

## **Capital Projects Update**

Projects and Construction Office
Michael Brandt
Deputy Lab Director for Operations and
Chief Operating Officer

January 14, 2019

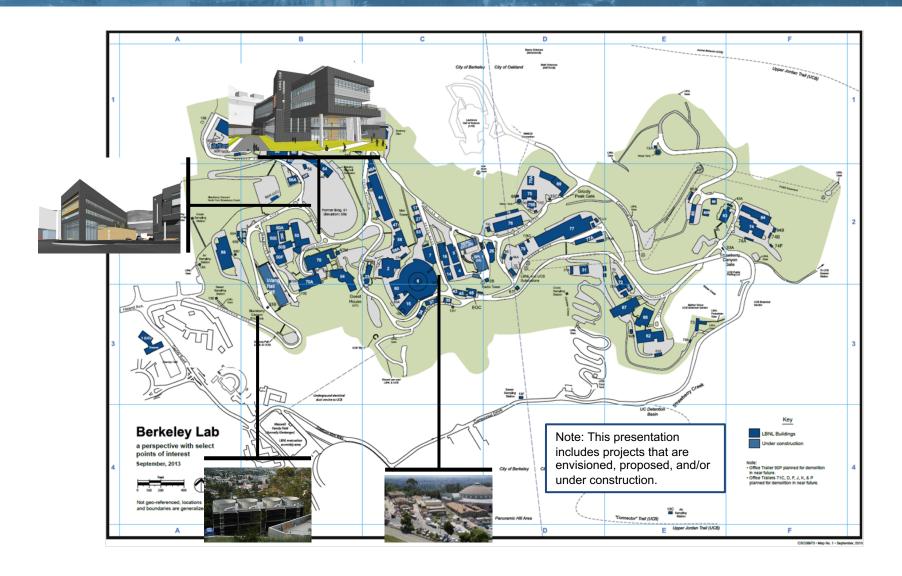
### **Objectives**



- Capital construction remains central to science mission excellence at the Laboratory
- CAG members will be updated and consulted as the projects evolve
- LBNL will continue to manage the Laboratory in an environmentally responsible and compliant manner
- LBNL will actively manage and work to mitigate potential community impacts
  - Construction truck traffic and noise are monitored and managed for each project
- LBNL will continue to reach out to the community as economic and business opportunities arise

## **Building Construction and Demolition Map**





### **Laboratory Strategy**













The Ecosystem Manipulatory ecoFAB decoTECH decoSENSE decoSIM









### **INFRASTRUCTURE**









**BREAKTHROUGH** 

**DISCOVERY SCIENCE IN FUNDAMENTAL PHYSICS** 







### **Old Town Demolition: Update**





Old Town Pre-Cleanup



Old Town as of 10/4/2018

#### Overall Accomplishments:

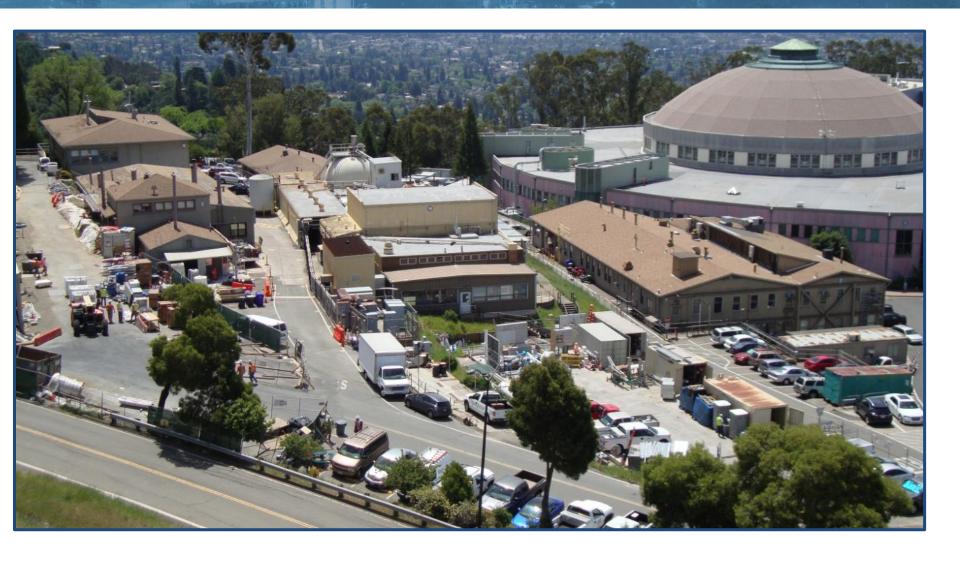
- Removed ten (10) legacy structures and related environmental issues since 2011
- Constructed two (2) new science buildings,
   Chu Hall and GPL, on a portion of the remediated footprint thru 2013
- Completed structure demo and soil remediation on former building footprints (5, 16, 16A) thru 2018

