

# JEFFERSON LAB STATUS

Stuart Henderson, Director  
July 8, 2021

Jefferson Lab



# Reminder: Community Standards



## COMMUNITY STANDARDS

### Welcome to Jefferson Lab!



Everyone at Jefferson Lab has a responsibility to foster an environment where all employees, users, students, guests, visitors, and subcontractors feel safe, welcomed and supported in advancing the Lab's mission.

We'd like to take a moment to familiarize you with our Community Standards. Jefferson Lab actively promotes a diverse and harassment-free experience for all.

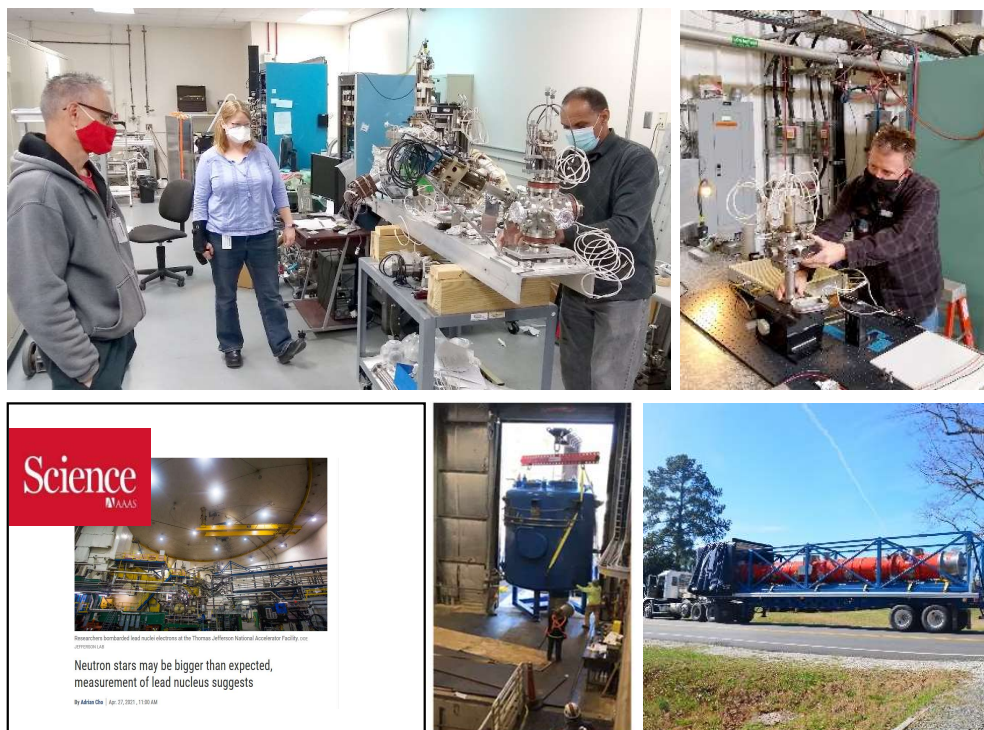
While it is not possible to provide a complete list of the types of improper behavior below, prohibited conduct includes, but is not limited to:

- Offensive verbal comments
- Bullying or deliberate intimidation
- Stalking/following
- Repetitive photography of the same person(s)
- Gender-based insults
- Displaying or circulating sexually suggestive materials
- Inappropriate physical contact
- Unwelcome sexual attention or advances

Everyone is expected to embody the values of professionalism, respect, and diversity as well as cultivate a supportive and inclusive environment where the opinions of others are embraced. Behaviors not aligned with the lab's values will not be tolerated. Failure to adhere to this Community Standard may result in being barred from further lab events, suspension of site access including housing at the SURF Residence Facility, and/or removal from the site.



