



Comprehensive Mitigation Review Options:

Forward Clean Energy Market

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A POWERFUL MODEL THAT PUTS CUSTOMER FIRST

A POWERFUL PURPOSE

We are an energy company powered by people and built on dynamic retail brands with diverse generation resources.

We bring the power of energy to people and organizations.

SUSTAINABLE COMMITMENTS



50%
reduction in carbon emissions by 2025



Net zero
Emissions by 2050

COMMUNITY HIGHLIGHTS



300+
Nonprofits served by NRG volunteers

16,000+
Total volunteer hours in 2018¹

¹Data taken from the 2018 PositiveNRG recap

INDUSTRY LEADER



A Fortune



Over



Over

500

COMPANY

\$9 Bn

IN REVENUE

4,500

FULL-TIME EMPLOYEES

INTEGRATED PLATFORM



Powering the country with a diverse, competitive energy portfolio

- Approximately 23,000 MW of generation
- Over 35 generating assets in 8 states
- Natural gas, coal, oil, nuclear, renewables



Delivering customized electricity solutions for business

- Energy plans
- Energy systems
- Energy efficiency



Providing energy to retail customers across the nation

- Approximately 3.7 million customers large and small¹
- Serving 67 TWhs by our retail brands (2018)

1. Projected count including Stream customer portfolio.



The State(s) of Play

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- At least 29 states have a binding renewable portfolio standard that legally obliges (some part of) the power business to (buy or sell) a certain percentage of their electricity from qualifying, usually zero-carbon resources.
 - Observe that goals are accelerating in many regions
 - In-state preferences, technology carve-outs have resulted in a crazy-quilt of policies

State-led procurements too often *shift risks to customers* instead of appropriately allocating it to project owners or counterparties incentivized to manage/hedge that risk.

- Compensate new or existing power projects on a
 - Fixed basis for 'as available' energy deliveries; or are,
 - Based on a 'revenue requirement' similar to classic utility regulation, but with less transparency & the same task of determining the "right" rate of return
- Terms so long that it locks consumers into these bets, shifting risk to them
- Often with financially indifferent counterparty
- Often contain weak damage/substitutions provisions
- Have little/no regional framework

Improving: Forward Clean Energy Market



- This concept grew out of the ISO-NE's "Integrating Markets & Public Policy" (IMAPP) process
- Adapted and further defined by Brattle Group for NRG
- A good idea whose time has come?



- A Forward Clean Energy Market is a trade in Clean Energy Attribute Credits (CEAC),
 - Like RECs a 1-for-1 match to a MWh of physical production
 - Unlike RECs would encompass all clean-energy resources
 - Can be enhanced by making them “dynamic,” tied to the marginal emissions prevailing during the time of a CEAC’s creation
- State demand would be expressed by a volume-and-price bid, anchored around
 - the state’s clean-energy procurement requirement and
 - the state’s reference price (*eg.*, social cost of carbon or a legislative price cap, etc.)
- Multiple states’ participation + voluntary actors (cities & customers) allow for the market to scale up.

