

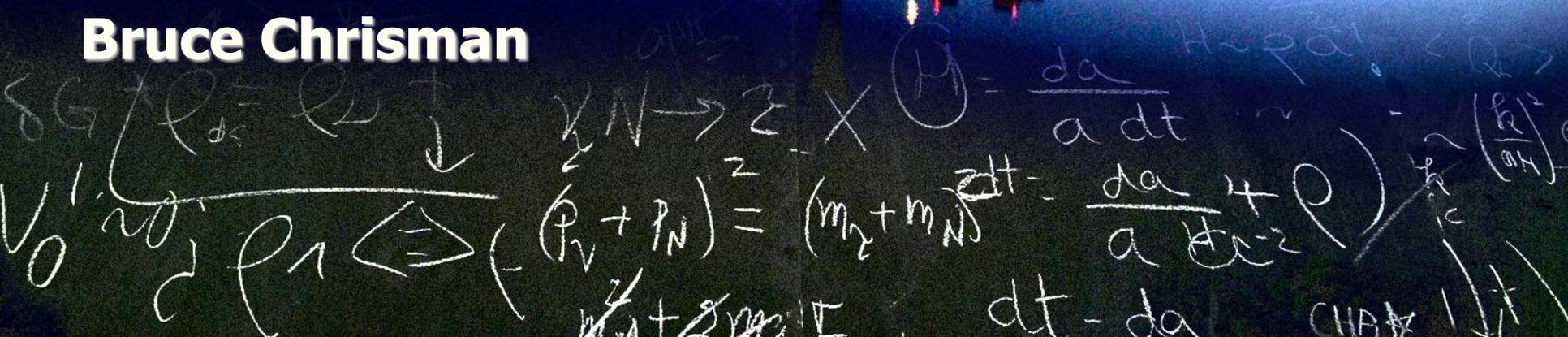
FY 2011 Fermilab Performance Review

October 3, 2011

Pier Oddone

Young-Kee Kim

Bruce Chrisman



Performance Evaluation Management Plan

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Fermi National Accelerator Laboratory

◆ **Goal 1.0: Provide for Efficient and Effective Mission Accomplishment**

- ◆ The contractor produces high quality, original and creative results that advance science and technology; demonstrates sustained scientific progress and impact; receives appropriate external recognition of accomplishments; and contributes to overall research and development goals of the department and its customers.

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❖ **1.1 Science and Technology Results Provide Meaningful Impact on the Field**

- ❖ Of the top ten most highly cited articles in PRD and PRL submitted over this FY11 period, there are 4 Fermilab papers
- ❖ Science: Fermilab continues to produce world leading results at the three frontiers of particle physics; they are featured in all HEP conferences
- ❖ As of 5/7/2011, 109 publications in FY 2011 in 21 refereed journals
- ❖ Continuing wide coverage of Fermilab in general interest science magazines, newspapers, and other popular media

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◆ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Energy Frontier

- ◆ The Tevatron has continued to break records. In addition to the integrated luminosity for CDF and DZERO, we have accomplish many accelerator physics studies relevant to future developments of the LHC.
- ◆ All systems provided by Fermilab to LHC have performed extremely well.

Cosmic Frontier:

- ◆ Cryogenic Dark Matter Search (CDMS) collaboration published new limits on Weakly Interacting Massive Particles
- ◆ Construction of the Dark Energy Camera Imager was completed.
- ◆ Chicagoland Observatory for Underground Particle Physics (COUPP) announced new limits on spin-dependent Weakly Interacting Massive Particles.
- ◆ Pierre Auger Observatory (PAO) collaboration published cross section measurements at a record high energy, 57 TeV in the center-of-mass frame.

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◆ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Intensity Frontier:

- ◆ MINERvA project received the 2011 Secretary of Energy's Award of Achievement
- ◆ MINOS hint of a non-zero θ_{13} and earlier new, best determination of mass splitting at atmospheric scale and first measurements of antineutrino oscillation parameters with long-baseline.
- ◆ MiniBooNE cross-section and anti- ν oscillation results and, with SciBooNE, joint analysis of muon neutrino disappearance.
- ◆ ArgoNeuT making progress analyzing neutrino interactions in a LAr TPC.
- ◆ Comprehensive white papers for the five thrusts of the Project-X research program (November 2010, <http://projectx.fnal.gov/>).

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❖ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Intensity Frontier (continued):

- ❖ Functional Requirements Specification established for the Project-X accelerator complex (February 2011).
- ❖ Preparation of "Mission Need Statement" documentation for Project-X Critical Decision Zero (March 2011).
- ❖ Baseline conceptual design of the low-energy and medium-energy beam transport for Project-X established. (April 2011).

