



UNIVERSITY OF  
CALGARY

# Renewing A Climate Action Plan

How the community can  
inform its development



# Presentation Outline

- Institution Quick Facts
- Sustainability Backgrounder and 2010 Climate Action Plan
- Renewing the Climate Action Plan
- Key Takeaways
- Questions & Answers



# Quick Facts

5

Primary  
Campuses

14

Faculties

30,000+  
Students

**1,800+ academic staff**  
actively engaged in research,  
scholarship and teaching

**3,200+ non-academic staff**  
focused on operating the institution  
and delivering against our core mandate

**\$1.2 billion operating budget**  
UCalgary contributes nearly \$8 billion  
annually to Alberta's economy

650+  
Acres

120+  
Buildings

1M+  
Sq. Meters

Climate  
Zone

7

220  
Annual  
CDD

4300  
Annual  
HDD

# Sustainability Backgrounder

STARS Gold Since 2013



Corporate Knights



2017 Greenest  
Campus in Canada



# Sustainability Backgrounder

The University of Calgary **Institutional Sustainability Strategy** is an institutional roadmap for leadership and excellence in sustainability.

Three supporting frameworks:

- 1) Education and research
- 2) Engagement
- 3) Operations and administration

<https://www.ucalgary.ca/sustainability/>



# 2010 Climate Action Plan





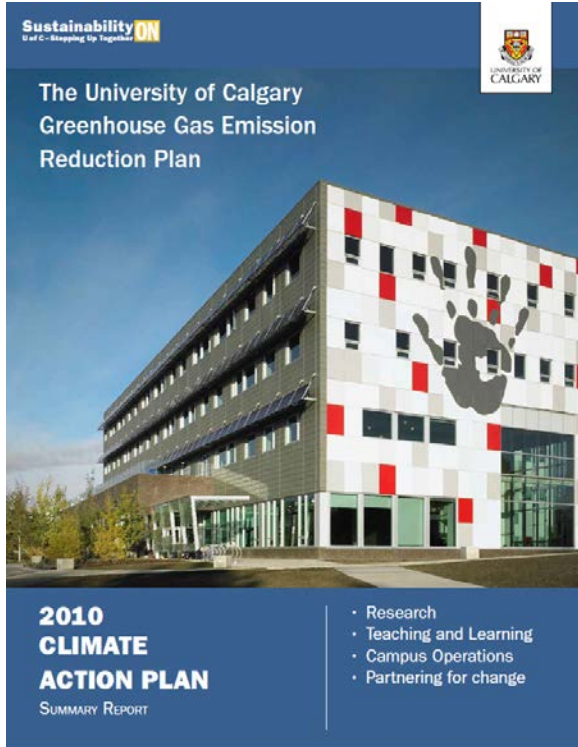
# Context for change: The world around us

UCalgary's renewed CAP was developed taking into consideration a rapidly changing external environment:

- Changing provincial energy context
- Regulatory and policy drivers at different levels of government
- Emerging information and building technology opportunities
- Consideration of resiliency and risk mitigation related to climate change over time



# The 2010 Climate Action Plan



- Developed internally
- University commitments to reduce emissions
- Set a reduction target for near future.
- Included strategies on Scope 3 emissions

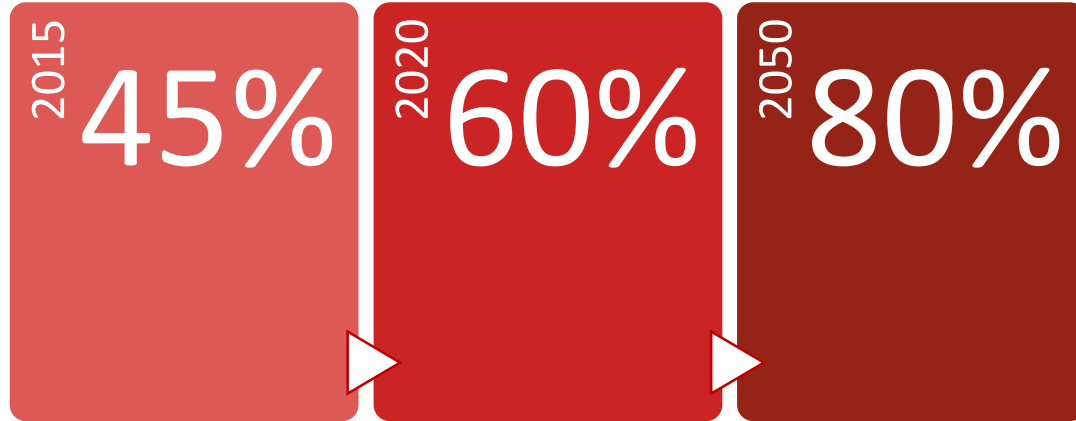




# 2010 CAP GHG Reduction Targets

What did we set out to do?

The University of Calgary targeted reductions from 2008 for Scope 1, 2 and 3 emissions.

