



Staff Report Item 12

TO: East Bay Community Energy Board of Directors

FROM: Izzy Carson, Power Resources Manager

SUBJECT: Emissions Overview (Information Item)

DATE: October 18, 2023

Recommendation

Receive a presentation showing the history of the Bright Choice plan's emission factor and future emission reduction targets.

Background and Discussion

Staff is presenting an overview of the Bright Choice plan's emission factor to the Board. This presentation is in response to requests for additional information on Bright Choice emissions and the history and methodology of how this is calculated.

Bright Choice History

In October 2018, the Board adopted a 2018 calendar year emission factor of 142 pounds of carbon-dioxide equivalent per mega-watt hour (lb-CO₂^e/MWh) for the Bright Choice energy product, a product approved in 2018 that was established to provide a choice for customers for electricity at a lower price than PG&E as a comparable renewable product.

2020 Changes Impacting Procurement and Emissions Reporting

Carbon Free Allocation

In 2019 Pacific Gas and Electric (PG&E) initiated a formal large hydro and nuclear electricity allocation process determined by load share, with deliveries starting in 2020. The acceptance of this allocation did not have incremental cost to Community Choice Aggregators (CCAs) due to the Power Charge Indifference Adjustment (PCIA), a non-by passible charge set annually, under which all customers pay.

The fundamental question of whether to accept nuclear electricity from the allocation came down to a trade-off between having nuclear electricity as part of East Bay Community Energy's (EBCE) portfolio and lower greenhouse gas (GHG) emissions, or not having nuclear and accepting higher GHG emissions. Ultimately the Board elected to accept the large hydro allocation and reject the nuclear allocation.

With the introduction of the Carbon-Free Allocation, EBCE's large hydro portfolio was expected to be more in line with PG&E, and therefore renewable energy was a more appropriate focus.

Bright Choice Procurement Floor

In 2020 the Bright Choice renewable target was amended to establish a clean energy procurement floor that was intended to be higher than PG&E. The procurement floor was derived based on PG&E's prior year renewable energy power content forecast, plus an additional 5% renewables.

While the 5% buffer was included to mitigate uncertainty in PG&E's provided forecast, it was noted at the April 2020 Board meeting that there was a possibility that in a given year EBCE's renewable percentage may be less than PG&E's. This approach did have increasing forecasting challenges due to a lack of visibility into PG&E's annual renewable target. Furthermore, the reporting lag on power content means that actual values are not fully validated until their Power Content Label is produced, which occurs in the Fall of the year after the power is procured.

Assembly Bill (AB) 1110

In 2016, AB 1110 was passed which modified the Power Source Disclosure Report (PSDR) methodology and impacted the information shared with customers on the Power Content Label (PCL). The new methodology required electricity suppliers, EBCE included, to disclose the GHG emissions intensity associated with its electricity sources. The California Energy Commission (CEC) updated the PSDR regulations implementing AB 1110 effective May 2020.

AB 1110 required that emission factors could only be marketed using the newly adopted PSDR regulations methodology and that other methods for calculating emissions factors like The Climate Registry (TCR), a national emissions accounting methodology that was widely used by load serving entities, including CA utilities, CCAs and cities could not be used for calculating and disclosing emission factors to customers. The global emissions perspective of TCR was replaced with a California specific methodology, with the most significant change being in the application of the associated GHG emissions from firm and shaped Renewable Energy Credit (REC) purchases, also known as Portfolio Content Category (PCC) 2 RECs. PCC2 RECs are a California Renewable Portfolio Standard (RPS) renewable product that are by in large solar, wind and hydro resources, generated outside of California. Under the new CA specific methodology, these PCC2 RECs, regardless of source, are given an equivalent emissions factor equal to unspecified power, resulting in a material increase in reported emissions.

Path to Zero Emissions 2030

In December of 2020, the Board adopted a clean energy goal for all electricity within EBCE's portfolio to have zero net emissions by 2030. In April of 2022, a path to reach that zero

emissions goal was approved by the Board, which included annual targets for renewables and large hydro (as a percentage of sales) to reach that goal. Two months later in June of 2022, the renewable targets were increased by an additional 5%.

