Minutes of the Brown University Community Council (BUCC) Meeting
Wednesday, March 20, 2019
4:00 – 5:30 p.m.

Members: President Paxson, Russell Carey, Sarah Besky, Matthew Harrison, Alla Hassan, Evelyn Lincoln, Matthew McGarrell, Shanze Tahir, Alastair Tulloch, Chloe Zimmerman, Meghan Admirand, Heather Cole, Kim Departie, Joanne McEvoy, Ray Windsor, Olajumoke Akinsulire, Thanos Chaltas, and Guy Sanchez were in attendance. Provost Locke, Cass Cliatt, Erin DeBobes, Eric Estes, Kayla Rosen, Rachel Cassidy, Justin Izzo, Jung-Eun Lee, Shipra Vaishnava, Claire Heiden, Jee Won Kang, Anuj Krishnamurthy, Rachael Schmidt, Nathan Blouin, Robert Kashow, Peter Mattson, Shayna Kessel, and Lauren Allister were unable to attend.

The minutes of the November 13, 2018 meeting were approved.

President Paxson gave an overview of the February 2019 Corporation Meeting. During the three days of meetings, the Corporation approved the budget, tuition and fees for FY20 and the University's goal to cut campus greenhouse gas (GHG) emissions by 75 percent by 2025, and to achieve net-zero no later than 2040. It also engaged in discussions focused on building academic strength, strengthening community, and Brown's philosophy and principles for accepting gifts. President Paxson referenced her recent Op-Ed in the Brown Daily Herald in which she explained that the core principle that guides the acceptance of a gift is whether it will advance Brown's mission of research and education in the service of society. She next spoke about the ongoing college admissions scandal. It is her understanding that none of the indicted families have children at Brown, and none of the indicted coaches have worked at Brown. She reported that Brown has completed a case-by-case review of the admission of varsity athletes.

Leah VanWey, Professor of Sociology and Environment & Society, Associate Provost for Academic Space, presented the plan for moving the Brown campus to net-zero greenhouse gas emissions no later than 2040. The plan addresses GHG emissions from two sources: purchased electricity and fuel that is combusted on campus. It takes advantage of 70% of Brown's on-campus combustion taking place in a central heat plant that serves 98 campus buildings via an underground hot-water loop. The remaining 30% comes from 130 campus buildings that are not in the loop and have stand-alone heating systems. The on-loop building emissions will be addressed in four steps. (1) purchasing sustainably-produced electricity, (2) a short-run shifting to bio-oil in the central heat plan, (3) upgrading the systems on the loop to accommodate lower-temperature hot water, and (4) converting the central heat plant to a sustainable zero-carbon source. The steps to address the off-loop building emissions are being developed and may include system upgrades, property sales, or adding properties to the loop.

Michael Guglielmo, Vice President for Facilities Management, gave a planning update on the Performing Arts Center (PAC) and Lacrosse and Soccer Facility. In May 2017, REX was selected as the architect for the PAC. The facility will serve as a campus hub for the arts, featuring an acoustically excellent main performance hall with flexible seating, lighting and staging, a smaller performance and rehearsal hall, dance studio, and acting studio. The project is scheduled to be completed in spring 2021. The Lacrosse and Soccer Facility will feature new women's and men's lacrosse and soccer locker rooms, offices, shared team room, viewing area/study lounge, and satellite sports medicine. The project will be completed in February 2020.

The next meeting of the Brown University Community Council will be held on Tuesday, April 16 from 4:00 – 5:30 pm in the Stephen Robert '62 Campus Center, Kasper Multipurpose Room.

Respectfully submitted,
Catherine Pincince
Secretary of the Brown University Community Council

Brown University Community Council
Wednesday, March 20, 2019
4:00 – 5:30 pm
Stephen Robert ’62 Campus Center, Kasper Multipurpose Room

Agenda

1. Approval of Minutes of November 13, 2018 Meeting

2. Path to a Carbon Neutral Campus
   Leah VanWey

3. Overview of Performing Arts Center and Lacrosse & Soccer Facility
   Michael Guglielmo

4. Open Time for University Community Members to Present Broad Campus Issues to the Council

Path to a Carbon Neutral Campus

Leah VanWey
Professor of Sociology and Environment & Society
Associate Provost for Academic Space

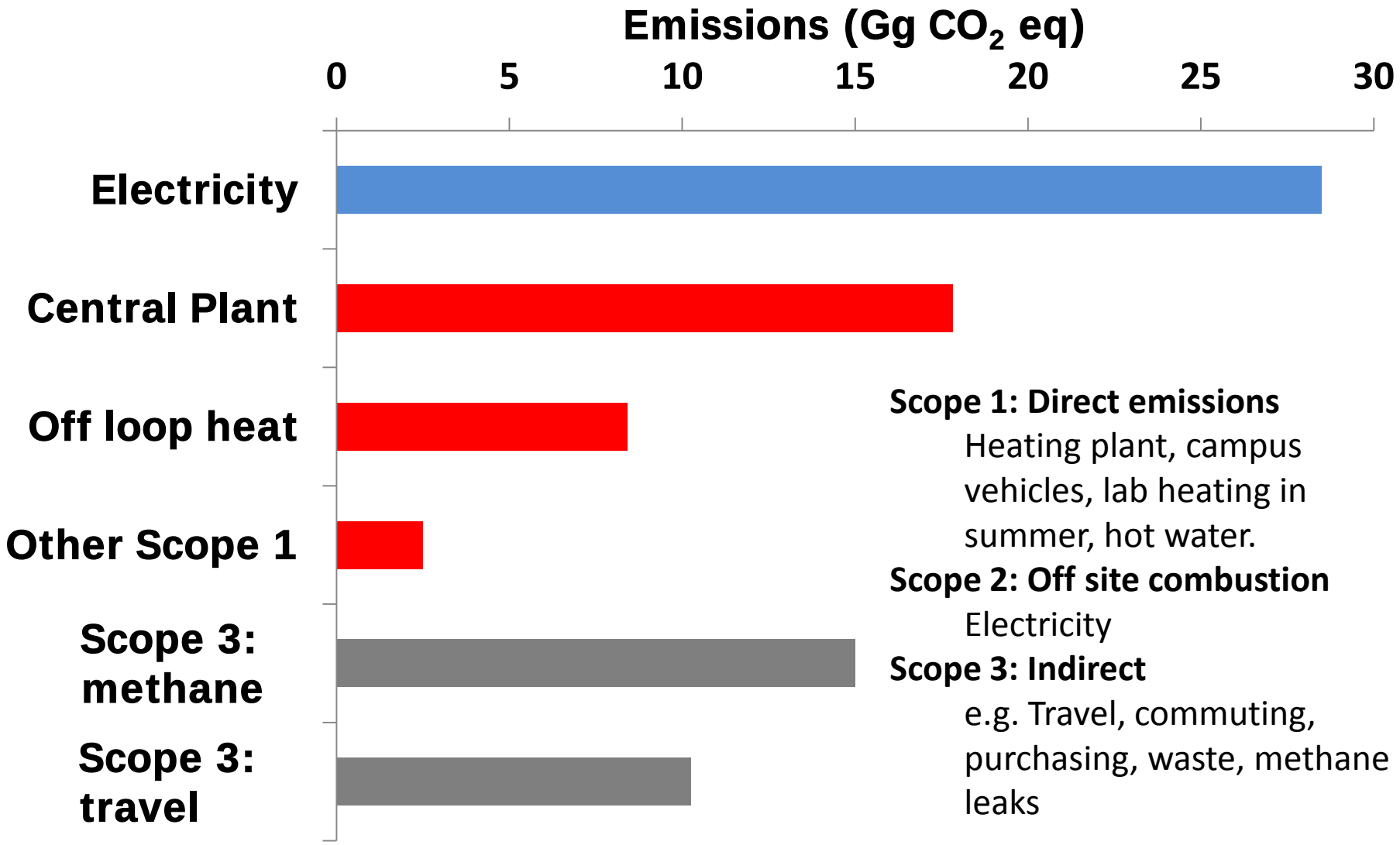
Stephen Porder
Professor of Ecology and Evolutionary Biology
Assistant Provost for Sustainability

Global emissions must peak now and reach zero by 2050

What is Brown's role in the 21st century's greatest challenge?

Education
Research
Citizenship

Brown's 2017 Emissions



Scope 1: Direct emissions
Heating plant, campus vehicles, lab heating in summer, hot water.