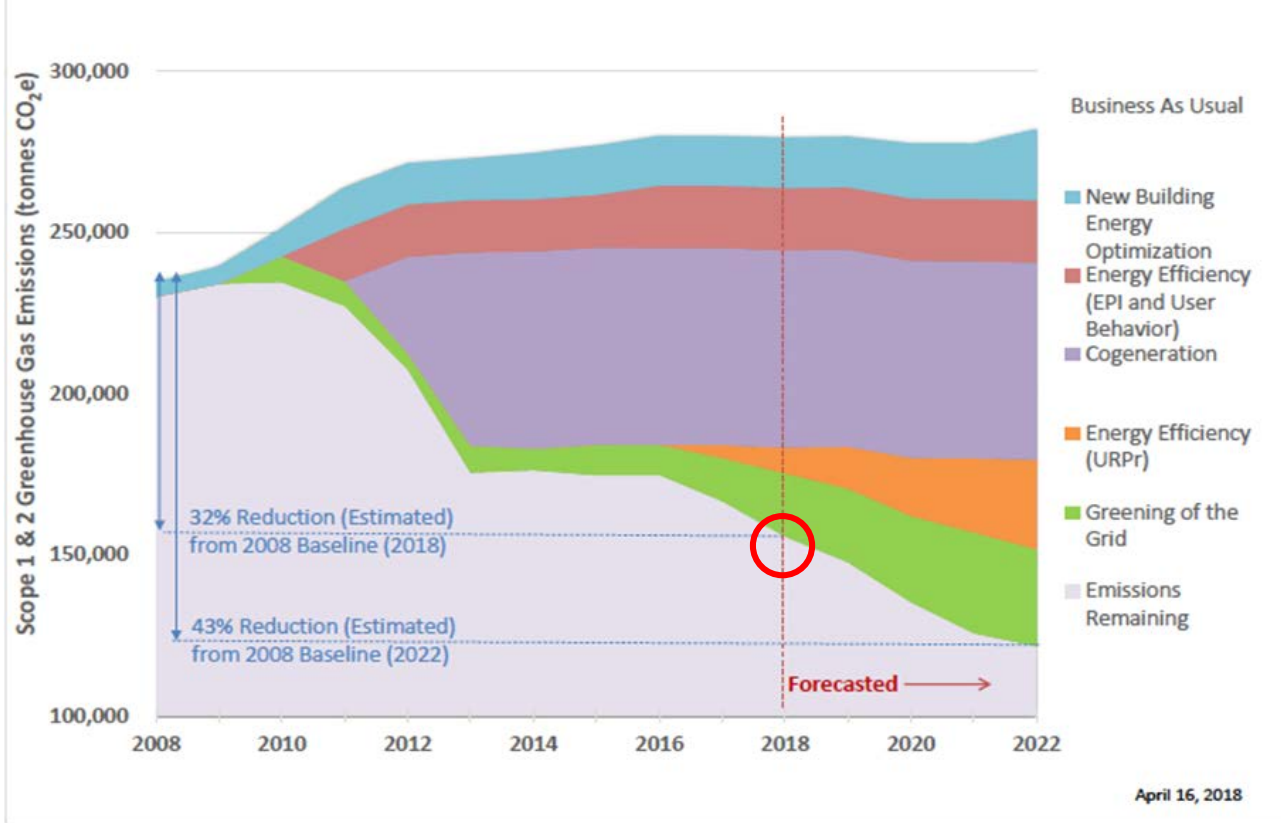


# A Growing Campus

- From 2008 onwards, the University experienced significant growth
- 16% growth in space (140,000 m<sup>2</sup> of space)
- 16% increase in new staff and students