# Jefferson Lab News and Highlights

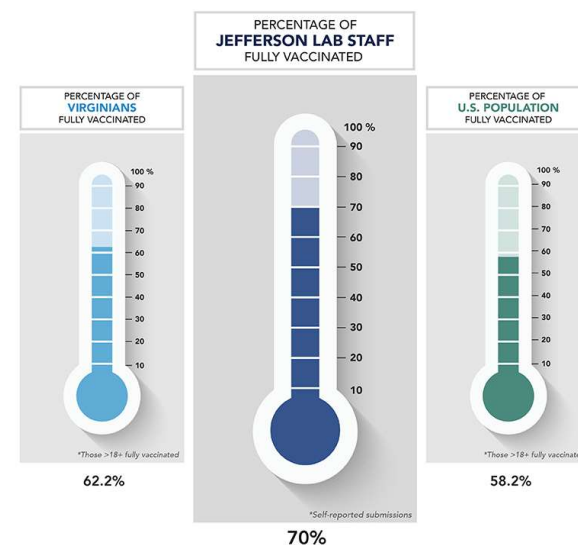
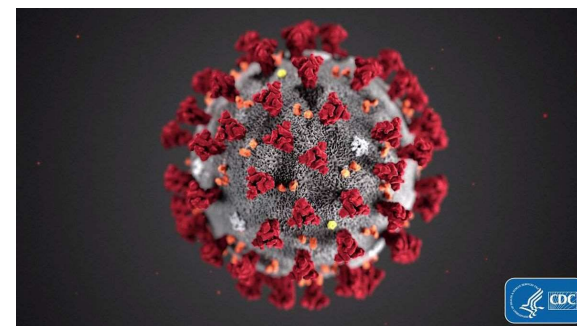


- CEBAF 12 GeV Program:
  - 12 GeV Scientific era is in full swing, with high-profile results
  - Completing extensive 8-month maintenance
  - MOLLER has CD-1
- Electron-Ion Collider: integrated TJNAF-BNL team; scope responsibilities largely defined
- Excellent progress in Multi-Lab partnership projects:
  - LCLS-II Project Jefferson Lab scope complete!
- Computational Sciences and Technology organization developing new strategic direction
- Significant progress maturing safety program, culture and improving performance
- Significant progress enhancing D&I program with strong leadership ownership and engagement
- Successful response to COVID; significant on-site work accomplished while ensuring safety

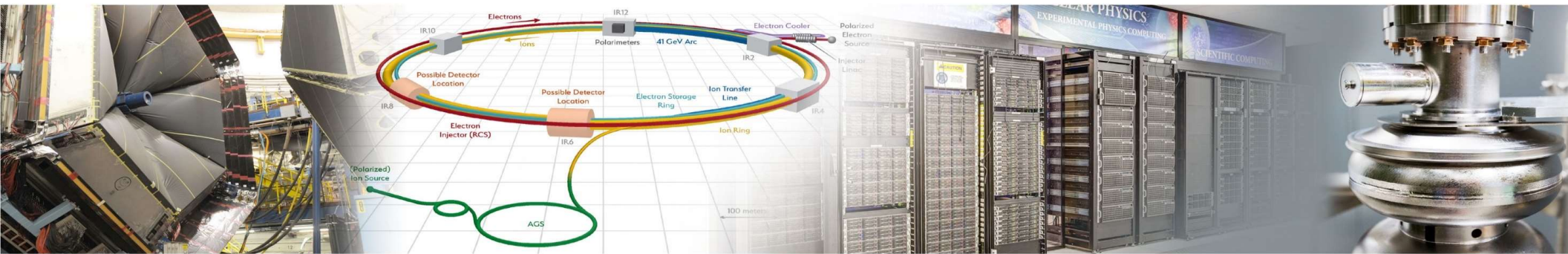


# Jefferson Lab COVID Status

- Jefferson Lab transitioned to MEDCON4 (Normal Operations with Expanded telework) on June 7
- A typical day has ~350 staff, ~100 contractors, several users on site and ~400 staff working remotely
- Cumulative Rates:
  - 33 Test Diagnosed
  - 38 Presumptively Diagnosed
  - 81 Contacts of Cases
  - 66% of Jefferson Lab staff fully vaccinated
- Our COVID controls have worked
  - We believe we've had no on-site transmission
  - At the same time we have accomplished a great deal of work
- We are continuing to maximize teleworking while opening the campus to additional employees and users to prepare for the upcoming CEBAF run, other priority projects, and activities essential to our collaborative mission
- We will likely remain in MEDCON4 through the summer
- The leadership team is finalizing plans for our long term hybrid work model that will be instituted once we are able to transition to MEDCON 3 Normal Operations



