Renewable Energy Credits

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Before Senate Finance Committee

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Overview

- Renewable requirements
  - Renewable Energy Credits (RECs) are used to demonstrate compliance
- RECs: A mechanism to enable regional trading
  - What are RECs?
  - Why are RECs important?
  - How do RECs work?
- REC pricing

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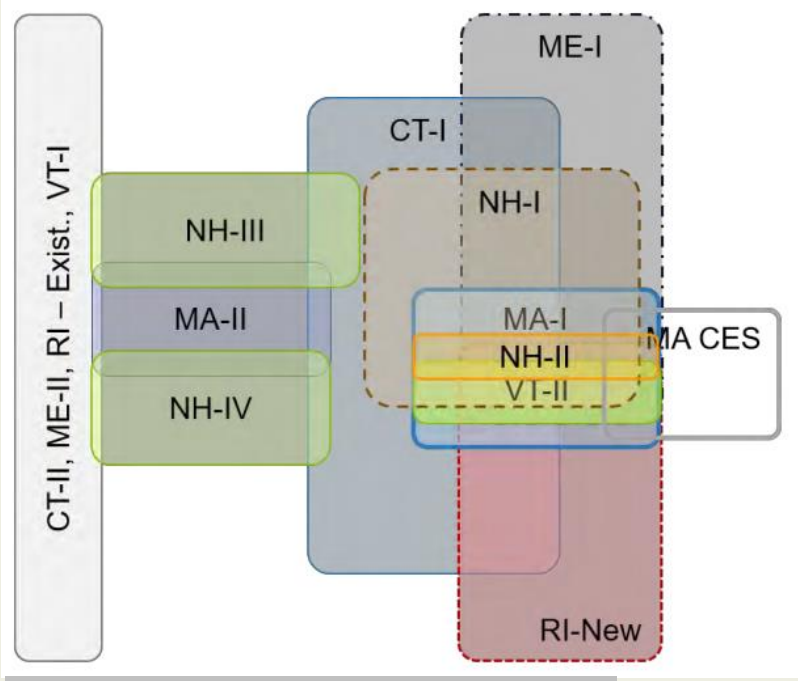
Renewable Requirements

- States set policy regarding the amount, type and pace of renewable requirements, often with a *Renewable Portfolio Standard*
- RECs are a market mechanism that enable the tracking and trading of renewable attributes
- Vermont: Renewable Energy Standard (RES)
  - Enacted in 2015, compliance started 2017 with requirements increasing annually
  - Tiers I and II require retirement of RECs
    - All other states in the region also require retirement of RECs for compliance
- Additionally, MA has adopted a Clean Energy Standards (CES) that focuses on emissions rather than renewability. HQ is eligible is an eligible resource.

New England Renewable Requirements



Source: Green Mountain Power 2018 Integrated Resource Plan

VT Tier I (existing):

- Total renewables requirement
- Broad eligibility, similar to Maine-II, Connecticut-II, and RI-Existing

+ unique to VT Tier I: Hydro-Quebec attributes

➔ supply of VT Tier I resources > supply of other existing renewable requirements

VT Tier II (premium):

- Similar prices to Class I; Tier II is a subset of Class I
- Narrow eligibility requirements: capacity < 5MW, commissioned after 6/30/2015, and in Vermont
- VT Tier II resources are a small subset of regional premium REC resources, whereas premium RECs in other states include larger resources with online dates prior to 2015.

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RES Compliance

- RECs are used to demonstrate annual compliance
- By August 31, utilities submit a compliance report showing:
  - Annual retail sales (kWh) for the previous year
  - RES requirement
  - RECs retired
  - RECs banked
- RECs are associated with the calendar year that the energy was generated, called “vintage”

What is a Renewable Energy Credit (REC)?

- The environmental attribute from a MWh of generation by a qualified renewable resource
- Energy (MWh) and attributes (RECs) can be separated and traded independent of each other
- Each MWh of energy generated in New England has an associated environmental attribute

ENERGY: power is generated and sent to the grid or used to offset customers' electricity usage. ISO-NE operates and manages the energy market in New England--the origin and destination of the energy are not tracked.

RECs: the environmental attributes associated with the generation. NEPOOL GIS is the platform in New England where RECs are created, traded and retired.

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Why do we need RECs?

- RECs are the tool used for accounting, tracking and assigning ownership of renewable attributes.
  - Creates fungible commodity that can be traded
  - Creates uniform system for ensuring that there is no double counting
  - Allow for the transfer and tracking of ownership in NEPOOL GIS
- The ownership of a REC provides the right to claim the associated renewability.
- RES compliance is demonstrated through REC retirements.

How do RECs work?

- An eligible renewable resource can qualify its generation in different states such that attributes associated with that resource receive a “REC” designation.
  - Attributes from one resource may be qualified RECs in multiple states
- When a MWh of energy is generated by a qualified resource, a corresponding REC is “minted” in NEPOOL GIS.
- Certificates can be transferred between counterparties or retired for compliance and/or voluntary purposes, but certificates CANNOT be duplicated.
- RES compliance can be met by purchasing RECs and does not require the physical energy from the renewable resources.

What is REC trading?