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◆ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Technology

- ❖ The Dark Energy Camera was tested on a telescope simulator at Fermilab and the first components were shipped to Chile.
- ❖ 40m laser cavity for the new holographic noise search (Holometer) achieved 'lock'.
- ❖ First operation of electronics on a liquid argon TPC where the electronics are in the liquid argon itself. Demonstrated purification system for LAr.
- ❖ Thick CCD detectors (spares from DECam) were read out with <1 electron noise, enabling interesting new dark matter (DAMIC) and dark energy experiments.
- ❖ Led the way for world collaboration to qualify 3D ASIC design at the silicon fabrication brokers MOSIS (U.S.), CMP (France) and CMC (Canada).
- ❖ Fermilab Test Beam Facility supported 13 experiments in FY2011, 223 collaborators from 60 institutions in 14 countries. (85% uptime)

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❖ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Technology (Continued):

- ❖ First time for a “long” Nb₃Sn coil to reach Short Sample Limit at 1.9 K.
- ❖ YBCO double-pancake coil reached a total field of ~21 T in the presence background field.
- ❖ Delivered to KEK of last cavity-tuning machine and Lorentz-force detuning system. Achieved 9-cell cavity tuning automatically in under 4 hours.
- ❖ Completion of electromagnetic rf design for all cavities presently envisioned in the 3 GeV CW Project X design (SSR0, SSR1, SSR2, 650 MHz).
- ❖ With innovative mechanical polishing techniques achieved mirror-smooth rf cavity surfaces, with $Q > 4 \times 10^{10}$ and with $E_{acc} > 43$ MV/m.

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◆ 1.1 Science and Technology Results Provide Meaningful Impact on the Field

Technology (Continued):

- ❖ Four of six Fermilab nine-cell ILC cavities fabricated by U. S. vendor (AES) exceeded 35 MV/m in a vertical test after processing at JLab. This is at world-class level.
- ❖ Two US 1.3 GHz dressed ILC cavities fabricated at Fermilab and shipped to Japan for S1-global cryomodule. ILC/Project X cryomodule built from DESY kit cold and in operation with RF at NML, 1st such demonstration in Americas.
- ❖ Eight dressed 1300 MHz cavities qualified at 35 MV/M in Horizontal Test Stand.
- ❖ String of 8 cavities complete for CM2, final assembly in progress, 1st attempt in Americas to meet ILC S1 goal.

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◆ Goal 1.0 Notable Outcome:

- ❖ The CDF and D-Zero collaborations will improve the exclusion limits on the allowed mass of a standard model Higgs Boson, and continue to study the most pressing Standard Model issues accessible at the Tevatron. (Objective 1.1)
 - The Tevatron Collider program is at its physics-output peak and has extended and strengthened the Higgs limit, now excluding 156-177 GeV. It is unique in providing constraints in the dominant $H \rightarrow b\bar{b}$ mode at the currently favored low Higgs masses (115-130 GeV).
 - Exclude a wide range of Higgs boson masses in a 4th generation model.
 - Top Forward Backward Asymmetry discrepant now at the 3 sigma level and seen by both CDF and D0.
 - Worlds most precise top mass measurement in lepton+jets channel.
 - Ξ_b^0 recently observed by CDF.
 - Di-muon charge asymmetry by DZero with significance of 4 sigma using 9 fb⁻¹.



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◆ Goal 2.0 Provide for Efficient and Effective design, Fabrication, Construction and Operation of research Facilities

- ◆ The Laboratory provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory research facilities; and are responsive to the user community.

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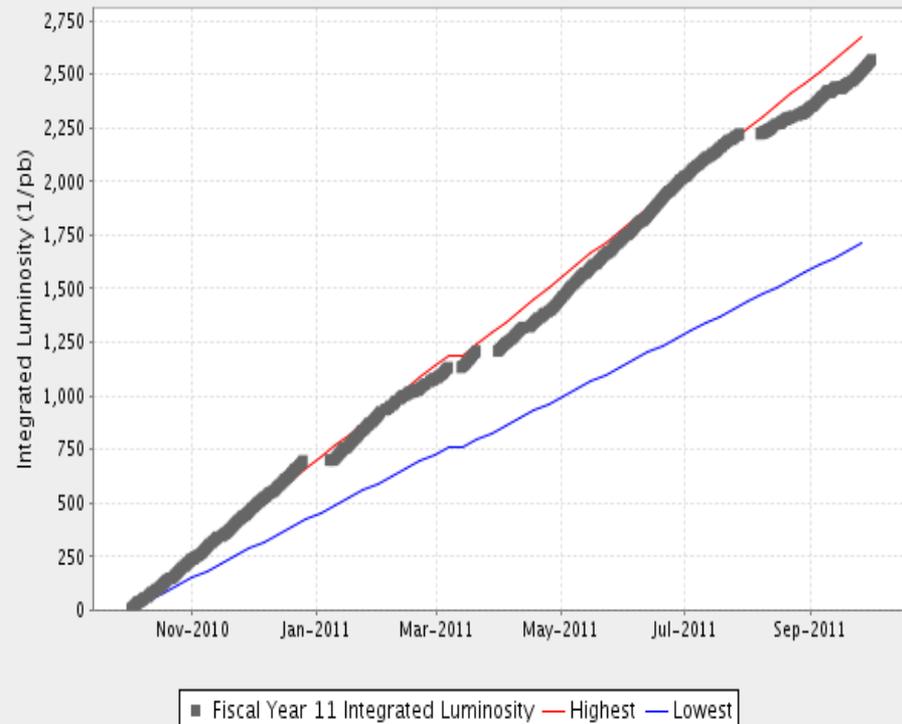
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◆ 2.3 Provide for effective and Efficient Operation of Facilities

