Visualizing MassEnergyInsight

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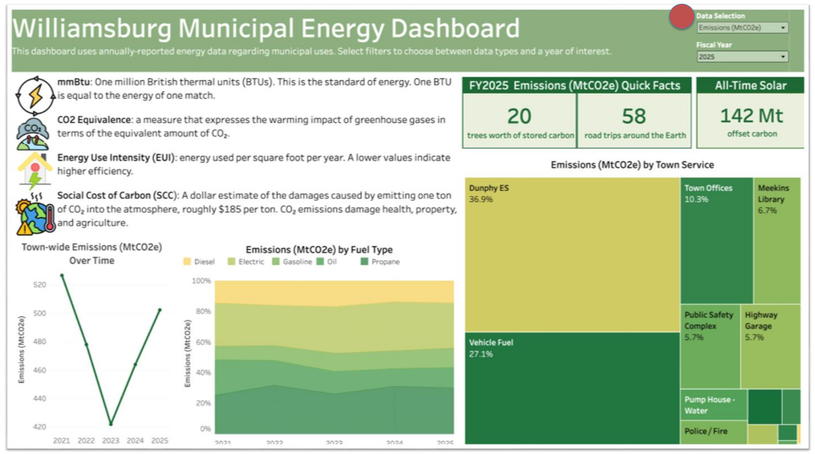
Project Overview & Objectives

- To qualify as a Green Community under the Green Communities Act, municipalities in Massachusetts must adopt and track progress towards a 20% energy reduction at municipal buildings and facilities.
- MassEnergyInsight (MEI) is the state's free, web-based energy-tracking and reporting tool. Offered at no cost by the Massachusetts Department of Energy Resources (DOER), the program helps cities, towns, and regional government entities manage their municipal energy use, carbon footprints, and taxpayer costs.
- MEI holds a wealth of data but is hidden from the public and is often presented in antiquated report formats.
- We wanted to transform this data into something that is engaging to residents and gets people excited about clean energy transition.
    - Guiding principle: community development projects and initiatives are more likely to succeed when there is community support and collective buy-in.
- Objective: make interactive dashboards for each of the member-municipalities (Westhampton, Southampton, Williamsburg) and a still-display for the Hampshire Regional High School.
    - Make data accessible.
    - Identify and track trends over time.

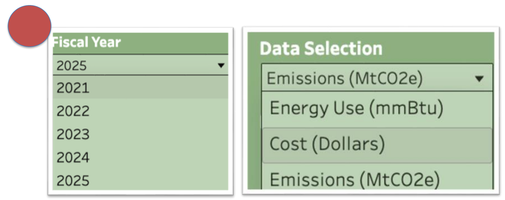
Approach and Methods

- Familiarized myself with clean energy definitions.
- Built a working understanding of MEI by pulling reports, making pivot tables, and constructing charts using PowerBI.
- Identified interesting trends and KPIs.
- Noted erroneous data points (i.e. double charges, incorrect decimal points, missing charges) in workbook for fixing.
- Converted metrics (i.e. MMBTU) into more identifiable indicators (i.e. homes powered for one year).
- Received feedback from Williamsburg Energy Committee and weekly input from municipal energy manager.
- Identified useful definitions to provide context to the dashboard.
- Compiled MEI data report spreadsheets into Tableau.
- Created visuals for identified trends.
- Built user interactivity.
- Created graphic design components.
- Published dashboards to Tableau Public.

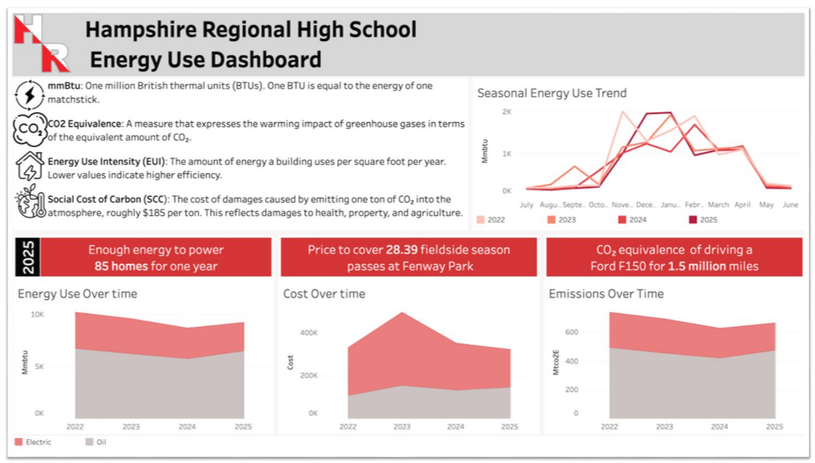
Deliverables and Findings



Example web-based interactive dashboard for Williamsburg.



Interactive settings on municipality web dashboard (see red dot for location).



Still-frame summary report for Hampshire Regional Highschool for TV display.

Additional finding: data upload errors in MEI. Identified errors were compiled and reported to the state.

Main Takeaways

- Community planners need to break down knowledge barriers so that residents can better engage in clean energy initiatives.
    - Clean energy terms can be confusing and unintuitive.
    - By demystifying definitions, citizen participation becomes far more accessible.
- In rural communities, schools and vehicle fleets typically contribute most to global warming.
    - To reduce municipal energy use, specific facilities can be targeted to maximize the impact of green spending.
- Tracking baseline energy usage is only as good as the reporting system.
    - Partnerships between utility companies and the state do a great job reducing the burden of manual reporting on municipalities.
    - However, errors are common and often go unchecked.
    - Stronger data validation systems need to be put in place.

Acknowledgements

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