

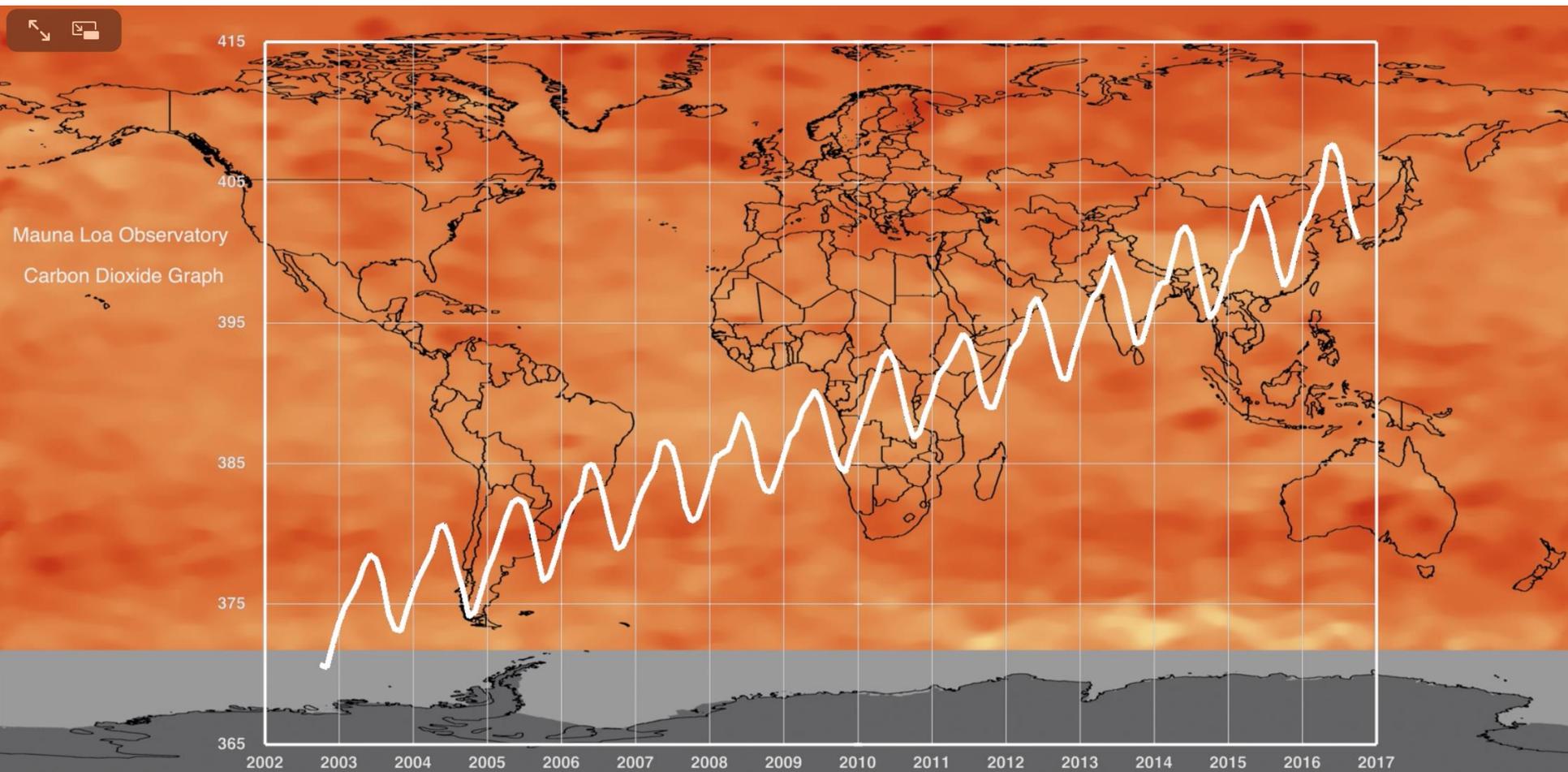
42.4 N 71.3 W

Path to Zero Emissions

Presented by
Bob Zogg and **Debbie Bentley**
Carlisle Energy Task Force
cetf@carlislema.gov

