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## Permitting Update and GHGs

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Jay Hofmann

[Jhofmann@Trinityconsultants.com](mailto:Jhofmann@Trinityconsultants.com)

Trinity Consultants  
12770 Park Central Drive  
Suite 2100  
Dallas, TX 75251  
972.661.8100



# Presentation Agenda

- > Permitting Update
  - ❖ EPA's new Regional "Inconsistency" Regulation
  - ❖ GHG and PSD
- > California Cap & Trade (AB-32) - Allowances
- > Washington State's new Clean Air Rule

## PSD - Stationary “Source” Definition

- > All of the pollutant-emitting activities which:
  - ❖ Belong to the same SIC major group (or “support activity”), and
  - ❖ **Are located on one or more contiguous or adjacent properties,** and
  - ❖ Are under common control

# Sixth Circuit Case

- > Sixth Circuit Case (August 7, 2012)
  - Summit Petroleum v. EPA
    - ❖ Ruling that addressed the second criteria (contiguous or adjacent criteria) in the definition of a major source. Judge ruled that EPA should be using a basic definition (Webster's) of contiguous or adjacent (not the most complex logic EPA has used for years)

# Summit Directive

> **Summit Directive** (December 21, 2012) - [EPA's response](#) to losing the Sixth Circuit Case

- ❖ EPA said Sixth Circuit ruling only applies in Michigan, Ohio, Tennessee, and Kentucky. BUT...the story does not end there...

# NEDA/CAP Case

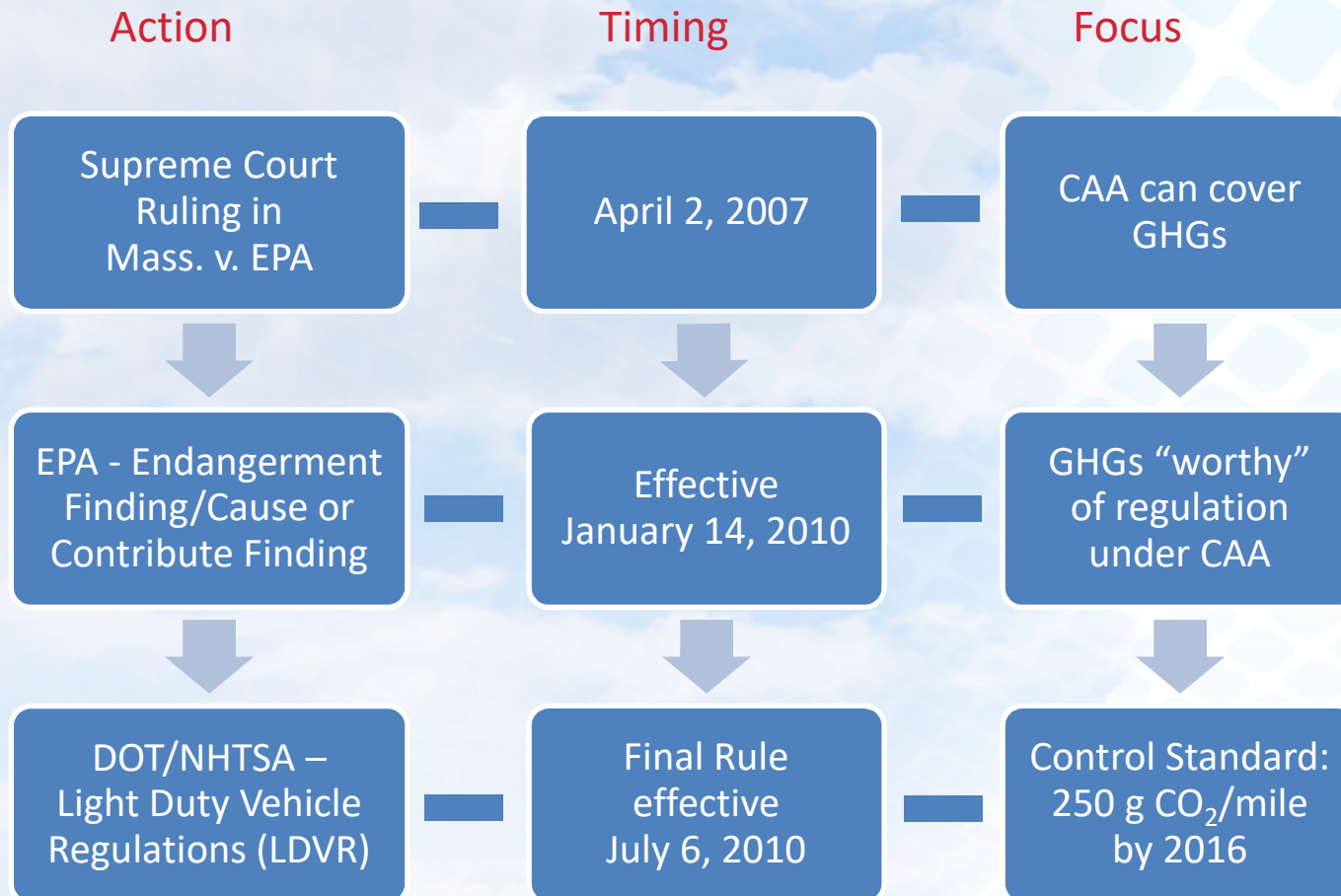
- > DC Court of Appeals in NEDA/CAP v. EPA vacated the [Summit Directive on May 30, 2014](#)
  - ❖ “The essence of Petitioner’s argument is that the *Summit* Directive must be vacated because it violates EPA’s “Regional Consistency” regulations without purporting to amend those regulations. We agree.”
  - ❖ The **old version** of 40 CFR 56.3 said - It is EPA’s policy to:
    - ◆ Assure fair and uniform application by all Regional Offices of the criteria, procedures, and policies employed in implementing and enforcing the act;
    - ◆ Provide mechanisms for identifying and correcting inconsistencies by standardizing criteria, procedures, and policies being employed by Regional Office employees in implementing and enforcing the act; and
    - ◆ Insure an adequate quality audit for each State’s performance in implementing and enforcing the act.

# The “New” 40 CFR 56.3

## > It is EPA's policy to:

- ❖ Assure fair and uniform application by all Regional Offices of the criteria, procedures, and policies employed in implementing and enforcing the act;
- ❖ Provide mechanisms for identifying and correcting inconsistencies by standardizing criteria, procedures, and policies being employed by Regional Office employees in implementing and enforcing the act; and
- ❖ Insure an adequate quality audit for each State's performance in implementing and enforcing the act.
- ❖ Recognize that only the decisions of the U.S. Supreme Court and decisions of the U.S. Court of Appeals for the D.C. Circuit Court that arise from challenges to “nationally applicable regulations . . . or final action,” as discussed in Clean Air Act section 307(b) (42 U.S.C. 7607(b)), shall apply uniformly, and to provide for exceptions to the general policy stated in paragraphs (a) and (b) of this section with regard to decisions of the federal courts that arise from challenges to “locally or regionally applicable” actions, as provided in Clean Air Act section 307(b) (42 U.S.C. 7607(b)).

# GHG Cascade of Events





# “GHG Tailoring Rule”

- > On October 27, 2009, (74 FR 55292) the EPA proposed the GHG Tailoring Rule
- > Proposed to increase the permit applicability thresholds for GHGs effectively “tailoring” the PSD and Title V permit programs to target only “major” GHG sources and major modifications
- > Without a higher applicability threshold, permitting agencies would be overwhelmed with PSD and Title V applications
- > Regulation of 6 GHG compounds (GHG mass basis and as CO<sub>2</sub>e):
  - ❖ CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, & SF<sub>6</sub>
  - ❖ Included 75,000 tpy CO<sub>2</sub>e “subject to regulation” threshold under PSD
- > EPA finalized the rule on May 13, 2010, and published it in the Federal Register on June 3, 2010, (75FR 31514). Rule effective on August 2, 2010.
- > EPA issued extensive guidance on rule applicability and GHG BACT on March 25, 2011
- > June 23, 2014 - Utility Air Regulatory Group v. EPA et al. - vacated significant portions of rule

# Tailoring Rule Bottom Line

- > Tailoring Rule introduced new thresholds for defining when GHG become a regulated NSR pollutant
- > The Tailoring Rule, supported by subsequent EPA guidance, suggests that determining whether GHGs are regulated under PSD is a **project-specific** consideration
- > Most states now understand the 75,000 tpy CO<sub>2</sub>e modification threshold only applies when projects trigger PSD for one or more traditional (non-GHG) regulated NSR pollutants (i.e., “anyway” projects) result in the BACT provisions being applied to GHG
- > **October 3, 2016 (81 FR 68110) - EPA proposed amendments to:**
  - ❖ Clean up the “subject to regulation” language and largely replace it with a “conventional” SER for GHG
  - ❖ Seeking comments on GHG SER between 30,000 and 75,000 tpy CO<sub>2</sub>e

# GHG and PSD - October 3<sup>rd</sup> Proposal

## > Definition of “major modification”

- ❖ Major modification means any physical change in or change in the method of operation of a major stationary source that would result in:
  - ◆ A significant emissions increase (as defined in paragraph (b)(40) of this section) of a regulated NSR pollutant (as defined in paragraph (b)(50) of this section) **other than the pollutant greenhouse gases** (as defined in paragraph (b)(32) of this section); and
  - ◆ A significant net emissions increase of that regulated NSR pollutant from the major stationary source.
- ❖ GHGs OUT?