# Jefferson Lab's Science and Technology Vision



## Nuclear Physics at CEBAF

Vibrant 12 GeV research program, operating >30 weeks/yr, supporting 1,700 annual users

MOLLER Project & SoLID proposal

Future opportunities in fixed-target, high-luminosity complementary to EIC

Theory and computation supporting NP goals

## Electron-Ion Collider

Partnering with BNL in the management, design, and construction of the Electron-Ion Collider Project

Leadership in EIC scientific program

## Computational Science & Technology

Vision for world-leading computational program

Developing concept of a High Performance Data Facility focused on the unique challenges and opportunities for data-intensive applications and near real-time computing needs

Computational Nuclear Physics

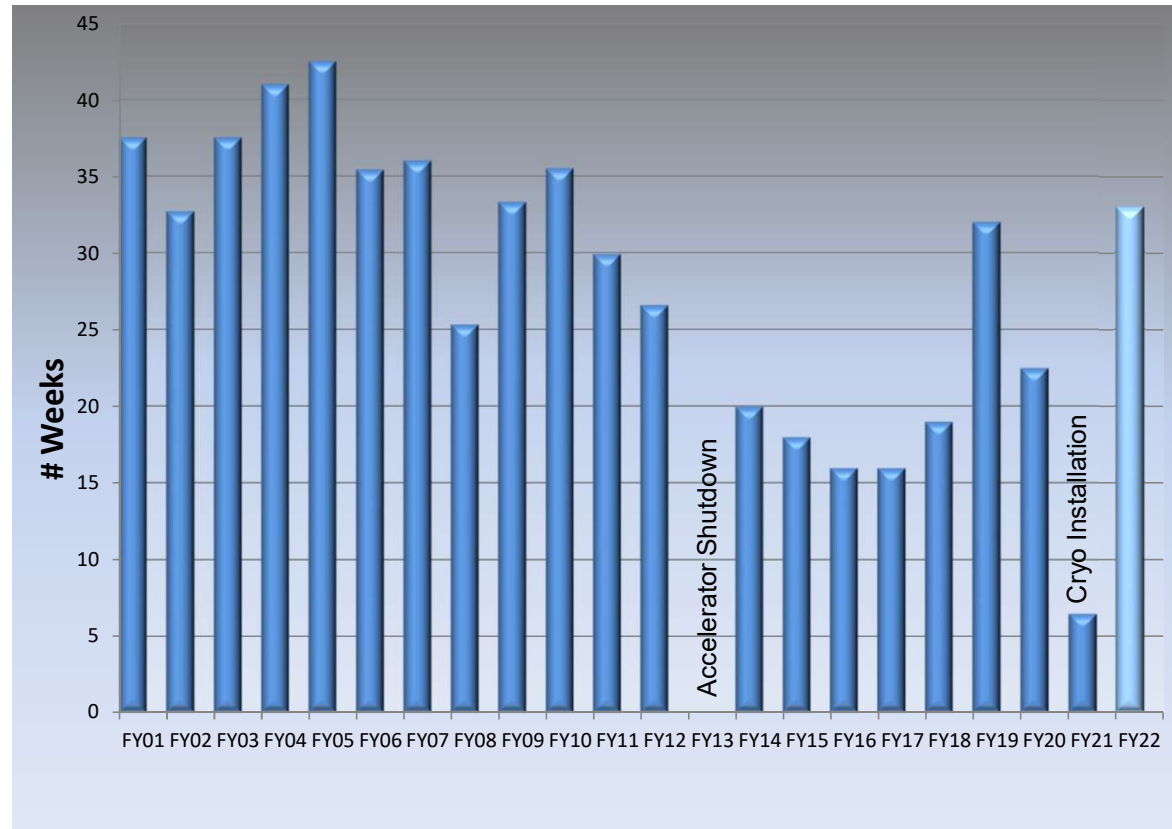
## Accelerator Science & Technology

Accelerator component production for DOE/SC projects, including LCLS-II and LCLS-II-HE at SLAC, and SNS-PPU at ORNL