- ◆ FY11 Luminosity delivered to CDF and D0 totals 2.57 fb^{-1}
- ◆ DOE 2 fb^{-1} goal was exceeded
- ◆ FY11 was the best year for Tevatron integrated luminosity and peak luminosity

Delivered Luminosity

FY11 Integrated Luminosity 2567.01 (1/pb)



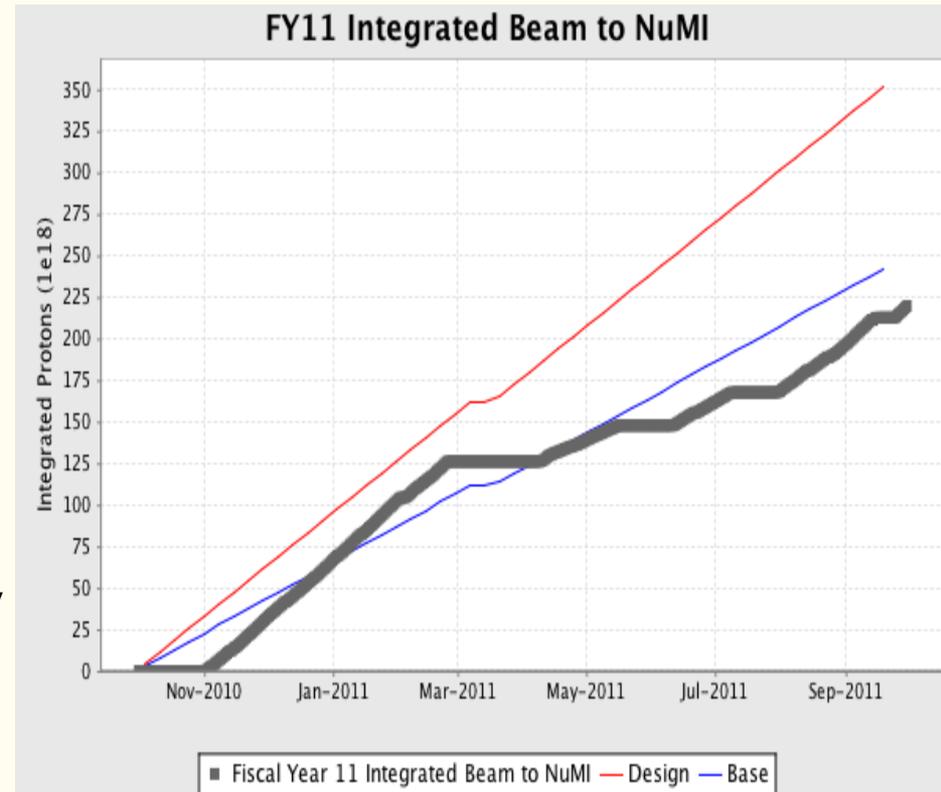
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2.3 Provide for effective and Efficient Operation of Facilities

- ❖ Delivered 2.21×10^{20} Protons to the NuMI target, which is 81.9% of the DOE goal of 2.7×10^{20} POT.
- ❖ Had the second best year for POT
- ❖ Significant downtime due to 4 target failures and change-outs
- ❖ Post-mortem analyses carried out on all failed targets; several design improvements are implemented on the present target
- ❖ Engaged expertise at Rutherford Laboratory in the UK in analysis, design and target production
- ❖ Pursuing construction of modified targets through an additional vendor



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◆ Goal 2.0 Notable Outcomes:

Lead a collaboration of national laboratories and universities to prepare a conceptual design and alternative(s) analysis for the Long Baseline Neutrino Experiment (LBNE), which is suitable for review by the Office of Project Assessment in preparation for Critical Decision 1. (Objective 2.1)

- ◆ The LBNE Project, led by Fermilab, has made substantial progress in developing the conceptual design and alternatives analysis for LBNE, and the cost and schedule estimates that follow. Progress has been slowed, however, by the unfortunate decision by the NSF to terminate support for DUSEL, which was the preferred alternative for the far detector site.

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During FY2011, LBNE

- ❖ Completed a series of five conceptual design and cost reviews of each the of subprojects (beam, near detector, water Cherenkov far detector, liquid argon far detector, conventional facilities).
- ❖ Conducted an extensive value engineering exercise, including more than 80 Value Engineering proposals, to reduce the cost of LBNE without compromising the primary scientific goals.
- ❖ Developed designs and plans for the case in which the LBNE far detectors are the only occupant of the Homestake Mine site.
- ❖ Documented this work in a set of documents submitted to the Office of Science Independent Review of Options for Underground Science describing LBNE with a water, liquid argon, or mixed technology far detector complex.
- ❖ Made initial, exploratory contact with two potential alternate sites for the far detectors.

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◆ Goal 2.0 Notable Outcomes:

- ❖ **The NOvA Project continues to progress towards completion on time and within budget. (Objective 2.2)**
- ❖ During the FY2011, the NOvA Project remained on schedule and within budget.
- ❖ The Project advanced from 37% to 53% complete during October through August, 2011.
- ❖ The NOvA Integration Prototype Near Detector was completed on November 24, 2010, and was observing neutrino events starting on December 15, 2010. The full NOvA Near Detector was completely installed in March, 2011. Current sample has over 2000 in-time events from the NuMI and Booster Neutrino Beams.

