

**ENVIRONMENTAL  
SUSTAINABILITY  
COMMITTEE ADVANCING  
PSC ECO-CONSCIOUSNESS  
ESCAPE**



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Division Director  
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# PSC ENVIRONMENTAL SUSTAINABILITY

Lab strategy

Team

Mission

Goals

Lab initiatives

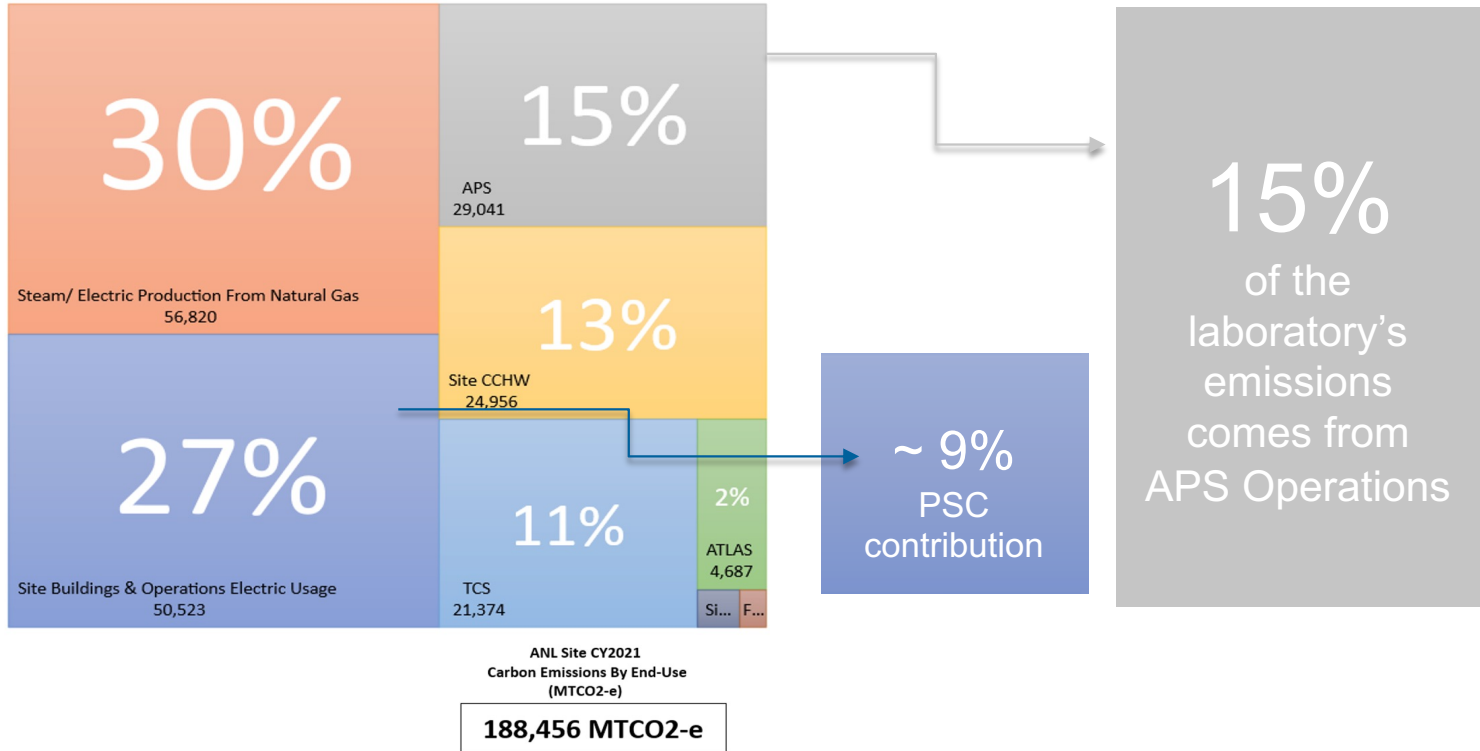
How can you help?