# Current Institutional GHG Emissions



April 16, 2018



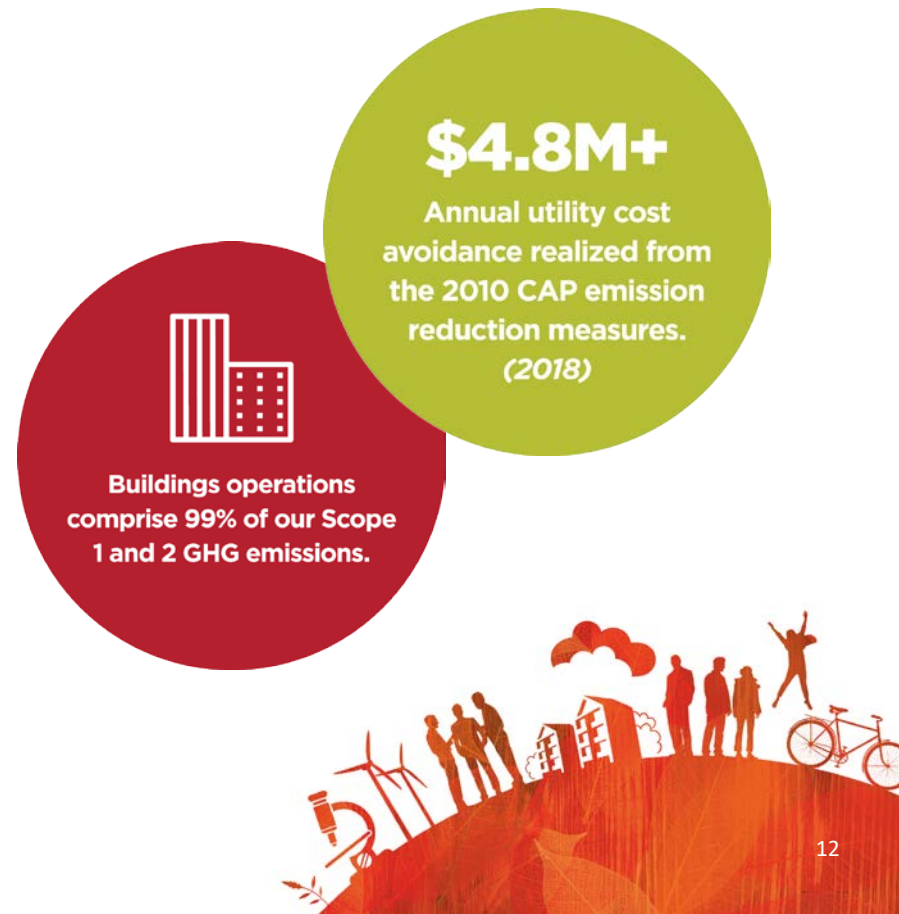
# Our emissions reductions

By 2018 we had achieved a 30% reduction in GHG emissions<sup>1</sup> compared to our 2008 baseline despite substantial growth on campus.

## 3 key initiatives:

1. Installing a cogeneration unit on main campus
2. Reducing GHG emissions growth by investing in energy efficient buildings
3. Implementing utility reduction programs

(1) Scope 1 and 2 emissions



# Green Building Strategy

LEED requirements for new construction

Minimum energy requirements

MacKimmie will be first Zero Carbon project on Campus

15,000 t CO<sub>2</sub>e in annual avoided emissions





# R.B. Miller Field Station

- Field Stations provide opportunities to test technologies at a smaller scale and prove a concept (PV, Thermal Solar, Energy Storage)
- Field Stations can be great sites to showcase passive design approaches



# MacKimmie Complex Redevelopment

## Project Overview

- Multiphase project:
  - MacKimmie Tower renewal (Aug 2019)
  - Block and link reconstruction (Aug 2022)
- 40,000 m<sup>2</sup>
- Targets:
  - 90% Reduction in Energy
  - EUI <100 kWh/m<sup>2</sup>/year
  - TEDI <36 kWh/m<sup>2</sup>/year
  - Carbon Zero Certification

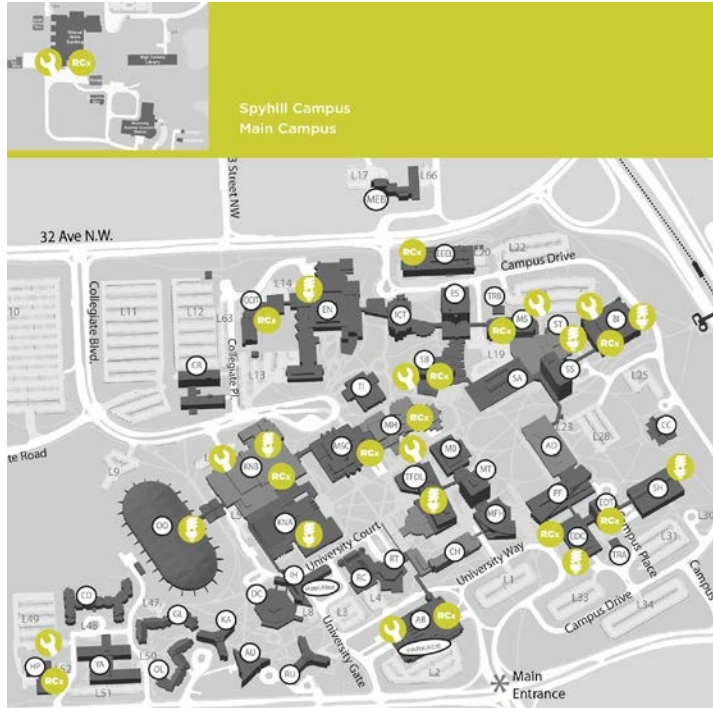


# Energy Supply

- Reducing reliance on Alberta's Electricity Grid
- Installation of 20 MW cogeneration plant
- 60,000 t CO<sub>2</sub>/year reduction
- Ongoing operational savings



# Existing Buildings



Institutional wide programs:

- Energy Performance Initiative
- Utility Reduction Program

\$17 Million Invested

\$1.7 Million in avoided utility costs



# 2018 Progress

- 30% below baseline of Scope 1 and 2 emissions
- 18% Growth of Space and Users
- Cogeneration Implemented
- Green Building Strategy ahead of schedule
- Utility Reduction Program in place





