SPEED BUMPS TO DECARBONIZATION:

UVA School of Medicine Smart Labs

University of Virginia | School of Medicine

Affiliated Engineers

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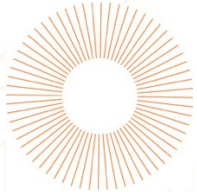


OBJECTIVES

- Understand the need to retro-commission laboratory facilities
- Understand the critical involvement of all stakeholders
- Understand how to seek high impact outcomes in an existing building
- Understand the benefits of a Smart Labs program to reach Decarbonization goals

UVA SMART LABS & THE SCHOOL OF MEDICINE

UVA SMART LABS PROGRAM

- GOAL: UVA will be carbon neutral by 2030 and fossil fuel free by 2050.
- Greatest energy-user in a lab is the **building** itself
- UVA School of Medicine (SoM) has over 1 million SF of space
- Hold base year building energy consumption and Pay Back investment with energy savings delta
- The GOOD news: Lab Ventilation and Energy Savings

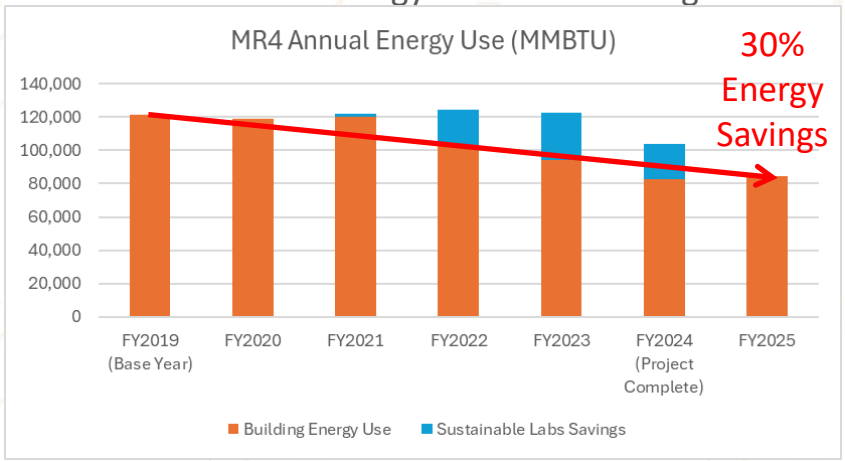

MR-4

MEDICAL RESEARCH BUILDING (MR-4)

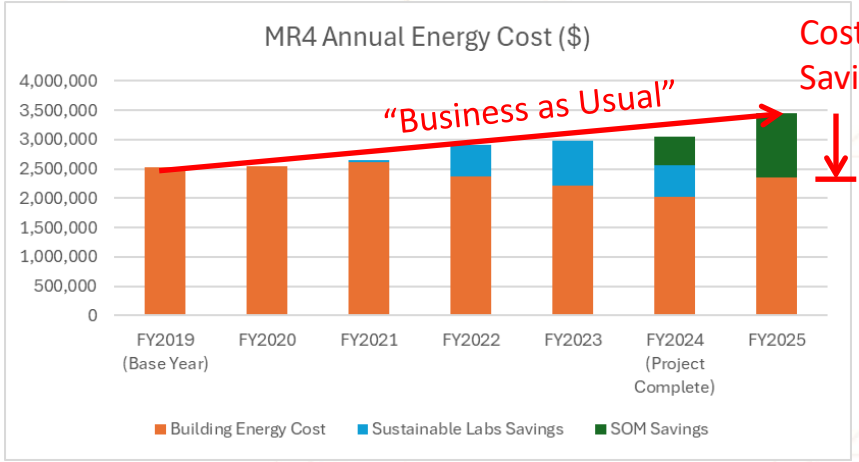
- Building initially built in 1984 with several additions (195,000 gsf)
- First SoM use of UVA Smart Labs Program
- Initiated due to Controls Replacement Project
- Smart Labs additional scope included:
    - LED Lighting
    - Occupancy-based sensor Thermostats
    - Cold Room motor upgrades
    - VFDs for Pumps, AHUs, Return Fans

MR-4 ENERGY SAVINGS

Energy



Cost



Total building savings of $3.5M and counting!