Scope 2: Off site combustion
Electricity

Scope 3: Indirect
e.g. Travel, commuting, purchasing, waste, methane leaks

*some other Scope 3 have been quantified but are not included here

Brown emissions from Scopes 1 and 2 equivalent to burning

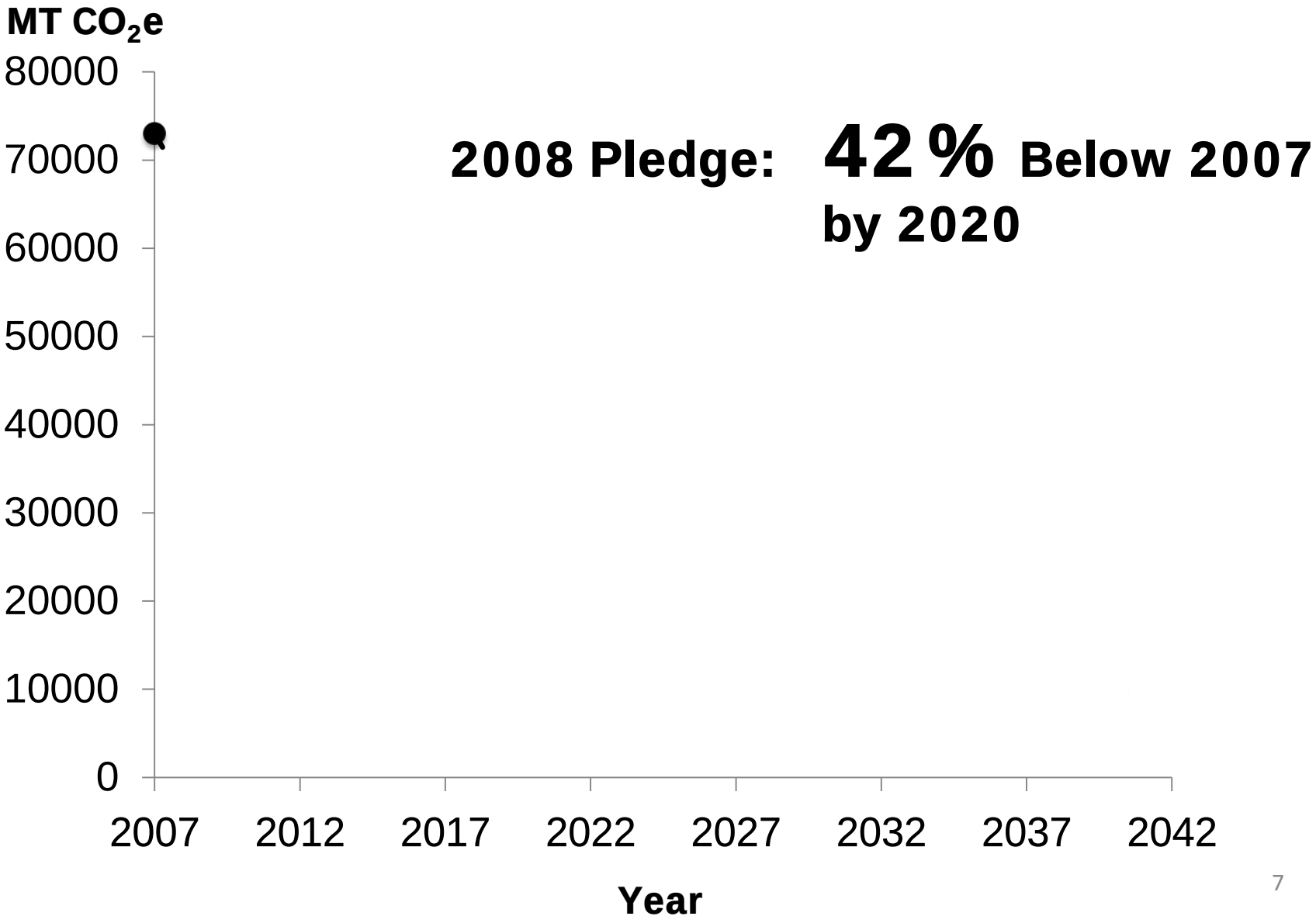
52 million pounds of coal

Or

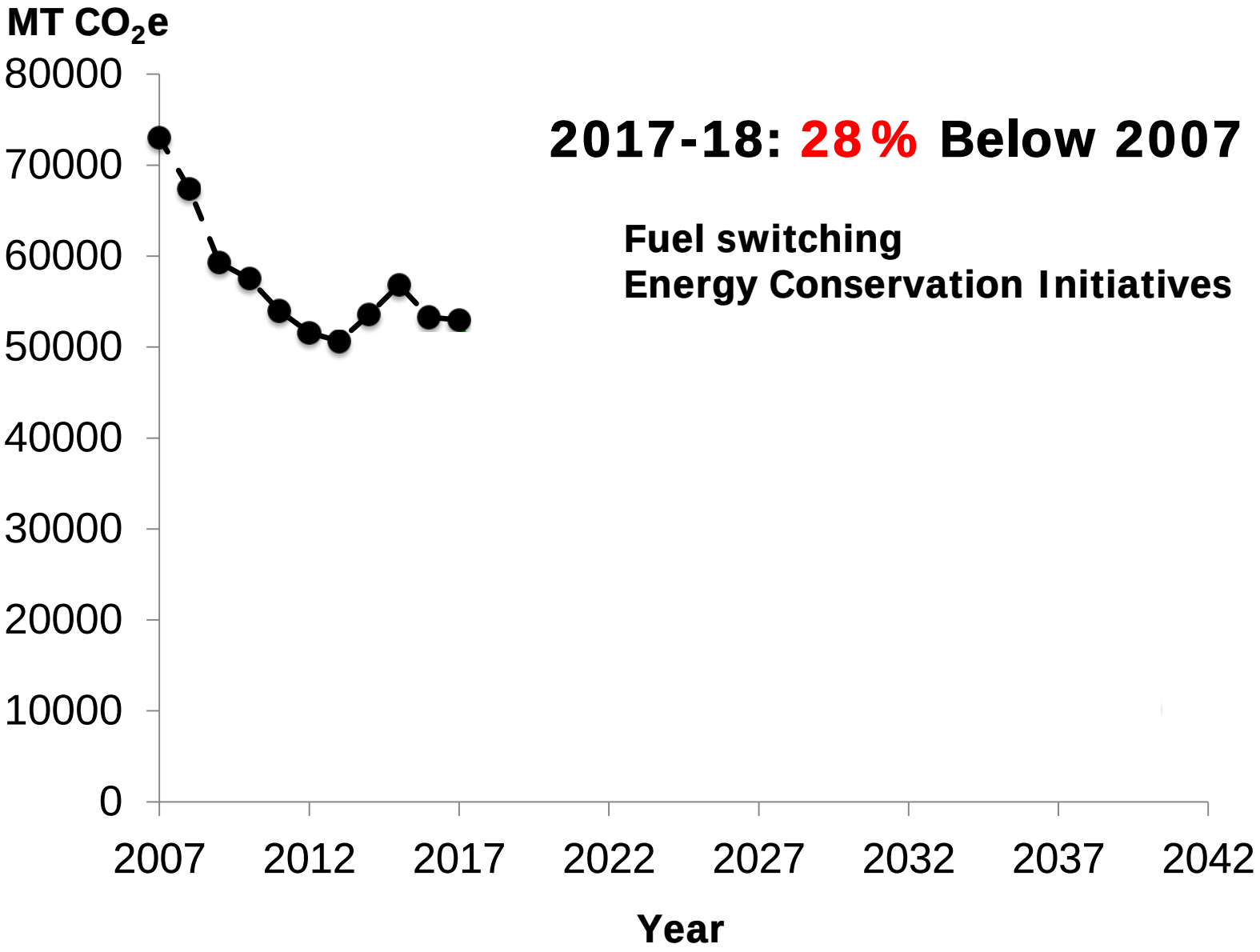
5,600 pounds/student

Per year

Brown's Emissions Trajectory



Brown's Emissions Trajectory



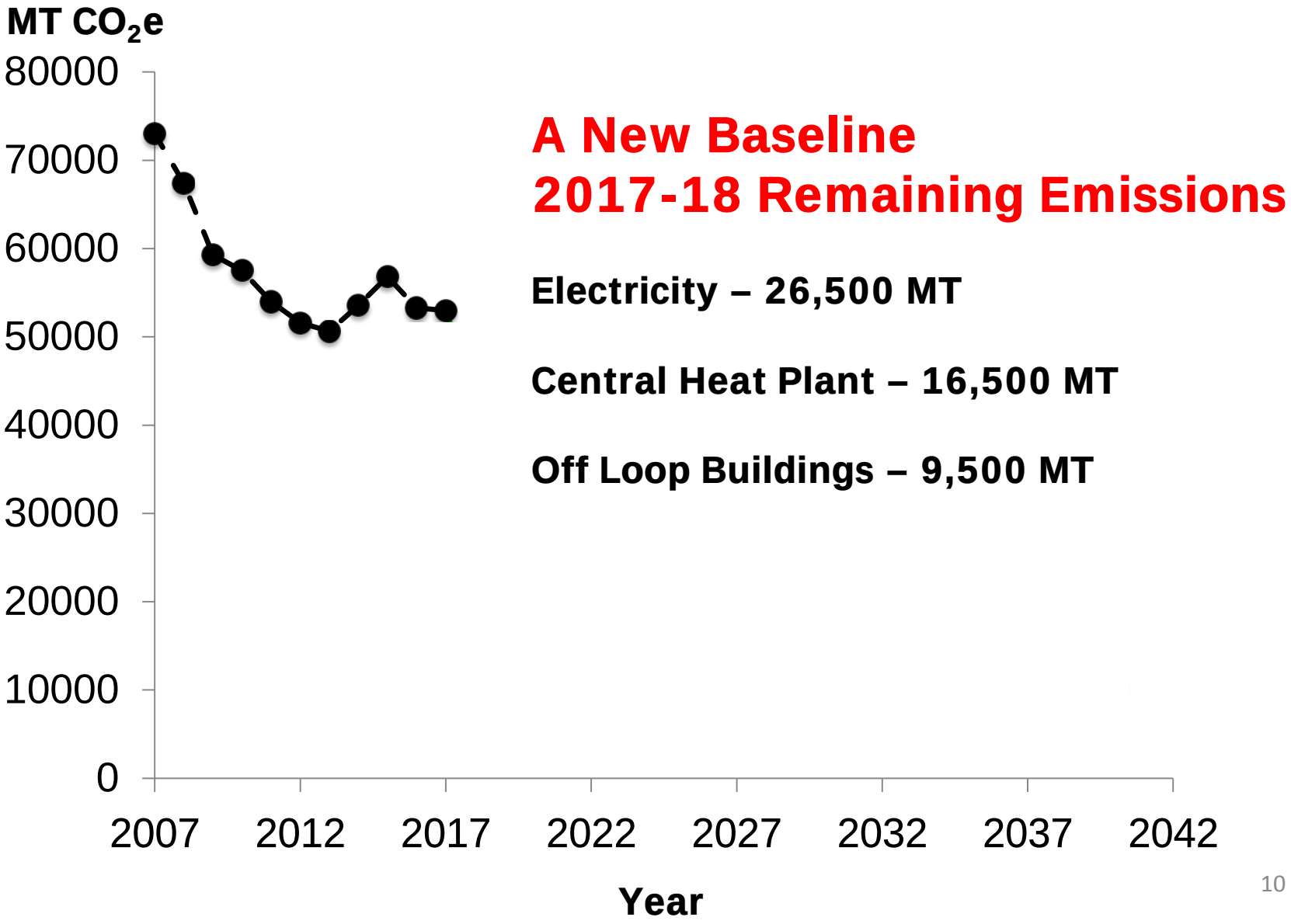
2017-18: 28% Below 2007

Fuel switching
Energy Conservation Initiatives

Net zero by 2040

"[Be] it resolved that the Corporation pledges to move the campus to net-zero greenhouse gas (GHG) emissions no later than 2040, and will take immediate actions that will produce a 75% reduction in GHG emissions (relative to a 2017-2018 baseline) by 2025."

Brown's Emissions Trajectory



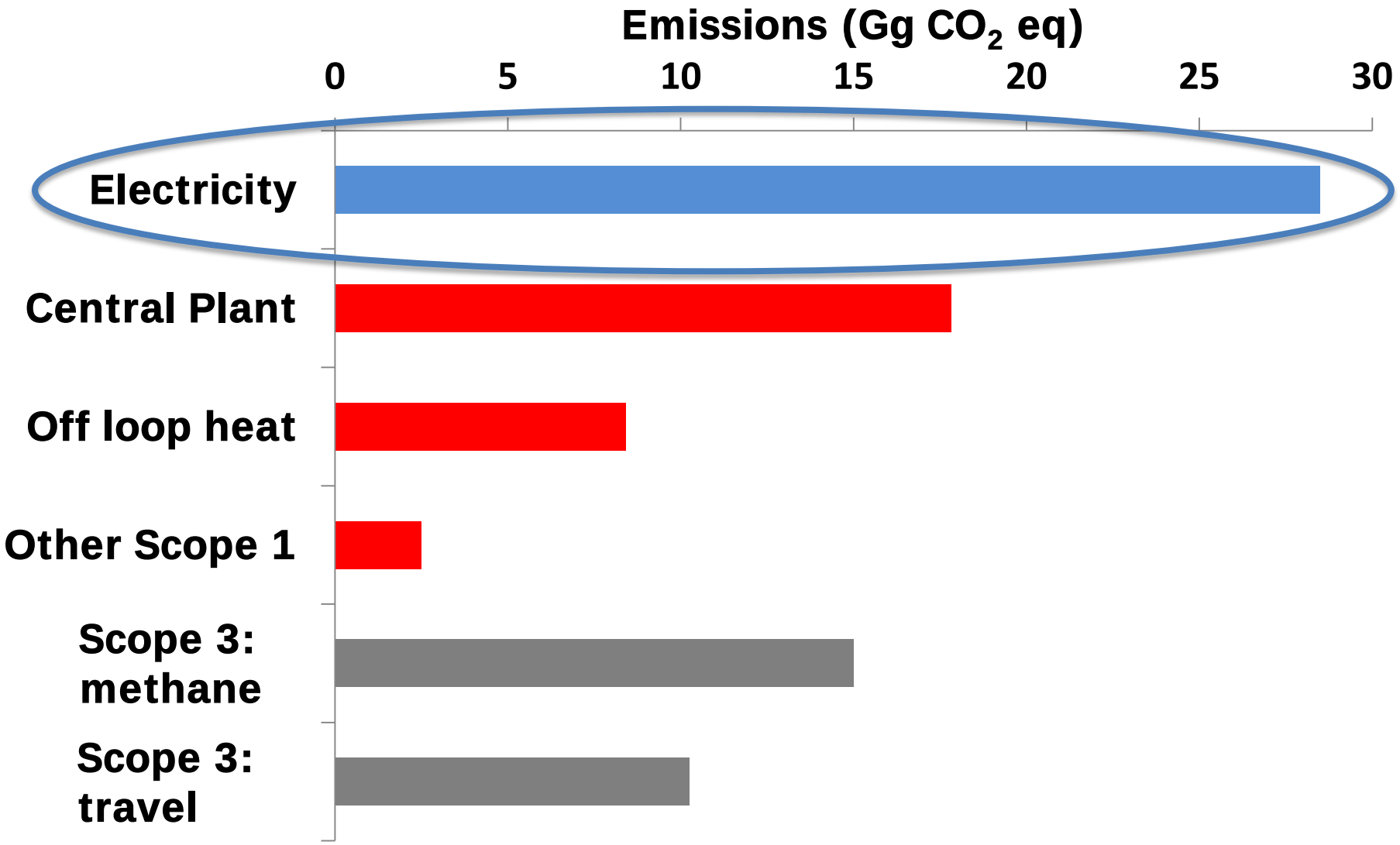
A New Baseline
2017-18 Remaining Emissions