R&D in accelerators, detectors, isotopes

# CEBAF Operations

- Scheduled Accelerator Down began September, nearing completion
- Pacing activity is the installation of new 2K cold-box for CHL-1, replacing obsolete failure-prone system.
- SAD includes many important activities, including installation of refurbished cryomodules
- Assembled aggressive plan to increase CEBAF energy and gradient margin, and improve reliability
- Looking forward to a full year of CEBAF operation in FY22 (as shown in posted schedule), which promises exciting science results



# MOLLER and SoLID are Both Moving Forward

## MOLLER Project

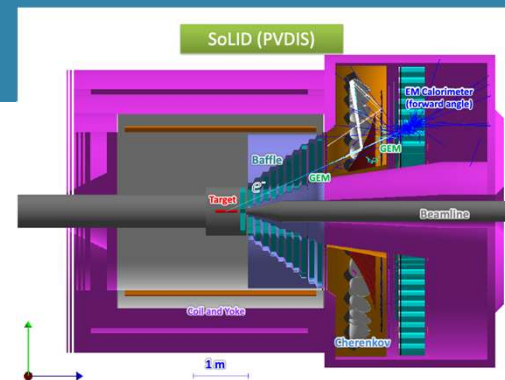
- Experiment in Hall A
- Cost estimate: ~\$50M
- Timeline: construction over FY21-24
- DOE Critical Decision 1 Review October 13-15
- CD-1 Approved December 15, 2020
- Congratulations to the MOLLER Team!



Jim Fast, MOLLER  
Project Manager

## SoLID Proposal

- Solenoidal Large Intensity Device – new multipurpose detector facility (in Hall A) with broad scientific program
- Submitted proposal to DOE in February
- Cost estimate: ~\$90M
- Timeline: construction FY23-FY27
- Seeking CD-0 approval
- DOE Science Review held March 8-10 – first step in making SoLID a reality



# Electron Ion Collider Partnership

- Partnership agreement signed by Lab Directors in May 2020, lays foundation for full intellectual partnership
- EIC Project - Executive Management Team established:
  - Strong experienced leaders from host Lab and partner Lab
- Established Jefferson Lab EIC Partner Project organization under leadership of A. Lung
- **Project:** Jefferson Lab primary responsibilities include:
  - **Lead** for Detector Systems, RF Systems, Cryogenics, and Energy Recovery Linac
  - **Collaborative** responsibilities for Management, Design, R&D, Magnets, and Electron Injector
- **Science and Detector:** Jefferson Lab EIC group will continue to provide scientific support as guidance for the Project.

