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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Address Utility Cost and Revenue Issues Associated with Greenhouse Gas Emissions.	Rulemaking 11-03-012 (Filed March 24, 2011)

ADMINISTRATIVE LAW JUDGE'S RULING SETTING FORTH PROCEDURAL SCHEDULE TO ADDRESS GREENHOUSE GAS ALLOWANCE REVENUE ALLOCATION FORMULAS AND REQUESTING PRE-WORKSHOP STATEMENTS

Background

Decision (D). 12-12-033 (Decision Adopting Cap-and-Trade Greenhouse Gas Allowance Revenue Allocation Methodology for the Investor-Owned Electric Utilities) directs the Commission's Energy Division to initiate a public workshop process to finalize the proposed greenhouse gas (GHG) revenue allocation formulas for emissions-intensive and trade-exposed (EITE) entities and small business customers, as defined in that decision. Initial proposed formulas were attached as Appendices A and B to D.12-12-033 and are included by way of reference as Attachments B and C to this ruling.

The workshop process must consider all necessary input sources required to calculate GHG revenue returns as well as the process and timing of all information and data exchanges that must occur to calculate the revenue return. The workshop process must also evaluate the appropriate timing of GHG revenue returns to EITE and small business customers, and, for the EITE return, the appropriate form of the return (whether on- or off-bill). Finally, the

workshop process must explore alternatives to the requirement that EITE customers with total annual emission less than 25,000 metric tons of carbon dioxide equivalent opt into the Cap-and-Trade program in order to be eligible to receive GHG allowance revenues.

Upon completion of the workshop process, D.12-12-033 directs Energy Division staff to submit a workshop report setting forth recommended EITE and small business GHG allowance revenue distribution formulas, including all information necessary to calculate the formulas, as well as a recommendation on the timing of allowance revenue distribution (and the form of revenue distribution for EITE customers). Parties will have an opportunity to comment on the staff proposal included in the workshop report prior to the issuance of a decision adopting EITE and small business GHG revenue allocation formulas.

Request for Pre-Workshop Statements from Parties

In order to maximize the efficiency of the workshop process, parties should submit pre-workshop statements. Pre-workshop statements should address the questions set forth in Attachment A to this ruling. Pre-workshop statements must be filed and served by close of business February 6, 2013.

Technical Working Group

As the initial step of the workshop process, Energy Division will convene a technical working group to discuss EITE and small business GHG revenue allocation formulas. The initial technical working group meeting will be held on February 14-15, 2013. To ensure an effective and streamlined process that enables Energy Division to dive deeply into the technical details of the formulas, each party grouping (not individual parties) listed below may (but are not required to) send a maximum of two attendees knowledgeable in the technical aspects of the proposed EITE and small business formulas to the technical

working group. The purpose of this working group is to solicit the technical expertise of parties on the specific details of the formulas proposed in Appendices A and B to D.12-12-033 (Attachments B and C to this ruling). Energy Division may convene additional meetings of the technical working group, as necessary. Delegates to the technical working group should identify themselves to Energy Division staff via email to Jason Houck (jason.houck@cpuc.ca.gov) by February 8, 2013. Energy Division staff will send an agenda to members of the technical working group in advance of February 14, 2013.

Technical Working Group Parties

1) The large investor-owned utilities
2) The small investor-owned utilities
3) The Joint Parties
4) The Large Users
5) Ratepayer advocacy groups
6) Community Choice Aggregation/Direct Access customers
7) Combined Heat and Power representatives
8) Tesoro/USS POSCO
9) Energy efficiency/renewable energy/solar energy groups
10) Agricultural Parties

Staff Proposal

Energy Division will incorporate the feedback of the technical working group, along with the feedback received from parties in pre-workshop statements, to develop a detailed draft staff proposal including all information necessary to distribute GHG revenues to EITE and small business customers (i.e. formulas, data exchanges, calculation methodologies, timing, and the distribution mechanism for EITE customers). The draft proposal will be served

on all parties to this proceeding, and Energy Division will subsequently convene a public workshop to discuss the draft proposal. Following the public workshop, a final staff proposal will be incorporated into the record of this proceeding by written ruling of the assigned Administrative Law Judge (ALJ). Parties will have an opportunity to provide comments on the final proposal prior to the issuance of a proposed decision.

Schedule

The following schedule is established to address the finalization of EITE and small business GHG revenue allocation formulas. Dates may be changed to accommodate the development of the staff proposal, as necessary, and the date of the public workshop will be noticed on the Commission's Daily Calendar and via electronic mail to the service list of this proceeding.

Item	Date
Pre-Workshop statements filed and served	February 6, 2013
Delegates to the technical working group identify themselves to Jason Houck (jason.houck@cpuc.ca.gov)	February 8, 2013
Initial technical working group meeting to discuss EITE and small business formulas (additional meetings may be convened at the election of Energy Division staff).	February 14-15, 2013
Energy Division draft staff proposal served on parties	April 15, 2013
Public workshop to discuss draft staff proposal	Late April/Early May, 2013
Energy Division final staff proposal (to be incorporated into the record via ALJ ruling)	May 17, 2013
Parties file and serve comments on the final staff proposal	May 31, 2012

Proposed Decision	July, 2013 (anticipated)

An amended scoping memo will issue at a later date to memorialize the above schedule, and the assigned ALJs or Commissioner may modify the schedule as necessary to ensure the efficient resolution of this process.