The path to zero emissions also removed the use of Pacific Gas and Electric’s (PG&E) prior year renewable content forecast as the basis for the annual procurement floor for Bright Choice. This step de-coupled the renewable content of Bright Choice from PG&E renewable content forecasts and established the annual steps that would lead to zero emission electricity in 2030.

Bright Choice Annual Renewable and Carbon Free Electricity Targets

The table below shows renewable and carbon free content targets through 2030 for Bright Choice, including estimates for unspecified power based on those targets, as well as estimates for emission factors in future years, and the CA RPS percentages for comparison. The totals for 2018 through 2022 represent actual sales and electricity purchases.

Table 1: Bright Choice: Renewable, Carbon Free Percentages by Year, Unspecified Power estimates and PCL Emissions Factor for Bright Choice

| Year | Bright Choice | | | | CA-RPS % |
|------|---------------|---------------|---------------|----------------------|-------------|
| | Renewable % | Carbon Free % | Unspecified % | PSDR Emission Factor | Renewable % |
| 2018 | 41% | 62% | 38% | <i>n/a</i> | 29% |
| 2019 | 60% | 87% | 13% | <i>n/a</i> | 31% |
| 2020 | 40% | 55% | 45% | 591 | 33% |
| 2021 | 42% | 60% | 40% | 564 | 36% |
| 2022 | 49% | 72% | 28% | 496 | 39% |
| 2023 | 49% | 66% | 34% | 521 | 41% |
| 2024 | 52% | 71% | 29% | 455 | 44% |
| 2025 | 56% | 76% | 24% | 387 | 47% |
| 2026 | 60% | 81% | 19% | 315 | 49% |
| 2027 | 64% | 85% | 15% | 241 | 52% |
| 2028 | 67% | 90% | 10% | 163 | 55% |
| 2029 | 71% | 95% | 5% | 83 | 57% |
| 2030 | 75% | 100% | 0% | - | 60% |

There are two primary factors influencing Bright Choice emissions. The largest source of emissions in EBCE’s portfolio is power content from emitting generation sources and for Bright Choice this is unspecified power which is the balance of carbon free electricity purchases (which includes renewable) and total sales. Unspecified electricity is not purchased for Bright Choice for content purposes but is reflective of the total sales net of carbon free content. The second factor influencing the Bright Choice emissions is renewable content from PCC2 RECs since the PSDR emissions reporting regulations require EBCE to report emissions for these renewable purchases when the source of the energy is not specified. Annual increases in the renewable and carbon free content result in annual reductions in the emission factor and unspecified power for Bright Choice.

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 whereby 2030 all of the renewable electricity for Bright Choice would come from PCC1 RECs.

Fiscal Impact

There are no fiscal impacts as this item provides information only on Bright Choice product emissions.

Attachments

- A. Presentation

OCTOBER 18, 2023

Bright Choice Emissions Overview



Overview

- What is Power Content
- EBCE Product Overview
- Renewable Energy Credits and Portfolio Content Category Classifications
- EBCE Bright Choice Target History
- PG&E Carbon Free Allocation
- Bright Choice Amendment to Power Content
- Emissions Accounting Methodology
- Where we are now
- CCA Comparison

What is the Power Content Label (PCL)?

