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MEMORANDUM

TO: Thomas A. Golden, Jr., City Manager 

FROM: Yovani Baez-Rose, Assistant City Manager/DPD Director

CC: Katherine Moses, Energy Manager

SUBJECT: MOTION RESPONSE: December 13, 2022 –M. Chau -
Req. City Mgr. Provide City Council on Plans for the City to Meet Massachusetts
Reduced Greenhouse Gas Emissions Goals of 50% by 2030 and Net Zero by 2050

Background:

On March 26, 2021, Governor Charlie Baker signed into law “An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy, which requires the Executive office of Energy and Environmental Affairs (EEA) Secretary to set statewide emissions limit and sector-specific sub-limits every 5 years. The 2030 emissions shall be at least 50% below the 1990 baseline level, the 2040 emissions limit shall be at least 75% below the 1990 level, and a 2050 emissions limit that achieves at least net zero statewide greenhouse gas emissions, provided that in no event shall the level of emissions in 2050 be higher than a level of 85% below the 1990 level. It also specifies January 1, 2023, as the deadline for the adoption of the 2050 emissions limits and sub-limits, as well as the release of a comprehensive plan to achieve those limits. On December 21, 2022, the Baker-Polito Administration released the Clean Energy and Climate Plan for 2050 (2050 CECP), the Commonwealth of Massachusetts’ comprehensive and aggressive plan to achieve Net Zero greenhouse gas emissions in 2050, in compliance with the law. The plan established sector-specific sub-limits for the Commonwealth as a whole. At this point, legislation does not mandate specific reductions on a municipal level.

Progress:

Big Picture Community Wide Progress:

Lowell completed a comprehensive greenhouse gas (GHG) inventory in conjunction with the Green Communities designation process in 2010. Data was compiled for 2008 data in order to establish a baseline level and project future consumption from community and municipal operations. The total GHG emissions for the City of Lowell was calculated to be 1,005,963 tons CO₂e (carbon dioxide equivalent), roughly 9.55 tons of CO₂e per person in Lowell.

Although a formal GHG inventory has not been completed since this time, the Energy team recently estimated current emissions based on a tool developed by the Metropolitan Area Planning Council (MAPC) in their net zero playbook. Although there are limitations due to the age of some of the data, reductions are likely to be understated, rather than overstated. From 2008 to 2021, Lowell has reduced its overall emissions to 741,674 tons CO₂e, roughly 6.68 tons per person in Lowell. This represents a **26% emissions reduction over 13 years.**

Because emissions reductions are measured against a 1990 baseline and Lowell-specific data is not available for that time period, assumptions would need to be made on overall progress. The Commonwealth does have comprehensive data going back to 1990. This data shows that an emissions reduction of 5% from 1990-2008 and an additional 26% from 2008-2021. Since the energy reduction for the Commonwealth at large is similar to the energy reduction in Lowell from 2008-2021, it might reasonably be assumed that emissions reductions from 1990-2008 are also similar. This would put Lowell at a **31% emissions reduction vs. 1990 baseline levels.**

The Four Key Pillars of Decarbonization identified in the 2050 CECP include: transitioning end-use energy away from consuming fossil fuels; energy efficiency and flexibility; decarbonizing energy supply; and carbon sequestration. We have made progress on all of these pillars on both a municipal and a citywide basis.

Municipal Progress:

On the municipal level, we have begun to address these four pillars through:

- Supporting solar development
 - Municipal on-site and off-site solar projects have supported the generation of over 90 million kWh of clean energy over the past decade
 - Looking to develop additional behind-the-meter solar throughout on municipal assets
- Supporting Electric Vehicles (EV) and EV Charging Infrastructure
 - Participating in the National Grid Fleets Advisory Program to analyze the municipal fleet to plan for electrification efforts
 - Proposed a next-generation Fuel Efficient Vehicle policy that emphasizes EV first options
- Investing in energy efficiency for municipal assets
 - 17.2% overall energy reduction from FY 2008-FY 2022
 - 43.7% GHG emissions reduction from FY 2008-FY 2022
 - Signed a Strategic Energy Management Partnership with National Grid to help advance energy efficiency projects. Over the past 3.5 years, this partnership has allowed Lowell to complete energy efficiency projects that are projected to save 3.2 million kWh and 110,809 therms while leveraging over \$2 million in utility incentives and on-bill repayment allowances.
- Supporting carbon sequestration by supporting the urban canopy
 - Currently working on a Municipal Vulnerability Preparedness grant to create a Resilient Urban Forest Master Plan and Urban Heat Island Assessment

Citywide Progress:

On the citywide level, we have begun to address these four pillars through:

- Supporting solar development for municipal, residential, and commercial properties
 - Total installed solar capacity of over 15 MW within the city limits
 - In FY 2022, installed capacity increased 25% year-over-year
 - Over the past 5 years, the installed capacity has more than doubled
- Supporting Electric Vehicles (EV) and EV Charging Infrastructure
 - Expanded publicly accessible, city-owned EV charging stations from 4 stations to 33 stations in the past 3.5 years
- Supporting energy efficiency for residential, commercial, and business customers
 - Opted into the Property Assessed Clean Energy Program (PACE) program to help finance energy improvements for commercial/industrial, multifamily properties, and buildings owned by non-profits

- Participating in Community First Partnership to expand participation in Mass Save energy efficiency programs
- Dedicating \$1 million in ARPA funds for energy efficiency in qualified census tracts
- Supporting renewable energy development through municipal aggregation
 - Generated demand for an additional 253 million kWh of newer New England-based renewable energy assets
- Supporting carbon sequestration by supporting the urban canopy
 - Currently participating in the Greening the Gateway Cities program, which has planted 448 trees so far

The Path Forward:

The Commonwealth's plan to achieve emissions reductions relies on supporting a variety of policies and actions to facilitate market transformation in a number of areas. Although some of these policies will involve mandates, there is also likely to be some flexibility in how municipalities help contribute to emissions reduction targets. Various communities across the Commonwealth have created or begun net zero planning efforts. Depending on the size of the community, these plans were created through grant funding, volunteer resources, municipal funding, or a combination of these efforts. Given Lowell's size, the Energy team recommends that a third-party be utilized to create a Net Zero plan.

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