IT IS RULED that:

1. The schedule and process to finalize greenhouse gas revenue allocation formulas for emissions-intensive and trade-exposed and small business customers is as set forth herein.

2. Parties should file pre-workshop statements addressing the questions set forth in Attachment A to this ruling by close of business February 6, 2013.

3. Party groups listed herein may designate no more than two (but are not required to designate any) delegates to participate in the technical working group process that will commence on February 14-15, 2013. Delegates must identify themselves to Jason Houck of the Commission's Energy Division via email at jason.houck@cpuc.ca.gov by February 8, 2013.

Dated January 23, 2013, at San Francisco, California.

/s/ MELISSA K. SEMCER
Melissa K. Semcer
Administrative Law Judge

ATTACHMENT A

EITE and Small Business Workshop
Questions for Ruling Seeking Pre-Workshop Comments

EITE Allocation Methodology

1) Product-Based Allocation Methodology

a. Formula:

i. Discuss the proposed Product-Based Allocation Methodology formula, ($Allocation = A_t * B * C_t * O_{t-1} * D_t$, with variables explained on Appendix A, p. 5) and evaluate whether it is reasonable.

b. Variables:

i. What agency or entity will provide the emission factor to be used in the calculation of the benchmark variable, $B_{purchased\ electricity}$, and how frequently should this factor be updated over time?

ii. For an entity that purchases electricity from a third-party owned CHP facility, should the benchmark variable, $B_{purchased\ electricity}$, be calculated with the utility-specific emissions factor, $CCF_{Electricity\ utility}$, of the interconnecting utility, or should a different emissions factor be used?

iii. The proposed product output variable, O_{t-1}, would rely on verified product output data representing production from the year prior to the compliance year for which the entity seeks allowance revenue, and the allocation formula as proposed does not include a true-up in subsequent years. Discuss the reasonableness of this approach, and evaluate the merits of two alternatives: 1) using verified product output data for compliance year "t," in which case the product output variable would become O_t; or 2) use verified product output data in a given compliance year "t-1" from the current compliance year, and include a true-up in 2014 and later.

1. Discuss the pros and cons of each approach.

2. Evaluate and quantify, if possible, the financial implications to businesses of using current budget year's verified production data (O_t), which would delay a distribution of revenue from occurring until after verifiable production data are available. Discuss the extent to which this approach would have material financial impacts on a business compared to an allocation methodology that uses the most recent year's verified production data (O_{t-1}) with and without a true-up in the subsequent year.

3. For each general approach – 1) using the current budget year's verified production data (O_t), and 2) using the previous year's verified production data (O_{t-1}) – by what month and day each year should eligible industries receive an allocation of revenue?

iv. Discuss the appropriateness of calculating the conversion factor *D* as the "sales weighted average market clearing price of allowances sold at auction of the same vintage year as the compliance year for which compensation is being sought."

c. Timing:

i. For the two product output scenarios mentioned above – 1) using verified product output data for compliance year "t," or 2) using verified product output data in a given compliance year "t-1" from the current compliance year, identify the following:

1. By what date each year should the revenue return be provided to eligible industries?

2. By what date each year should the CPUC and ARB have collected all data necessary to complete the calculations?

3. By what date each year should the CPUC have completed all necessary calculations and communicated the results to the IOUs so they can then distribute allowance revenue.

    a. How quickly will the utilities be able to distribute revenue (via check or as an on-bill credit) once they have direction from the Commission to return specific amounts to each business?

d. Data Confidentiality

    i. What data must remain confidential between the CPUC and ARB (e.g. product output data), and what minimum amount of data must be shared with the utilities to facilitate the distribution of revenue?

2) Energy-Based Allocation Methodology

a. Formula:

    i. Discuss the proposed Energy-Based Allocation Methodology formula, ($Allocation = e_{purchased} * B_{electricity} * AF_t * C_t * D_t$, with variables explained on Appendix A, p. 9) and evaluate whether it is reasonable.

b. Variables:

    a. "$e_{purchased}$": Over what historical period should $e_{purchased}$ be calculated, and what should be the source of this historical data: records submitted to ARB, or utility invoices and invoices from third-party electricity providers?

        i. What should the methodology be to estimate a new entrant's electricity purchases, where a new entrant is an entity not in operation prior to 2011 that is eligible for an energy-based allocation?

        ii. "$B_{electricity}$": What agency or entity will provide or calculate the emissions efficiency benchmark per unit of

electricity purchased? Should this benchmark represent the same historical period used to calculate $e_{purchased}$?

c. Timing:

a. Should the timing of the energy-based allocation coincide with the timing of the product-based allocation each year, or should the energy-based allocation be provided as soon as practicable?

b. What is a reasonably practicable and fair date each year by which the utilities should provide allowance revenue to entities that qualify for an energy-based allocation?

c. By what date must a new entrant opt-in to the Cap-and-Trade program in order to qualify for an allocation of revenue for the current compliance year?

