



Technical Analysis of a 100% Renewable or
Clean Energy Standard Requirement for
Vermont Distribution Utilities:
Stakeholder Advisory Group Meeting 2

Sustainable Energy Advantage, LLC

August 1, 2023

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 suggested scenarios or case runs that were not ultimately modeled, the Department expects the final report to explain the factors that went into the decision.

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.

Agenda

Gather & Overview (10:30-10:40am)

- Objectives, Process, & Feedback

Discuss Scenario Elements and Definitions (10:40am-12:15pm)

- Topics:
 - Scenario Design Elements
 - Achieving a common understanding and language re: power supply
 - Scenario Definitions
- Timing:
 - Facilitated discussion, Part 1: 10:40 – 11:20
 - Non-Member Comments, Part 1: 11:20 – 11:30
 - Break: 11:30 – 11:35
 - Facilitated discussion, Part 2: 11:35 – 12:15
 - Non-Member Comments, Part 2: 12:15 – 12:25

Next Steps (12:25-12:30pm)

SAG: Objectives, Process, & Feedback

- **Objective:** Design and evaluate scenarios that reflect SAG's highest priority *policy objectives*.
- **Process:**
 - Survey & Discussion (For each design element, absence of a specific recommendation denotes assent to modeling status quo)
 - Achieve consensus. Design 2 scenarios.
 - Comment on other 4 scenarios.
- **Feedback:**
 - **All feedback must be specific enough to model.**
 - When providing feedback, consider your audiences, including:
 - Your fellow SAG members (objective = achieve consensus on scenarios)
 - PSD (re: potential adjustment to 'scenarios 1-4')
 - Legislature (re: providing analysis to inform the policy making process)

Scenario Design Elements

Targets:

Overall, end dates, and annual schedules.

Eligibility:

Technology, size, vintage (i.e., commercial operation date)

Renewable Energy
Standard (RES) or Clean
Energy Standard (CES)

Applicability (of Targets and Eligibility):

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: BAU + 'Approach to' S1-S4

Scenarios → Design Element ↓		BAU	Scenario 1	Scenario 2 (S1 + Regional)	Scenario 3	Scenario 4 (S3 + Regional)
Tier I	<i>Target</i>	Up to 65%	Up to 80%/Up to 70%	TBD*	Up to XX%/Up to YY%*	
	<i>Target Date</i>	2032	2030/2035		2030/2035	
	<i>Eligibility Changes</i>	N/A	None		None	
Tier II	<i>Target</i>	10%	20%/30%		20%/30%	
	<i>Target Date</i>	2032	2030/2035		2030/2035	
	<i>Eligibility Changes</i>	N/A	None		None	
CES	<i>Target</i>	N/A	N/A		100%*	
	<i>Target Date</i>	N/A	N/A		2030	
	<i>Eligibility</i>	N/A	N/A		Tier I + Nuclear	
New Regional Tier	<i>Target</i>	N/A	N/A	TBD*	N/A	TBD*
	<i>Target Date</i>	N/A	N/A	TBD*	N/A	TBD*
	<i>Eligibility</i>	N/A	N/A	TBD*	N/A	TBD*

Scenarios 5 & 6 to be defined based on SAG feedback → to be discussed with next slide.

* Not yet fully defined. SAG input will be critical to completing the definition.

SAG Feedback: Proposed Changes to...

Tier I Eligibility	Tier I %	Tier II Eligibility	Tier II %	CES	New Regional
“expand Tier I” “clarify definitions”	“speed up the timeline”	For BTM facilities, retire RECs associated w/ on-site load (do not convey to utility)	Wish to understand impact of %, technology mix, and location of plants; Increase Tier II MW cap (to what?)	40% Tier I + Nuclear (limit on % served by nuclear?)	30%; Cap eligible hydro @ 200 MW
Exclude biomass Exclude industrial wind (MW by facility? By turbine?)	Wish to understand impact of maintaining/increasing/reducing Tier I targets.	Add VT utility-owned hydro to Tier II eligibility (no limits were specified, so assume all)	10%	New nuclear in New England highly unlikely; therefore, CES has little value [0%]	30% by 2035; Vintage* 2010+
Additionality consistent with Paris Agreement	Supply adequacy should be considered	Modify eligibility to date to no later than 2011	30% by 2035		30% by 2035; Vintage* 2010+
Maintain current	100% umbrella by 2030 (implies netting of other Tiers)	Cap and phase-out local projects with negative impacts (e.g., siting)	For RES-exempt utilities (i.e., already @ 100% RE), meet load growth w/ RE (Tier II?)		Important to consider; similar in design to Class I markets
Consider adding nuclear to Tier I eligibility	100% umbrella (implies netting of other Tiers)	DG multipliers (inconsistent w/ a 100% standard)	20% by 2030; 30% by 2035		Modify eligibility date to no later than 2011
Limit hydro eligibility to align with other New England states (RES/CES?)	100% umbrella, w/ Tier I limited to 40%		20% by 2030; 30% by 2035		
	100% umbrella, w/ Tier I limited to 40%		20% by 2032; 25% by 2035		



