

Benefits of Long-Term Renewable Contracts for Pennsylvania

Prepared on behalf of the Mid-Atlantic Renewable Energy Coalition

Authors: Elizabeth A. Stanton, PhD, Anna Sommer, Tyler Comings, and Rachel Wilson

Pennsylvania's 2004 Alternative Energy Portfolio Standards (AEPS) Act requires the Commonwealth's electric distribution companies and electric generation suppliers to purchase Tier I alternative energy credits (AEC) equal to 6 percent of their retail sales by 2017, rising to 8 percent in 2021. The 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 AEPS as compared to the current practice of purchasing renewable generation and associated AECs at procurement auctions every six months.¹

Long-Term Renewable Contracts Save Money for Consumers

Over a ten-year period from 2018 to 2028, 20-year renewable power purchase agreements (PPAs) for one-half of Pennsylvania's incremental AEPS requirement would save ratepayers \$134 to \$331 million.

Net present value difference between PPA and auction costs (millions of 2016\$)

		Natural Gas Price Projection		
		Low	Base	High
1/2 Total AEPS	10-year	\$85	\$18	(\$112)
	20-year	(\$134)	(\$201)	(\$331)

Note: Savings shown in red.

We compared the status quo auction purchasing to costs under long-term PPA contracts. The difference between the PPA prices and the procurement auction prices is the per kilowatt-hour (kWh) benefit of procuring renewables through long-term contracts. The dollar value for this benefit is the product of the amount of energy purchased in kWhs and the \$/kWh benefit. The amount of renewables and AECs procured is the same in all scenarios examined, regardless of natural gas price, length of contract, and whether the purchase is through a PPA contract or an auction.

Using this method we found that:

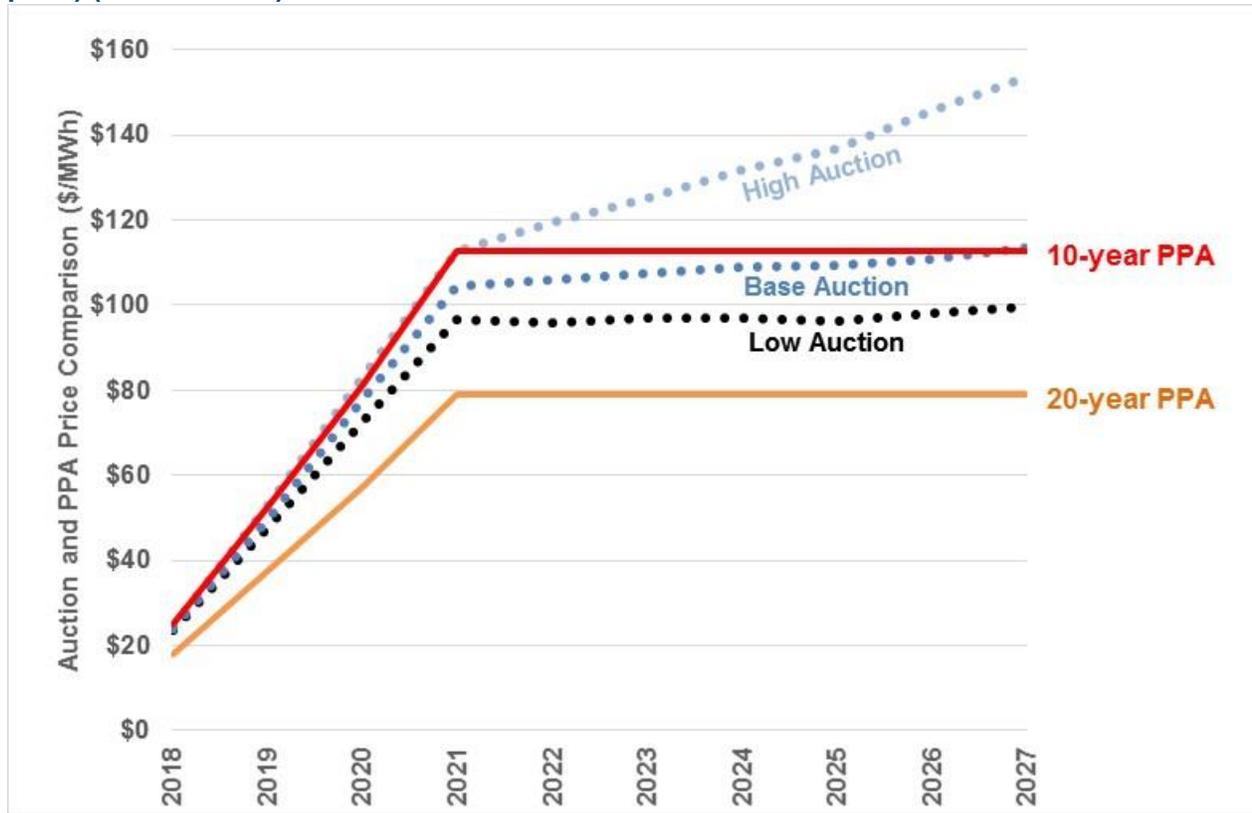
- Long-term contracts are always less expensive than auction purchases under a high natural gas price future. Under a low or base natural gas price future the economics of long-term contracts depends on their length: Longer contracts are more economic.
- Long-term contracts are always less expensive than auction purchases when contracted as 20-year PPAs. When contracted as 10-year PPAs the economics of long-term contracts depends on the price of natural gas: The contracts are more economic when gas prices are high.

The figure below shows annual costs of the PPA and auction purchases on their own (rather than the difference between the two). The annual costs of the 10-year PPA contracts are within the range of the auction costs. 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.

¹ For a more detailed discussion of our methodology and results, along with citations for references and assumptions see our accompanying report: Stanton et al. (2017) *Pennsylvania Long-Term Renewables Contracts Benefits and Costs*. <https://aeclinic.org/benefits-and-costs-of-long-term-re-contracts-in-pa>



Annual purchase costs via PPA (10- and 20-year length) and auction (low, base, and high gas price) (million 2016\$)



Long-Term Contracts Stimulate Renewable Development

Studies have shown that providing predictable revenue streams to renewable energy developers through long-term contracts helps to secure financing and lower financing costs for additional renewable energy generation that helps to comply with renewable standards like AEPs and benefit ratepayers through realized savings on electric bills.

Long-term contracts for renewables also result in lower energy prices for ratepayers by adding renewable generators and increasing the availability of RECs. While our study did not attempt to estimate benefits from lower AEC prices, a 2015 study of the benefits of long-term contracting for compliance with New Jersey's Renewable Portfolio Standard found that long-term PPA contracting drove New Jersey's Renewable Energy Credit (REC) prices down by 25 percent. Consumers also benefit from locking in rates over multi-year timeframes, which can eliminate rate adjustments.

Long-Term Renewable Contracts are in the Public Interest

Analysis of long-term renewable contracts in other states have shown consumer benefits from economic development including new jobs from renewable construction and operation, as well as significant health benefits, achieved by displacing fossil-fuel generators with non-emitting renewables that serves to reduce outdoor air pollution and its corresponding health issues, like asthma and stroke.

Overall, our study provides evidence of the benefits that long-term contracting could make available to Pennsylvania electric consumers.