3) Refinery Allocation Methodology

a. Formulas:

i. Discuss the refinery allocation formulas proposed in Appendix A to D.12-12-033, and evaluate their reasonableness. Propose any changes to these formulas.

ii. For simple refineries that do not have a Solomon Complexity Index (EII), comment on the appropriateness of compensating refineries according to baseline emissions if emissions are in excess of historical levels (i.e. if $A_t * B * C_t * O_{t-1} > A_t * BE * C_t$, then Revenue Allocation$_t$ = $A_t * BE * C_t * D_t$, as these variables are defined on page 15 of Appendix A to D.12-12-033).

iii. For refineries with an EII value, comment on the appropriateness of providing compensation according to the following formula: $Revenue\ Allocation_t = BE_Y * DF_{Y,t} * F_t * D_t$, with variables as defined on page 16 and 17 of Appendix A to D.12-12-033.

iv. Discuss the appropriateness of the true-up mechanism proposed on page 17 of Appendix A to D.12-12-033 to account for circumstances in which actual emissions are less than the revenue provided (i.e. the refinery must reimburse ratepayers), and, conversely, when actual emissions are greater than the revenue provided (i.e. the refinery receives a credit).

b. Variables:

i. What agency or entity will provide the emission factor to be used in the calculation of the benchmark variable, $B_{refineries}$, and how frequently should this factor be updated over time?

ii. For an entity that purchases electricity from a third-party owned CHP facility, should the benchmark variable, $B_{refineries}$, be calculated with the utility-specific emissions factor, $CCF_{Electricity\ utility}$, of the interconnecting utility, or should a different emissions factor be used?

iii. If a refinery does not report production volume or its Solomon Complexity Index (EII), how should the allocation for this refinery be calculated, and how should the total allocation to the refinery sector be adjusted, if at all?

c. Timing:

i. Should the timing of the refinery allocation coincide with the timing of the product-based allocation each year, or should the refinery allocation be provided as soon as practicable?

ii. By what date each year should the CPUC and ARB have collected all data necessary to complete the calculations, including EII values, electricity purchases by refinery, annual GHG emissions, and annual production output.

iii. By what date each year should the CPUC have completed all necessary calculations and communicated the results to the IOUs so they can then distribute allowance revenue.

iv. What is a reasonably practicable and fair date each year by which the utilities should provide allowance revenue to entities that qualify for a refinery allocation?

4) Method of Return

a. Should an EITE entity's revenue allocation be returned via an annual check or via an annual bill credit, and why?

b. What is the minimum amount of business-identifying information that the utilities need from Energy Division so they will be able to identify eligible EITE businesses in their billing systems and provide either a check or on-bill credit to the eligible entity?

c. What are the utilities' expected annual implementation costs if: 1) They issue an annual check to eligible EITE entities, or 2) They issue an annual on-bill credit to eligible entities? Explain the basis for these cost estimates.

d. How quickly will the utilities be able to deliver, a) a check, or b) an on-bill credit once Energy Division provides a list of eligible EITE entities to compensate along with dollar amounts to provide to each entity?

e. Should revenue be awarded to a single business entity, or to multiple facilities with compliance obligations?

5) Opt-In Eligibility

a. By what date each year must a qualifying industrial entity opt-in to the Cap-and-Trade Program in order to qualify for a distribution of allowance revenue as outlined in *Appendix A* of D.12-12-033?

b. D.12-12-033 requires that EITE entities with emissions less than 25,000 MTCO2e opt-into the Cap-and-Trade program to receive allowance revenue for indirect emission costs associated with electricity purchases unless another method can be developed to accurately obtain the necessary information to calculate greenhouse

gas allowances (OP 6). Propose methods, other than opting into the Cap-and-Trade Program and following the methodologies identified in Appendix A to D.12-12-033, to collect information necessary to calculate how much allowance revenue should be returned to EITE entities that have emissions less than 25,000 MTCO2e. Similarly, propose alternative methodologies to calculate how much revenue should be returned to these entities. Identify and discuss any benefits and perverse outcomes that may result from using these proposed methodologies, compared to the default requirement that the entities opt-in to the Cap-and-Trade Program.

c. Discuss other circumstances or needs that may be unique to EITE entities with emissions below 25,000 MTCO2e/year and that are relevant to the Commission's consideration of an appropriate methodology to return allowance revenue to these entities.

Small Business Allocation Methodology

1) Formulas

a. Discuss the reasonableness of the approach proposed in *Appendix B* to D.12-12-033, and propose and justify any modifications deemed necessary.

2) Variables

a. By what date will each utility have submitted forecasted GHG costs and generation allocation factors in its ERRA proceeding?

3) Method of return

a. Should the volumetric return be visible on a customer's bill as a line-item credit, or should it be provided behind-the-scenes as a rate reduction?

