## **Background**

The Town of Brookline is committed to achieving zero emissions by 2040.

We have limited direct means to meet this goal and must rely on a combination of local initiatives, state-level actions, and strategies to offset unavoidable emissions.

## **Direct Opportunities Under Town Control**

1. **Zoning and Building Codes**
   * Adopting and enforcing progressive standards for new construction (e.g., Stretch Code).
2. **Standards for Large Buildings**
   * Establishing and enforcing rules similar to Boston’s Building Emissions Reduction and Disclosure Ordinance (BERDO) and building upon statewide Large Building Energy Reporting (LBER) requirements.
3. **Municipal Buildings and Properties**
   * Transitioning Town-owned buildings to zero emissions (e.g., Ground-Source Heat Pumps (GSHP) and solar installations at the Pierce School).

## **State-Level Actions**

Certain emissions-reduction efforts are beyond our direct control and will be implemented at the state level:

* **Vehicle Emissions**
  + Requirements for new cars to be electric by 2035.
* **Electricity Sources**
  + Gradual increase in the percentage of electricity generated from renewable sources (RECs).
* **Sunsetting gas infrastructure**
  + Winding down gas utilities

## **Indirect Opportunities**

The Town can encourage, but not mandate, specific actions that may help reduce emissions:

* **Renovations for Zero Emissions**
  + Facilitating private investment in zero-emissions retrofits through educational programs, financial incentives (e.g., Commercial Property Assisted Clean Energy (PACE) loans), and zoning adjustments.
* **Complete Streets Initiatives**
  + Making infrastructure more suitable for public transportation, bicycles, walking, and other lower impact transportation. While complete streets is a direct action, we cannot mandate how people use the streets.

## **Areas Likely Beyond Our Control**

* **Existing Residential Buildings**
  + Emissions standards for privately owned homes are unlikely to be mandated at the local level.
* **Smaller Buildings**
  + Many small property owners lack the resources to implement costly upgrades and may not be covered by large-building regulations.

## **Key Assumptions**

In planning for 2040, the Town should operate under several assumptions:

* **Residential and Small Building Autonomy**
  + Homeowners and small building owners will act according to their personal resources and motivations, limiting the Town’s direct influence.
* **Personal Vehicles**
  + At least half of the cars in Brookline may still be ICE vehicles in 2040. The average lifetime of a car is 11 years.
* **New Construction**
  + Relatively few new buildings, as a percentage of the whole, will be constructed between now and 2040.
* **Large Building Regulations**
  + Owners of large buildings will likely question initiatives such as BERDO, limiting their overall impact.
* **Retrofitting Town Buildings**
  + Upgrading older municipal buildings to zero emissions is costly, likely hundreds of millions of dollars, and logistically complex. The town is not well positioned financially to take on these initiatives.
* **Private Commercial Buildings**
  + Most large commercial properties existing today will still be in use beyond 2040, making voluntary or mandated retrofits an ongoing challenge.

These factors mean that **without offsetting measures, the Town will not reach net-zero emissions by 2040 (or 2050)**. Therefore, finding ways to offset or balance the remaining emissions is critical to meeting our goals.

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## **The Role of Municipal Solar**

**Municipal solar** provides a unique avenue for creating these offsets.

By using existing infrastructure—roofs, parking lots, and other developed areas—we can generate local renewable energy without further encroaching on undeveloped land.

Local solar generation and local storage also improve resilience by reducing reliance on long transmission lines and aging electrical infrastructure.

This project alone is likely to have the most significant impact on carbon emission reduction goals, financial savings, resiliency, and cost-effective charging for EVs. It will also demonstrate to the Brookline community our ability to deliver projects without which we are unlikely to meet our net zero goals.

Depending on the size of the solar panel installations and the ability to benefit from the ITC, this project could potentially deliver:

* Annual savings of between [1,000-12,000] metric tons of carbon emissions[[1]](#footnote-0) - equal to what solar installations on [300-1,200]+ homes in Brookline would deliver - >[2-5]X of all solar installations in Brookline over the last 20 years.
* Total savings of between $[3]M to greater than $[12]M over the next 20 years. These savings could potentially be leveraged to finance other net zero initiatives
* As Massachusetts utilities move towards time-of-use electricity rates, the potential financial savings could be significantly higher by leveraging the batteries to time-shift availability of cheap solar power for use by the town.

There is no other initiative that could deliver such an impact. It does not require any capital investment and is likely to be the most feasible in terms of execution.

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## **Vision**

1. **Comprehensive Solar Installations**
   * Install solar panels, EV chargers, and battery storage on as many municipal properties and parking areas as possible.
2. **Financing Through Power Purchase Agreements (PPAs)**
   * Structure projects so the Town avoids large capital outlays, paying instead for the electricity generated.
3. **Immediate Action**
   * Move forward quickly to try to take advantage of current federal tax credits and avoid losing financial incentives.

## **Historical Context**

The concept of municipal solar is not new to Brookline. Multiple proposals have been considered over the years, and though there have been some successes, widespread implementation has been repeatedly delayed.