January 17, 2020

The Anthropocene Epoch



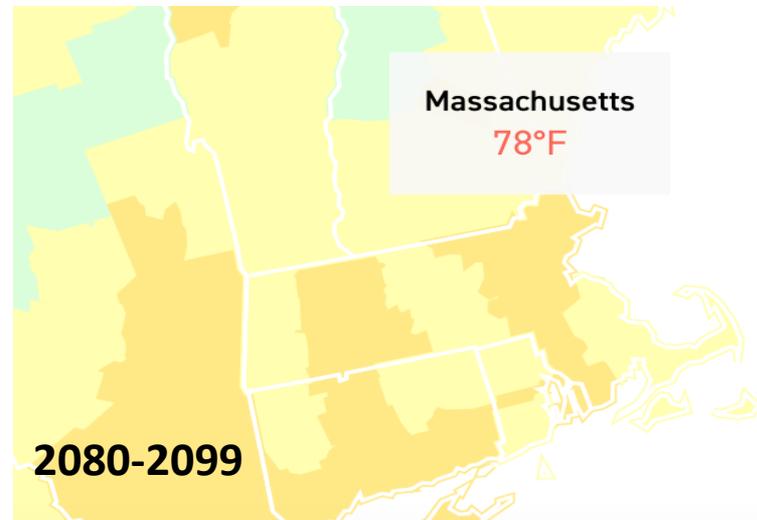
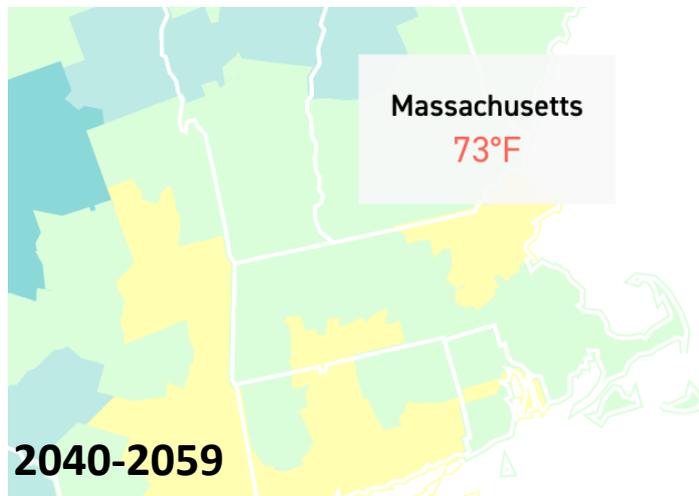
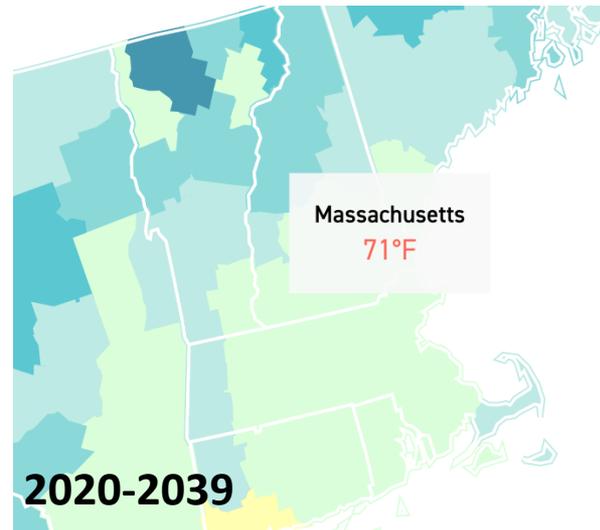
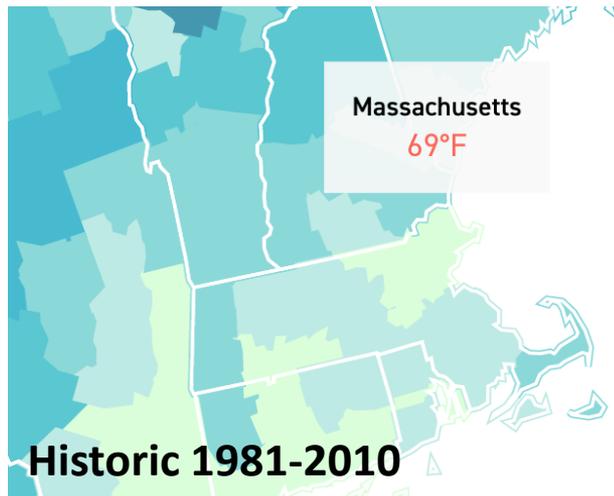
How fast will the effects of climate change be felt locally and globally?

