NARUC Winter Policy Summit

Committee on Energy Resources and the Environment

STRATEGEN CONSULTING

Distributed Energy Resources in the Wholesale Market

February 12, 2018

Lon Huber

About Strategen

Certified WBENC Women's Business Enterprise WOMEN OWNED™

Strategies for clean energy

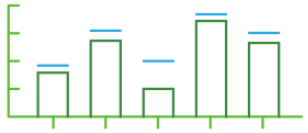
Strategen provides insight to global corporations, utilities and public sector leaders, helping them to develop impactful and sustainable clean energy strategies

CLIENTS

We work with governments, utilities, research institutions, technology providers, project developers, and large energy users seeking to evaluate and implement next generation grid and clean energy technologies.

MARKETS

Our exclusive focus on clean energy and advanced grid technologies means we bring our clients a sophisticated understanding of industry trends, market drivers and regulatory policy.



SERVICES

Our clients come to us for our expertise in developing business models, commercial strategies, financing tools and regulatory support that empower them to create sustainable value and long-term solutions.

TEAM

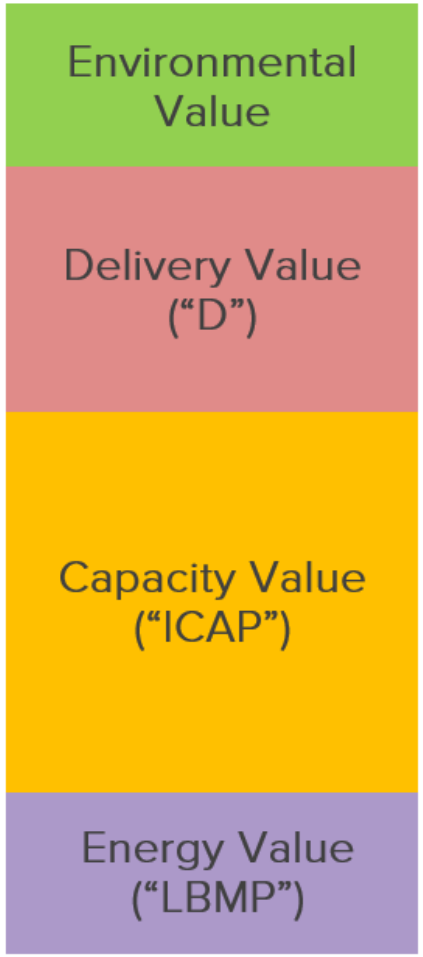
Our team is comprised of well-respected thought leaders and industry experts who have played instrumental roles in shaping the power sector's transformation in the 21st century.

We are experts in power sector strategy. Our track record and networks are unmatched in the business.

- Cost/benefit analysis
- Market entry
- Public proceeding support
- Regulatory strategy
- Product development
- Grid resource planning and procurement
- Stakeholder engagement and education
- Mergers and acquisitions

V-DER Tariffs – A proxy to wholesale market participation?

New York: V-DER Stack



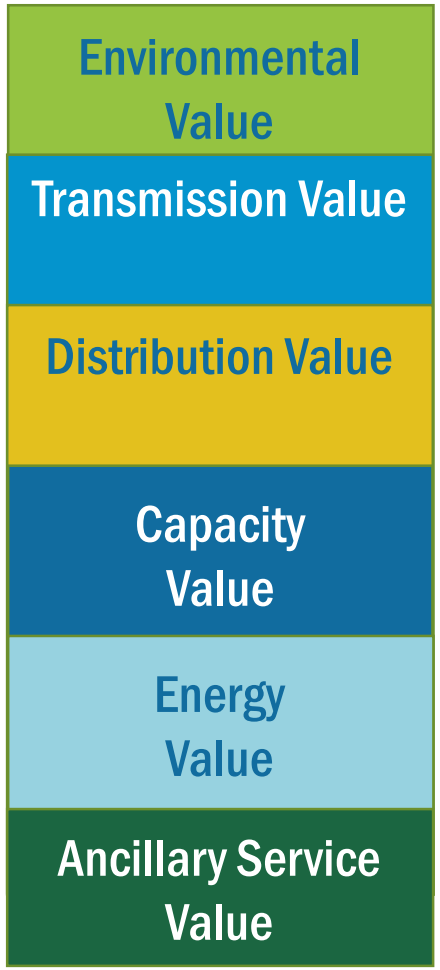
- Value of environmental attributes of the generation.
- Based on higher of the latest CES Tier 1 Renewable Energy Certificates (RECs) in New York Market or the Societal Cost of Carbon.

- Value of avoided delivery system costs due to demand reduction
- Basic "Demand Reduction Value" linked to $/kW-year determined from utility Marginal Cost of Service (MCOS) studies
- Can be enhanced with "Locational System Relief Value" in specific high-value locations

- Value of avoided capacity costs
- Dispatchable (e.g. storage) and intermittent (e.g. PV) technologies treated differently
  - Dispatchable Technologies: MW production (ex-post during peak hour) X ICAP Spot Price (month)
  - Intermittent Technologies:
    - Alternative 1 - (default) spread across all hours of year
    - Alternative 2 - Higher rate but paid only on injection during 60 summer hours 2-7pm June-Aug

- Reflects the avoided cost of energy purchases (and avoided line losses).
- Based on actual Day Ahead NYISO LBMP Energy Prices (varies by hour and location).

New England: V-DER Stack?



- Value of environmental attributes of the generation
  - Value of RECs to meet NH RPS requirements or sell into MA SREC market
  - Impacts on RGGI allowances needed/arbitraged
- Value of avoided transmission system costs due to demand reduction
  - ISO-NE transmission regional network system (RNS) charges
  - ISO-NE reliability and administrative charges
- TBD
- Value of avoided capacity costs
  - ISO-NE net regional clearing price * DER's prior year coincident peak
  - Demand reduction induced price effects (DRIPE)
- Reflects the avoided cost of energy purchases (and avoided line losses)
  - ISO-NE real-time NH Nodal LMP Energy Prices (5 min intervals)
  - Demand reduction induced price effects (DRIPE)
- Reflects the avoided cost of ancillary service purchases
  - ISO-NE ancillary market charge * overall load

Thank you!

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