



MEMORANDUM

TO: Dover City Council
FROM: J. Michael Joyal, City Manager
DATE: September 25, 2020
SUBJECT: Analysis of Solar Performance – Children’s Museum/Indoor Pool

This memo documents the performance of the solar array installed at the Children’s Museum and Indoor Pool. It is slightly underperforming based on projections of the original Power Purchase Agreement, but it is not having a negative fiscal impact to the City.

The solar array began service in January of 2019. The terms of the contract, outlined via a Power Purchase Agreement (PPA), states that the City will purchase generated power at a set rate per the schedule below. The PPA projections also assumes that the performance of the array will decline each year. The first 10 years of the PPA are highlighted below.

	Estimated Energy	Energy
Contract Year	Production (kWh)	\$/kWh
1	116,794	\$0.0915
2	116,210	\$0.0915
3	115,629	\$0.0933
4	115,051	\$0.0952
5	114,476	\$0.0971
6	113,903	\$0.0990
7	113,334	\$0.1010
8	112,767	\$0.1030
9	112,203	\$0.1051
10	111,642	\$0.1072

For year 1 (calendar 2019) the PPA estimated a total production of 116,794 kWh. Based on actual metered performance, the array generated 102,745 kWh. This year through August it has generated 90,455 kWh.

To determine savings or costs to the City, you have to compare the difference in pricing between solar-generated electricity versus that purchased directly from Eversource. It is difficult to make a direct cost comparison as Eversource has multiple billing items, including factors for energy supply, delivery, demand charges, stranded costs, etc. One benefit of utilizing solar generated power is that you can avoid many of the “delivery” related costs due to the transmission of electricity through the Eversource grid. City Staff evaluated historical Eversource bills and determined an actual, effective Eversource rate to be about \$0.0908/kWh. So this rate is slightly less than the PPA rate, meaning it has cost the City

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approximately \$126 for the period of January 2019 through August 2020. But it is important to note that the solar company has to pay the City a payment in lieu of taxes (PILOT) for the actual power generating equipment. So when factoring in the PILOT (\$240 in 2019) – the array is generating a net positive impact of roughly \$170/year.

In general, the solar array appears to be matching the small positive trends that were originally presented in some of the PPA projections, an excerpt of which is illustrated below. It was anticipated there would be a slight positive fiscal trend for the first 5 years of the array. The projection below (with red highlight) reflects the City exercising an option at the 5-year mark to purchase the array, based on a depreciated value. Upon purchase of the actual array, all solar generated electricity would be at no cost to the City. The projected payback of the corresponding free electricity to offset the investment to buy the array would occur at about the 15-year mark.

PPA Financial Projections - 102kW Solar Array at Dover Indoor Pool & Children's Museum

