



Staff Report Item 17

TO: East Bay Community Energy Board of Directors

FROM: Jim Dorrance, Power Resources Manager

SUBJECT: Path to Zero Emission Electricity, 2030 (Action Item)

DATE: April 20, 2022

Recommendation

Adopt the schedule with annual power procurement goals for renewable and Carbon-free electricity purchases as a path to reach zero emission electricity by 2030.

- The schedule for adoption would be for the Bright Choice plan's renewable and Carbon-free annual percentages that are included in Table 1
- Total renewable and Carbon-free annual percentages for all plans are largely dictated by the jurisdictional enrolment in either the Bright Choice or Renewable 100 plans

Background and Discussion

Background

At the December 16th, 2020, Board meeting, the Board adopted a clean energy goal by Resolution setting a goal for all electricity within EBCE's portfolio to have zero net emissions by 2030. This target was supported by EBCE's 2020 Integrated Resource Plan (IRP) analysis and the associated cost modeling that was performed. This ambitious goal set EBCE's zero emission timeline 15 year's ahead of California's (CA) goal of state-wide zero emission electricity by 2045, as mandated in Senate Bill 100 (SB100).

At the February 26th, 2022, Board meeting, a schedule with annual procurement goals was presented as an informational item to describe staff's approach to meeting the Board adopted clean energy goal. The purpose of this staff report is to present the schedule with annual goals for renewable and other Carbon-free electricity purchases for Bright Choice as a path to achieve zero emission electricity by 2030 for adoption by the Board. Additionally, this report will describe in more detail EBCE's current renewable resource contracts and provide details on the process for determining future procurement to reach the goals set forth herein.

Path to Zero Emissions in 2030

The schedule described in this report details a path to reach the zero emissions target with each year's renewable and Carbon-free percentages as steps to reach that goal. Staff will continue to work to meet or exceed the annual goals of this schedule but understands that there is yearly uncertainty with the generation from EBCE's contracted long-term renewable sources and the dynamic availability of generation from large hydroelectric facilities.

The schedule includes a year-over-year reduction in emissions for Bright Choice and EBCE's entire portfolio. EBCE has used multiple systems for the purpose of calculating and reporting emissions from electricity. In 2018-2019 EBCE used The Climate Registry (TCR); starting in 2020 EBCE reported emissions through the Power Source Disclosure Report (PSDR) and on the Power Content Label (PCL), using the associated regulations for calculating and reporting emissions. The PSDR regulations, which EBCE is now required to use, include reporting emissions associated with power content from any emitting generation source (Unspecified Power, Natural Gas, etc.) and emissions for purchases of Portfolio Content Category 2 (PCC2) RECs when the associated energy is not specific by source.

EBCE seeks to establish a formal annual schedule of power content through 2030 to provide some level of certainty on annual procurement targets and to use in the modeling as part of the 2022 IRP analysis. Of course, this schedule will be further refined in future years based on market intel from ongoing renewable energy solicitations that EBCE issues, progress of contracted PPAs, and future IRP analysis and brought forward to the board for review.

Existing Portfolio of Resources

In presenting the schedule towards zero emission electricity by 2030 we can examine the current long-term resources that are under contract for EBCE customers and the additional renewable electricity that will be required to reach the 2030 clean energy goal. The below chart represents contracted renewable and large hydroelectric electricity as a percent of total electricity sales with the yellow line showing the Carbon-free percent from the schedule.

