

## Potential Measure Concepts For Discussion

The below measures are preliminary for discussion purposes. The final scope, design and effectiveness of measures to be considered will be subject to comments that the District expects to receive from Valley businesses and residents through the remaining public participation process.

<b>Directly Emitted PM2.5 Control Strategy</b>										
Measure ID	Measures/Strategies to Reduce Directly Emitted PM2.5	Units Controlled Through Incentives	Incentive \$ per unit	\$ for Incentives	2019		2021		2025	
					Potential Emission Reduction (tpd)	Potential Reduction in Design Value (24-hr)	Potential Emission Reduction (tpd)	Potential Reduction in Design Value (annual)	Potential Emission Reduction (tpd)	Potential Reduction in Design Value (annual)
	<b>Under-fired Charbroilers</b>									
District-1	Install PM control technology by 2019 on larger under-fired charbroiler units installed within the last 10-15 years (360 out of a total of 1800)	360	\$ 100,000	\$ 36,000,000	0.35	0.73	0.36	0.22	0.38	0.23
	<b>Residential Wood-burning Devices</b>									
District-2	Replace 7,876 residential wood-burning devices by 2019 with cleaner devices	7,876	\$ 1,671	\$ 13,163,738	0.36	0.15	0.36	0.06	0.36	0.06
District-3	Replace 5,251 residential wood-burning devices in 2020 through 2021	5,251	\$ 1,671	\$ 8,775,825	-	-	0.24	0.04	0.24	0.04
District-4	Replace 10,501 residential wood-burning devices in 2022 through 2025	10,501	\$ 1,671	\$ 17,551,650	-	-	-	-	0.48	0.08
District-5	Prohibit wood-burning devices in new homes on low density parcels	-	-	-	TBD	TBD	TBD	TBD	TBD	TBD
	<b>Conservation Management Practices</b>									
District-6	Enhanced CMPs for agricultural operations aimed at reducing directly emitted PM	-	-	-	3.00	0.01	3.00	0.05	3.00	0.05
District-7	San Joaquin Valley Healthy Soils Initiative	-	-	TBD	TBD	TBD	TBD	TBD	TBD	TBD

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					Potential Emission Reduction (tpd)	Potential Reduction in Design Value (24-hr)	Potential Emission Reduction (tpd)	Potential Reduction in Design Value (annual)	Potential Emission Reduction (tpd)	Potential Reduction in Design Value (annual)
<b>District-8</b>	<b>Almond Harvesters</b> Replace 325 almond harvesters by 2019 with new almond harvester technologies capable of 50% PM2.5 control efficiency with local funding by 2019 (325 out of a total of 650)	325	\$ 53,400	\$ 17,355,000	0.90	0.004	0.90	0.03	0.90	0.03
<b>NRCS-1</b>	Replace 325 almond harvesters by 2019 with new almond harvester technologies capable of 50% PM2.5 control efficiency with local funding by 2019 (325 out of a total of 650)	325	\$ 53,400	\$ 17,355,000	0.90	0.004	0.90	0.03	0.90	0.03
<b>District-9</b>	<b>Ag Engines</b> Electrify 1,053 (50% of total internal combustion engines) ag pumps in areas impacting peak PM2.5 sites where access to electricity available	1,053	\$ 60,000	\$ 63,150,000	TBD	TBD	TBD	TBD	TBD	TBD
<b>Projected Reductions Based on Current Information</b>					<b>5.5</b>	<b>0.9</b>	<b>5.8</b>	<b>0.4</b>	<b>6.3</b>	<b>0.5</b>

### SOx Control Strategy

Measure ID	Measures/Strategies to Reduce SOx	Units Controlled Through Incentives Incentive \$ per unit \$ for Incentives			2019		2021		2025	
					Potential Emission Reduction (tpd)	Potential Reduction in Design Value	Potential Emission Reduction (tpd)	Potential Reduction in Design Value	Potential Emission Reduction (tpd)	Potential Reduction in Design Value
<b>District-10</b>	<b>Glass Plants</b> Install additional SOx control technology on Valley glass plants	-	-	-	TBD	TBD	TBD	TBD	TBD	TBD

