



Strategic Priority Pillar Update – Environmental Stewardship

A review of Newmarket Climate Change Initiatives and the IPCC's Physical Science Basis for Climate Change

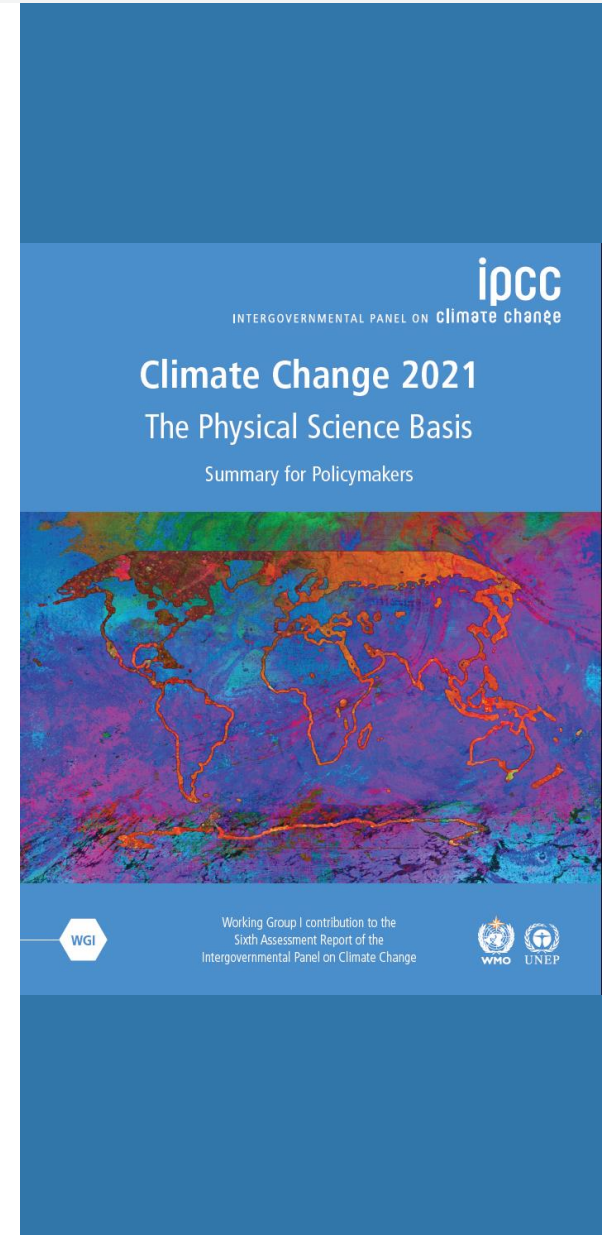
Prepared by: Craig Schritt

Department Name: Engineering Services

Date: 2022-01-24

What this presentation covers:

1. Updates from the Town of Newmarket's Climate Change and Environmental Sustainability Working Group
 - a. *Review of Environmental Stewardship Council strategic pillar*
 - b. *State of additional climate change initiatives*
2. Review of the 2021 IPCC report on the physical science basis for climate change



The background of the slide is a blue-tinted photograph of a forest. The top and bottom edges of the slide feature a dark blue horizontal band with a faint, darker blue image of tree branches and leaves. The central area is white, providing a high-contrast background for the text.


*Updates from the Climate
Change and Environmental
Sustainability Working Group*


Continue to implement programs that make Newmarket a leader in LID

ENVIRONMENTAL STEWARDSHIP LOW IMPACT DEVELOPMENT

 Action Item:
Implement Low Impact Development (LIDs) Capital projects where appropriate

 Underway

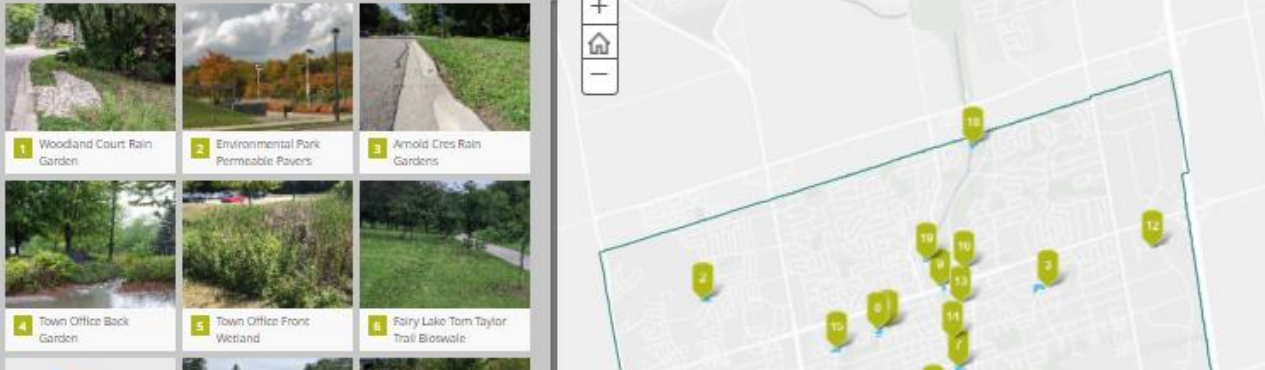
 Action Item:
Partner with Lake Simcoe Region Conservation Authority (LSRCA) on LID understanding of implementation, education, operation and maintenance

 Underway

Low Impact Development (LID) Projects

>> Click on an image or a map pin to learn more about the LID facility

Town of Newmarket

The image shows a grid of six photographs of LID projects, each with a numbered label: 1. Woodland Court Rain Garden, 2. Environmental Park Permeable Pavers, 3. Arnold Cres Rain Gardens, 4. Town Office Back Garden, 5. Town Office Front Wetland, 6. Fairy Lake Tom Taylor Trail Bioswale. To the right is a map of the town area with numbered pins corresponding to these projects.

Continue to implement programs that make Newmarket a leader in LID

- New LIDs installed on Charles St, George Richardson Park, and the Tom Taylor Trail – Tannery Section
- Development Engineering advises Developers to include LIDs on private property as per the Town's LID policy
- *Upcoming LIDs in the Lorne Ave reconstruction project*
- *Upcoming municipal staff training partnership with LSRCA*

Continue to explore and support solar power installations in place and investigate additional installations

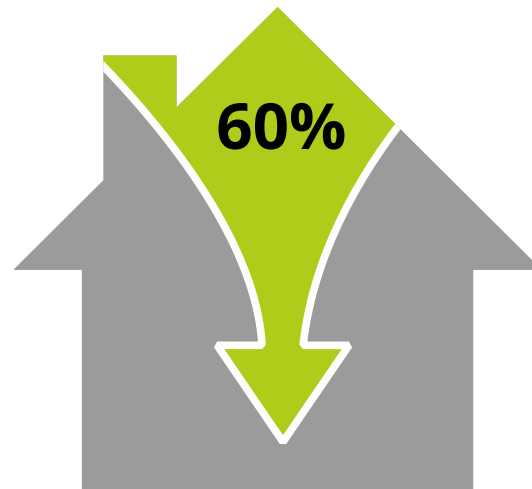
- Seven (7) facilities already have solar retrofits
- Solar powered radar speed boards
- Solar irrigation system at George Richardson Park



Continue to implement the Community Energy Plan



Increase Residential Efficiency



Lower Carbon Emissions



Increase Water Efficiency

Support highly effective partnerships with outside agencies who offer funding and support for our numerous projects