# GHG and PSD - October 3<sup>rd</sup> Proposal

- > But, a “Significant Emission Rate” (SER) is being proposed for GHG?
  - ❖ GHG will be included in the same SER definition with the traditional pollutants (i.e. 40 tpy VOC, SO<sub>2</sub>, NO<sub>2</sub>, etc.)
  - ❖ GHG SER = 30,000 tpy to 75,000 tpy
- > How does the new GHG SER play out in the rule?
- > BACT Applicability!

# BACT Applicability

- > 40 CFR 52.21(j) *Control technology review*
  - ❖ (2) A new major stationary source shall apply best available control technology for each regulated NSR pollutant that it would have the potential to emit in **significant amounts**.
  - ❖ (3) A major modification shall apply best available control technology for each regulated NSR pollutant for which it would result in a **significant net emissions increase** at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.

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# **AB 32 Cap-and-Trade Program Basics**

# AB 32 Cap-and-Trade Program

- > Regulation became effective January 1, 2012
  - ❖ Codified under 17 CCR 95800 to 96023
- > Current version to regulation
  - > Dated January 2015
  - > Electronic version available at [http://www.arb.ca.gov/cc/capandtrade/capandtrade/unofficial\\_c&t\\_012015.pdf](http://www.arb.ca.gov/cc/capandtrade/capandtrade/unofficial_c&t_012015.pdf)

## §95810. Covered GHGs

- > The Cap-and-Trade program applies to the following GHGs:
  - ❖ Carbon dioxide (CO<sub>2</sub>)
  - ❖ Methane (CH<sub>4</sub>)
  - ❖ Nitrous oxide (N<sub>2</sub>O)
  - ❖ Sulfur hexafluoride (SF<sub>6</sub>)
  - ❖ Hydrofluorocarbons (HFCs)
  - ❖ Perfluorocarbons (PFCs)
  - ❖ Nitrogen trifluoride (NF<sub>3</sub>) and other fluorinated greenhouse gases



# AB 32 Key Features

- > **California sources only (400+ facilities)**
- > **3 Year Compliance Cycle**
  - ❖ Compliance Period 1: 2013 to 2014 (No fuel suppliers)
  - ❖ Compliance Period 2: 2015 to 2017 (Fuel Suppliers)
  - ❖ Compliance Period 3: 2018 to 2020 (Fuel Suppliers)
- > **Reconciliation Periods**
  - ❖ Annual (by November) at least 30% of obligations must be surrendered
  - ❖ At end of compliance period, 100% of obligations must be surrendered
- > **GHG allowances/credits do NOT expire**
- > **Direct/Free Allowances**
  - ❖ Annual issuance only
  - ❖ By industry sector according to specific formulas
- > **Quarterly Public Auctions held by ARB**
  - ❖ Current Vintage Year (i.e., 2015 credits)
  - ❖ Future Vintage Year (i.e., 2018 credits)

# Applicability > 25,000 MT

- > Oil & Gas
  - > Refineries & Petroleum Products
  - > Cement Plants
  - > Food Products
  - > Paper & Pulp
  - > Electrical Utilities (IOUs / POUs)
  - > Independent Power Producers
  - > Power Importers
  - > Natural Gas Suppliers
  - > Fuel Suppliers (Gasoline / Diesel)
  - > Pharmaceuticals
  - > Aerospace / Aircraft
  - > Metal / Foundries
  - > Breweries
  - > Apparel Manufacturing
- Plus many more . . .  
350+ covered entities

# AB 32 Cap-and-Trade: Regulated Sectors

Sector	Covered Emissions (MT)	%
Industrial	108,728,498	30.7%
Natural Gas/LPG	47,497,605	13.4%
Transportation	156,510,757	44.2%
Electricity	41,084,841	11.6%
<b>Total</b>	<b>353,821,701</b>	<b>100.0%</b>

**Approximately  
400 facilities  
subject to AB 32  
cap-and-trade**

Note: Rankings based on 2012 Data Reports

# Largest AB 32 Facilities (2014 Data)

Facility	Industrial	Fuel Supplier	Electricity	Total (MT)
Tesoro Refining and Marketing	0	46,396,888	0	49,346,841
Chevron Products Company	0	31,723,210	0	33,505,333
Southern California Gas Company	0	44,159,140	0	44,159,140
Phillips 66 Company - Fuel Supplier	0	18,197,812	0	19,266,598
Pacific Gas and Electric Company (PG&E)	0	41,616,935	0	41,616,935
Valero Marketing and Supply Company	0	14,522,492	0	16,200,818
Los Angeles DWP (LADWP)	0	0	12,996,637	12,996,637
Shell Oil Products US - Supply	0	11,891,864	0	12,598,411
ExxonMobil Oil Corporation - Supply	0	7,510,109	0	8,030,587
Tesoro Refining - Los Angeles Refinery - Carson	6,364,605	0	0	6,364,605
BP West Coast Products LLC (BPWCP)	0	6,324,346	0	6,770,463
Chevron - Richmond Refinery	4,120,931	0	0	4,120,931
Shell Oil Products US - Martinez	3,968,978	0	0	3,968,978
Chevron - El Segundo Refinery	3,323,215	0	0	3,323,215
Aera Energy San Joaquin Basin	3,300,514	0	0	3,300,514
<b>Total (Top 15 Facilities)</b>				<b>265,570,005</b>


**\* These facilities are 61% of AB 32 reported emissions. All emissions in metric tons-CO<sub>2</sub>e (MT)**

Note: Rankings based on 2014 Data Reports

# Compliance Periods

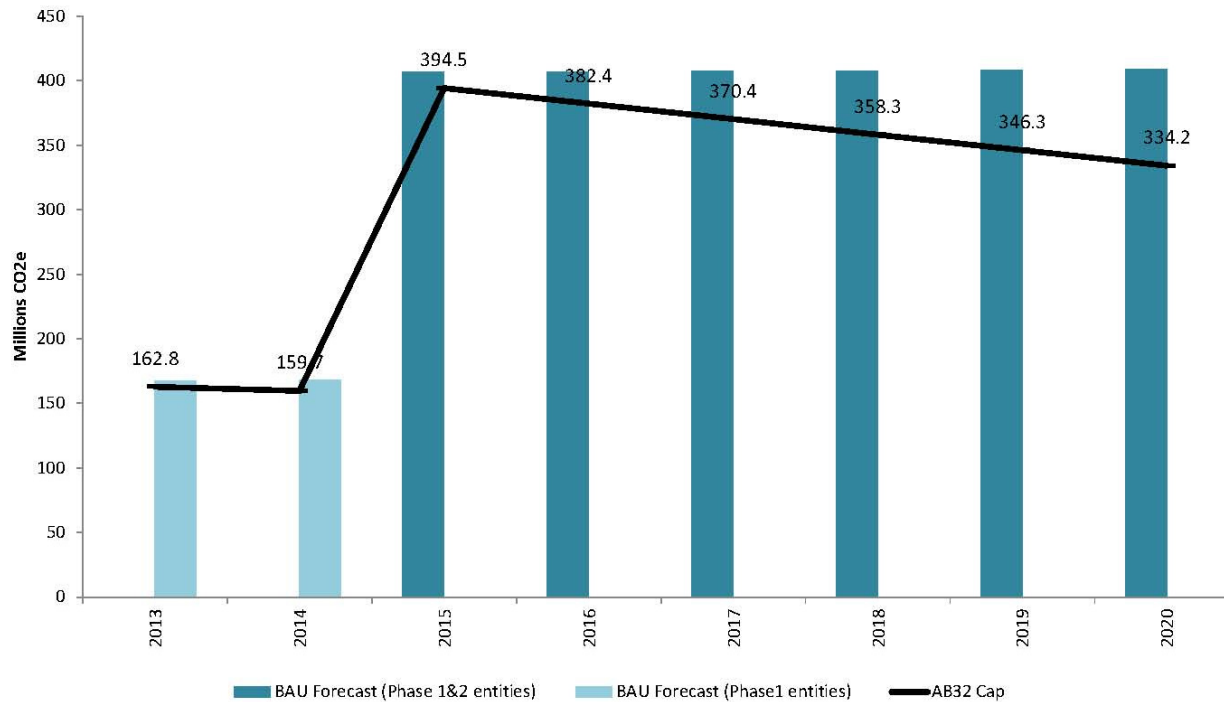
	Period 1	Period 2	Period 3
	2013 – 2014	2015 – 2017	2018 - 2020
Industrial Facilities	X	X	X
CO <sub>2</sub> Suppliers	X	X	X
Electricity Generation / Importing	X	X	X
Natural Gas Suppliers		X	X
LPG Suppliers		X	X
RBOB / Fuel Oil Suppliers		X	X
MAX ALLOWANCES (Program Emission Cap)	159 to 162 Million allowances	370 to 394 Million allowances	334 to 358 <sup>8</sup> Million allowances