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- ❖ The Full Height Engineering Prototype Pivoter was completed and tested in the CDF Assembly Building in November, 2010 and began shipment of the production block pivoter parts to Ash River, MN in September, 2011.
- ❖ Production of NOvA Far Detector PVC extrusions began on January 10, 2011. Have 1,880 of the 23,040 extrusions required.
- ❖ Deliveries of NOvA wavelength shifting fiber from Kuraray reached the 56% mark (6,840 kilometers) in August, 2011.
- ❖ Installed the first NOvA accelerator component (a PDD, Permanent Dipole Double strength) in the Main Injector / Recycler during the short March, 2011 shutdown.
- ❖ Beneficial Occupancy of the NOvA Ash River Detector Building on April 13, 2011.

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◆ Goal 2.0 Notable Outcomes:

Additional notable outcomes at the Intensity Frontier:

- ❖ Mu2e experiment passed (29-member-team) Director's Design Review on technical readiness for CD-1. Overall, "The overall design maturity for the Mu2e experiment is at the conceptual level and consistent with the detail necessary to support a DOE Critical Decision 1 (CD-1)."
- ❖ g-2 experiment gaining strength following reviews, Stage I approval by Fermilab in January, funding plans with DOE, and collaboration growth and establishment of by-laws, task lists, and responsibilities, etc.

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FSO response to mid-year status Goals 1.0-3.0: ***Areas Indicating Continued Focus by FRA is Necessary:***

- ◆ Maintaining project progress and cohesion during difficult budget, new start climate
 - ❖ All projects continue to make progress. ARAA projects beginning to complete with no additional slippage.
 - ❖ Other than the no start induced multi-year SLI slippage no other project has been delayed for lack of funds, there have been LNBE and Mu2e projects delays due to outside factors such as NSF cancelation of DUSEL and estimated cost issues with Mu2e. MicroBooNE has received CD2/3a. Filter quality issues with the DECcam were overcome.

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(continued)

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FSO response to mid-year status Goals 1.0-3.0:

Areas Indicating Continued Focus by FRA is Necessary:

- ◆ POT and future plans for technology
 - ❖ The Neutrino production target for NuMI posed significant issues this year. A major design effort has resulted in the recent completion of a new target which was installed in mid-September. It appears to be a successful design, but it will not be fully stressed until there is a backup fabricated.

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(continued)

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FSO response to mid-year status Goals 1.0-3.0:

Areas Indicating Continued Focus by FRA is Necessary:

- ◆ Budget Framework and Communication with HEP
 - ◆ Fermilab has completed the transition of its internal budgeting process to mirror the DOE B&R reporting categories. Each B&R has an identified Fermilab person responsible for interacting with the appropriate OHEP program manager. Aligning the information needs of both parties remains a work in progress.

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FSO response to mid-year status Goals 5.0-8.0: ***Areas Indicating Continued Focus by FRA is Necessary:***

- ◆ Completion of 2011 Tripartite Reviews
 - ◆ Done
- ◆ Laser safety – Holometer, etc
 - ◆ Increased attention to this area
- ◆ Fermilab Chief Engineer/ Implementing Office of Integrated Planning functions
 - ◆ Complete, although one position, while covered, still needs to be filled

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FSO response to mid-year status Goals 5.0-8.0:

Areas Indicating Continued Focus by FRA is Necessary:

- ◆ Involuntary separation process/procedure
 - ❖ Remains a work in progress
- ◆ OQBP Comprehensive Assessment Plan Integration with FSO
 - ❖ Remains an issue
- ◆ Worker's Compensation levels
 - ❖ Under control
- ◆ Collective Bargaining Agreements / Cost Allowability
 - ❖ All FY11 agreements successfully negotiated
- ◆ No progress yet on Secretary's 35%, over 3years, fleet reduction
 - ❖ Plan almost final, will meet end of CY2011 goal.



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FSO response to mid-year status Goals 5.0-8.0: ***Areas Indicating Continued Focus by FRA is Necessary:***

- ◆ Small Business Subcontracting Goals
 - ❖ Not met due large amount of “pass-through” funding for Universities provided by DOE
- ◆ Mission Readiness Progress
 - ❖ Mission Readiness Peer Review successfully completed
- ◆ Sustainability Plan
 - ❖ Remains a work in progress – sustainability committee established and beginning to function

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FSO response to mid-year status Goals 5.0-8.0: ***Areas Indicating Continued Focus by FRA is Necessary:***

- ◆ Counterintelligence support
 - ❖ Continues
- ◆ Emergency Management training /exercise
 - ❖ Complete

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◆ Goal 3.0 Provide Effective and Efficient Science and Technology Program Management

- ◆ The Laboratory provides effective program vision and leadership; strategic planning and development of initiatives; recruits and retains a quality scientific workforce; and provides outstanding research processes, which improve research productivity

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❖ **3.1 Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision**