# Renewing the Climate Action Plan



# Context for change: The world around us

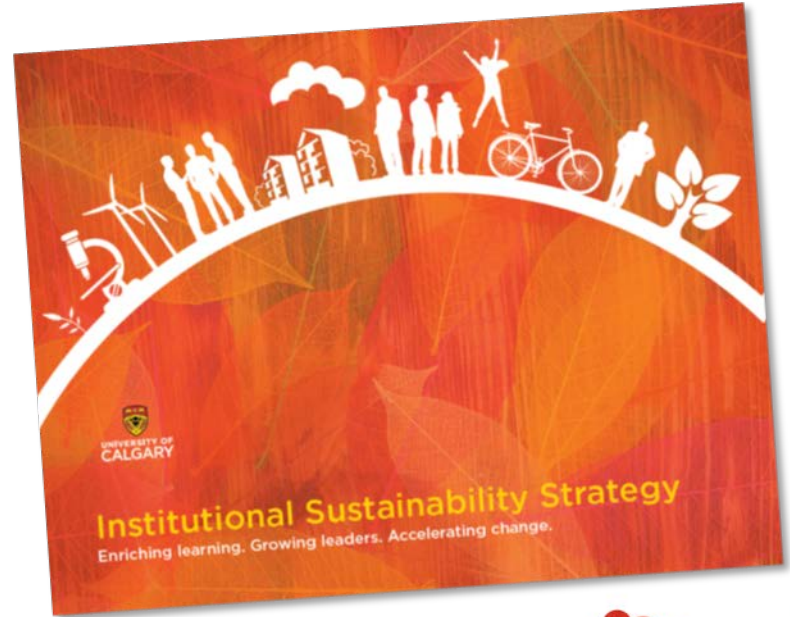
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# Need for Renewal

- Generate a roadmap for two goals of the Institutional Sustainability Strategy:
  - Most Energy Efficient Campus
  - A Carbon Neutral Campus
- Changing context of from carbon reduction to carbon neutrality



# 2019 CAP goals at the onset

Address the Institutional Sustainability Strategy goals and aspirations:

- To attain net carbon neutrality
- To be one of the most energy efficient campuses in Canada
- To be a Canadian leader in healthy high performance green buildings

Ensure long term reliability, resiliency and cost effectiveness of energy supply to all campuses considering:

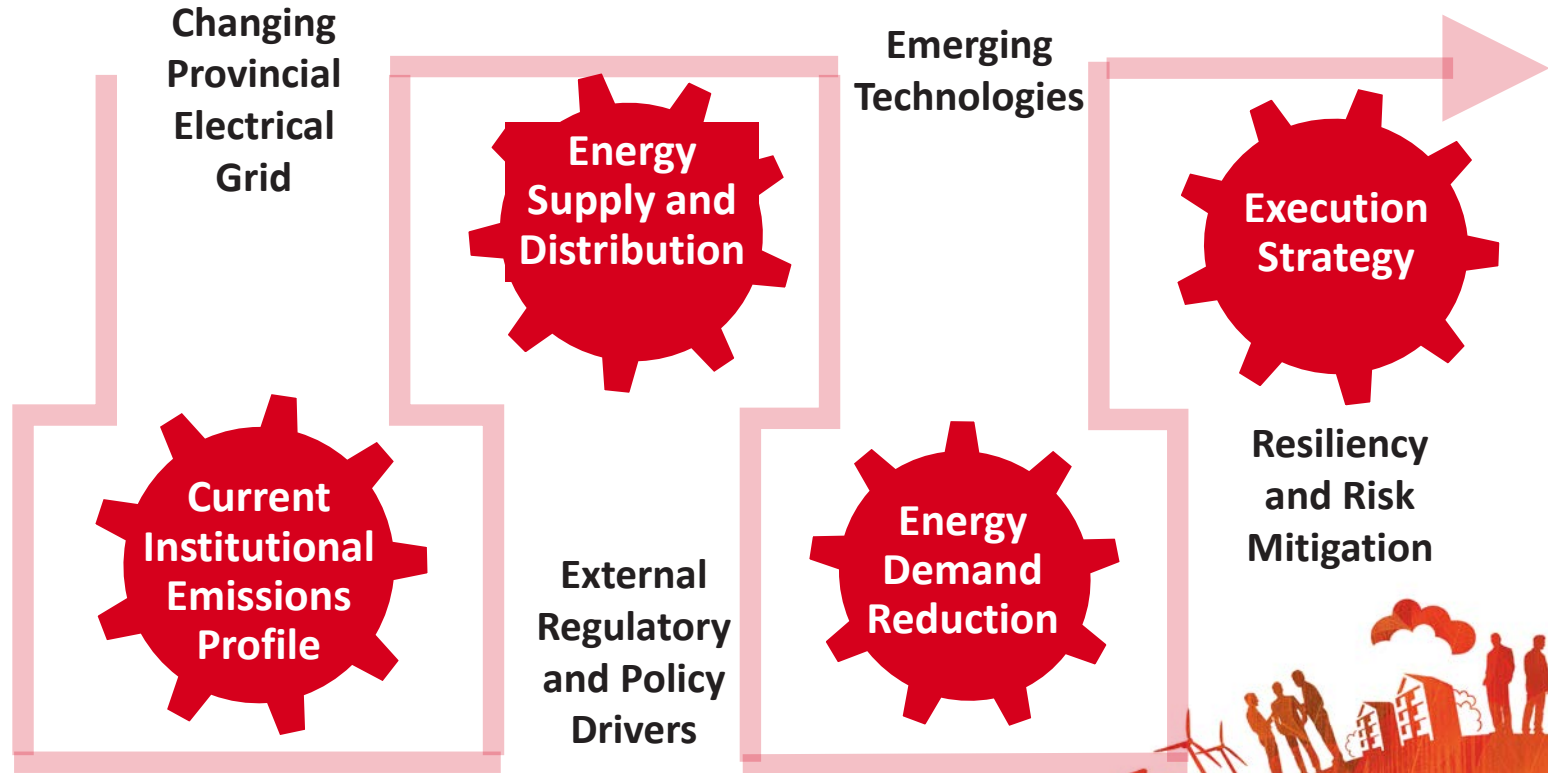
- Adaptation to a changing regulatory, financial and climatic context

