MEMO

To: Bruce Burcat, MAREC

From: Elizabeth A. Stanton, PhD

Date: July 25, 2019

Re: Update to Pennsylvania Long-Term Renewables Contracts Benefits and Costs

In December 2017, Applied Economics Clinic and Sommer Energy, LLC examined the potential benefits of longer term contracting (10 years and 20 years) for the renewables needed to meet one-half of Pennsylvania’s Alternative Energy Portfolio Standard (AEPS) as compared to the current practice of purchasing renewable generation and associated alternative energy credits (AEC) at procurement auctions every six months. In that analysis, we estimated that over a ten-year period starting in 2018, 20-year renewable power purchase agreements (PPAs) for one-half of Pennsylvania’s incremental AEPS requirement would save ratepayers $134 to $331 million (see Figure 1). The annual costs of the 10-year PPA contracts are within the range of the auction costs. But the cost of meeting one-half Pennsylvania’s incremental renewable energy needs using 20-year PPAs is below that of auction costs, even at the lowest natural gas price predictions.

Figure 1. Net present value difference between PPA and auction costs, 2018-2027 (millions of 2016$)

<table>
<thead>
<tr>
<th>Natural Gas Price Projection</th>
<th>Low</th>
<th>Base</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-year</td>
<td>$85</td>
<td>$18</td>
<td>($112)</td>
</tr>
<tr>
<td>20-year</td>
<td>($134)</td>
<td>($201)</td>
<td>($331)</td>
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Underlying data used in our December 2017 analysis included forecasted future natural gas prices, capital investments in wind and solar electric generation, and Pennsylvania’ six-month electric procurement auction prices available at the time. Predictions of future prices have changed over the last one and half years, and more up-to-date predictions could lead to changes in the results of our analysis. This memo presents updated gas prices, renewable capital costs, and procurement auction prices but does not present a new economic analysis based on these new prices.

All three types of price projections are lower today than they were in 2017, however, the drop in renewables costs is greater than that of the auction price—suggesting that an updated analysis could show greater net benefits of long-term renewables contracting. Wind and solar capital costs were 9-14 percent and 4-6 percent lower, respectively, in late 2018 than in 2017. Pennsylvania procurement auction prices, however, were 3 percent lower in 2019 than in 2015. This decrease is likely due to lower natural gas prices (see Figure 2), although that is one of many factors affecting the auction price.

Figure 2. EIA AEO delivered natural gas prices for the electric sector, 2017 and 2018

Note: AEO’s “Low gas and oil” scenario assumes lower gas and oil supply and higher prices, while the “High gas and oil scenario” assumes higher gas and oil supply and lower prices.

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