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National Grid IPPTF Proposal

Dynamic Forward Clean Energy Market (DFCEM)

National Grid Principles of IPPTF

- National Grid supports the IPPTF process and wants to contribute as an active stakeholder

- Wholesale market mechanisms are the most cost effective manner of accomplishing public policy goals

- Any solution chosen by IPPTF to harmonize wholesale markets with public policies should be calibrated to meet public policy goals

  - If not, deciding between solutions will be impossible

- National Grid believes public policy goals should be defined by the energy sector component of the NY State Energy Plan (80% emissions reductions by 2050)

Shortcomings of a Carbon Adder

November 30th comments on Carbon Adder proposal:

1. "[A carbon adder] may not lead to strong enough price signals to encourage sufficient zero-emission generation build in the immediate future to fully meet [NY Public Policy] goals."

2. "[A Carbon Adder] lacks a forward investment signal, which has the potential to increase customer bills immediately but not result in substantial and immediate zero-emission resource investment needed to meet Public Policy goals because of investor aversion to energy market volatility."

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# Dynamic Forward Clean Energy Market

- An alternative (or complement) to a carbon adder

- NYISO-administered REC auction with dynamic pricing

- Demand is set by public policy goals (80x50)

- Zero-emitting resources (ZER) offer into a <u>reverse auction</u>

- <u>"Anchor Price"</u> is set by lowest marginal cost ZER needed to meet demand

- Ensures <u>financeability</u> because auction is run on a forward basis
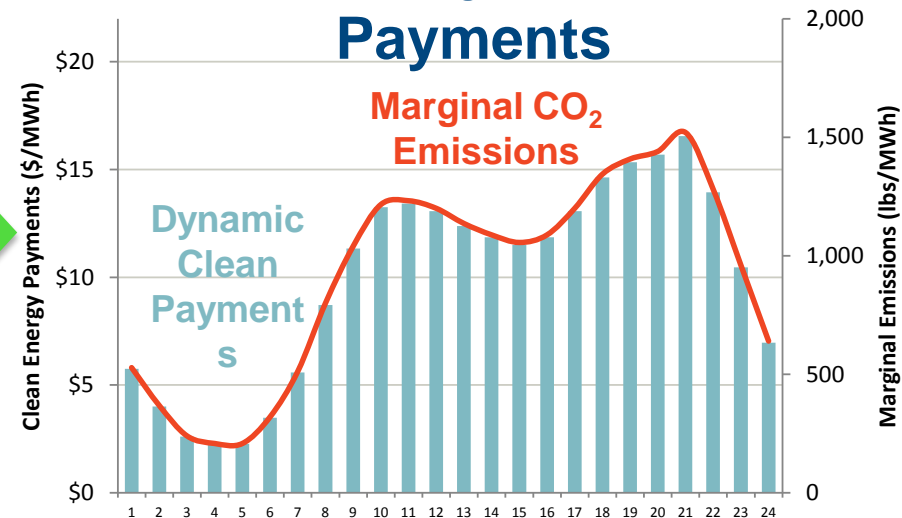
"Dynamic" Clean Energy Payments [1]

The centerpiece of this design proposal is a new "carbon-linked" dynamic clean energy payment

Illustrative Traditional REC-Payments
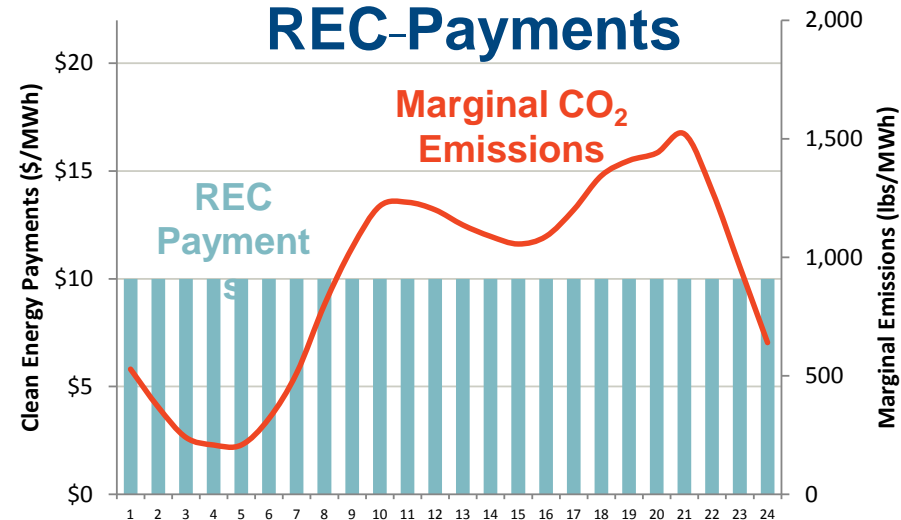
- Flat payments over every hour
- Incentive to offer at negative energy prices during excess energy hours

Illustrative "Dynamic" Clean Payments

- Payments scale in proportion to marginal CO_2 emissions
- Incentive to produce clean energy when and where it avoids the most CO_2 emissions
- No incremental incentive to offer at negative prices

1 The Brattle Group, "A Dynamic Clean Energy Market", 2017: http://www.nepool.com/uploads/IMAPP_20170517_LT_Straw_Dynam_Clean_Energy_Market.pdf
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DFCEM Payments

- DFCEM payments are based on efficacy of ZERs avoiding emissions at time and place of generation.

Payment = MWh * Anchor Price * (MER/RER)

- MER = Marginal Emissions Rate (i.e. average zonal emissions rate)

- RER = Reference Emissions Rate (i.e. avg. state emissions rate)

- Energy payment is determined based on the MER at the location and time a ZER generates

Locational Incentives for Clean Energy [1]

Location-specific payments will focus incentives to develop new clean energy where they will displace the most CO_2 emissions

Low-Emitting Location

Generation pocket that is already saturated with wind. New clean energy will mostly displace the generation of existing wind resources (and will earn fewer payments)

Dynamic Clean Payments ($/MWh)

Anchor Price

Realized Payments
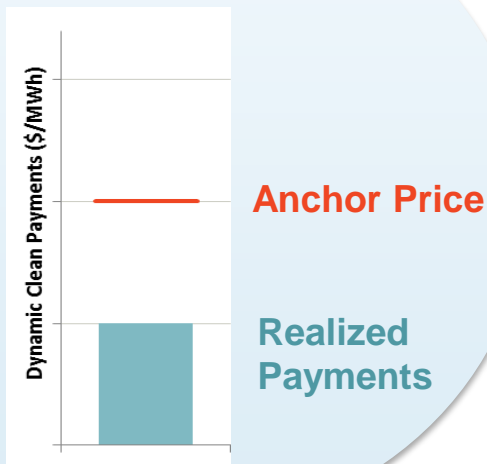
High-Emitting Location

Load pocket where high-emitting steam oil units are often called on. Clean energy will displace more emissions (and earn more payments)

Dynamic Clean Payments ($/MWh)

Realized Payments

Anchor Price

1 The Brattle Group, "A Dynamic Clean Energy Market", 2017:
http://www.nepool.com/uploads/IMAPP_20170517_LT_Straw_Dynam_Clean_Energy_Market.pdf

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Other issues

- Demand-setting process

- Deliverability rights

- Price certainty

- ICAP Market Mitigation

- Carbon Adder and DFCEM – a Dual Solution