- ❖ Clarity of vision and its effective articulation by the Laboratory: recognized by users, oversight groups in reviews and the national planning panel.
 - Near-term, mid-term, and long-term strategy at the Energy, Intensity, and Cosmic Frontier.
- ❖ DOE OHEP encouragement to develop strategy for Fermilab being primary US particle physics laboratory:
 - site of Intensity Frontier (near-term and mid-term)
 - eventual US site for a potential lepton collider at the Energy Frontier, and a neutrino factory at the Intensity Frontier (long-term)

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- ❖ Joint planning with outside community: Project X physics workshops and accelerator collaboration meetings and a muon collider workshop involve the widest possible participation. Vision for the future requires and involves nine major accelerator laboratories in the US.
- ❖ Developing core competencies in established areas (e.g., accelerator design and operations, detector and computing techniques) and new areas (e.g., superconducting RF, 3D electronic devices, and Liquid Argon technology).
- ❖ Doing R&D for new facilities: Focus on Project X and options for maximizing physics reach and flexibility for future programs at the Intensity Frontier, starting with high intensity proton beams for long-baseline and short-baseline neutrino experiments, but also for kaon and muon experiments, precision measurements with nuclei, and energy application. In addition, organizing accelerator R&D for neutrino factory and muon collider through MAP which Fermilab was asked to lead.

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- ❖ Accomplishing this requires a highly qualified staff. Many staff members serve on national and international reviews, studies, and planning committees – providing insight for others and keeping Fermilab abreast of efforts, successes, and problems elsewhere.
- ❖ Fermilab completes well with top universities and laboratories in attracting and retaining qualified scientific staff, as evidenced by the many awards, prizes, and honors for our staff since the last review in September, 2010.

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◆ Goal 3.0 Notable Outcome

- ❖ **Develop a detailed plan to deal with workforce issues arising in FY2012 from the planned completion of operations of the Tevatron. (Objective 3.2)**
- ❖ We have a mechanism, OHAP (Organization and Human Asset Plan), to review skills across the entire lab (available/ future needs) and guide the evolution of the workforce to carry out the lab's mission annually.
- ❖ Accomplished in FY2011
 - Monthly update and analysis of the current Fermilab workforce data by OHAP categories and roles
 - 5-year (transition) plan / evolution for scientists complete (Feb. 2011)
 - Taskforces are commissioned to help the OHAP process. The primary one in FY2011 was WFOTF (Work Force Optimization Task Force) to provide a more detailed staffing model for FY2012 based on anticipated budget and migration from Tevatron into projects, R&D, & other operations. (April 2011)

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◆ Goal 3.0 Notable Outcome (cont.)

❖ **Develop a detailed plan to deal with workforce issues arising in FY2012 from the planned completion of operations of the Tevatron. (Objective 3.2)**

❖ FY2011 Accomplishments

- Decommissioning Task Force produced a plan and schedule (using OHAP skill sets) for the Tevatron & CDF/DZero decommissioning, which was the subject of a Director's Review in September 2011
- The FY 2012 budget including program/project resources was prepared according to DOE B&R categories and guidance given to Projects, Divisions, and Sections, based on the most recent, more realistic budget scenario assumption in June 2011.

❖ Plan for Fall 2011

- Workforce gap analysis study, with gathering of updated data staffing needs for the next decade, will begin in October.

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FSO response to mid-year status: ***Areas Indicating Continued Focus by FRA :***

- ◆ Plans for Tevatron - see above goal # 3
 - ❖ Decommissioning Task Force Plan & Director's Review

- ◆ Availability of engineering and technical resources
 - ❖ Voluntary Separation Program took account of needed resources
 - ❖ Upcoming Involuntary Separation Program in FY2012 will free-up funding to address these staffing needs

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◆ **Goal 4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory**

◆ This Goal evaluates the Contractor's Leadership capabilities in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory

- The leadership of FRA is exercised by its President who is also the Director of the Laboratory. He reports to the Board of Directors chaired by Robert Zimmer, President of the University of Chicago, and Steve Beering who is the vice chair of the FRA Board and Chairman of the Board of Trustees of URA.

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◆ Goal 4.0 Notable Outcomes

- ❖ Implement a Contractor Assurance System in accordance with Clause H.13 of the prime contract, create a standing Contractor Assurance System Review Committee comprised of appointees from the FRA Board of Directors and relevant subject matter experts, and conduct a formal review of the Contractor Assurance System. (Objective 4.3)

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◆ Goal 4.0 Notable Outcomes

- ❖ The FNAL Contractor Assurance System description was approved by DOE on April 28, 2011, and Clause H.13 was added to the prime contract.
- ❖ A standing FRA CAS Review Committee was created that is chaired by Anne Street and includes Jill Wittels and Avijit Ghosh from the FRA Board and three additional subject matter experts (Jane Fitzpatrick [SNL], Dean Helms [Ret. DOE] and Jack Anderson [ORNL]).
- ❖ The Review Committee conducted an organizational meeting at FNAL on January 21, 2011, and conducted its formal review of the FNAL CAS on June 12-15, 2011.