Chart 1: Contracted Renewable and Carbon-free as a Percent of Total Sales

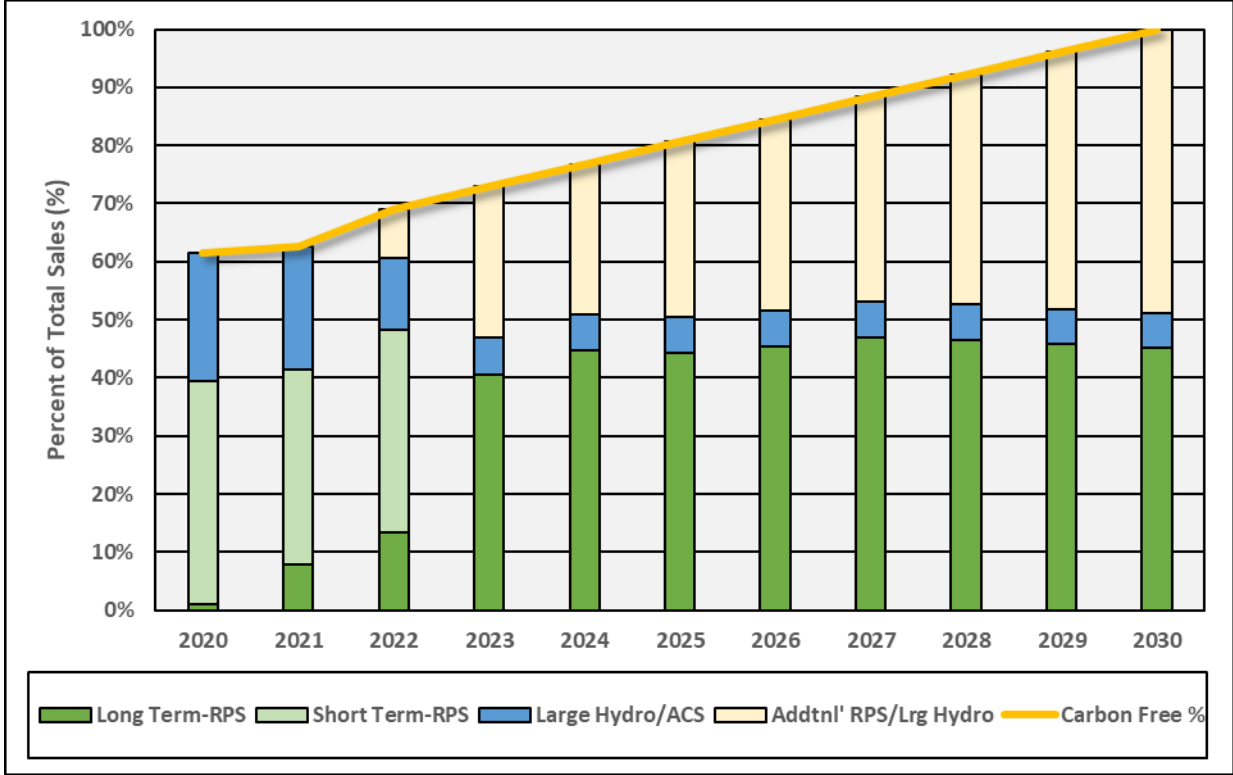


Chart 1 shows how EBCE’s contracted long-term renewables are being used to meet the near-term renewable goals and the open position in need of contracting across the planning horizon to reach the annual goals of EBCE’s emission reduction schedule. The details and the makeup of the renewable and other Carbon-free resources that will be contracted to meet the annual renewable goals will be described and analyzed during the 2022 IRP which will be submitted later in 2022 and is discussed in further detail below.

Schedule for Annual Renewable and Carbon-free Electricity

In asking the Board to adopt the schedule for annual renewable and Carbon-free electricity purchases as a path to zero emission electricity by 2030, staff is asking the Board to specifically approve the annual targets for the Bright Choice plan which are included below as Table 1. The total renewable and Carbon-free annual percentages for all plans, which are discussed later, are largely influenced by customer enrollment in either of the Bright Choice or the Renewable 100 plan. This means that the default enrolment at the jurisdictional level will impact the total renewable and Carbon-free percentages for a given year. Included below is the proposed schedule of annual targets for Bright Choice (Table 1) and the proposed and resulting schedules for all the plans combined (Table 2 and Chart 2) based on the current planned jurisdictional enrollments into the Bright Choice and Renewable 100 plans. The action staff is requesting from the Board is the adoption of the schedule for Bright Choice and the associated annual renewable and Carbon-free electricity purchases.

Table 1, below, presents the proposed schedule for Bright Choice through 2030 for renewable and other Carbon-free electricity as a percent of total sales. Additionally, the table includes estimates for the Bright Choice emission factor for each year showing an annual reduction in plan-wide emissions with a zero emissions portfolio achieved in 2030. Please note that these

numbers are not additive; the percent of Carbon-free is inclusive of purchased renewable electricity.