# ARGONNE'S SUSTAINABILITY PROGRAM



# APS IMPACT ON ARGONNE EMISSIONS



# PSC ENVIRONMENTAL SUSTAINABILITY

- APS uses ~ 105M kWh of electricity annually
- **Cost (5c/kWh - current cost) = \$5.2M**
- Cost (12.5c/kWh – IL/National average) = \$13M



Equivalencies from EPA website.

This is equivalent to greenhouse gas emissions from:

**10,108** gasoline-powered passenger vehicles driven for one year ?



This is equivalent to CO<sub>2</sub> emissions from:

**5,111,106** gallons of gasoline consumed ?



This is equivalent to greenhouse gas emissions avoided by:

**15,717** tons of waste recycled instead of landfilled ?





# PSC ENVIRONMENTAL SUSTAINABILITY MISSION AND GOALS

## MISSION

Reduce PSC CO<sub>2</sub> emissions and achieve carbon neutrality by 2050 by developing operational strategies for climate adaptation and resilience in response to climate change

## GOALS

1. Common understanding of environmental sustainability and current DOE, lab and PSC practices *FY24-FY25*
2. Renewable energy integration *FY24-28*
3. Green PSC building and operating infrastructure *FY24-28*
4. Carbon offsetting and neutralization *FY25-FY29*
5. Waste reduction, reuse, recycling and composting program *FY24-FY27*
6. Sustainable supply chain management *FY25-FY29*
7. Water conservation *FY24-FY27*

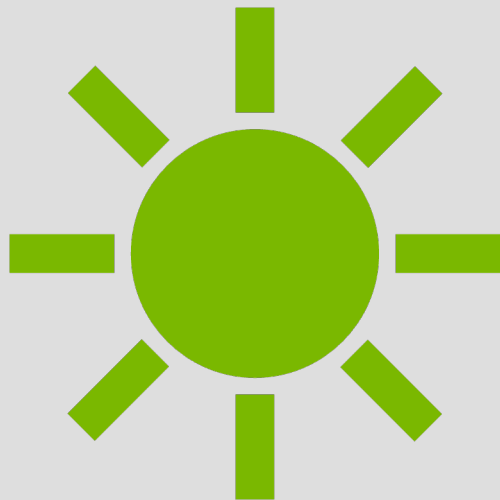
# UNDERSTANDING SUSTAINABILITY AND CURRENT PRACTICES



- Lab sustainability program and initiatives
  - Guest speakers
  - Educational talks
- Change network: Join us!
- **Core Team:** Mike Edelen (Lead), JoAnna Tan (FY24), Michael Becker, Jon Almer
- **Critical Partners:** CPA, PSC divisions, User Office, IS-FAC, PMO-Sustainability



# RENEWABLE ENERGY INTEGRATION



- Assess PSC operational power consumption
- Optimize PSC operating practices for efficiency, assess carbon-friendly alternatives
- **Core Team:** Adi Goel (Lead), Marion White (FY25), Jon Smejkal, Paul Amann, JoAnna Tan (FY24)
- **Critical Partners:** IS-FAC, PMO-Sustainability

# GREEN PSC BUILDING AND OPERATING INFRASTRUCTURE



- Assess current PSC consumption for facility power, gas, heating, cooling, etc.
- Optimize PSC facility and infrastructure operating practices for maximum efficiency
- Review sustainable energy sources for 400 Area
- Assess infrastructure supporting use of electric vehicles in 400 Area
- Review 400 Area landscape and land management sustainability
- **Core Team:** Rob Wright (Co-lead), Dan Preuss (Co-lead), Scott Izzo, Jon Almer, Paul Amann
- **Critical Partners:** BIS, AES, IS-FAC, PMO-Sustainability

# CARBON OFFSETTING AND NEUTRALIZATION



- Assess viable carbon offsetting options for PSC
- Assess viable carbon neutralization options for PSC
- **Core Team:** Michael Becker (Lead), Mike Edelen and PMO-Sustainability
- **Critical Partners:** IS-FAC

# WASTE REDUCTION, REUSE, RECYCLING AND COMPOSTING PROGRAM



- Develop and implement PSC trash, recycle, and compost streams for non-bulk (common) items
- Develop an electronic reuse program
- Develop PSC composting program
- **Core Team:** Fanny Rodolakis (Lead), Ed Russell, Nick Sempowicz, Chris Gorman, Jon Smejkal
- **Critical Partners:** BIS, IS-MC&A, IS-FAC, PMO-Sustainability

