

Roadmap to Carbon Free Newton

Presentation before the Committees on Public
Facilities, and Zoning and Planning of Newton
City Council

August 26, 2019

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Commission on Energy

Newton Citizens Climate Action Plan

Research, Analysis and Implementation Priorities

Newton Citizens Commission on Energy
Aug 21, 2019



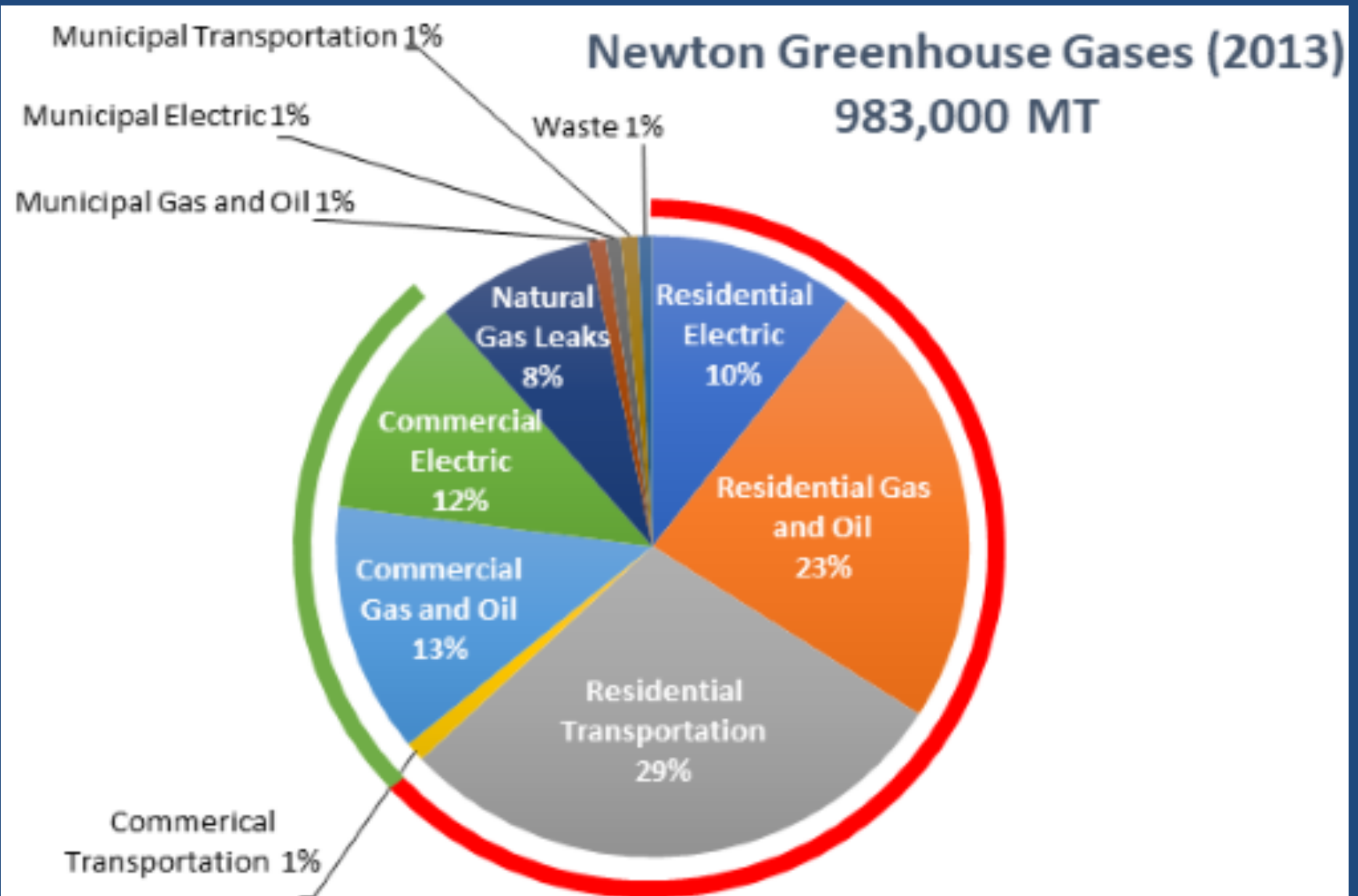
Newton Citizens Commission on Energy

Our 1979 Charter:

“The commission shall develop a city-wide energy plan to encourage energy conservation and the use of alternative energy forms...”