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◆ Goal 4.0 Notable Outcomes

- ❖ Demonstrate the use of the full suite of resources at the labs' disposal (including the expertise of Laboratory scientists and engineers) to develop innovative, crosscutting strategies for meeting the Executive Order 13514 Goals. (Objectives 4.2, 4.3)
- ❖ Save money, improve efficiency, reduce pollution, and eliminate waste.

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◆ Goal 4.0 Notable Outcomes

- ◆ The most “innovative, crosscutting strategies” are listed first, with additional examples of effective efforts across the Laboratory following.
 - Procurement of laser cutter for magnet insulation production, allowing more efficient use of staff time, better parts, and increase safety (no blades used, minimized risk of hand-cuts).
 - We are actively pursuing an R&D program to develop mechanical-based processing (tumbling polishing) to minimize the use of toxic chemicals in the preparation and construction of SRF cavities.
 - Fermilab Sustainability Committee formed to advise the Lab on effective ways to meet the requirements DOE has developed in its Strategic Sustainability Performance Plan, in accordance with EO 13514 requirements.

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◆ Goal 4.0 Notable Outcomes

- ◆ The most “innovative, crosscutting strategies” are listed first, with additional examples of effective efforts across the Laboratory following.
 - Greenhouse-gas emissions inventory system and info web site developed.
 - New purchasing guidance developed for Sustainable Acquisition (green purchasing).
 - Employee commuter survey to help determine actions lab could take to reduce GHG emissions associated with commuting.
 - Removal, disassembly, packing, and transport of the SciBar detector for re-use in a cosmic-ray neutron telescope in Mexico.
 - Systematic replacement of older, smaller equipment with more efficient units; e.g., heavy A/C elements

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◆ Goal 4.0 Notable Outcomes

- Continued program to use more efficient lighting fixtures and bulbs. More lights out, too.
- Consolidated the functions of Machine Shop Department Head and Quality Material Control Department Head into a single person, increasing synergy and reducing OH cost.
- New, segregated scrap metal recycling area for more efficient recycling.
- Systematic review of software licenses to reduce unnecessary copies/fees.
- Power management feature enabled during transition to Win7 on computers;
- Networked printers are reset to default duplex printing, which should save paper and money – part of CD's green [computing policy](#).
- Also, the Grid Computing Center received an Energy Star building rating.

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◆ Goal 5.0 Sustain and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection

- ◆ This Goal evaluates the Contractor's overall success in deploying, implementing, and improving integrated ES&H systems that efficiently and effectively support the mission(s) of the Laboratory

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◆ 5.1 Provide an Efficient and Effective Health and Safety Program

- ◆ Human Performance Improvement Initiatives (HPI):
 - Implementing HPI principles into incident/near miss investigations.
 - Implemented HPI in FESS OPS – very successfully.
 - Trained over 200 people in HPI - many in FY2011 in preparation for implementing more fully at the Lab.
 - Tasked a broad based team, lead by the AD for Accelerators, with determining an implementation plan for the lab. They have been meeting regularly and continue to make progress.
- ◆ Improved Industrial Hygiene Database Systems to provide statistical analysis.
- ◆ Developed and implemented Experiment specific ITNAs in TRAIN.
- ◆ Completed a successful OHSAS 18001 and ISO 14001 surveillance audit in August by registrar.



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- ❖ **5.1 Provide an Efficient and Effective Health and Safety Program (continued)**
 - ❖ DART rate is 0.26; TRCR is 1.03; analysis is done of each case.
 - ❖ Revised our Traffic Safety Chapter (widely publicized) and improved the timeliness and fairness of the associated discipline policy.
 - ❖ Using many different communication tools; *Fermilab Today*, *Porcelain Press*, Scheduling Meeting Handouts, Take 5 Posters & web page, signs at entrances to the lab, and new ES&H web pages.
 - ❖ Continuous updating/improving of the "Take 5 for Goal Zero" campaign.
 - ❖ Current Individual Training Needs Assessment (ITNA) completion rate is ~98%, tracked, and communicated.
 - ❖ ALARA reviews performed in accordance with the Fermilab ALARA program; the laboratory continues to identify ALARA efforts and best practices.

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- ◆ **5.1 Provide an Efficient and Effective Health and Safety Program (continued)**
 - ❖ Obtained the lowest total effective dose received by Fermilab workers in the last decade - despite record beam intensities delivered to experiments.
 - ❖ Automated radiological worker training more effectively.
 - ❖ Challenges: The intensity frontier as well as Tevatron decommissioning and the upcoming long shutdown.
 - ❖ Continued effective work by professional staff, FESHCom subcommittee system, as well as ad hoc groups.

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◆ 5.2 Provide an Efficient and Effective Environmental Management System

◆ Sustainable Acquisition (SA)

- Provided lab wide training and have regular meetings
- More accurately report SA purchases for next year's Pollution Prevention Tracking and Reporting System submittal
- Recycled and Bio-based Products

◆ National Environmental Policy Act (NEPA)

- Updating FESHM Chapter/improving the process

◆ Office Recycling Program

- Paper, Plastic/Glass/Metal Bottles and Cans
- Recycled over ¼ million pounds last year
- Custodial manages collection

◆ Also recycle construction demolition debris and electronics.



