



CRS

center for
resource
solutions

April 28, 2017

Mary Nichols
California Cap-and-Trade Program
California Air Resources Board (ARB)
1001 I Street
Sacramento, CA 95814

Re: Supplemental Comments of Center for Resource Solutions (CRS) on Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms

Dear Chairman Nichols:

CRS appreciates the opportunity to submit supplemental comments on the 45-day proposed changes to the cap-and-trade regulation. We understand that since these comments will be received after the September 19, 2016 deadline for comments on the 45-day proposed changes, they are considered “late” and ARB Staff is not obligated to respond to them in the Final Statement of Reasons (FSOR). However, we are submitting them to present and respond to new information that has come to our attention since the deadline. We also present new solutions developed in response to this new information. We therefore encourage both the Board and ARB Staff to consider these supplemental comments in decisions on the 45-day proposed changes to the cap-and-trade regulation.

Our supplemental comments focus exclusively on two areas: first, the proposal to remove the requirement that Renewable Energy Credit (REC) serial numbers be reported with specified renewable energy (RE) imports, and second, future allocations to the Voluntary Renewable Electricity (VRE) Reserve Account.

REC Reporting Requirement for Specified Source Imports

Background

In March and September of 2016, CRS submitted comments explaining the risk of double counting and leakage associated with ARB Staff’s proposed removal of the existing REC reporting requirement for specified imports at Sec. 95852(b)(3)(D).¹ There will be double counting of zero-emission power if energy is imported without the REC, counted as zero-emissions specified power, and then the associated REC is counted as zero-emissions by another program. RECs are therefore critical in this

¹ March 4, 2016. Comments of Center for Resource Solutions (CRS) in response to February 24, 2016 Workshop on Potential Amendments to the Greenhouse Gas Mandatory Reporting and Cap-and-Trade Regulations. Available online: http://resource-solutions.org/site/wp-content/uploads/2016/03/CRScommentstoARB_3-4-2016.pdf.

September, 19, 2016. Comments of Center for Resource Solutions (CRS) on Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms. Available online: https://resource-solutions.org/wp-content/uploads/2016/10/CRScomment_CTAmendments_9-19-2016.pdf.

context to prevent double counting with other programs and policies, and in fact, to prevent leakage² for California as it would allow null power (electricity without RECs or for which the RECs are sold out of state) to be imported without emissions. We also explained that matching e-tags and RECs in the Western Renewable Energy Generation Information System (WREGIS) cannot currently prevent this double counting:

- Certain parties can see e-tags with RECs in WREGIS but only if the account holder has matched their e-tags and RECs and only if the account holder has chosen to release that information; and
- Even if states or Green-e could require that regulated entities/sellers with WREGIS accounts match e-tags to RECs and make this information available in WREGIS, there would be no way to see if the underlying power associated with RECs was imported into California by a previous or different seller or importer.

We recommended not only that the current requirement at Sec. 95852(b)(3)(D) in the cap-and-trade regulation be maintained, but that the list of REC serial numbers associated with specified imports be given to WREGIS and that WREGIS be used to confirm that those RECs were retired in California or by a California user at the time of compliance.

Supplemental Comments

Since our submission of comments on the 45-day proposed changes, ARB Staff has provided a more detailed explanation of the proposed removal of the REC reporting requirement in the cap-and-trade regulation. They have characterized the proposed change as a clarification to reduce confusion, arguing that the REC reporting requirement will remain in the Mandatory Reporting Regulation (MRR) and that keeping this language in the cap-and-trade regulation would appear to require reporting of RECs in order to claim a specified source, which was never the practice or intent of the language.

ARB Staff is referring to Sec. 95111(a)(4) of the MRR, which requires that electricity imports be reported as specified source if that electricity is from the generation providing entity (GPE) or the importer holds a contract to obtain power from that resource, and which does not provide further clarification that RECs are also required in the case that the resource is renewable. Based on this, Staff has treated failure to report RECs with specified renewable imports as a nonconformance that does not affect reported emissions, which does not lead to an adverse verification statement.