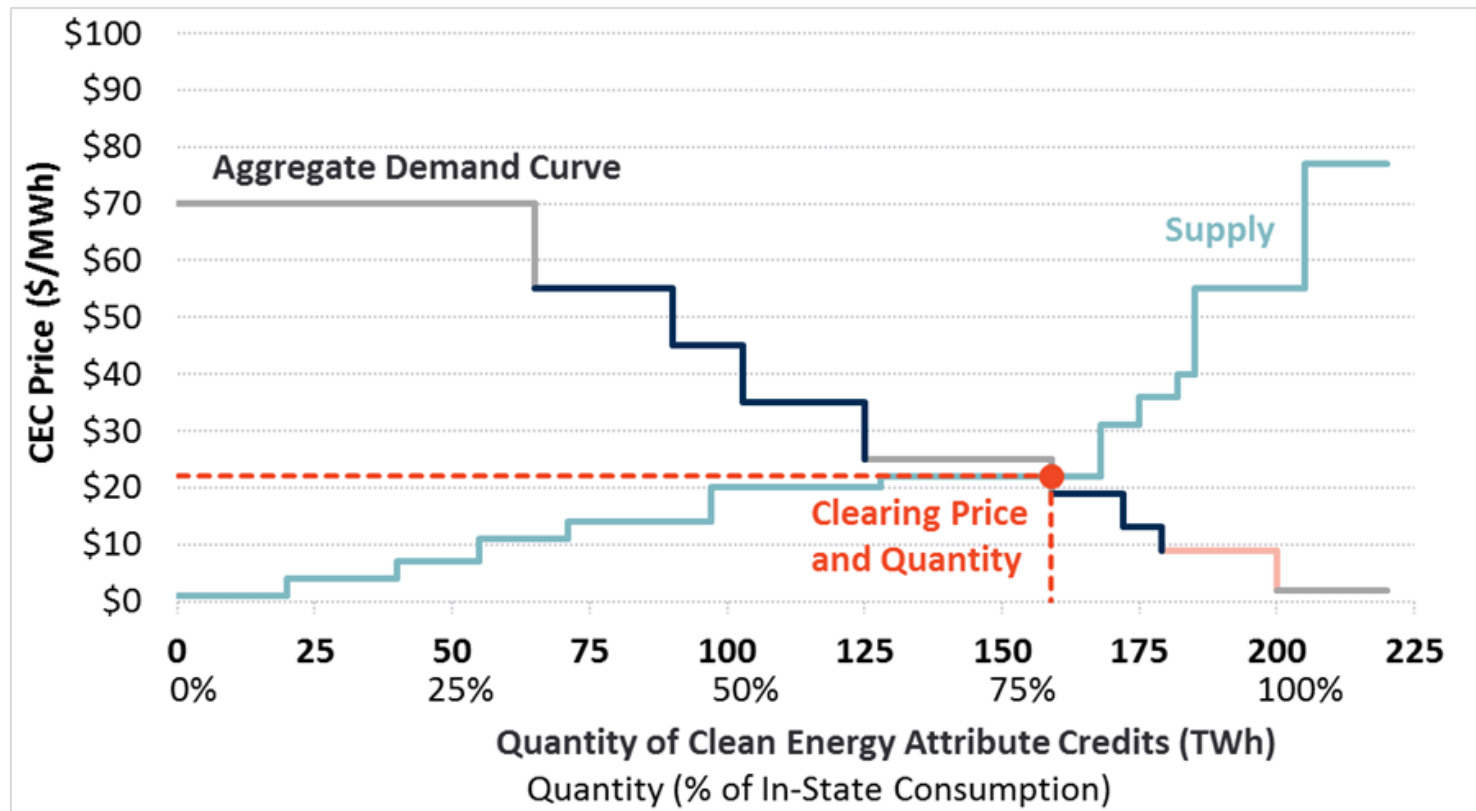
- An annual auction, 3 years forward
 - Spot auction before compliance period to allow trade for residuals
 - Banking permitted to encourage early adoption/smooth pricing/project formation
 - Borrows from (and complementary with) existing capacity auctions