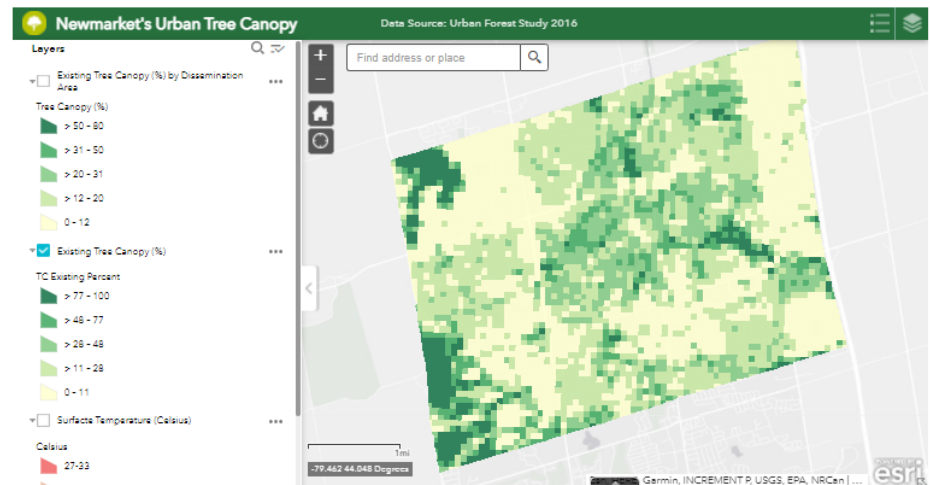
Implement a private tree by-law, public tree policy, and tree canopy management

- Completion of the Urban Forestry Management Plan
- Completion of iWonder event for the private tree by-law

ENVIRONMENTAL STEWARDSHIP TREE POLICY

 Action Item:
Complete Urban Forestry Management Plan including Urban Forestry Operations Manual
Underway
[Urban Forestry Management Plan](#) was completed in 2019. Urban Forestry Operations Manual is underway.

 Action Item:
Complete iWonder event for private tree by-law to increase canopy and number of trees in the Town
Completed
iWonder event held October 5, 2019. Learn about it [here](#)

