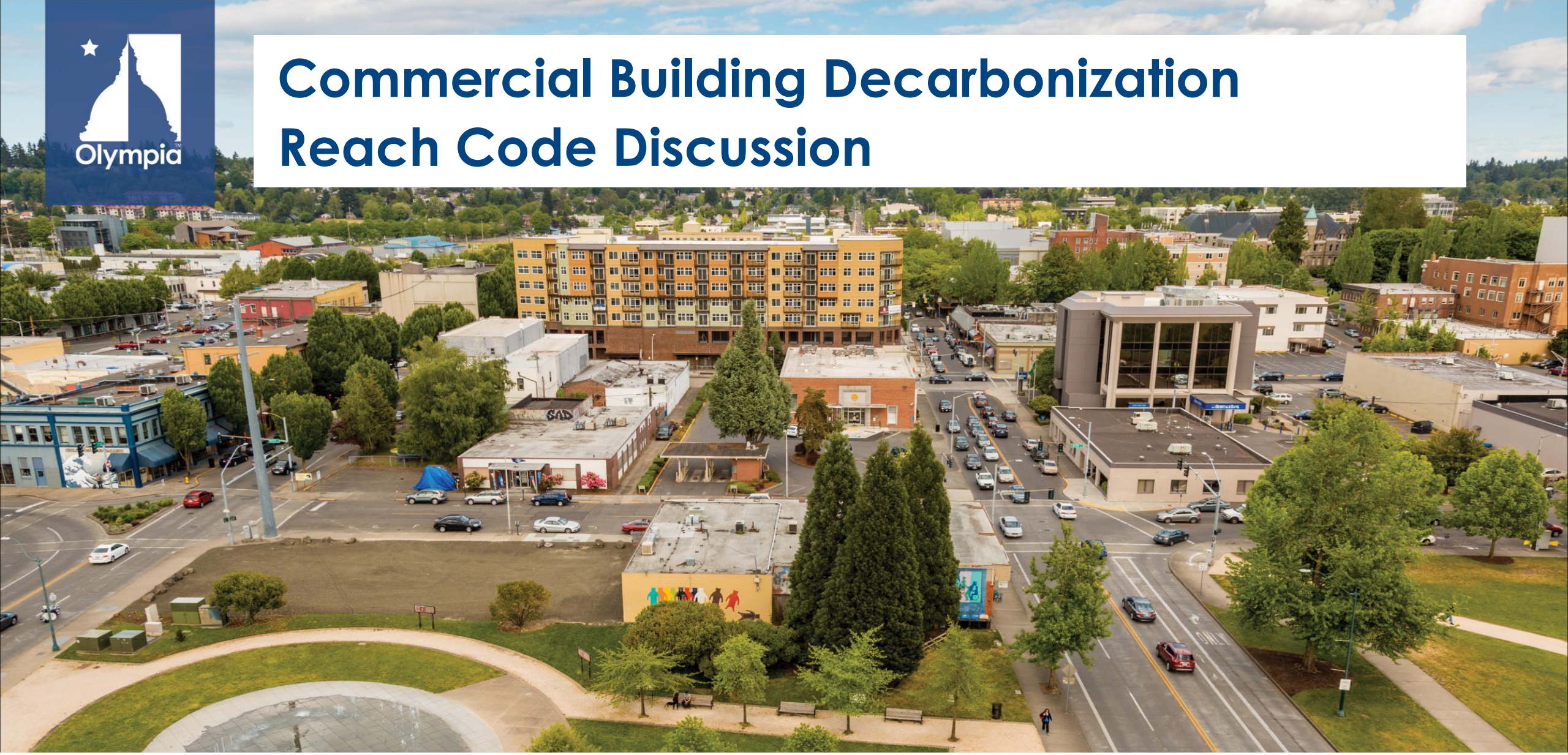
Commercial Building Decarbonization Reach Code Discussion