Electricity – 26,500 MT

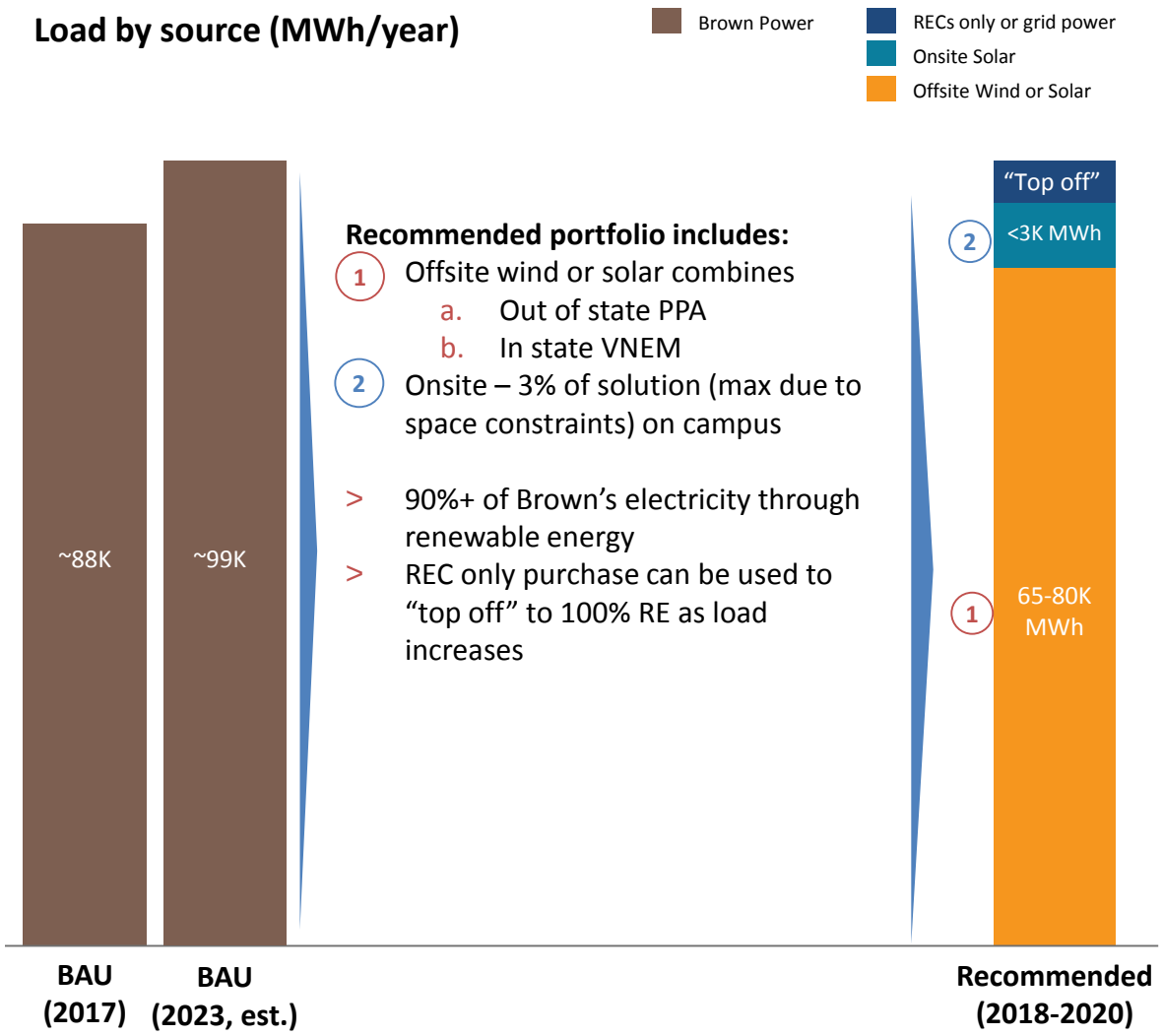
Central Heat Plant – 16,500 MT

Off Loop Buildings – 9,500 MT

Brown's 2017 Emissions



Phase 1 of net-zero by 2040: Renewable electricity



Planning: Stephen Porder (chair), Michael Guglielmo, Dawn King, Christopher Powell, Jesse Shapiro, Kurt Teichert, Leah VanWey, Customer First Renewables

Implementation: Jess Berry, Barbara Chernow, Al Dahlburg, Lichen Grewer, Michael Guglielmo, John Luipold, Stephen Porder, Leah VanWey, Customer First Renewables

Renewable electricity projects

25 year power purchase agreements

Dry Bridge Solar (operational 2019-2020)
- 40 MW solar facility
- North Kingstown, RI
- Decommissioned gravel pit

Mesquite Star Wind (operational 2019)
- 8MW of utility-scale Texas wind farm
- Oil/gas fields

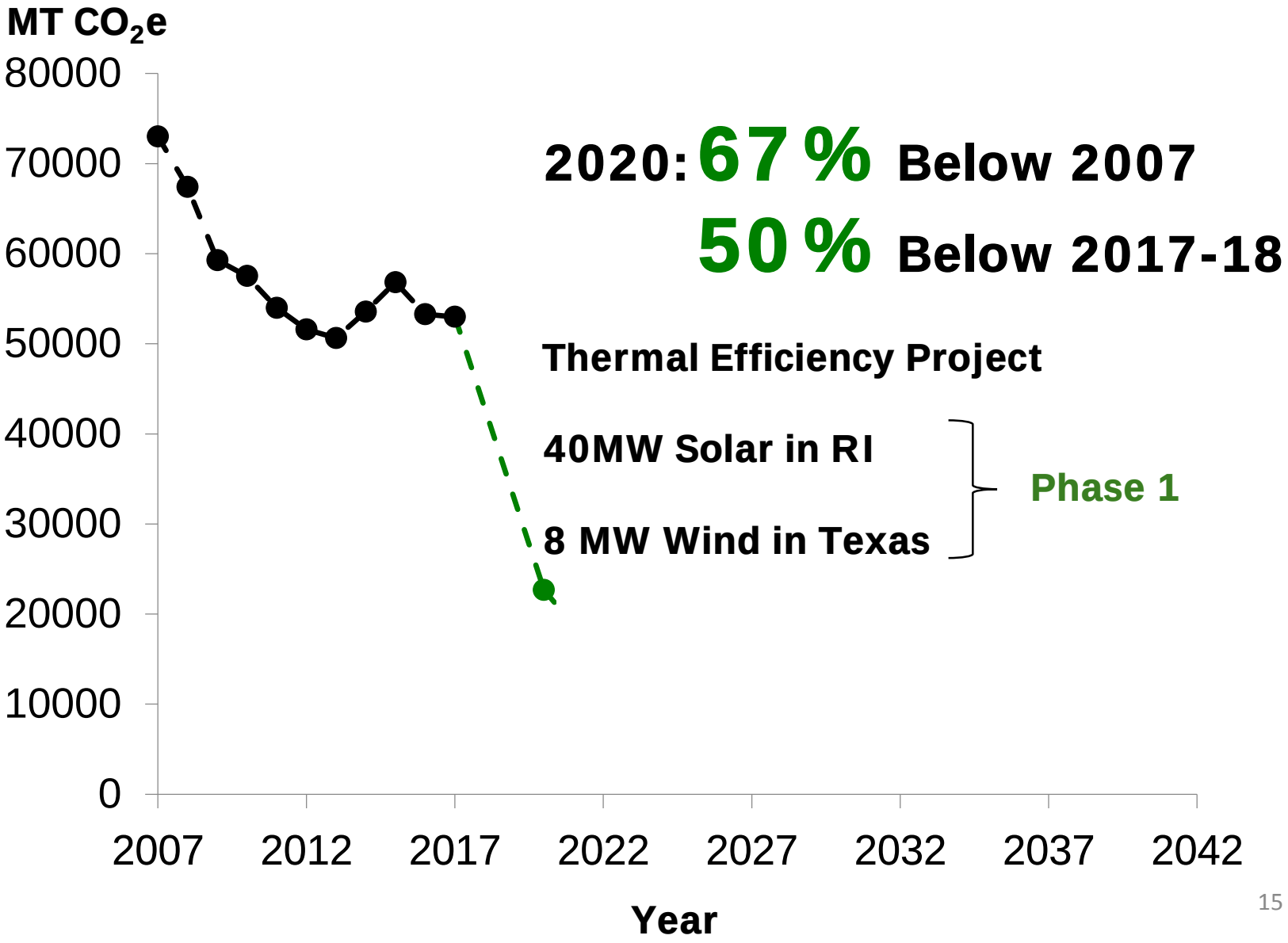
A former sand and gravel mining site in North Kingstown, Rhode Island, will be transformed into 240 acres of solar arrays capable of generating 50 megawatts of direct current.
Stephen Crocker / Brown University

Solar and wind energy projects expected to offset 100 percent of Brown's on-campus electricity use

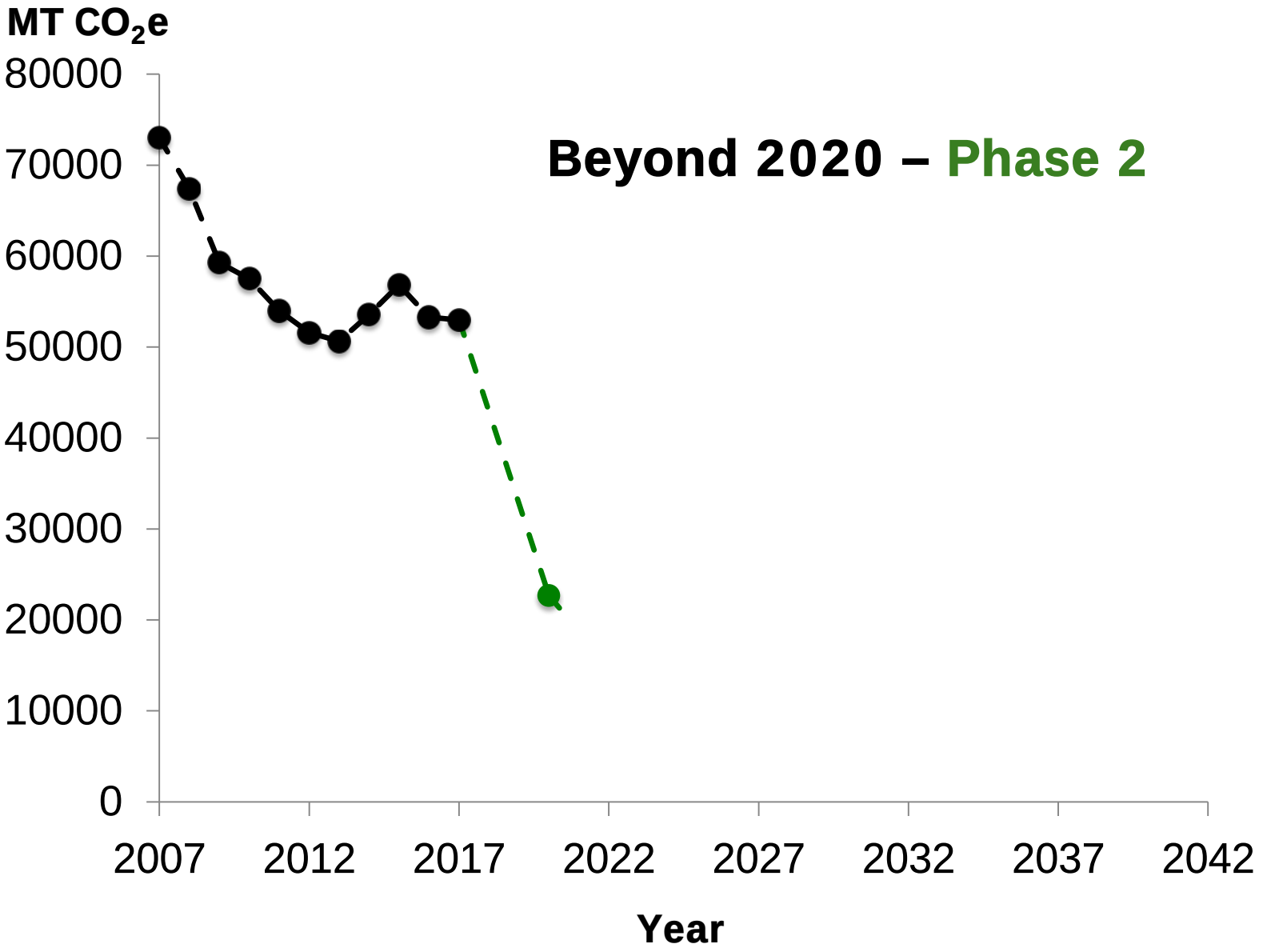
January 17, 2019 Media contact: Jill Kimball 401-863-5450

A new Brown initiative with Constellation and Energy Development Partners will transform a former gravel pit in North Kingstown into Rhode Island's highest-capacity contiguous solar generation project.