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❖ 5.2 Provide an Efficient and Effective Environmental Management System (continued)

❖ Computers

- All Win7 machines have power saving features enabled
- All networked printers default to double sided printing

❖ Implemented Environmental Management Systems (EMS) fully:

- Lab has developed a Site Sustainability Plan describing current status and planned actions to meet DOE's sustainability goals.
- Goals are to be integrated into the EMS. (Meeting DOE's goals will prove challenging.)

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❖ 5.2 Provide an Efficient and Effective Environmental Management System (continued)

- ❖ Implemented Environmental Management Systems (EMS) fully (continued):
 - Fermilab Sustainability Committee has been formed and continues to do their work.
 - Comprehensive Greenhouse Gas inventory completed for site activities.

- ❖ Commuter Survey
 - A committee will study the results/analysis and make specific recommendations

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- ◆ **5.2 Provide an Efficient and Effective Environmental Management System (continued)**
 - ◆ Environmental Management Program (EMP)
 - Polystyrene Recycling – pilot program (FCC, Wilson Hall and Cross Gallery)
 - Energy – Computer Power Management
 - Site Management – Infrastructure, Existing Building Modification (develop plan to meet DOE goals for High Performance Sustainable Buildings)
 - Releases – Air Emissions Scope 1 Green House Gasses (minimize refrigerant R22 at D0)
 - ◆ Spill Prevention and Countermeasure Control Plan (SPCC) – final approval

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◆ Goal 5.0 Notable Outcomes

- ◆ Meet the FY 2011 milestones contained in the May 2010 Safety Assessment Document (SAD) Schedule, Rev. 0. (Objective 5.1)

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Objective 5.1

- ❖ On schedule
- ❖ Progress continues to be made on meeting the milestones in the approved corrective action plan written to address the findings of the May 2010 Safety Assessment Document Schedule. Specifically, during FY 2011, 10 Chapters of the Fermilab Safety Assessment Document were completed and chapters for 2 new modules of the Fermilab accelerator facility developed and approved. The Accelerator Safety Envelope was maintained up-to-date and approved by DOE-FSO.

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◆ Goal 5.0 Notable Outcomes

- ◆ Implement changes to the Spill Prevention Control and Countermeasure Program (SPCC) to address recent assessment findings and either close or provide secondary containment for three emergency generators. (Objective 5.2)

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Objective 5.2

- ❖ Secondary containment is now in place for emergency generators related to the assessment finding.
 - New generators meeting SPCC requirements are double-walled to reduce risk of leaked fuel into the environment.
 - Single-walled generator fuel tanks at Service Building C4 and DO were replaced and are now double walled.
 - Aging generator set at AP50 was replaced. New generator has double-walled tanks.

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❖ **Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)**

- ❖ This Goal evaluates the Contractor's overall success in deploying, implementing, and improving integrated business systems that efficiently and effectively support the mission(s) of the Laboratory

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◆ Goal 6.0: Notable Outcomes

- ◆ Complete the FY 2011 milestones and key activities identified in the DOE approved Quality Implementation Plan for an Integrated Quality Assurance Program. (Objective 6.5)
 - All milestones are accomplished and key activities are on track. Progress is reported to DOE every quarter

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◆ Goal 6.0: Notable Outcomes

- ❖ Demonstrate efficient and effective execution of all American Recovery and Reinvestment Act (ARRA) activities at the Laboratory.
(Objectives 6.2)
 - ARRA Funds awarded to FNAL (\$114.2M)
 - FNAL Obligations \$108.3M (94.8%)
 - FNAL Costed \$73.8M (64.6%)
 - Successful ARRA Review with FSO and SC attendance
 - *No findings – slippages being adequately addressed*

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◆ Goal 6.0: Notable Outcomes

- ◆ Perform Succession Planning through the Division, Section, and Center Heads by the end of FY 2011. (Objective 6.4)
 - The 2011 Succession Planning process is completed.
 - Succession plans are complete for senior management positions down through Division/Section/Center Head positions.

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❖ 6.2 Provide an Efficient, Effective and Responsive Acquisition Management System(s)

Activities and Accomplishments:

- ❖ The Procurement Balanced Scorecard (BSC) Plan for FY11 was approved by DOE-FSO and is the primary performance management tool for this system. Based on results so far, a year-end score of 94% is expected.
- ❖ Procurement is on target to fully meet three of the four BSC perspectives: Customer, Learning and Growth, and Financial. Most but not all of the elements of the fourth perspective, Internal, are expected to be met.
- ❖ Procurement actions totaled \$186M through September 29, 2011. Activity for construction, A&E and projects has been very heavy, as well as contract administration effort for NOvA and on site construction. Acquisition planning in support of LBNE has been substantial.
- ❖ Procurement has taken on leadership roles in the DOE-wide Supply Chain Management project, and the DOE-wide peer review (PERT) process.

