2018 Value of Solar (VOS) Update

Resource Management Commission
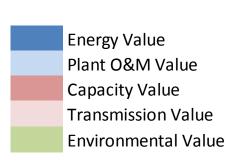May 16, 2017

CLEAN, AFFORDABLE, RELIABLE ENERGY AND EXCELLENT CUSTOMER SERVICE

- Gas prices are projected to remain at historic lows and trending lower

- Solar profile were updated with latest Austin Energy fleet using PV Watts

- Transmission cost of service has gone up

- Environmental value was updated using the societal cost of carbon estimates

- Proposing commercial value of solar for commercial installations

2018 Residential Value of Solar

	Economic Value ($/kWh)	Load Match (No Losses) (%)	Distributed Loss Savings (%)	2018 Distributed PV Value ($/kWh)
Energy Value	$0.028		4%	$0.029
Plant O&M Value	$0.005	100%	6%	$0.005
Capacity Value	$0.030	50%	6%	$0.016
Transmission Value	$0.038	50%	6%	$0.020
Environmental Value	$0.015		0%	$0.015
			Value of Solar (VOS)	**$0.085**

- The Peak Coincidence factor of the Solar to AE load has decreased from 62% to 50%
  - The Peak Coincidence factor (Load Match) is calculated as
    - Average of (Percentage of solar generation with respect to its capacity for the top 10 peak hours of each summer months)

Residential VOS Rate

Year	VOS Current Method (Cents/kWh)
2012 (Oct-Dec)	12.8
2013	12.8
2014	10.7
2015	10.0
2016	9.7
2017	9.7
2018 Est.	8.5
5-yr Rolling Avg.	**9.7**

- The 2018 residential value of solar rate comes around to be 9.7 Cents/kWh

- Based on the current ERCOT market design (Energy only market where the capacity value is reflected in the energy prices)

- Calculated similar to the residential value of solar except the capacity & plant O & M are replaced with the historical scarcity premium embedded in the energy prices over the last 5 years

- Has the following components
  – Energy value
  – Transmission value
  – Environmental value

- Energy value
  - Avoided cost of fuel to meet electric loads as well as transmission and distribution losses, based on the local solar PV production profile.
  - The scarcity premium embedded in the historical energy prices (2012-2016) in terms of heat rate is calculated and added to the forecasted forward implied heat rate to determine the effective heat rate for calculating the energy value
    - Forward implied heat rate is based upon the fundamental prices for 10 years assuming a steady reserve margin in ERCOT
    - The scarcity premium is determined by
      - Reviewing the historical prices
      - Identifying the periods where the prices are above $100/MWh and determine the delta above $100/MWh (Assuming that prices above $100/MWh are generally caused by conditions when the reserves are tight)
      - Translating into heat rate equivalent and determine the average over the last 5 years
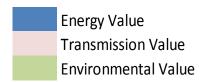
- Transmission value
  - Calculated similar to the residential value of solar and reflects the avoided transmission costs resulting from the reduction in the peak load by local solar PV

- Environmental value
  - Based upon the avoided emissions at Austin Energy emissions rate and priced at the societal cost of carbon
    - The SC-CO2 is meant to be a comprehensive estimate of climate change damages and includes changes in net agricultural productivity, human health, property damages from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning
    - Societal Cost of Carbon is estimated (SC-CO_2) by EPA
    - Reduces as Austin Energy portfolio gets cleaner

2018 Commercial Value of Solar

	Economic Value	Load Match (No Losses)	Distributed Loss Savings	2018 Distributed PV Value
	($/kWh)	(%)	(%)	($/kWh)
Energy Value	$0.031		4%	$0.032
Transmission Value	$0.038	50%	6%	$0.020
Environmental Value	$0.015		0%	$0.015
			Value of Solar (VOS)	**$0.067**

- The impact of demand charges is not factored in the above calculations
  - Currently the demand charges are based on the AE meter readings which nets out the Solar production