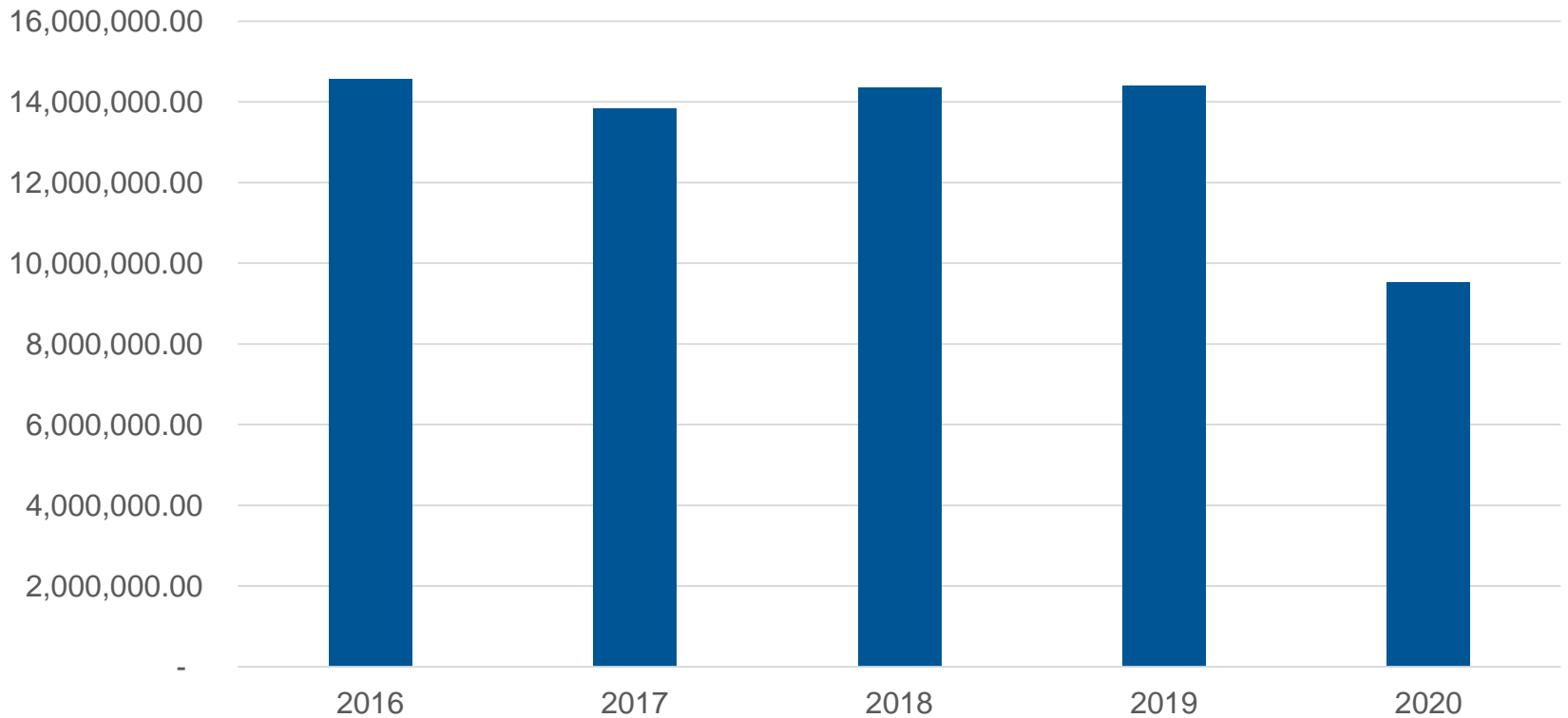




Climate Change Markers

Facility Electricity Use

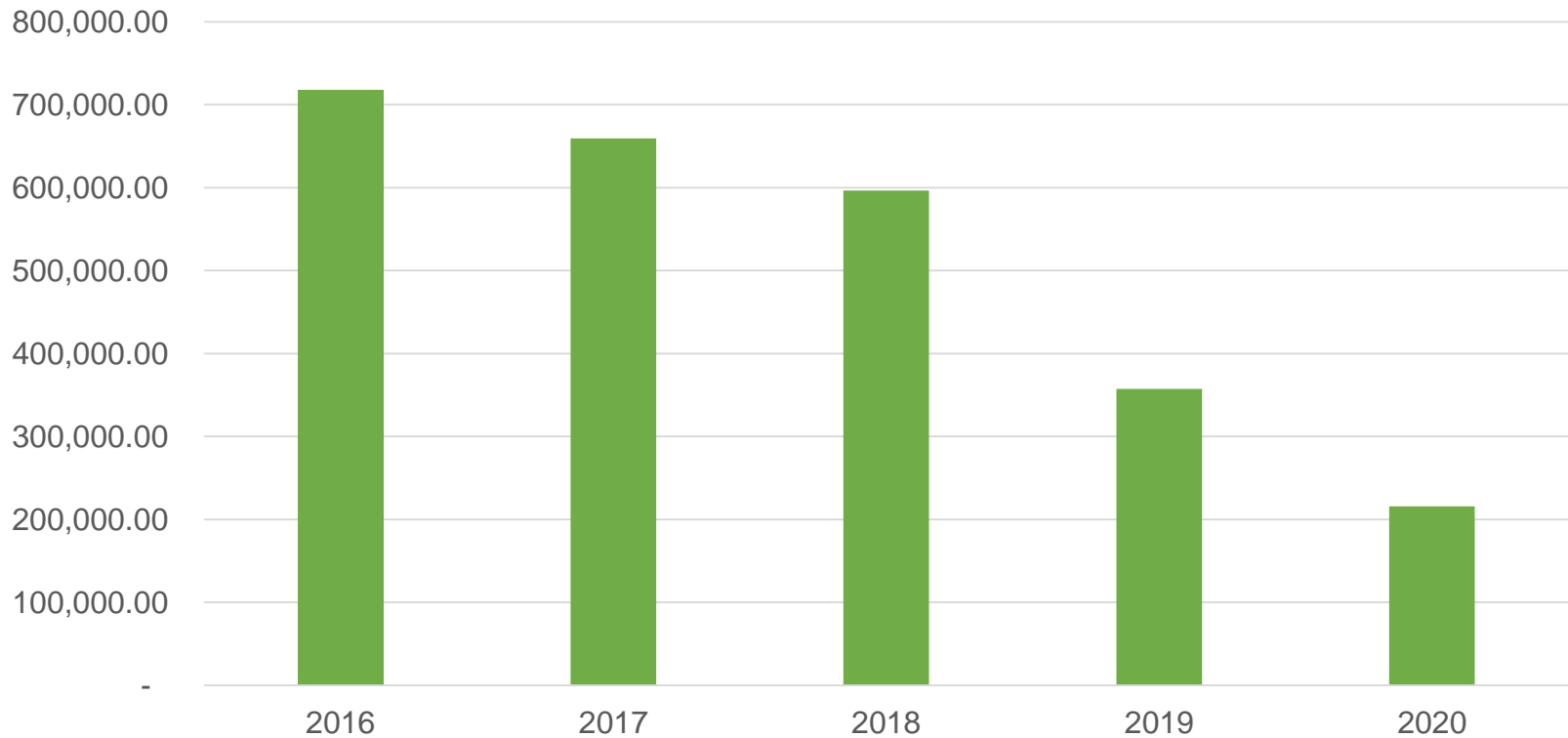
Total energy usage in kWh by year



Includes: Ray Twinney Complex, Operations Centre, Elman W. Campbell Museum, Old Firehall, Hollingsworth Arena, 451 Millard Ave, Old Town Hall, Senior's Meeting Place, Youth Centre, Magna Centre and Soccer Fields, Gorman Pool, Town Hall, Community Centre, Public Library, Fire Station 4-1, Fire Station 4-2, Fire Training Centre

Solar Energy Production

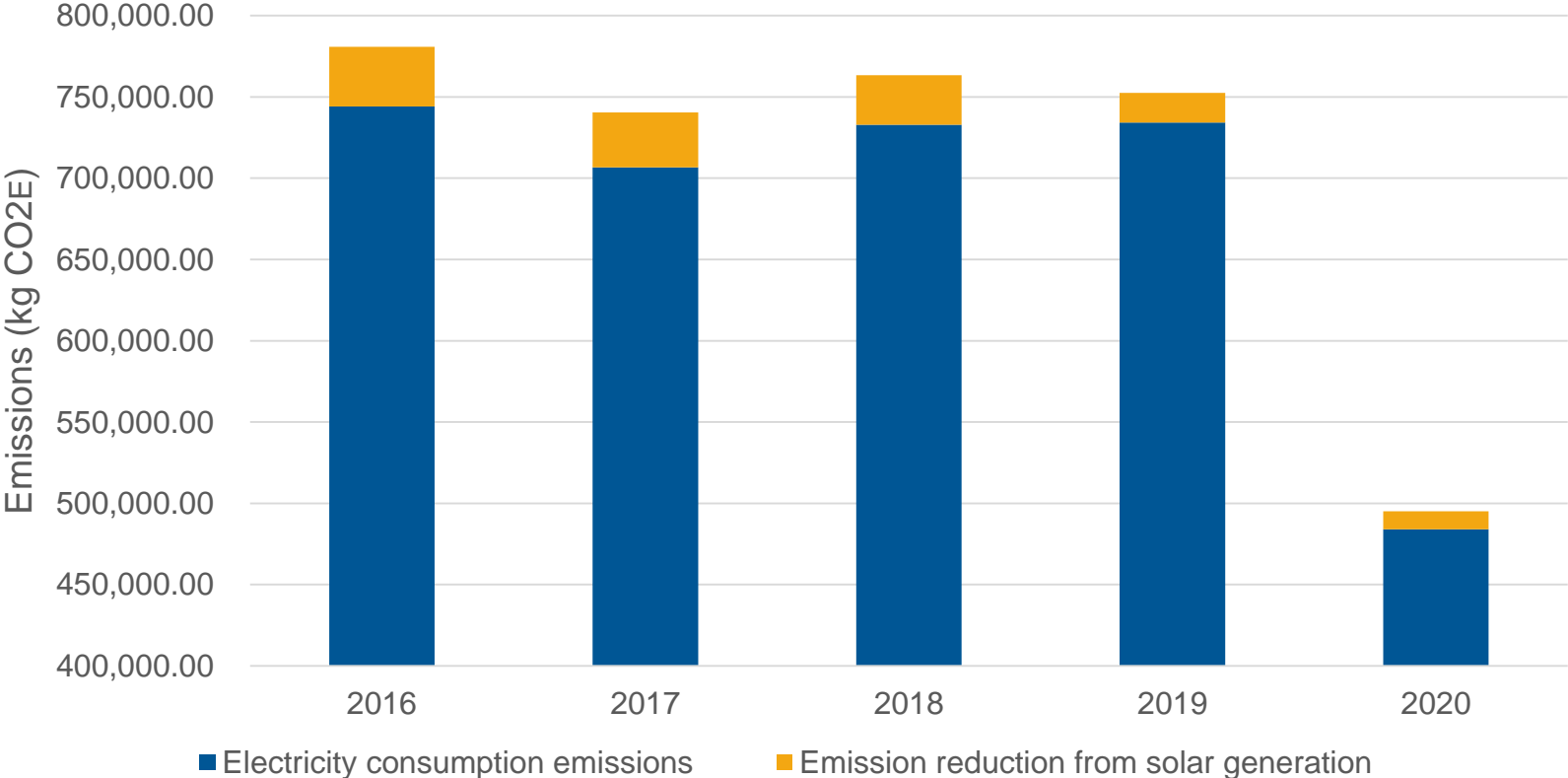
Total solar energy produced in kWh by year



Locations: Ray Twinney Complex, Community Centre, Senior's Meeting Place, Gorham Pool, Fire Station 4-1, Fire Station 4-2, Magna Centre

