FEATHER RIVER AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING DEPARTMENT

MANUAL OF OPERATIONS – FACILITY PRIORITIZATION

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1.0   PURPOSE:

The purpose of this document is to provide guidelines for conducting the facility prioritization provisions of the AB 2588 Air Toxics "Hot Spots" *Emission Inventory Criteria and Guidelines Report*. These guidelines may also be used for the evaluation of air toxics emissions as part of the Districts permitting procedures. These guidelines are in large part composed of procedures outlined in the California Air Pollution Control Officers Association (CAPCOA) *Air Toxics "Hot Spots" Facility Prioritization Guidelines* (August 2016).

2.0   APPLICABILITY:

2.1   Permitting: These guidelines apply to new facilities and existing facilities undergoing a modification which results in the increased potential to emit air pollutants, including sources subject to Section 112(g) of the federal Clean Air Act.

2.2   AB 2588 Program Compliance: These guidelines also apply to facilities, performing prioritization and risk assessments in compliance with the AB 2588 program.

3.0   DEFINITIONS:

Unless otherwise defined below, the terms used in this guidance are the same as defined in the CAPCOA *Air Toxics "Hot Spots" Facility Prioritization Guidelines* (August 2016).

3.1   ARB: The California Air Resources Board.

3.2   OEHHA: The Office of Environmental Health Hazard Assessment.

4.0   GENERAL PROCEDURES:

4.1   Requirements: The prioritization process is based on examination of the emissions from a stationary source and the pollutant risk data published by ARB and OEHHA. Facilities subject to this requirement will be assigned three prioritization scores for acute non-carcinogenic, chronic non-carcinogenic, and carcinogenic effects. Based on the calculated scores, a "low", "intermediate", or "high" designation will be assigned to the facility.   The following guidelines consist of two separate procedures for prioritizing facilities. The Emissions and Potency Procedure found in Section 5.0 shall serve as a preliminary approach whereby facilities tentatively identified as "high" priority are re-evaluated using the more comprehensive Dispersion Adjustment Procedure in Section 6.0 to determine if the high priority designation is appropriate.

4.2   Receptor Proximity: The distance from a facility's emission source(s) to the nearest off-site receptor must be estimated in order to assign a respective receptor proximity adjustment factor. The following methods from the *Air Toxics "Hot*

Spots" Facility Prioritization Guidelines shall be used to determine the receptor proximity:

4.2.1   Method 3: Measure the distance (in meters) from the facility's nearest emitting source to the nearest receptor or potential receptor; or

4.2.2   Method 2: Measure the distance (in meters) from the facility's nearest property line to the nearest receptor or potential receptor. (NOTE: This method should only be used if the exact location of the emission source is not known)

4.3   Carcinogenic Score: Facilities subject to prioritization will be evaluated for pollutants which are known to cause carcinogenic health effects on the general public. The prioritization of the facility will be based on the calculated scores and the corresponding designation found below in Section 4.3.1. For facilities that are not initially identified as "low" or "high" priority based on the score, additional factors may be considered for prioritization.

4.3.1   Evaluation of Facility Scores (Carcinogenic Effects)

Facility Score	Facility Description
TS ≥ 10	High Priority
1 ≤ TS < 10	Intermediate Priority
TS < 1	Low Priority

4.4   Non-carcinogenic Acute and Chronic Score: Facilities subject to prioritization will be evaluated for pollutants which are known to cause non-carcinogenic acute and chronic health effects on the general public. The prioritization of the facility will be based on the calculated scores and the corresponding designation found below in Section 4.4.1. For facilities that are not initially identified as "low" or "high" priority based on the score, additional factors may be considered for prioritization.

4.4.1   Evaluation of Facility Scores (Non-carcinogenic Acute and Chronic Effects)

Facility Score	Facility Description
TS ≥ 10	High Priority
1 ≤ TS < 10	Intermediate Priority
TS < 1	Low Priority

4.5   Facility Prioritization: If a facility emits only substances with carcinogenic or non-carcinogenic effects, the priority of the facility is that determined in Section 4.3 or 4.4, respectively. If a facility emits a substance(s) with carcinogenic and non-carcinogenic health effects, the facility is prioritized with the highest of the three designations assigned from Section 4.3 and 4.4.