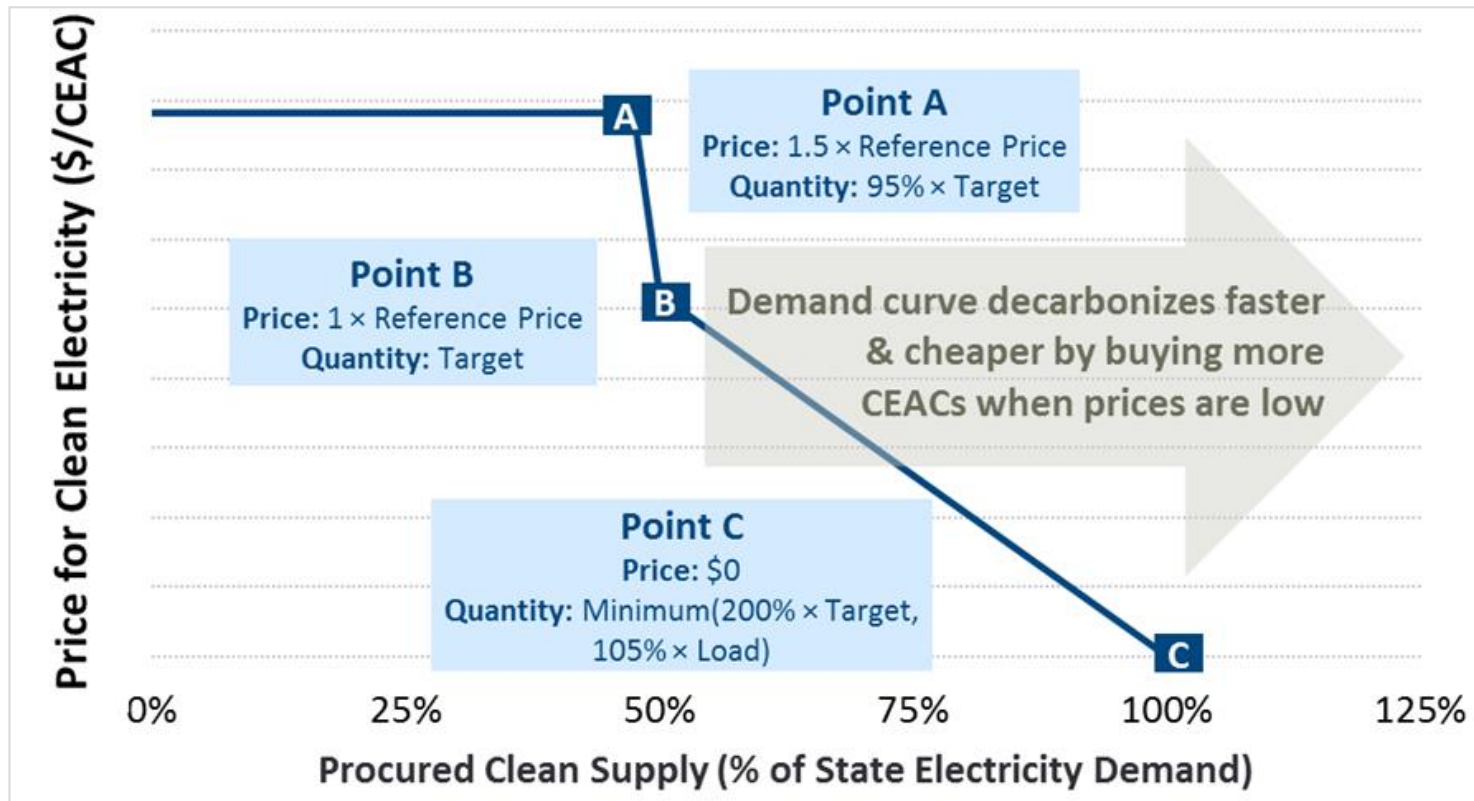
- 7-year “price lock” for new resources

Clearing the Market

- Different buyers all have a different willingness to pay.
- A central market accommodates these, and ensures that those willing to pay more are not simply paying more for less—but *getting more* because of that willingness to pay.



