



Distributed Solar PV Value for Austin Energy Update -Year 2011

April 25, 2011

Solar PV Value Defined

- Establish what local Solar PV Generation is worth in the AE system – its “Value”.
- “Value” is the maximum price AE should be willing to pay for local Solar PV
 - Based on a levelized present value over 30 years
- For a Solar Project to be feasible, its cost has to be equal to or less than the “Value”.

Solar PV Value Study Background

- Established value of Distributed Solar Photovoltaic (PV) systems in Austin.
 - Multiple Configurations assessed
- First report completed in 2006
 - Utilized consultant and internal resources
 - Public Report available on Austinenergy.com/About%20Us/Newsroom/Reports/PV-ValueReport.pdf
- Updated annually by AE

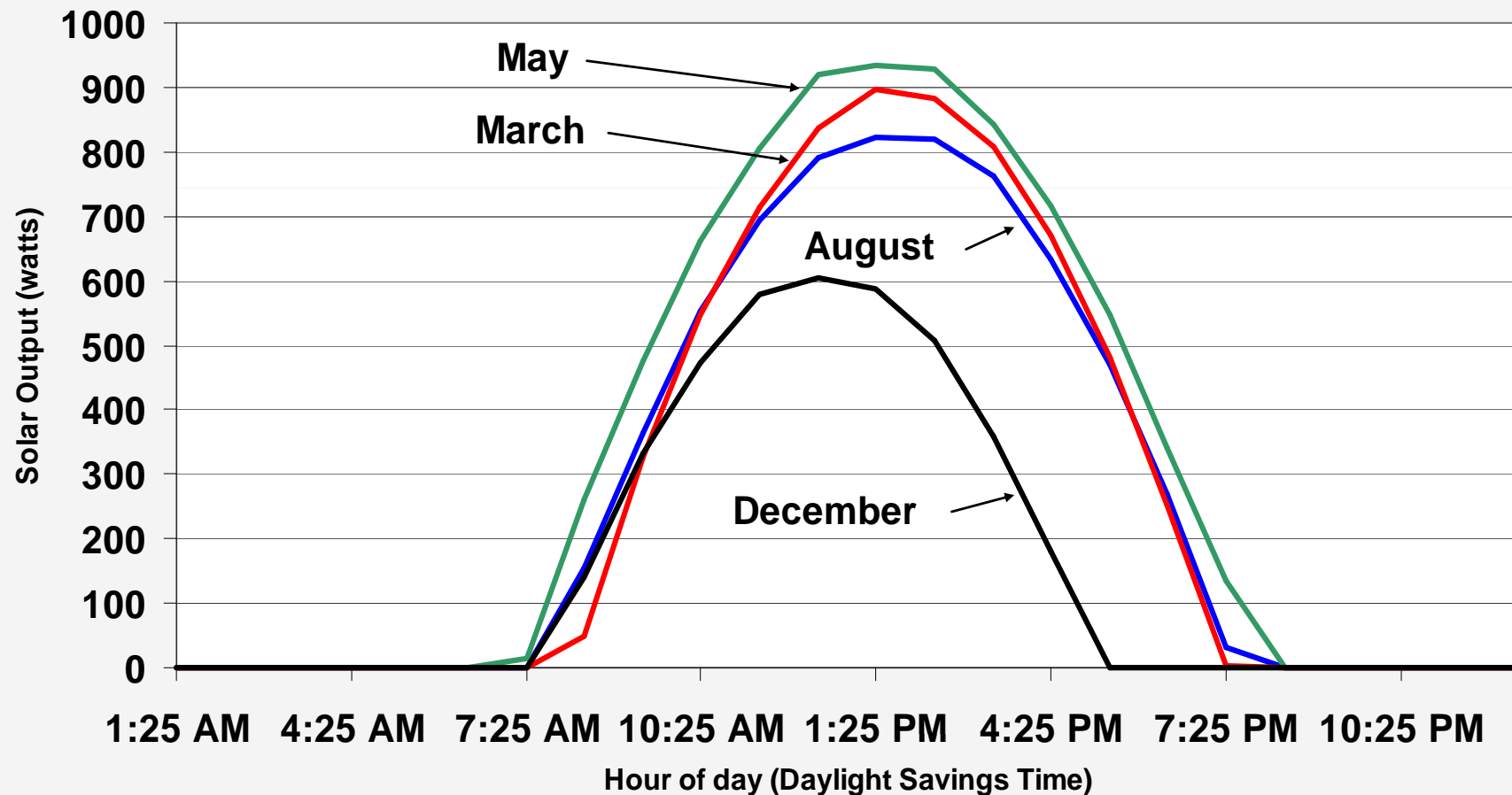
Study Components

- Energy – PV replaces energy produced by marginal unit in real time. PV value is based on cost of energy it replaces.
- Capacity – PV hourly kW contribution to AE system multiplied by the capital cost of installing a new Gas Turbine.
- Environment – Based on customer willingness to pay premium prices for green power in Texas.
- T&D Deferral – Expense savings due to adding distributed PV which can defer future T&D capital investments. The T&D deferral benefit is location-specific.
- Loss Savings – PV produces electricity at point of consumption eliminating need for supplemental energy to cover T&D losses.