END OF ATTACHMENT A.

ATTACHMENT B

Sample Methodologies for Calculating Allowance Value to Compensate EITE Customers for their Purchased Electricity Costs Resulting from the Cap-and-Trade Program

In this Appendix we detail proposed methodologies and associated formulas consistent with the direction provided in this decision to calculate the amount of revenues entities eligible for Industry Assistance would receive to compensate them for the indirect emissions costs they are subject to under the Cap-and-Trade program as a result of their electricity purchases. These formulas are substantially based on those developed by the Air Resources Board to calculate allowance allocations that entities are eligible to receive to address direct emissions costs. As described in detail below, depending on industrial classification and activity, a different methodology and formula may apply.

In developing these proposed methodologies and formulas we seek to mirror those ARB developed for purposes of distributing emission allowances, recognizing that in the context of this decision, we are allocating revenues, not allowances. This and other factors necessitate modifications to the ARB formulas to make them applicable to address revenue allocation. Going forward we seek to refine these formulas and inputs through technical workshops and ultimately a Commission-adopted resolution. However, in making any refinements, we will seek to maintain ARB's basic conceptual and methodological approach.

Product-Based Allocation Methodology

Under this methodology, ARB applies the following general formula to determine the allocation of allowances that an entity would receive:

Allocation = A * B * C * O

Where:

"A" is the "assistance factor," which is the percent of the emissions benchmark (described below) that will be provided in an allocation, ranging from 30% to 100%, depending on sector's leakage risk classification (high: 100% for all compliance periods; medium: 100%, 75%, and 50% for the first, second, and third compliance periods, respectively; and low: 100%, 50%, 30%). The specific percentage is determined based on ARB determinations regarding the level of emissions intensity and trade exposure an entity is subject to and the year in which the allocation is being sought. The specific Assistance Factor that applies to a given sector can be found in Table 8-1 of the ARB's cap-and-trade regulation.

"B" is the emissions benchmark per unit output for the applicable sector. This amount is calculated for each activity defined in Table 9-1 of ARB's Cap-and-Trade regulating summing direct emissions and indirect emissions from steam purchases for the category, netting out any direct emissions associated with sold electricity and/or steam, and then dividing this amount by total production for the category:

$0.9 * [\text{Direct Emissions} + (\text{Steam Purchased} - \text{Steam Sold}) * CCF_{\text{Steam}} - \text{Electricity Sold} * CCF_{\text{Electricity}}] / \text{Production}$

Where:

0.9 is the benchmark stringency chosen to reflect the emissions intensity of highly efficient, low-emitting covered entity within each industrial activity. For sectors in which there was only one covered entity or in which no covered entity was at least at the efficiency of the benchmark, the benchmark stringency was set at the average emissions efficiency (i.e., multiplied times 1.0, not 0.9).

"Direct Emissions" is the total direct emissions for the industrial sector for which the benchmark "B" is being calculated over a historical period, that results from process emissions (where applicable) and the combustion of fossil fuels onsite.

"Steam Purchased" is the total steam purchased by the sector for which the benchmark "B" is being calculated over a historical period, in MMBTU.

"Steam Sold" is the total steam sold by the sector for which the benchmark "B" is being calculated over a historical period, in MMBTU.

"CCF" is a benchmark for emissions from steam or electricity. The CCF for steam is .0663 tonne $CO_2e/MMBTU_{steam}$, which is consistent with a boiler utilizing natural gas and operating at 85% efficiency, and .431 tonne CO_2e/MWH for electricity, which is consistent with a natural gas emission factor.

"Electricity Sold" is the total electricity sold by the sector for which the benchmark "B" is being calculated over a historical period, in MWH.

"Production" is the total output for the industrial activity for which the benchmark is being calculated over a historical period.

"C" is the Cap Adjustment Factor applied to the allocation calculation to scale the allocation consistent with the decline in the overall GHG cap. This factor will depend on the year in which an allocation is being provided. The schedule for the Cap Adjustment Factor can be found in Table 9-2 in the ARB's cap-and-trade regulation.

"O" is the total production from a given industrial activity subject to the product-based benchmark.

To develop an allocation that mirrors this methodology for indirect emissions, the formulation above can be left largely intact with the exception of the benchmark ("B"), which, for purposes of calculating indirect emissions can be calculated by simply dividing indirect emissions from electricity purchases by total production for the category:

$$B_{\text{purchased electricity}} = 0.9 * \Sigma(EP_{\text{covered entity}} * CCF_{\text{Electricity,utility}})/\text{Production}$$

Where:

0.9 is the benchmark stringency chosen to reflect the emissions intensity of highly efficient, low-emitting covered entity within each sector. For sectors in which there was only one covered entity or in which no covered entity was at least at the efficiency of the benchmark, the benchmark stringency was set at the average emissions efficiency (i.e., multiplied times 1.0, not 0.9).

"$EP_{\text{covered entity}}$" is the total electricity purchased by an individual covered entity within an sector for which the benchmark "B" is being calculated over a historic period in MWH.