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❖ 6.2 Provide an Efficient, Effective and Responsive Acquisition Management System(s)

Challenges and Plans:

❖ Under the fourth BSC perspective, Internal:

- We will not meet the Small Business, Service Disabled Veteran Owned, or HUBZone, business goals. Efforts continue to access these segments but the market is not amenable.
- We will not meet the on-time delivery measure. (staffing and value)

Notable Outcome 6.1: (Procurement related aspects)

- ❖ 501 ARRA actions totaling \$17.2M have been awarded this year; total ARRA obligations since inception are \$95.9M.
- ❖ Compliance and reporting are burdensome but tended to very well.
- ❖ Two audits by external entities, and multiple internal reviews of ARRA subcontracts have yielded zero findings.

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❖ 6.3 Provide an Efficient, Effective and Responsive Property Management System(s)

Activities and Accomplishments:

❖ Property:

- The Personal Property Management Balanced Scorecard (BSC) Plan for FY11 was approved by DOE-FSO and is the primary performance management tool for this system. We expect to meet or exceed all metrics except one. A year-end score of $\geq 94\%$ is expected.
- Property Manager participated in the Metals Suspension Review at BNL.
- DOE Metals Suspension Review at Fermilab yielded favorable results.

❖ Fleet:

- We are on track to meet vehicle Local Use Objectives, although they have not yet been approved by DOE for FY11.
- We are exceeding the 2% reduction in petroleum fuel use in FY11.

Performance Evaluation Management Plan

Dave Carlson

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❖ 6.3 Provide an Efficient, Effective and Responsive Property Management System(s)

Challenges and Plans:

- ❖ One BSC metric is at risk: Sales offered within 60 days of receiving local disposition authority; a staffing vs. workload problem. Property staff are tracking this measure manually and trying to adjust assignments in the warehouses and railhead in order to list everything as soon as possible.
- ❖ DOE O 580.1A – A new CRD is out for review, and compliance with that would be our biggest challenge going forward. The evolution of requirements from the Federal and DOE Property Management Regulations to a revised DOE Order and CRD has opened the door to additional requirements and oversight. We have provided comments for DOE consideration, and will continue to participate in periodic property management teleconferences to keep current and close to the process.
- ❖ No DOE guidance yet on the Secretary's 35%, over 3 years, fleet reduction.

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◆ Goal 7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility Infrastructure Portfolio to meet Laboratory Needs

- ◆ This Goal evaluates the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today's and tomorrow's mission(s) and complex challenges.

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◆ **Goal 7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility Infrastructure Portfolio to meet Laboratory Needs**

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◆ Goal 7.0 Notable Outcomes

- ◆ Fully implement the Mission Readiness process, resolve and incorporate any comments, findings, or recommendations resulting from the FNAL Mission Readiness peer review, and participate in peer reviews of other sites and the overall SC Mission Readiness process. (Objective 7.1)

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- ❖ Mission Readiness (MR) process has been implemented at Fermilab
- ❖ Facility Mission Matrix updated and verified by landlords
- ❖ Annual Lab Plan completed with all core competencies rated as mission “capable”; utility systems given a “partially capable” rating due to loss of SLI
- ❖ FRA board was briefed on MR status at June 2011 meeting
- ❖ FIMS data validation obtained “Green” rating on May 18, 2011
- ❖ Fermilab provided Team Leader for SLAC MR review on May 24
- ❖ Fermilab MR peer review successfully completed on July 13-15
- ❖ Fermilab participated in AMES MR peer review on July 23-25
- ❖ Served as steering committee member to review & update Lines of Inquiry

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◆ **Goal 8.0 Sustain and enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems**

- ◆ This Goal evaluates the Contractor's overall success in safeguarding and securing Laboratory assets that supports the mission(s) of the Laboratory in an efficient and effective manner and provides an effective emergency management program.

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- ❖ **8.1 Provide and Efficient and Effective Emergency Management System**
 - ❖ Hazard Assessment Document was updated (3 year cycle).
 - ❖ Fermi Emergency Response Plan (FERP) was updated (3-year cycle).
 - ❖ Improved web presence of the Emergency Management Program.
 - ❖ Completed re-banding of all Tone Alert Receivers (TARs) and transmitters.
 - ❖ Started regular presentations to the Fermilab ES&H Committee on Emergency Management.

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- ◆ **8.1 Provide and Efficient and Effective Emergency Management System (continued)**
 - ❖ Incorporation of Highly Protected Risk (HPR) findings into the building manager training and frESHTRK (issues tracking system).
 - ❖ Had a successful drill of the EOC on September 6, 2011 – a tornado warning with damage on site.

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◆ Goal 8.0 Notable Outcomes

- ❖ Complete the FY 2011 milestones identified in the Corrective Action Plan to address the findings of the June 2010 FSO/FNAL assessment of the Laboratory's Emergency Management Program. (Objective 8.1)

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◆ Objective 8.1

- ◆ FNAL completed the scheduled FY2011 milestones in the Corrective Action Plan (CAP) to address the findings identified during the June 2010 joint FSO/FNAL assessment of the Laboratory's Emergency Management Program. (8.1). The CAP included modifications to the following documents:
 - FESHM Chapter 6010-Technical Appendix B:Hazard Map Program
 - Emergency Response Plan-Technical Appendix K:Local Plans
 - Hazard Assessment Document
 - FESHM Chapter 2040 Emergency Preparedness
 - Emergency Response Plan-Technical Appendix E: Drill and Exercise Manual