Table 1: Schedule, Bright Choice: Renewable, Carbon-free Percentages by Year and Emissions Factor for All Plans

Year	Bright Choice				CA-RPS %
	Renewable %	Carbon Free %	TCR*-Emission Factor	PSDR-Emission Factor	Renewable %
2018	41%	87%	101	n/a	29%
2019	60%	85%	135	n/a	31%
2020	40%	54%	n/a	580	33%
2021	41%	55%	n/a	577	36%
2022	45%	63%	n/a	566	39%
2023	49%	66%	n/a	521	41%
2024	52%	71%	n/a	455	44%
2025	56%	76%	n/a	387	47%
2026	60%	81%	n/a	315	49%
2027	64%	85%	n/a	241	52%
2028	67%	90%	n/a	163	55%
2029	71%	95%	n/a	83	57%
2030	75%	100%	n/a	-	60%

* The Climate Registry (TCR) was used for emissions calculation and reporting for 2018-2019, beginning in 2020, EBCE no longer uses the TCR for emissions reporting and currently only uses the Power Source Disclosure (PSDR) methodology for emissions calculating and reporting as required by regulations.

Table 1 above represents renewable and Carbon-free content targets through 2030 for Bright Choice. The totals for 2018 through 2020 represent actual sales and electricity purchases; 2021 represents forecast data as we continue to finalize the Bright Choice content from last year. The above table includes estimates for emission factors in future years calculated using the PSDR method and the CA RPS percentages for comparison. The above schedule includes annual increases in the renewable and Carbon-free electricity content, resulting in annual reductions in the emission factor for Bright Choice. The schedule demonstrates that renewable energy procured for Bright Choice customers will exceed the CA RPS requirements by at least five percent each year and increases to 15 percent over the CA RPS requirements by 2030 when Bright Choice will achieve zero emissions. Not shown in the above table but reflected in the estimates for emission factors is an annual reduction in the purchase of PCC2 RECs for the Bright Choice plan; by 2030 all renewable electricity for Bright Choice customers will come from PCC1 RECs.

In EBCE’s portfolio, Carbon-free energy comes from either renewable or from large hydroelectric generating resources. Hydroelectric generation’s availability is based on weather and market conditions. EBCE is one of many load serving entities in the western United States that values this resource; our ability to purchase large hydroelectric generation at competitive prices is not guaranteed in any given year. As a result, there may be situations where a greater amount of the Carbon-free generation showed in the schedule will come from renewable sources instead of large hydroelectric, increasing the renewable percent for a given year but having the same percentage of Carbon-free electricity in EBCE’s portfolio. Table 2 has the schedule for electricity purchases from all the plans combined for each year through 2030 for renewable and other Carbon-free electricity as a percent of total sales.

Table 2: Schedule, All Plans: Renewable, Carbon-free Percentages by Year and Emissions Factor for All Plans

Year	All Plans				CA-RPS %
	Renewable %	Carbon Free %	TCR*-Emission Factor	PSDR-Emission Factor	Renewable %
2018	42%	88%	82	n/a	29%
2019	65%	88%	113	n/a	31%
2020	39%	61%	n/a	488	33%
2021	41%	63%	n/a	483	36%
2022	56%	69%	n/a	450	39%
2023	59%	73%	n/a	417	41%
2024	62%	77%	n/a	364	44%
2025	65%	81%	n/a	309	47%
2026	68%	85%	n/a	252	49%
2027	71%	88%	n/a	193	52%
2028	74%	92%	n/a	131	55%
2029	77%	96%	n/a	67	57%
2030	80%	100%	n/a	-	60%

* The Climate Registry (TCR) was used for emissions calculation and reporting for 2018-2019, beginning in 2020 EBCE no longer used the TCR for emissions reporting and currently only uses the Power Source Disclosure (PSDR) methodology for emissions calculating and reporting as required by the regulations

Chart 2: Renewable, Carbon-free Percentages, RPS percent, Emissions Factor for All Plans through 2030