5.0   EMISSIONS AND POTENCY PROCEDURE:

5.1   Score Facilities – Carcinogenic: If substances with carcinogenic effects are not emitted from the facility, go to Section 5.2. For each facility, multiply the total emissions in pounds per year (lbs/yr) for each substance by the appropriate unit risk factor, receptor proximity, and normalization factors. To arrive at a total facility score (TS) for carcinogenic effects, sum the results for each substance emitted as shown in the equation in Section 5.1.1. (NOTE: The appropriate factors can be found in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* and the Appendix A of this document)

5.1.1   Carcinogenic Score Calculation

$$TS = \left\{ \sum^{c} (Ec)(Pc) \right\} (RP)(7.7 \times 10^{3})$$

Where: TS = total facility score, carcinogenic effects
C = specific carcinogenic score
Ec = emissions of c (lbs/year)
Pc = unit risk of c
RP = receptor proximity adjustment factor
7.7×10^{3} = normalization factor

5.2   Score Facilities – Non-carcinogenic Acute and Chronic: If substances with non-carcinogenic effects are not emitted from the facility, the score calculated in Section 5.1 above will determine the prioritization of the facility. For each facility, divide total emissions for each substance by the appropriate reference exposure level. The result of this calculation is then multiplied by the receptor proximity, and normalization factors. Express emissions in maximum pounds per hour (max lbs/hr) for substances associated with acute toxicity and average pound per hour (lbs/hr) for substances associated with chronic toxicity. There are two equations for calculating the total score (TS[*]) for non-carcinogenic effects as shown in the equations in Section 5.2.1 and Section 5.2.2.   (NOTE: The appropriate exposure levels and factors can be found in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* and Appendix A of this document)

5.2.1   Non-Carcinogenic Acute Score Calculation

$$TS^{*} = \sum^{t} \left(\frac{Et}{Pt}\right)(RP)(1500)$$

Where: TS^{*} = total facility score, acute effects
t = toxic substance
Et = emissions of t (maximum lbs/hr)
Pt = reference exposure level of t (ug/m^{3})

	RP	$=$	receptor proximity adjustment factor
	1500	$=$	normalization factor

5.2.2 Non-Carcinogenic Chronic Score Calculation

$$TS^* = \sum^{t} \left(\frac{Et}{Pt}\right)(RP)(150)$$

Where:

	TS^*	$=$	total facility score, chronic effects
	t	$=$	toxic substance
	Et	$=$	emissions of t (average lbs/hr)
	Pt	$=$	reference exposure level of t (ug/m^3)
	RP	$=$	receptor proximity adjustment factor
	150	$=$	normalization factor

6.0   DISPERSION ADJUSTMENT PROCEDURE:

6.1   Score Facilities – Carcinogenic: If substances with carcinogenic effects are not emitted from the facility, go to Section 6.2. For each facility, multiply the total emissions in pounds per year (lbs/yr) for each substance and release point by the appropriate unit risk factor, dispersion adjustment, receptor proximity, and normalization factors. To arrive at a total facility score (TS) for carcinogenic effects, sum the results by release point for each substance emitted as shown in the equation in Section 6.1.1. (NOTE: The appropriate factors can be found in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* and Appendices B and C of this document)

6.1.1 Carcinogenic Score Calculation

$$TS = \left\{ \sum^{c} (Ec,h)(Pc)(RPh) \right\}(128)$$

Where:

	TS	$=$	total facility score, carcinogenic effects
	C	$=$	specific carcinogenic score
	$E_{c,h}$	$=$	emissions of c (lbs/year)
	Pc	$=$	unit risk of c
	h	$=$	release height
	D_h	$=$	dispersion adjustment factor for h
	RP_h	$=$	receptor proximity adjustment factor for h
	128	$=$	normalization factor

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6.2   Score Facilities – Non-carcinogenic Acute and Chronic: If substances with non-carcinogenic effects are not emitted from the facility, the score calculated in Section 6.1 above will determine the prioritization of the facility. For each facility, divide emissions for each substance and release point by the appropriate reference exposure level. The result of this calculation is then multiplied by the appropriate dispersion adjustment, receptor proximity adjustment, and normalization factors. Express emissions in maximum pounds per hour (max. lbs/hr) for substances associated with acute toxicity and average pound per hour (lbs/hr) for substances associated with chronic toxicity. There are two equations for calculating the total score (TS*) for non-carcinogenic effects as shown in the equations in Section 6.2.1 and Section 6.2.2.   (NOTE: The appropriate exposure levels and factors can be found in the *Consolidated Table of OEHHA/ARB Approved Risk Assessment Health Values* and Appendices B and C of this document)