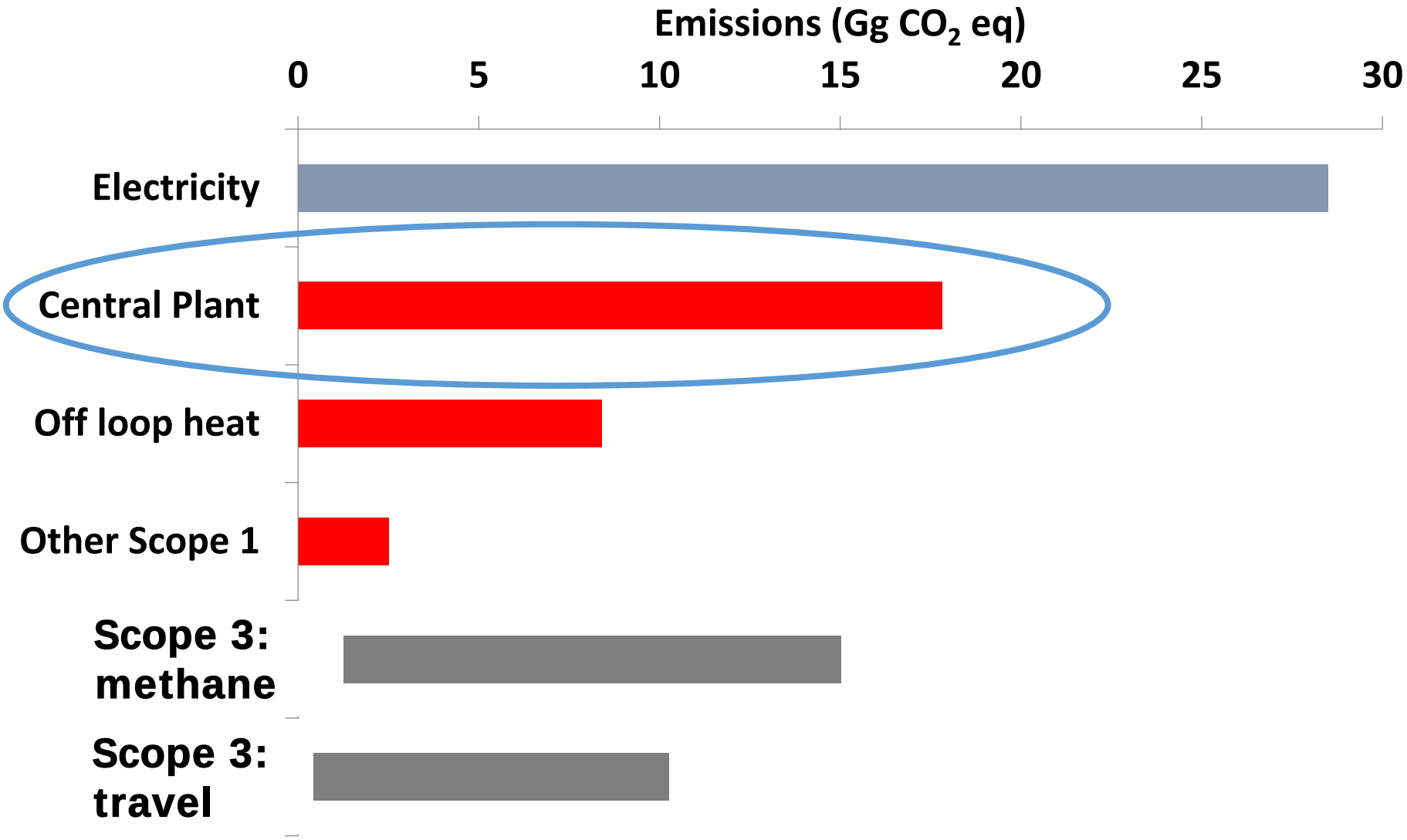
Brown's Emissions Trajectory



Brown's Emissions Trajectory



Brown's 2017 Emissions

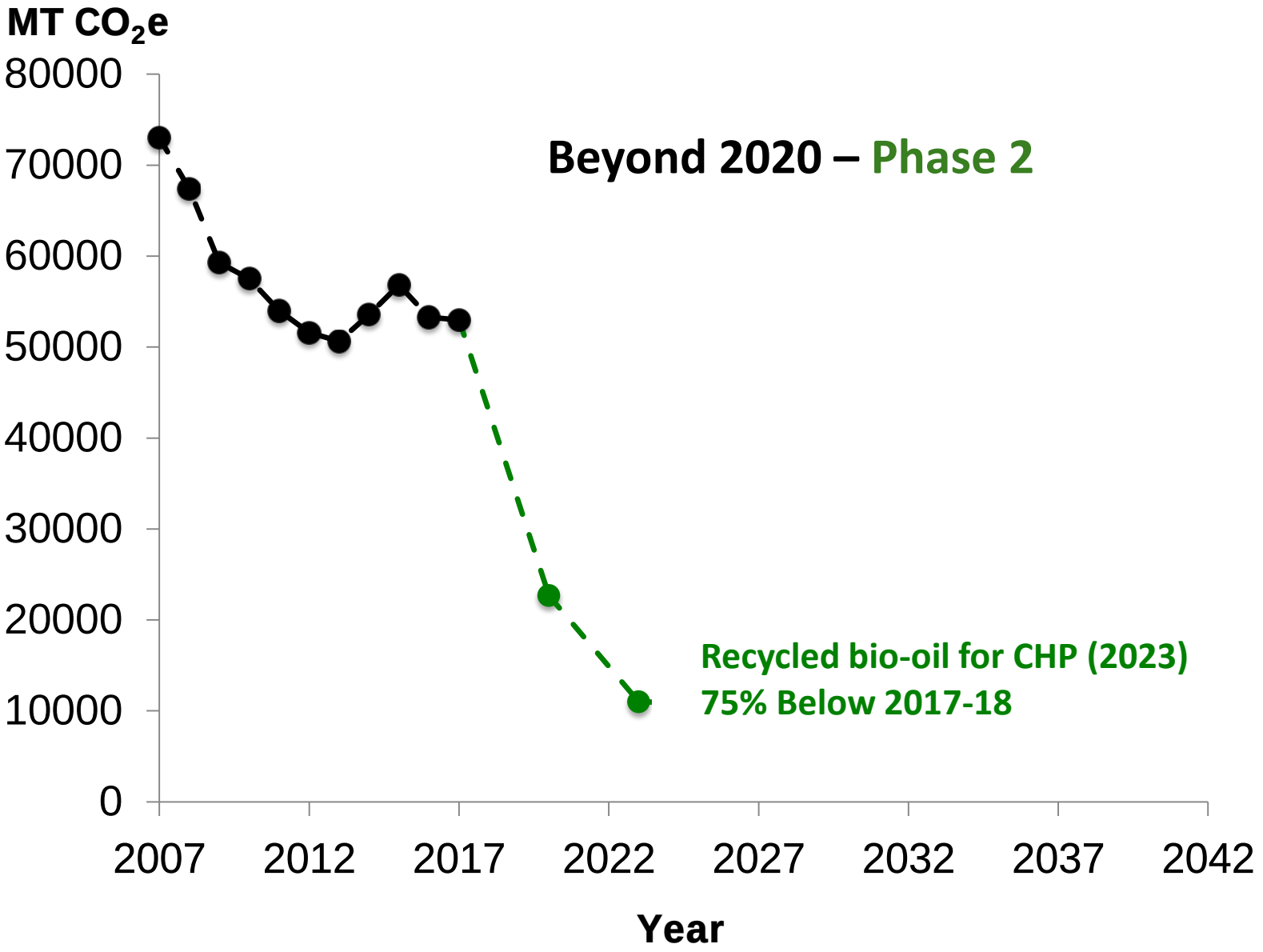


Central heating plant strategy

Phases 2-4 of net-zero by 2040 plan, driving largest source of scope 1 emissions to zero

Brown Team: Jessica Berry (Director of Office of Sustainability); Anthony Casello (Director of Design and Construction); Lichen Grewer (Director of Planning); Michael Guglielmo (VP For Facilities Management); Arthur Larson (Energy Project Manager); John Luipold (VP Real Estate/Strategic Initiatives); Stephen Porder (Assistant Provost For Sustainability); Leah VanWey (Associate Provost for Academic Space)

Brown's Emissions Trajectory

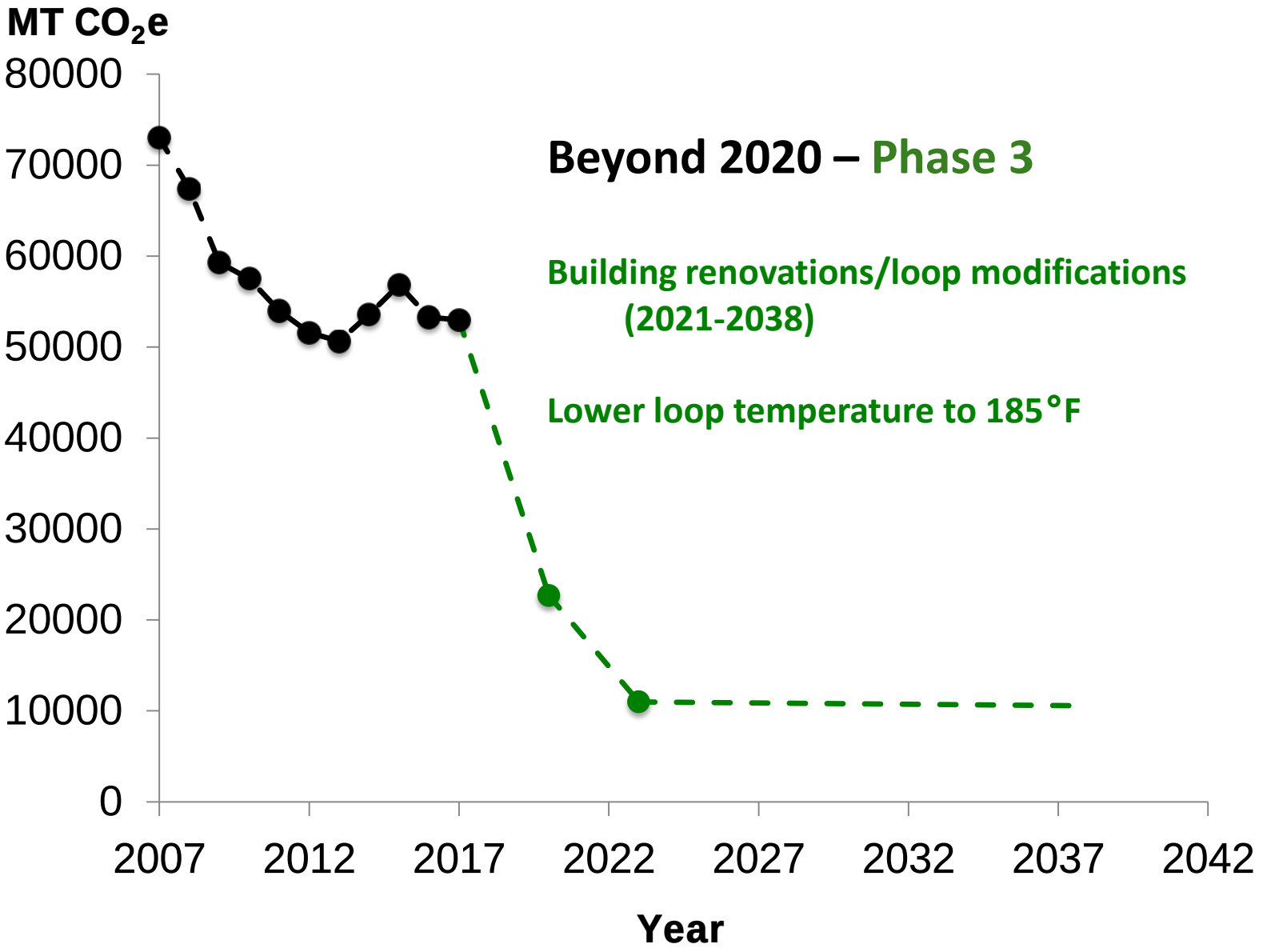


Recycled bio-oil:

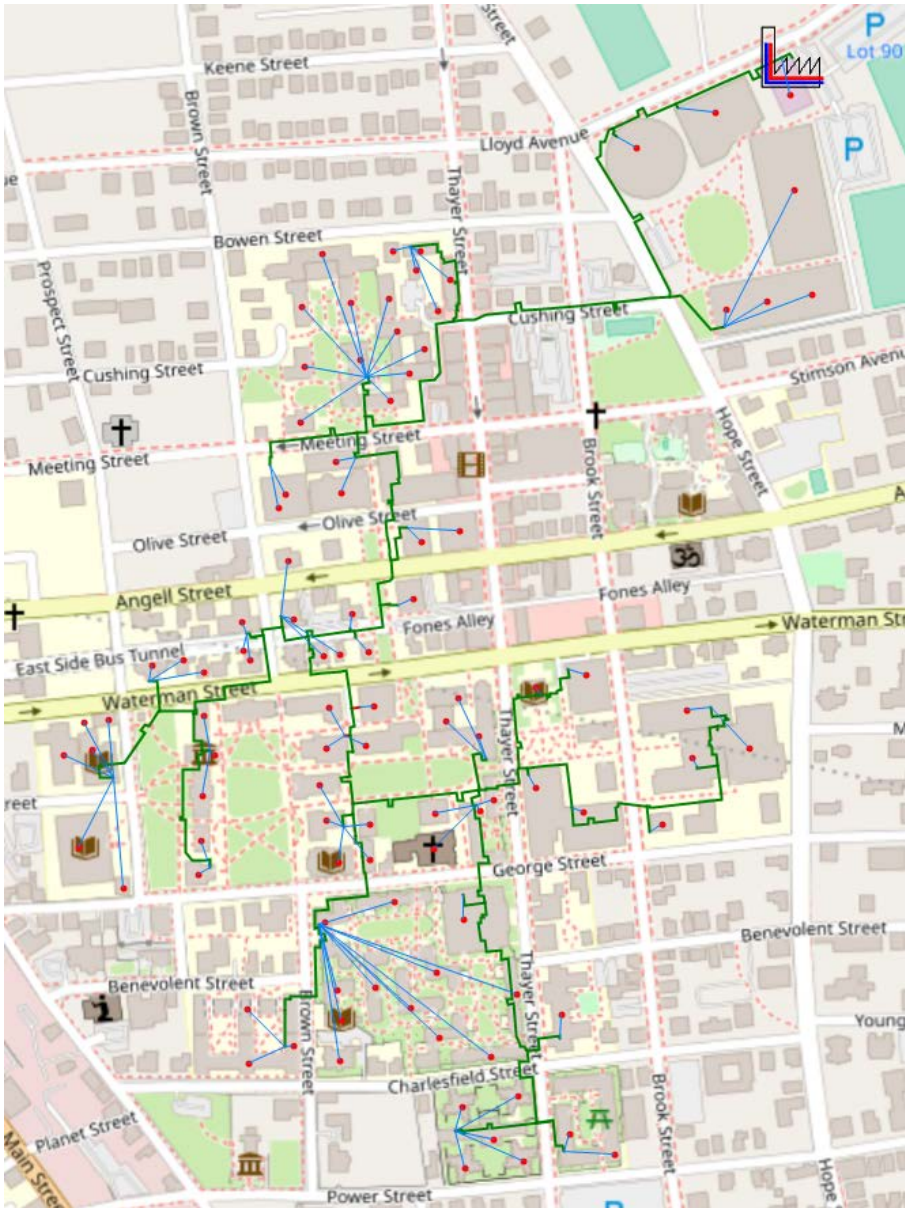
"Drop in" conversion
Low-carbon
Dual fuel capacity

Excellent transitional solution

Brown's Emissions Trajectory



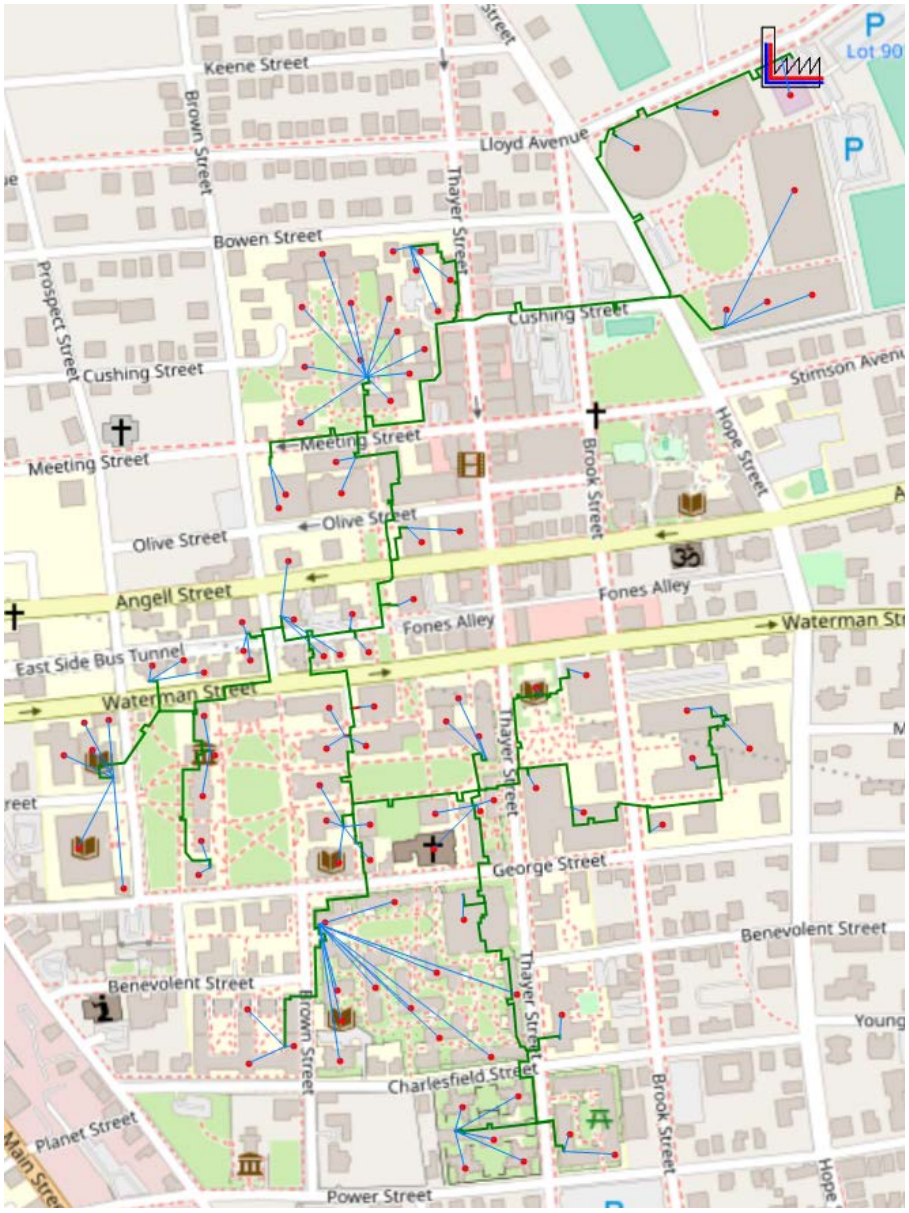
Validated hydraulic model of the loop



Temperatures and pressures match our data well.

This gives confidence in model.