ARB Staff is interpreting the fact that Section 95111(a)(4) of the MRR does not explicitly require RECs for specified renewable imports (or, more accurately, does not explicitly exclude renewable energy where the RECs are sold off or not reported from being reported as specified) to mean that it conflicts with current language at Sec 95852(b)(3)(D) of the cap-and-trade regulation, which says that if RECs were created for the electricity imported and reported pursuant to MRR, then the REC serial numbers must be reported and verified pursuant to MRR in order for importers to claim a compliance obligation for

² California does not appear to provide a clear definition of leakage outside of the context of an offset project (see Sec. 95802(a)(3) and 95802(a)(221)). But if RECs are not required for specified renewable imports, there can be decreased GHG removals outside the cap-and-trade program's boundary due to the effects of the program on RE markets. This appears to meet a general definition of market-shifting leakage. Alternatively, it can be viewed as the state simply failing to account for emissions—allowing emissions to be imported without a compliance obligation or allowing what would otherwise be California's emissions reductions to be exported and counted in other states/programs. For each MWh of RE that is double counted, there is one less MWh of RE and fewer emissions reductions by the marginal emissions rate.

delivered electricity based on a specified source emission factor or asset controlling supplier emission factor. To resolve this conflict, Staff has chosen to propose removal of Sec. 95852(b)(3)(D) of the cap-and-trade rule, rather than add clarification at Sec. 95111(a)(4) of the MRR that RECs are required where the electricity is from a renewable resource. This choice means that RECs are not required for specified renewable imports and that nonconformance with the REC reporting requirement in the MRR results in a qualified positive verification statement. It also allows double counting and leakage. The alternative choice—to modify Sec. 95111(a)(4) of the MRR—would recognize the mechanisms and instruments used in the broader electricity market for tracking RE delivery in the design and implementation of California’s cap-and-trade program and in so doing avoid potential double counting.

Another development since our last submission of comments on this proposed change is a memo from WREGIS to its account holders dated April 19, 2017 with the subject “WREGIS Certificates and EIM Crossover.”³ This memo was the result of lengthy discussion at WREGIS and among its members and advisors regarding the treatment of imported renewable electricity bidding into the EIM claimed as specified renewable imports under the MRR and cap and trade regulation and the resultant requirement for REC ownership and retirement.

This memo is further confirmation that the direct emissions attributes of RE generation are contained in WREGIS certificates, and that a claim on this attribute (the emissions or emissions factor associated with RE) represents a claim on the REC and requires REC retirement in WREGIS: “In the case of carbon attributes being claimed by a buyer of the energy, the REC would need to be retired in WREGIS as one or more defined attributes would be used by the buyer.”

This memo also addresses how California’s cap-and-trade program and GHG accounting and reporting under the MRR affects RECs and RE delivery claims. It confirms that REC retirement in WREGIS is required for energy that is assigned a specified renewable emissions factor to calculate emissions associated with delivered electricity for the purposes of cap-and-trade compliance: “WREGIS account holders bidding energy into the EIM should be prepared to retire the RECs associated with that energy.”

Supplemental Recommendation

Once again, we recommend that the current language at Sec. 95852(b)(3)(D) of the cap-and-trade rule remain included to prevent leakage and double counting, and we are concurrently recommending that clarification be added to Sec. 95111(a)(4) of the MRR such that will align with the current requirement at Sec. 95852(b)(3)(D).⁴

Voluntary Renewable Electricity

Background

In our September 2016 comments on the 45-day proposed changes, CRS provided a back-of-the-envelope calculation of a conservative floor for the number of allowances that will be needed in the VRE Reserve Account annually to support the three large Green-e certified voluntary green pricing programs by the state’s investor-owned utilities (IOUs) and current subscriptions. We provided this calculation to support our recommendation that allocations of VRE allowances continue beyond 2020 to ensure that

³ <https://www.wecc.biz/Administrative/WREGIS%20EIM%20Memo%2020170419.pdf>.

⁴ See CRS comments on 45-day proposed changes to the MRR, April 28, 2017.

the VRE Reserve Account is not depleted. Depletion of the VRE Reserve Account would remove historical benefits or raise costs for those unable to obtain allowances through the Reserve Account, both of which could damage voluntary demand and limit the size and benefits of the voluntary market for California.

Supplemental Comments and Recommendations

In response to requests from ARB Staff, we have prepared more detailed analysis and projections for the Voluntary Renewable Energy Program (VREP). In response to the results, we also provide new recommendations for VRE allowance allocation. Both the projections and our new recommendations can be found in the attached document *Center for Resource Solutions' Projections for the California Voluntary Renewable Energy Program*.

Please feel to contact us with any questions about these comments, or if we can otherwise be of assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'Todd Jones', with a stylized flourish at the end.

Todd Jones
Senior Manager, Policy and Climate Change Programs

Attachment A: Center for Resource Solutions' Projections for the California Voluntary Renewable Energy Program

Center for Resource Solutions’ Projections for the California Voluntary Renewable Energy Program

Background

Without further action by the California Air Resources Board (ARB), retirements of allowances through the voluntary renewable energy program (VREP) will continue, but new allocations of allowances to the VREP will cease in 2020. This means that sometime after 2020, depending on growth in the voluntary renewable energy (VRE) market and subscriptions to the VREP, VRE allowances will be depleted. VRE demand and investment in the state could suffer without a VREP with available allowances. ARB Staff has pointed to the fact that there will be about 7 million allowances made available through the VREP by 2020 and fewer than 400,000 that have been retired to date.¹ Based on these numbers, Staff feels confident that there would still be allowances in the account beyond 2025 without new allocations and cannot justify continuing allocations to the VREP after 2020 at this time.

