



# Distributed Solar PV Value for Austin Energy Update

Presented to RMC  
September 16, 2008

# 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](http://Austinenergy.com/About%20Us/Newsroom/Reports/PV-ValueReport.pdf)
- Updated annually by AE

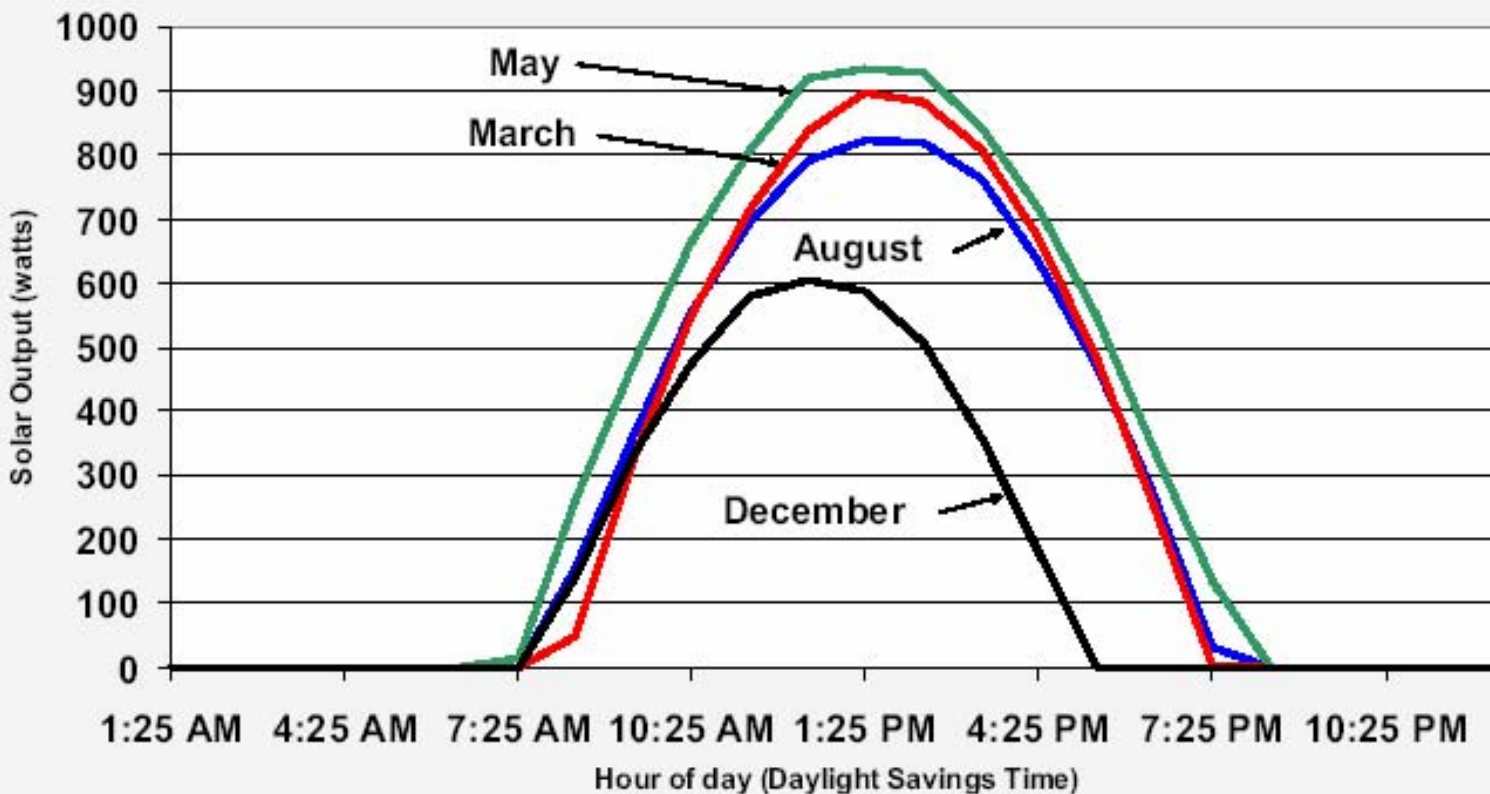
# Study Components

- 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.