## ELECTRON ION COLLIDER PROJECT

**J. Yeck (BNL)**, Project Director

**F. Willeke (BNL)**, Deputy Project Director and Technical Director

**R. Ent (TJ)**, Co-Associate Director for the Experimental Program

**E. Aschenauer (BNL)**, Co-Associate Director for the Experimental Program

**A. Lung (TJ)**, Deputy Project Director for TJNAF Partnership

**A. Seryi (TJ)**, Associate Director for Accelerator Systems & International Partnership

**D. Hatton (BNL)**, Project Manager

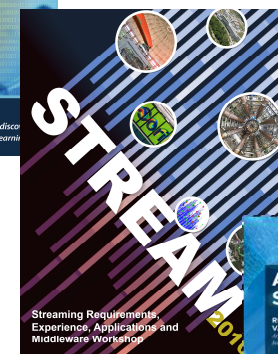
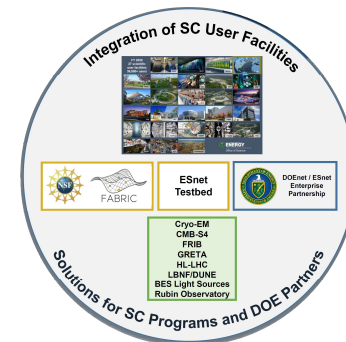
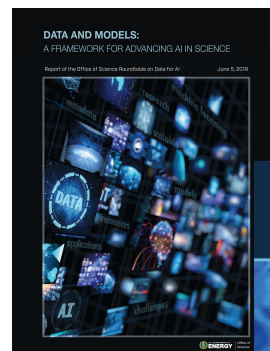


Feb 28, 2020 @ TJNAF



# Establishing an Advanced Computing Program: High Performance Data Facility

- We put forward to DOE a bold vision for a computational capability based at Jefferson Lab that meets needs identified in various community studies for a data-centered high performance computing facility
- We are designing the **High Performance Data Facility**:
  - Focused on unique challenges/opportunities for data-intensive applications workflows and near real-time computing needed to support significant growth in DOE-SC user facility data
  - Foundational to a National Data Infrastructure



## FY22 DOE Budget Request to Congress:

*"In FY 2022, ASCR will design a state-of-the-art Scientific High Performance Data Facility focused on the unique challenges and opportunities for data-intensive applications workflows and near real-time computing needed to support the explosion of SC scientific data that will serve as the anchor for the Integrated Computational and Data Infrastructure Initiative. To provide geographic diversity and operational resiliency, this facility will be located on the East Coast."*

# Two Significant Building Projects Are Moving Ahead

- CEBAF Center Renovation and Expansion
  - *Modern and sustainable home for our growing staff*
  - *Expanded collaboration spaces*
- Acquisition and renovation of the Applied Research Center
  - *Highly cost effective consolidation of administrative and support staff*
  - *Room for expanded STEM education and public visitor center*
- CD-1 approved; \$87M

- Thomas Jefferson Infrastructure Improvement Project
- Renovation of EEL and new Test Lab High Bay Annex
  - *Provides needed high bay space for Physics and relieves space for SRF production*
  - *Improves operability, safety, and security by consolidating like functions*
- Upgrade and sustainment of water, sewer, comm, and traffic infrastructure
  - *Alleviates growing deferred maintenance backlog*
- CD0; \$98M



NORTH ENTRANCE  
CEBAF CENTER RENOVATION & ADDITION



# Budget Status

FY21:

- Very tight year due to both increased costs and reduced funding; 6.5 weeks CEBAF operations and strained core research

FY22 DOE Budget Request to Congress is very good for Jefferson Lab

- Healthy CEBAF Operations including full funding of CEBAF Performance Plan
- \$7M for MOLLER
- \$10M CEBAF Center Renovation and Expansion Project
- \$1M for Thomas Jefferson Infrastructure Improvement Project

	FY19	FY20	FY21	FY22 PBR
Facility Operations	118.3	124.3	113.3	138.2
MOLLER	0.4	2.9	5.2	7.0
Total Nuclear Physics	134.6	142.0	129.5	158.0
Weeks of Operation	32	22.5	6.5	31

\*Does not include EIC Funding

# World Class Science Requires World Class Safety

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- Recent near-misses brought ongoing safety culture issues to the fore
- DOE Office of Enforcement investigated safety incidents at Jefferson Lab and concluded that JSA violated regulatory requirements prescribed under 10 C.F.R. Part 851, Worker Safety and Health Program. DOE issued a Notice of Violation with accompanying civil penalty
- These events are a wake-up call for all of us that business as usual is not an acceptable response

We want you to be able to come to Jefferson Lab and safely carry out your research; my message to you:

- Have a questioning attitude: ask yourself, what can go wrong?
- Pay attention to your surroundings – situational awareness
- Don't make assumptions when it comes to your safety
- Ensure that our students in particular are properly trained and supervised