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MR-4 LESSONS

- What to do with existing equipment? Could there have been value added by scope expansion? (AHU Replacement happening after project completion.)
- What is the right timing to initiate a Risk Assessment?
- How much of the building should be commissioned?
- The Final 5%. When is a Smart Labs project done?
- Vivarium not included – should it have been?


MR-5

BIOMEDICAL ENGINEERING & MEDICAL SCIENCE BUILDING (MR-5)

- Built in 2002 (165,000 gsf)
- Initiated as Retro-Commissioning effort
- Smart Labs additional scope included:
    - Full Retro-Commissioning
    - LED Lighting
    - Occupancy-based sensor BAS Integration
    - Ventilation Study

MR-5 APPLICATIONS & LESSONS

- Timing of Risk Assessments – LATER not first
- FIRST retro-commission AHUs
- HVAC energy savings vs Lighting – Focus MORE on biggest $ savings
- Exhaust and recent Project synergies – should we plan for ducted BSCs when we are trying to remove them in other buildings? Value added by scope expansion?
- Increased focus on shorter project duration
    - Utilize procurement flexibility to find right lighting contractor
    - Floor plan challenges, controls sequencing changes


PINN HALL

PINN HALL

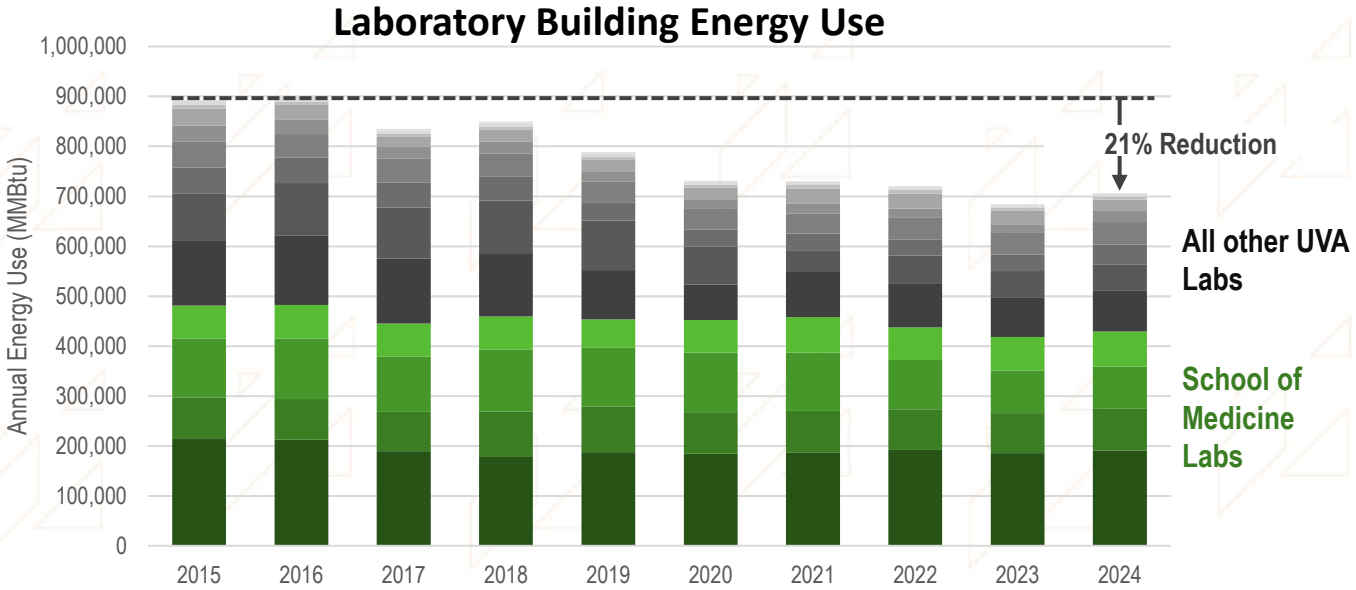
- Building initially built in 1971, large Annex added in 1992 (450,000 gsf)
- Initiated due to Controls Replacement Project to Pinn Annex
- Smart Labs additional scope includes:
    - Full Retro-Commissioning of all of the building, including Vivaria
    - Determination of next phases