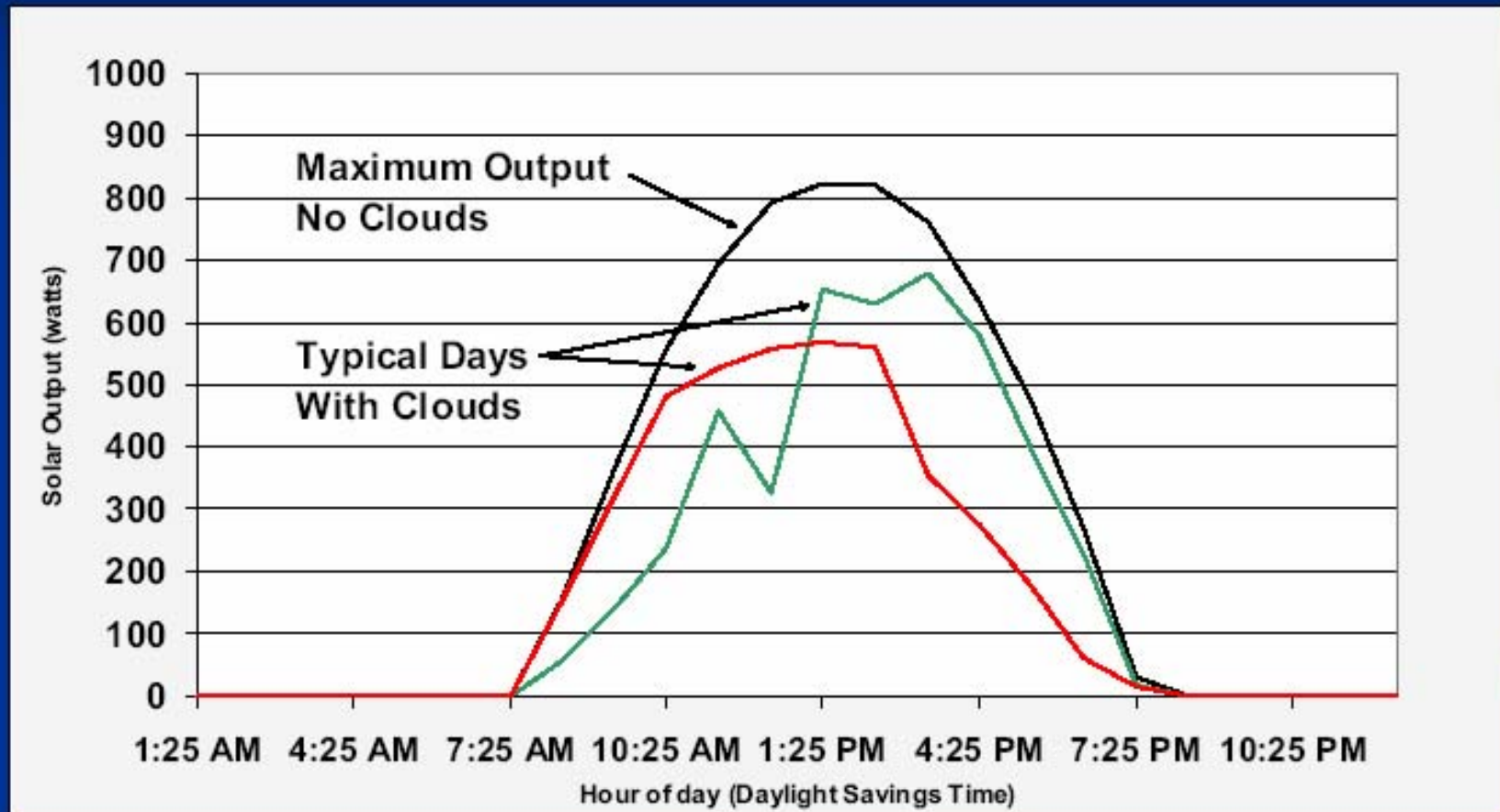
# Solar Operational Characteristics

- 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

