

# Distributed Solar Generation: Value and Pricing

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# I. Value

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- 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)

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- 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

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### 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

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- 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

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- 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)

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## 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

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- 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