

Update on 2020 Agricultural Burning Evaluation and Report

San Joaquin Valley Air Pollution Control District
Governing Board Meeting

September 17, 2020

Agricultural Open Burning Mandates

- SB 705 (2003 Florez) established agricultural open burning prohibitions for the San Joaquin Valley
 - Codified in CH&SC Sections 41855.5 and 41855.6
 - Phased prohibition schedule by crop type began in 2005
- District implements SB 705 through Rule 4103 (Open Burning) and District's Smoke Management Program
- District "Staff Report and Recommendations on Ag Burning" must be updated every 5 years, per Rule 4103 requirements
 - Governing Board approval required prior to submittal to CARB and EPA
 - Last report submitted to CARB in 2015
 - Next report due to CARB by December 2020

Valley Efforts to Reduce Agricultural Open Burning

- Since 2005, District has prohibited burning from a majority of field crops, prunings, surface harvested prunings, orchard removals, weed abatement activities, and other materials
 - Until 2014, restrictions reduced ag burning by 80%
 - District operates comprehensive Smoke Management System (no burning when atmospheric conditions not conducive for dispersion)
- Valley has lost significant biomass capacity (biomass plants historically served as primary alternative to open burning)
- Since 2015, open burning initially surged due to increased drought-related waste and reduced availability of alternatives, but has recently declined through new alternatives/funding

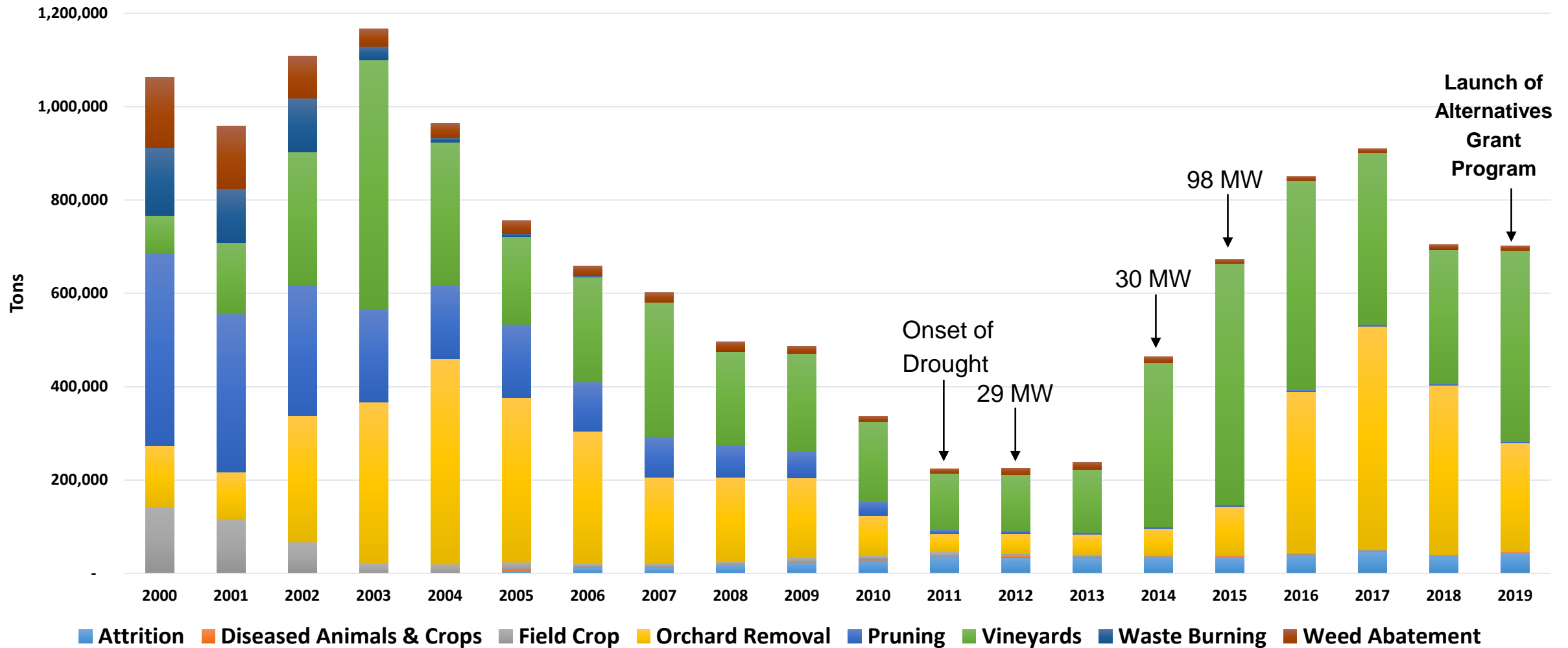
Valley Efforts to Reduce Agricultural Open Burning (cont'd)