PINN HALL APPLICATIONS

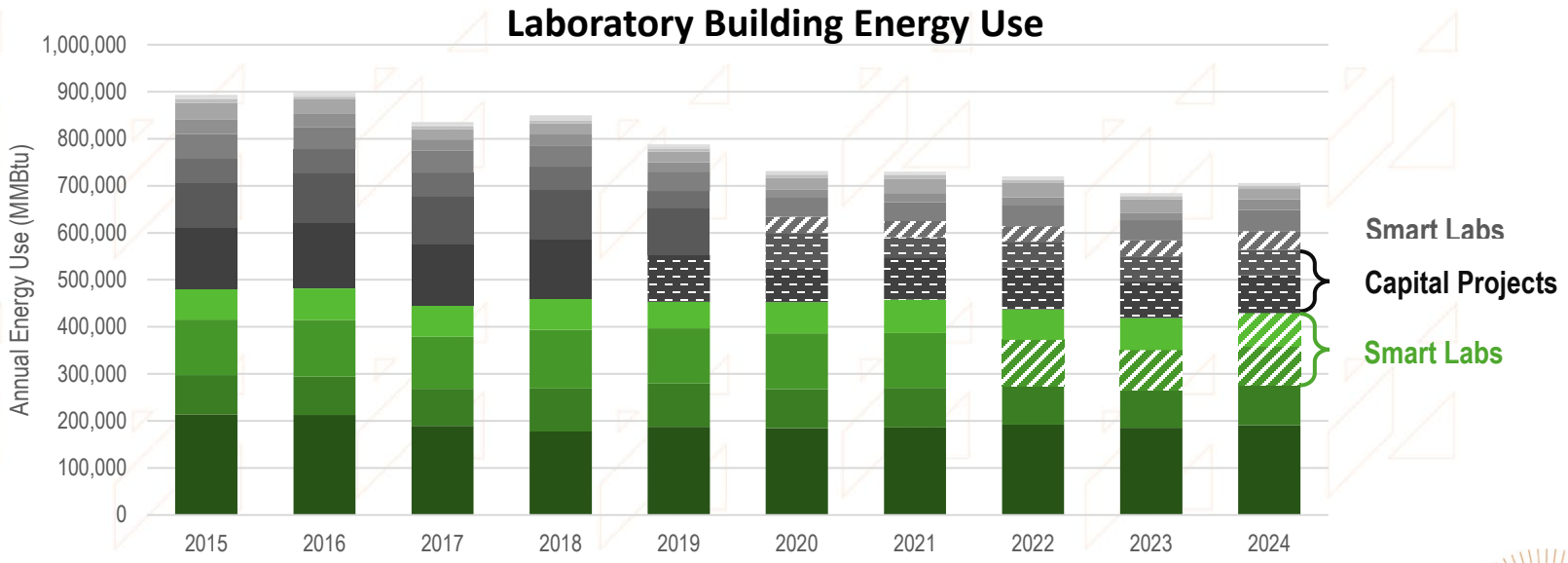
- Two buildings in one – Retro-commissioning the **entire** footprint including Vivaria in Old Pinn and Pinn Annex
- Retro-commissioning major infrastructure and renovation projects that have been completed in the last 10 years
- Reviewing with maintenance, PIs, School: what future work is funded, in planning, needs to be done?
- Proactively planning the *next* phase of Smart Labs work in “Old” Pinn
- Working WITH Primary Investigators for solutions