California VREP Subscription and Allowance Projection Methodology

Center for Resource Solutions (CRS) has prepared projections of California VREP subscriptions and allowances in order to help inform ARB’s decision on continuation of allowance allocations to the VREP post-2020. These projections consist of a range of possible market growth and VREP subscription scenarios, the assumptions for each are described below.

Scenario Name	Assumptions
Minimal growth	2% Green-e® growth, 2% growth Green Tariff Shared Renewables (GTSR) capacity
Moderate growth	10% Green-e growth, 10% growth GTSR capacity with a maximum of 50% of the cap on capacity for the program
Large growth	15% G-e growth, 10% growth GTSR capacity with a maximum of the cap on capacity for the program
Full VRE market	Moderate growth scenario, plus an estimation of voluntary onsite/distributed generation (DG) and use, and voluntary portions of default CCA offerings

All scenarios have been calculated in metric tons of CO₂-equivalent (MTCO₂e), using an emissions factor of 0.428 MTCO₂e/MWh (943.58 lbs/MWh), which is ARB’s default emissions factor for market purchases in CAISO.²

These projections assume that the major sources of demand for the VREP include the following:

1. Green-e certified sales (non-GTSR, see below). This includes certified retail sales (excluding GTSR) and certified portions of Community Choice Aggregation (CCA) load. The historic rate of growth of Green-e certified sales over the past 3 years has been 15%. For these projections, we have conservatively assumed less than historical growth for the minimal and moderate growth scenarios. We’ve included only the Green-e certified CCA programs in the minimum, moderate,

¹ Seven (7) million is the total number of allowances that will be available through the VREP by 2020. The total for 2015 used in these projections includes the allowances set aside for 2013, 2014, and 2015—2,598,750 allowances set aside so far. But there have been 394,000 allowances retired, so the 2.4 million total in 2015 is the difference between allowances issued and retired.

² See <https://www.arb.ca.gov/cc/reporting/ghg-rep/ghg-rep-power/epe-faqs.pdf>.

and large growth scenarios. But we've calculated their annual growth based on a baseline year for each—there's no compounding. For example, if year one is 100 MWh and we assume 10% growth, year 2 will be 110 MWh and year 3 will be 120 MWh, not 121).

2. Green Tariff Shared Renewables (GTSR) programs. In January 2015, the California Public Utilities Commission directed the three largest investor-owned utilities (IOUs) in the state—Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas and Electric Company, which together cover nearly 80% of the state—to offer a Green-e Energy certified 100% renewable energy option to their customers.³ This program has a capacity cap of 600 MW. The large growth scenario assumes the cap for GTSR programs. This is appropriate since the size of the VREP should be sufficient to cover existing voluntary programs and where those programs have a cap, those caps should be used in planning allocations. Only where programs do not have a cap should projections be used (e.g. with Green-e, CCAs, onsite and other voluntary sales). However, because we agree that these programs may not hit the cap, we have included the minimum and moderate growth scenarios for consideration as well.

These projections assume that the following VRE market segments *do not* represent sources of demand for the VREP, and therefore have only been included in the full VRE market scenario:

3. Non-Green-e retail sales. We have assumed that the voluntary portion of the CCA's standard mix is around 20%. This is based on the CEC's estimation of standard mix in CA.⁴ We have included all of Lancaster, Marin, and Peninsula CCA's load in this estimation. No other non-Green-e certified sales were included. New CCAs that are planned but have not yet been established were not included in the full VRE market scenario, which makes this scenario relatively conservative as well.
4. Onsite/DG use. Assumptions for onsite/DG in the full market scenario are consistent with ARB's proposed modifications to the cap-and-trade regulation from Aug 2, 2016.⁵ Though it is very difficult to estimate onsite/DG growth and how much of that will be voluntary (i.e. keeping the RECs) (since the three IOUs are by far the biggest driver of DG growth and they generally use those RECs toward meeting their RPS obligations), we have assumed that DG capacity will increase by 10% each year and that half of this (5%) will be voluntary. This is extremely conservative, as the average growth of DG in CA over the past 4 years is close to a 39% increase each year.

