

Valuation and Pricing of Distributed Solar PV

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Value Propositions

Energy and Capacity

- Produces Energy on Intermittent Basis
- Capacity Value Depends on Production Coincidence with Demand
- Subsidies for DG Can Distort Wholesale Capacity and Energy Markets

Social Externalities, Environmental and Otherwise

- PV Units Themselves Produce Zero Emissions
- Promoting Solar Does Not Equal Reducing Emissions
- Impact of PV from Production Through Dispatch: Less Certain Impact
 - Chinese Market Dominance in Production
 - Effects on Dispatch and Other Generators Make Benefits Uncertain
 - Renewable Subsidies Leave More Room for Carbon Emitting Sources
- Potential Adverse Impact on Energy Efficiency Programs and Green Pricing
 - Utilities Move to More Fixed (non-bypassable) Costs
- Cross Subsidy from Less Affluent to More Affluent
- Adverse Impact on Large Scale Renewables

Reliability

- Subsidizing PV Sans Storage: Supports Less Reliability and Efficiency
- Reliability Gains Largely Go to Solar Hosts and Not to Systems
- Net-Metering and Other Pricing Deprive Distributors of Needed Revenues
- DG is Subject to Same Distribution Disturbances as Other Generation
 - Outages
 - Line Losses

Fuel Hedge

- Value Driven by Reliability and Availability at Peak Demands for Energy and Pipelines
- Value Relative to Storage, Financial Hedges, etc.
 - Subsidies Likely to Distort Hedge Product Market
- Aggregation of Solar DG Essential to Capturing System Hedge Value
- Hedge Value More Individual Than Systemic

Transmission

- Transmission Short Term Savings Possible
 - Savings Cannot Simply Be Assumed
 - Savings Occur When Production is Coincident with Congestion
- Transmission Long Term Savings
 - Theoretically Possible but Improbable

Optimal Pricing Option

- Solar DG Customers Pay Full Retail Rates for All Consumption
 - DG Customers Credited For All Production at LMP Rate
 - Captures Energy Value
 - Captures Transmission Savings
- Capacity Payments Possible Depending on Availability

Pricing Option In RPS Context

- Use All Renewable Auction
- Market Clearing Price Establishes Feed In Tariff