#### Next Steps:

- Finalize EPA/DTSC reports for work in place
- Characterize and remove buildings 4 & 14 (FY19)
- Characterize and remove buildings 7 & 7C (FY20)
- Characterize and remove slab and remediate soils for buildings 4 and 14 (FY21)

# Old Town: Before Cleanup





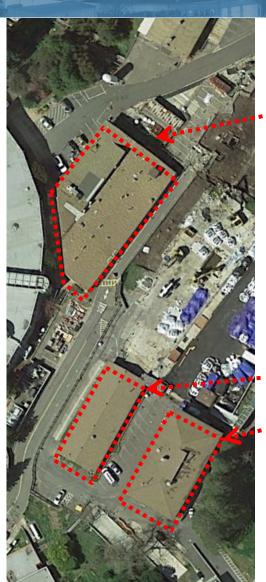
## **Old Town: Present Status**





### **Old Town Demolition: Next Steps**





.B7/7C

· B14 · B4 Phase V – Started – Pending full Environmental Management (EM) authorization

- ✓ Energy isolation buildings 4/14 (complete)
- Characterization of buildings 4/14 (in progress)
- Demo buildings 4/14 structures (planned for FY19)

Phase VI – Pending EM authorization

 Characterize and demo slabs and remediate soils for buildings 4 and 14 area (planned for FY21)

Phase VII – Pending EM authorization

- Characterize buildings 7 and 7C (planned for FY19)
- Demo buildings 7 and 7C structures (planned to FY20)

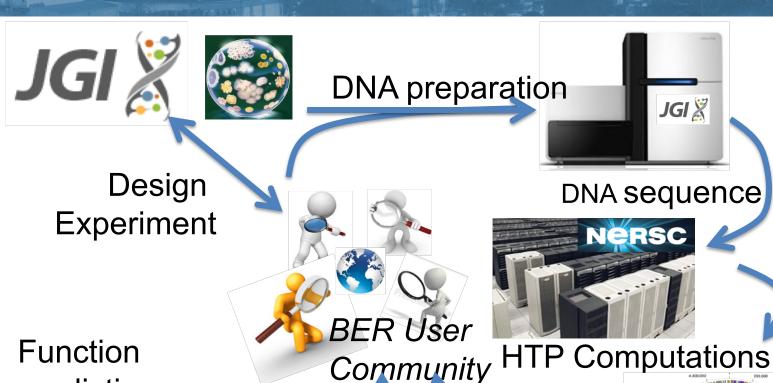
## **IGB: Rendering from Northwest**



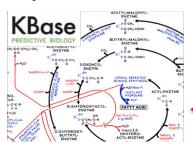


### **IGB: DOE Mission**



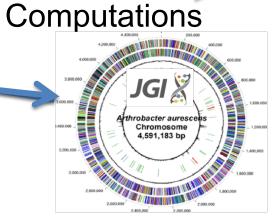


**Function** prediction



Data Integration

**DOE Systems Biology Knowledgebase** 



Genome analysis

### **IGB: Status**



### <u>IGB</u>

- Current planned construction completion is Spring 2019, move planned to take 6 months and occur this Summer
- Preparing to energize the building
- Installing building skin, target completion early February
- Installing finishes and laboratory casework

### **Modular Utility Plant (MUP)**

- Making final power and controls connections
- Plan to begin start up of equipment in early February

### **IGB: Exterior Construction**





# **IGB: Exterior Construction**





Site-work will follow closely behind the facility work.

# **IGB: Exterior Construction**





## **IGB: Interior Construction**





Open plan office spaces in the upper floors are ready for lighting and final finishes.

## **MUP: Mechanical Installations**





Equipment in the MUP mechanical room is prepared and ready for start-up and commissioning.

### **MUP: Exterior Construction**





### **IGB & MUP: Next Steps**



### **IGB**

- Power to all floors and equipment, start up of all equipment
- On average 100-140 craft workers on the job site daily
  - 40% mechanical/plumbing, 30% electrical, 15% drywall
- Commissioning