Though these segments could choose to subscribe to the VREP, we did not include them in the minimum, moderate and large growth scenarios because we thought it unlikely that they would apply to the VREP. In particular, it is especially unlikely that onsite/DG users will go through the VREP allowance retirement process as it currently exists. The difference between VREP subscriptions by Green-e participants and total VREP subscriptions in 2015 is around 1,000 allowances. This means that, for the most part, VRE market participants are not using the VREP unless Green-e requires it (though there are some notable exceptions and this could of course change), including Green-e participants for any

³ California Public Utilities Commission (CPUC). Decision 15-01-051 January 29, 2015. Decision Approving Green Tariff Shared Renewables Program for San Diego Gas & Electric Company, Pacific Gas and Electric Company, and Southern California Edison Company pursuant to Senate Bill 43. Available online: <http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M146/K250/146250314.PDF>.

⁴ California Energy Commission (CEC). Available online: http://www.energy.ca.gov/almanac/electricity_data/total_system_power.html

⁵ See the August 2, 2016, 45-day Initial Statement of Reasons, pg. 54. Available online: <https://www.arb.ca.gov/regact/2016/capandtrade16/isor.pdf>.

uncertified portions their load. As a result, we did not include the non-Green-e certified portions of participant sales and CCA load in the minimum, moderate, or large growth scenarios. Alternatively, we considered including newly certified CCAs or those that plan to become certified at 2-5% of their total loads in the minimum, moderate, and large growth scenarios. But since this would not have impacted the projections very much, we instead chose not to include it.

California VREP Subscription and Allowance Projections

Projections are shown in Table 2. VREP Subscriptions equal MTCO_{2e} associated with MWh projections based on the assumptions described for each scenario above. VREP Allowances equal MTCO_{2e} that is the difference between total VRE Allowances and VREP Subscriptions. Total VRE Allowances equal the sum of VRE Allowance Allocations back to 2015 (shown in Table 1) plus a surplus of 1,218,493 MTCO_{2e} in 2015.

Table 1. Annual VRE Allowance Allocations (2015-2020) (MTCO_{2e})⁶

Year	Allowances
2015	986,250
2016	956,000
2017	926,000
2018	895,750
2019	865,750
2020	835,500

Table 2. VREP Subscription and Allowance Projections (MTCO_{2e})

Year	Minimal Growth		Moderate Growth		Large Growth		Full VRE Market	
	VREP Subscriptions	VREP Allowances	VREP Subscriptions	VREP Allowances	VREP Subscriptions	VREP Allowances	VRE MTCO _{2e}	VREP Allowances
2015	184,468	2,204,743	184,468	2,204,743	184,468	2,204,743	886,566	1,712,184
2016	316,667	2,844,076	340,423	2,820,320	349,646	2,811,097	1,089,874	622,310
2017	356,933	3,413,143	419,466	3,326,855	445,895	3,291,202	1,186,531	(564,221)
2018	363,815	3,945,077	465,125	3,757,480	508,759	3,678,193	1,251,566	(1,815,787)
2019	370,698	4,440,130	510,784	4,112,446	571,624	3,972,319	1,318,538	(3,134,325)
2020	377,580	4,898,050	556,443	4,391,503	634,489	4,173,330	1,387,641	(4,521,966)
2021	384,462	4,513,588	590,854	3,800,649	697,353	3,475,977	1,447,841	(5,969,807)
2022	391,344	4,122,243	625,265	3,175,384	760,218	2,715,759	1,510,620	(7,480,428)
2023	398,227	3,724,017	659,676	2,515,708	839,047	1,876,712	1,576,236	(9,056,663)
2024	405,109	3,318,908	694,088	1,821,620	901,912	974,801	1,644,972	(10,701,636)
2025	411,991	2,906,917	728,499	1,093,121	964,776	10,025	1,717,141	(12,418,776)
2026	418,873	2,488,044	762,910	330,211	1,016,393	(1,006,368)	1,793,085	(14,211,861)
2027	425,756	2,062,288	797,321	(467,110)	1,068,010	(2,074,378)	1,873,183	(16,085,044)

⁶ California Air Resources Board. available online:
<https://www.arb.ca.gov/cc/capandtrade/renewable/renewable.htm>

Year	Minimal Growth		Moderate Growth		Large Growth		Full VRE Market	
	VREP Subscriptions	VREP Allowances	VREP Subscriptions	VREP Allowances	VREP Subscriptions	VREP Allowances	VRE MTCO2e	VREP Allowances
2028	432,638	1,629,650	831,732	(1,298,842)	1,119,627	(3,194,005)	1,957,849	(18,042,893)
2029	439,520	1,190,130	866,144	(2,164,986)	1,171,243	(4,365,248)	2,047,541	(20,090,434)
2030	446,402	743,728	900,555	(3,065,541)	1,222,860	(5,588,108)	2,142,761	(22,233,195)
2031	453,285	290,443	934,966	(4,000,507)	1,274,477	(6,862,585)	2,244,062	(24,477,256)
2032	460,167	(169,723)	969,377	(4,969,884)	1,326,094	(8,188,679)	2,352,051	(26,829,308)
2033	467,049	(636,772)	1,003,788	(5,973,672)	1,377,711	(9,566,390)	2,467,399	(29,296,707)