PCL

- Published annually, based on prior calendar year generation from owned or contracted-for resources
- Detailed breakdown on sources of energy used to provide electricity
- Resembles a nutrition label for electricity
- The PCL submission is reviewed and approved by the CEC

| 2022 POWER CONTENT LABEL | | | | | | | | |
|---|---------------|---------------|-------------------------|---------------------------------|---|---------------|---------------|-------------------|
| East Bay Community Energy | | | | | | | | |
| https://ebce.org/key-documents/ | | | | | | | | |
| Greenhouse Gas Emissions Intensity (lbs CO ₂ e/MWh) | | | | Energy Resources | Renewable 100 | Brilliant 100 | Bright Choice | 2022 CA Power Mix |
| Renewable 100 | Brilliant 100 | Bright Choice | 2022 CA Utility Average | Eligible Renewable ¹ | 100.0% | 35.8% | 49.4% | 35.8% |
| 0 | 0 | 496 | 422 | Biomass & Biowaste | 0.0% | 0.0% | 1.5% | 2.1% |
| | | | | Geothermal | 0.0% | 0.0% | 0.8% | 4.7% |
| | | | | Eligible Hydroelectric | 0.0% | 0.0% | 1.4% | 1.1% |
| | | | | Solar | 50.0% | 17.9% | 18.1% | 17.0% |
| | | | | Wind | 50.0% | 17.9% | 27.6% | 10.8% |
| | | | | Coal | 0.0% | 0.0% | 0.0% | 2.1% |
| | | | | Large Hydroelectric | 0.0% | 64.2% | 21.9% | 9.2% |
| | | | | Natural Gas | 0.0% | 0.0% | 0.0% | 36.4% |
| | | | | Nuclear | 0.0% | 0.0% | 0.2% | 9.2% |
| | | | | Other | 0.0% | 0.0% | 0.0% | 0.1% |
| | | | | Unspecified Power ² | 0.0% | 0.0% | 28.4% | 7.1% |
| | | | | TOTAL | 100.0% | 100.0% | 100.0% | 100.0% |
| Percentage of Retail Sales Covered by Retired Unbundled RECs ³ : | | | | | 0% | 0% | 1% | |
| <p>¹The eligible renewable percentage above does not reflect RPS compliance, which is determined using a different methodology.</p> <p>²Unspecified power is electricity that has been purchased through open market transactions and is not traceable to a specific generation source.</p> <p>³Renewable energy credits (RECs) are tracking instruments issued for renewable generation. Unbundled renewable energy credits (RECs) represent renewable generation that was not delivered to serve retail sales. Unbundled RECs are not reflected in the power mix or GHG emissions intensities above.</p> | | | | | | | | |
| For specific information about this electricity portfolio, contact: | | | | | East Bay Community Energy 1-833-699-EBCE (3223) | | | |
| For general information about the Power Content Label, visit: | | | | | https://www.energy.ca.gov/programs-and-topics/programs/power-source-disclosure-program | | | |

EBCE's Customer Products

Renewable 100

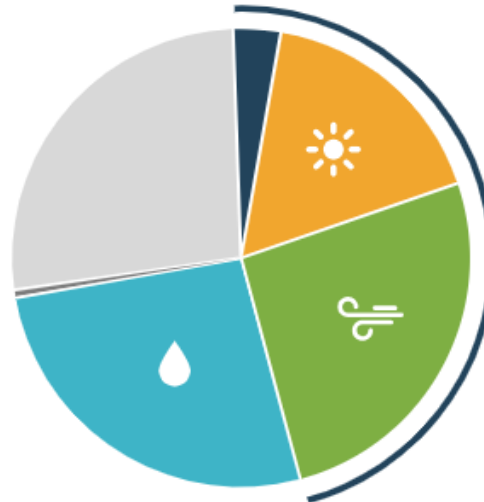
100% renewable energy from California solar & wind power at a slightly higher price than PG&E



100% eligible renewable

Bright Choice

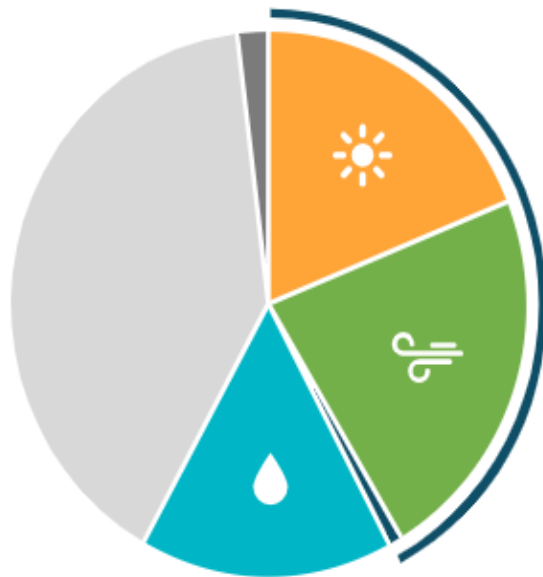
Our basic plan, which costs less than PG&E