Phase-Out Date	Crop Category	Agricultural Material Prohibited from Open Burning
2005	Field Crops	Alfalfa, asparagus, barley stubble, beans, corn, cotton, flower straw, hay, lemon grass, oat stubble, pea vines, peanuts, safflower, sugar cane, vegetable crops, and wheat stubble
	Field Crops	Rice Stubble: No more than 70% of operator's acreage can be burned
	Prunings	Apricot crops, avocado crops, bushberry crops, cherry crops, Christmas trees, citrus crops, date crops, eucalyptus crops, kiwi crops, nectarine crops, nursery prunings, olive crops, pasture or corral trees, peach crops, persimmon crops, pistachio crops, plum crops, pluot crops, pomegranate crops, prune crops, and rose crops
	Weed Abatement	Berms, fence rows, pasture, grass, and Bermuda grass
2007	Field Crops	Rice Stubble: No more than 50% of the operator's acreage can be burned
	Orchard Removals	Orchard removal matter for all crops with the exception of citrus, apple, pears, quince, and fig crops, and from 20 acres or less at a single location

Valley Efforts to Reduce Agricultural Open Burning (cont'd)

Phase-Out Date	Crop Category	Agricultural Material Prohibited from Open Burning
2010	Orchard Removal Matter	Small Orchards: Reduced burn allowance to 15 acres or less per location per year (includes fig crops)
	Other Materials	Brooder paper, deceased goats
	Field Crops	Rice Stubble: Modified schedule to phase out by June 2015
	Prunings	Fig Crops
	Surface Harvested Prunings	Almond, Walnut, and Pecan: Prohibit burning for each ag operation whose total nut acreage at all sites is 3,500 acres or more (allows burning of up to 20 acres per year for sites less than 3,500 acres)
	Vineyard Materials	Grape vines, grape canes
2012	Orchard Removals	Citrus orchard removals over 3,500 acres are not allowed to burn as of 2012. Citrus orchard removals under 3,500 acres are allowed to burn on a case-by-case basis, depending on feasibility of alternatives.

Annual Tons of Material Burned Compared to Decrease in Megawatt Capacity at Biomass Plants



Efforts to Identify Alternatives to Open Burning

- Your Board has directed staff to work with stakeholders to identify short and long-term measures to avoid rolling back current prohibitions on open burning of agricultural materials
- District convened 2017 Central Valley Summit on Alternatives to Open Burning of Agricultural Waste to bring together Valley stakeholders, researchers/experts, biomass industry reps, and technology vendors
- Board directed staff to explore feasibility of utilizing air curtain burn boxes to dispose of agricultural wood waste materials
 - Adopted amendments to District Rule 2280 (Portable Equipment Registration) to facilitate use of air curtain burners in Valley
- In partnership with Ag, District launched new incentive program in late 2018 to demonstrate new alternatives, such as whole orchard recycling

Alternatives to Open Ag Burning Incentive Pilot Program

- Since November 2018, Board has authorized \$8,000,000 in incentive funding for new program to demonstrate feasibility of on-field alternatives to open burning of woody ag materials
- Program launched in December 2018
- Nearly 17,000 acres funded to date (~465,000 tons of woody ag material)
- Program has provided valuable data as to cost and feasibility of soil incorporation and land application for different crops



Incentive Program Acres Funded by Crop Type

	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare	Total	Percent of Total
Almonds	1,458.4	2,145.8	76	1,075.3	2,145.8	220.6	1,807.1	303.3	9,232.3	54.6%
Citrus	146	306.1	-	153	-	-	-	193.9	799.0	4.7%
Vineyards	1,105.4	1,040.4	-	85.3	-	-	-	446	2,677.1	15.8%
Walnuts	34.3	-	32	93	27.4	256.4	56	318.4	817.5	4.8%
Stonefruit	597.4	44	100	124.1	398.9	554.7	533.7	801.5	3,154.3	18.7%
Other	22.8	145	-	-	19	21	-	9.3	217.1	1.3%
Total Acres	3,364.3	3,681.3	208.0	1,530.7	2,591.1	1,052.7	2,396.8	2,072.4	16,897.3	

2020 Agricultural Burning Evaluation and Report

- Comprehensive report will evaluate the feasibility of additional prohibitions on open burning for remaining postponed crop categories and maintenance of existing burn prohibitions
- Working closely with agricultural stakeholders, USDA-NRCS, CARB, and other partners, District staff are analyzing the feasibility, costs, and availability of different alternatives to open burning for each crop type
- Economic consultant will provide costs of production and revenues for potentially impacted agricultural operations (different sizes, crop types)
- District evaluation will provide recommendations on further prohibiting open burning of agricultural materials based on statutory criteria, including availability, feasibility, and funding of alternatives
 - Will return to Board by end of 2020 with proposed report and recommendations