6.2.1   Non-Carcinogenic Acute Score Calculation

$$\text{TS}^* = \sum^t \left(\frac{Et,h}{Pt}\right)(Dh)\,(RPh)(25)$$

Where: TS* =   total facility score, acute effects
               t   =   toxic substance
               Et,h   =   emissions of *t* at *h* (maximum lbs/hr)
               Pt   =   reference exposure level of *t* (ug/m^3)
               h   =   release height
               Dh   =   dispersion adjustment factor for *h*
               RPh   =   receptor proximity adjustment factor for *h*
               25   =   normalization factor

6.2.2   Non-Carcinogenic Chronic Score Calculation

$$\text{TS}^* = \sum^t \left(\frac{Et,h}{Pt}\right)(Dh)(RPh)(2.5)$$

Where: TS* =   total facility score, chronic effects
               t   =   toxic substance
               Et,h   =   emissions of *t* at *h* (average lbs/hr)
               Pt   =   reference exposure level of *t* (ug/m^3)
               h   =   release height
               Dh   =   dispersion adjustment factor for *h*
               RPh   =   receptor proximity adjustment factor for *h*
               2.5   =   normalization factor

7.0   REFERENCES:

7.1   California Air Pollution Control Officers Association (CAPCOA) *"Air Toxics 'Hot Spots' Program Facility Risk Prioritization Guidelines"* (August 2016)

7.2   California Air Resources Board *"Emission Inventory Criteria and Guidelines for the Air Toxics "Hot Spots" Program"* (September 2007)

APPENDIX A

Receptor Proximity Adjustment Factors [a,b,c]
(The Emissions and Potency Procedure)

Receptor Proximity (R)						
0m < R < 100m	100m ≤ R < 250m	250m ≤ R < 500m	500m ≤ R < 1000m	1000m ≤ R < 1500m	1500m ≤ R < 2000m	R ≥ 2000
1[c]	0.25	0.04	0.011	0.003	0.002	0.001

a. The receptor proximity adjustment factors provided are based on a release height of 5 meters.

b. Receptor proximity is expressed in meters (m).

c. If a receptor or potential receptor is located within approximately 50 meters of the release point, this receptor proximity adjustment factor may not be conservative.

APPENDIX B

Dispersion Adjustment Factors for the Dispersion Adjustment Procedure [a]

Release Point Description [b]	Dispersion Adjustment Factor
0m ≤ Release Height <20m	60
20m ≤ Release Height < 45m	9
Release Height ≥ 45m	1

a. The dispersion adjustment factors were derived by dividing the concentration at the maximum impacted receptor (at a 50 meter minimum) for varying stack heights by the concentration at the maximum impacted receptor for a release of 5 meters.

b. Release height is expressed in meters (m).

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APPENDIX C

Receptor Proximity Adjustment Factors [a,b]
(The Dispersion Adjustment Procedure)

Receptor Proximity (R)							
Release Height (RH)	0m < R < 100m	100m ≤ R < 250m	250m ≤ R < 500m	500m ≤ R < 1000m	1000m ≤ R < 1500m	1500m ≤ R < 2000m	R ≥ 2000
0m ≤ RH < 20m	1	0.25	0.04	0.011	0.003	0.002	0.001
20m ≤ RH < 45m	1	0.85	0.22	0.064	0.018	0.009	0.006
RH[d] > 45m	1	1	0.90	0.4	0.13	0.066	0.042

a. Because the receptor proximity adjustment factors are based on actual release height (not taking into account effective plume rise), they are not necessarily conservative for all emission scenarios.

b. Release height and receptor proximity are expressed in meters (m).

c. If a receptor or potential receptor is located within approximately 50 meters of the release point, these receptor proximity adjustment factor may not be conservative.

d. The receptor proximity adjustment factors provided in this row are based on a release height of 45 meters.