



Memorandum

TO: Ahmad Zayyad, Deputy Village Manager

FROM: Marcella Bondie Keenan, Sustainability Coordinator

FOR: Village Manager; Village Board of Trustees

DATE: May 4, 2022

SUBJECT: Oak Park Sustainability, Climate Action & Resilience Plan – Building Electrification policy; Leaf blower policy; Emissions reduction timeline

Village Trustees, Commissioners, and community advocacy groups have brought forward several topics related to climate action and sustainability: 1.) a potential new policy to promote building electrification; 2.) a potential amendment to the existing leaf blower ordinance, and 3.) the timeline for greenhouse gas emissions reductions. The Village Board of Trustees has referred the question of building electrification to the Building Code Advisory Commission (BCAC), and the question of the leaf blower ordinance to the Environment & Energy Commission (EEC.) This memo summarizes the status of these actions as reflected in the Oak Sustainability, Climate Action & Resilience Plan (“Climate Plan”) process.

1.) Building Electrification

The 2020 Oak Park community greenhouse gas emissions inventory demonstrates that the largest percentage of community emissions derive from residential (41.2%) and commercial (31.6%) building energy use. Community input through various Climate Plan engagement channels demonstrates some existing support for building electrification.

The draft Climate Plan features several actions to reduce building energy use, and shift building energy sources from fossil-fuels to renewable energy. Actions include adopting an energy code for new construction and a goal to convert natural gas equipment in existing buildings. These actions have been reviewed by a representative of the BCAC during a cross-commission plan review meeting held on May 3, 2022. The draft plan actions are in alignment with Commissioner Heitzman’s recommendations. Consolidated comments from the full BCAC are expected by May 31, 2022.

Some of the common challenges and potential solutions to decarbonizing the building sector through electrification that are applicable to Oak Park include the following. Solutions

may be implemented by local government bodies, utilities, institutions, associations, or advocacy groups, as appropriate

Common Barrier	Potential Solution
Regulatory challenges that prevent utilities from providing incentives or rebates for fuel-switching.	Implement a legislative agenda to advocate for supportive energy utility policies and programs required by State legislation.
Consumer perceptions that electricity is not as reliable as natural gas.	Conduct an educational campaign and architect/contractor training to promote climate resilience strategies during building design and renovation, such as increased insulation to passively maintain internal building temperature and backup energy storage equipment.
Consumer perceptions that electricity is more expensive than natural gas.	Conduct an outreach campaign that communicates local success stories, including cost savings over time, while acknowledging that each building should be evaluated for cost savings potential. Require energy modeling to evaluate potential cost savings for individual buildings, as part of the permitting process.
Consumer perceptions that natural gas is superior to electric-powered equipment (such as cooking stoves).	Conduct an outreach campaign with local chefs to create all-electric cooking demonstrations.
Consumer perceptions that technology is not suitable for their needs/ climate /building.	Identify specific buildings where perception may be preventing electrification, and implement a user-centered pilot program to encourage energy retrofits.
Lack of contractor awareness and/or expertise.	Develop a program to deliver contractor training and resources, and technical assistance for building owners, including a database of trained contractors.
Higher up-front installation costs.	Develop a program to connect building owners with affordable financing tools.
Reduced housing and commercial affordability due to building owner investment cost and improved occupant benefits.	Develop a program to deliver energy and climate resiliency building upgrades and financing services to existing affordable housing (income-qualified or naturally occurring) and small commercial buildings, including program terms that preserve long-term affordability.

A building electrification policy should not be pursued as the sole building energy strategy. Electrification should be sequenced within a suite of other energy strategies: energy conservation (occupant behavior and demand management); energy efficiency and weatherization upgrades; onsite or district renewable energy and energy storage; community solar; and utility-scale renewable energy development and power grid enhancement.

2.) Leaf Blower Ordinance

Research literature indicates that gas-powered lawn care equipment has an adverse health impact on landscape laborers because it exposes workers to high concentrations of toxic fumes. Gas-powered lawn care equipment also has an adverse impact on community air quality, noise level, and greenhouse gas emissions.

Community input through various Climate Plan engagement channels demonstrates some support for a more restrictive ordinance governing leaf blowers. Preliminary engagement with landscaping businesses indicates that banning leaf blowers for municipal operations may have an adverse impact on Village expenditures and level of service.

The Park District of Oak Park has already transitioned its leaf blowers and most other lawn care equipment to battery-powered models. The Park District team prefers battery-powered leaf blowers because they do not create fumes, are lighter, and require less maintenance.

The draft Climate Plan includes a Public Health action relevant to the leaf blower ordinance: *Develop a program to transition lawn care to quiet, zero-emission equipment.* This action will be reviewed, along with other actions, during a cross-commission meeting on May 12, 2022. The EEC will also hold a meeting on May 10, 2022 for a detailed discussion of policy recommendations concerning the leaf blower ordinance.

