



# The TOWN OF NORWOOD

Commonwealth of Massachusetts

## MUNICIPAL LIGHT DEPARTMENT

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### **Norwood Landfill Solar Project – Winter Street – FAQs**

#### What are the benefits of putting a solar array on the Norwood site?

According to Massachusetts Department of Energy Resources (MA DOER), solar arrays are an optimal use of landfill areas, generating electricity on typically unusable land. One financial benefit for the Town is predictable and below market wholesale rates. Bottom-line, the solar array reduces Norwood's purchased energy costs and puts Norwood's Winter Street landfill to good use.

#### Why is this site ideal for a solar array?

Like many landfills, the Winter Street landfill has excellent exposure and orientation to sunlight. The area that is planned to be covered by solar panels is free from shading from trees or buildings and is primarily south west facing, providing for good sun light.

#### How big is the solar array and how much energy will it generate?

The array will cover approximately 70% of the landfill area and is rated at 2.6 MW of peak power. This size array will produce ~1% of Norwood's total annual load. The array will generate over 3 million kWh annually, the annual average power consumed by 600 typical Norwood homes. In a typical day, 15 minutes of Norwood's entire energy use can be provided by this project.

#### Who will pay for it?

The Town will not pay for any construction costs related to the PV system. The PV system on the landfill will be paid for via a commercial Power Purchase Agreement (PPA) with Tangent Energy. The Norwood Light Department plans to sign a PPA with Tangent Energy to purchase the solar electricity produced at the landfill for a 25-year period at a rate currently below our average cost of energy. The Town of Norwood will have the option to buy the equipment at certain intervals throughout the contract.

#### Will this solar array be "green" and renewable?

Solar panels convert sunlight in to electricity and hence, are considered renewable energy sources. Nonrenewable electricity sources burn fuel which generate emissions, including CO<sub>2</sub>. This solar array is renewable and is projected to avoid over 1,400 tons of CO<sub>2</sub> annually.

#### How big are the solar panels?

The solar array consists of over 7,000 solar PV panels, each mounted on a ground-level racking system. Each panel is 77 inches tall, 39 inches wide, and 2 inches thick.

#### How are the panels mounted on the landfill?

The panels are mounted to a metal racking system that is "anchored" into cement filled tubs spaced evenly under the racks. The cement filled tubs keep the arrays properly aligned and positioned, despite high winds, rain, hail, or snow. This approach avoids any piercing of the landfill membrane cap, maintaining the integrity of the landfill cover.

How tall is the array when mounted over the landfill?

The racking system allows the panels to be oriented toward the sun at an optimal average angle (fixed tilt and rotate). The lower edge (south west) of the panels are often 2 – 3 feet off the ground. The back edge (north east edge) ranges from 5 – 10 feet off the ground, partially dependent on the slope of the ground underneath.

How long will it take to install this solar array on the landfill site?

A solar array of this size typically takes 6 -12 weeks to install over a landfill. Working hours are typically 7:00 am to 5:00 pm, primarily weekdays only. Small and light-weight utility vehicles are used to move materials onto the landfill and the installers utilize handheld power tools.

Does the array make noise?

The panel themselves do not make noise. The inverters condition the electricity and convert it to AC power before delivering it to the Norwood electric distribution system. Solar PV arrays are very quiet systems.

Do the panels cause glare?

No. The panels are designed to absorb light and convert in to energy. The panels have an “anti-glare” coating to increase efficiency. The glass used in PV panels is less reflective than water and is not expected to impact airplane pilots or passing drivers.

Will snow, rain, or hail damage the array?

The panels are designed to withstand a wide range of weather conditions, over several decades. Rain, ice, and snow roll / melt off the panels given the tilt. These panels typically meet class 4 hail testing. If a panel is damaged, the instrumentation alerts to a fault and the individual panel is replaced, without affecting the production of the other panels.

What is the life expectancy of this system?

These panels will be in operation for more than 25 years. Solar panel output slowly reduces over time (less than 1% annually). These solar panels come with a performance warranty for 25 years, specifically, the panels will generate at least 80% of rated output in year 25. Very few manufactured products have a 25-year warranty, and fewer still include a performance warranty over that time frame.

Will the grass cover remain over the landfill and how do we ensure environmental compliance?

Yes, the grass that currently covers the landfill will remain. The grass will be periodically cut, under the current cutting schedule. Spacing between the rows of solar panels will allow for mowing equipment to continue to be used. The Town plans to engage environmental consultant CDM-Smith for permitting, construction document review, inspection during construction and any other assistance needed to ensure compliance.

What ongoing maintenance is involved?

Solar arrays do not require much maintenance. The panels themselves are solid state and have no moving parts to wear out. The inverters are installed at the east edge for this site, on concrete pads for easy access and update/replacement as needed (typically every 10 years).

What type of panels will be used?

We will use crystalline-silicon panels which are both non-hazardous and recyclable. There is an existing and growing solar panel recycling program in place worldwide.