#### **MUP**

- Start up of all equipment
- Commissioning

### **BioEPIC: Rendering from Southwest**





## **BioEPIC: DOE Mission**



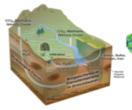
**BER Mission** 

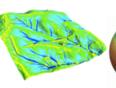














Molecules

Genomes

Soil & Communities Organisms

Watersheds

Ecosystems

Atmosphere

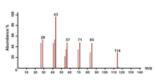
Programs

ENIGMA, mCAFEs

**Integration & Synergy EcoSENSE** 

Watershed Function

**Platforms** 













Mass Spec

CryoEM

**EcoFABs** 

**EcoPODs** 

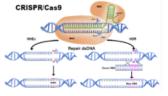
**SMARTsoils** 

Telemetry to/from Field

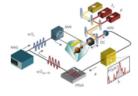
Capabilities



Greenhouse



Organism engineering



Sensor Lab



**GMF** 



Computations

### **BioEPIC: Overview**

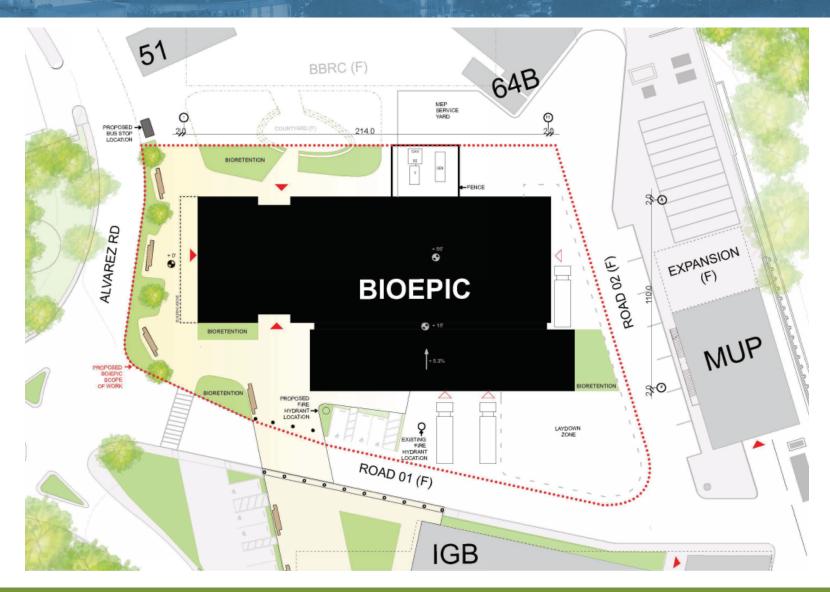


# BioEPIC <u>Bio</u>logical & <u>E</u>nvironmental <u>Program Integration Center</u>

- Critical Decision-0 (CD-0), Mission Need, Approved March 13, 2018
- Co-location of major Scientific Focus Areas (SFAs) and programs currently dispersed throughout LBNL and in offsite leased space
- Combination of Biosciences Area (BSA) and Earth and Environmental Science Area (EESA) programs will bridge a capability gap in the understanding and ability to quantify how microbial communities respond to and shape environmental systems, or biomes.
- Bridging the gap from microbe-scale to biome-scale is critical for predicting how ecosystems respond to global change.
- BioEPIC would provide the infrastructure that is lacking to enable seamless measurements and manipulations across scales.

### **BioEPIC: Site Plan**





### **BioEPIC: Facility Section**



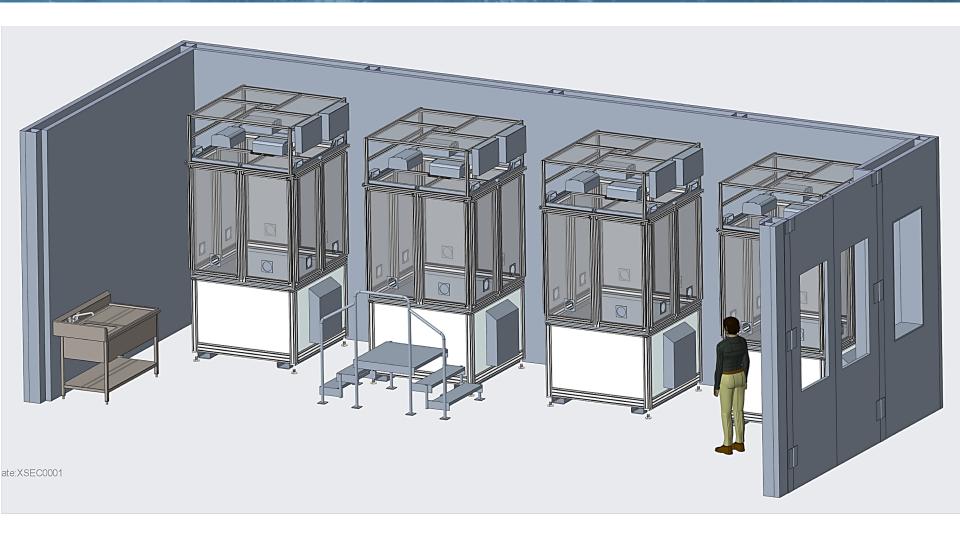
#### Building consists of four floors:

- 1st floor with a larger footprint to include a high-bay area to allow for EcoPods and EcoSense Soil Transfers
- Lab and office space on Floors 2 4
- Greenhouse on the roof
- 72,000 gsf, \$142M DOE investment



## **BioEPIC: EcoPods**





### **BioEPIC: Current Activities**



- Preparing for Critical Decision-1 (CD-1)
- 100% Conceptual Design Report (CDR) and cost estimate complete
- Director's Review planned for 1/23/19
- Independent Project Review (IPR) to be scheduled for week of 3/18/19
- National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA) analysis underway

### NERSC-9: Facility Upgrade of Shyh Wang Hall



- Home for National Energy
  Research Scientific
  Computing Center (NERSC)
  at LBNL
- Currently houses Cori (N8) and Edison (N7) high performance computing (HPC) systems
- Proposed electrical and cooling upgrades would accommodate NERSC-9 (N9) computer system



## **NERSC-9: DOE Mission**



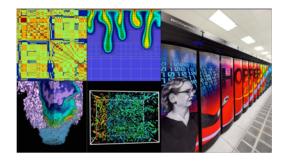


Office of Science

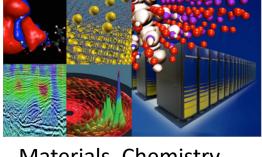
Largest funder of physical science research in U.S.



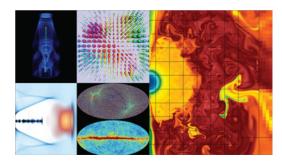
Biology, Environment



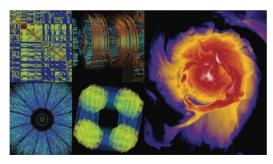
Computing



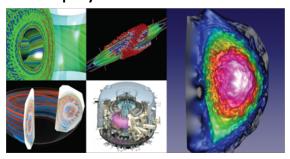
Materials, Chemistry, Geophysics



Particle Physics, Astrophysics



**Nuclear Physics** 



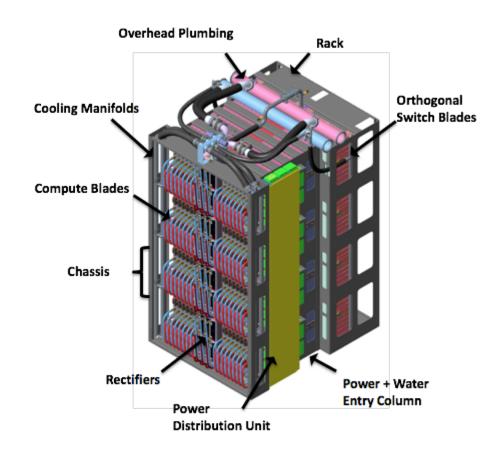
Fusion Energy, Plasma Physics

### **NERSC-9: Upgrade Status**



- Critical Decision 2/3
   (CD-2/3) approved
   September 2018
   allows contractor
   mobilization and key
   material order
   placement
- Construction in progress
- Substantial completion planned for Summer 2020

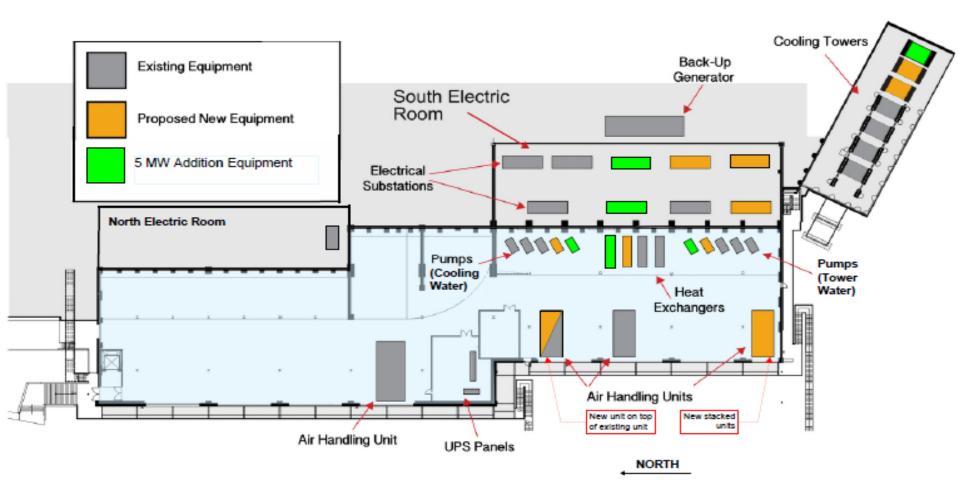
#### **Schematic Compute Rack**



### **NERSC-9: Upgrade Scope**



#### Mechanical and Electrical Equipment Plan



### Summary



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- LBNL will continue to reach out to the community as economic and business opportunities arise



# **Thank You**

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