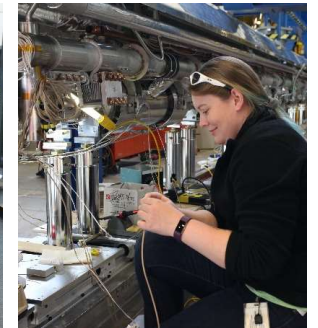
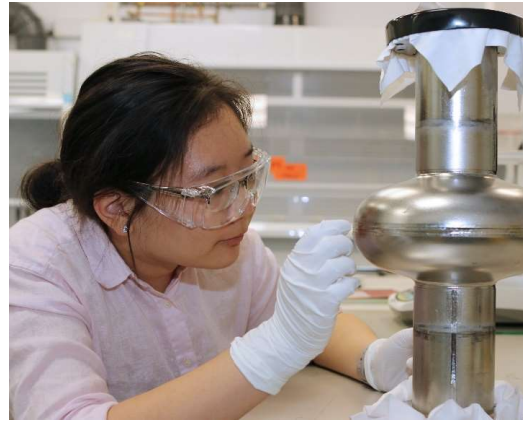
# Diversity and Inclusion as an Uncompromising Value

## Highlights of the Past Year

- Completed D&I Culture Survey rollout to staff and users
- Established Demographic Focus Groups with senior leadership sponsors
- Completed nearly 20 “deep-dive” focus groups sessions, and formulated action plans

## Key Initiatives

- Institutionalize Hybrid Remote Work
- Evolve compensation program
- Review family-oriented Benefits and Policies
- Identify targeted career pathing options, based on Individual Career Profiles
- Scaling up Science Education Outreach programs