PROGRESS TO DECARBONIZATION

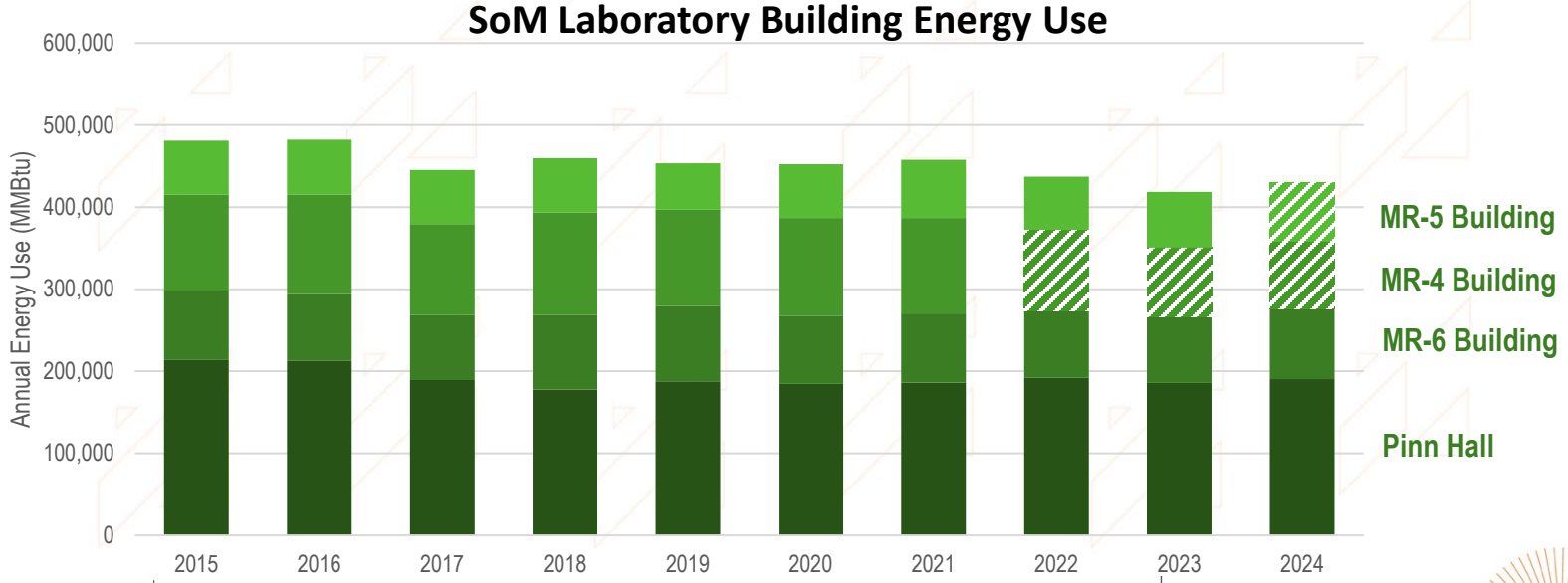
UVA PROGRESS TO DECARB



UVA PROGRESS TO DECARB



SCHOOL OF MEDICINE PROGRESS TO DECARB



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WHAT WE'VE LEARNED

- UVA Leadership buy-in to retro-commission critical facilities and infrastructure, supporting labs and Smarts Labs programs
- PI, Department, SoM Facilities, Health System Physical Plant (maintenance) involvement in Smart Labs program life-cycle
- Changing reasons for Smart Labs initiation and areas of building being covered – Vivarium
- The Final 5% AGAIN – still learning….
- Substantial energy savings can be achieved outside of major renovations – every little bit helps!


LIBRARY
QUESTIONS?

RESOURCES

- UVA Sustainable Labs
- UVA Sustainability Plan 2020-2030
- Rice Hall Presentation (ask Jeff or Keith to share!)

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