Illustrative sloped demand curve & reference price based on SCC

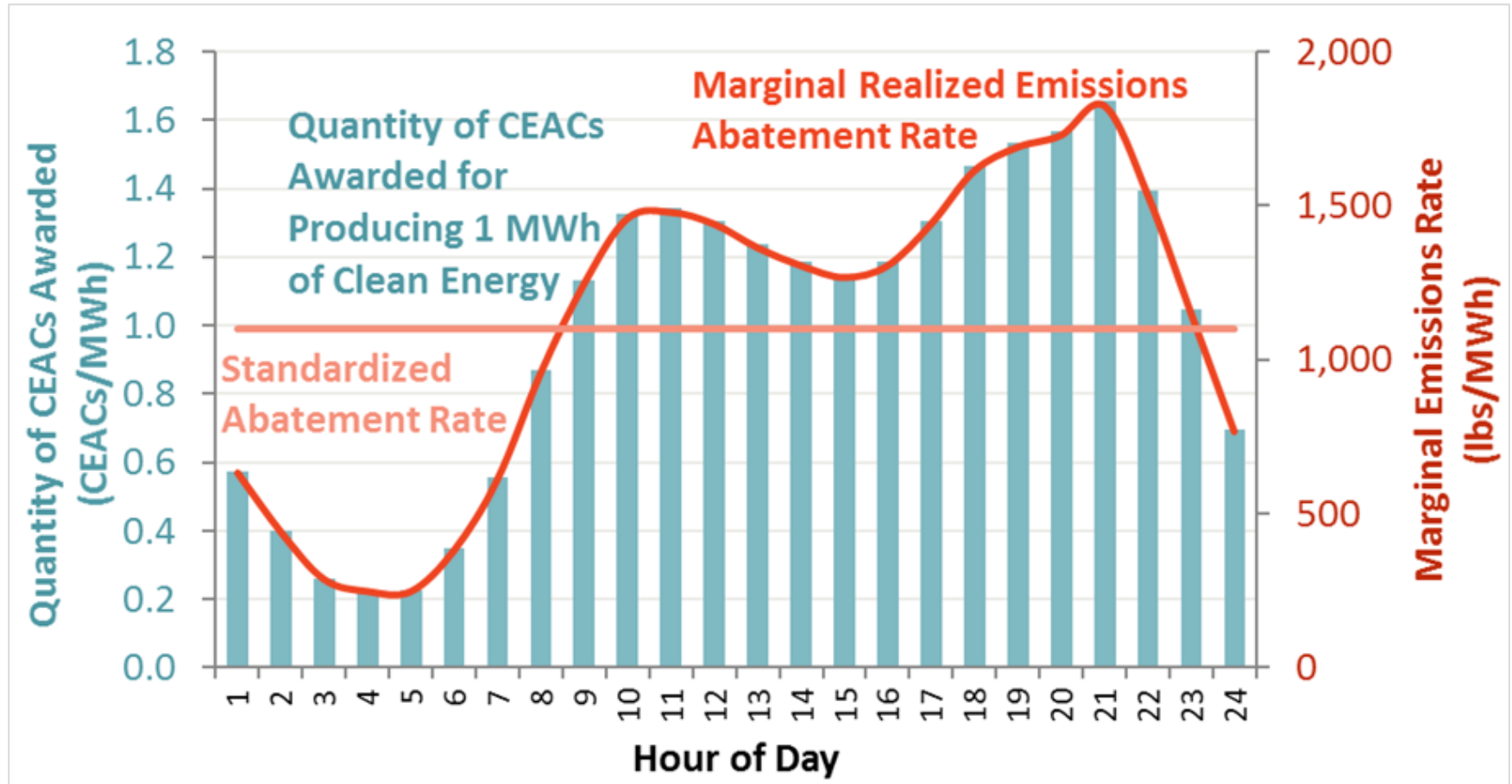


Year	Social Cost of Carbon (\$/ton)
2020	\$47.25
2025	\$51.75
2030	\$56.25
2035	\$61.87
2040	\$67.49
2045	\$71.99
2050	\$77.62