If the Board directs staff to develop and implement a more stringent ordinance, a roll-out strategy should be implemented to help landscape businesses and residents transition more easily. Considerations include a timeframe for the ordinance to take effect, an enforcement program, stakeholder outreach and education, financial relief for small minority-owned landscaping businesses, and incentives for residents.

3.) Timeline for Greenhouse Gas Emissions Reductions

How were the Climate Plan's emissions reduction goals developed?

The Climate Plan's greenhouse gas emissions reduction goals are based on mid-term and long-range science-based targets (SBTs). These SBTs, which apply IPCC modeling, represent Oak Park's "fair share" of carbon emission reductions needed in order to meet the Paris Agreement to keep global warming below 1.5 °C. ^{1,2}

What are the Climate Plan's emissions reduction goals?

The Climate Plan uses 2019 as a baseline year to develop a "business-as-usual" emissions forecast, and to quantify the emissions reduction needed to reach the SBT goals. The forecast projects a relatively flat growth in emissions through 2050, under a business-as-usual scenario based on predicted population growth. Business-as-usual assumes that the Oak Park community does not implement any new climate action strategies.

The mid-term 2030 SBT aims to reduce emissions in line with a global reduction of 50%. Oak Park's 2030 SBT is a 60.3% decrease in emissions, relative to 2019 emission levels. This is a reduction of 280,235 MTCO₂e from the 2030 business-as-usual forecast emissions.

The long-term 2050 SBT goal aims to reduce total emissions to net zero, to meet the Paris Agreement. Oak Park's 2050 SBT is net zero, meaning that the community balances the amount of greenhouse gases released with the amount absorbed from the atmosphere. The reduction from the 2050 business-as-usual forecast is 468,582 MTCO₂e.

How can Oak Park achieve our emissions reduction goals? "90K By 2030"

The Climate Plan team has prepared emissions reductions scenarios, focusing on a reduction of about 90,000 MTCO₂e by 2030 for each of the major emissions sources – residential buildings, commercial buildings, and transportation, in order to reach the 2030 SBT. Several actions support each scenario.

Scenario Examples:

- *Transition building energy use to 75% renewable energy: 84,663 MTCO₂e*

¹ The ICLEI's SBT 2021 methodology is an updated version of the One Planet City Challenge (OPCC) 1.5 °C Alignment Method, which applies regional models from the IPCC's Special Report on Global Warming of 1.5 °C and an additional "equity adjustment" from the Human Development Index. The OPCC method was endorsed by the UN Race to Zero Campaign, as a method to set emission reductions targets that align with the Paris Agreement. The mid-term target equity adjustment requires faster decarbonization from cities in more developed nations. [Link to technical manual.](#)

² IPCC (2018). Summary for Policymakers. In: Global Warming of 1.5 °C. An IPCC Special Report on the impacts of global warming of 1.5 °C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.

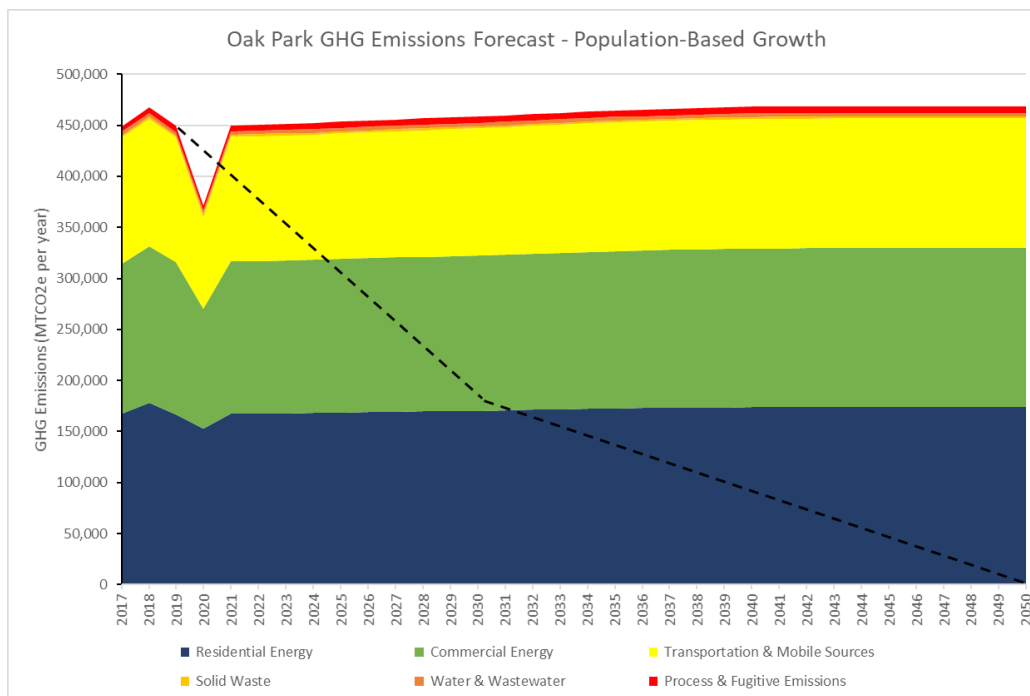
- Convert 25% of building stock from natural gas to electric: 45,233 MTCO₂e
- Reduce gasoline-powered vehicle miles traveled (VMT) by 50%: 50,736 MTCO₂e
- Transition 50% of gasoline-powered vehicles to zero-emission vehicles: 77,283 MTCO₂e

