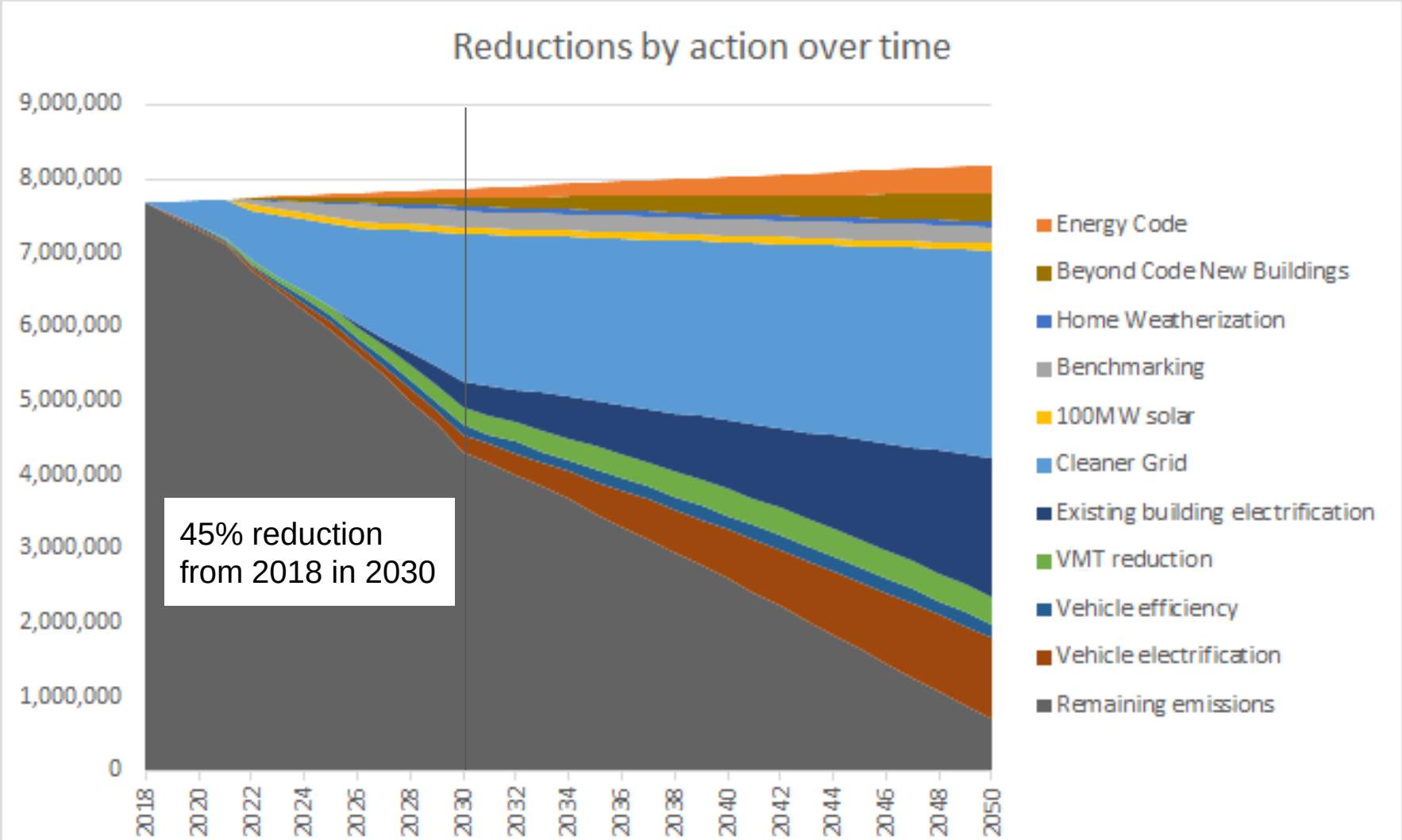
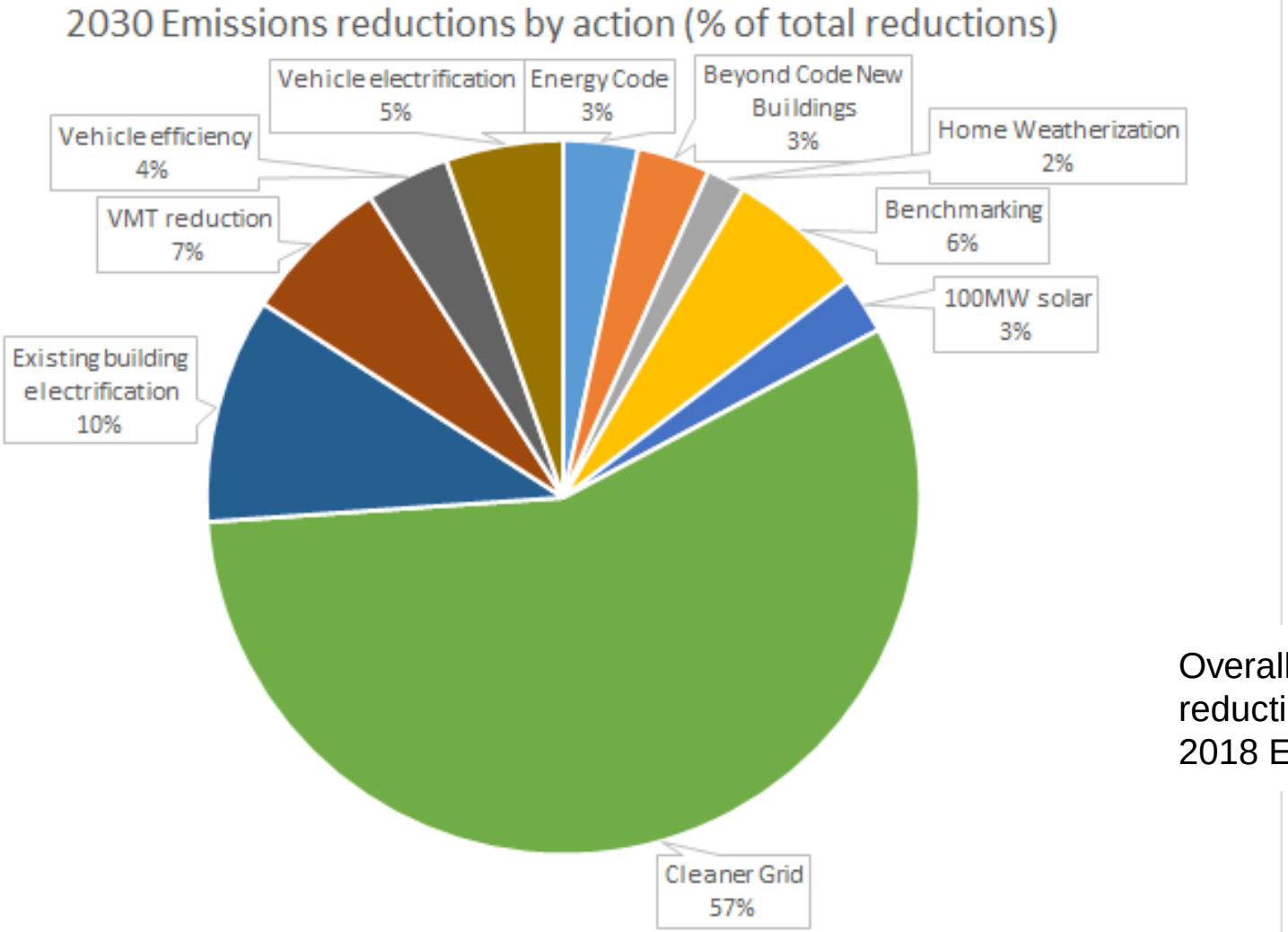
ICLEI
Local Governments for Sustainability