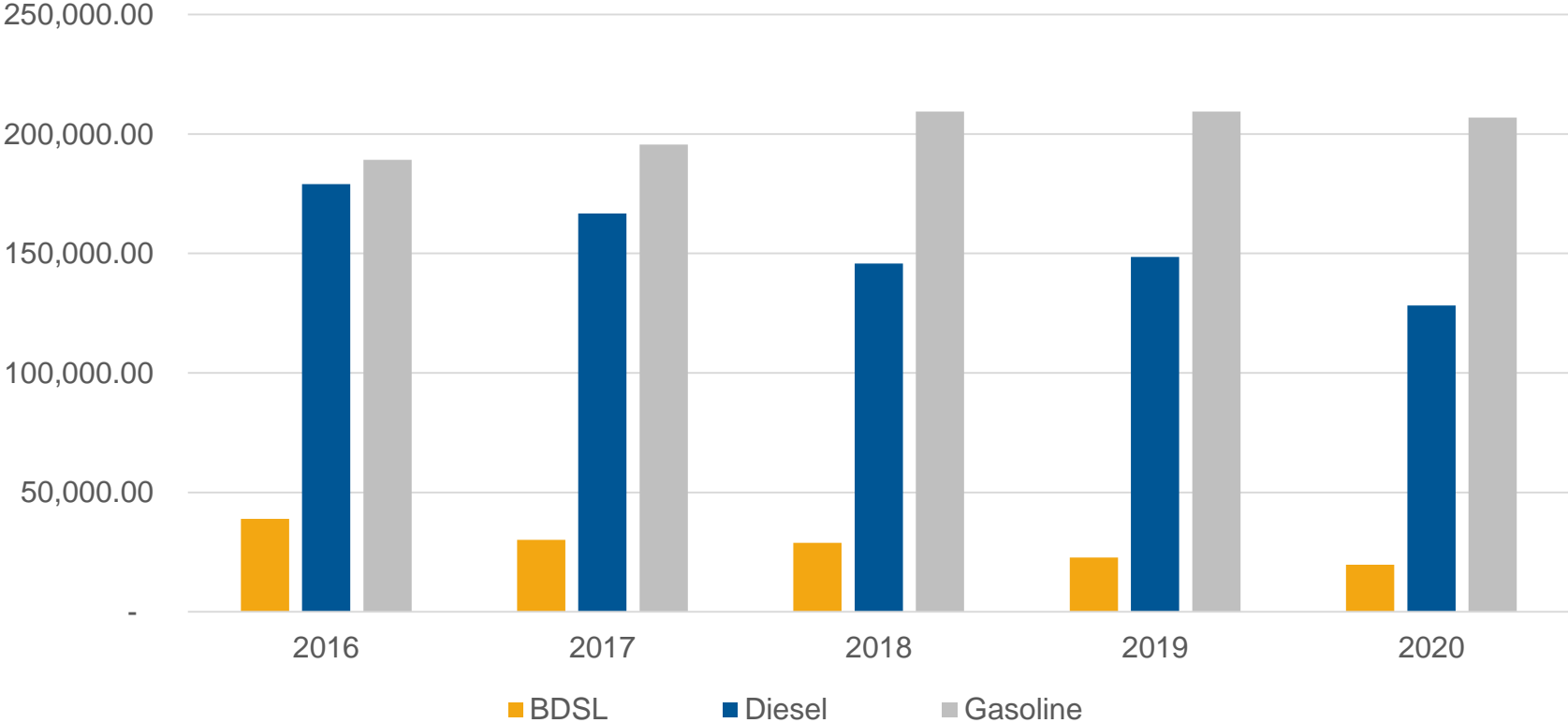
Comparison of energy consumed to solar energy produced