Figure 1. VRE Subscriptions in minimal, moderate and large growth scenarios

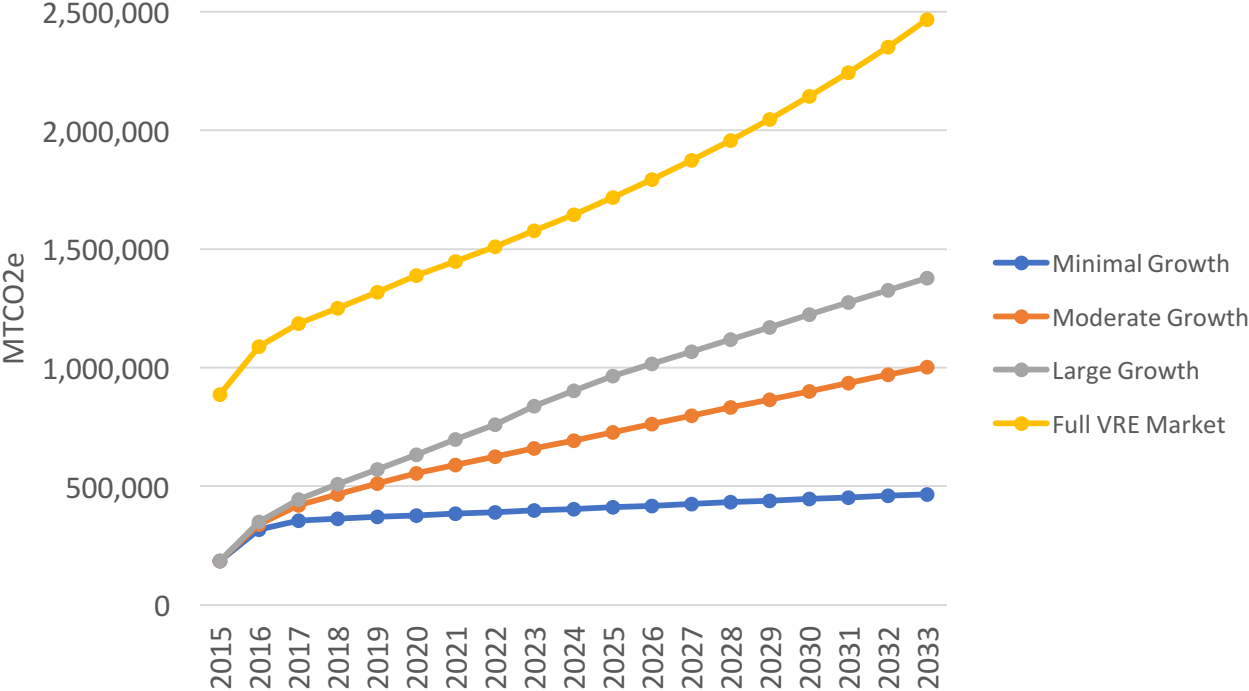


Figure 2. VREP Allowances in minimal, moderate, and