“...[shall] report on its activities to the mayor and the board of aldermen when so requested or on its own initiative; file legislation before the board of aldermen...”

Sources of GHG Emissions



Key Features of CCAP

Three sectors: Residential buildings, Commercial buildings, Transportation (88%)

Demonstrates that it is feasible for Newton to achieve the UN goal of zero GHG emissions in 2050.

Calls for adoption of this plan and the 2050 goal of zero emissions

Provides 30 year roadmap: numerical goals and metrics, policies, incentives, technologies, responsibilities

Recommends 10 priority actions for now

Essence of CCAP: *Research, Analysis & Implementation Priorities*

- **Research: today & future trends**

- Newton housing stock
- Newton demographics
- Building technology
- Heating & cooling technology
- Automobile technology

- How to Change Behaviors through Incentives and Regulations/ordinances

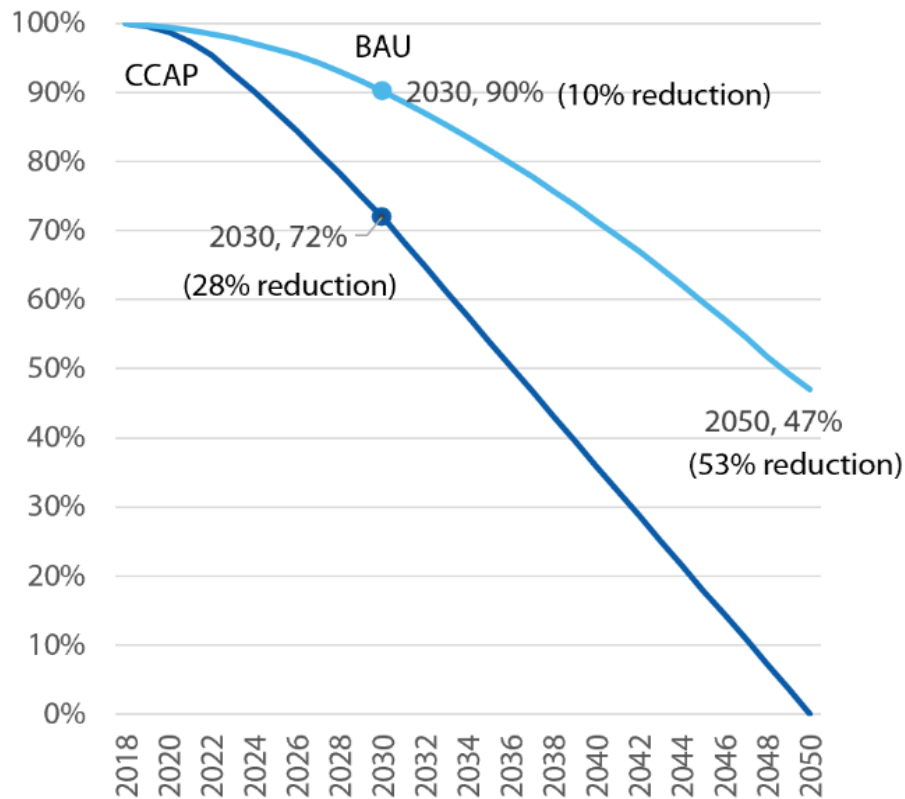
Essence of CCAP: *Research, Analysis & Implementation Priorities*

