



## Establishing a Community Climate Goal

Date: March 2018

### What is a Science-Based Target?

A science-based climate target or goal sets a rate of climate action<sup>1</sup> that is aligned with keeping average global temperature increases below 2°C compared to pre-industrial temperatures.<sup>2</sup> A science-based target represents the overarching global goal that humanity must collectively work towards. Maintaining temperatures below the 2°C threshold will allow the majority, but not all, of the global population to avoid the worst social and economic effects of climate change. 2°C is considered the minimum, “guardrail” science-based goal, but any goal equal to or more aggressive (e.g. 1.5°C) is considered a science-based goal. As a point of reference in 2018, we are already experiencing a 1.2°C temperature increase.

### What are the options?

2°C is the target set forth by the Intergovernmental Panel on Climate Change (IPCC), International Energy Agency (IEA), Paris Climate Accord, State of Oregon, and the City of Portland and Multnomah County. The Paris Climate Accord is legally bound to 2°C goal, but it also states that signatories will “pursue efforts” towards a 1.5°C goal. Inclusion of the 1.5°C goal is meant to acknowledge that the difference between a 1.5°C and 2°C temperature rise will result in “a greater likelihood of drought, flooding, resource depletion, conflict and forced migration” and that “those most at risk will be individuals and communities experiencing multidimensional poverty, persistent vulnerabilities and various forms of deprivation and disadvantage.”<sup>3</sup> The City of Beaverton, Oregon selected 1.5°C as their community goal. Other groups, such as Our Children’s Trust and 350.org, are focused on a 1°C target to further limit the negative societal impacts of climate change. The Cities of Eugene, Oregon and Ashland, Oregon selected 1°C as their community goals.

### What are the trade-offs between goals?

Our modern society was built over the past 150 years on fossil fuels and therefore transitioning away from these energy sources requires large scale technology as well as deployment significant personal behavior change. The 2°C target is meant to strike a pragmatic political and technological balance between limiting the physical impacts of climate change with the time it will take to transition away from fossil fuels and reduce global GHG emissions. More aggressive targets, such as 1.5°C, put a greater weight on limiting climate impacts, but require that emissions reductions measures and negative emissions technologies<sup>4</sup> be implemented more quickly; to a greater degree; and at a greater near-term financial cost.

### Turning the Temperature Goal into Action

The science-based temperature goals discussed above represent the most commonly cited type of climate goal – limiting average global temperature increases. While this is the convention – and should be included in Milwaukie’s goal setting discussion - it does not represent the only form of community climate action goals. Other communities commonly set additional goals on specific mitigation opportunities. The best example is Milwaukie’s previously discussed action (goal) to transition to **100% Renewable Electricity by 2040**. The Portland Metro region recently set a goal of 100% renewable electricity by 2035 and all renewable energy by 2050 (e.g. natural gas, gasoline, diesel, etc.). Another example is setting a goal around % reduction in fossil fuel use (e.g. 50% reduction in fossil fuel use by 2030). Eugene, Bend, and Ashland have all set goals around fossil fuel consumption. Additional goals may be set that address other large sources of community

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<sup>1</sup> Climate actions to include reducing fossil fuel and other man made sources of greenhouse gas emissions as well as implementing negative emissions strategies. Negative emissions strategies provide more time to decarbonize.

<sup>2</sup> A 2°C target is roughly aligned with an atmospheric carbon dioxide concentration of 450 parts per million (ppm)

<sup>3</sup> Intergovernmental Panel on Climate Change (2018). DRAFT of Special Report on Global Warming of 1.5 °C.

<sup>4</sup> Negative emissions is the process of removing carbon dioxide from the atmosphere. Currently, land management options are available for biological carbon sequestration by forests and agricultural practices. Longer term, negative emissions technologies will need to be developed. The most likely of these technologies is bioenergy with carbon capture and sequestration.



emissions. The climate action planning process will highlight actions that fit Milwaukie's unique community context. Ideally each of the actions included in Milwaukie's Climate Action Plan will include an action-specific goal/target; be assigned an organizational lead; establish a tracking metric; and identify a data stream to measure progress over time.

## **How much would it cost to offset 100% of community emissions?**

Milwaukie's 2016 community sector-based emissions were roughly 260,000 metric tons of carbon dioxide equivalent (MT CO<sub>2</sub>e). This does not include the emissions from food, goods and services made outside of Milwaukie. Regulatory-grade credits in California's Cap-and-Trade market sold in Jan. 2018 for an average of \$15 per MT. Likewise, the Climate Trust produces high-quality, voluntary-market carbon offsets from projects in Oregon for about \$15 per MT. Globally the average offset price is \$5 per MT.

Based on a price of \$15 per MT, the average annual cost for the community to be carbon neutral is about \$440 per Milwaukie household or \$3.9 million dollars per year for the entire community. That said – the community does not need to be carbon neutral next year to meet a science-based target. A 2°C goal would require about a 3% annual decline in emissions. If offset costs were indexed with a science-based goal, the cost in year 1 would be about \$13 per household or \$117,000 dollars in year 1 for the entire community. In year 2 the cost would be \$26 per household, or \$234,000 for the community and so on working towards a science-based target.