Ensure institutional buildings are fit-for-us for the next fifty years:

- Renewal roadmap to guide investment decision



# 2019 CAP Planning Context





# Engagement

- Key opportunity to review how the university as a whole and facilities specifically
- Bring in outside experts
- Have everyone at the table



Photo Credit: Anna Nowaczyk



# Working with the Community

The university worked closely with the community to develop the CAP. This allowed us to bring in experts and different voices to the process.



Photo Credit: Anna Nowaczyk



# Experts Forum

- Audience is campus community with exception of identified external industry experts
- Set the context for the Integrated Design Process



# Integrated Design Process

- Set the technology and infrastructure context
- Understand the input of each area
- Multi-day format



Photo Credit: Anna Nowaczyk



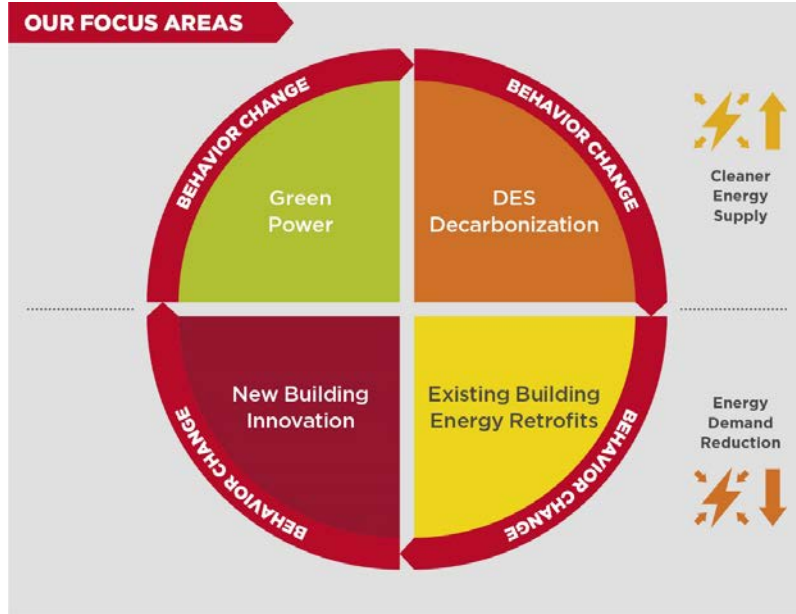
# 2019 CLIMATE ACTION PLAN

- Focused on building operations
- Clear targets for 2025 and 2030
- Understands that the post 2030 path is dependent on the actions prior





# Our renewed approach



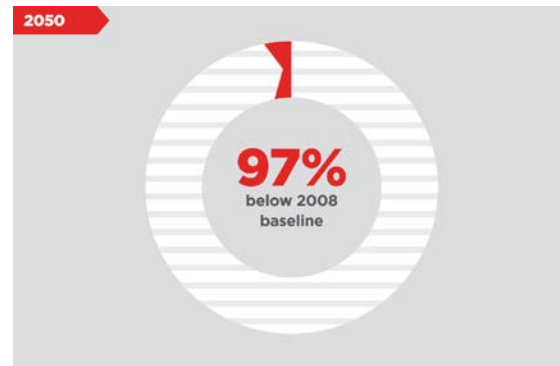
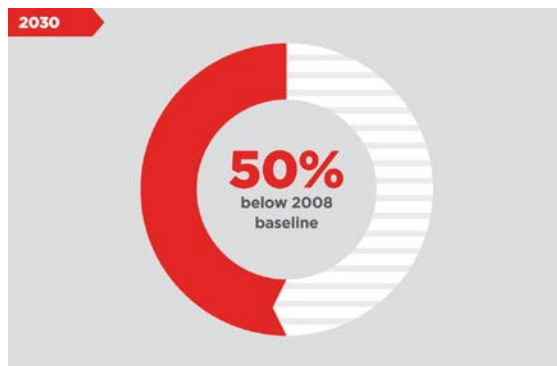
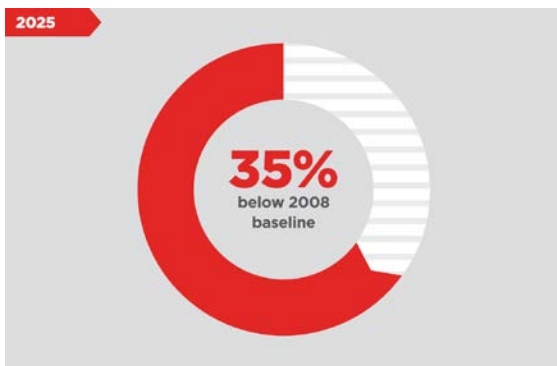
Our 2019 CAP outlines actions to realize emissions reductions through **four key focus areas** that require behavior change from our community:

1. New building innovation
2. Existing building energy retrofits
3. Green power
4. Decarbonization of the district energy system

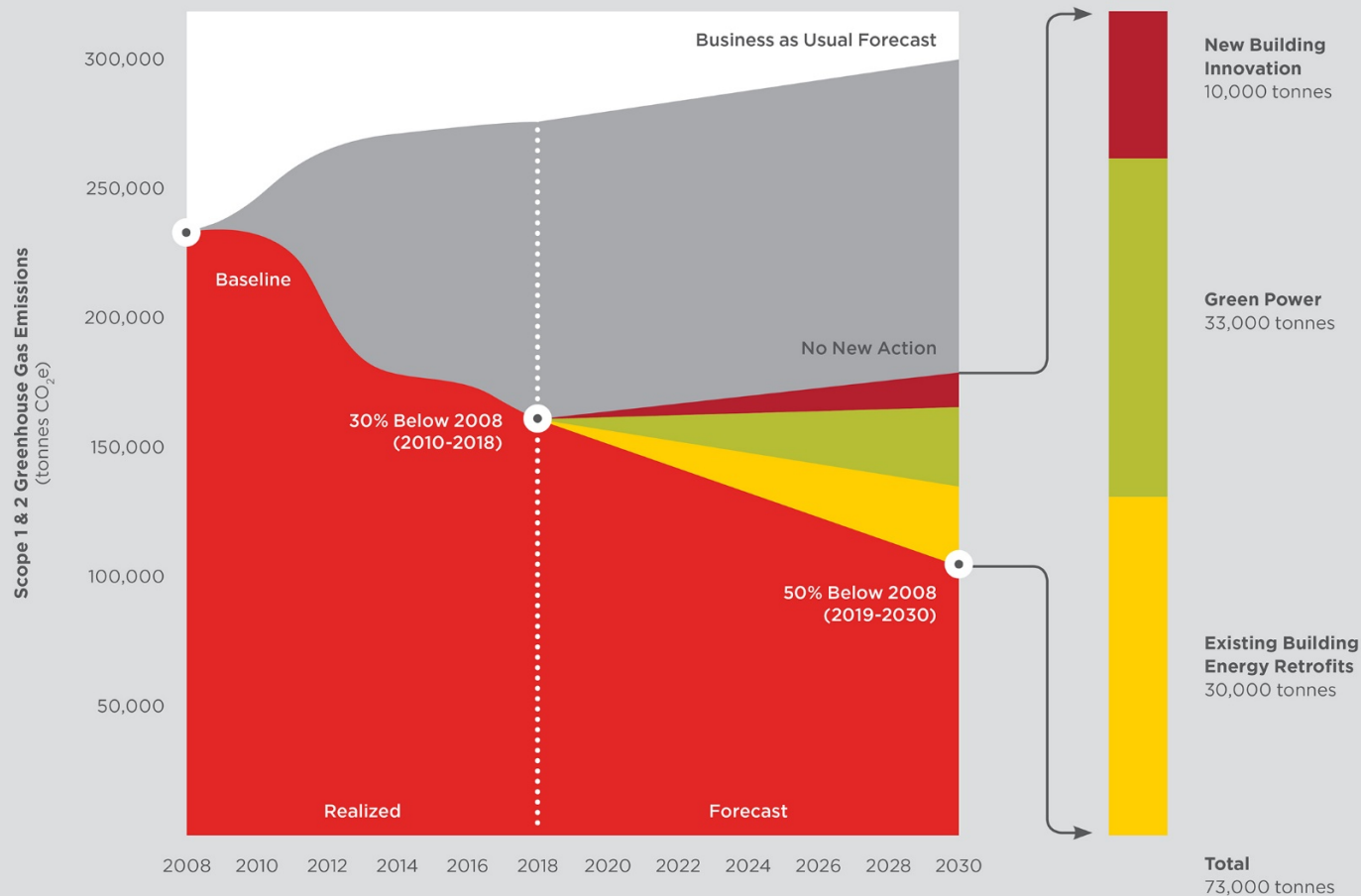


# Our renewed targets

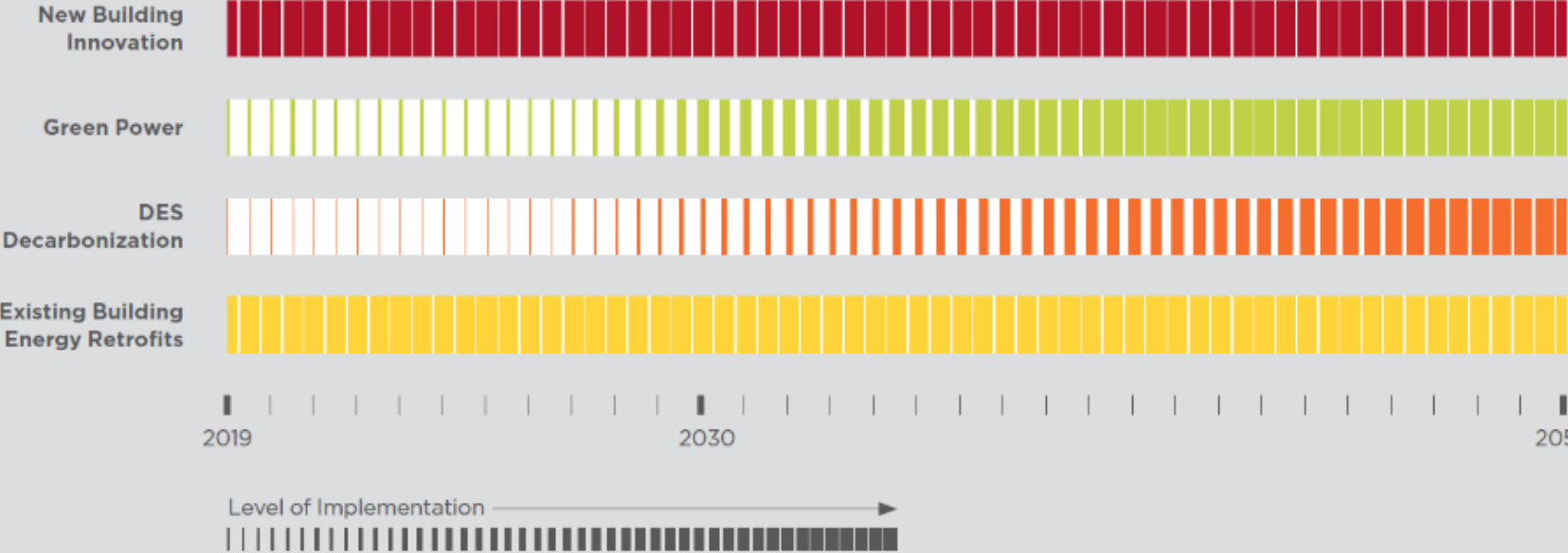
Our 2019 CAP confirms renewed targets for Scope 1 and 2 greenhouse gas (GHG) emission reductions and strategies to reduce GHG emissions from our campus operations.



## OUR EMISSIONS REDUCTIONS: 2008-2030



IMPLEMENTATION TIMELINE



# Key Takeaways



# Stakeholder Engagement

- Needs to be broad