**Marketplace Doubles in  
Size with Fuel Suppliers  
(Periods 2 and 3)**



# Declining Allowance Cap

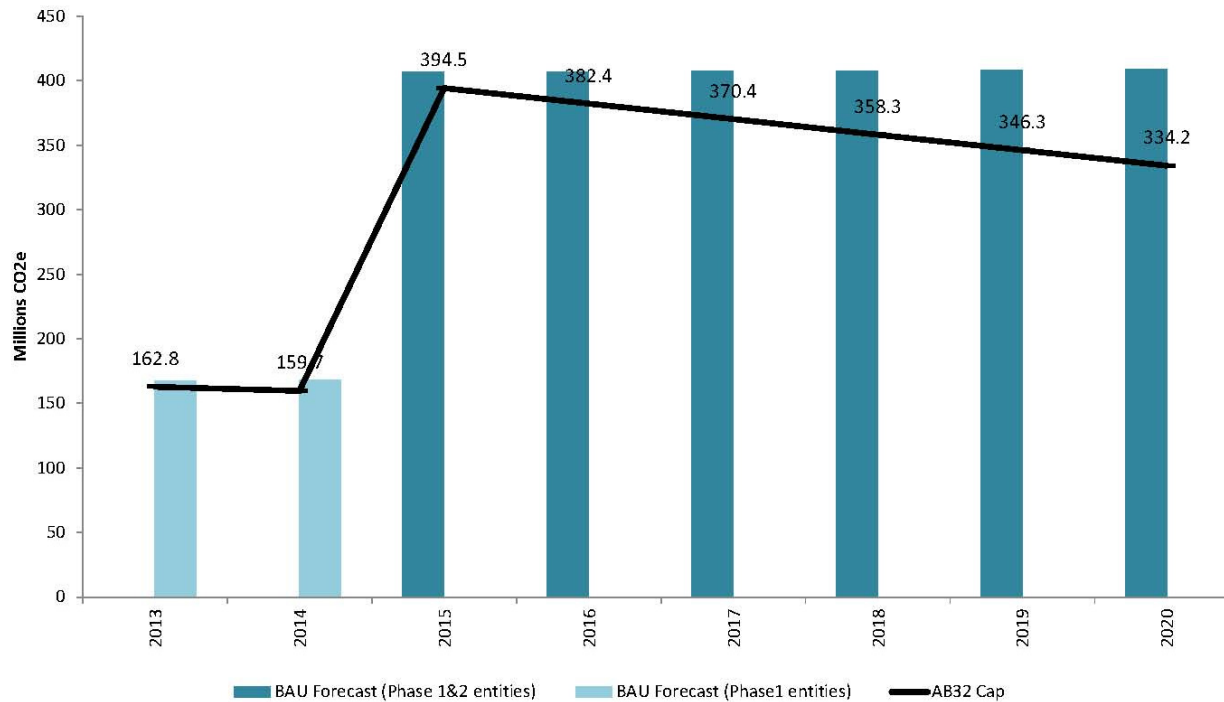
Forecasted BAU GHG Emissions Compared to the Allowance Cap  
Covered Entities Only  
2013 - 2020



**Approximate  
15% decline by  
2020**

# Declining Allowance Cap

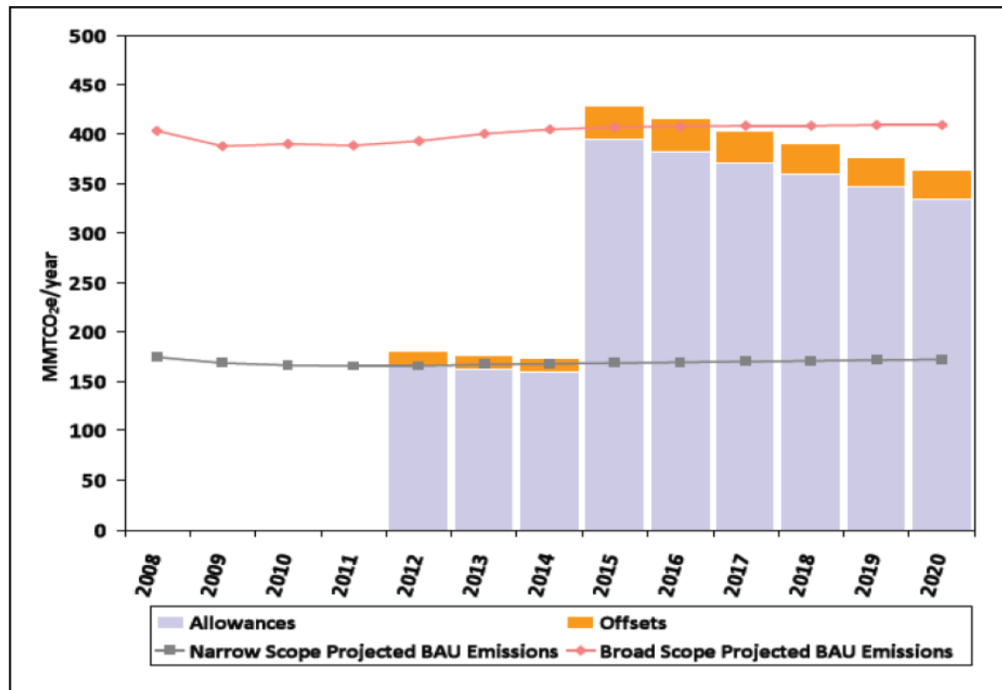
Forecasted BAU GHG Emissions Compared to the Allowance Cap  
Covered Entities Only  
2013 - 2020