"$CCF_{\text{electricity,utility}}$" as used here is a utility-specific emissions factor for electricity delivered to the covered entity in $EP_{\text{covered entity}}$ during the historic period, calculated as the average tonnes CO_2e/ MWH of electricity.

"Production" is the total output for the activity for which the benchmark is being calculated over a historical period.

Substituting this formulation of the benchmark ("B" in the above equation) into the equation above results in a formula that calculates the allocation an entity subject to a product-based benchmark would receive for its indirect emissions costs from purchased electricity.

However, because the IOUs are required to consign their allocations to auction, rather than allowances, the compensation for entities for purchased

electricity costs requires an additional factor to convert the allocation, denominated in tonnes of CO_2e, into dollars. Thus, we need to multiply the result from the equation above by a conversion factor, "D" representing an estimate of the cost per tonne of emissions. Given the vagaries of carbon prices in the market, we believe this conversion factor should be calculated as the sales weighted average market clearing price of allowances sold at auction of the same vintage year as the compliance year for which compensation is being sought.

With these additions, the general formula for calculating the allocation for purchased electricity costs under the product based benchmark approach becomes:

$$\text{Allocation} = A_t * B * C_t * O_{t-1} * D_t$$

Where:

"A_t" is the "assistance factor," associated with a given sector for a given compliance year "t". It is the percent of the emissions benchmark (described below) that will be provided in an allocation, ranging from 30% to 100%. The specific percentage is determined based on ARB determinations regarding the level of emissions intensity and trade exposure an activity is subject to and the year in which the allocation is being sought. The specific Assistance Factor that applies to a given sector can be found in Table 8-1 of the ARB's cap-and-trade regulation.

"B" is the indirect emissions benchmark per unit output for the applicable sector. This amount is calculated for each industrial sector by summing indirect emissions from electricity purchases for a given sector and historical period, and then dividing this amount by total production for the sector and period as described above.

"O_{t-1}" is the total output produced in a given compliance year "t-1" from a given covered entity receiving compensation under the product-based benchmark.

> "D_t" is the Dollar Conversion Factor calculated based on the sales-weighted average market clearing price of allowances sold at auction of the same vintage as the compliance year for which compensation is being provided.

Under the approach we take here, the allocation amount for compliance year "t" would be calculated after the last auction for year t has occurred. For example, compensation for purchased electricity costs for the 2013 compliance year would be calculated and provided late in 2013, using 2012 production data and 2013 auction clearing prices.

These calculations should, for the most part rely on the same output data that ARB uses to calculate allowance allocations. We note that there may be some entities that would be eligible for compensation for purchased electricity costs because they belong to an industrial sector designated for industry assistance, but, because they are below the reporting and/or compliance threshold, do not submit output data to ARB. To the degree these entities wish to receive compensation for their purchased electricity, they will need to opt into the cap-and-trade program, per section 95813 of the cap-and-trade regulation.

Energy-Based Allocation

For some industrial entities, rather than adopt a product-based approach, ARB instead relies on an "Energy-based" allocation methodology reflecting estimated historical emissions from a given covered entity. To develop these benchmarks, ARB relied on the following formula:

$$Allocation_t = (S_{Consumed} * B_{Steam} + F_{Consumed} * B_{Fuel} - e_{Sold} * B_{Electricity}) * AF_t * C_t$$

Where:

"$S_{Consumed}$" is the historical baseline annual arithmetic mean amount of steam consumed, measured in MMBtu, at the industrial covered entity for any industrial process, including heating or cooling applications. This value shall exclude any steam used to produce electricity. This value shall exclude steam produced from an onsite cogeneration unit;

"B_{Steam}" is the emissions efficiency benchmark per unit of steam, 0.06244 California GHG Allowances/MMBtu Steam;

"$F_{Consumed}$" is the historical baseline annual arithmetic mean amount of energy produced due to fuel combustion at a given covered entity, measured in MMBtus. ARB's Executive Officer shall calculate this value based on measured higher heating values or the default higher heating value of the applicable fuel in Table C–1 of subpart C, title 40, Code of Federal Regulations, Part 98 (October 30, 2009). This value shall include any energy from fuel combusted in an onsite electricity generation or cogeneration unit. This value shall exclude energy to generate the steam accounted for in the "SConsumed" term;

"B_{Fuel}" is the emissions efficiency benchmark per unit of energy from fuel combustion – 0.05307 California GHG Allowances/MMBtu**;**

"e_{Sold}" is the historical baseline annual arithmetic mean amount of electricity sold or provided for off-site use, measured in MWhs;

"$B_{Electricity}$" is the emissions efficiency benchmark per unit of electricity sold or provided to off-site end users, 0.431 California GHG Allowances/MWh; This is the historical baseline annual arithmetic mean amount of electricity sold or provided for off-site use, measured in MWhs;

> "AF_t" is Assistance Factor, a number representing the percent of the emissions benchmark (described below) that will be provided in an allocation, ranging from 30% to 100% in a given budget year. The specific percentage is determined based on ARB determinations regarding the level of emissions intensity and trade exposure an entity is subject to and the budget year from which the allocation is being drawn. The specific Assistance Factor that applies to a given sector and budget year can be found in Table 8-1 of the ARB's cap-and-trade regulation.
>
> "C_t" is the Cap Adjustment Factor applied to the allocation calculation to scale the allocation consistent with the decline in the overall GHG cap. This factor will depend on the budget year from which an allocation is being drawn. The specific cap adjustment factor values for each budget year by sector can be found in Table 9-2.