Emissions (kg CO₂E) from facility electricity consumption by year

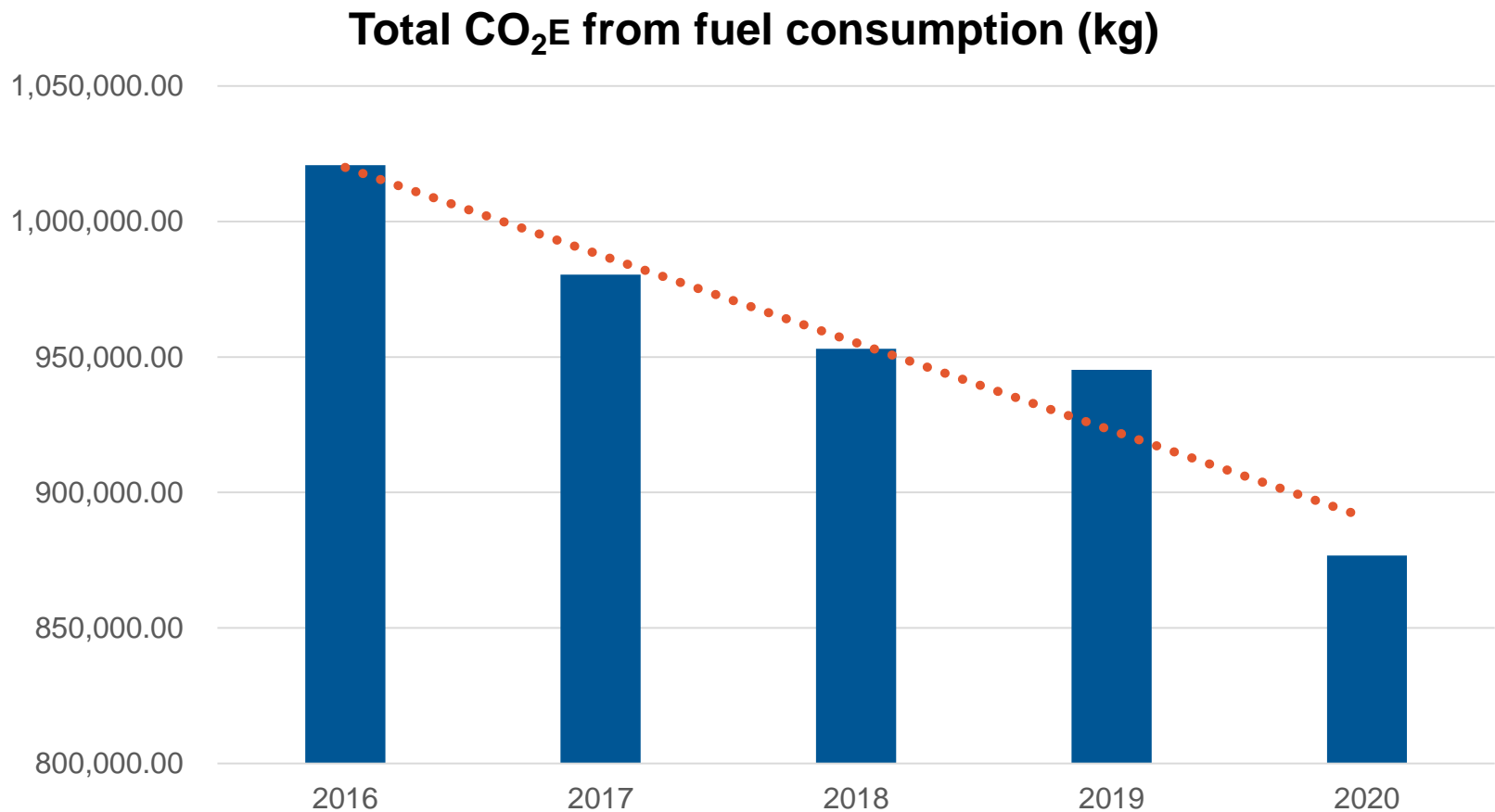


Fuel Usage

Fuel usage by type in liters by year

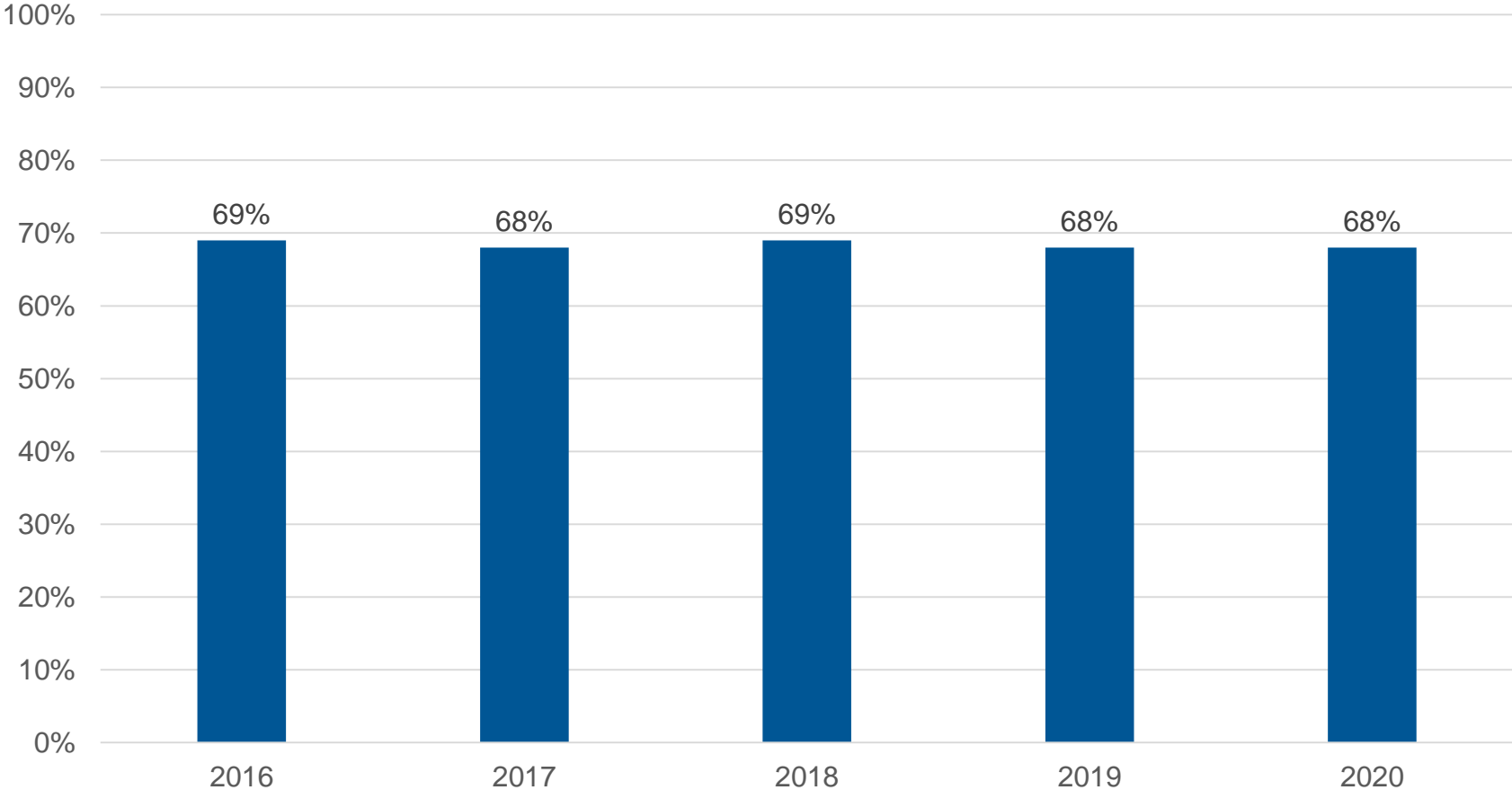


GHG emissions from vehicular fuel consumption



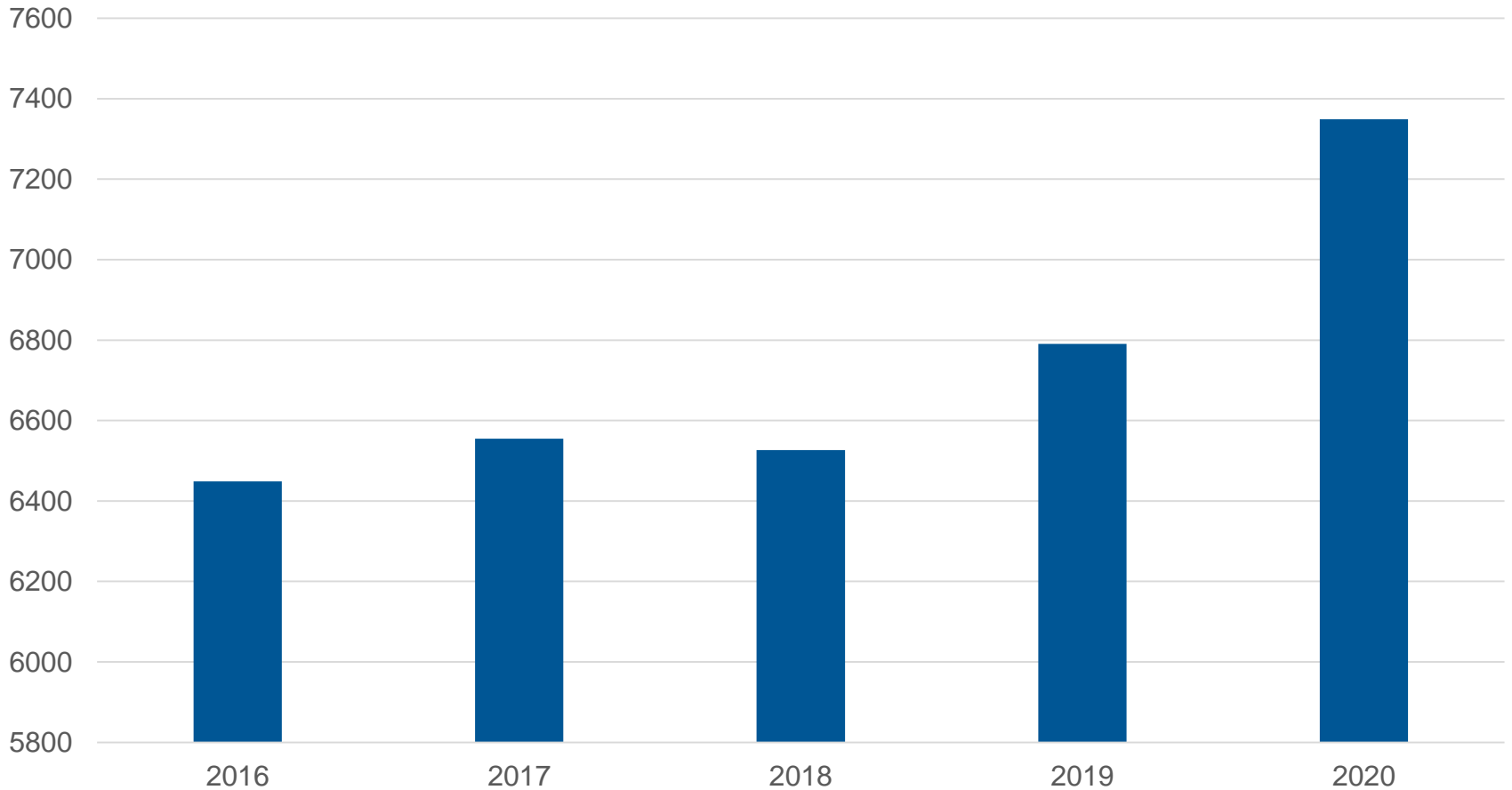
Residential waste diverted from landfill

Curbside Waste Diversion Rate (%)