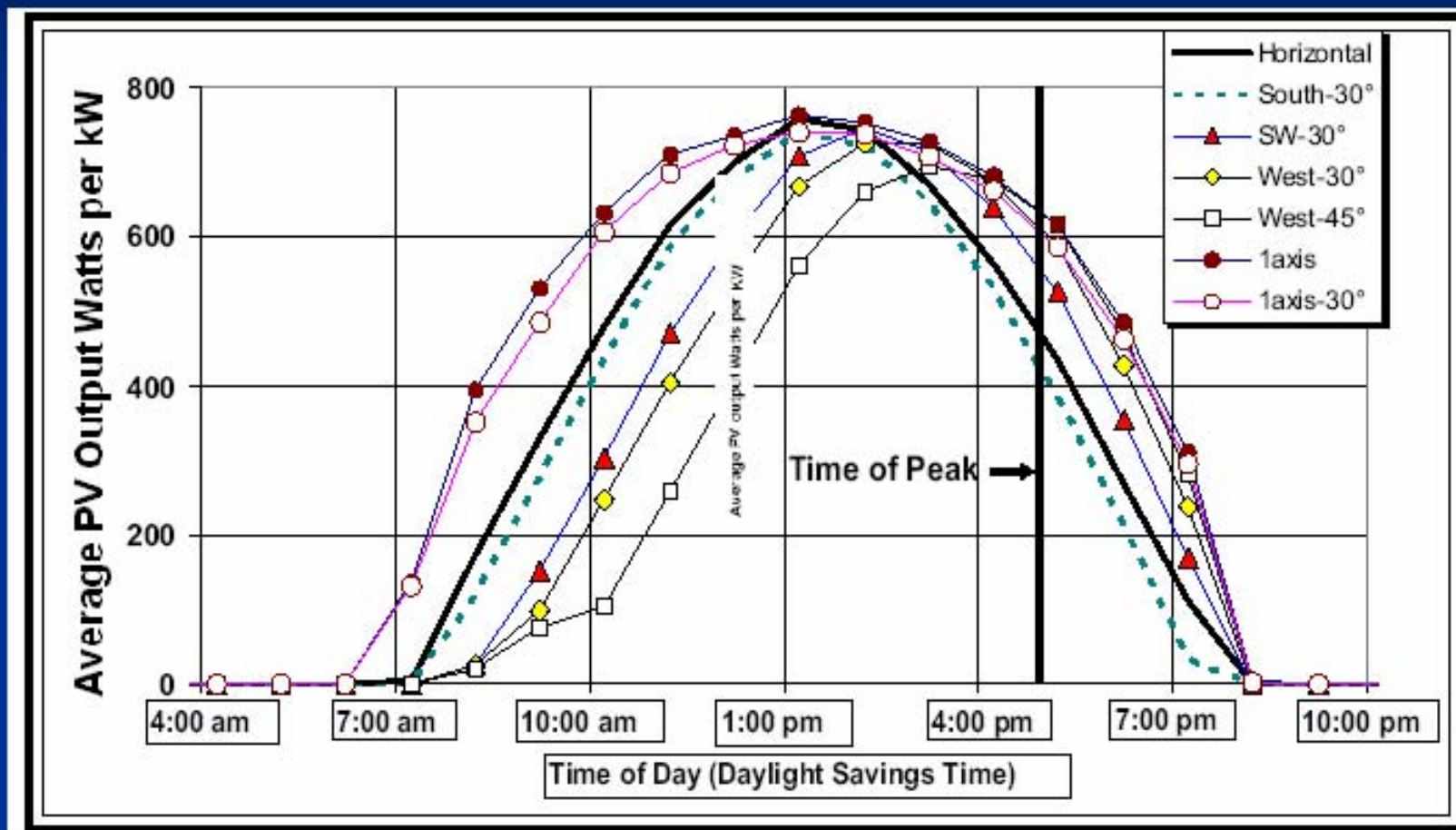
# PV output on Cloudless Days (Best Output Seasonally)