2002 – First Climate Action Plan, initiated by Conservation Administrator Erin Chute, includes “solar on municipal buildings” as an action item.

2005 – Director of Public Health Alan Balsam raises funds (including a $15,000 private fund-raising drive by Climate Action Brookline) to add solar panels to the Public Health Building renovation project.

2012 – Second Climate Action Plan, developed by the Select Board’s Climate Action Committee (SBCAC), which was created in 2008, proposes solar panels on five municipal buildings and the Single Tree Hill reservoir.

2013 – Solar Roof Assessment Committee was established in response to a Town Meeting warrant article.

2014 – Focus shifts to Community Shared Solar, with assistance of Metropolitan Area Planning Council and Blue Wave Capital.

2015 – Consideration of solar panels as part of a never realized proposal to redevelop the Center Street East Parking lot.

2016 – Closing report of SBCAC Community Shared Solar Working Group, co-chaired by David Lescohier and Werner Lohe, concludes there is no path forward since nearly all viable large solar sites in the region have been claimed, often by national enterprises.

2016 – Focus shifts to Community Choice Aggregation, resulting in Brookline Green Electricity Program.

2019-23 – Solar panels installed on Putterham Library, Runkle School, Kirrane Aquatics Center, Ridley School, the High School, and Driscoll School.

2024 - Solar on Municipal Parking lots is identified as one of the 3 high-priority focus areas for ZEAB and the town.

## **Current State**

* **Federal Tax Credit (ITC)**
  + A federal Investment Tax Credit (ITC) currently subsidizes solar installations. Experts believe that this credit may be sunset as part of the next budget presently being negotiated in Washington, DC. The timing of the sunset could be as early as March 2025 or Sept/Oct 2025, or may get pushed to early 2026 in case Congress is not able to agree on a comprehensive budget deal. Even if the ITC is sunset by the end of the year, it’s possible to secure some of its financial benefits by signing a PPA agreement with a vendor before the scheduled date of the sunset. The chosen solar developer can “safe-harbor” the equipment, thus preserving some of the ITC benefits.
  + Immediate engagement in this initiative will dramatically increase the probability that it will be able to deliver the best financial savings for the town.
* **Financial Structure**
  + Under a PPA structure, the Town will pay a discounted rate for every kWh of electricity it uses from the solar installation. There is no capital cost for the town nor any cost associated with maintaining the system during the term of the PPA contract.. The key negotiation point will be the price per kilowatt-hour and duration of the PPA contract (likely to be between 15-20 years). The solar panel systems generally operate for 25-40 years. Most likely, the town will be able to own the project for free or at a very low cost when the PPA contract term ends and enjoy significant savings for a couple more decades.
  + Even without the availability of the ITC, municipal solar likely remains a compelling direction for the Town in terms of its ability to meet our net zero goals and deliver some financial savings and hedge against the rising energy costs.
* **Potential Sites**
  + Parking lots, parking structures, and municipal building rooftops, the municipal landfill, and many other areas are prime candidates for solar installations.

## **The Importance of Acting Now**

To have any hope of reaching net-zero emissions by 2040, Brookline must pursue strategies that offset unavoidable emissions. **Municipal solar** is one of the most impactful and controllable pathways for doing so:

* It utilizes existing infrastructure.
* It can be financed in a way that requires no immediate Town capital.
* After approximately 15 years, the solar arrays could transition to full Town ownership, potentially providing free or significantly reduced-cost energy.

By taking advantage of existing tax incentives and partnering with a solar developer to finalize a Power Purchase Agreement soon, Brookline can secure the economic and environmental benefits of local clean energy generation—ensuring we move closer to our net-zero goals while reducing costs for our taxpayers.

## **Suggested Next Steps**

* Discovery - led by Alexandra Vecchio and the Town
  1. Assessment of opportunities in town for Municipal Solar
     + All parking areas controlled by the Town
       - Public and town parking lots including those at parks, cemeteries, schools, at the T, the golf course other Brookline open spaces
       - All town-controlled parking areas e.g. Beacon Street median
       - Other tarmac areas, e.g. the municipal landfill
       - Separated (or other) bikelines
       - All other areas that are covered by tarmac that are in Town control
     + All municipal buildings
     + Town public areas e.g. the town reservoir, Single Tree Hill reservoir
     + The Brookline Reservoir
     + Anything else not otherwise on this list
  2. Engagement with organizations that might be able to manage town PPAs through an RFI process:
     + Share (a version of) this document along with the list of opportunities.
     + Invite them to comment on the feasibility of moving forward either to take advantage of the ITC or otherwise as a precursor to a formal RFP.
* ZEAB Options
  1. Public Hearing
  2. Bring this to the Select Board
  3. Other

1. Approx, 500-1,500 metric tons of carbon emission per MWh of solar installation. The town might be able to install as little as 2MW and up to 8MW of solar. The numbers will be finalzed after surveys of potential sites for the installations. [↑](#footnote-ref-0)