<https://svs.gsfc.nasa.gov/4533>

Also see: <https://www.bbc.co.uk/ideas/videos/viewpoint-whats-in-half-a-degree-of-climate-change/p07mvstd?playlist=get-a-taste-of-bbc-ideas-short-films-for-curious-m>

The effect on Massachusetts

Predicted Average Summer Temperatures in MA using high (current) emissions

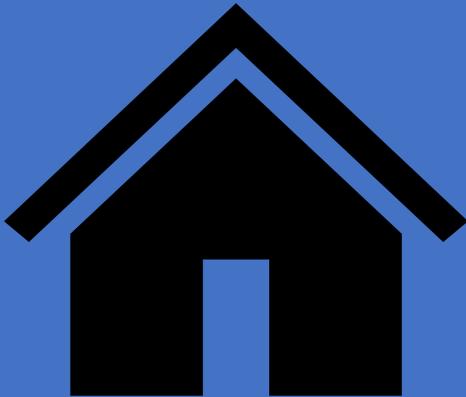


Research and Action

- ***Path to Zero Emissions—Creating a Sustainable Carlisle***
 - <https://www.carlislema.gov/758/Path-to-Zero-Emissions-DRAFT>
 - **We present herein updates not yet reflected in the draft report**
- **Purpose of Report:** To inform Carlisle’s decision about whether to adopt community-wide goals to lower greenhouse gas emissions
- **Today’s Event:**
 - Highlight report’s key findings
 - Encourage participation in shaping Carlisle’s Master Plan
 - Solicit feedback

Carlisle Greenhouse Gas Emissions by Sector (2017)

Residential (includes Vehicles)



88%

Municip...

4%

Waste
Inciner...