49.4% eligible renewable energy

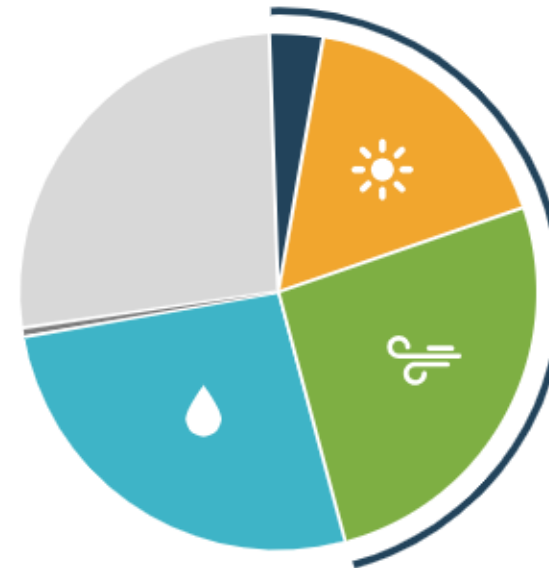
EBCE Bright Choice Comparison

2021



42.3% eligible renewable

2022



49.4% eligible renewable energy

KEY

- Wind
- Solar
- Hydro
- Biomass & Biowaste, Geothermal, Eligible Hydroelectric
- Other or Unspecified
- Nuclear

Renewable Energy Credits and Portfolio Content Category Classifications

Renewable Energy Credits (RECs):

- Represent clean energy attributes of renewable electricity
- Each REC is equivalent to one MWh of renewable electricity generated
- Limitations to the amount that each group can count towards RPS requirements
- Classified into three distinct categories Portfolio Content Categories (PCC)

| | |
|-------|--|
| PCC 1 | Energy and REC are from same source and delivered into a California Balancing Authority (CBA) without any substitution |
| PCC 2 | Substitute Energy not from the same source as REC |
| PCC 3 | Electricity Products Not Qualified as PCC 1 or PCC 2, Including Unbundled RECs |

Bright Choice History

Bright Choice plan was created to provide electricity to customers at a lower price than PG&E as a comparable product.

2018 – Bright Choice was a Board approved product, with an approved power content set at 85% carbon free

- October 2018 – Board approved use of The Climate Registry (TCR) carbon accounting methodology and 2018 calendar year emissions factor target of 142 lb-CO₂e/MWh (Actual 2018 emissions was 101 lb-CCO₂e/MWh)
- TCR is a national emissions accounting methodology that was widely used by load serving entities, including CA IOUs and CCAs, and cities

2019 PG&E Carbon Free Allocation

- PG&E initiated a formal large hydro and nuclear allocation process determined by load share, with deliveries starting in 2020. The acceptance of this allocation had zero incremental cost to CCAs due to PCIA
- EBCE initiated discussions in the November 2019 ExComm meeting followed by extensive discussions on risks, benefits, and costs with the Board and CAC at the December 2019 and January 2020 Board meetings
 - Fundamental question for accepting nuclear or not came down to a trade-off between having nuclear and lower greenhouse gas emissions, or not having nuclear and **accepting higher greenhouse gas emissions**
 - EBCE board elected to accept the large hydro allocation



