

Distributed Solar Generation: Value and Pricing

Utilities in a Time of Change and Challenge

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I. Value

- Economic
 - Energy Value Depends on Time of Production
 - Mostly Off Peak
 - Capacity Value Depends on Availability
 - Consequences of Non-Availability
 - Hedge Value Depends on Cost and Callability
 - High Price Could Exceed the Risk to be Hedged
 - Is it Really Callable?
 - Transmission Effects
 - Distribution Effects
 - Transaction Costs

I. Value (cont'd)

- Environment/Externalities
 - Effects on Consumer Behavior
 - What does it Displace?
 - Effect on Dispatch Order (California Duck Curve)
 - Environmental Choice vs. Technology Choice
 - Cost Effectiveness for Reducing Carbon

II. Pricing

Two Historically Valid Bases for Pricing Generation

1. Market Based
2. Cost Based (when market fails)

Options Under Debate for Pricing Solar D.G.

1. Net Metering
2. Value of Solar
3. Market Based

Net Metering

- Evolved as Default for No Longer Relevant Reasons
 - a. Primitive Meters
 - b. Insignificant Market Presence
 - a. Lacks Any Bases in Either Cost or Market
 - b. Compensates Wrong Party for Fixed System Costs
 - c. Provides No Incentive for Efficiency or Productivity (e.g. Southern Exposure)
 - d. Provides Windfall for Installer
 - e. Socially Regressive
 - f. Poor Subsidy Model (not targeted; no end)

Value of Solar

- Carbon is Priced by RGGI, so are Elevated Prices Rooted in Environmental Objectives or Technology Preferences?
- Needs to Account for Intermittency
- Environmental Value Based on What is Displaced
- Hedge Capacity and Energy Value
 - Discussed Above

Value of Solar (cont'd)

Transmission Value

- No Real Capacity Value
- Possible Congestion Value (or Cost)
- Least Cost Effective Use of Renewables for Carbon Reduction of All Renewables in U.S.
- Highly Objective Form of Pricing – Reminiscent of Avoided Cost Debates of 1980s
- Reliability – No System Benefits

Market Based

- LMP is Market Value of Energy and Congestion Reduction
- RGGI Internalizes Carbon into Energy Prices
- All Customers should Pay Demand and Fixed Costs they Impose
- Capacity Payments are Fine if Symmetrically Based (i.e. penalties for Non-Performance)
- Provides Incentive for Productivity Gains (e.g. Western Exposure)
- Provides Incentives for Passing on Declining Panel Costs to Consumers Rather than Allowing Installers to Retain Them