**Approximate  
15% decline by  
2020**

# ARB Projections (2012 - 2020)

Figure E-3: Projected GHG Emissions Relative to Allowance and Offset Levels



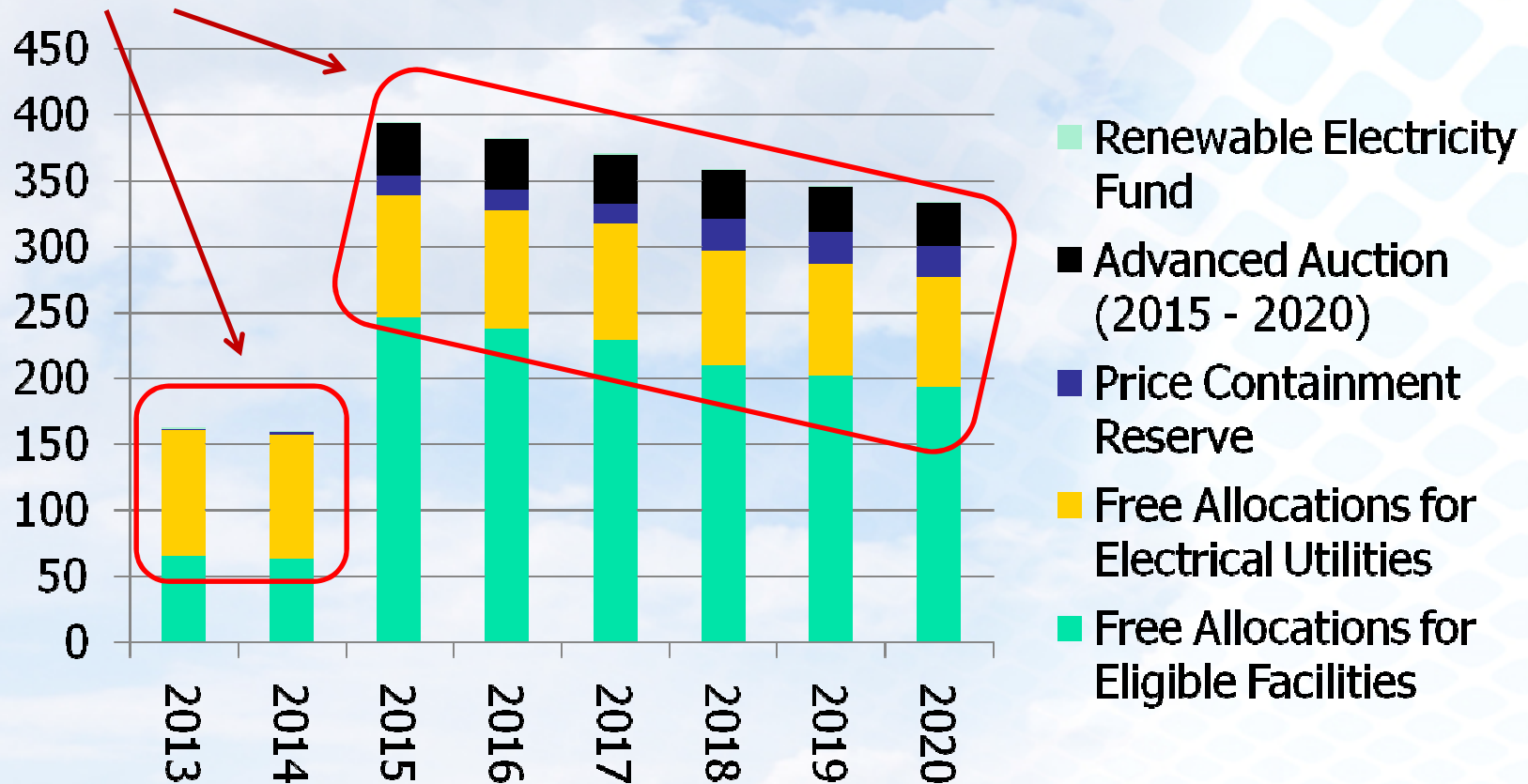


# Reported Data (2014)

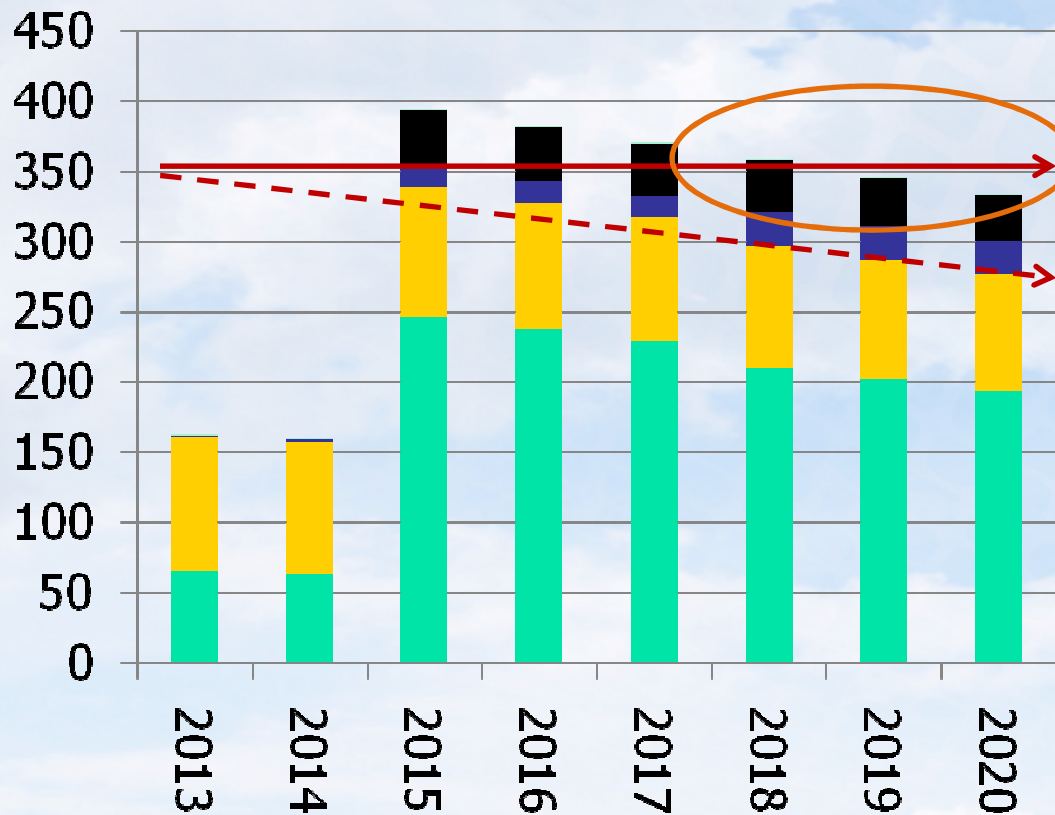
- > Total GHG = 435,202,961 MT
- > “Covered” Emissions
  - ❖ Emitter emissions = 111,853,785 MT
  - ❖ Electricity importer = 34,266,548 MT
- > Total “covered” emissions = 146,120,333 MT
- > More than 10,000,000 MT below prior BAU forecast
  
- > FYI: Fuel supplier emissions = 196,689,040.30 MT
  - ❖ Not “covered” in 2014
- > Sum: “Covered” + Fuel Suppliers = 342,809,374 MT

# Annual Supply

Quarterly Auctions and ARB Sales



# The “Cross-Over” Point



Cross over is theoretical point when AB 32 program cap drops below total covered emissions reported by facilities.

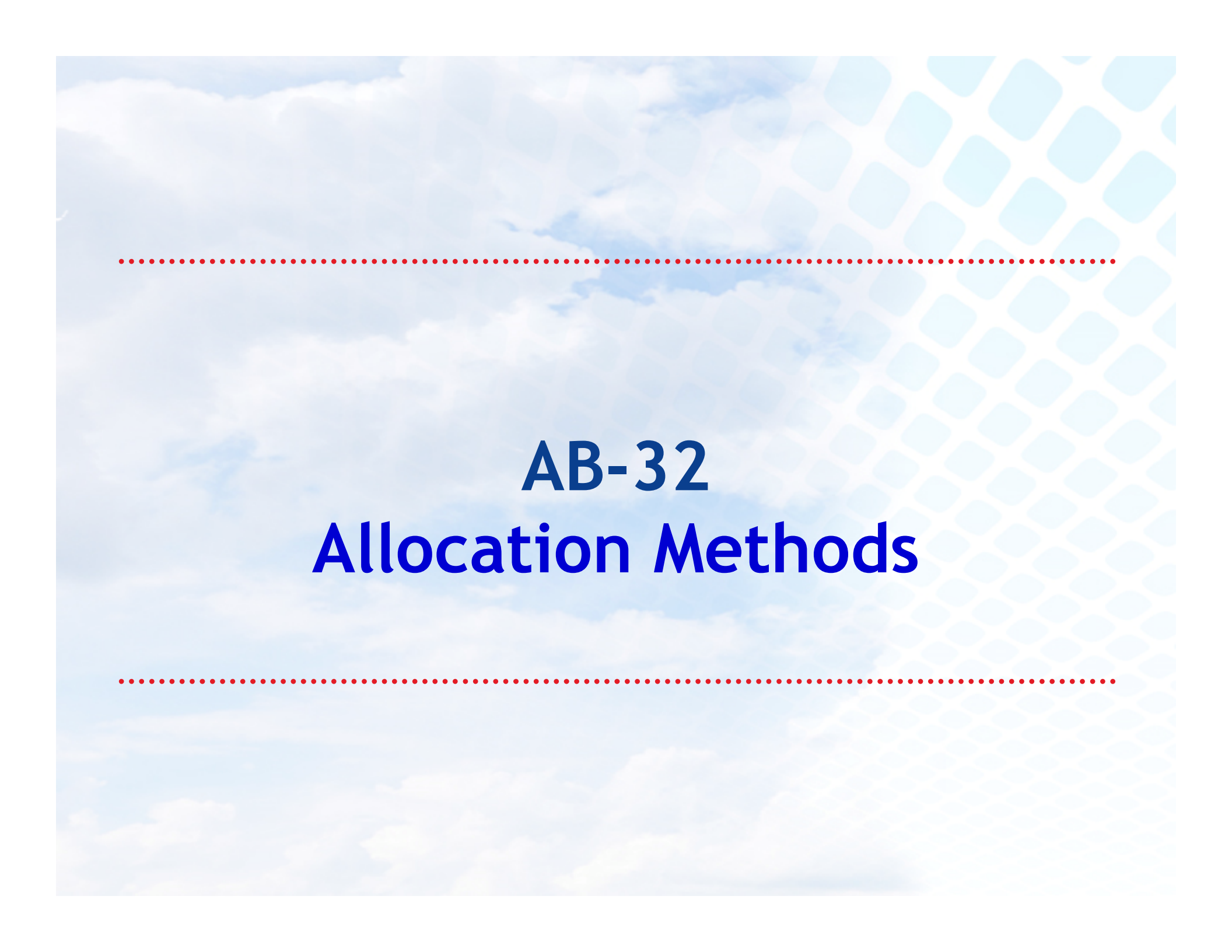
After cross over, ARB auctions cannot supply sufficient carbon allowances to meet expected demand.

Cross over expected in 3<sup>rd</sup> compliance period, if AB 32 policies do not work (i.e., C&T, LCFS, RPS, ZEVs, etc.)

# AB 32 Market Drivers

- > Price Floor = \$12.73 (Regulated by ARB)
- > Annual Increase of Auction Reserve Prices (inflation + 5%)
- > Declining permit caps (15% through 2020) (i.e., shrinking supply)
- > Economic recovery over next few years (i.e., more demand)
- > Annual surrender by beginning 2014 (at least 30% each year)
- > Quebec Market Linkage (2014 and thereafter)
- > No free allocations to transportation fuel suppliers
- > Participation by VAEs (non-regulated entities that are allowed to buy/sell, but have no compliance obligation, i.e., investors and others)
- > Lack of affordable end-of-stack control technologies for CO<sub>2</sub>
- > Energy efficiency and/or reducing production throughput are the principal means of reducing carbon dioxide emissions