large growth scenarios

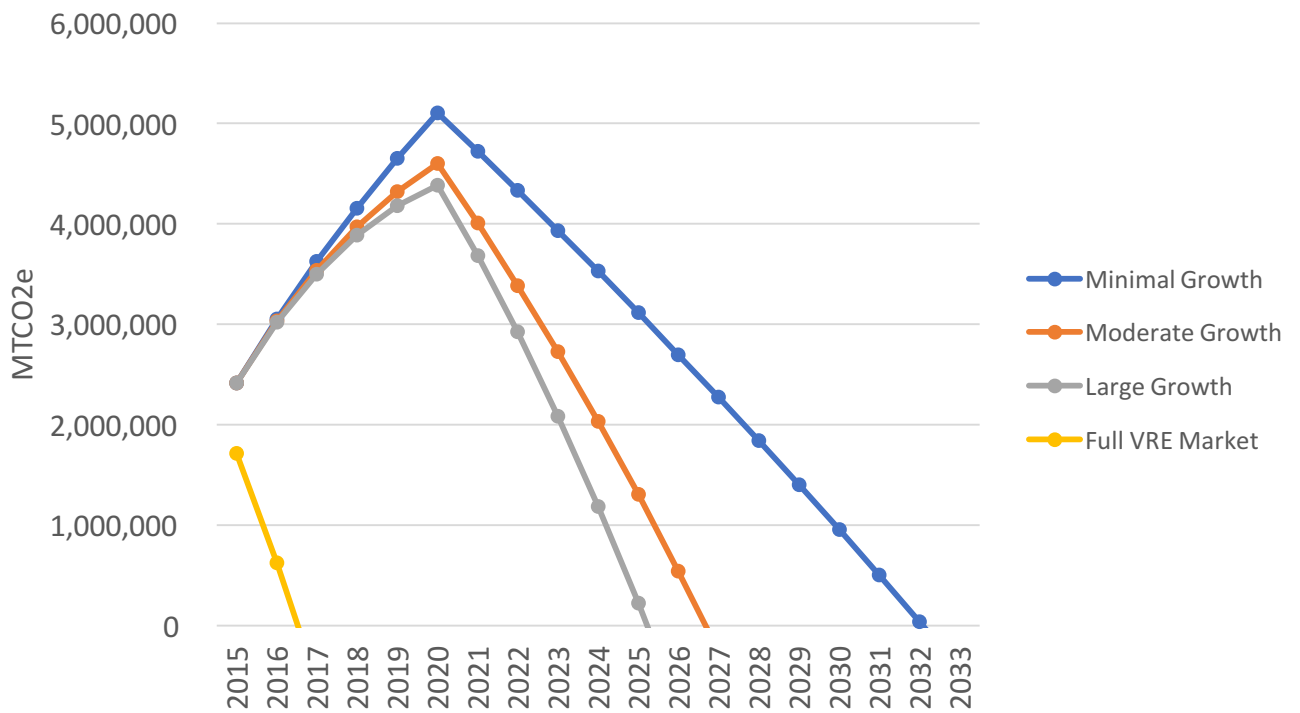


Figure 3. VRE Subscriptions and Allowances in minimal growth scenario

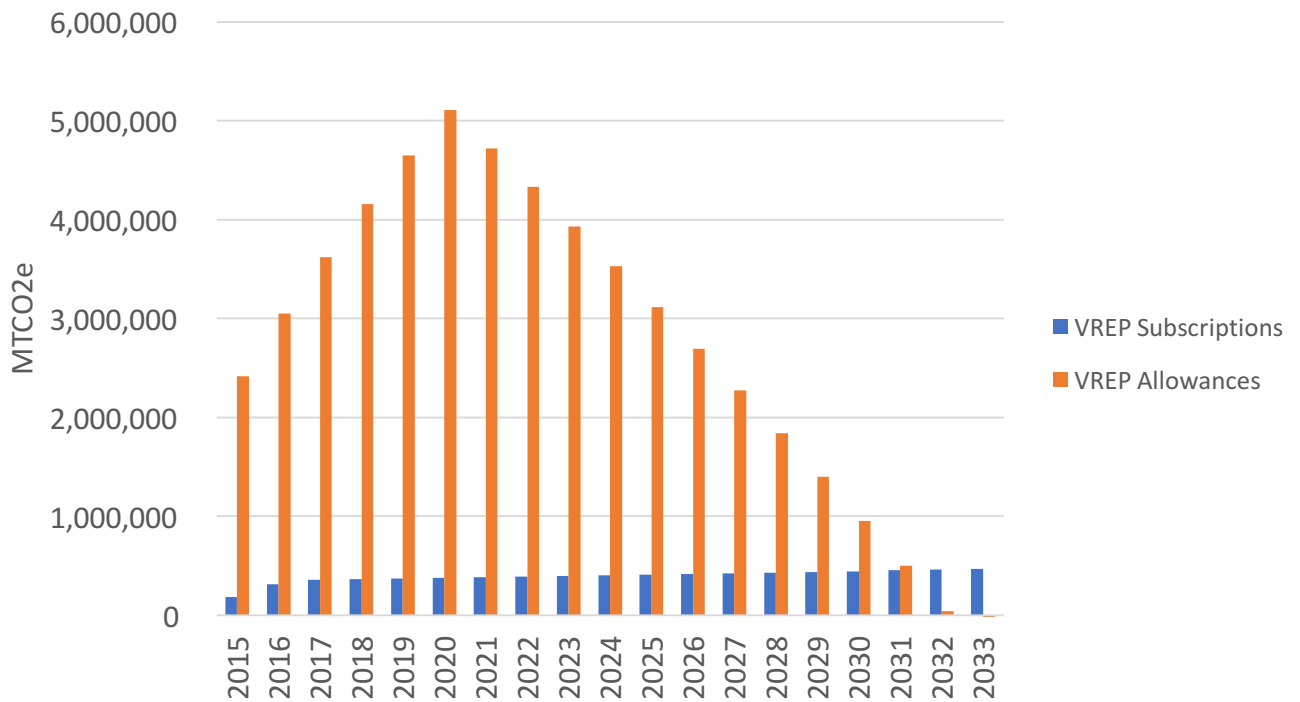