Analysis: several scenarios 2019-2050

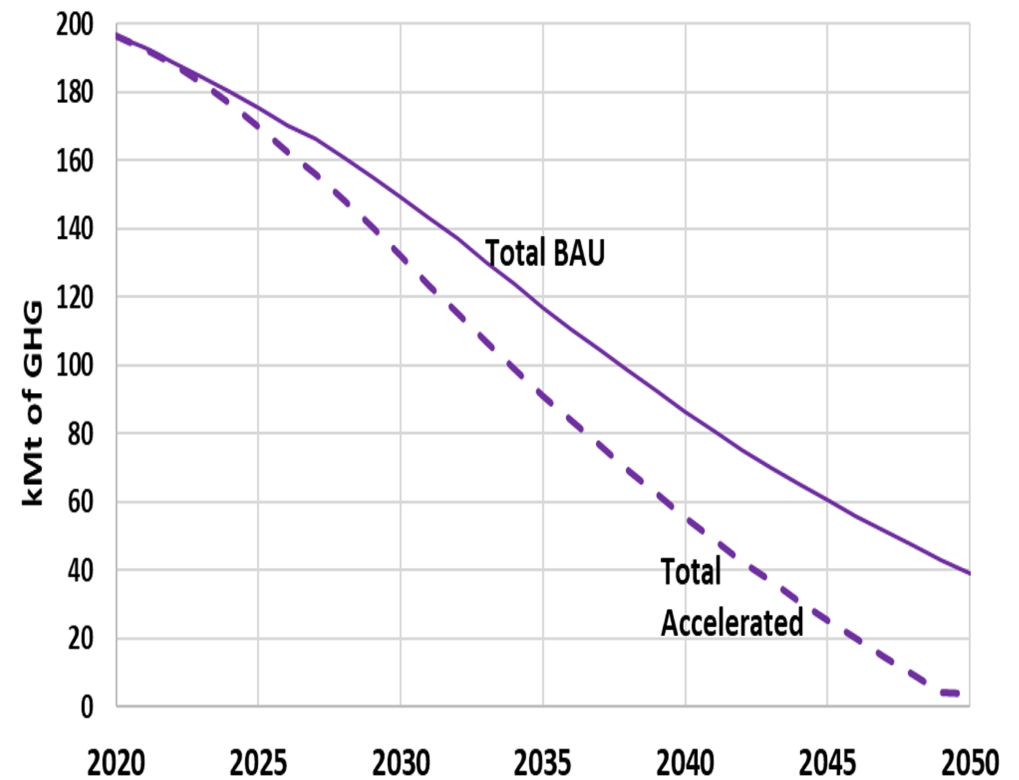
- Model the changes in residential housing stock
- Model energy use and greenhouse gas emissions from residential sector
- Model adoption of EVs and GHG emissions from cars

We Can Reach the UN Goal (zero carbon) for 2050....

Residential Sector



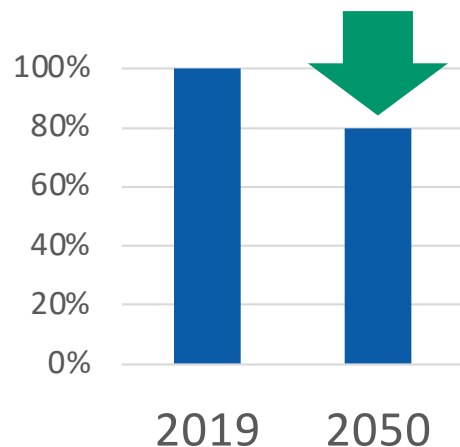
Transportation Sector



... if we adopt this long-term strategy

1. Reduce Energy Demand

20% in residential housing
Up to 50% in commercial buildings
15-20 % in vehicle miles traveled



2. Electrify Buildings & Transportation

All-electric heating and all-electric transportation using 100% Class 1 New England renewables



3. Motivate Largest Commercial Owners

Mayor and the Utilities get 10-30 large property owners to develop and implement their own climate action plans.



...if we invest \$\$ strategically.