# PV output on August Cloudy Days

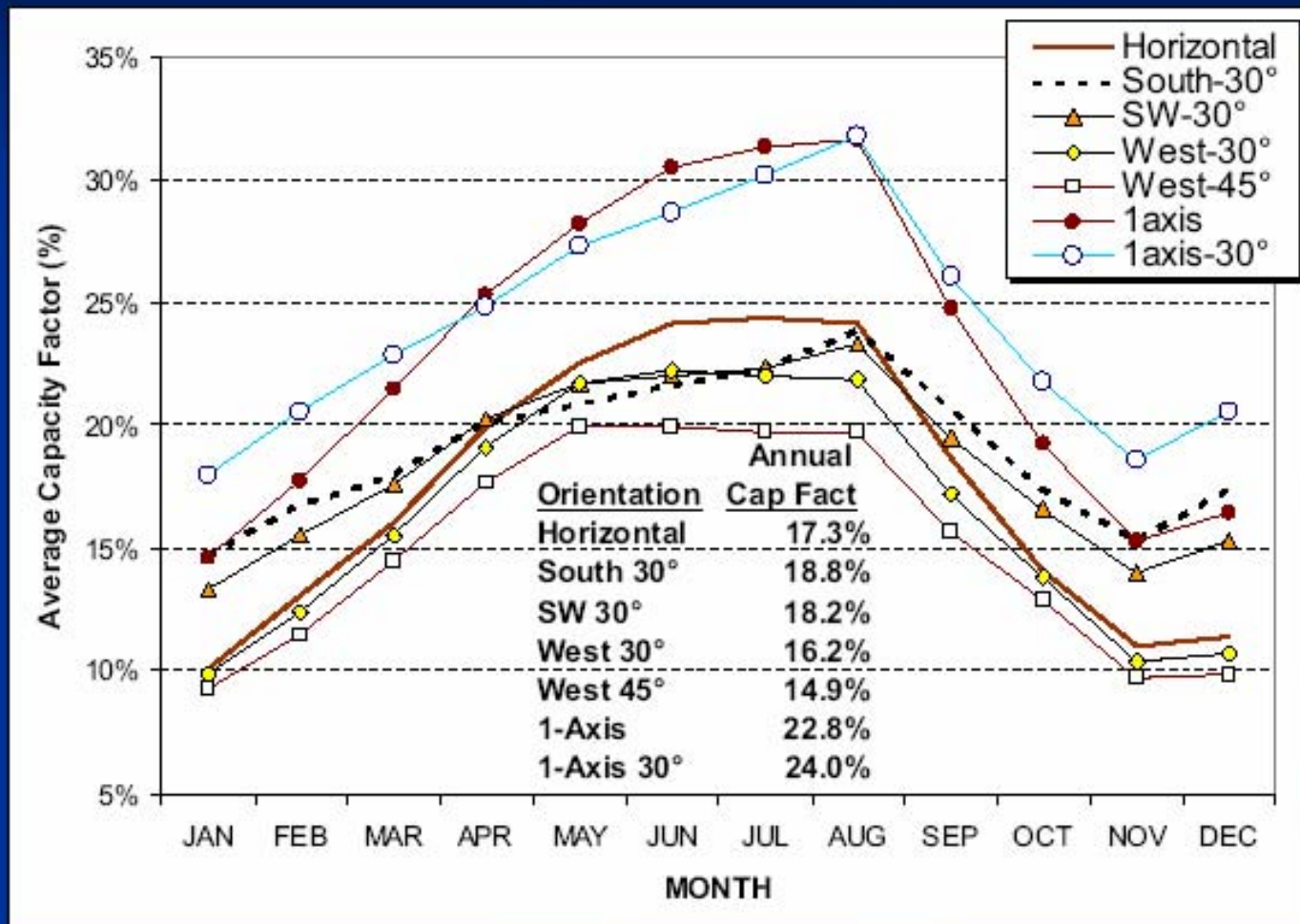


# Average Summer PV Output by Orientation (Fixed and 1 Axis Tracking)





# Average Monthly PV Capacity Factors



## Summary of Changes & Results South 30°

<u>Component</u>	<u>Input Change</u>	<u>Value Change</u>	<u>Driver</u>
Energy	+65%	+58%	Natural Gas Prices
Capacity	+46%	+44%	GT Capital Costs
Environ.	No Change		
T&D Deferral	No Change		
Loss Savings		+44%	Energy & Capacity

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

## 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
2006	Track	9.9	2,605
2007	Track	11.4	3,005
2008	Track	15.8	4,161

END