Validated hydraulic model of the loop

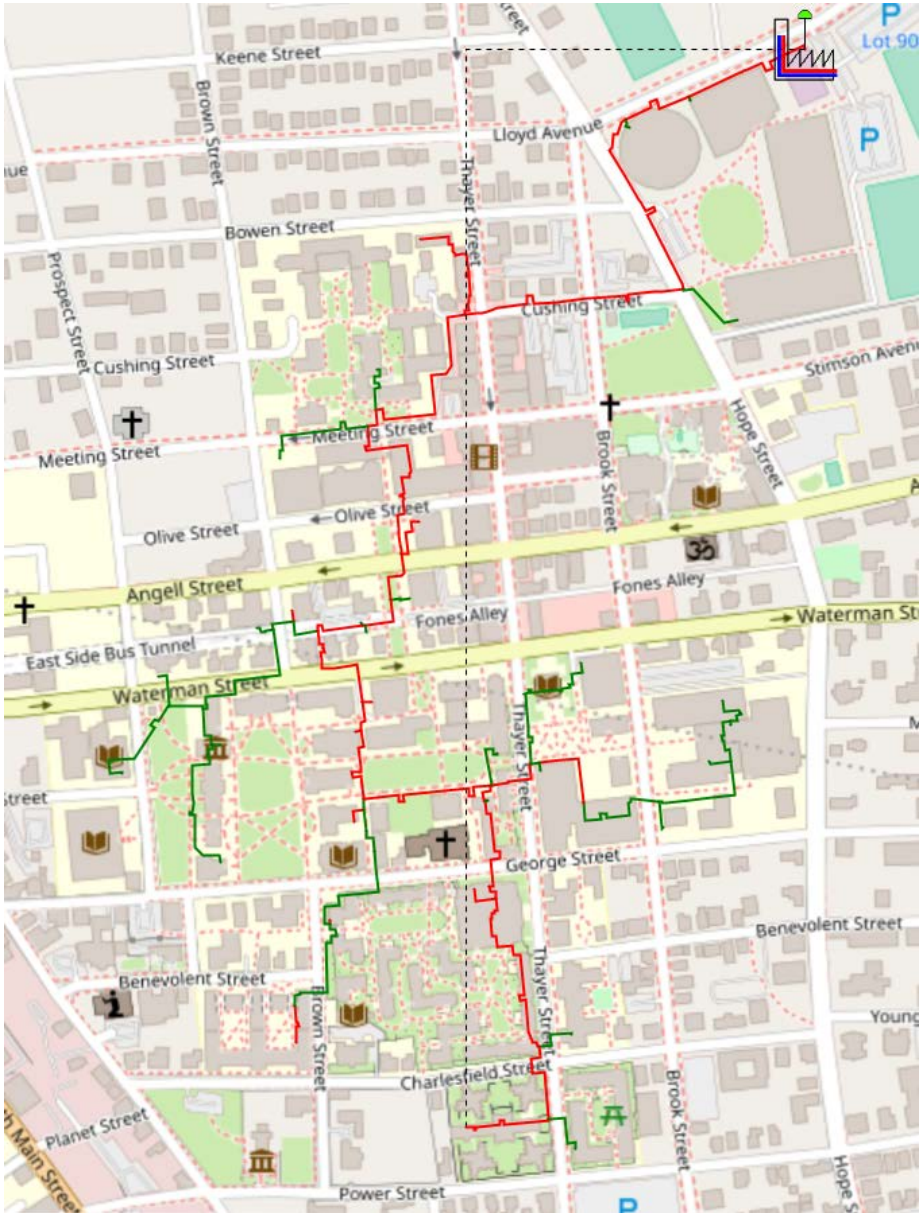


Lower water temperatures increase efficiency

185°F water opens up more heat source options

We can lower temps in the model and see effects

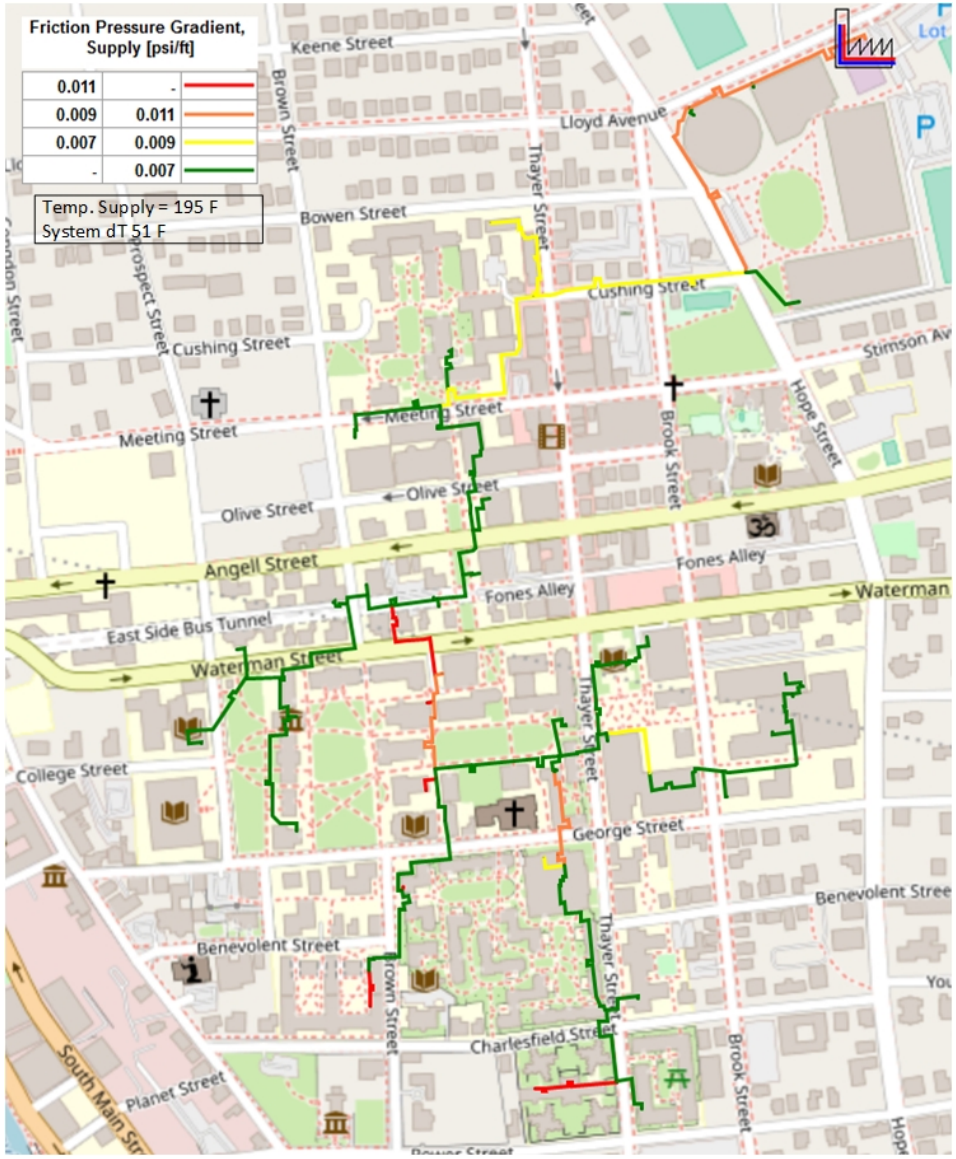
Modeled trouble spots @185ºF



Red lines indicate where pressure and velocity are not acceptable using lower temp water

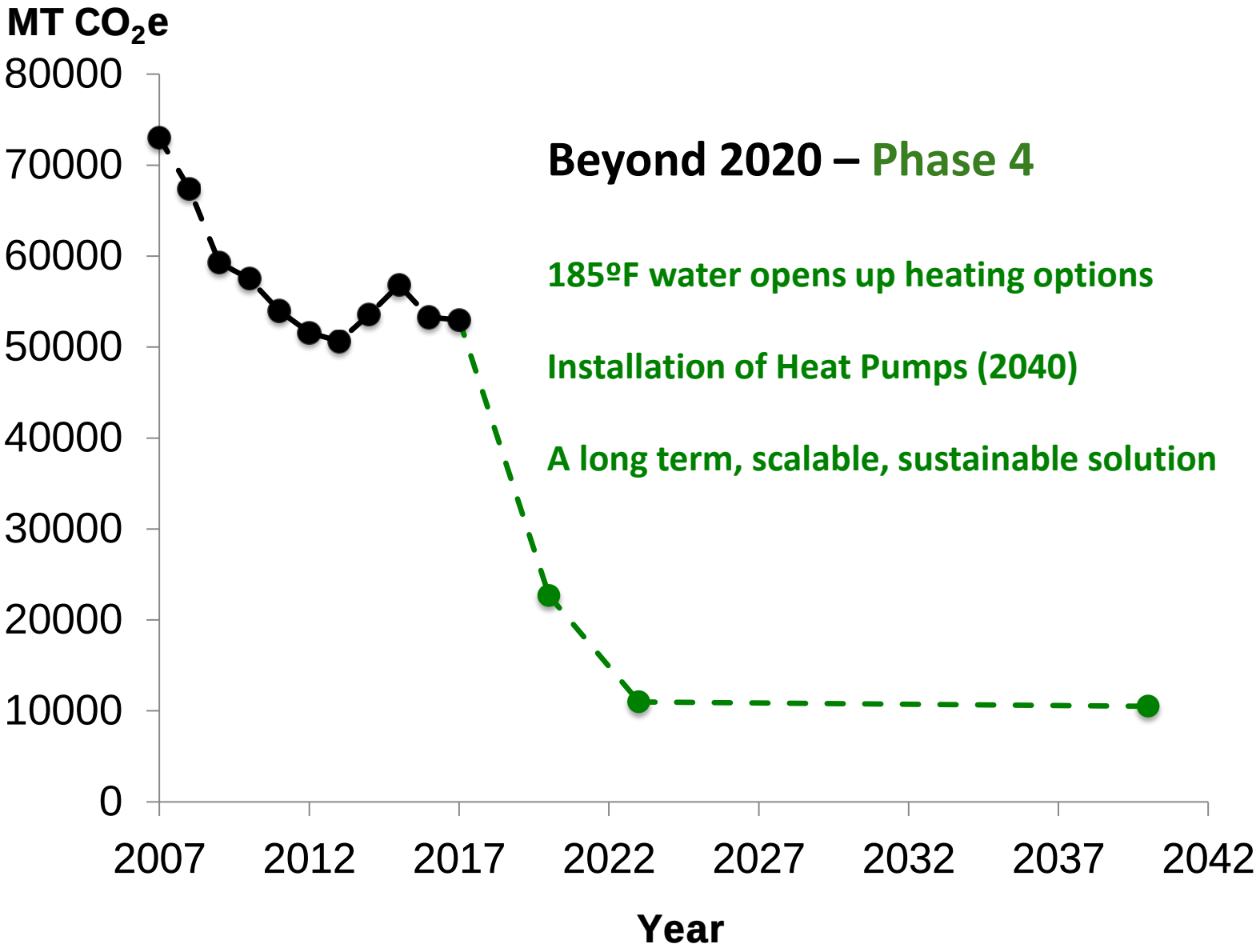
This shows modifications will be necessary to have optimal flow in the loop

Renovations resolve trouble spots



Remaining challenges can be addressed by slight increase in loop temp during peak hours (hours or a few days per year), or replacement of pipes during routine maintenance.

Brown's Emissions Trajectory



Best solution using current technology:

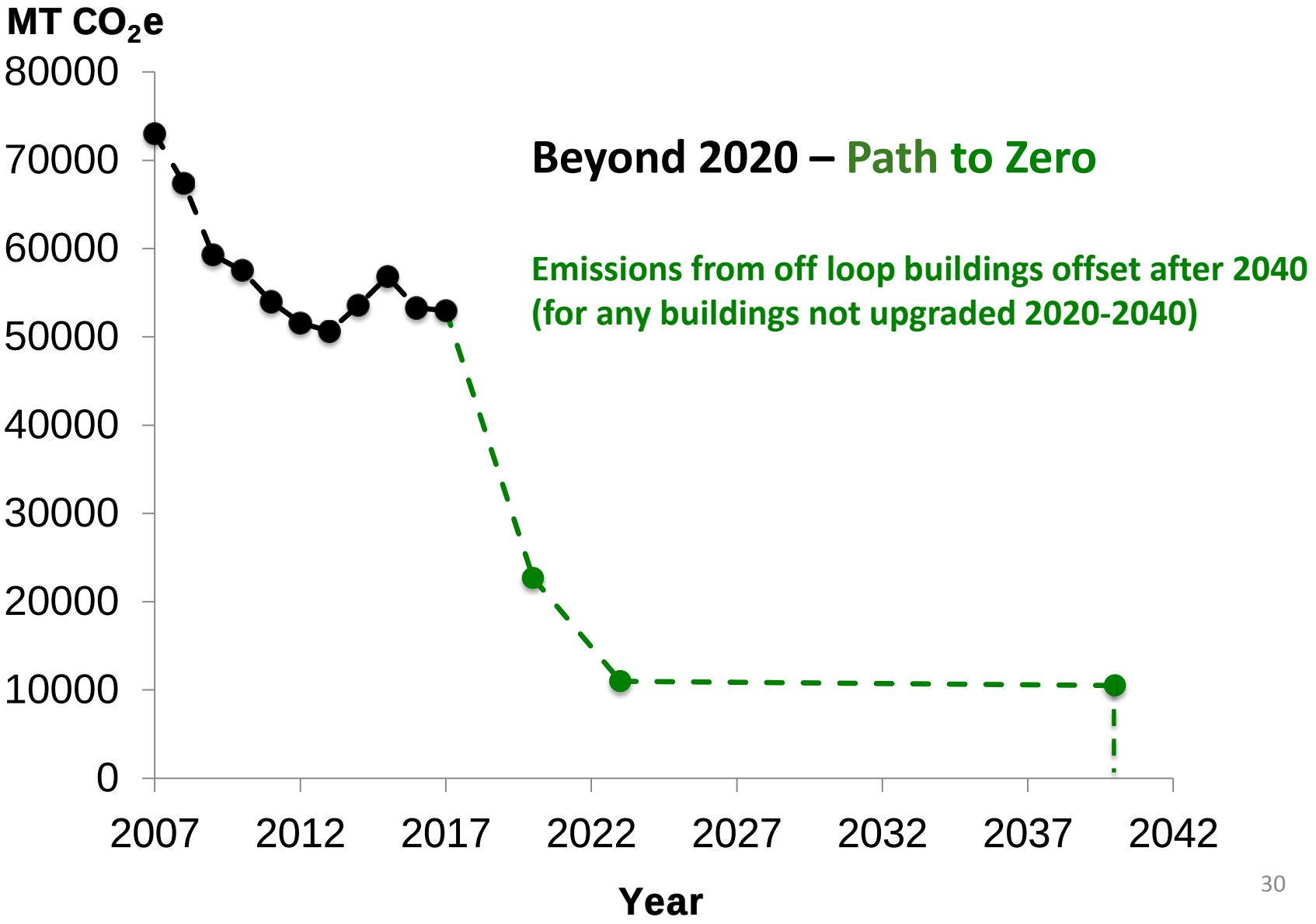
Air source heat pumps, hot water storage, bio-oil peaking

Best solution using current technology:

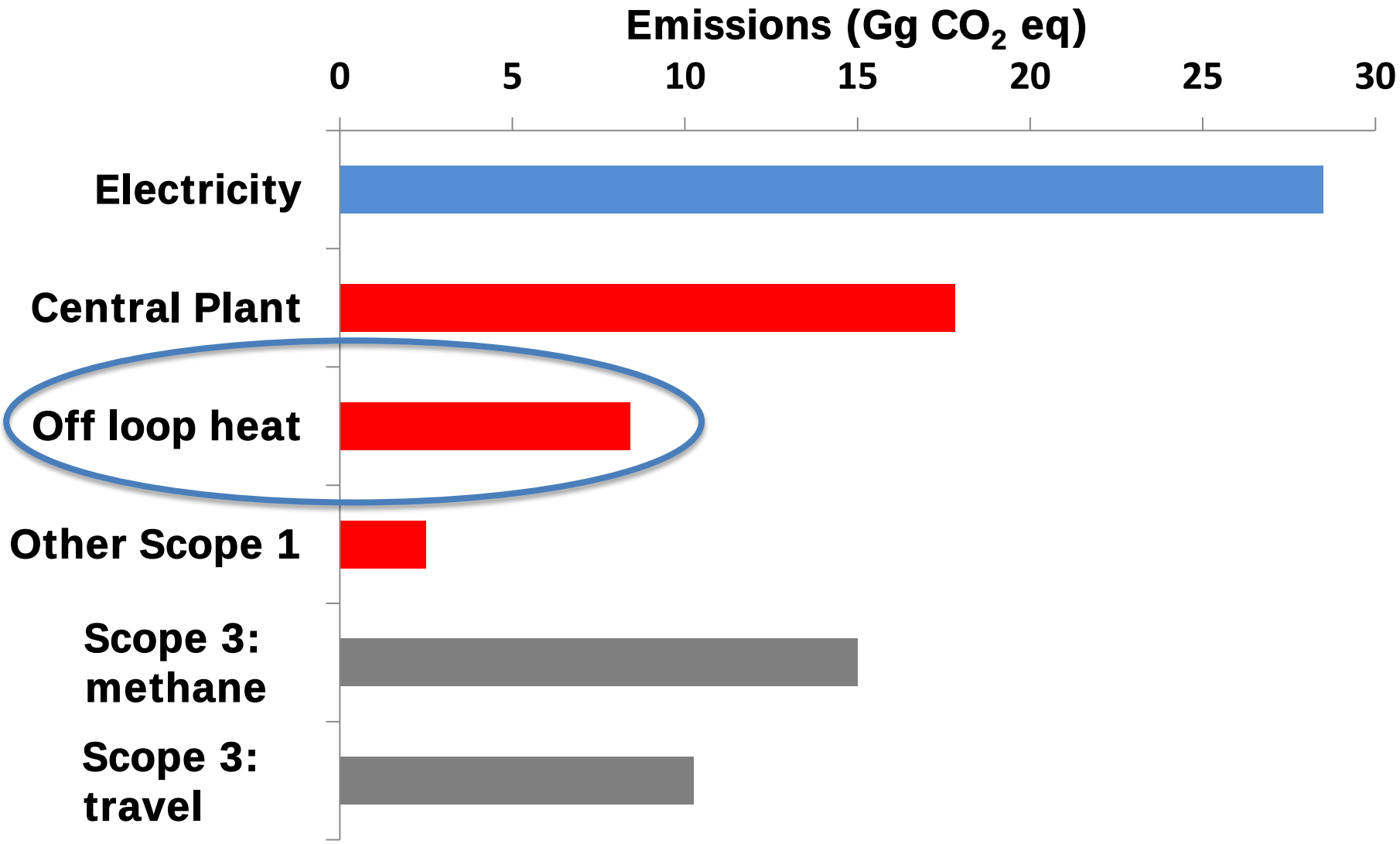
Air source heat pumps, hot water storage, bio-oil peaking

If new technologies emerge lower loop temperatures allow us to capitalize on them

Brown's Emissions Trajectory



Brown's 2017 Emissions



Off loop buildings

Gradually transition 130 buildings off fossil fuels

Maintain campus operations

Incorporate into ongoing building and boiler renewal

Prioritize larger and higher value buildings

Explore connecting additional buildings to the loop

Leverage other renovations

Example: Hirschfeld House

Example: Hirschfeld House

Renovation summer 2018

Initial plan to replace part of two-zone heating

(and not update window air conditioners)

Added $140K for air source heat pumps to provide single heating and cooling system

Greater comfort

Easier maintenance

Net zero after renewable electricity

Other Scope 1 emissions

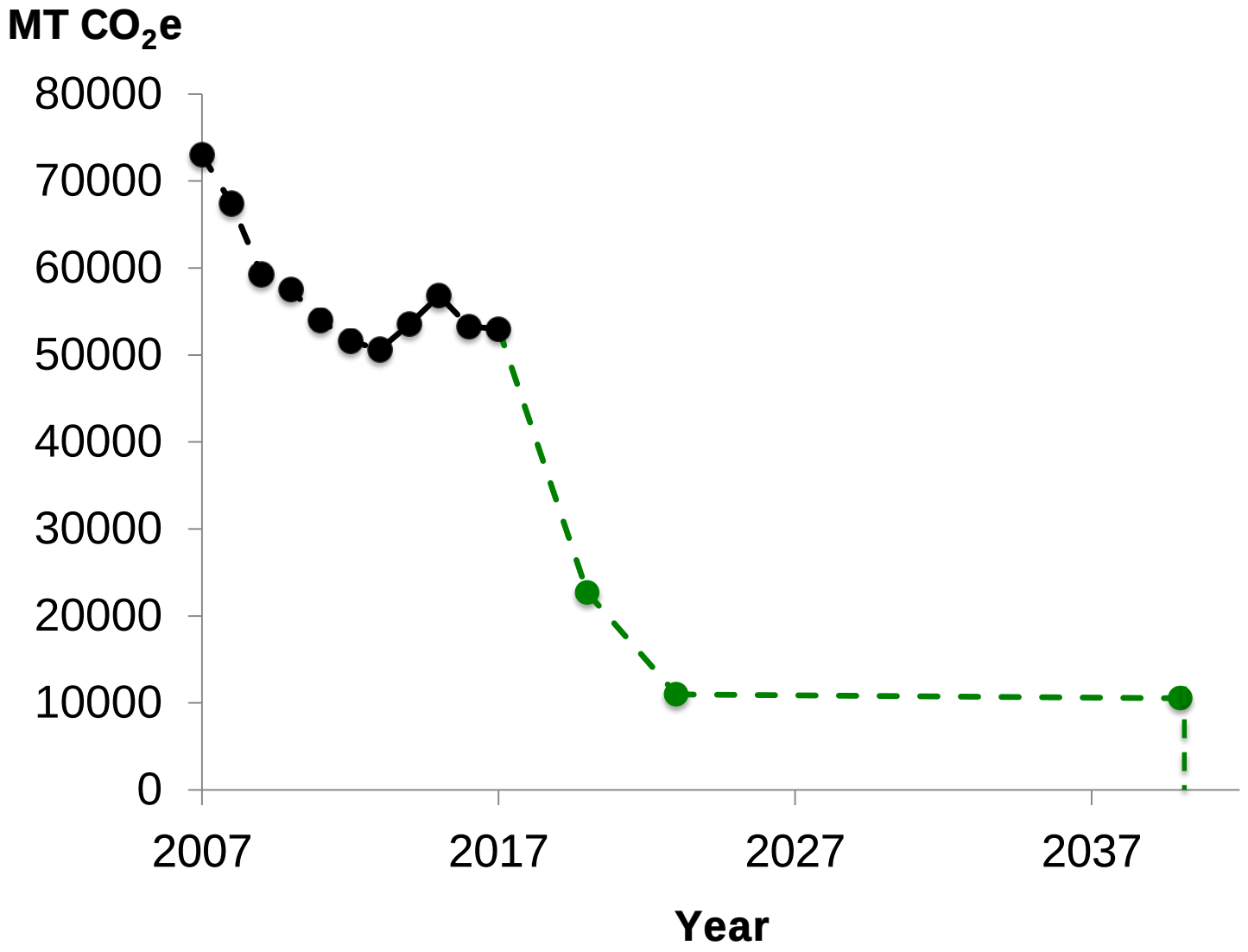
Domestic hot water, summer lab reheat, campus vehicles

Maintain campus operations

Incorporate into ongoing renewal

Leverage other renovations

Net zero by 2040: Technologically, financially and logistically feasible



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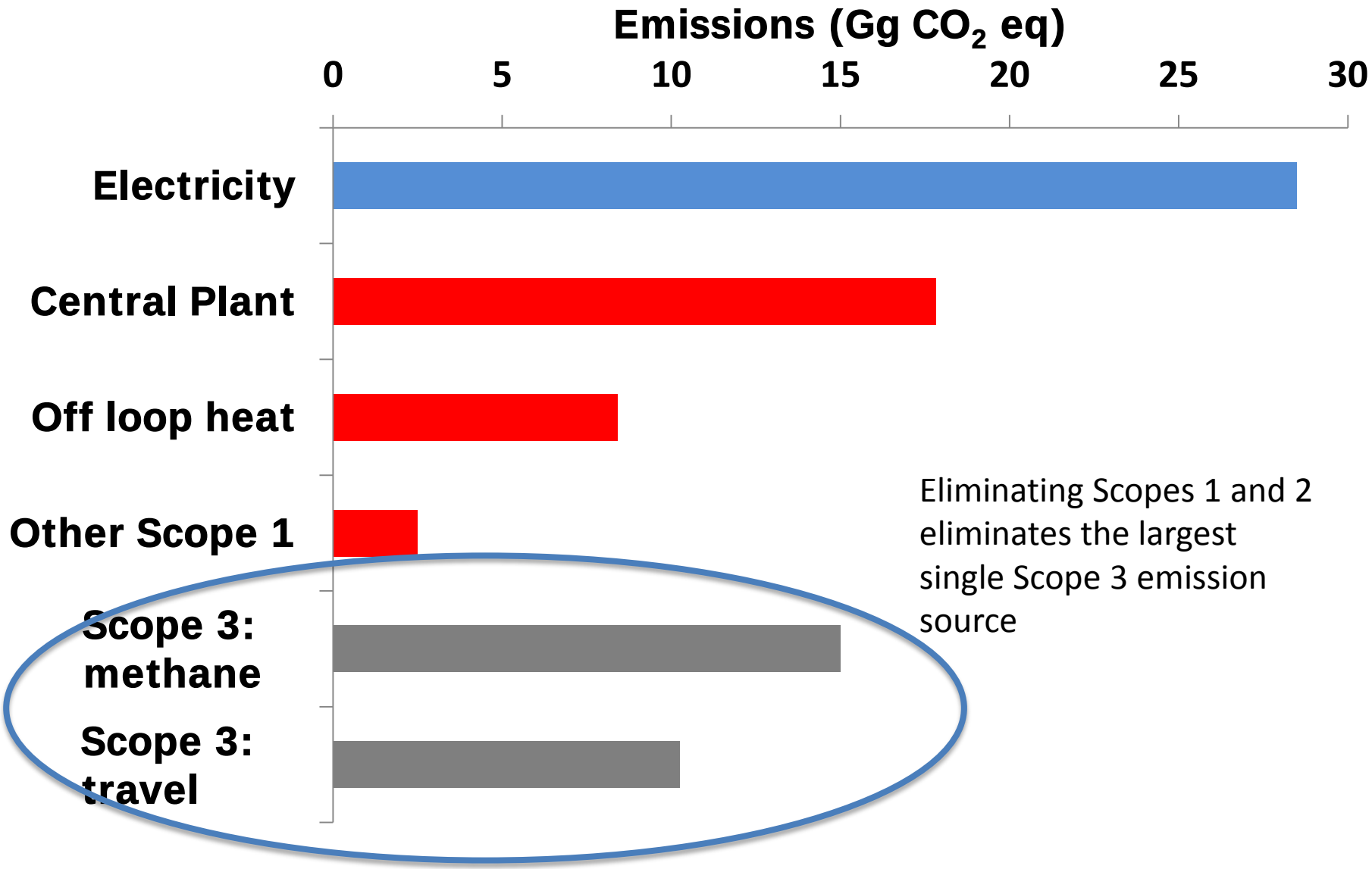


Eliminating Scopes 1 and 2 eliminates the largest single Scope 3 emission source

Committee on Scope 3

The committee will examine and determine how Brown can accurately measure and quantify our Scope 3 emissions. The committee will then offer insight, advice and recommendations on which of those emissions, technically categorized under Scope 3, the university should include in its overall carbon emissions accounting and will recommend on ways to reduce or offset those emissions.