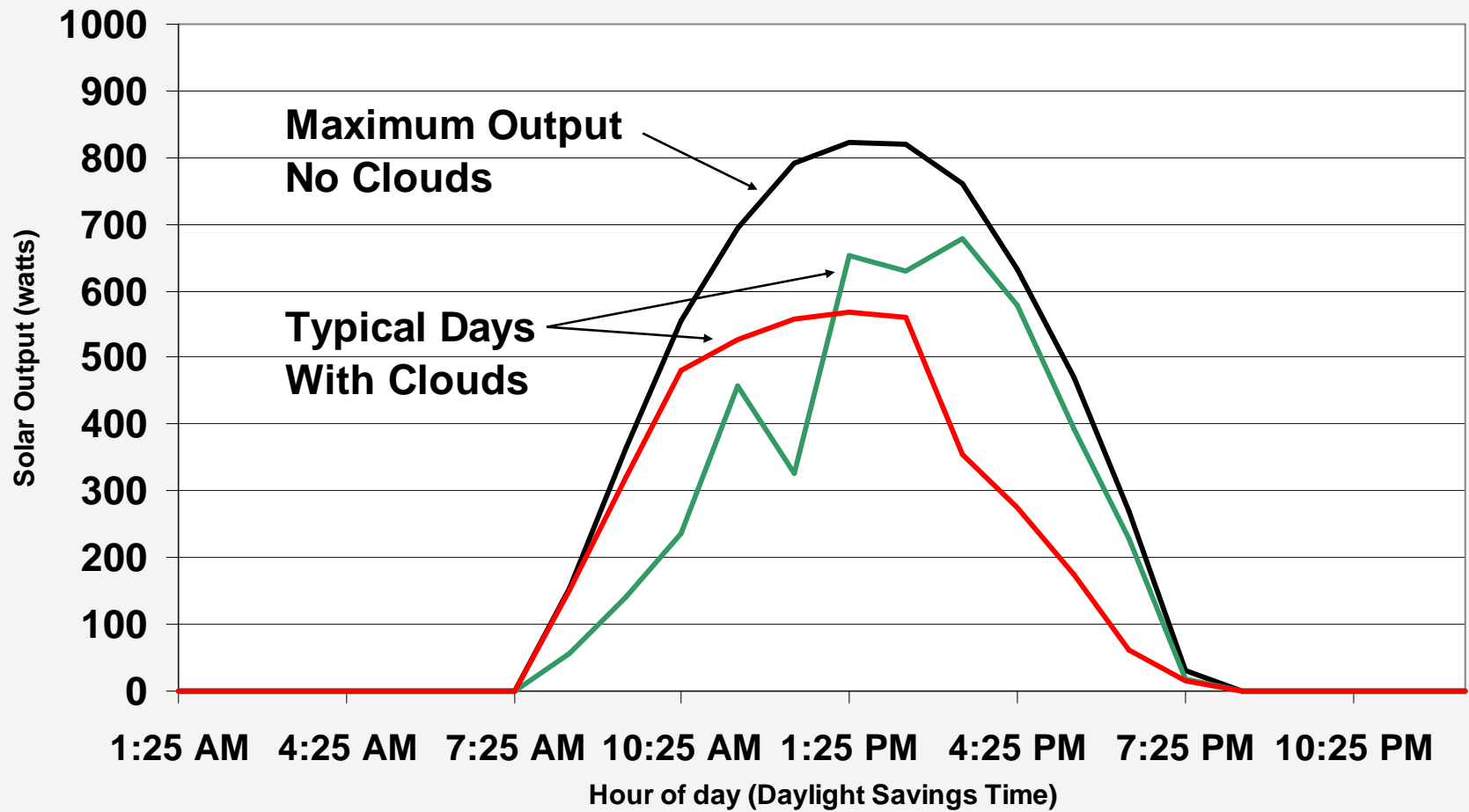
Solar Operational Characteristics

- Solar is an Intermittent Resource (similar to Wind Power) due to daylight hours and weather conditions
- The following charts show satellite derived average Solar PV output for the Austin area.
- PV output based on theoretical PV output adjusted for cloud cover from satellite data
 - Satellite derived PV monthly capacity factors compared favorably with historical ABIA actual monthly capacity factors for 2002