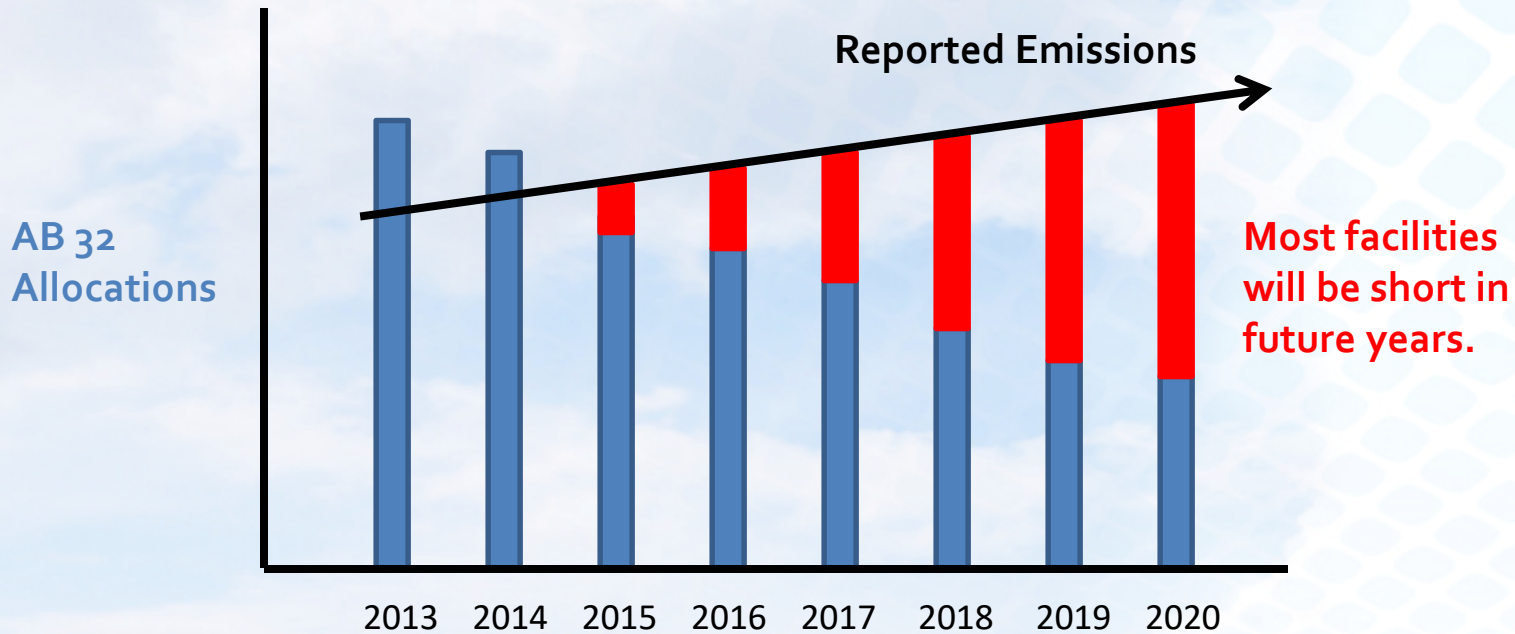


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# **AB-32**

## **Allocation Methods**

# 2 Methods for Direct Allocations: Product and Energy Based



## Eligibility Requirements: *Product Output Based Method*

- > Must be a covered or opt-in facility
- > Must have complied with MRR, and have a positive or qualified positive data verification from prior year
- > Must be listed on **Table 8-1** and **Table 9-1**
- > Direct allocations placed into Holding Account on the first business day of each year once their vintage is equal to the current calendar year

## Eligibility Requirements: *Energy Based Method*

- > Must be a covered or opt-in facility
- > Must have complied with MRR, and have a positive or qualified positive data verification from prior year
- > Must be listed on **Table 8-1** (and not listed on Table 9-1)
- > Direct allocations placed into Holding Account on the first business day of each year once their vintage is equal to the current calendar year



# Table 8-1. Industry Assistance Factors (AF<sub>a</sub>)

**Table 8-1: Industry Assistance**

Leakage Risk Classification	NAICS Sector Definition	NAICS Code	Activity(a)	Industry Assistance Factor (AF <sub>a</sub> )		
				by Budget Year		
				2013-2014	2015-2017	2018-2020
High	Crude Petroleum and Natural Gas Extraction	211111	Thermal EOR Crude Oil Extraction	100%	100%	100%
			Non-Thermal Crude Oil Extraction	100%	100%	100%
	Natural Gas Liquid Extraction	211112	Natural Gas Liquid Processing	100%	100%	100%
	All Other Metal Ore Mining	<u>212299</u>	Rare Earth Production	100%	100%	100%
	Potash, Soda, and Borate Mineral Mining	212391	Mining and Manufacturing of Soda Ash and Related Products	100%	100%	100%
	All Other Nonmetallic Mineral Mining	212399	Diatomaceous Earth Mining	100%	100%	100%
	Paper (except Newsprint) Mills	322121	Tissue Manufacturing	100%	100%	100%
	Paperboard Mills	322130	Recycled Boxboard Manufacturing	100%	100%	100%
			Recycled Linerboard (Testliner) Manufacturing	100%	100%	100%
			Recycled Medium (Fluting) Manufacturing	100%	100%	100%
All Other Petroleum and Coal Products Manufacturing	324199	Coke Calcining	100%	100%	100%	
All Other Basic Inorganic Chemical Manufacturing	325188	All Other Basic Inorganic Chemical Manufacturing	100%	100%	100%	

# Table 8-1. Industry Assistance Factors (AF<sub>a</sub>)

Leakage Risk Classification	NAICS Sector Definition	NAICS Code	Activity(a)	Industry Assistance Factor (AF <sub>a</sub> )		
	All Other Basic Organic Chemical Manufacturing	325199	All Other Basic Organic Chemical Manufacturing	100%	100%	100%
	Nitrogenous Fertilizer Manufacturing	325311	Nitric Acid Production	100%	100%	100%
			Calcium Ammonium Nitrate Solution Production	100%	100%	100%
	Flat Glass Manufacturing	327211	Flat Glass Manufacturing	100%	100%	100%
	Glass Container Manufacturing	327213	Container Glass Manufacturing	100%	100%	100%
	Cement Manufacturing	327310	Cement Manufacturing	100%	100%	100%
	Lime Manufacturing	327410	Dolime Manufacturing	100%	100%	100%
	Mineral Wool Manufacturing	327993	Fiber Glass Manufacturing	100%	100%	100%
	Iron and Steel Mills	331111	Steel Production Using Electric Arc Furnace	100%	100%	100%
	Rolled Steel Shape Manufacturing	331221	Hot Rolled Steel Sheet Production	100%	100%	100%
All Other Metal Ore Mining	212299	Rare Earth Production	100%	100%	100%	
Mineral Wool Manufacturing	327993	Fiber Glass Manufacturing	100%	100%	100%	
Medium	Food Manufacturing	311	Food Manufacturing	100%	<del>100%</del> 75%	<del>75%</del> 50%
	Cut and Sew Apparel Manufacturing	3152	Cut and Sew Apparel Manufacturing	100%	<del>100%</del> 75%	<del>75%</del> 50%
	Breweries	312120	Brewing	100%	<del>100%</del> 75%	<del>75%</del> 50%
	Petroleum Refineries	324110	Petroleum Refining	100%	<del>100%</del> 75%	<del>75%</del> 50%
	Asphalt Paving Mixture and Block Manufacturing	324121	Asphalt Paving Mixture and Block Manufacturing	100%	100%	75%
	Industrial Gas Manufacturing	325120	Gaseous Hydrogen Production	100%	<del>100%</del> 75%	<del>75%</del> 50%
			Liquefied Hydrogen Production	100%	<del>100%</del> 75%	<del>75%</del> 50%
	Ethyl Alcohol Manufacturing	325193	Ethyl Alcohol Manufacturing	100%	100%	75%

# Table 8-1. Industry Assistance Factors (AF<sub>a</sub>)

Leakage Risk Classification	NAICS Sector Definition	NAICS Code	Activity(a)	Industry Assistance Factor (AF <sub>a</sub> )		
	Biological Product (Except Diagnostic) Manufacturing	325414	Biological Product (Except Diagnostic) Manufacturing	100%	<del>100</del> 75%	<del>75</del> 50%
	Gypsum Product Manufacturing	327420	Plaster Manufacturing	100%	<del>100</del> 75%	<del>75</del> 50%
			Plaster Board Manufacturing	100%	<del>100</del> 75%	<del>75</del> 50%
	<del>Mineral Wool Manufacturing</del>	<del>327993</del>	<del>Fiber Glass Manufacturing</del>	<del>400%</del>	<del>75%</del>	<del>50%</del>
	Rolled Steel Shape Manufacturing	331221	Picked Steel Sheet Production	100%	<del>100</del> 75%	<del>75</del> 50%
			Cold Rolled and Annealed Steel Sheet Production	100%	<del>100</del> 75%	<del>75</del> 50%
			Galvanized Steel Sheet Production	100%	<del>100</del> 75%	<del>75</del> 50%
			Tin Steel Plate Production	100%	<del>100</del> 75%	<del>75</del> 50%
	Secondary Smelting and Alloying of Aluminum	331314	<del>Secondary Smelting and Alloying of Aluminum</del> Aluminum Alloy Billet Manufacturing	100%	<del>100</del> 75%	<del>75</del> 50%
	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (Except Copper and Aluminum)	331492	<del>Secondary Smelting, Refining, and Alloying of Nonferrous Metal (Except Copper and Aluminum)</del> Lead Acid Battery Recycling	100%	<del>100</del> 75%	<del>75</del> 50%
	Iron Foundries	331511	Iron Foundries	100%	<del>100</del> 75%	<del>75</del> 50%
	Hardware Manufacturing	<del>332510</del>	Hardware Manufacturing	100%	100%	75%
Turbine and Turbine Generator Set Units Manufacturing	333611	Testing of Turbines and Turbine Generator Sets	100%	<del>100</del> 75%	<del>75</del> 50%	
Low	Pharmaceutical and Medicine Manufacturing	325412	Pharmaceutical and Medicine Manufacturing	100%	<del>100</del> 50%	<del>50</del> 30%
	<del>Nonferrous Forging</del>	<del>332112</del>	<del>Nonferrous Metal Forging</del>	<del>100%</del>	<del>100%</del>	<del>50%</del>
	Aircraft Manufacturing	336411	Aircraft Manufacturing	100%	<del>100</del> 50%	<del>50</del> 30%
	Support Activities for Air Transportation	4881	Support Activities for Air Transportation	100%	<del>100</del> 50%	<del>50</del> 30%