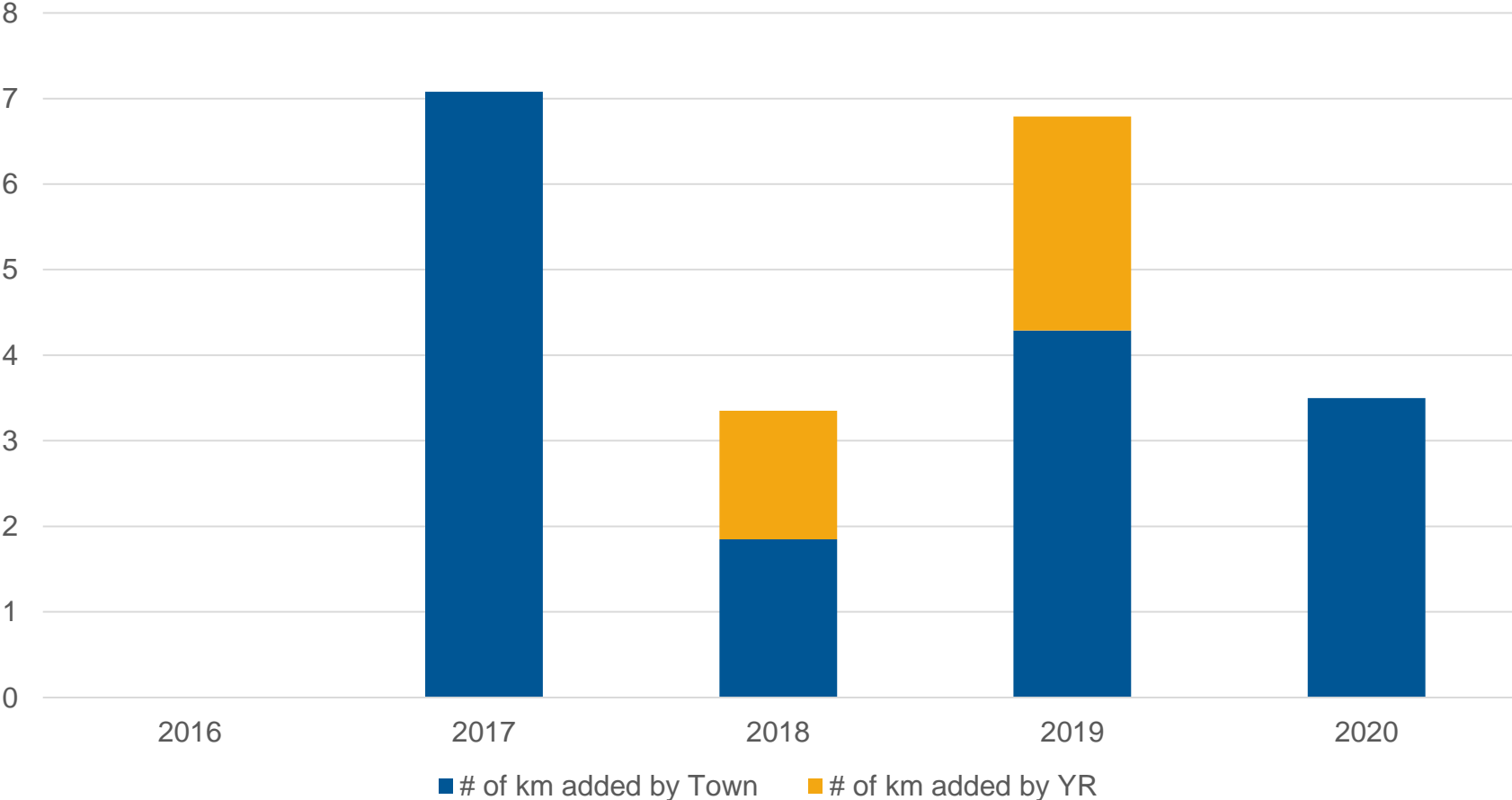
Residential waste diverted from landfill

Source Separated Organics (Compost in MT)



Kilometers of bike lanes added (Active transportation)

Bike lanes installed in km by year





*Intergovernmental Panel on
Climate Change (IPCC)
Summary for Policymakers*

Introduction

- IPCC is the Intergovernmental Panel on Climate Change, a part of the United Nations
- Created to provide policymakers with regular scientific assessments on
 - *Climate change*
 - *The implications and potential future risks*
 - *And to put forth adaptation and mitigation options*

“



[Credit: NASA]

Recent changes in the climate are widespread, rapid, and intensifying, and unprecedented in thousands of years.

”

“



[Credit: Peter John Maridable | Unsplash]

Unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to 1.5°C will be beyond reach.

”



[Credit: Hong Nguyen | Unsplash]

“

Climate change is already affecting every region on Earth, in multiple ways.

The changes we experience will increase with further warming.

”



[Credit: Shari Gearheard | NSIDC]

“

There is no going back from some changes in the climate system. However, some changes could be slowed and other could be stopped by limiting warming.

”



[Credit: Evgeny Nelmin | Unsplash]

“

To limit global warming, strong, rapid, and sustained reductions in CO₂, methane, and other greenhouse gases are necessary.

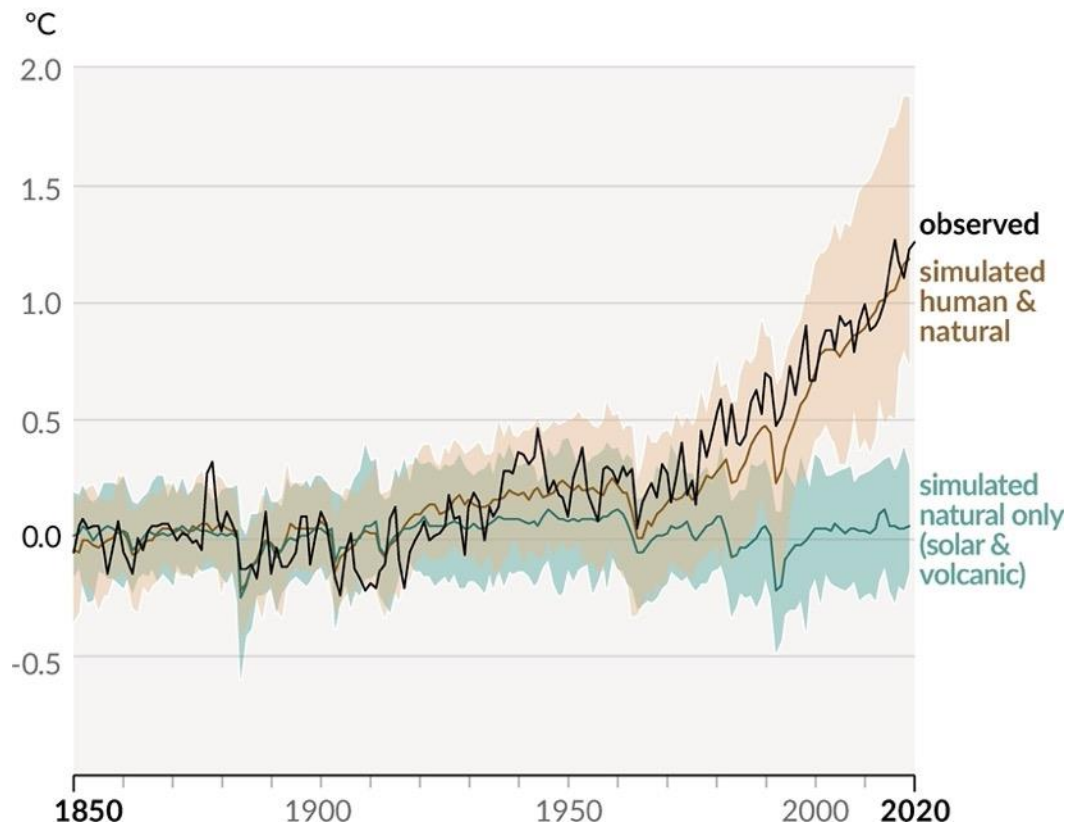
This would not only reduce the consequences of climate change but also improve air quality.