Figure 4. VRE Subscriptions and Allowances in moderate growth scenario

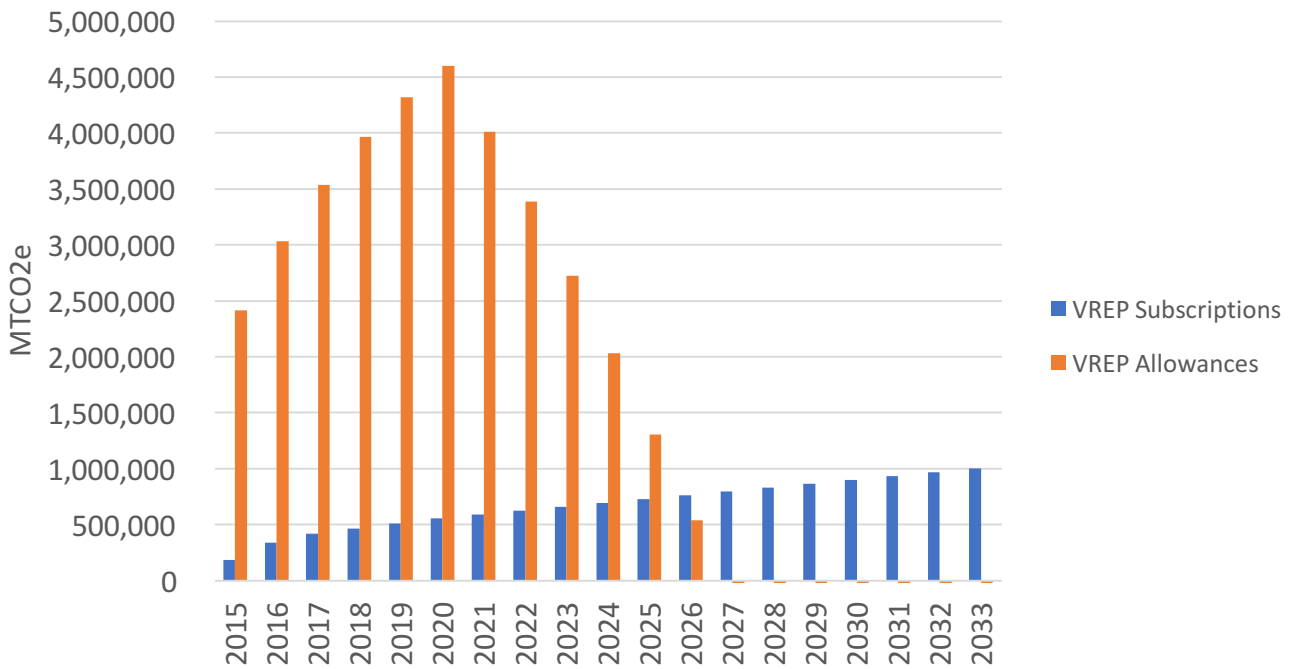
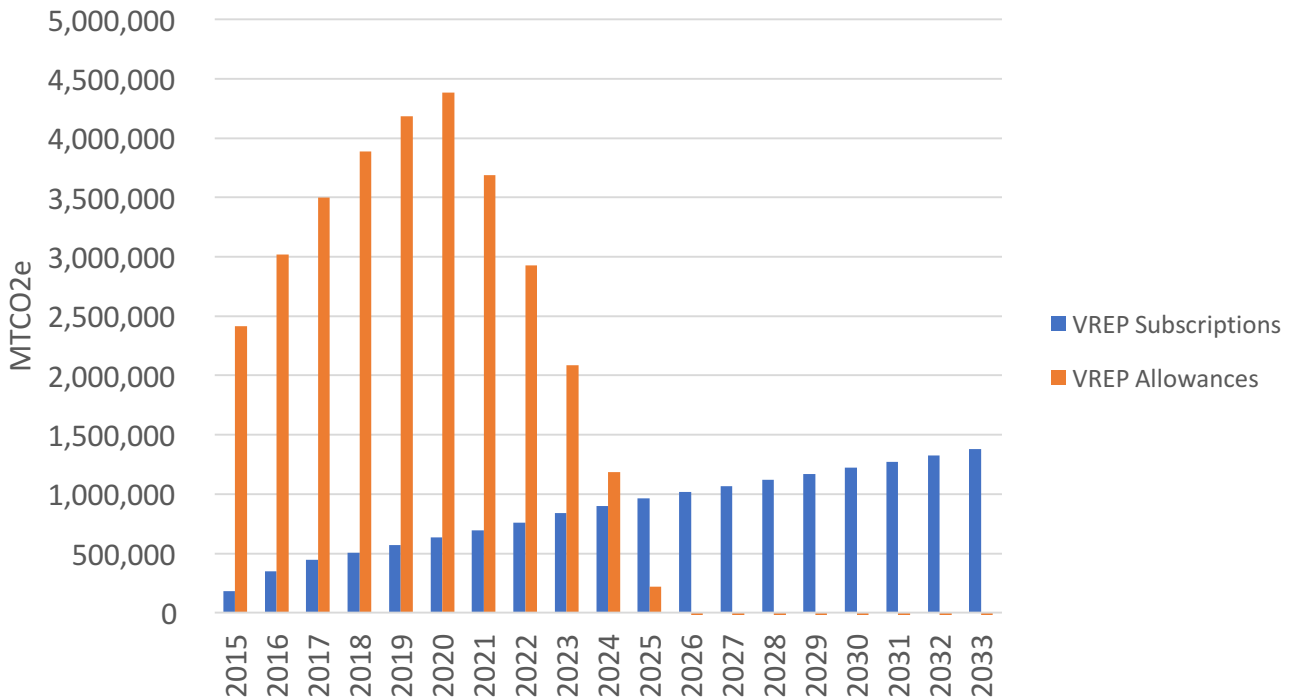