- REC trading is the transfer of ownership of RECs
- REC market participants include utilities with compliance obligations, generators and speculators
- Trades can be direct (between two counterparties), arranged by a broker, through an auction, or an RFP
- Trades can range from short-term RECs only purchase for immediate delivery to long-term (20+ years) bundled Purchase Power Agreements for energy, capacity, RECs and other products.

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NEPOOL GIS

The NEPOOL GIS issues and tracks certificates for all MWh of generation and load produced in the ISO New England control area, as well as imported MWh from adjacent control areas.

Regulators, such as the PSD, have access to reports in NEPOOL GIS to verify utility compliance

For each resource, NEPOOL GIS tracks several attributes, including:

* Plant Name
* GIS Unit ID
* Facility location
* Project vintage (build date)
* Certificate unique identification number
* Project name
* Fuel type
* Nameplate capacity of project
* Certificate (generation) vintage
* RPS/ RES eligibility

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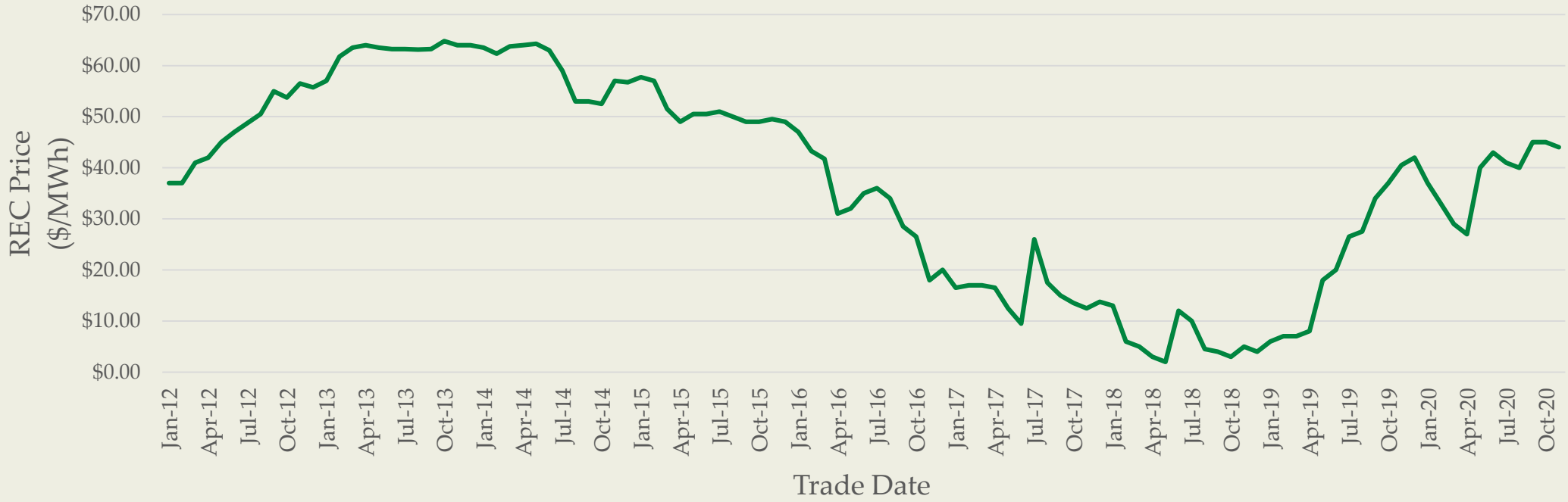
REC Pricing

- Theory: REC price = Cost to build RE – market revenues (energy, capacity, ancillary services, etc.)
- Reality: REC prices are determined by supply and demand
- Different Tier/Class eligibility means different values
- Similar markets tend to have similar pricing
  - VT Tier I, ME-Existing, RI-Existing all currently trade $0.50 - $2/REC
  - VT Tier II, CT-I, MA-I, NH-I, & RI-I all currently trade $40/REC
- REC markets are volatile-- the commissioning or delays of large resources or changes in requirements can have a significant impact on supply and demand and result in large price swings

Historical Prices

MA Class I RECs



Source: GT Environmental REC Brokers

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REC Arbitrage

Arbitrage: the near-simultaneous buying and selling of commodities in different markets in order to take advantage of different prices for the same or similar assets.

REC arbitrage occurs when RECs from one project are sold and replaced by less expensive RECs from another project.

A VERMONT EXAMPLE

Project	Kingdom Community Wind
Owners	Vermont Utility Owned– GMP & VEC
Location	Lowell, VT
Commissioning Date	November 2012
Type	Wind
Size	63 MW
REC Qualifications	VT Tier I, CT-I, MA-I, MA CES, RI-new
Class I REC price (v18)	max: $45/ REC; min: $3/REC
VT Tier I cost	avg reported 2018 cost: $0.50/REC

Annual generation of 160,500 MWh. Utilities could (1) retire or (2) sell the RECs.

(1) Retirement for Tier I compliance: value = $80,250
(2) Sell into the MA, CT, or RI REC markets:
REC revenue = 160,500 x $23/REC = $3.7M
Tier I expense = 160,500 x $0.50/REC = $80,250
→ Net benefit to Vermonters = $3.6M

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Questions?

Additional information can be found in the PSD's

2021 Annual Energy Report

Appendix D: Renewable Energy Programs Report