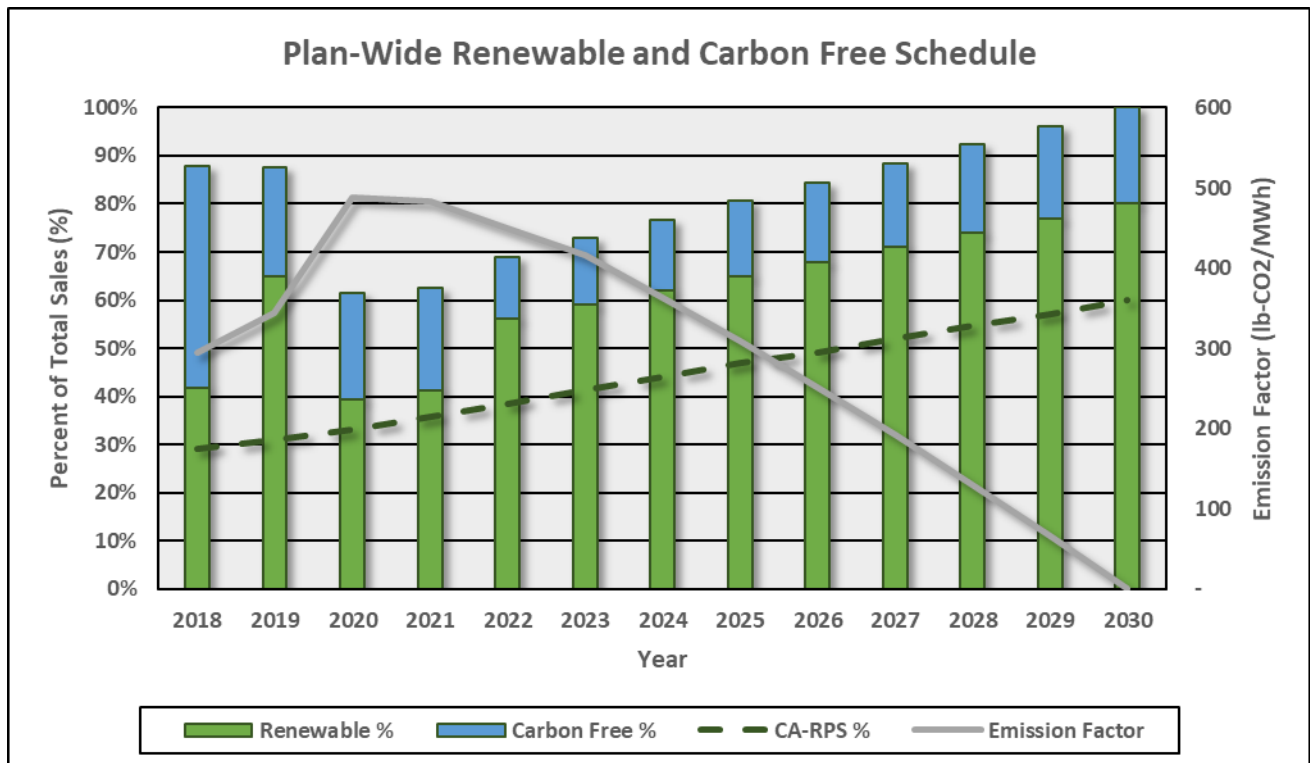


Table 2 and Chart 2 reflect the schedules for all of EBCE’s customer plans combined. These annual totals are largely influenced by the renewable and Carbon-free content of Bright Choice, and the plan enrollment in both Bright Choice and Renewable 100. There are two primary factors influencing the plan-wide emissions. The largest source of emissions in EBCE’s portfolio is from unspecified power in Bright Choice customer’s power content. Unspecified electricity is not purchased for Bright Choice customers for the purpose of achieving a power content target, it is reflective of the total Bright Choice sales net of carbon-free content. The second factor influencing emissions is renewable content from PCC2 RECs for Bright Choice customers. The PSDR emissions reporting regulations require EBCE to report emissions for these renewable purchases when the source of the energy is not specified. Bright Choice is EBCE’s largest customer plan and currently has the largest impact on emissions, since Renewable 100 by its nature is always both emission-free and 100 percent renewable.

The proposed schedules incorporate EBCE’s existing contracted PPAs and a projection of additional short and long-term renewable contracts that EBCE anticipates executing based on the modeling and cost analysis from the IRP cycles. The renewables procurement is informed by our existing IRP analysis and aims to take a disciplined approach towards cost averaging our procurement portfolio through multiple market cycles and realize technology developments. Furthermore, regulatory changes are dynamic, and a number of compliance requirements are not yet established related to Resource Adequacy, storage integration, import energy, among other areas. Therefore, it is important to allow our contract structures and terms to address the evolving regulatory landscape and compliance requirements.