It should be noted that the Climate Plan is being developed within the framework of what is *possible tomorrow*, rather than what cannot be achieved today. In other words, enabling conditions, some of which are outside the direct authority of the Village Trustees and staff, are necessary to achieve full carbon neutrality. For example:

- Full community participation in either Community Choice Aggregation, community solar, or distributed renewable energy
- New sources of renewable energy are developed and available for subscription within the geographic boundary specified by policymakers
- Transition to 100% renewables in the electricity grid

Can the Climate Plan's emissions reduction goals be accelerated?

The emissions forecast chart, shown below, depicts the 2030 and 2050 SBTs (dashed “trend line”) over the “wedges” of greenhouse gas emission sources, including both actual emissions (2017-2020) and forecasted emissions under a business-as-usual scenario (2021-2050). The residential building energy, commercial building energy, and transportation wedges comprise the majority of community greenhouse gas emissions.



As shown by the steep decline of the trend line, a 60% reduction by 2030 is an ambitious target. If this rapid rate of emissions reductions can be maintained, net zero emissions are projected to occur between 2037 and 2040. However, program investment typically experiences “diminishing returns,” meaning that once “low-hanging fruit” has been achieved, new emissions reductions will be more difficult and/or more expensive to achieve over time.

Of course, these emissions reductions are only estimates until the strategies are implemented and acted upon. In other words, the timeline for achieving our carbon neutrality goal via community actions will be driven by the enthusiasm of the policymakers, residents, businesses and institutions of Oak Park, and broader technological and policy conditions which enable greater access to renewable energy.

Actual GHG reductions will be quantified by future GHG inventories to determine the emissions remaining and progress toward the goal. Similarly, future climate planning efforts will include new strategies and updated assumptions for existing strategies based on actual progress and lessons learned. This could include revisiting the carbon neutrality timeline.

How can we meet our 2030 goal and carbon neutrality goal if certain enabling conditions do not occur?

Two strategies, RECs and carbon offsets, could be employed. These strategies are currently being used by peer communities such as Evanston and Ann Arbor.

- Renewable Energy Credit (REC): A tradeable instrument that represents the legal right to the “renewable-ness” of renewable electricity generation. A REC can be sold separately from the actual electricity. The REC owner has the exclusive rights to make claims about “being powered with” renewable energy. – USEPA
- Carbon Offsets: Method of accounting for GHG emissions in one location with another action that reduces emissions somewhere else (e.g., planting trees). Offsets can be bought, sold, and traded.

Given the currently available technology and policy landscape, it is possible that some use of renewable energy certificates (RECs) or carbon offsets will be necessary to meet a GHG emission goal of carbon neutrality. The likelihood of needing such instruments to achieve carbon neutrality is greater in the nearer term (e.g., an earlier net zero target date), as is the amount of RECs or offsets required to meet an earlier goal.

The cost of RECs and offsets may also be impacted by the target date for carbon neutrality. By some estimates, the price of a single carbon offset could increase 10-fold by 2030 and up to 50-fold by 2050 as demand increases from organizations (e.g., companies, municipalities, states, and others) purchasing offsets to meet their climate goals.

Example 1: Oak Park sets a goal of carbon neutrality by 2035 but only achieves an 80% reduction (theoretical for illustration purposes only). Based on forecast emissions in 2035, there would be about 93,000 MTCO₂e left to offset. If offsets

cost \$20/MTCO₂e, the cost would be about \$1.9 million. If offsets cost \$50/MTCO₂e, the cost would be \$4.7 million.

Example 2: Oak Park sets a goal of carbon neutrality by 2050 but only achieves a 90% reduction (theoretical for illustration purposes only). Based on forecast emissions in 2050, there would be about 47,000 MTCO₂e left to offset. If offsets cost \$50/MTCO₂e, the cost would be about \$2.4 million. If offsets cost \$120/MTCO₂e, the cost would be \$5.6 million.

Summary

The Climate Plan's emissions reductions targets have been developed by an external organization (ICLEI) in alignment with the Paris Agreement, and as part of a global conversation backed by IPCC science. The targets are ~60% emissions reductions by 2030, and carbon neutrality by 2050. Several interlocking strategies have been developed to achieve the ambitious 2030 target.

The ability to accelerate the carbon neutrality target depends on:

- the speed at which the Climate Plan is implemented by governmental bodies, community members, local businesses, and institutions;
- the amount of resources devoted to plan implementation (staffing, program funding);
- policy decisions regarding mechanisms such as carbon offsets, RECs, and carbon taxes;
- policy decisions concerning prescriptive (e.g., ordinances) versus incentive-based voluntary approaches to plan implementation; and
- advances in the technological and policy landscape beyond Oak Park.