# SUSTAINABLE SUPPLY CHAIN MANAGEMENT



- Education:
  - Sustainable materials and sustainably produced materials
  - Reviewing environmental impact of materials vs. financial cost
- Review of Top 10 non-sustainably produced materials or with largest carbon footprint
- **Core team:** Tejas Guruswamy (Lead), Mike Edelen, PSC Stockroom and IS-FAC
- **Critical Partners:** FMPS-Procurement and PMO-Sustainability

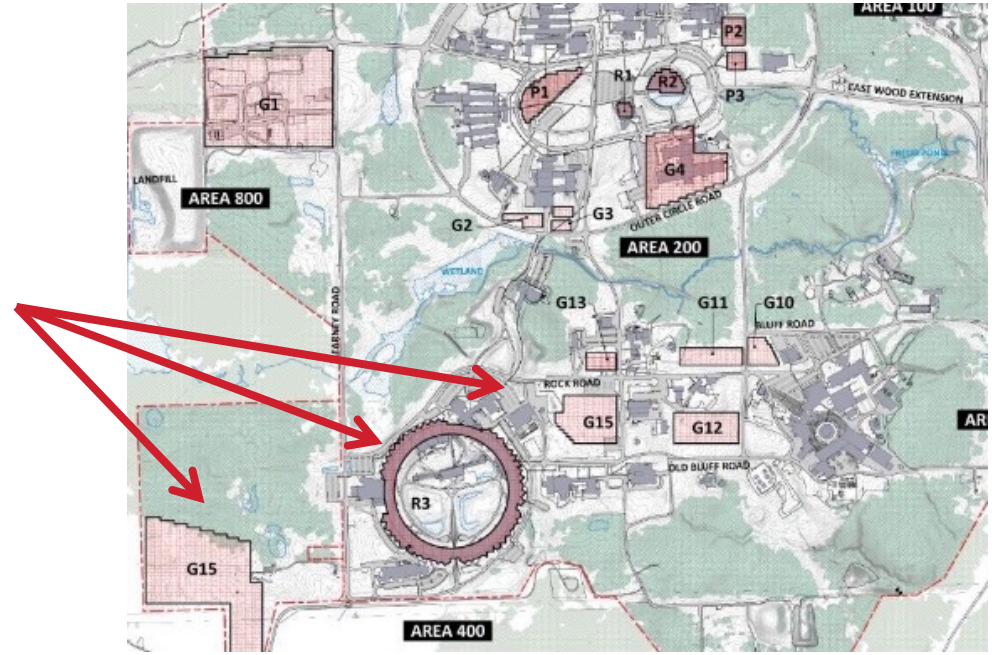
# WATER CONSERVATION



- Assess the current PSC water *Facility* and *Operational* consumption
- Review for waste, leaks, run off, capture, reuse opportunities, etc.
- **Core Team:** Rob Wright (Co-Lead), Camelia Metitelu (Co-lead), Tejas Guruswamy, Paul Amann, ASD, IS-FAC (FY 24): ASD, IS-FAC (FY25)
- **Critical Partners:** IS-Utilities, PMO-Sustainability

# ASSESSMENT OF 400 AREA SOLAR ARRAY OPTIONS

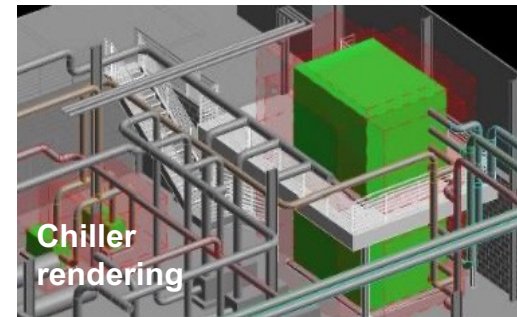
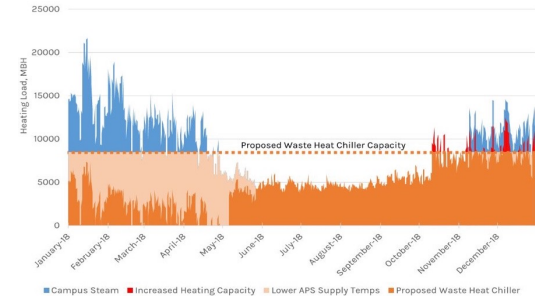
- Lab sustainability completed a campus-wide solar study in FY22 with many options
- Focusing on 400 Area first to select a location and begin process of design and construction for potential installation in FY25