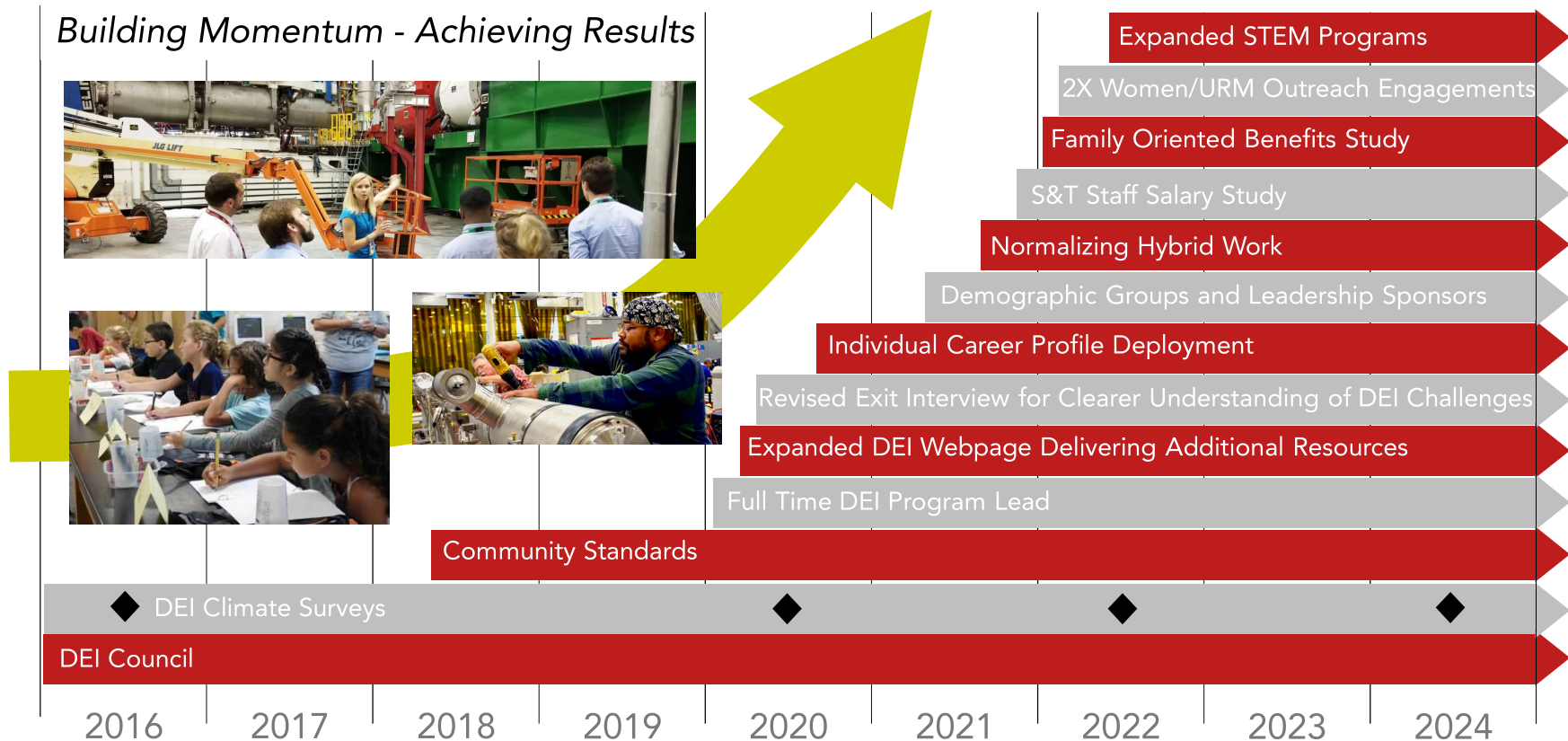
# Perspective

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- The Lab is in a strong position moving forward
- Achieving the level of funding called for in the DOE Budget Request is critical
- Our priorities are clear:
  - Ensuring that the 12 GeV program is successful in all facets: performance, capability, scientific productivity
  - Moving EIC forward aggressively in partnership with BNL
  - Diversifying Jefferson Lab's Scientific Mission with a significant role in Advanced Computing
- What I would ask is that you keep in mind the competitive environment in which we are operating:
  - Keep up the good work and proceed with an appropriate sense of urgency
  - Let your voice be heard. Decision-makers need to hear from you about the importance of your work, training the next generation and the importance of Jefferson Lab in achieving your goals

***Thank you for your continued enthusiasm and support for Jefferson Lab and your partnership in the lab's future***

# Attracting and Retaining a More Diverse Workforce

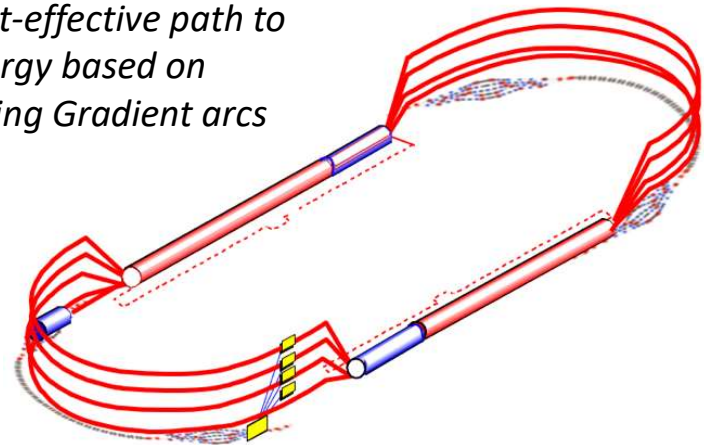


## Future of CEBAF: Planned 12 GeV Program extends well into 2030s

### CEBAF will remain the prime facility for very high luminosity even in the EIC era

- CEBAF has a long program ahead complementary to the envisioned EIC program
- CEBAF will remain the prime facility for fixed target electron scattering at very high luminosity
- Emerging ideas on extending CEBAF energy and accelerating positrons will motivate further enhancements, perhaps including a future upgrade to CEBAF
- We are preparing to make the case at the next Long Range Plan for Nuclear Physics

*Exploring a very cost-effective path to doubling CEBAF energy based on Fixed-Field Alternating Gradient arcs*



***CEBAF is a very unique and powerful facility that will remain in high demand, even in the EIC era***