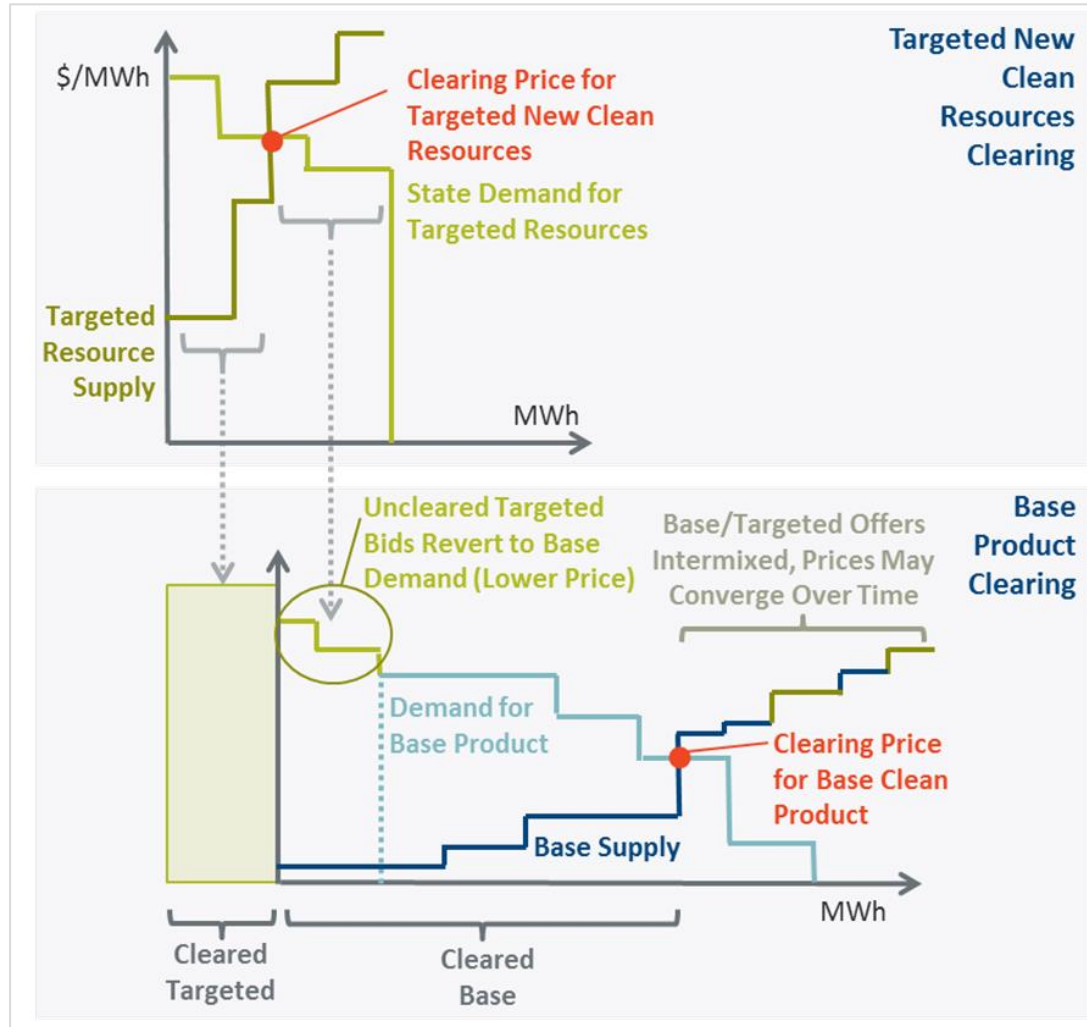
Source: Interagency Working Group on Social Cost of Carbon (updated 2016, revd for 2019 real dollars).



One (complicating but positive) enhancement



Possible modification for technology carveouts



- Faster and cheaper decarbonization than alternatives
 - By driving accelerated decarbonization through sloped demand curve + banking provisions in earlier years before compliance requirement binds
- Less risk for consumers vs. long-term, *ad hoc* contracting
- Strength in numbers – distribution of risk to many buyers/sellers; avoids lumpiness.
 - State policies less dependent on individual project non-performance; projects not as subject to counterparty bankruptcy (*eg.*, PG&E)
 - Easier platform for smaller buyers (munis, corporates) to buy from
- A more level playing field between existing and new resources who provide the same thing (zero-carbon energy)
- Sends a stronger signal to developers to site projects where energy & capacity are most valuable
- RTO-operated, state demand-determined design can avoid conflict that meets state goals while compatible with jurisdictional matters