- Allow for all voices
- Stakeholders should understand the technological constraints





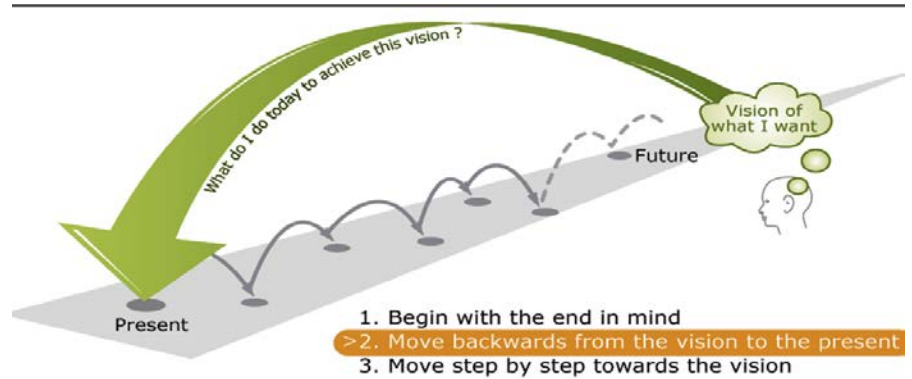
# Integrated Design Process

- Avoid discussing constraints too early
- Make sure that all options are considered
- Brainstorming best practices
- Applying design theory
- Strong facilitator



# Work Backwards from the End Goal

- A credible vision of Net-Zero
- Understand the constraints
  - Assets
  - Operations
  - Costs
- Work backwards