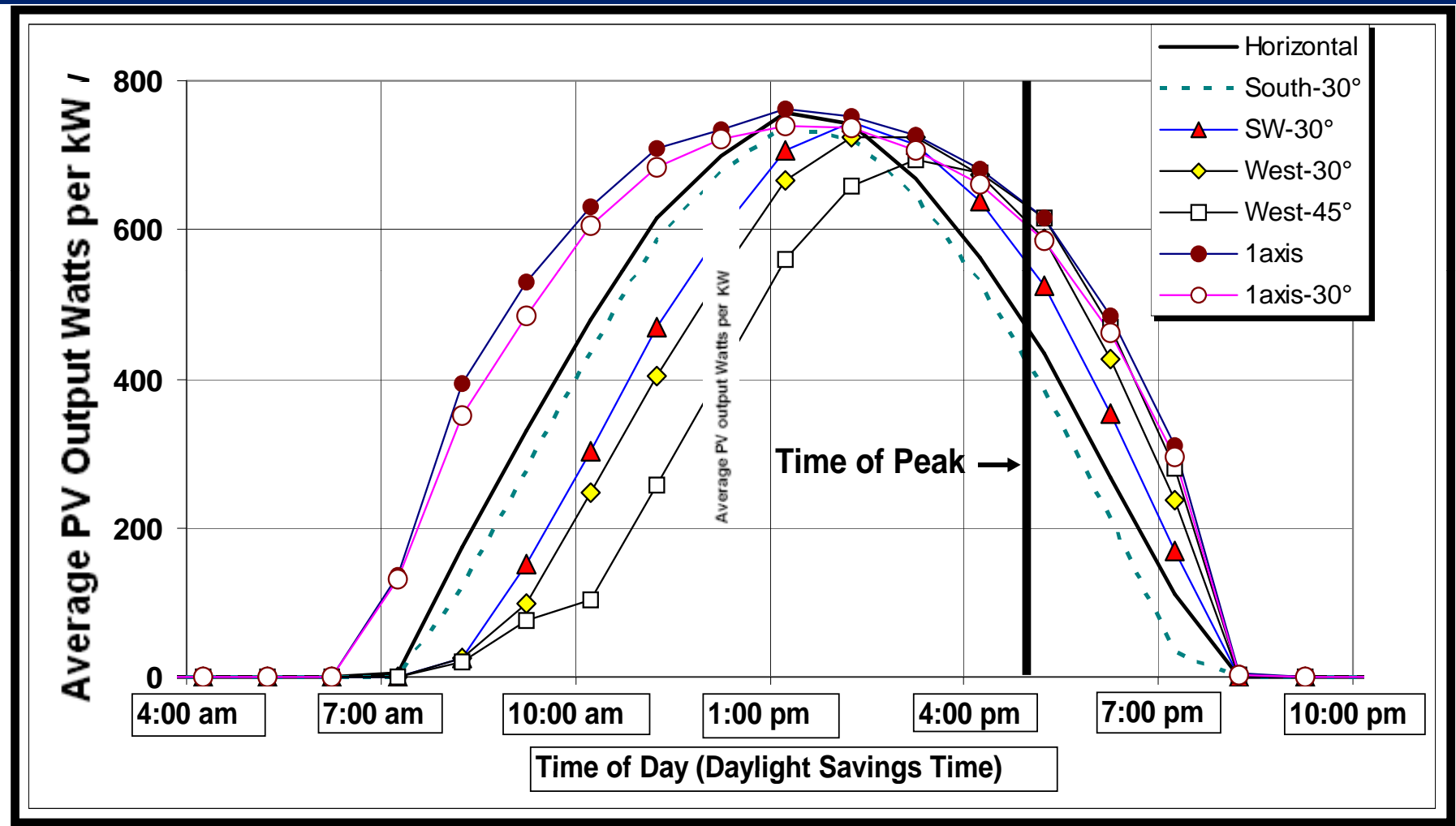
PV output on Cloudless Days (Best Output Seasonally)