2020 Amendment to Bright Choice Power Content Guidelines

- With the introduction of the carbon free allocation, EBCE's large hydro portfolio content was expected to be generally in line with PG&E, and therefore Renewable Energy was a much more appropriate focus
- Renewables target was amended to reflect a clean energy procurement floor based on PG&E's prior year renewable energy power content forecast + 5% buffer for uncertainty

$$2020 \text{ Bright Choice Renewable } \% = [2019 \text{ PG\&E Renewable Forecast}] + 5\% = 39.5\%$$

- Challenges existed under this approach due to lack of visibility into PG&E's annual renewable target and a changing RPS banking strategy. Furthermore, the reporting lag means that actual values are not fully validated until the fall of the year after the power is procured

Assembly Bill (AB) 1110

- Regulations modifying power content reporting methodology and emissions accounting methodology were initially implemented in 2020.
- AB 1110 fundamentally required replacing the previously accepted TCR emissions methodology, which took a global emissions perspective, with a California-centric emissions methodology
- Requires retail sellers to:
 - Include emissions from PCC 2 RECs resulting in a material increase in reported emissions
 - Resources, regardless of source (solar, wind, hydro) are given an equivalent emissions factor based on imported energy into CAISO, typically unspecified system power.

Where are we now?

- In December 2020, the Board adopted a clean energy goal for all electricity within EBCE's portfolio to have zero net emissions by 2030
- In April 2022, a path to reach that zero emissions goal in 2030 was approved, which included annual targets for renewable and large hydro (as a percentage of sales)
- 2022 and 2023 Targets were increased by an additional 5% in June 2022:

2022: Renewables 45% → 50%; Carbon Free 63% → 68%
2023: Renewables 49% → 54%; Carbon Free 66% → 71%

- 2023 and 2024 Targets were increased by an additional 5% and 10% respectively in June 2023
- **Increase applied to either renewable or carbon free target**

2023: Renewables 49% → 54%; Carbon Free 71% → 76%
2024: Carbon Free 71% → 81% (can be either RE or CO2 free)

Where are we now?

2022 (actuals): Renewable: 49.4%; Carbon Free:71.4%; Unspecified Power: 28.4%
 2023: Renewable target: 54%; Carbon Free target: 76%; unspecified target: 24%
 Current 2024: Carbon Free target: 81% (can include RE or CO2 free)

| Year | Bright Choice | | | | | CA-RPS % |
|------|---------------|---------------|---------------|----------------------|----------------------|-------------|
| | Renewable % | Carbon Free % | Unspecified % | TCR*-Emission Factor | PSDR Emission Factor | Renewable % |
| 2018 | 41% | 62% | 38% | 101 | <i>n/a</i> | 29% |
| 2019 | 60% | 87% | 13% | 135 | <i>n/a</i> | 31% |
| 2020 | 40% | 55% | 45% | <i>n/a</i> | 591 | 33% |
| 2021 | 42% | 60% | 40% | <i>n/a</i> | 564 | 36% |
| 2022 | 45% | 63% | 37% | <i>n/a</i> | 566 | 39% |
| 2023 | 49% | 66% | 34% | <i>n/a</i> | 521 | 41% |
| 2024 | 52% | 71% | 29% | <i>n/a</i> | 455 | 44% |
| 2025 | 56% | 76% | 24% | <i>n/a</i> | 387 | 47% |
| 2026 | 60% | 81% | 19% | <i>n/a</i> | 315 | 49% |
| 2027 | 64% | 85% | 15% | <i>n/a</i> | 241 | 52% |
| 2028 | 67% | 90% | 10% | <i>n/a</i> | 163 | 55% |
| 2029 | 71% | 95% | 5% | <i>n/a</i> | 83 | 57% |
| 2030 | 75% | 100% | 0% | <i>n/a</i> | - | 60% |

EBCE 2022 Bright Choice Emission Factor: 496
 TCR Emission Factor: 271.8
 PCC2 Emission Factor:224.2