3%

Comm'l/
Inst

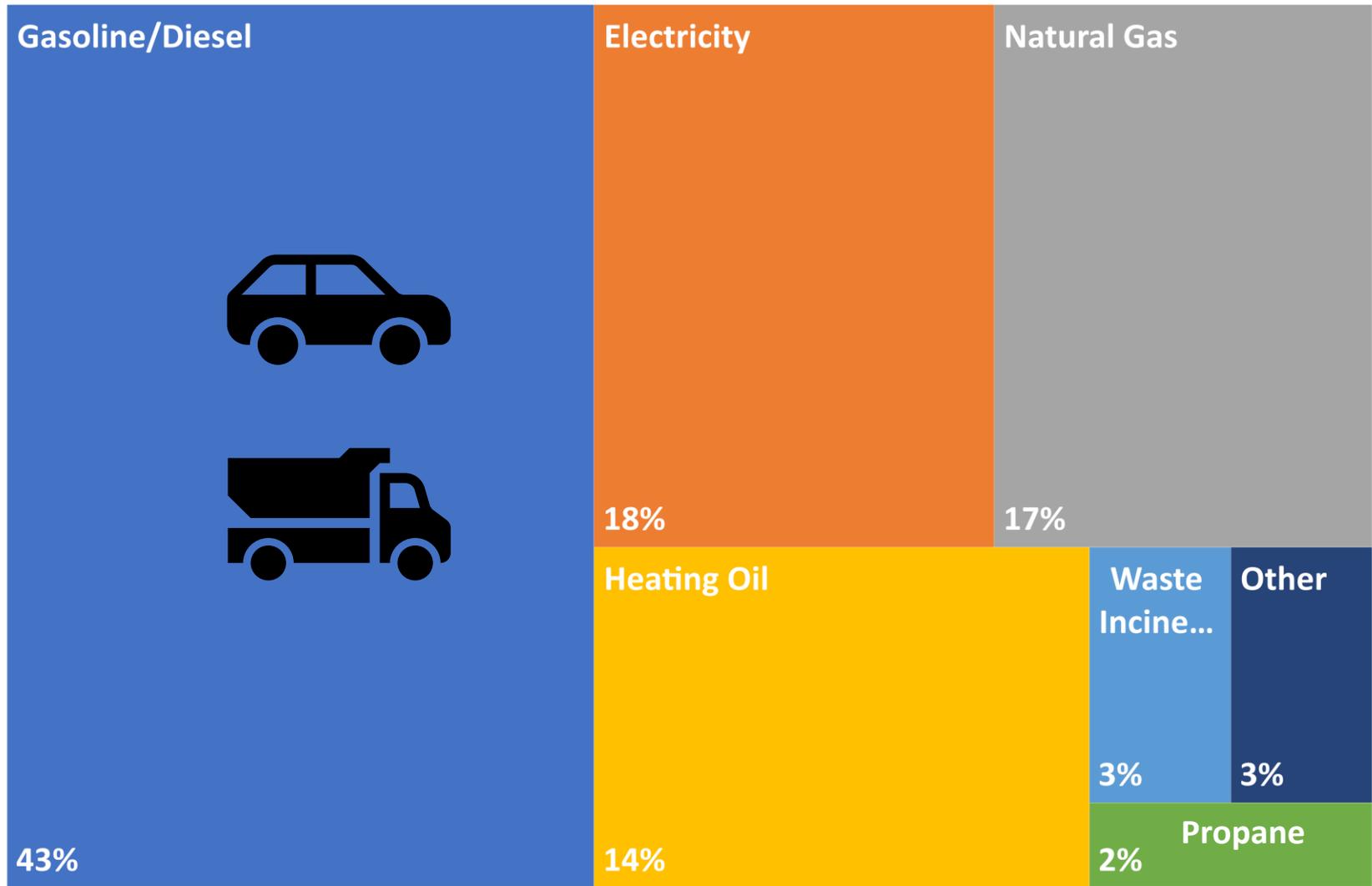
3%

Agricult...

2%

48,800 MT CO₂e/yr

Carlisle Greenhouse Gas Emissions by Fuel Type (2017)



48,800 MT CO₂e/yr

Most of our emissions occur outside of Carlisle.

Indirect Emissions



Emissions associated with the manufacture, distribution, and delivery of products and services

67%

Direct Emissions (plus Electricity and Trash)