# Table 9-2. Cap Adjustment Factors

**Table 9-2: Cap Adjustment Factors for Allowance Allocation**

Budget Year	Cap Adjustment Factor (c) for All Other Direct Allocation	Cap Adjustment Factor (c) for Sectors with Process Emissions Greater Than 50%		
		Sector	NAICS	Activity
		Nitrogenous Fertilizer Manufacturing	325311	Nitric Acid Production Calcium Ammonium Nitrate Solution Production
Cement manufacturing	327344 327310	Cement manufacturing		
Lime manufacturing	327410	Dolime Manufacturing		
2013	0.981	0.991		
2014	0.963	0.981		
2015	0.944	0.972		
2016	0.925	0.963		
2017	0.907	0.953		
2018	0.888	0.944		
2019	0.869	0.935		
2020	0.851	0.925		

NOTE: Authority cited: Sections 38510, 38560, 38562, 38570, 38571, 38580, 39600 and 39601, Health and Safety Code.  
Reference: Sections 38530, 38560.5, 38564, 38565, 38570 and 39600, Health and Safety Code.

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# Product-Based Benchmarking

# Simplified Product Output Method

$$\text{Allocation} = \text{Output} * A * B * C (+ \text{True Up})$$

Where:

Output = product throughput (2 years before)

Fixed  
Parameters

A = assistance factor (Table 8-1)

B = product benchmark (Table 9-1)

C = declining cap factor (Table 9-2)

- > “True Up” is the amount of true-up allowances allocated to account for changes in production or allocation not properly accounted for in prior allocations.

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

Table 9-1: Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Crude Petroleum and Natural Gas Extraction	211111	Thermal EOR Crude Oil Extraction	<u>0.08160_0811</u>	Allowances / Barrel of Thermal Crude Oil Eqv.
		Non Thermal Crude Oil Extraction	<u>0.00820_0076</u>	Allowances / Barrel of Non Thermal Crude Oil Eqv.
Natural Gas Liquid Extraction	211112	Natural Gas Liquid Processing	<u>0.01460_0118</u>	Allowances / Barrel of Natural Gas Liquids Produced
<u>Onshore Natural Gas Processing Plants</u>	<u>211111</u>	<u>Natural Gas Processing ≥ 25MMscf/day</u>	<u>0.0220</u>	<u>Allowances / Barrel of Gas Processed Eqv.</u>
Potash, Soda, and Borate Mineral Mining	212391	Mining and Manufacturing of Soda Ash and Related Products	0.948	Allowances / Short Ton of Soda Ash Equivalent (Soda Ash, Biocarb, Borax, V-Bor, DECA, PYROBOR, Boric Acid, and Sulfate)
<u>All Other Nonmetallic Mineral Mining</u>	<u>212399</u>	<u>Freshwater Diatomite Filter Aids Manufacturing</u>	<u>0.418</u>	<u>Allowances / Short Ton of Freshwater Diatomite Filter Aids</u>

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
<u>Fruit and vegetable canning</u>	<u>311421</u>	<u>Tomato Processing</u>		
<u>Poultry Processing</u>	<u>311615</u>	<u>Whole Chicken and Parts Processing</u>		<u>Allowances / Short Ton of Whole Chicken and Parts</u>
		<u>Poultry Deli Product Processing</u>		<u>Allowances / Short Ton of Poultry Deli Product</u>
		<u>Protein Meal Processing</u>		<u>Allowances / Short Ton of Protein Meal</u>
<u>Dried and Dehydrated Food Manufacturing</u>	<u>311423</u>	<u>Dehydrated Garlic Processing</u>	<u>0.665</u>	<u>Allowances / Short Ton of Dehydrated Garlic</u>
		<u>Dehydrated Onion Processing</u>	<u>0.819</u>	<u>Allowances / Short Ton of Dehydrated Onion</u>
		<u>Dehydrated Chili Pepper Processing</u>	<u>1.270</u>	<u>Allowances / Short Ton of Dehydrated Chili Pepper</u>
		<u>Dehydrated Spinach Processing</u>	<u>5.557</u>	<u>Allowances / Short Ton of Dehydrated Spinach</u>
		<u>Dehydrated Parsley Processing</u>	<u>3.178</u>	<u>Allowances / Short Ton of Dehydrated Parsley</u>
<u>Dairy Product Manufacturing</u>	<u>31151</u>	<u>Milk, buttermilk and skim milk processing</u>		<u>Allowances / Short Ton of Milk, Buttermilk and Skim Milk</u>



# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
		<u>Cream processing</u>		<u>Allowances / Short Ton of Cream</u>
		<u>Butter processing</u>		<u>Allowances / Short Ton of Butter</u>
<u>Dairy Product Manufacturing</u>	<u>31151</u>	<u>Sweetened Condensed Milk and Evaporated Milk Processing</u>		<u>Allowances / Short Ton of Sweetened Condensed Milk and Evaporated Milk</u>
	<u>31151</u>	<u>Powdered Milk Processing</u>		<u>Allowances / Short Ton of Powdered Milk</u>
	<u>31151</u>	<u>Cheese Processing</u>		<u>Allowances / Short Ton of Cheese</u>
	<u>31151</u>	<u>Lactose Processing</u>		<u>Allowances / Short Ton of Lactose</u>
	<u>31151</u>	<u>Dry Whey Protein Concentrate Processing</u>		<u>Allowances / Short Ton of Dry Whey Protein Concentrate</u>
	<u>31151</u>	<u>Deproteinized Whey Processing</u>		<u>Allowances / Short Ton of Deproteinized Whey</u>
<u>Food Manufacturing</u>	<u>311</u>	<u>Pistachio Processing</u>		<u>Allowances / Short Ton of Pistachios</u>
	<u>311</u>	<u>Almond Processing</u>		<u>Allowances / Short Ton of Almonds</u>

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
<u>Snack Food Manufacturing</u>	<u>31191</u>	<u>Fried Potato Chips Processing</u>		<u>Allowances / Short Ton of Fried Potato Chips</u>
		<u>Baked Potato Chips Processing</u>		<u>Allowances / Short Ton of Baked Potato Chips</u>
		<u>Corn Chips Processing</u>		<u>Allowances / Short Ton of Corn Chips</u>
		<u>Corn Curls Processing</u>		<u>Allowances / Short Ton of Corn Curls</u>
		<u>Pretzel Processing</u>		<u>Allowances / Short Ton of Pretzels</u>
<u>Food Manufacturing</u>	<u>311</u>	<u>Juice Manufacturing</u>		
<u>Beet sugar manufacturing</u>	<u>311313</u>	<u>Beet sugar manufacturing</u>	<u>0.611</u>	<u>Allowances / short ton Granulated-Refined Sugar</u>
<u>Breweries</u>	<u>312120</u>	<u>Lager Beer Manufacturing</u>	<u>0.178</u>	<u>Allowances / Thousand Gallons of Lager Beer</u>
<u>Wineries</u>	<u>312130</u>	<u>Spirits Manufacturing</u>		

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Paper (except Newsprint) Mills	322121	Tissue Manufacturing	<u>1,140.101</u>	Allowances / Air Dried Short Ton of tissue <u>produced adjusted by water absorption capacity</u>
Paperboard Mills	322130	Recycled Boxboard Manufacturing	<u>0.4990_516</u>	Allowances / Air Dried Short Ton of recycled boxboard
		Recycled Linerboard (Testliner) Manufacturing	0.562	Allowances / Air Dried Short Ton of recycled linerboard
		Recycled Medium (Fluting) Manufacturing	0.392	Allowances / Air Dried Short Ton of recycled medium
Petroleum Refineries	324110	Petroleum Refining (CO <sub>2</sub> -Weighted Tonne)	<u>0.0295</u>	Allowances / CO <sub>2</sub> Weighted Tonne
All Other Petroleum and Coal Products Manufacturing	324199	Coke Calcining	<u>0.344</u>	Allowances / Short Ton Calcined Coke
Industrial Gas Manufacturing	325120	<del>Gaseous Hydrogen Production</del>	<del>8.85</del>	<del>Allowances / Metric Ton of Hydrogen Gas</del>
		Liquid Hydrogen Production	<del>8.85</del>	Allowances / Metric Ton of Liquid Hydrogen