Figure 5. VRE Subscriptions and Allowances in large growth scenario



Conclusions

Based on our projections, the VREP will be sufficient without new allowance allocations after 2020 through sometime between 2025 and 2032.

- minimal – in 2032, the VREP would be depleted and would be unable to meet demand for VRE allowance retirement; in 2033, no VRE sales would be able to use the VREP for allowance retirement
- moderate – in 2026, the VREP would be depleted and would be unable to meet demand for VRE allowance retirement; in 2027, no VRE sales would be able to use the VREP for allowance retirement
- large – in 2025, the VREP would be depleted and would be unable to meet demand for VRE allowance retirement; in 2026, no VRE sales would be able to use the VREP for allowance retirement

Recommendations

1. We recommend that ARB continue allocations of allowances to the VREP after 2020.

Thinking beyond 2025, it is unclear if and how allocations can be resumed once they have stopped when the account is nearing depletion. Current contracts for VRE in California may extend beyond 2025 and particularly where new projects are proposed to be built, the potential of depleting VRE allowances and either no longer being able to make emissions reductions claims beyond the cap or having to buy allowances after 2025 may affect project development. It is our view that the VREP should not represent limit on voluntary activity (a ceiling for emissions reductions). Finally, we see no argument against continuing allocations on the basis of increased compliance cost. Our understanding of current market dynamics is that the VREP does not reduce supply of allowances such that continuing historical allocations would significantly affect price. Even if it did, we have provided information showing that the set-aside is effectively cost neutral and the decrease in supply of allowances and corresponding increase in price is offset by the decrease in demand for allowances due to reductions from voluntary renewable energy and corresponding decrease in price. Likewise, discontinuing allocations to the set-aside is benefit neutral for compliance entities: the increase in supply of allowances that are no longer being set aside and corresponding decrease in price is offset by the increase in demand for allowances as VRE no longer pays for reductions and those costs shift to compliance entities, increasing the price. But there is great cost to the voluntary market.⁷

2. If ARB chooses not to continue allocations to the VREP after 2020, we recommend that it allow for allocations to be resumed in the future if and when the VREP is nearing depletion. This can be achieved by including additional language in the regulation to this effect.

⁷ See CRS Comments on Proposed Amendments to the California Cap on Greenhouse Gas Emissions and Market-based Compliance Mechanisms dated September 19, 2016. Available online: https://resource-solutions.org/wp-content/uploads/2016/10/CRScomment_CTAmendments_9-19-2016.pdf.

Also see a June 7, 2010 Coalition letter to Kevin Kennedy, CARB Office of Climate Change on the issue of off-the-top treatment of voluntary renewable energy purchases. Available online: http://resource-solutions.org/site/wp-content/uploads/2015/08/CRS_on_allocation_7_7_2010.pdf.

3. Noting the difference between the full VRE market in CA and VREP subscriptions and to the extent that levels of subscription to the VREP are affected by both the complexity of the process that is currently in place and a dearth of education among consumers and voluntary sellers about the VREP, we recommend that the application and retirement process be simplified and that more education be done about the VREP set-aside and its value.

For example, rather than setting a fixed amount of allowances to set aside for the VRE reserve account (a fixed percent of the total allowance budget) and requiring the VRE seller, generator, purchaser, or owner of self-generation to apply to the set-aside for in-state voluntary generation, ARB could gather data on voluntary market transactions in California (we can help provide data for the part of the market that is Green-e certified) and make retirements automatically on behalf of the voluntary market. This would remove the application process.