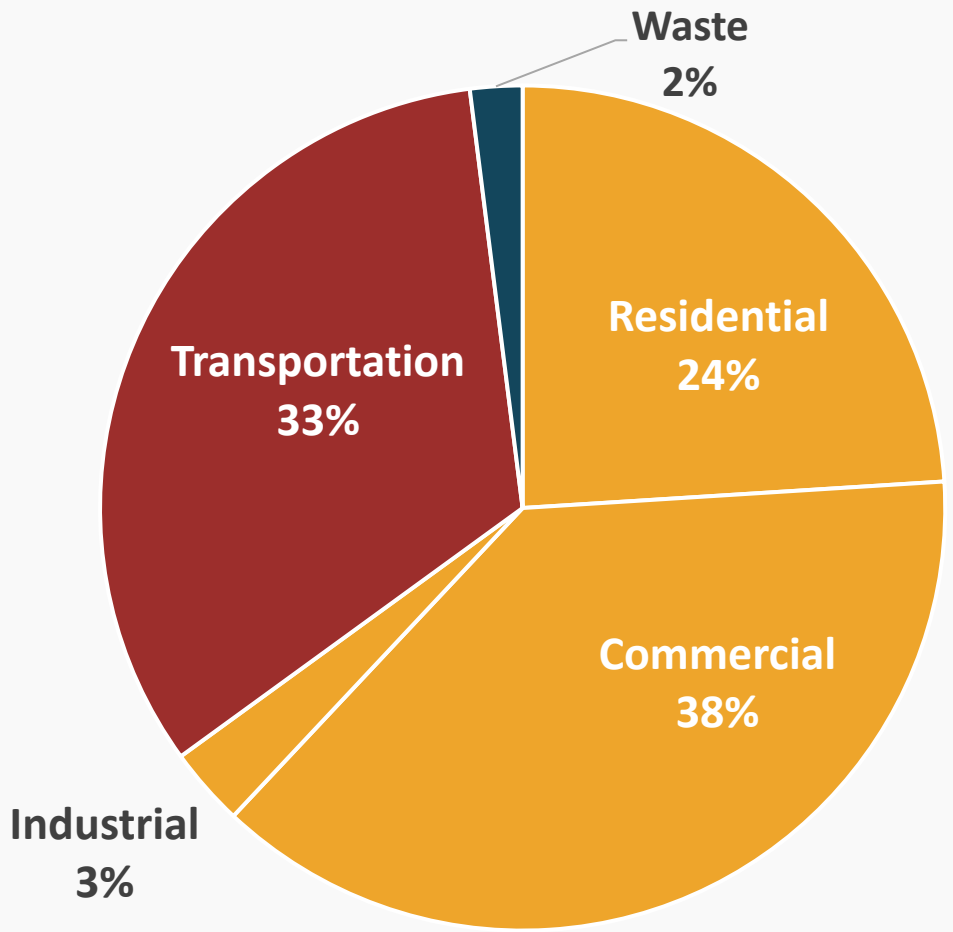


Land Use and Environment Committee
April 27, 2023

2019 Greenhouse Gas Emissions
Olympia

661,000

metric tons of carbon dioxide equivalent ($MTCO_2e$)



Data Source: Thurston Climate Action Team, 2021

Olympia's 2030 Science Based Target (SBT)

59%

reduction in GHG emissions by 2030

- Science-Based Targets represent your community's fair share of climate action necessary to meet the Paris Agreement commitment of keeping warming below 1.5°C.
- To achieve this goal, we must reduce global emissions by 50% by 2030 and achieve climate neutrality by 2050.
- Equitably reducing global emissions by 50% requires that high-emitting, wealthy nations reduce their emissions by more than 50%.

High Impact Action Analysis Summary Report: Olympia, WA 2019

High Impact Actions to Achieve 2030 SBT

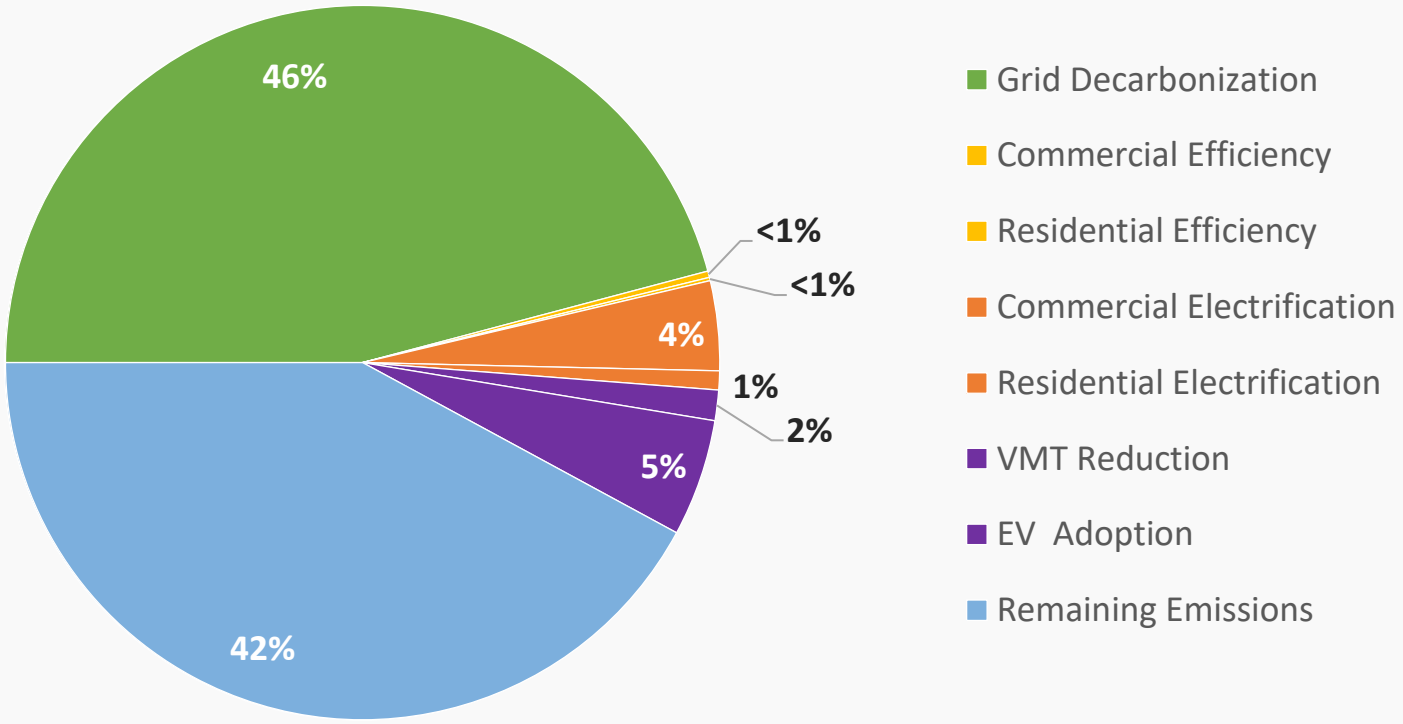
Grid Decarbonization
80% reduction in carbon intensity