Stephen Porder (Chairs); Jesse Shapiro; Dawn King; John Luipold; Jess Berry; Patricia Mulcahey; Daniel Traver; Keven Zhang; Nate Snell; Lusine Galoyan

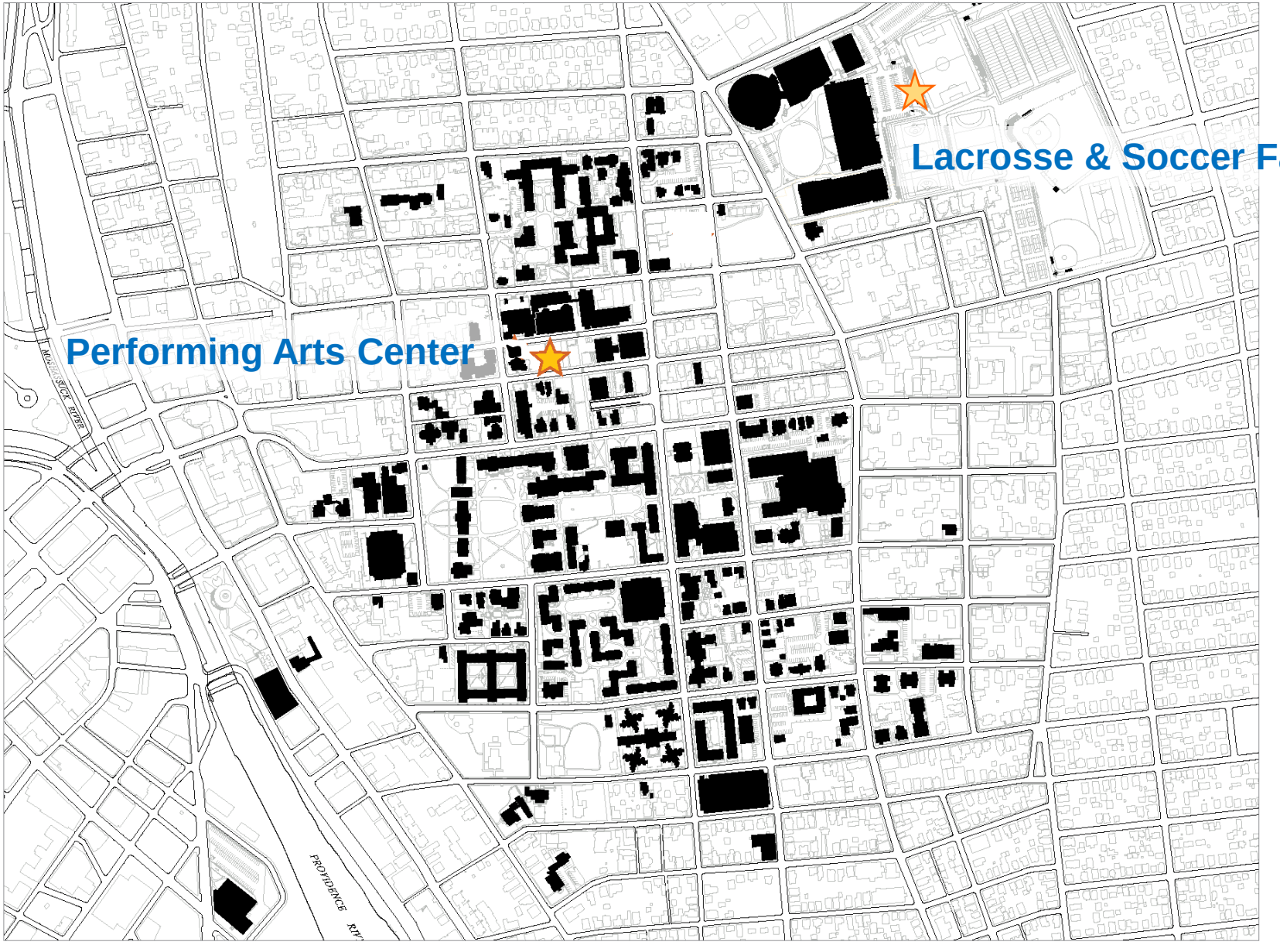
BROWN

Brown University Community Council

Capital Planning Update

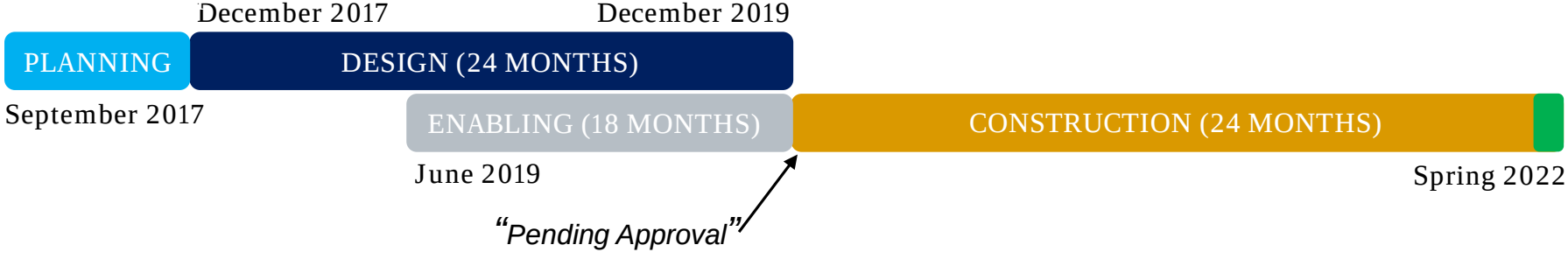
March 20, 2019

Facilities Management


Lacrosse & Soccer Facility
Performing Arts Center
PROVIDENCE

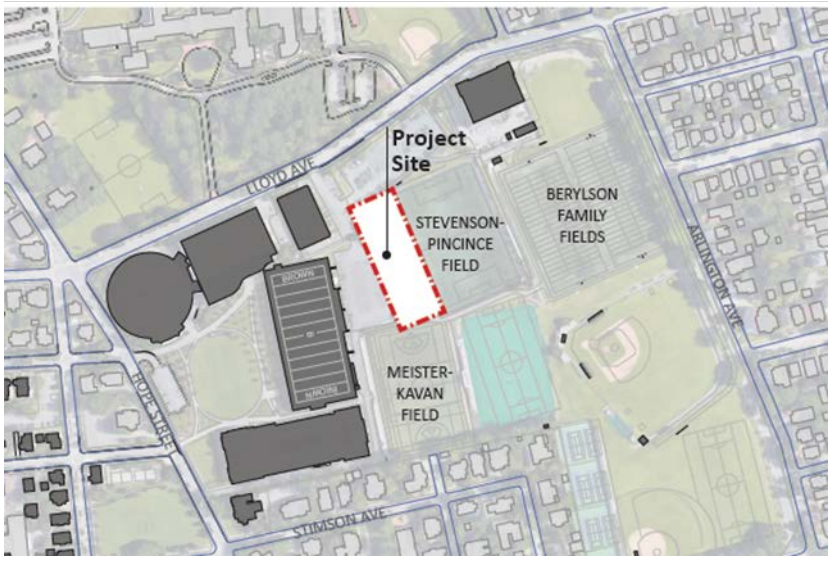
Performing Arts Center

- Create a premier Performing Arts facility to support the Arts.
- ~96K GSF Featuring a Main Performance Space, Lobby gathering, Orchestra rehearsal (resilient floor), Acting Studio (sacrificial floor), Movement Studio (sprung floor), Tribune, South promenade, assembly space.



Lacrosse & Soccer Facility

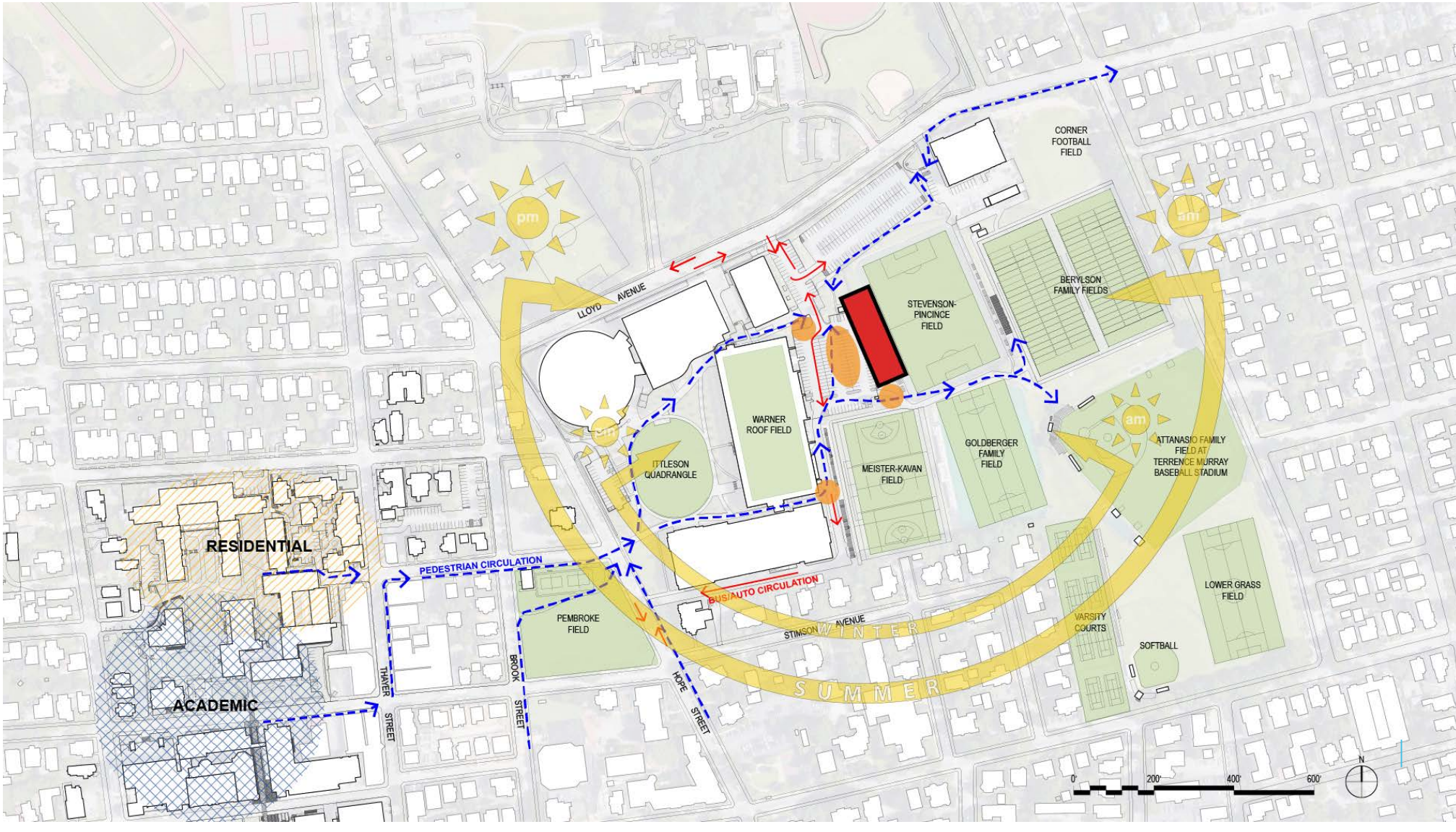
- Create a premier facility for lacrosse and soccer team practice and games to enhance team and game day experiences.
- ~22.5K GSF Features new men's and women's lacrosse & soccer locker rooms, offices, shared team room, viewing Area/study lounge, and satellite sports medicine.
- Other enhancements include permanent restrooms, concessions, visiting "Game Day" rooms, staff locker rooms, media, seating improvements and scoreboard.



IMP

PLANNING | DESIGN (7 MONTHS) | CONSTRUCTION (15 MONTHS)

February 2019	May 2019	February 2020	August 2020
Architect selection	Construction Approval	Lacrosse Use	Soccer Use (Pending)



CAMPUS SITE PLAN

SOUTH EAST VIEW