Scenario Definitions: BAU + Proposed S1-S4

Scenarios → Design Element ↓		BAU	Scenario 1	Scenario 2 (S1 + Regional)	Scenario 3	Scenario 4 (S3 + Regional)
CES	Target	N/A	N/A		100%	
	Target Date	N/A	N/A		2030	
	Eligibility	N/A	N/A		Tier I + Nuclear*	
Tier I	Target	Up to 65%	Up to 80%/Up to 70%	Up to XX% / 40%	Up to XX% / YY%*	Up to AA% / BB%*
	Target Date	2032	2030/2035		2030/2035	
	Eligibility Changes	N/A	None		None	
Tier II	Target	10%	20%/30%		20%/30%	
	Target Date	2032	2030/2035		2030/2035	
	Eligibility Changes	N/A	None		None	
New Regional Tier	Target	N/A	N/A	30%*	N/A	30%*
	Target Date	N/A	N/A	2035	N/A	2035
	Eligibility	N/A	N/A	2010+*	N/A	2010+*

Sensitivity Recommendations:

- Assess S1 without the Tier II increase and/or with a smaller Tier II increase.

* Not yet fully defined. See also next slide for discussion prompts. Red = placeholder for discussion, based on initial SAG feedback.

Additional Considerations / Implementation Details

- Define CES: For example...
 - An umbrella policy, towards which all other Tiers contribute. Result is a 'net' requirement that can be fulfilled *either* by another Tier's resources *or* by CES-only eligible resources (i.e., nuclear)
 - Within this structure, should the % (of retail sales) contribution from nuclear also be capped?
- Define annual target increases: Applies to all Tiers
- Additional (i.e., beyond vintage date) eligibility constraints for new regional Tier?
- Alternative Compliance Payment Rates: (for discussion on next slide)
 - New Regional Tier: Same as Tier II?
 - CES: Same as Tier I? Or align to MA CES-E (which also includes both large hydro and nuclear)

Additional SAG Feedback: For discussion/clarification

- For discussion
 - For all behind-the-meter (BTM) facilities, assume RECs are retired → to ensure that on-site load can be demonstrated to have been served by renewable energy.
 - Compare existing requirements to a design “that excludes the use of ACPs, RECs, [and] environmental attributes.”
- To be reflected through scenario design
 - Maximize GHG reductions
 - Minimize the need for state subsidies; minimize ratepayer costs
 - End-user affordability
 - Resource mix diversity (size, location, technology) to balance VT’s rapid growth in distributed resources.
 - Create limits on forest conversion.

Other Comments

- Consider “the total elimination of RECs and REC arbitrage and what the cost to consumers would be if that happens”
 - *Response: this conflates contract structure preference with compliance verification. We are very happy to discuss this in more detail.*
- “Utilities were taking the RECs from homeowners who would have to pay a penalty to retain them”
 - *Response: homeowners had the option to retain RECs or sell them to the utility. No penalties were paid.*
- Include SCC in the rate structuring
 - *Response: will be included in BCA; while rate structure alternatives are incredibly important, that discussion cannot reasonably be included in this analysis*
- Economic modeling should incorporate the Social Cost of Carbon as developed by the VT Climate Council, specifically using the 2% discount rate
 - *Response: SCC and associated discount rate will be included in this analysis*
- Capture the full value of distributed resources in the context of high electrification
 - *Response: the time-value of distributed resources will be included in this analysis*
- Consider additionality for resources as defined by Paris Climate Agreement
 - *Response: will be subject to further discussion*



Next Steps

- Develop follow-up survey to continue the scenario refinement process
- Circulate poll to schedule SAG Meeting #3
- [Note: SAG is tasked with arriving at final, consensus definitions for S5 and S6 by August 31st]



Sustainable Energy Advantage, LLC
161 Worcester Road, Suite 503
Framingham, MA 01701
<http://www.seadvantage.com>

Contacts:

Jason Gifford

☎ 802-846-7627

✉ jgifford@seadvantage.com

Stephan Wollenburg

☎ 508-834-3050

✉ swollenberg@seadvantage.com

Po-Yu Yuen

☎ 508-665-5861

✉ pyuen@seadvantage.com

Appendix



Demonstrating RES/CES compliance

Achieving a common understanding and language re: power supply

- Objective: Must verify compliance with policy mandates and progress toward policy objectives (e.g., 100% RES or CES)
- Requires reliably describing, counting, and allocating the energy and attributes of every MWh on the system (not just renewable and clean generation)
- What are the options?
 - Bundled: purchase energy and attributes together
 - Unbundled: 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 NEPOOL GIS Certificate (i.e., REC) possesses the unique claim to the descriptive characteristics of the applicable MWh (original or interim asset and/or certificate ownership are irrelevant)
- Whether bundled or unbundled, all attributes are transferred between parties through the [NEPOOL Generation Information System](#) (GIS)

