

Technical Analysis of a 100% Renewable or Clean Energy Standard Requirement for Vermont Distribution Utilities: Stakeholder Advisory Group Kick-Off Meeting

Sustainable Energy Advantage, LLC July 21, 2023

Agenda

Introductions & Agenda Overview (10-10:25am)

- Public Service Department, Sustainable Energy Advantage, Stakeholder Advisory Group
- Expected Meeting/Process Norms
- -Why are we here? (Context)

What are we trying to accomplish? (10:25-11:15)

-Overview of Schedule, Methodology, Study Approach -Modeling Considerations, including Sensitivities

Non-Member Comments (11:15-11:25)

Next Steps (11:25-11:30)

Meeting Etiquette & Process

Respect – Come with open mind to suggestions and thoughts from different perspectives. This includes the chat.

The Department needs input from stakeholders to make this technical analysis robust and understand all perspectives. **The Department has final decision-making authority**. For valid opinions that are not ultimately modeled

Members - cameras on if possible.

Non-Members, cameras off unless speaking at dedicated times in meetings to hear comments. Time will be allocated based on number of people that would like to speak and available time.

Context

This technical analysis is part of an effort by the Public Service Depart **to review our current state electricity policies and programs,** as recommended by the state Comprehensive Energy Plan and Climate Action Plan.

Throughout the process the Department **is engaging Vermonters** to better understand what they think is important in our state electricity policies and programs.



Objectives

- Overall Objectives:
 - SEA: To provide targeted analysis in support of informed RES/CES policy decision-making
 - Supported by expertise in policy design and analysis of regional renewable/clean energy markets
 - **SAG: To provide <u>prioritized</u> feedback on potential RES/CES design elements**, analytical assumptions, and all Scenario definitions... *Which parameters are most important to you?*
 - Objective = arrive at consensus on scenario definitions 5 and 6 (see later slide)
- Meeting Objective
 - Initiate PSD/SAG/SEA collaborative process, with a focus on:
 - Analytical approach & schedule
 - Identifying RES/CES design elements for consideration in analysis
- What is beyond the scope of this technical analysis?
 - Tier III
 - Drafting proposed legislation or regulation \rightarrow that comes *next*.
 - Once complete, this technical analysis can be used to inform policy proposals.



Schedule: Overview Detailed workplan provided separately

Milestone & Description	Event or Due Date	
Stakeholder Advisory Group (SAG) Kick-Off Meeting (virtual)	Friday July 21 st	
SAG comments on Work Plan (by email)	By close of business Wednesday July 26th	
SEA to provide revised Work Plan + meeting minutes (by email)	By close of business Friday July 28th	
2 nd SAG Meeting (virtual)	Targeting the week of July 31 st or August 7 th . A poll is outstanding.	
(Agenda = discuss and agree on scenario definitions)		
'Business as Usual (BAU) Baseline' Inputs & Assumptions, and	On or about August 11 th	
Draft Scenario & Sensitivity Definitions		
3 rd SAG Meeting (virtual)	TBD – likely late August	
Final Scenario & Sensitivity Definitions	On or about August 31 st	
Scenario Evaluation	Draft: September 29 th	
(i.e., quantitative modeling, QC and preparation of results)	Final: November 3 rd	
Public Presentation of Results (virtual)	Draft: October – timing TBD	
	Final: November – timing TBD	



Methodology

- Start by *identifying* RES/CES policy design *issues* & *options* ➤ Targets, tiers, timing, eligibility (vintage, size, etc...)
- 2. Prioritize policy design parameters based on policymaker and stakeholder engagement
- **3.** Evaluate implications of variations in <u>key</u> (i.e., prioritized) RES/CES policy design parameters; i.e., design scenarios and sensitivities to evaluate the specific questions we are trying to answer



Approach: Scenario Design & Assumptions (1)

• Six Scenarios

- 4 scenarios (plus variants) were described in the RFP that preceded this step in the process and reflected stakeholder input. Are these the right scenarios? Do they reflect stakeholders' top priority questions?
- Up to two more scenarios can be modeled following input from the Stakeholder Advisory Group on priorities
- SEA to facilitate discussion of modeling approach, inputs, and considerations for all scenarios
- Sensitivities: will evaluate the impact (on a scenario) of a limited number of key variants
- **BAU Baseline:** All scenarios will be evaluated relative to a Business As Usual (BAU) baseline case, reflecting...
 - Current RES/RPS/CES policies region-wide
 - Current renewable/clean energy procurement programs, policies, and authority regionwide
 - E.g., ranging from net metering to offshore wind procurement

Approach: Scenario Design & Assumptions (2)

• Inputs and Assumptions:

- The BAU Baseline will draw upon the 2021 AESC 'All-In' Climate Policy Sensitivity
 - See descriptions beginning on PDF page 293 of the <u>AESC 2021 Report</u>
- SEA will update and adjust the BAU Baseline to reflect:
 - Current and projected future loads, including the impacts of beneficial electrification
 - All codified updates to RES/RPS/CES demands
 - All existing ISO-NE (and imported) renewable energy supplies
 - Expected supply resulting from state-sponsored procurements and programs

• Supply-Demand Modeling:

- SEA will simulate scenario-specific interaction between VT and all other New England RES/CES programs
- SEA will forecast VT RES supply/demand outcomes and estimated cost impacts through scenario-specific allocation of eligible supplies to regional RES/RPS/CES demands based on facility-specific characteristics and state-by-state eligibility requirements



