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