In presenting the above schedule to reach zero emission electricity in 2030, EBCE would be moving away from using PG&E’s renewable content forecast as the basis for the annual procurement floor for Bright Choice. The below table reviews Bright Choice and plan-wide content compared to PG&E’s base product. Included are the annual renewable and Carbon-free electricity as reported on the PCL. In addition to PG&E’s renewable electricity, the table shows PG&E’s Carbon-free electricity from both renewable and large hydro sources combined. This is the equivalent for comparison purposes to the Carbon-free content in EBCE’s plans since EBCE does not have nuclear electricity as content from specific sources and only has transient amounts from purchased Asset Controlling Supplier electricity (ACS). Additionally, the Carbon-free electricity from PG&E’s nuclear sources is displayed. The percentages from PG&E are displayed in this manner to create an accurate comparison for the Carbon-free content from EBCE and PG&E.

Table 3: Comparison of EBCE’s Bright Choice, and Plan-Wide Renewable and Carbon-Free Content Compared to the content PG&E base plan

Year	All Plans		Bright Choice		PG&E-Base Plan			CA-RPS %
	Renewable %	Carbon Free %	Renewable %	Carbon Free %	Renewable %	Renewable + Lrg. Hydro, %	Nuclear	Renewable %
2018	42%	88%	41%*	87%	39%	52%	34%	29%
2019	65%	88%	60%*	85%	29%	56%	44%	31%
2020	39%	61%	40%*	54%	31%	41%	43%	33%
2021	41%	63%	41%*	55%				36%
2022	56%	69%	45%	63%				39%
2023	59%	73%	49%	66%				41%
2024	62%	77%	52%	71%				44%
2025	65%	81%	56%	76%				47%
2026	68%	85%	60%	81%				49%
2027	71%	88%	64%	85%				52%
2028	74%	92%	67%	90%				55%
2029	77%	96%	71%	95%				57%
2030	80%	100%	75%	100%				60%

** Board Adopted targets for Bright Choice renewable percentage are 38% for 2018-2019, 39.5% for 2020 and 41.2% for 2021*

Long-Term Planning, Portfolio Optimization, and the Integrated Resource Planning analysis (IRP)

The schedule presented in this report demonstrates annual targets to achieve the Board adopted clean energy goal of zero emission electricity by 2030. Identifying the specific resources and contract tenors needed to achieve EBCE's renewable and other Carbon-free purchases for the future years of the schedule is an ongoing process. Staff will evaluate generation resources, contract tenors and the costs and risks associated with them through the 2022 IRP, which is currently active, future biennial IRP filings, through portfolio optimization using our current portfolio of resources and solicitations for new long-term renewable generation.

EBCE conducted solicitations for long-term renewable generating resources during both the 2018 Request for Offers (RFO) and the 2020 RPS and Storage RFO. These solicitations added over 800 MW of renewable energy and over 450 MW of energy storage as long-term hedges to meet EBCE's customer needs. When the currently contracted projects are all online, they will supply renewable power to meet approximately 25 percent of forecasted annual load, with changes based on annual generation variability and project related risks.

In optimizing EBCE's portfolio of resources, staff evaluates the cost, location, and shape of generation from our contracted resources alongside regulatory requirements, how new projects can fit in with our load shape and their associated costs. New renewable and other Carbon-free projects are typically evaluated as part of formal solicitations where EBCE request offers from a number of developers for a variety of project types, and then performs a forward-looking analysis to forecast each resource's cost and potential value within our existing portfolio. EBCE is currently working on the analysis of projects from our third long-term project RFO that was released in February.

In addition to staff's cycle of RFOs, EBCE performs a biennial IRP analysis; the most recent IRP was completed and presented to the Board in 2020. The IRP is a compliance requirement but also a tool for resource planning that includes robust modeling and analysis for an optimized resource portfolio over time to reach scenario-based emissions goals. This includes cost and generation modeling that simulate hourly performance and evaluates a range of the potential incremental costs to achieve emissions goals. The modeling and the associated findings of the 2020 IRP provided the analysis that was presented to the Board's and aided the decision to adopt and choose the clean energy goal of zero emission electricity in 2030. The purpose of this report is to provide the schedule for reaching that goal based on the renewable and Carbon-Free portfolio for Bright Choice. The IRP Analysis will typically incorporate a California Public Utilities Commission (CPUC) required conforming analysis. In 2020, this analysis reflected 46MMT and 38MMT emissions by 2030 scenarios in order to comply with the CPUC requirements. Following the IRP submission to the CPUC, EBCE completed additional optional analysis to reflect 30MMT and 0 MMT emissions scenarios by 2030, which was the basis of the Dec 2020 Board approval of the goal for zero emissions by 2030.