Building Efficiency
All new buildings meet IECC 2018
+1% existing residential/1% commercial

Building Electrification
All new buildings are electrified
+1% existing residential/6% commercial

VMT Reduction
5% reduction in total vehicle miles travelled

EV Adoption
4.5% annual growth in EV adoption



High Impact Action Analysis Summary Report: Olympia, WA 2019

Pace of Building Decarbonization Needed to Achieve 2030 SBT

Improve Efficiency and Electrify:

100% of New Buildings

1% of Existing Residential Building square ft per year

6% of Existing Commercial Building square ft per year

What is building electrification?

Electrification means using electricity, instead of fossil fuels, for space heating, water heating, and cooking in homes and buildings.

Space heating/cooling

Air source heat pumps

Hot water heating

Heat pump water heater

Cooking

Electric and Induction

Project Timeline

- **March 2022**: LUEC briefing discussion on commercial building electrification policies.
- **April 2022**: State Building Code Council approves 2021 WA State Commercial Energy Code.
- **October 2022**: City staff begin discussion with New Buildings Institute (NBI) for support on developing a local reach code.

Project Timeline

- **February 2023**: Develop code concepts.
- **March 2023**: Conduct stakeholder outreach.
- **April 2023**: Review stakeholder feedback and draft code language.
- **May 2023**: City Council Work Session.
- **June/July 2023**: City Council Action.

Electrification Code Concepts

1. New Construction Electrification
2. Existing Building Electrification
3. Targeted Electrification Retrofits
4. Existing Building Efficiency Requirements

1. New Construction Electrification

- **All-Electric Buildings**
  - Prohibits the installation of gas infrastructure in commercial buildings.
  - Includes targeted exceptions for process loads like manufacturing, equipment in commercial kitchens, and make-up air systems for “contaminated” air flows for which heat pumps paired with energy recovery are not feasible alternatives.
- **Increase code stringency for mixed-fuel buildings**
  - Increases the credit requirement in C406 for buildings that include combustion equipment as part of the exception to all-electric buildings.

2. Existing Building Electrification

- **Electrification of Substantial Improvements**
  - Prohibits the installation of gas infrastructure in commercial buildings.
  - Includes targeted exceptions for process loads like manufacturing, equipment in commercial kitchens, and make-up air systems for “contaminated” air flows for which heat pumps paired with energy recovery are not feasible alternatives.
- **All-Electric Additions**
  - Increases the credit requirement in C406 for buildings that include combustion equipment as part of the exception to all-electric buildings.

3. Targeted Electrification Retrofits

- **Electrification of Furnaces**
  - Require electrification when a gas furnace is replaced. Includes exceptions for emergency replacement.
- **Electrification of Storage Water Heaters**
  - Require electrification when a gas storage water heater is replaced. Includes exceptions for emergency replacement.
- **Heat Pumps for Split System AC Compressors**
  - Require the installation of heat pumps for split-system AC compressor replacements for systems with gas furnaces and the configuration of the gas furnace as supplementary heat.
- **Electrical Service Upgrade**
  - Require replacement service connections to be sized for full building electrification.

4. Existing Building Efficiency Requirements

- **System Sizing in Commercial Alterations**
  - Requires that new equipment installed in alterations be “right sized,” or sized based on the current building conditions, instead of being sized based on the existing equipment size.
- **Commercial HVAC Control Upgrade**
  - New HVAC equipment in alterations must have controls that comply with current code requirements.

Solar Readiness

Commercial Energy Code

- **C411.1 On-site renewable energy.** Requires each new building, or addition larger than 10,000 square feet of gross addition larger than 10,000 square feet of gross area, to include a renewable energy generation system.
- **C411.3 Solar readiness.** Requires a solar zone shall be provided on buildings that are 20 stories or less in height above grade plan.

Residential Energy Code

- **Appendix T. Solar Ready Provisions.** Requires a solar-ready zone for detached one- and two-family dwellings and townhouses.

Erik Jensen

ejensen@ci.olympia.wa.us

Pamela Braff

pbraff@ci.olympia.wa.us