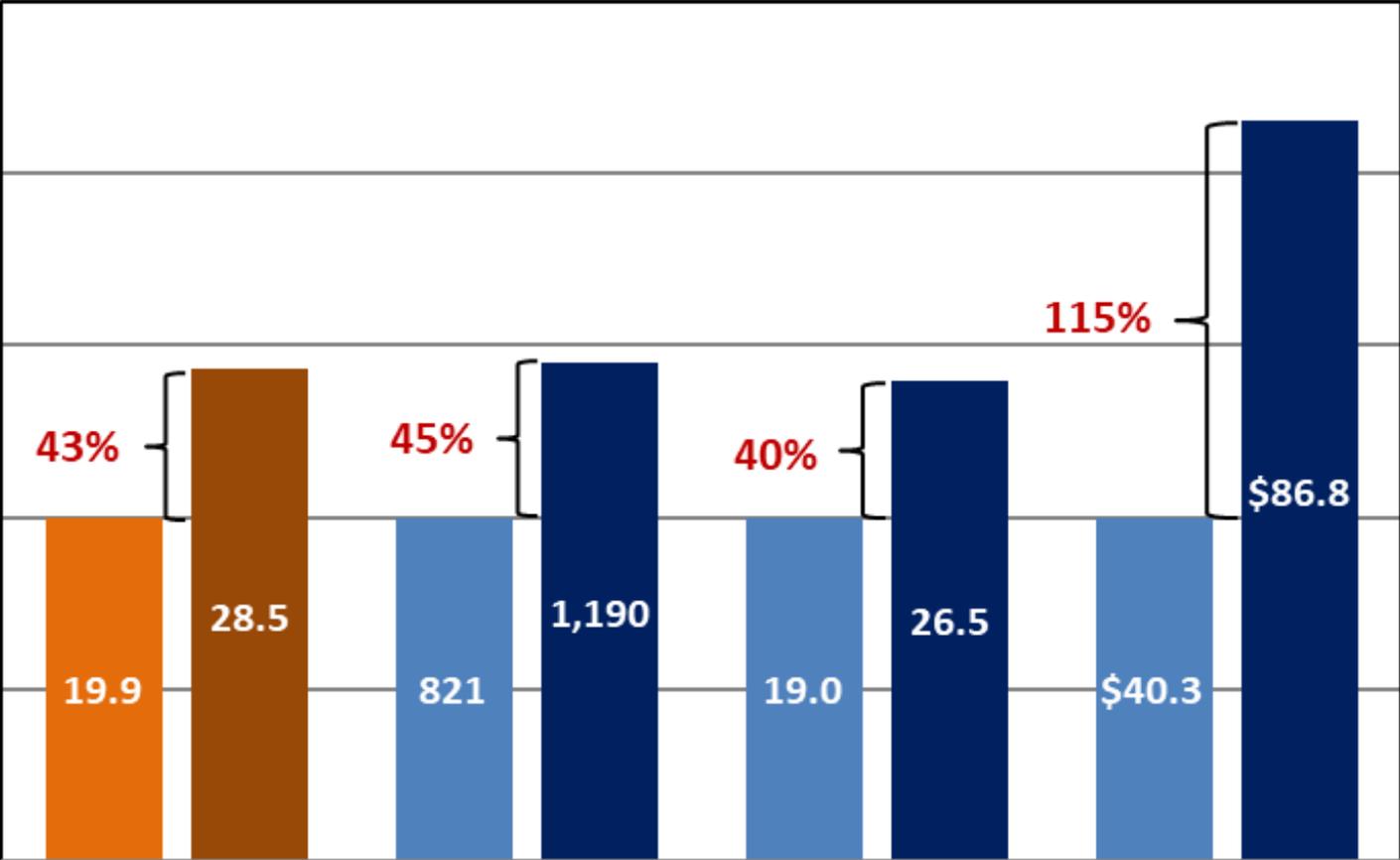


Emissions included in report

33%

28.5 MT CO₂e/yr/capita

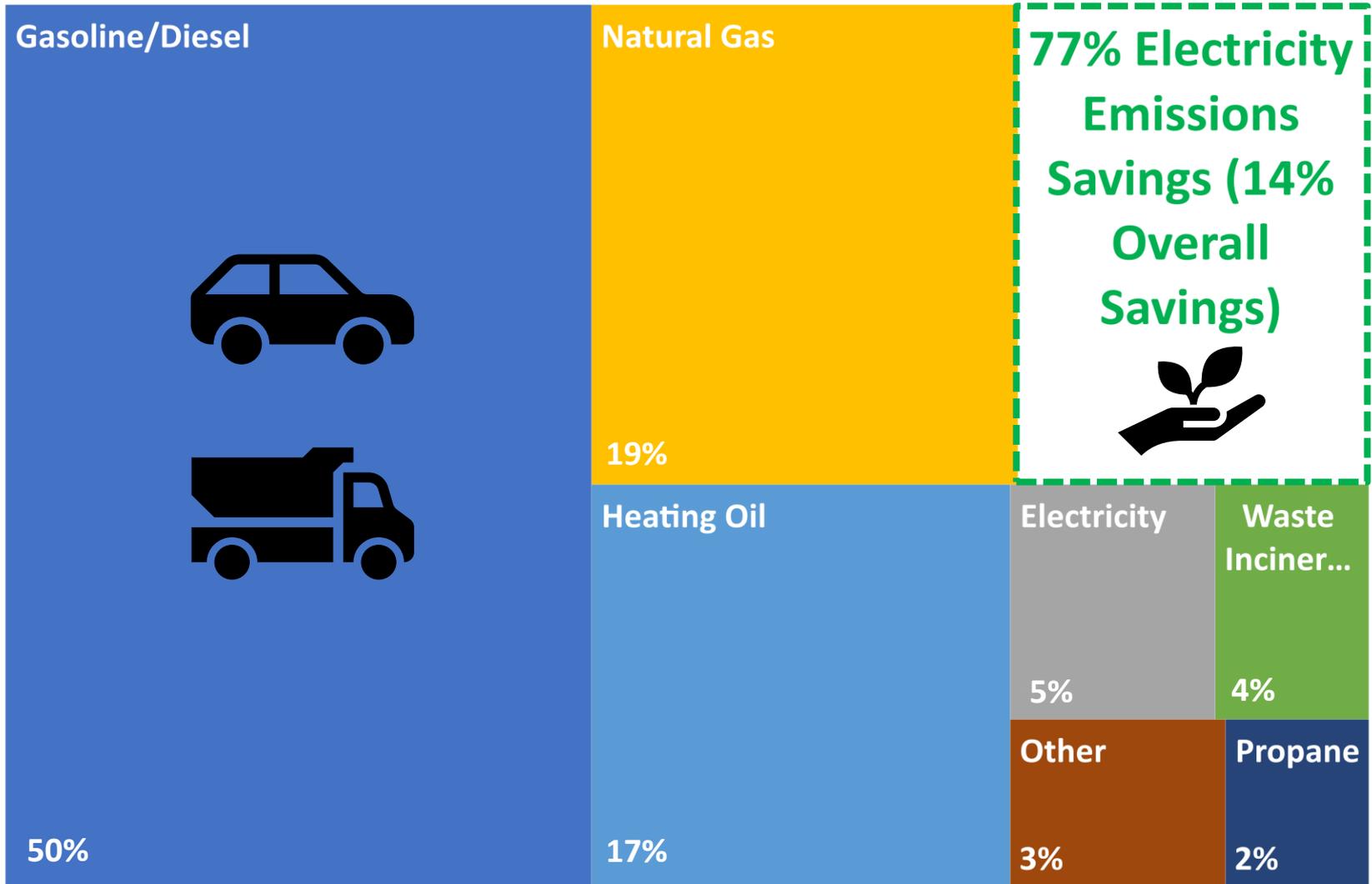
Carlisle per-Capita Emissions exceed the MA average by over 40%.



Emissions (MT CO2e/yr) **Home Size (sq. ft.)** **Vehicle Use (miles/day)** **Income (1,000 \$/yr)**

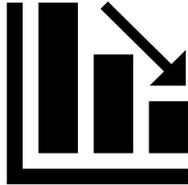
MA vs. Carlisle Per-Capita Comparisons

Carlisle Emissions after Community Choice Power Supply (July 2018)



41,900 MT CO₂e/yr

Options for Goals



Align with MA Global Warming Solutions Act



2030: 40% Town-Wide Reduction

2050: 80% Town-Wide Reduction

5% Avg. Annual Reduction

Align with Intergovernmental Panel on Climate Change



2030: 65% Town-Wide Reduction

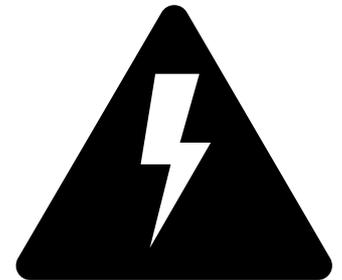
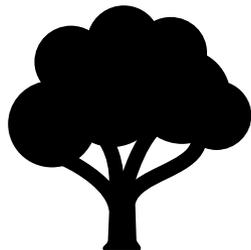
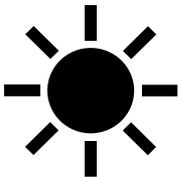
2050: 95% Town-Wide Reduction*

10% Avg. Annual Reduction

* The IPCC suggests reaching net-zero global emissions by 2050 to limit warming to 1.5°C.

FIVE PILLARS OF SUSTAINABILITY

1. Improve the energy efficiency of our homes and buildings
2. Electrify (i.e., convert from fossil fuels to electricity in our homes, buildings, and vehicles)
3. Purchase (and/or generate) 100% renewable electricity
4. Sequester carbon and lower direct emissions, where feasible
5. Promote more sustainable behaviors.