Approach: Benefit Cost Analysis

- Benefit cost analysis (BCA) will be designed to demonstrate incremental costs and benefits relative to a business-as-usual scenario, based on VT's existing RES
- Perspectives: BCA will consider benefits and costs from three perspectives:
 - Ratepayer (ratepayer impact measure or RIM provides information on net costs/savings that would affect rates)
 - Vermont perspective
 - Societal perspective (societal cost test or SCT primary metric used in screening energy efficiency)

• Key metrics:

- Total benefits and costs (\$)
- Renewable energy additions: LCOE, avoided costs, price effects
- Land use impacts
- Equity consideration of ratepayer impact measure on bills and identification of specific sites where we expect new, large-scale renewable resources to be located
- Transmission and distribution impacts (\$)
- 'Renewability' (comparison of projected hourly load with projected hourly generation from procured resources)
- Avoided marginal GHG emissions (RES perspective tons and \$)



RES/CES Design Elements for discussion and prioritization

<u>Targets</u> : Overall, end dates, and <u>annual</u> schedules.	<u>Eligibility</u> : Technology, size, vintage (i.e., commercial operation date)		
Renewab Standard (R Energy Star	Renewable Energy Standard (RES) or Clean Energy Standard (CES)		
<u>Applicability (of Targets and Eligibility</u> : Define individually, for: Tier I, II, regional 'new' Tier, CES	Additional Considerations: Alternate load forecasts Alternative Compliance Payment rate (for regional 'new' Tier and CES, if applicable)		

Scenario Definitions, Illustrative

#	Scenario Definition	Prerequisite Decisions	Potential Sensitivity Variants
1	100% RES by 2030, including Tier II increase to 20% by 2030 and 30% by 2035	Define 100% target date, and annual target increases	Alternative Tier II targets (10%?, Other?) Alternative 100% target dates (2030? 2035?) Modifications to eligibility (Tier I) Modifications to eligibility (Tier II) Alternative state load forecast These variants can be drawn upon to define Scenarios 5 & 6
2	100% CES by 2030, including Tier II increase to 20% by 2030 and 30% by 2035	Define 100% target date, CES increment (25%?), annual target increases, CES eligibility, CES ACP*	
3	100% RES , including Tier II increase and new tier for regional "new" renewables	Same as Scenario 1 + "new" tier targets, eligibility criteria (including vintage), and ACP	
4	100% CES , including Tier II increase and new tier for regional "new" renewables	Same as Scenario 2 + "new" tier targets, eligibility criteria (including vintage), and ACP	
5	TBD – Stakeholder Advisory Group has primary responsibility		
6	TBD		

Additional modeling considerations addressed through Benefit-Cost Analysis and/or post-processing after Supply/Demand Scenarios:

- 1. Requiring compliance on a more granular time basis than annually (e.g., quarterly, seasonally or hourly)*
- 2. Placing restrictions on locations of new renewable energy in Vermont;
- 3. Optimizing the timing of generation (including implications of storage);

* Analysis will assume VT is the only state in the region with this requirement. Requires hourly certificate creation at NEPOOL GIS.

* ACP = Alternative Compliance Payment

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Additional Modeling Considerations Proposed by stakeholders during the engagement process

• Eligibility

- "Allowing all in-state LIHI-certified hydro facilities to count for Tier II"
- "Expanding Tier II to include all existing VT renewables, regardless of vintage or size"
- Limiting the volume of HQ large hydro* RECs that can be used to meet Tier I and/or limiting the use of unbundled HQ large hydro RECs without Quebec establishing a reciprocal Generation Information System (GIS)

Resource Preference

 "Adding a locational element to procurement programs to encourage development that minimizes grid expansion costs, minimizes impacts to natural and working lands, and provides potential community benefits."

Other

"Measuring based on total electrical energy requirements, not just retail sales" → this is a prerequisite of achieving any 100% standard (renewable or clean)

* Note: transactions of (i.e., demand for) large hydro from Quebec has increased as a result of (1) Massachusetts' creation of a new RPS category called the 'Clean Energy Standard – Existing,' and (2) the increase in voluntary renewable energy demand.



Demonstrating RES/CES compliance

- <u>Objective</u>: Must verify compliance with policy mandates and progress toward policy objectives (e.g., 100% RES or CES)
- Requires reliably describing, counting, and allocating the attributes of every MWh on the system (not just renewable and clean generation)
- What are the options?
 - <u>Bundled</u>: purchase energy and attributes together
 - <u>Unbundled</u>: purchase energy and attributes separately
 - Either way, each MWh must be assigned an attribute, 1:1.
 - Both are financial transactions. Neither results in consumers being served by specified facilities. Electrons obey the laws of physics.
- Whether bundled or unbundled, the ultimate owner of the REC possesses the <u>unique claim</u> to the descriptive characteristics of the applicable facility (original or interim asset and/or REC ownership are irrelevant)
- Whether bundled or unbundled, all attributes transferred between parties through the NEPOOL Generation Information System (GIS)

Next Steps

- SAG participants to comment on Work Plan by close of business Wednesday July 26th
- SEA to provide final work plan, including revisions per SAG feedback during this call and via follow-up comments (if any) by close of business on Friday July 28th
- Schedule next SAG meeting. A poll has been circulated. Please respond ASAP.
- SAG participants to prepare for next meeting by creating a prioritized list of scenario and sensitivity parameters.
 - SEA will help facilitate this process by developing a brief survey.
- SAG participants to propose draft definitions for Scenarios 5 and 6 in advance of next meeting
 - Ultimately, SAG will be tasked with arriving at final, consensus definitions by August 31st





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