# 400 AREA WASTE HEAT RECOVERY

Supports Argonne's decarbonization goals, reduces campus steam heating load and increases resiliency by providing a secondary building heating source to a DOE User Facility

- Waste heat recovery system uses rejected heat from chilled water systems to heat facility
- Reduces steam load from central heating plant currently powered by natural gas and replaces with heat from recovery chillers driven by electricity
- Provides ~55% of total APS annual heating load and 30% of peak heat rejection
- Estimated carbon reduction: 1,400 metric tons, or 24% of existing system
- Estimated energy savings: \$170,000/year
- Design complete, chiller delivery expected September 2024, system completion targeted for January 2025





# 400 AREA ELECTRIC VEHICLE (EV) CHARGING

## Expanding B450 charging capabilities

- Upgrade to Level 2 charging capacity (208-240V)
- Increase from 2 to 12 parking spots
- ADA compliant
- Expect completion in fall 2024

## Long Beamline Building (B444)

- Dual port charging station in spring 2024

## Charging as a service

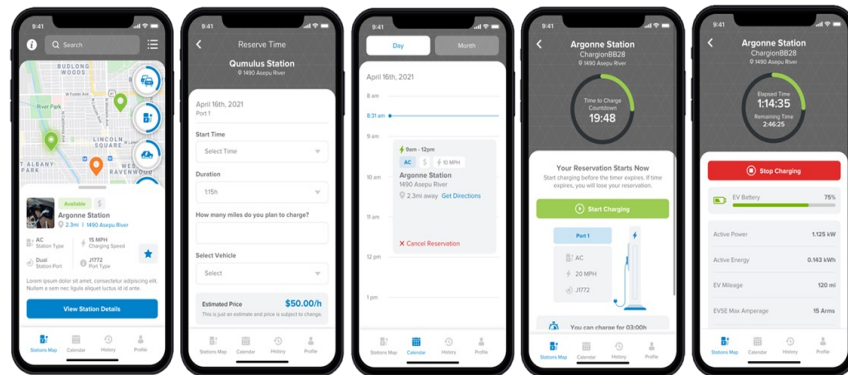
- Open to site occupants via mobile app



# MOBILE APPLICATION FOR EV CHARGING

## EVREST – Electric Vehicle Reservation App

- Developed by ANL researchers
- Available for iOS and Android
- Replaces Vector-based reservations
- Features include: remote session monitoring, push notifications, historical charge session information
- Currently used on stations at B242, B362, and B300 Smart Energy Plaza
- Lab-wide rollout planned as station networking upgrades are completed
- In pilot phase but can be expanded to general lab population and visitors



# MORE EFFICIENT EQUIPMENT

- **B450 recent improvements funded/ supported by Argonne Sustainability:**
  - Steam meter replacements
  - Air compressor controller upgrades
  - Compressed air dryer replacement
- **Other 400 Area improvements:**
  - B440 air handling units HEPA replacement
  - B401 retro commissioning air handling unit (AHU) controls
  - SR and utility aisle lighting upgrades
  - APS SR AHU damper and controls upgrade



B450 Replacement Air Dryer

# ESCAPE TO IMPROVE THE ENVIRONMENT!

- **Have ideas? Reach out to the team leads**
- **Want to join a team?**
  - Contact Mike Edelen, Chris Gorman, or team lead
- **Have ideas for other initiatives?**
  - Contact the team lead or Mike Edelen
- **Passionate about environmental sustainability?**
  - Join our team: Be a change champion and educator
  - Present your ideas
  - Help with lab-wide sustainability
  - Have simple, sustainable solutions: inform your GL and work together to implement