We note that under the energy-based allocation, the allocation amount an entity is eligible to receive does not change or update over time. It is established from the outset based on the variables described above, with the exception of entities that shut-down or fall below the emissions threshold, in which case they are no longer eligible to receive allowances.[1] Additionally, to address new entrants, i.e. those entities that were not in operation prior to 2011, but are eligible for a free allocation under the energy-based approach, ARB allows the Executive Officer the ability to establish an allocation based on the covered entity's "expected activity levels".[2]

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[1] ARB Cap and Trade regulation 95891.c.4.

[2] ARB Cap and Trade regulation 95891.c.3.

As with the product-based benchmarking methodology described above, this methodology does not include the indirect emissions associated with electricity purchases. To address these indirect costs under the energy-based benchmark, the following calculation should be used:

$$\text{Revenue Allocation} = e_{Purchased} * B_{Electricity} * AF_t * C_t * D_t$$

Where:

"$e_{Purchased}$" is the historical baseline annual arithmetic mean amount of electricity purchased by a given covered entity for use onsite, measured in MWhs; This should be based on historical data either submitted to ARB, or based on utility invoices over that same, historical period.

"$B_{Electricity}$" is the emissions efficiency benchmark per unit of electricity purchased from third parties in tonnes CO_2e/MWh. The specific emissions efficiency benchmark is specific to the third party that provided power to the entity receiving an energy-based revenue allocation over the historical period.

"AF_t" is the percent of the emissions benchmark (described below) that will be provided in an allocation, ranging from 30% to 100%. The specific percentage is determined based on ARB determinations regarding the level of trade exposure an entity is subject to and the year in which the allocation is being sought. The specific Assistance Factor that applies to a given sector and compliance year can be found in Table 8-1 of the ARB's cap-and-trade regulation.

"C_t" is the cap adjustment factor applied to the allocation calculation to scale the allocation roughly consistent with the decline in the overall GHG cap. This factor will depend on the year for which an allocation is being sought. The specific Cap Adjustment Factor that applies to a given sector can be found in Table 9-2 of the ARB's cap and trade regulation.

"D_t" is the Dollar Conversion Factor used to convert tonnes of emissions into dollars. This value should be calculated as the sales

> weighted average market clearing price of the allowances sold at auction. The weighted average includes only the vintage allowances associated with the compliance year for which the emissions being compensated occur.

As with the product-based approach, the revenue allocation will be calculated and provided at the end of the given compliance year for which the compensation is being calculated. Similar to ARB's approach for direct emissions costs under the energy-based benchmark, we also need to address new entrants and facility closures. For new entrants, we need to develop a process to reasonably estimate a new entrant's electricity purchases, defined as an entity not in operation prior to 2011 that is eligible for an energy-based allocation. Should an entity, otherwise eligible to receive an energy-based allocation, cease operations, consistent with ARB's approach, it will no longer be eligible to receive an energy-based allocation to address its indirect costs.

Allocations to Refineries

As described earlier in this decision, Tesoro filed comments regarding specific concerns related to its Golden Eagle Refinery. Specifically, Tesoro argues that the Commission should address the lack of Industry Assistance that the Golden Eagle Refinery will receive from ARB for the purchase of electricity from a third-party-owned CHP unit. Tesoro points out that if the Golden Eagle refinery owned the same CHP unit, the GHG costs of its electricity production would be eligible for Industry Assistance. Tesoro argues that this mere difference in ownership status should not result in substantially different level of Industry Assistance. In order to provide assistance commensurate with a facility with on-site CHP, Tesoro suggests that the utilities be directed to set aside some of the

allowance revenues they receive to cover the costs faced by refineries purchasing electricity from third-party CHP providers.

We agree that it is appropriate to address the GHG costs of electricity purchased by refineries from third-party CHP through the use of the allowance revenues the utilities will receive in a manner consistent with the intent of Tesoro's request. The ARB approach to allowance allocation to the refinery sector during the first compliance period employs a two-tiered approach. First, the sector is allocated allowances on a simple product-based, "simple barrel" benchmark identical to that utilized for other product-based benchmarks, but where the allocation is based on sector production from two year's prior, the refinery assistance factor, the cap adjustment factor, and a benchmark of 0.0462 allowances per barrel of primary refinery product. By using the simple barrel metric to evaluate GHG intensity for the sector as a whole, the sector allocation is transparent and based on information that can generally be made publicly available. The total amount of allowances allocated to the sector can increase or decrease automatically in response to future production levels of refinery products consistent with the product-based allocation approach for producers in other sectors. Likewise, the performance goal (benchmark stringency) for the sector is directly comparable to what is required for other industrial sectors.