2019- 2050 Newton Will Spend **\$13B+** on energy

Build 4,100 New Homes



\$2.5 Billion

Build 2,200 New Apartments



\$375 Million

Replace 22,500 Heating Systems



\$270 Million

Buy 150,000 New Cars



\$5.6 Billion

Buy 500M Gallons of Gas



\$1.3 Billion

Buy 124T BTUs of Energy for Residential Heating



\$1.9 Billion

Build 954K SQFT of Commercial Space



\$177 Million

Buy 84T BTUs of Energy for Commercial Heating



\$1.2B

What needs to happen?

1. **2030: 100% renewable electricity**

2. **Adoption rate of EVs**

2020-2024: 1.5% per year

2025-2050: 4% per year

2019-2025: 1% → 10% EVs

3. **Rate of home retrofits**

2019-2050: All homes electrified

2018-2023: 300 → 800 home retrofits/year

4. **4000 additional housing units; 80% apartments; 960 sf**

5. **2023-2050: All new construction at Passive House performance**

How should it happen?

Analysis identified opportunities for developing specific implementation actions

100 homes torn down and replaced/year

Build to PH Standard with Electric Heat

Energy retrofits heavily subsidized by MassSave

Take Greater Advantage of Subsidies to Save \$\$

Growing road congestion

Transform Transportation, not More Roads or Parking

Several large mixed-use complexes under development

Build to PH Standard with Electric Heat

650 homes sold to new owners/year

Publically disclose energy performance at point of sale

31 employers own 50% of commercial floor space

Drive These Organizations to Change

700 heating systems replaced/year

Replace with Heat Pumps, not Gas

25% of Newton residents over 65

Accelerating Home Sales → More Interventions

New car purchases: every 9 years

Incentives and campaign to buy EVs

Where do we begin?

Criteria for choosing 10 priority actions

- **Magnitude of GHG emissions reduction**
- **Technical feasibility**
- **Market adoptability: likelihood that residents, businesses, and others will adopt necessary changes and take action**
- **Importance in laying the groundwork for further major impact actions**

4 Actions Lead by City Council

1. Require Passive House and all Electric for All Special Permits. Revise Criterion

- Ensure that large projects like Riverside are highly efficient and GHG emissions-free

2. Pass ordinance requiring HERS rating, energy costs & EV charger to be disclosed for all home sales. List in Assessor database

- Start building awareness of energy costs to preferentially drive owners and buyers toward homes that cost less to operate; and are adapted for EVs and electric heat

3. Pass ordinance requiring an electric option for all heating system

- Present homeowners with an electric heat option so they can make an informed choice.
- Educate building professionals

4. Begin deliberations about revenue neutral ordinance to financially reward residential properties with low energy use

- Property owners who achieve Lower-Than-Average energy usage will be eligible for property tax reduction.

4 Actions Led by the Mayor

5. Preferential & Free Parking for EVs at Municipal Lots

- Build visibility of EVs, educate non-EV owners

6. Start a Marketing Campaign for EVs

- Educate residents that EVs cost less to buy, power and maintain

7. MOU with National Grid and Eversource

- Accelerate home retrofits;
- Set numerical goals & metrics for energy conservation
- Training of contractors
- Co-brand a joint campaign for efficiency measures
- Finance Community Energy Assistance Mngr. position
- Enhanced incentive for Commercial users beyond MassSave

8. Establish Green Leadership Collaborative for Commercial Building

- Begin process of getting major property owners to start lowering their own emissions. Jointly with NGrid and Eversource

2 Actions Led Jointly by Mayor and the Council

9. Set up Climate Action Services Office and fund it!

- Facilitate adoption of clean renewable energy technologies and energy efficiency measures in residential & commercial buildings and transportation.

10. Require transportation plans for new developments that support CCAP goals

- Ensure that the City does not approve new commercial and mixed use development that will increase traffic and vehicle miles traveled



...but City Hall must drive change:

- Ordinances
- Regulations
- Incentives
- Technical assistance
- Barrier removal



-Outreach



Thank you to all the hard workers!

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