Backcasting Model

Source: <http://www.thenaturalstep.org/sustainability/backcasting/>

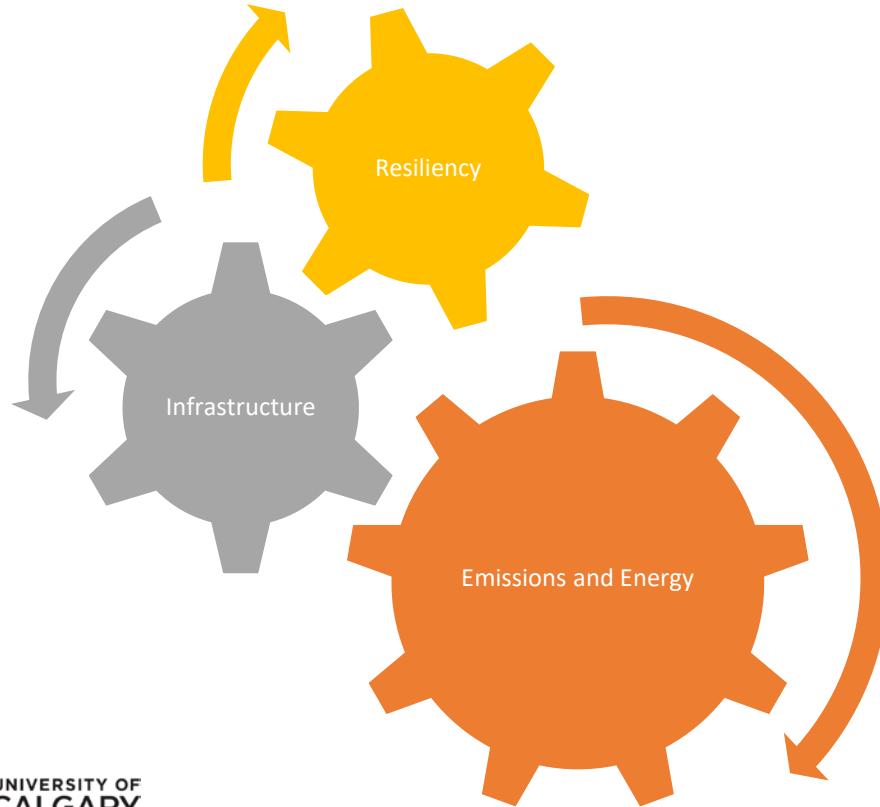


# The Right People in the Room

- Needs to get buy-in from all groups, not just driven by sustainability
- Consider effects of reliability and resiliency
- Operations and existing assets



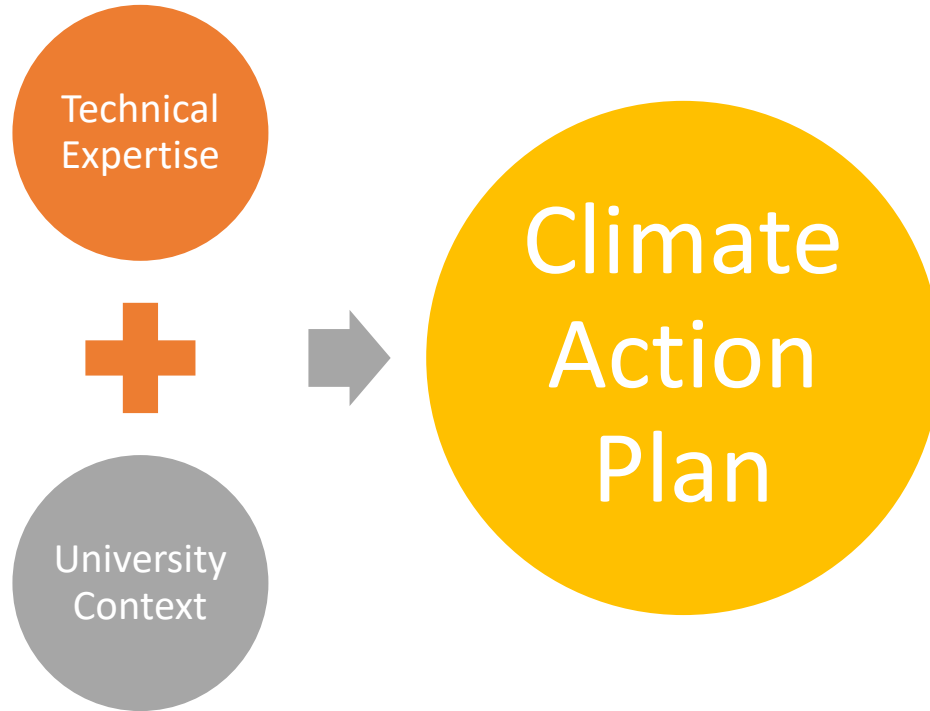
# Iterative Process



- Developing a plan to get to Net Zero will require many iterations
- Technical reports and inputs may require revisions



# Needs to be created from within



- Bring in experts where needed
- Maintain ownership of the Plan
- How will this be governed?



# Plan for next steps

- Document cannot wait five years for review
- 2040 is not far away
- Be prepared for opportunities
- Understand the funding context







# Questions?

**Learn more:**

[ucalgary.ca/sustainability/climate-action-plan](https://ucalgary.ca/sustainability/climate-action-plan)

