

# Lead Commissioner Workshop on Renewable Energy Costs

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# Introduction

- What affects the range of costs for renewables in California? What have been recent trends? What are important regional differences?
- What are important non-technological factors to consider? Financing terms? Tax policies?
- What are other important events and trends to consider?

Focus on framing these issues

# Developing Assessments for Policymaking Consumers

- Importance of perspective; multitude of factors that affect costs and value
  - Choosing an “average” or an “expected” outcome can obscure real policy choices or constraints
    - E.g., several federal renewable tax credits are set to expire which will affect future cost trends, but renewal is highly uncertain
- Cost presentations need to be transparent about those assumptions so policy makers can discern the issues that they need to focus on e.g., how the expiration of federal tax credits might affect resource planning decisions
- Understanding the reasons for a cost range is important for decision makers, so the range should be segmented into digestible pieces with clear delineations



# Principles for Comparing “Costs”

- The “value” and “cost” for renewables are not necessarily the same
- Now there are many attributes from power plants and the bundling of those attributes will affect both costs and values (e.g., load following capability versus GHG reductions)
- “Market” prices seen in power purchase agreements (PPA) can diverge from “costs” for many reasons
- We need to be careful moving from project specific terms for *investing* purposes to generalized cost assumptions for *planning*

# Distinguishing Value, Cost and Market Price

- Value depends on the needs of the system and the attributes delivered
- Cost can be expressed with different dimensions and is only part of the value equation
- Market or contract prices and terms are set by market and regulatory conditions of the moment



# Valuation of Multiple Attributes

- Use to be simply capacity and energy as a single technology—heavy turbine—dominated
- Now have multiple needs and constraints: a “MW” may no longer equals a MW
- Different dollars for different bundles of attributes, so any cost comparisons must be made carefully

# Market or Contract Prices Don't Necessarily Equal Cost or Value

- Market or contract “price” may reflect
  - a single year out of a string of years
  - pricing for a single segment of the market, such as the real time market or a capacity payment
  - part of a larger portfolio strategy
- Expect market prices to converge with costs, but valuation affects this trend

# Bottom Line Cost Measure Affected by Many Factors

- “Technology” cost actually a bundle of individual costs.

Examples:

- Solar PV – panel costs falling rapidly, but BOS costs stable
- Wind – Site conditions highly variable, and biased by optimism
- Differences in performance characteristics
  - Capacity factor, peak MW output, intermittency assumptions, emission rates
- Financing terms
  - Availability and restrictions on debt financing
  - Rates and terms on equity and debt
- Tax issues
  - Federal tax credits and deductions – time horizon and renewal prospects
  - State property tax exemption – continuation and what’s subject to tax?
  - Sales tax – what share of costs are taxable? Point of sale or title transfer?



# Policy Factors Likely to Drive Costs

- RPS eligibility
- GHG reduction credits
- DRECP considerations
- Sustainability of Chinese solar industry and trade sanctions



# Questions or Comments

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