The IRP analysis, which is currently underway for 2022, is the next biannual modeling requirement as required by the IRP, where EBCE staff and a third-party consultant model different emissions and resource scenarios with our existing contracted generation resources

over a ten-year planning horizon to develop detailed plans to reach EBCE defined goals while evaluating benefits and risks of those plans under different energy market conditions. This includes the resource type and forecasts for associated costs and annual emissions and evaluates EBCE capacity and regulatory obligations required in California. The IRP analysis, which will be presented to the Board for informational purposes prior to seeking Board approval later this year will fill in the details related to forecasted costs to achieve the emissions schedule provided in this report and will inform the Board on risks to meet EBCE's emissions goals by 2030.

Staff is presenting the schedule for Bright Choice within this report to the Board as a path to zero emissions in 2030 as was adopted by the Board in 2020. At the same time EBCE will continue to add long-term renewable projects to our portfolio with a focus on projects within our jurisdictions and target annual reductions in plan-wide emissions. The schedule outlined here includes year over increases in renewable electricity for Bright Choice, a continuation of Bright Choice's renewable percentage exceeding the CA RPS and plan-wide, year over year reduction in emissions resulting in zero emission electricity in 2030.

Fiscal Impact

The fiscal impacts of this item will be evaluated as part of the 2022 IRP process although the above schedule would include annual increases in renewable and Carbon-free electricity purchased and will likely result in increased costs for purchased electricity if adopted.

Attachments

- A. Presentation

APRIL 20TH, 2022

Path to Zero Emissions in 2030



Recommendation: Adopt the Bright Choice schedule for renewable and Carbon-free electricity purchases linked to the Board adopted clean energy goal of zero emission electricity by 2030.

- Background
 - 2020 IRP
 - Relevant Board Items and Actions
- Long-term Renewable Purchased Power
- Schedule for the Path to Zero emission Electricity
 - Bright Choice and All Plans
 - Next Steps



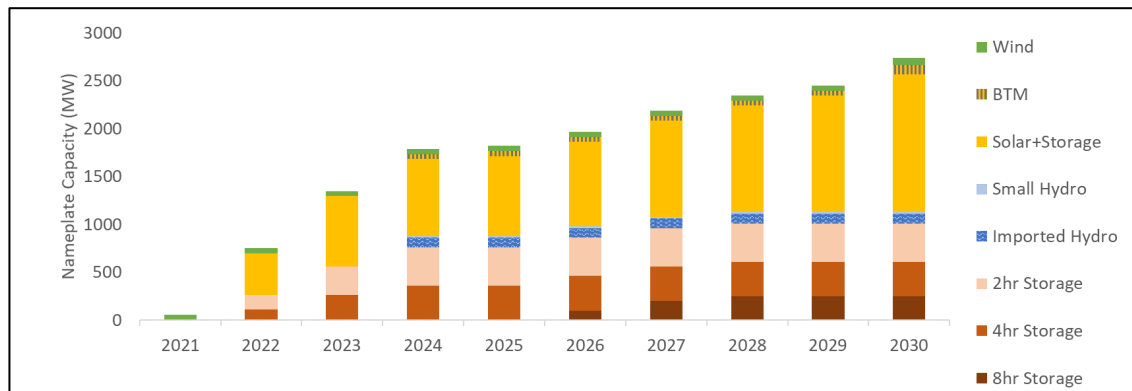
The Integrated Resource Planning (IRP): Is modeled analysis that is conducted every other year and looks 10-years forward to evaluate long-term compliance with CPUC policies and programs for electrical supply, reliability and emissions reductions

- Requires submission of resource planning for distinct electricity portfolios that achieve a proportional share of two electric sector GHG targets: **46 MMT and 36 MMT of emissions by 2030, the required targets for the 2020 filing**
- Modeling was conducted for supplemental emissions targets for 2030

Key Evaluation Metrics	Scenario 1: EBCE 46 MMT i.e. 1.22 MMT	Scenario 2: EBCE 38 MMT i.e. 0.98 MMT	Scenario 3: EBCE 30 MMT i.e. 0.73 MMT	Scenario 4: EBCE net 0 MMT
Carbon Free (by 2030)	64%	72%	80%	100%
Affordability (2030 cost in 2020\$)	\$608 MM (2020\$)	+3% (+\$17 MM)	+6% (+\$34 MM)	+14% (+\$85 MM)
Resource Mix (2030) (incl. New build vs existing)	1.2 GW new RE PPAs (includes 100 MW BTM S+S) 1.5 GW/ 6 GWh new energy storage 100 MW existing NW hydro			
Risk Mgmt: Short-term vs Long-term Contracts	62% long-term in 2030 (~50% by 2025; ~55% avg. 2021-2030), remaining short-term			
Reliability	~70% of RA need met by long-term portfolio			