Example Initiatives

Volunteer-Led



Community spirit

Information/education

Promotional programs

Coaching



Municipally Led



Sustainable decision-making

Government grants

Infrastructure

Community Choice Power Supply

Community Solar

Bylaws and ordinances



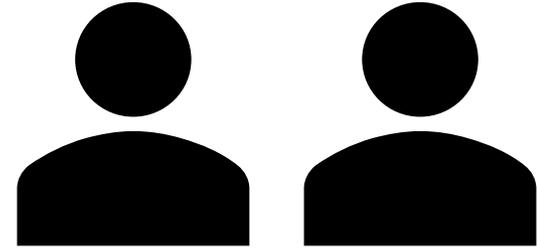
Fiscal Focus

Sustainability is not embedded into the different departments in the town.

Other towns, including small towns, are hiring sustainability coordinators.

The state is considering more grants for carbon-reduction projects and initiatives.

The state includes carbon emissions when considering projects that apply for grants.



Grants Carlisle is not currently applying for:

- Micro Grants
- More electric vehicle charging stations
- Mass DEP grants
- + more

Item	Preliminary Projected Costs (\$/yr)
Sustainability Coordinator	\$85K to \$145K*
Other Staff	\$25K to \$75K
Expenses	\$25K
Total	\$130K to \$245K (\$70 to \$140 per household)

*Full cost to employ, including 68.5% salary 31.5% benefit. Range based on half-time to full-time.

The way forward.

- Emissions goals, if adopted, must reflect the consensus of the community
- Carlisle's new Master Plan is the place to establish these goals:
 - ***Make your opinions known***
 - ***Encourage friends/neighbors***
- Realistically, Carlisle will not have another opportunity to adopt such goals



Climate Change is not someone else's problem.



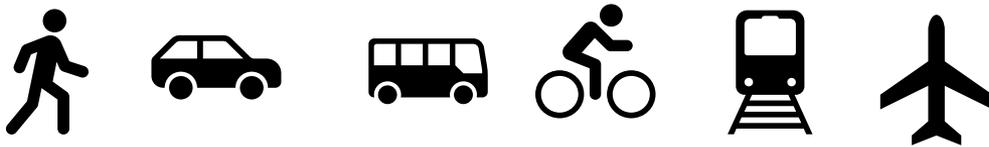
It is our children's problem.

Shouldn't we give them less of a problem to resolve?

Exercise # 1 : Opinion

Our largest emissions come from residential use:

Sticky Note # 1



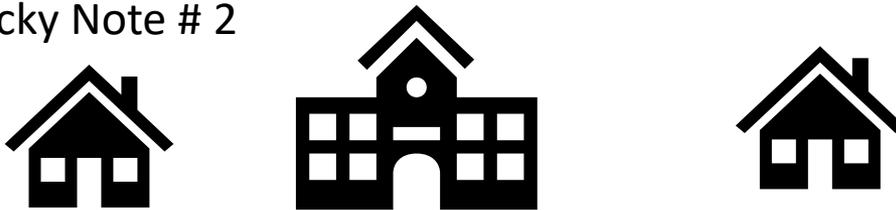
What is your major concern regarding traffic/ transportation in Carlisle?

Sticky Note # 3



Share one issue/ item that you changed in 2019 that reduced your household's carbon footprint.

Sticky Note # 2



What is your major concern regarding energy use/sustainability in your home?

Exercise #2 : Questionnaire

Question 1.

Some towns in MA are adopting new regulations restricting new additional fossil fuel infrastructure in their town. Should Carlisle follow suit?

Question 2.

If Carlisle could gain another grant to install an Electric Vehicle Charging station, where should it be located?

Question 3.

How concerned are you about the effects of climate change?

a. Locally b. Globally

Exercise #3 : Vote

Turn over the Questionnaire sheet

Ballot #1

Should Carlisle adopt goals to lower greenhouse gas emissions?

Ballot #2

Should Carlisle invest taxpayer resources to support lowering greenhouse gas emissions?

Synopsis of the questionnaire and voting results will be posted within a week at:

<https://www.carlislema.gov/188/Energy-Task-Force>