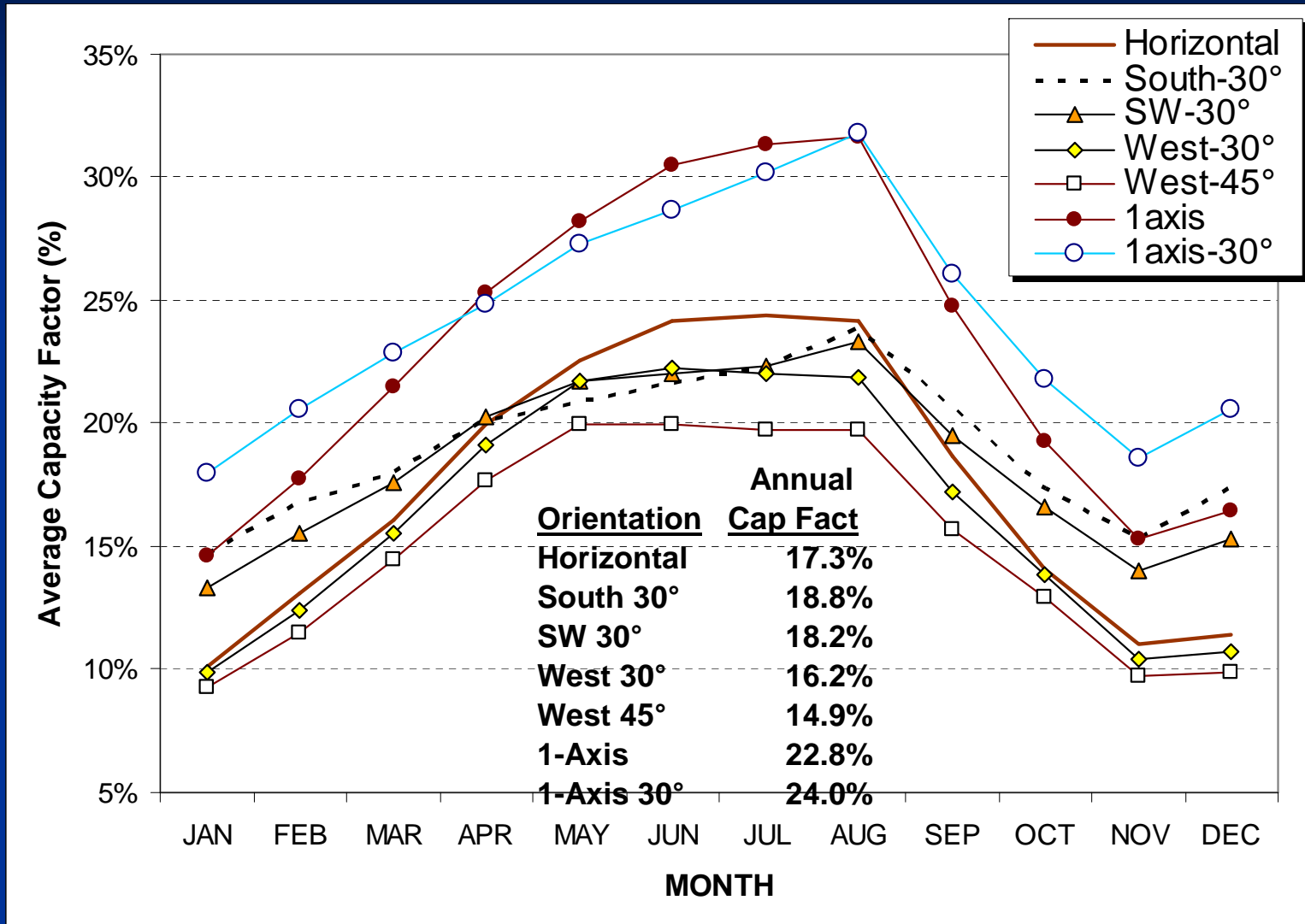
PV output on August Cloudy Days



Average Summer PV Output by Orientation (Fixed and 1 Axis Tracking)



Average Monthly PV Capacity Factors



Summary of Changes & Results

(Using Mar. 11 Gas forecast for 2011-2038)

South 30°

<u>Component</u>	<u>Value Change</u>	<u>Driver</u>
Energy	-9.9%	Natural Gas Prices
Capacity	-15.3%	GT Capital Costs
Environ.	-2.5%	Treasury Yield
T&D Deferral	No Change	
Loss Savings	-9.8%	Energy & Capacity

Note: T&D Deferral value represents 1% of the total value.

Gas Forecast source: NYMEX/Wood Mackenzie

Solar Value by Study Year

<u>Study</u> <u>Year</u>	<u>Type</u>	<u>Avg. Value</u> <u>(cents/kWh)</u>	<u>Avg. Value</u> <u>(\$/kW)</u>
2006	Fixed	10.3	1,967
2007	Fixed	11.8	2,268
2008	Fixed	16.4	3,139
2009	Fixed	13.8	2,934
2011	Fixed	12.6	2,669
2006	Track	9.9	2,605
2007	Track	11.4	3,005
2008	Track	15.8	4,161
2009	Track	14.1	3,605
2011	Track	12.8	3,277

END