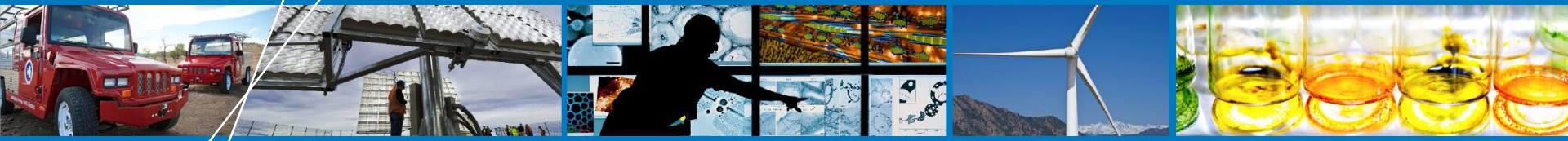
NREL
NATIONAL RENEWABLE ENERGY LABORATORY

BERKELEY LAB
Lawrence Berkeley National Laboratory

RPS Cost Estimation Methodologies and Issues: Introductory Remarks



Galen Barbose and Lori Bird

National RPS Summit
September 23, 2014

Framing the discussion

A basic distinction

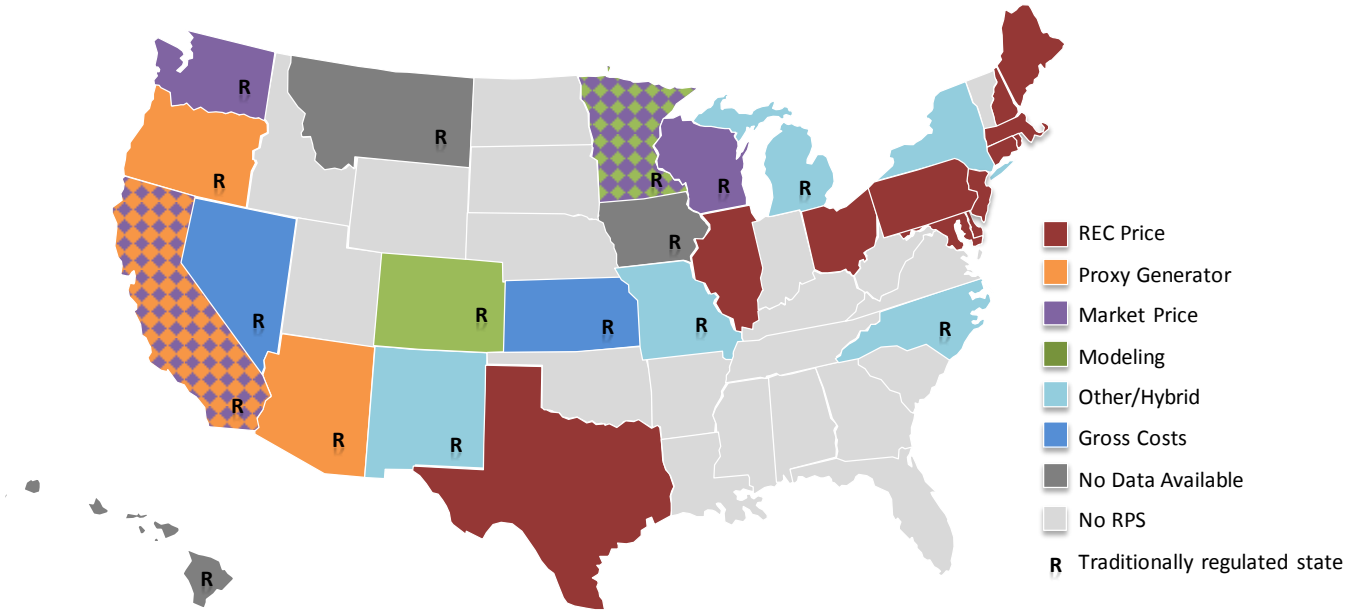
- **Gross costs:** Total costs associated with RPS procurement
- **Incremental cost:** Net costs relative to what would have occurred in the absence of the RPS (e.g., gross costs minus avoided costs)

What gets counted and how it gets counted may depend on:

- **The purpose of the cost calculation:** Periodic program evaluations, utility compliance reports/plans that demonstrate compliance with cost cap, utility filings for RPS tariff riders, PUC reports to legislature
- **The boundaries of the analysis:** i.e., costs/benefits to whom – the utility/LSE, ratepayers, or society as a whole?
- **Statutory requirements and administrative rules**
- **Market structure and RPS compliance mechanisms** (i.e., restructured vs. regulated states)

Widely varying approaches in use

- **Restructured states:** Can estimate incremental costs based on REC and ACP prices (plus other costs and benefits, if desired)
- **Regulated states:** Utilities and PUCs use varying methods (and hybrids) for estimating avoided costs
  - Proxy generator: Levelized cost of generator displaced by RPS resources
  - Market price: Cost of wholesale power (and capacity)
  - Modeling: Compare system costs with and without RPS resources



California: A Potent Illustration

- **California PUC RPS cost reports includes two alternate methods for computing avoided costs from RPS procurement :**
  1. Proxy Generator: Estimated all-in cost of a CCGT (Market Price Referent, MPR)
  2. Market Price: CAISO energy and capacity market prices in the compliance year
- **Incremental cost estimates diverge widely between methods**
- **CPUC criticism of market price approach:** Even existing large hydro and nuclear wouldn't be cost-effective by that measure; plus, utilities would never purchase 20% of load via spot market

Year	RPS Procurement (% of Retail Sales)	RPS Compliance Cost (% of Retail Rates)	
		Proxy Generator (MPR) Approach	Market Price Approach
2011	20%	-3.6%	6.5%
2012	20%	-0.6%	7.5%

Some Issues

- **General**
  - What RE costs to include – integration, transmission, admin costs?
  - What benefits to include – avoided carbon, other avoided emissions, econ development, water?
- **Restructured states**
  - Source of REC prices? Rely directly on spot prices or PUC collects actual REC costs from suppliers
  - How to deal with bundled contracts?
  - Include wholesale price suppression benefits?
- **Regulated states**
  - Choice of method: proxy generator, market prices, modeling, hybrid, etc.
  - What to assume for avoided capacity costs?
  - Timeframe of analysis: short-run vs. long-run avoided costs
  - Treatment of pre-RPS renewable generation
  - How/whether to account for costs of over-procurement?
  - How to account for costs of up-front incentives?