”

Human influence has warmed the climate at a rate that is unprecedented in at least the last 2000 years

IPCC - SIXTH ASSESSMENT REPORT Working Group I – The Physical Science Basis (Figure SPM.1)

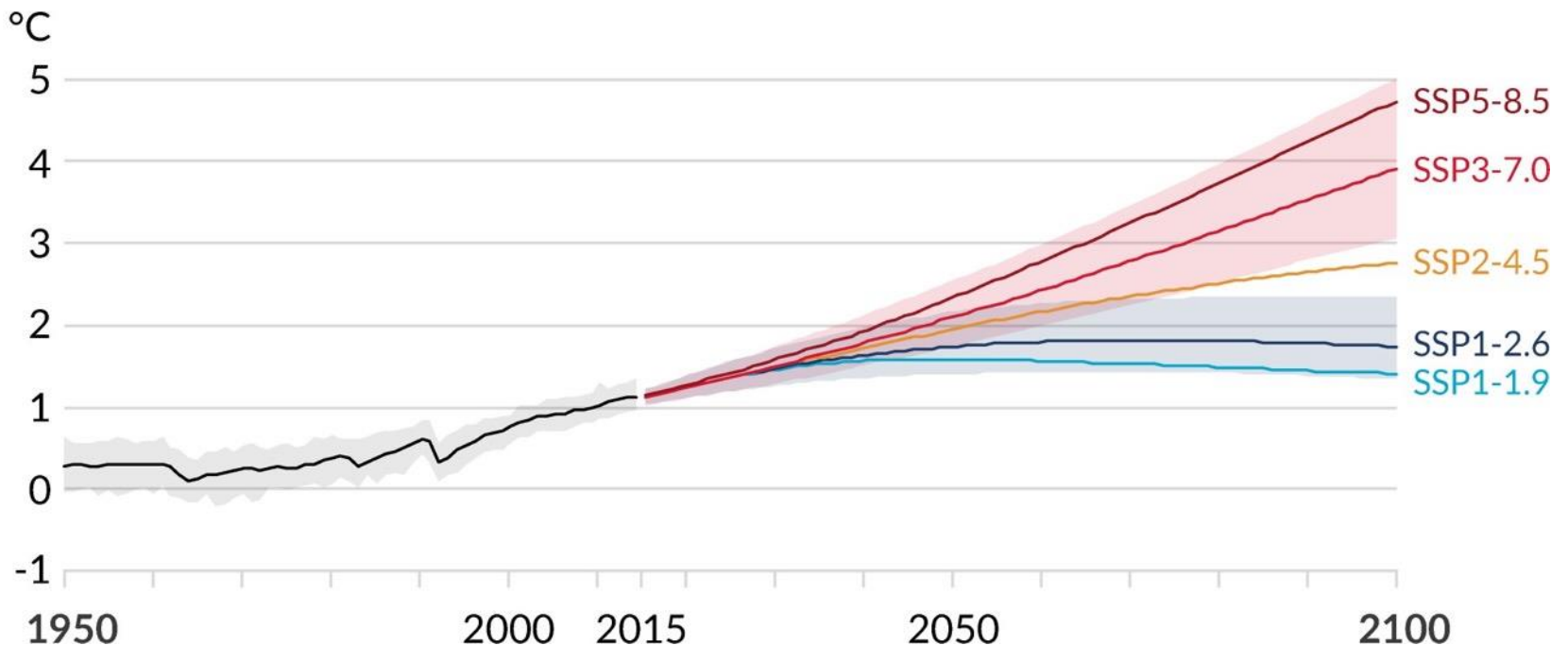
b) Change in global surface temperature (annual average) as **observed** and simulated using **human & natural** and **only natural** factors (both 1850-2020)



Human activities affect all the major climate system components, with some responding over decades and others over centuries

IPCC - SIXTH ASSESSMENT REPORT Working Group I – The Physical Science Basis (Figure SPM.8)

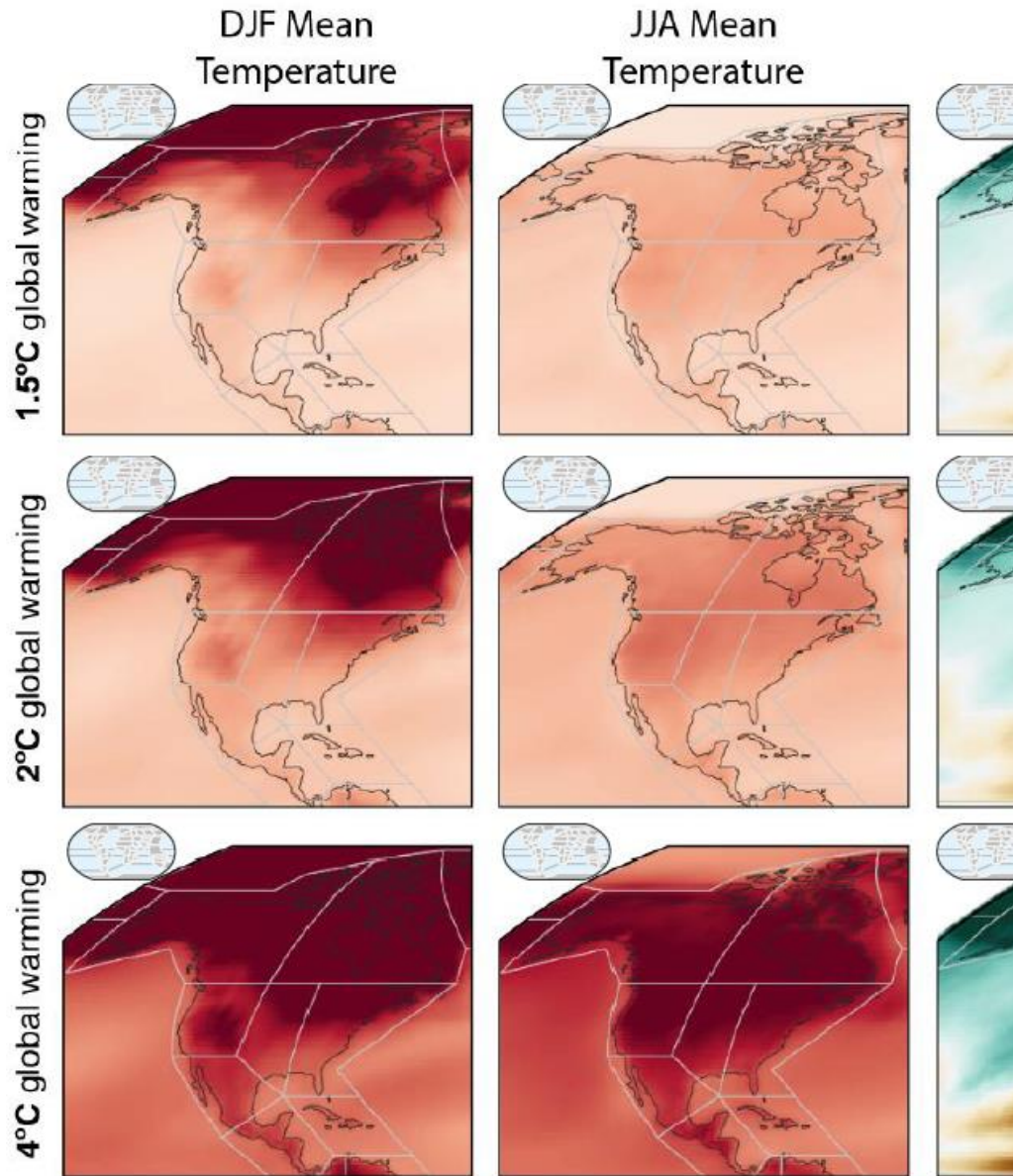
a) Global surface temperature change relative to 1850-1900