Milwaukee GHG Emissions Reduction Wedge Analysis Results

May 26, 2021


Reductions by action over time
9,000,000
8,000,000
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
2018
2020
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046
2048
2050
45% reduction from 2018 in 2030
Energy Code
Beyond Code New Buildings
Home Weatherization
Benchmarking
100MW solar
Cleaner Grid
Existing building electrification
VMT reduction
Vehicle efficiency
Vehicle electrification
Remaining emissions



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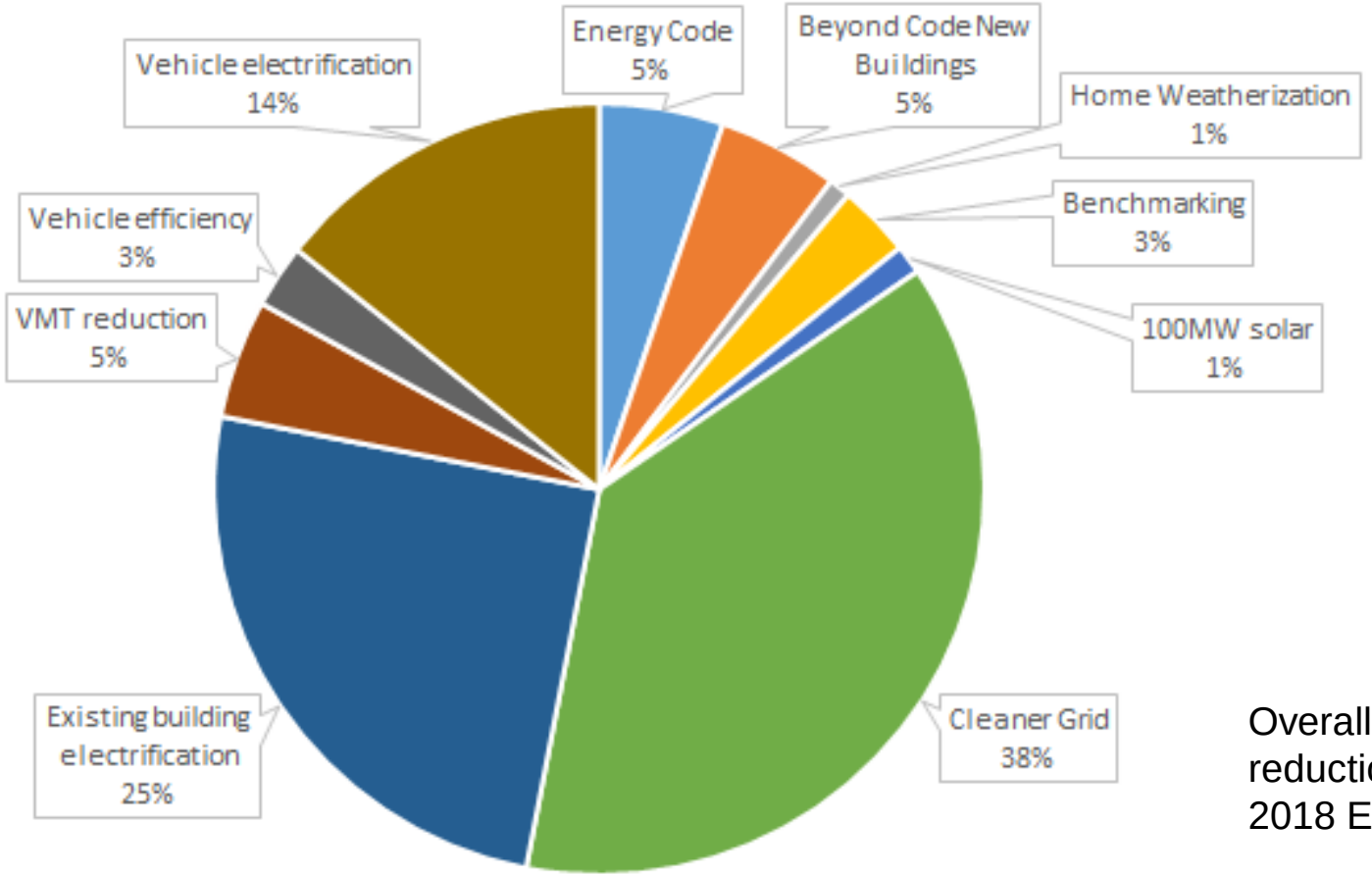
Overall 45% reduction from 2018 Emissions

2050 Emissions reductions by action (% of total reductions)



Overall 91% reduction from 2018 Emissions

Energy Code

- Based on 2021 IECC
- Applies to 0.2 annual growth plus 1% annual turnover of building stock
- 30% residential energy savings, 20% commercial, compared to BAU

Benchmarking

- 2.4% annual savings for 3 years (7.2% total)
- 90% compliance rate
- Based on:
  - Business Case for EE
  - Data Trends

Residential Weatherization

- 4,000 units/year for 10 years (40,000 units total, about 20% of 1-4 unit housing in city)
- Per unit savings of 1160 kWh, 185 therms (13% savings for electricity, 20% for gas)
- Savings from 2018 assessment of Wisconsin Home Energy Plus Program

Beyond Code New Buildings

- 500 net-zero energy homes per year
- 30% of new commercial space is no natural gas and 20% less electricity compared to BAU

Cleaner Grid

- Based on WE Energy goals
- 60% reduction from 2005 in 2025
- 80% reduction in 2030
- 100% reduction in 2050

Existing Building Electrification

- 30% of residential commercial building area, 5% of industrial gas use electrified in 2030
- 100% of residential and commercial building area, 30% of industrial gas use electrified in 2050

VMT Reduction

- 20% per-capita reduction in 2030
- 30% per-capita reduction in 2050

Vehicle Efficiency

- 14% reduction in fuel per mile in 2030 for light duty vehicles
- 23% reduction in fuel per mile in 2040 (constant after 2040)
- No change to heavy duty vehicle efficiency

Vehicle Electrification

- 50% of new light duty vehicles electric in 2030
- 30% of new heavy duty vehicles electric in 2030
- 100% of new vehicles electric in 2050

Solar PV and Land Area

- 100 MW PV requires about 700 acres (just over 1 square mile)

Land area for 100% PV (not modeled in wedge)

- Powering all Milwaukee buildings, plus full building and vehicle electrification from solar (assuming no efficiency or change to VMT) would require 7,700 MW PV
- The area would be equal to 0.6% of Wisconsin agricultural land

About ICLEI

ICLEI – Local Governments for Sustainability is a global network of more than 1,750 local and regional governments committed to sustainable urban development. Active in 100+ countries, we influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development. Our Members and team of experts work together through peer exchange, partnerships and capacity building to create systemic change for urban sustainability.