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Nitrogenous Fertilizer Manufacturing	325311	Nitric Acid Production	0.349	Allowances / Short ton of nitric acid (HNO <sub>3</sub> 100%)
		Calcium Ammonium Nitrate Solution Production	0.0902	Allowances / Short ton of calcium ammonium nitrate solution
Flat Glass Manufacturing	327211	Flat glass Manufacturing	<del>0.4740</del> <u>0.495</u>	Allowances / Short Ton of Flat Glass Pulled
Glass Container Manufacturing	327213	Container Glass Manufacturing	<del>0.264</del> <u>0.270</u>	Allowances / Short Ton of Container Glass Pulled
Mineral Wool Manufacturing	327993	Fiber Glass Manufacturing	0.394	Allowances / Short Ton of Fiberglass Pulled
Cement Manufacturing	327310	Cement Manufacturing	<del>0.718</del> <u>0.742</u>	Allowances / Short ton of adjusted clinker and mineral additives produced
Lime Manufacturing	327410	Dolime Manufacturing	1.40	Allowances / Short Ton of Dolime Produced
Gypsum Product Manufacturing	327420	Plaster Manufacturing	0.0454	Allowances / Short Ton of Plaster <u>Sold as a Separate Finished Product</u>
		Plaster Board <u>Stucco</u> Manufacturing	0.134	Allowances / Short Ton of Plaster Board <u>Stucco used to produce saleable plasterboard</u>

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Iron and Steel Mills	331111	Steel Production Using an Electric Arc Furnace	0.170	Allowances / Short ton of Steel produced using EAF
<u>Secondary smelting and alloying of aluminum</u>	<u>331314</u>	<u>Aluminum and Aluminum Alloy Billet Manufacturing</u>	<u>0.371</u>	<u>Allowances / Short ton of Aluminum and Aluminum alloy Billet</u>
<u>Secondary smelting, refining, and alloying of nonferrous metal (except copper and aluminum)</u>	<u>331492</u>	<u>Lead Acid Battery Recycling</u>		<u>Allowances / Short Ton of Lead and Lead Alloys</u>
<u>Iron Foundries</u>	<u>331511</u>	<u>Ductile Iron Pipe Manufacturing</u>	<u>0.561</u>	<u>Allowances / Short ton of Ductile Iron Pipes</u>
<u>Nonferrous Forging</u>	<u>332112</u>	<u>Seamless Rolled Ring</u>		

# Table 9-1. Product-Based Emissions Efficiency Benchmarks

NAICS Sector Definition	NAICS code	Activity (a)	Benchmark (B <sub>a</sub> )	Benchmark Units
Rolled Steel Shape Manufacturing <sup>1</sup>	331221	Hot Rolled Steel Sheet Production	0.0843	Allowances / Short ton of hot rolled steel
		Picked Steel Sheet Production	<del>0.04260</del> <u>0.0123</u>	Allowances / Short ton of pickled steel
		Cold Rolled and Annealed Steel Sheet Production	<del>0.03130</del> <u>0.0520</u>	Allowances / Short ton of cold rolled and annealed steel
		Galvanized Steel Sheet Production	0.0504	Allowances / Short ton of galvanized steel
		Tin Steel Plate Production	<del>0.06400</del> <u>0.1108</u>	Allowances / Short ton of tin plate
Turbine and Turbine Generator Set Units Manufacturing	333611	Testing of Turbines and Turbine Generator Sets	0.00782	Allowances / Horsepower tested

- (c) Energy-Based Allocation Calculation Methodology. The Executive Officer shall calculate the amount of California GHG Allowances directly allocated under the energy-based methodology annually using the following formula:

$$A_t = (S_{consumed} * B_{steam} + F_{consumed} * B_{fuel} - e_{sota} * B_{electricity}) * AF_{a,t} * c_{a,t}$$

Where:

<sup>1</sup> Cold rolling benchmark values (may affect pickled steel sheet production, cold rolled and annealed sheet production, galvanized steel sheet production and tin steel plate production) are being reviewed based on newly available data.

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# **Energy-Based Benchmarking**

# Simplified Energy Based Allocation

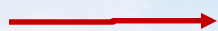
$$\text{Allocation} = (\text{Steam} * B_{\text{steam}} + \text{Fuel} * B_{\text{fuel}}) * A * C$$

Where:

Steam = facility's steam consumption

(MMBtu)

Fixed  
Parameters



Fuel = facility's fuel consumption (MMBtu)

A = assistance factor (Table 8-1)

B<sub>i</sub> = energy benchmark (for steam or fuel)

C = declining cap factor (Table 9-2)

NOTE: This general form equation omits consideration of electricity being provided for offsite use



# Energy Based Allocation Method

- > This method seeks to capture emissions based on two parameters fundamental to manufacturing:
  - ❖ Thermal energy from combustion (fuel use)
  - ❖ Steam consumption (heat carrier use)
- > Note: energy consumption attributed to electricity provided for or sold off site is excluded from allocation

# Energy Based Allocation

$$A_t = (S_{Consumed} * B_{Steam} + F_{Consumed} * B_{Fuel} - e_{Sold} * B_{Electricity}) * AF_{a,t} * C_{a,t}$$

## Where:

- > “ $A_t$ ” is the amount of California GHG allowances directly allocated to the operator of an industrial facility with an energy-based allocation from budget year “t”;
- > “t” is the budget year from which the direct allocation occurs;
- > “ $S_{Consumed}$ ” is the historical baseline annual arithmetic mean amount of steam consumed, measured in MMBtu, at the industrial facility 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;

# Energy Based Allocation

$$A_t = (S_{Consumed} * B_{Steam} + F_{Consumed} * B_{Fuel} - e_{Sold} * B_{Electricity}) * AF_{a,t} * c_{a,t}$$

Where:

- “ $F_{Consumed}$ ” is the historical baseline annual arithmetic mean amount of energy produced due to fuel combustion at a given facility, measured in MMBtus. The 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 “ $S_{Consumed}$ ” 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 MWh;
- “ $B_{Electricity}$ ” is the emissions efficiency benchmark per unit of electricity sold or provided to off-site end users, 0.431 California GHG Allowances/MWh;
- “ $AF_{a,t}$ ” is the assistance factor for budget year “t” assigned to each activity “a” as specified in Table 8-1; and
- “ $c_{a,t}$ ” is the adjustment factor for budget year “t” assigned to each activity “a” to account for cap decline as specified in Table 9-2.

# Data Sources for Energy Based Allocation Method

- > To determine baseline values:
  - ❖ ARB may use all available data reported to ARB under MRR for data years 2008-2010
  - ❖ If emissions reported to CCAR (and third party verified) from 2000-2007, ARB may use this data to develop baseline
  - ❖ If necessary, additional data will be solicited
- > Maximum direct allocation shall not exceed 110% of maximum annual emissions used in establishing baseline emissions
- > Baseline emissions levels from new facilities (not in operation prior to 2011) assessed based on expected activity as determined by ARB



# Washington Clean Air Rule

# WA Clean Air Rule (CAR)

- > September 15, 2016 - Ecology Director Maia Bellon.
  - ❖ “Today marks a watershed moment in our country’s history,” said “We are taking leadership under our clean air act, adopting a strong and practical plan to reduce greenhouse gases, and doing our fair share to tackle climate change.”
  - ❖ “Natural gas distributors, petroleum fuel producers and importers, power plants, metal manufacturers, waste facilities, and state and federal facilities would be included in the plan and need to show their emissions are declining by an average of 1.7 percent a year starting in 2017.”

# WA Clean Air Rule (CAR)

- > Finalized September 15, 2016
- > Codified in WAC 173-442
- > Takes effect October 17, 2016
- > Standards begin in 2017 for:
  - ❖ Stationary sources
  - ❖ Petroleum product producers
  - ❖ Natural gas distributors
- > Energy-intensive and trade-exposed (EITE) sources / petroleum product importers to join program in 2020.

# What Is an EITE Source?

- > Listed by primary NAICS code in CAR
- > Can choose not to be treated as EITE source
  - ❖ Decision cannot be reversed (even if operational control change)
  - ❖ Must notify ECY by January 1, 2017 or by January 1<sup>st</sup> of first year in baseline period



# EITE Source Listing (by NAICS)

- > (A) 311411: Frozen fruit, juice, and vegetable manufacturing;
- > (B) 311423: Dried and dehydrated food manufacturing;
- > (C) 311611: Animal (except poultry) slaughtering;
- > (D) 322110: Pulp mills;
- > (E) 322121: Paper (except newsprint) mills;
- > (F) 322122: Newsprint mills;
- > (G) 322130: Paperboard mills;
- > (H) 325188: All other basic inorganic chemical manufacturing;
- > (I) 325199: All other basic organic chemical manufacturing;
- > (J) 325311: Nitrogenous fertilizer manufacturing;
- > (K) 327211: Flat glass manufacturing;
- > (L) 327213: Glass container manufacturing;
- > (M) 327310: Cement manufacturing;
- > (N) 327410: Lime manufacturing;
- > (O) 327420: Gypsum product manufacturing;
- > (P) 327992: Ultra high purity silicon manufacturing;
- > (Q) 331111: Iron and steel mills;
- > (R) 331312: Primary aluminum production;
- > (S) 331315: Aluminum sheet, plate, and foil manufacturing;
- > (T) 331419: Primary smelting and refining of nonferrous metal (except copper and aluminum);
- > (U) 334413: Semiconductor and related device manufacturing;
- > (V) 336411: Aircraft manufacturing;
- > (W) 336413: Other aircraft parts and auxiliary equipment manufacturing.