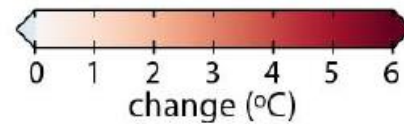
Low

Medium

High



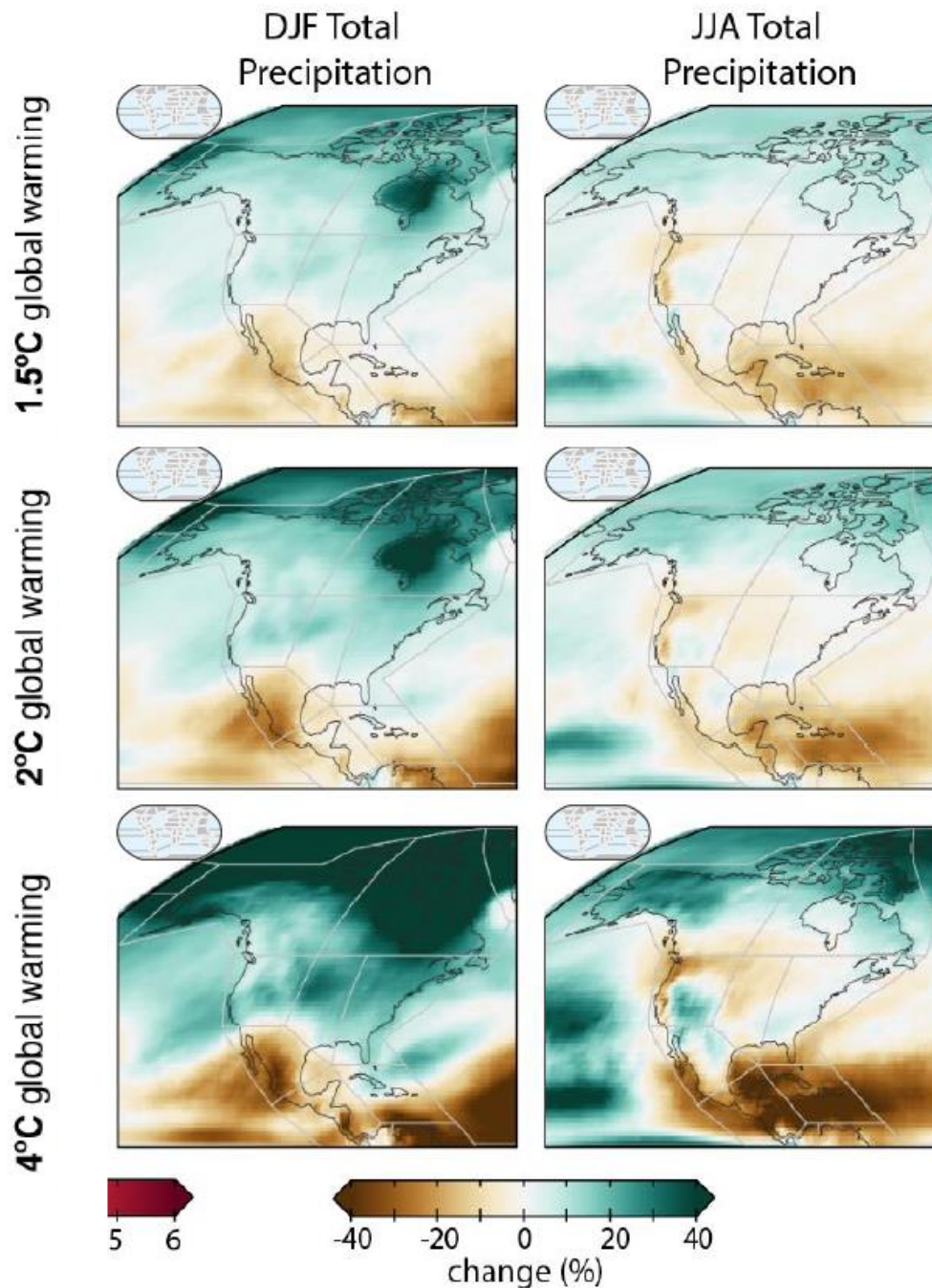
Results expanded
in the Interactive
Atlas (active links)



Low

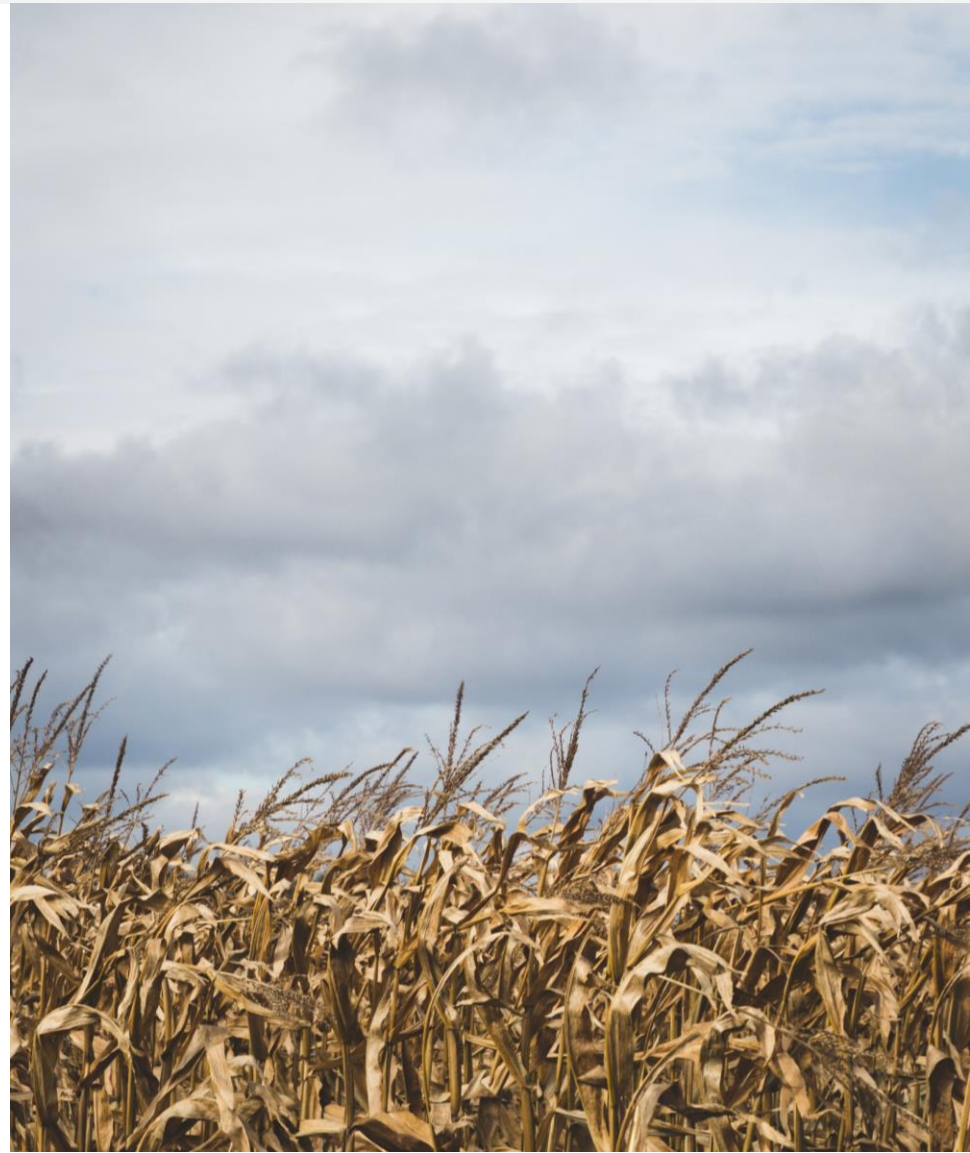
Medium

High



Climate information for risk assessment and regional adaptation

All regions are projected to experience further increases in hot climatic impact-drivers and decreases in cold climatic impact-drivers



Limiting future climate change

Limiting human-induced global warming to a specific level requires:

1. *Limiting cumulative CO₂ emissions*
2. *Reaching at least net-zero CO₂ emissions*
3. *Strong reductions in other greenhouse gas emissions*

The take-aways

- This report compiles a significant amount of independent scientific research from across the world
- Changes to the climate are happening faster than originally predicted
- The impacts are going to be worse than previously thought
- The certainty that humanity is the cause is deafening
- Achieving net-zero emissions is a requirement to stabilize the climate and should be the minimum target
- Even if we stopped all emissions today, there will still be a significant impact

Thank you