Total Emissions Inclusive of Renewable 100 Product

| Year | All Plans | | | | | CA-RPS % |
|------|-------------|---------------|---------------|----------------------|----------------------|-------------|
| | Renewable % | Carbon Free % | Unspecified % | TCR*-Emission Factor | PSDR-Emission Factor | Renewable % |
| 2018 | 42% | 88% | 12% | 82 | <i>n/a</i> | 29% |
| 2019 | 65% | 88% | 12% | 113 | <i>n/a</i> | 31% |
| 2020 | 39% | 61% | 39% | <i>n/a</i> | 488 | 33% |
| 2021 | 42% | 65% | 35% | <i>n/a</i> | 464 | 36% |
| 2022 | 56% | 69% | 31% | <i>n/a</i> | 450 | 39% |
| 2023 | 59% | 73% | 27% | <i>n/a</i> | 417 | 41% |
| 2024 | 62% | 77% | 23% | <i>n/a</i> | 364 | 44% |
| 2025 | 65% | 81% | 19% | <i>n/a</i> | 309 | 47% |
| 2026 | 68% | 85% | 15% | <i>n/a</i> | 252 | 49% |
| 2027 | 71% | 88% | 12% | <i>n/a</i> | 193 | 52% |
| 2028 | 74% | 92% | 8% | <i>n/a</i> | 131 | 55% |
| 2029 | 77% | 96% | 4% | <i>n/a</i> | 67 | 57% |
| 2030 | 80% | 100% | 0% | <i>n/a</i> | - | 60% |

2021 R100 MWh: 97,229
 2022 R100 MWh: 1,421,427

EBCE 2022 All Plans Weighted Emissions: 382.87
 TCR Emission Factor: 208.65
 PCC2 Emission Factor: 174.22



CCA Comparison

| | RPS | Hydro | % Nuclear | Non-nuke Carbon Free | Unspecified | Current Gen Rate | Cost Differential w/ PG&E | 2022 Lbs CO2e/MWh |
|----------------|-------|-------|-----------|-------------------------|-------------|---------------------|---------------------------------|----------------------|
| CleanPowerSF | 59.9% | 37.2% | 0.0% | 97.1% | 2.9% | \$0.1375 | -3.3% | 47 |
| MCE | 59.6% | 39.5% | 0.4% | 99.1% | 0.5% | \$0.1490 | 4.7% | 44 |
| Peninsula | 51.8% | 48.2% | 0.0% | 100.0% | 0.0% | \$0.1439 | 1.3% | 9 |
| Sonoma | 50.3% | 40.0% | 0.9% | 90.3% | 8.7% | \$0.1353 | -5.0% | 112 |
| Redwood Coast | 50.0% | 45.0% | 0.0% | 95.0% | 5.0% | \$0.1509 | 5.9% | 49 |
| EBCE | 49.4% | 21.9% | 0.2% | 71.4% | 28.4% | \$0.1342 | -5.8% | 496 |
| Silicon Valley | 44.9% | 30.8% | 24.3% | 75.7% | 0.0% | \$0.1459 | 2.7% | 72 |
| Pioneer | 44.1% | 1.3% | 27.6% | 45.4% | 27.0% | \$0.1287 | -10.3% | 343 |
| San Jose | 40.2% | 9.2% | 30.9% | 49.4% | 19.8% | \$0.1487 | 4.5% | 210 |
| King City | 38.5% | 0.0% | 0.0% | 38.5% | 61.5% | \$0.1524 | 6.8% | 580 |
| PG&E | 38.3% | 7.6% | 49.3% | 45.9% | 0.0% | \$0.1420 | 0.0% | 56 |
| 3CE | 35.8% | 5.9% | 0.0% | 41.7% | 58.3% | \$0.1060 | -34.0% | 637 |
| Valley | 17.5% | 7.4% | 0.0% | 24.9% | 75.1% | \$0.1521 | 6.7% | 709 |

Contributing factors to higher/lower emissions

- Acceptance or rejection of nuclear allocation
- Rates compared to PG&E
- Renewable and Hydro content
- Unspecified Power

Questions?

Thank You

Izzy Carson

Power Resources Manager