# CAR Applicability Thresholds

(based on 3 year average emissions beginning in 2012)

Washington Compliance Threshold	
Compliance Threshold (MT CO <sub>2</sub> e/year)	First Compliance Period (Calendar Year)
100,000	2017-2019
95,000	2020-2022
90,000	2023-2025
85,000	2026-2028
80,000	2029-2031
75,000	2032-2034
70,000	2035 and beyond

# Treatment of GHG from Biomass Combustion

- > Per WAC 173-442-040 Exemptions:
  - ❖ Covered GHG emissions do not include “CO<sub>2</sub> from industrial combustion of biomass in the form of fuel wood, wood waste, wood by-products, and wood residuals...”
- > Therefore, biogenic GHG does not contribute to applicability determination or compliance obligation

# Clean Air Rule Potentially Eligible Parties

> Agrium Kennewick Fertilizer Operations (KFO) - Kennewick	2020	EITE* stationary source
> Alcoa Intalco Works - Ferndale	2020	EITE stationary source
> Alcoa Wenatchee Works - Malaga	2020	EITE stationary source
> Ardagh Glass Inc. - Seattle	2032	EITE stationary source
> Ash Grove Cement Company - Seattle	2020	EITE stationary source
> Avista Corporation LDC - statewide	2017	natural gas local distribution co
> Boeing Commercial Airplanes - Everett	2035	EITE stationary source
> Boise Paper - Wallula	2020	EITE stationary source
> BP Cherry Point Refinery - Blaine	2017	stationary source & pet prod producer
> C/N Ethanol Marketing Corp	2020 or later	petroleum product importer
> Cardinal FG Company - Winlock	2020	EITE stationary source
> Cascade Natural Gas Corporation LDC - statewide	2017	natural gas local distribution co
> CHS Inc.	2020 or later	petroleum product importer
> CityServiceValcon LLC	2020 or later	petroleum product importer
> Cowlitz County Headquarters Landfill - Castle Rock	2017	stationary source
> ECO-Energy LLC	2020 or later	petroleum product importer
> Enwave - Seattle	2035	stationary source
> ExxonMobil	2020 or later	petroleum product importer
> Fred Meyer Stores Inc	2020 or later	petroleum product importer
> Frederickson Power LP - Tacoma	2017	stationary source
> Gas Transmission Northwest Compressor Station 6 - Rosalia	2029	stationary source
> Gas Transmission Northwest Compressor Station 8 - Wallula	2020	stationary source
> Georgia-Pacific Consumer Products LLC - Camas	2020	EITE stationary source

# Clean Air Rule Potentially Eligible Parties

> Grays Harbor Energy Center - Elma	2017	stationary source
> Green Plains Trade Group LLC	2020 or later	petroleum product importer
> H.W. Hill Landfill Gas Power Plant - Roosevelt	2026	stationary source
> IPC (USA)	2020 or later	petroleum product importer
> JR Simplot - Othello	2026	EITE stationary source
> Kaiser Aluminum Washington, LLC (Trentwood Works)	2020	EITE stationary source
> King County Solid Waste Cedar Hills Landfill - Maple Valley	2017	stationary source
> Land Recovery Landfill Industrial - Graham	2017	stationary source
> Longview Fibre Paper and Packaging/KapStone Kraft	2020	EITE stationary source
> McCain Foods - Othello	2023	EITE stationary source
> Northwest Pipeline C/S - Sumas	2029	stationary source
> Nucor Steel Seattle, Inc, - Seattle	2020	EITE stationary source
> NW Natural - Washington - statewide	2017	NG local distribution company
> PacifiCorp Energy - Chehalis Generating Facility - Chehalis	2017	stationary source
> Pettit Oil Co	2020 or later	petroleum product importer
> Phillips 66 Ferndale Refinery - Ferndale	2017	stationary source and prod producer
> Port Townsend Paper Corporation - Port Townsend	2032	EITE stationary source
> Puget Sound Energy - Encogen Station - Bellingham	2017	stationary source
> Puget Sound Energy - Ferndale Station - Ferndale	2017	stationary source
> Puget Sound Energy - Fredonia Station - Mount Vernon		potential stationary source
> Puget Sound Energy - Goldendale Station - Goldendale	2017	stationary source

# Clean Air Rule Potentially Eligible Parties

> Puget Sound Energy - Mint Farm Station - Longview	2017	stationary source
> Puget Sound Energy - Sumas Station - Sumas	2017	stationary source
> Puget Sound Energy LDC - statewide	2017	NG local distribution company
> REC Silicon - Moses Lake	2020	EITE stationary source
> River Road Generating Plant - Vancouver	2017	stationary source
> RockTenn Tacoma Mill - Tacoma	2020	EITE stationary source
> Roosevelt Regional Landfill - Roosevelt	2017	stationary source
> RPMG, Inc.	2020 or later	petroleum product importer
> SEI Fuel Services, Inc.	2020 or later	petroleum product importer
> Shell Puget Sound Refinery - Anacortes	2017	stationary source and producer
> Southern Counties Oil Co Ltd	2020 or later	petroleum product importer
> Spokane Waste to Energy Facility - Spokane	2017	stationary source
> Suncor	2020 or later	petroleum product importer
> Terrace Heights Landfill - Yakima	2017	stationary source
> Tesoro Refining & Marketing Company LLC - Anacortes	2017	stationary source and producer
> Tyson Fresh Meats, Inc. - Wallula		Potential EITE stationary source
> U.S. Oil & Refining Co. - Tacoma	2017	stationary source and producer
> University of Washington Seattle Campus - Seattle	2029	stationary source
> US Army Joint Base Lewis-McChord - Pierce Co.	2029	stationary source
> Vitol Inc.	2020 or later	petroleum product importer
> WaferTech LLC - Camas	2020	EITE stationary source
> Weyerhaeuser NR Company - Longview	2020	EITE stationary source
> Wilson Oil Inc	2020 or later	petroleum product importer
> World Fuel Services, Inc.	2020 or later	petroleum product importer

# Reduction Requirements

- > Non-EITE sources: 1.7% decrease annually from baseline GHG emission rates
  - ❖ From applicability date through 2035
  - ❖ Starting in 2036, remains constant at 2035 value
- > EITE sources: Ecology to determine efficiency improvement rate
  - ❖ Based on relative emissions intensity for each sector (production-based)
  - ❖ Varies between 0.7% and 2.7% annual decrease from baseline depending on performance
    - ◆ Bottom 25<sup>th</sup> percentile: decrease from 1.7% to 2.7%
    - ◆ Top 25<sup>th</sup> percentile: decrease from 0.7% to 1.7%
    - ◆ Between top 25<sup>th</sup> and bottom 25<sup>th</sup>: 1.7% decrease

# Non-EITE Baseline

Covered Party	Operated 2012-2016 (at least 3 yrs)	Average GHG Emissions (MT CO <sub>2</sub> e/yr)	Ecology Action
Category 1	Yes	≥ 70,000	Assign baseline*
Category 2	Yes	< 70,000	Assign baseline when emissions reach 70,000 MT or if requested**,***
	No		
	N/A or No	≥ 70,000	Assign Baseline**,***

\* Category 1 baseline: Avg of 5-year reported/assigned emissions (2012-2016); or at least avg of 3-years (when ECY omitting years that meet reg criteria)

\*\* Category 2 baseline: Avg of reported emissions from 1<sup>st</sup> 3 consecutive years (after 2012) with avg > 70,000 MT; or when requested by voluntary participant

\*\*\* New/modified equipment: Avg 1<sup>st</sup> 3 years reported emissions under normal operation or ECY benchmarking (90% most efficient facility in all surveyed stationary sources using benchmarking)



# EITE Baseline

- > EITE sources must report production data along with GHG annual emissions
- > ECY calculates output-based baseline for each EITE source
  - ❖ Remains constant
  - ❖ Using average GHG emissions and production rates for 2012-2016, if available
  - ❖ Otherwise, use average from first three consecutive post-2012 years with reported emissions of at least 70,000 MT

# Compliance Obligation

- > (Compliance obligation) = (covered GHG emissions for compliance period) - (baseline GHG emission rate for each year of compliance period discounted by emission reduction requirement)
- > If difference > 1, must acquire Emission Reduction Units (ERUs)

# Sample Compliance Obligation (100,000 MT/yr source)

Calendar Year	Baseline Discount Percent	Discounted Baseline (MT/yr)	Reported Emissions (MT/3-yr)	Discounted Baseline (MT/3-yr)	Compliance Obligation (ERUs)
2017	1.7%	100,000			
2018	3.4%	98,300			
2019	5.1%	96,629			
2020	6.8%	94,986			
2021	8.5%	93,371			
2022	10.2%	91,784			
2023	11.9%	90,224			
2024	13.6%	88,690			
2025	15.3%	87,182			

# Compliance Options

- > ERUs can be created by:
  - ❖ Directly cutting emissions
  - ❖ Purchasing reductions from other businesses
  - ❖ Obtaining ERUs from projects in WA
  - ❖ Purchasing allowances from outside of WA

# Compliance Reporting

- > 3-year compliance reports
  - ❖ Demonstrate how CAR reduction requirements satisfied
  - ❖ Verified by eligible third-party
- > Annual GHG reports will continue to be required
  - ❖ Recent updates require reporting of production data, and other measures to allow for CAR implementation

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**Questions?**