Background - 2020 IRP

- Analysis includes robust modeling for an optimized build-out of resources over time that can reach the 2030 emissions goals
- Includes renewable resources currently under contract for EBCE customers and forecasted resources aligned with EBCE's procurement and risk management strategies
- Performs cost modeling to simulate hourly performance evaluate the range of incremental costs to achieve the defined emissions goals



Background - Board Items, Clean Energy Goal

Attachment: Staff Report Item 17A

June-July 2020: An IRP update was presented to the Board in June, in July the required GHG targets and modeling assumptions were presented for the two 2030 emissions goals and the Board approved

Additional, and more aggressive emissions reductions targets for 2030 would be modeled with results presented later in the year

December 2020 Board Meeting: In addition to the analysis required by the IRP, staff conducted additional emissions reduction scenario analysis

Provided analysis of Resource Mix, Risk, Reliability, and Costs for four different 2030 emissions scenarios

Presented scenarios for discussion and, requesting adoption of a clean energy goal for 2030, supported by the 2020 IRP analysis

Background - Clean Energy Goal, 2030

Attachment Staff Report Item 17A

December 2020 Board Meeting, continued: The Board elected to adopt a resolution approving Clean Energy Goal supported by the 2020 IRP that would set a goal of zero emissions electricity in 2030 (Scenario 4)

The goal was established to reduce emissions from electricity for EBCE customers and guide EBCE's future procurement decisions

February 2021 Board Meeting: Based on the adopted 2030 goal, a schedule with annual targets for reaching zero emissions by 2030 were presented as informational

These included annual goals for both renewable and other Carbon-free electricity based on the renewable and Carbon-free content of Bright Choice

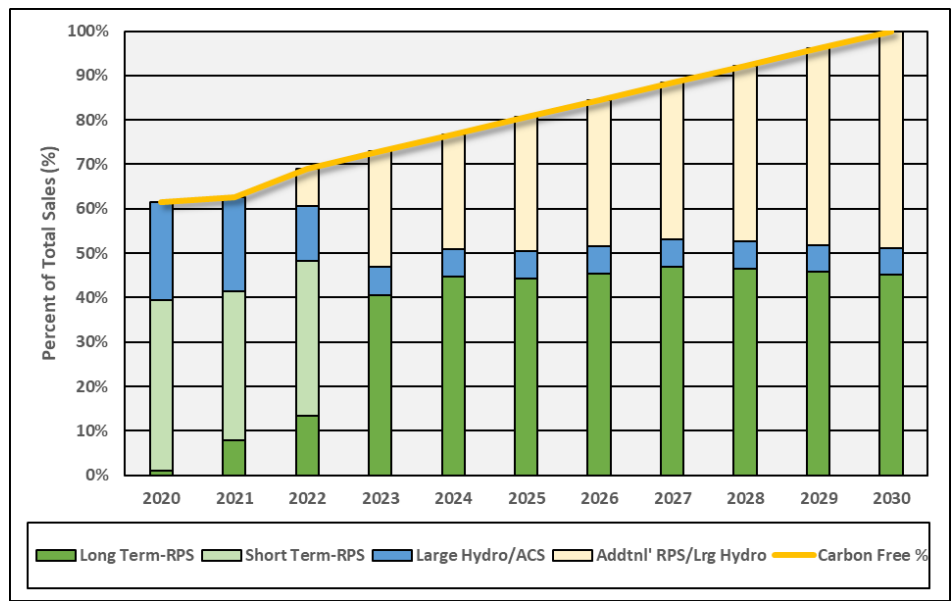
- The 2030 Clean Energy Goal was adopted in 2020 and supported by IRP analysis and modeling
- Staff is asking the Board to adopt the annual schedule to reach this goal
- The specific ask is to adopt the schedule for Bright Choice through 2030
- The schedule contains annual goals for renewable and Carbon-free purchases as a path to zero emission electricity by 2030
- The following is a discussion of currently contracted long-term renewable resources and how these will contribute to the annual targets for the schedule to a zero-emission portfolio by 2030