Allocation to individual refineries is determined depending on the complexity of the refinery. Simple and complex refineries are differentiated in the allocation to individual refineries because complex refineries conduct a variety of emissions-intensive processes that are disadvantaged under the simple barrel metric. For so-called "simple" refineries (i.e., those without a Solomon Energy Efficiency Index®, described below), covered entity-level allocations are provided using the same formula if emissions are at or below historical levels,

and at a baseline level of emissions (allocation = assistance factor x baseline level of emissions x cap adjustment factor) if emissions are in excess of historical levels. The remainder of refinery-sector allowances (i.e., those remaining after those allowances allocated to simple refineries are subtracted from the sector allocation), are divided amongst those refineries with a Solomon Energy Efficiency Index® (EII) value based on the historical emissions of each refinery, EII, an adjustment factor to reduce competitiveness impacts of allowance allocation between in-state refineries, and future emissions for each refinery.

The Solomon EII is a complexity-adjusted measurement of refinery energy efficiency developed by Solomon Associates, which has been developing energy efficiency benchmarks relied upon by the industry for the past 30 years. They maintain an extensive database of more than 500 refineries' energy consumption and process data, covering over 85 percent of global refinery capacity, which is used to develop the EII values. The Solomon EII is the industry standard for comparing energy efficiency across refineries globally. California refineries that have a Solomon EII value represent over 90 percent of the refining capacity in the state. Although EII value is a complexity-adjusted measurement of energy efficiency and not greenhouse gas efficiency, we believe it provides an appropriate performance metric for complex facilities. The metric is well understood by all complex facilities and has been recognized under the U.S. Environmental Protection Agency's Energy-Star Program. Under ARB's approach, and the parallel approach proposed here for emissions from electricity purchased by refineries, the covered entity with the best (most efficient) EII will receive the greatest portion of their historical emissions baseline, and less efficient facilities will receive small portions of their individual historical

emissions baseline. A true up using actual emissions will occur at the end of the first compliance period to ensure there is no excessive under or over allocation.

Though ARB's approach to providing compensation to refineries is complex, we believe the benefits of pursuing a comparable approach to address indirect emissions costs embedded in electricity purchases outweighs the administrative costs of doing so, particularly in light of the fact that it applies the appropriate incentive of encouraging the efficient use of electricity. In order to provide allowance value on this basis, we first need to calculate the allowances needed for the refining sector as a whole to cover their indirect emissions. This is accomplished using an approach comparable to that outlined for the product-based allocation methodology for purchased electricity:

$$SA_{EP} = At * B * C * O$$

Where:

"SA_{EP}" is the annual allocation to the refining sector for emissions from purchased electricity for budget year t.

"A_t" is the assistance factor for budget year t assigned to petroleum refining as specified in Table 8-1.

"B" is the benchmark for primary products produced by the refining sector, and is determined by the following equation:

$$B_{refineries} = 0.9 * \Sigma(EP_{covered\ entity} * CCF_{electricity,utility})/Production$$

Where:
0.9 is the benchmark stringency chosen to reflect the emissions intensity of highly efficient, low-emitting covered entities within the sector.

"$EP_{covered\ entity}$" is the total electricity purchased by an individual covered entity within the refinery sector for

which the benchmark "$B_{refineries}$" is being calculated over a historic period, in MWH.

"$CCF_{electricity,utility}$" as used here is a utility-specific emissions factor for electricity delivered to the covered entity during the historic period, calculated as the average tonnes CO_2e/MWH of electricity.

"Production" is the total output for the sector for which the benchmark is being calculated over a historical period.

"C_t" is the cap adjustment factor for budget year t assigned to petroleum refining to account for cap decline as specified in Table 9-2.

"O_{t-1}" is the output of primary refinery products, in barrels, from the refining sector in year t-1.

Refineries without an EII value would be allocated to based on the following approach:

If: $A_t * B * C_t * O_{t-1} \leq A_t * BE * C_t$
Then: Revenue Allocation$_t$ = $A_t * B * C_t * O_{t-1} * D_t$

If: $A_t * B * C_t * O_{t-1} > A_t * BE * C_t$
Then: Revenue Allocation$_t$ = $A_t * BE * C_t * D_t$

Where:

"$A_{X,t}$" is the allocation to refinery "X" without an EII value for year t.

"B" is the benchmark for the refinery sector for emissions from purchased electricity, as calculated on the previous page.

"C_t" is the adjustment factor for budget year t assigned to petroleum refining to account for cap decline as specified in Table 9-2.

"$O_{X,t-1}$" is the output of primary refinery products, in barrels, from refinery "X" in year t-1.

"BE_X" is the average annual greenhouse gas emissions for purchased electricity for refinery "X" over a historical period.

"D_t" is the Dollar Conversion Factor used to convert tonnes of emissions into dollars. This value should be calculated as the sales weighted average market clearing price of the allowances sold at auction. The weighted average includes only the vintage allowances associated with the compliance year for which the emissions being compensated occur.

