Colorado State University
University of Colorado at Boulder
University of Colorado at Denver—
Downtown Campus

Connecticut

University of Connecticut
Yale University

District of Columbia

National Academy of Sciences
Universities Research Association Inc.

Delaware

University of Delaware

Florida

Embry-Riddle Aeronautical University
Florida Institute of Technology
Florida International University
Florida State University
University of Florida

Georgia

Georgia Tech
Kennesaw State University

Hawaii

University of Hawaii

Iowa

Iowa State University
Luther College
University of Iowa

Illinois

Argonne National Lab
Fermi National Accelerator Lab
Illinois Institute of Technology
Northern Illinois University
Northwestern University
University of Chicago
University of Illinois at Chicago
University of Illinois at Urbana-Champaign

Indiana

Indiana University
Purdue University
University of Notre Dame

Kansas

Kansas State University
University of Kansas
Wichita State University

Kentucky

University of Kentucky

Louisiana

Louisiana State University and A&M
College

Massachusetts

Boston University
Brandeis University
Harvard University

Massachusetts Institute of Technology
Northeastern University
Smithsonian Institution Astrophysical
Observatory
Tufts University
University of Massachusetts—Amherst
Wellesley College

Maryland

Goucher College
Johns Hopkins University
University of Maryland

Maine

Bowdoin College

Michigan

Michigan State University
Michigan Technological University
University of Michigan Ann Arbor
Wayne State University

Minnesota

University of Minnesota—Duluth
University of Minnesota—Twin Cities

Missouri

Washington University

Mississippi

University of Mississippi

North Carolina

Duke University
University of North Carolina at Chapel Hill

Nebraska

University of Nebraska—Lincoln

New Hampshire

Dartmouth College

New Jersey

Institute For Advanced Study
Princeton University
Rutgers University—New Brunswick
Rutgers, The State University
of New Jersey

New Mexico

University of New Mexico

Nevada

University of Nevada, Reno

New York

Barnard College
Brookhaven National Lab
Columbia University
Cornell University
CUNY City College
CUNY Herbert H. Lehman College
CUNY New York City College of
Technology
Manhattan College
New York University
Rensselaer Polytechnic Institute
Siena College
SUNY at Albany
SUNY at Buffalo
SUNY at Stony Brook
Syracuse University
University of Rochester

Ohio

Case Western Reserve University
Kenyon College
Oberlin College
Ohio State University
Ohio University
Otterbein College
University of Cincinnati

Oklahoma

Oklahoma State University
University of Oklahoma

Oregon

Lewis and Clark College
Oregon State University
University of Oregon

Pennsylvania

Carnegie Mellon University
Drexel University
Lafayette College
Lehigh University
Temple University
The Pennsylvania State University
University of Pennsylvania
University of Pittsburgh

Puerto Rico

University of Puerto Rico Mayaguez

Rhode Island

Brown University

South Carolina

University of South Carolina

South Dakota

Augustana College
South Dakota School of Mines &
Technology
University of South Dakota

Tennessee

ProNova Solutions LLC
The University of Tennessee
Vanderbilt University

Texas

Baylor University
Sam Houston State University
Southern Methodist University
Texas A&M University
Texas Tech University
The University of Texas at Arlington
The University of Texas at Austin
The University of Texas at Dallas
University of Houston
William Marsh Rice University

Utah

University of Utah
Utah State University

Virginia

College of William and Mary
George Mason University
Hampton University
Old Dominion University
The University of Virginia
Virginia Polytechnic Institute and State
University

Vermont

Middlebury College

Washington

University of Washington

Wisconsin

University of Wisconsin—Eau Claire
University of Wisconsin—Madison