Discussion - Long-Term Renewable Procurement

- Three long-term renewable RFOs: 2018, 2020, and current one in 2022
- Contracted 800 MW of renewable energy and 450 MW of battery storage
- Contract Term length from 10-20 years
- Contracted generation from these is roughly 25% of annual sales when online
- First contracted project was online in 2020; currently there are 3 renewable projects and 1 stand-alone storage project online
- The rest of the contracted renewable projects have CODs starting in 2022 and through 2026

Discussion - Long-Term Renewable Procurement

- The chart below is renewables plus large hydro as a percent of sales through 2030
- Shows long- and short-term renewables, Large Hydro contracted to date with the additional Carbon-free or renewable purchases need to reach annual goals



Path to Zero Emissions electricity, 2030

Schedule for **Bright Choice** including renewable and Carbon-free as percent, forecasted emissions and CA RPS annual percent

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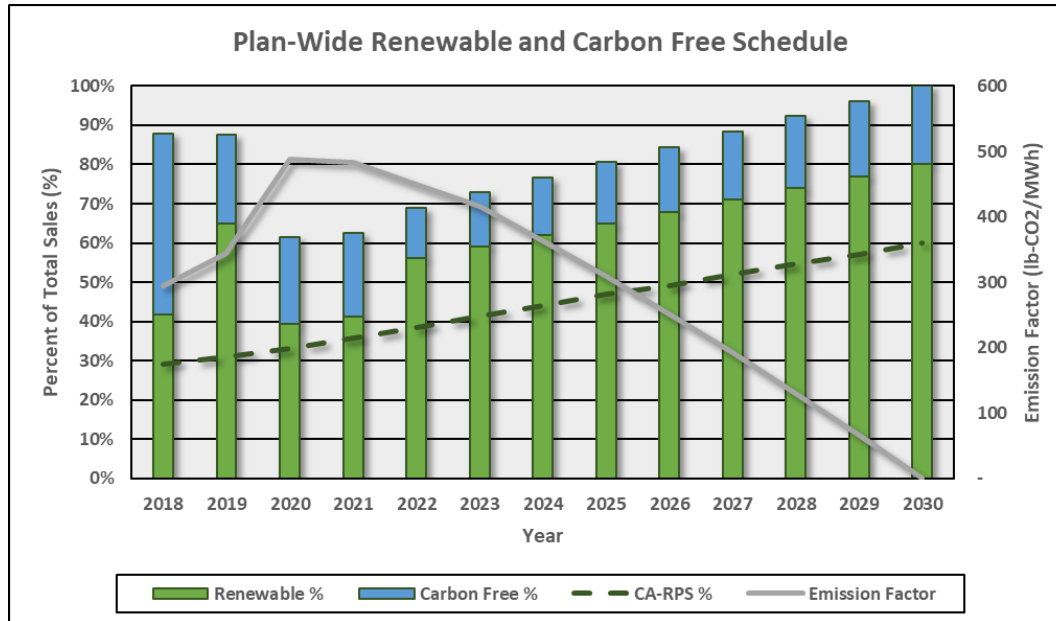
Path to Zero Emissions electricity, 2030

Schedule for **All Plans** including renewable and Carbon-free as percent, forecasted emissions and CA RPS annual percent

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Path to Zero Emissions electricity, 2030

Chart for **All Plans** including renewable and Carbon-free as percent, forecasted emissions and CA RPS annual percent



2022 IRP and Portfolio Optimization

- **2022 IRP:** Currently on-going
 - Progress from IRP analysis will be presented to the Board this year
 - Will evaluate and model current profile over 10-year planning horizon
 - Assists in the development of detailed plans for resource planning to reach 2030 goal and beyond
- **Portfolio Optimization**
 - Cost, location and shape of contracted generation is modeled to evaluate new projects and how they fit with our load
 - Forecasts projects value within our existing portfolio of resources and regulatory requirements

Next Steps

- **2022 Long Term RPS and Storage RFO**
 - Third long-term project RFO
 - Currently evaluating project submissions from developers
 - Will short list and report to Board as informational
- **Future power purchasing**
 - Continue to add long-term renewable projects through RFOs with a focus on projects within EBCE jurisdictions
 - Balance remaining open position with renewable and other Carbon-free market purchases
 - Emphasis on projects located in EBCE service territory

Thank You!



Questions? Give us a call:
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