Considerations for Postponement of Prohibitions

- Under SB 705, District may postpone burning prohibitions for any category of agricultural waste or crop if all of the following applies:
 - No economically feasible alternative means of eliminating waste
 - No long-term federal/state funding commitment for continued operation of biomass facilities in Valley or development of alternatives to burning
 - Continued issuance of permits for that specific category or crop will not cause, or substantially contribute to, a violation of an applicable federal ambient air quality standard
 - CARB must concur with the District's determinations on the above points

Current Burning Prohibition Postponements

Crop Category	Agricultural Material With Postponed Prohibition	2015 Review Determination
Field Crops	Rice straw (up to 70% of planted acreage), residual rice stubble, spot burning of rice stubble, and weeds and vegetative materials on rice field levees and banks	<i>No economically feasible alternative due to fluctuations in demand for rice straw and issues with inconsistent water allocation</i>
Prunings	Apples, pears, and quinces	<i>Burning is only feasible alternative to prevent spread of disease (Fire Blight) which is prevalent among these crops</i>
Weed Abatement	Pond and levee banks	<i>No feasible alternatives due to slopes of banks and potential for contamination of water ways</i>
Orchard Removals	Apples, pears, and quinces	<i>Burning is only economically feasible alternative to prevent spread of disease (Fire Blight) which is prevalent among these crops</i>

Current Burning Prohibition Postponements (cont'd)

Crop Category	Agricultural Material With Postponed Prohibition	2015 Review Determination
Orchard Removals	Citrus at farming operations with a combined citrus acreage of less than 3,500 acres on a case-by-case basis where alternatives are explored and are not feasible	<i>Case-by-case analysis allowed due to potential lack of economically feasible alternatives for smaller farming operations</i>
Orchard Removals	Small orchard removals less than 15 acres	<i>No economically feasible alternative below 15 acres due to high initial setup charges for chipping</i>
Surface Harvested Prunings	Up to 20 acres per year of almond, pecan and walnut prunings at farming operations with a combined total nut acreage of less than 3,500 acres	<i>No economically feasible alternative below 20 acres due to set-up charges and cost of shredding equipment</i>

Current Burning Prohibition Postponements (cont'd)

Crop Category	Agricultural Material With Postponed Prohibition	2015 Review Determination
Surface Harvested Prunings	Additional acres of almond, pecan and walnut prunings at farming operations with a combined total nut acreage of less than 3,500 acres on a case-by-case cost effectiveness basis	<i>Case-by-case analysis allowed due to potential lack of economically feasible alternatives for smaller farming operations</i>
Vineyard Materials	Raisin trays	<i>No economically feasible alternative due to polymer in the trays which slows the decomposition rate for soil incorporation and makes them unacceptable for biomass plants</i>
Vineyard Removals	Removals of grape and kiwi vineyards	<i>No economically feasible alternative due to the trellis wire that becomes embedded in the wood and associated high costs</i>
Other Materials	Diseased beehives	<i>No technologically feasible alternative for disposal</i>

Analysis of Feasibility of Potential Alternatives

- Analysis of alternatives to open burning includes:
 - Whether feasible alternatives exist
 - Whether existing alternatives are in practice by ag operators
 - Cost/acre of alternatives to open burning
 - Evaluation of economic feasibility of available alternatives as determined by impact on profitability
 - Quantification of emissions benefits/impacts from use of alternative
- District working closely with ag community to gather best available information regarding crop economics and costs/feasibility for alternatives to open burning
 - Datasets used historically include USDA Ag Census data, California County Ag Commissioner Reports, UC Co-op Extension data

Potential Alternatives to Open Burning

- **Soil Incorporation/Land Application**

- Chipped or shredded ag biomass materials can be used to produce wood mulch
- Common practice for prunings from orchards
- Whole orchard recycling/soil incorporation research and demonstrations ongoing

- **Biomass Plants**

- Historically provided a significant alternative to open burning of ag waste
- Lack of state funding may result in further plant closures in near future

- **Pyrolysis/Gasification**

- Possible paths to convert ag biomass to higher value products including syngas (for energy production or for conversion into a liquid fuel) and bio-char
- Scale of pyrolysis or gasification unit important in feasibility analysis, on-farm options being analyzed as well as potential future development of larger production plants

Potential Alternatives to Open Burning (cont'd)

- **Bio-char**

- Byproduct of pyrolysis or gasification; potentially high value product as a soil amendment that could increase feasibility of gasification/pyrolysis projects

- **Composting**

- Process by which organic material is broken down aerobically by bacteria and other microorganisms to form a biologically stable organic substance suitable as a soil amendment/plant fertilizer
- Limitations caused by local and state regulations/other environmental impacts important consideration in feasibility analysis

- **Air Curtain Burners**

- Open top combustion devices with vertical, refractory lined walls that operates by forcefully projecting a fan driven pane of high velocity air over the top of the combustion chamber; designed to reduce smoke/PM from open burning

Next Steps

- Engagement will continue through public workshops and stakeholders meetings
- Public workshop scheduled for September 30th (participation by Zoom with interpretation available)
- Staff will return in December 2020 with proposed report and recommendations for your Board's consideration