Refineries with an EII value would be allocated to based on the following approach:

Revenue Allocation$_t$ = $BE_Y * DF_{Y,t} * F_t * D_t$

Where:

"$A_{Y,t}$" is the initial allocation to refinery "Y" that has an EII value for year "t".

"BE_Y" is the average annual greenhouse gas emissions for purchased electricity for refinery "Y" over a historical period.

"$DF_{Y,t}$" is a distribution factor calculated as:

$$DF_{Y,t} = ((Avg / EII_Y) + Adj_t) / (1 + Adj_t)$$

"Avg" is the weighted average EII for all facilities with EII values calculated as:

$$Avg = \frac{\sum BE_Y}{\sum (BE_Y / EII_Y)}$$

"EII_Y" is the Solomon Energy Intensity Index (EII) for covered entity Y for 2008, 2009 or 2010 as determined to be representative by the

ARB's Executive Officer. For the purposes of this calculation, EII values shall be rounded to one digit after the decimal.

"Adj" is an adjustment factor designed to provide the covered entity with the best EII the most allowances relative to its baseline level:

$$Adj_t = ((Avg/EII_{Best}) * F_t - 1) / (1 - F_t)$$

"EII_{Best}" is the EII of most efficient covered entity (lowest EII in sector);
"F_t" is a fraction calculated as:

$$F_t = \frac{SA_{EF} - \sum A_{X,t}}{\sum BE_Y}$$

"D_t" is the Dollar Conversion Factor used to convert tonnes of emissions into dollars. This value should be calculated as the sales weighted average market clearing price of the allowances sold at auction. The weighted average includes only the vintage allowances associated with the compliance year for which the emissions being compensated occur.

If actual 2013 and 2014 emissions from purchased electricity are less than the revenue provided, the entity will need to reimburse the utility providing revenue according to the following true-up debit equation:

$$\text{If: } (AE_{Y,2013} + AE_{Y,2014}) < (A_{Y,2013} + A_{Y,2014})$$
$$\text{Then: } A_{Y,Debit} = 0.8 * [(AE_{Y,2013} + AE_{Y,2014}) - (A_{Y,2013} + A_{Y,2014})]$$

Where:

"$AE_{Y,t}$" = Actual GHG emissions for purchased electricity in year t.

"$A_{Y,Debit}$" = A debit (shown as a negative value in the equation above) to be surrendered to the providing utility by refinery "Y."

If actual 2013 and 2014 emissions from purchased electricity are greater than the revenue provided, a true-up allocation will be conducted using 2015 vintage allowances and the following true-up credit equation:

If: $(2 * BE_Y) < (AE_{Y,2013} + AE_{Y,2014})$

Then:

$$A_{Y,Credit} = (AE_{Y,2013} * DF_{Y,2013} * F_{2013} * A_{2013} + AE_{Y,2014} * DF_{Y,2014} * F_{2014} * A_{2014}) - (A_{Y,2013} + A_{Y,2014})$$

Where:

"$A_{Y,Credit}$" = An true-up revenue provided to refinery "Y."

This metric is preferable to the approach for the first compliance period because it is based on greenhouse gas intensity and adjusts to recognize refinery complexity. The method also is not dependent on a proprietary index and, therefore, is somewhat more transparent.

During the second compliance period of the cap-and-trade program, ARB will utilize a uniform complexity-adjusted approach. This method will employ the Carbon Dioxide-Weighted Tonne (CWT) metric initially developed for the European Union's Emission Trading Scheme. Extensive work has been conducted using a robust dataset of European refineries to create the CWT approach. Under the approach, refineries will report throughput or product values for a variety of processes to ARB, and ARB will convert these throughput values into CWT equivalent. Each covered entity will receive allowances based on the product output-based equation and the CWT benchmark value of 0.0295 allowances per CWT.

ARB staff plans to conduct additional technical work on the CWT approach in 2012, and will recommend any appropriate changes to the Board resulting from this analysis in a future regulatory package. Given this ongoing work, it may be necessary to revisit the reimbursement to refineries after ARB determines if any changes to the CWT approach may be necessary.

END OF ATTACHMENT B.

ATTACHMENT C

Proposed Methodology for Calculating Allowance Value to Compensate Small Businesses for Purchased Electricity Costs Resulting from the Cap-and-Trade Program

Allocation = A * G

Where:

"A" is the Industry Assistance Factor for the low leakage risk classification (100%, 50%, and 30% for the first, second and third compliance periods, respectively). This assistance factor can be found in Table 8-1 of ARB's Cap-and-Trade regulation.

"G" is the GHG Cap-and-Trade-related cost, in dollars per kilowatt-hour, that is included in a small business ratepayer's particular electricity tariff. This is the Cap-and-Trade-related cost that each investor-owned utility will incur, which the ERRA proceeding authorizes the investor-owned utilities to recover from the generation component of rates, and that is apportioned to each electricity tariff via allocation factors. This cost will therefore vary depending on the tariff of each small business.

END OF ATTACHMENT C