## NOx Control Strategy

Measure ID	Measures/Strategies to Reduce NOx	Units Controlled Through Incentives			2019		2021		2025	
					Incentive \$ per unit	\$ for Incentives	Potential Emission Reduction (tpd)	Potential Reduction in Design Value	Potential Emission Reduction (tpd)	Potential Reduction in Design Value
<b>District-11</b>	<b>Glass Plants</b> Lower NOx limit from container glass plants by 2019	-	-	-		TBD		TBD		TBD
<b>District-8</b>	<b>Almond Harvestors</b> Replace 325 almond harvesters by 2019 with new almond harvester technologies capable of 50% PM2.5 control efficiency with local funding by 2019 (325 out of a total of 650)	325	\$ 53,400	Included Above		TBD		TBD		TBD
<b>NRCS-1</b>	Replace 325 almond harvesters by 2019 with new almond harvester technologies capable of 50% PM2.5 control efficiency with local funding by 2019 (325 out of a total of 650)	325	\$ 53,400	Included Above		TBD		TBD		TBD
<b>District-9</b>	<b>Ag Engines</b> Electrify 1,053 (50% of total internal combustion engines) ag pumps in areas impacting peak PM2.5 sites where access to electricity available	1,053	\$ 60,000	see above		2.03		2.03		2.03
<b>District-12</b>	<b>Non-ag Engines</b> Lower NOx limits from non-ag engines as feasible by 2019	-	-	-		0.43		0.43		0.43
<b>District-13</b>	<b>Boilers</b> Lower NOx from boilers/steam generators > 5 MMBtu/hr as feasible by 2019	-	-	-		0.49		0.49		0.49
<b>District-14</b>	Lower NOx from boilers/steam generators < 5 MMBtu/hr as feasible by 2019	-	-	-		0.12		0.12		0.12
<b>District-15</b>	<b>Flares</b> Install ultra-low NOx flare technology and require additional flare minimization practices by 2019	-	-	-		TBD		TBD		TBD

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<b>Current ARB Proposal in Mobile Source Strategy</b>										
ARB-1	ARB On-Road Heavy Duty Low NOx Requirement	-	-	-	-	-	-	-	2	
ARB-2	Small Off-Road Engines Requirements	-	-	-	-	-	-	-	0.2	
ARB-3	Off-Road Equipment Low-Emission Diesel Requirements	-	-	-	-	-	-	-	1	
ARB-4	Innovative Clean Transit Initiative	-	-	-	-	-	-	-	0.1	
ARB-5	Last Mile Delivery	-	-	-	-	-	-	-	0.1	
<b>Public Fleets</b>										
ARB-6	Replace 181 public transit buses with 0.02 g/bhp-hr by 2019	? For ARB	\$ 300,000	? For ARB	0.47		0.47		0.47	
ARB-7	Replace 222 solid waste collection trucks with 0.02 g/bhp-hr by 2019	? For ARB	\$ 165,000	? For ARB	0.25		0.25		0.25	
ARB-8	Replace 617 school buses with 0.02 g/bhp-hr by 2019	? For ARB	\$ 92,500	? For ARB	0.25		0.25		0.25	
ARB-9	Replace 977 public agencies and utilities fleet vehicles with 0.02 g/bhp-hr by 2019	? For ARB	\$ 90,000	? For ARB	0.27		0.27		0.27	
<b>Light Duty Vehicles (Passenger Cars, SUVs, Pick-up Trucks, etc)</b>										
ARB-10	Replace 320,000 light-duty cars and trucks by 2019 with zero-emission vehicles	? For ARB	\$ 10,000	? For ARB	5.03		3.36		1.62	
<b>Light Heavy Duty (LHD) Trucks</b>										
ARB-11	Replace 49,167 LHD Trucks by 2019 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 30,000	? For ARB	7.21		5.85		3.65	
ARB-12	Replace 214 LHD Trucks through 2020-2021 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 30,000	? For ARB	-		0.05		0.04	
ARB-13	Replace 214 LHD Trucks through 2022-2025 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 30,000	? For ARB	-		-		0.01	
<b>Medium Heavy Duty (MHD) Trucks</b>										
ARB-14	Replace 110,000 MHD Trucks by 2019 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 30,000	? For ARB	15.02		10.25		7.32	

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<b>ARB-15</b>	<b>Heavy Heavy Duty Trucks (HHD)</b> Install 2,622 natural gas fueling stations as necessary to deploy 75,536 HHD 0.02 g/bhp-hr natural gas trucks by 2025	? For ARB	\$ 480,000	\$ 1,258,560,000						
<b>ARB-16</b>	Replace 67,728 HHD Trucks by 2019 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 100,000	? For ARB	55.47		51.47		29.28	
<b>District-16</b>	Replace 1055 HHD Trucks by 2019 with 0.02 g/bhp-hr with local funds, Prop 1B	1055	\$ 100,000	\$ 105,495,300	0.86		0.73		1.16	
<b>District-17</b>	Replace 68 HHD Trucks by 2019 with 0.02 g/bhp-hr with Federal Funding	68	\$ 100,000	\$ 6,829,000	0.06		0.05		0.08	
<b>ARB-17</b>	Replace 2,194 HHD Trucks between 2020 to 2021 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 100,000	? For ARB			0.99		0.16	
<b>District-18</b>	Replace 540 HHD Trucks between 2020 to 2021 with 0.02 g/bhp-hr with Local Funds, Prop 1B	540	\$ 100,000	\$ 54,000,000			0.24		0.04	
<b>District-19</b>	Replace 50 HHD Trucks between 2020 to 2021 with 0.02 g/bhp-hr with Federal funding	50	\$ 100,000	\$ 5,000,000			0.02		0.00	
<b>ARB-18</b>	Replace 2,282 HHD Trucks between 2022 to 2025 with 0.02 g/bhp-hr with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 100,000	? For ARB	-		-		0.82	
<b>District-20</b>	Replace 895 HHD Trucks between 2022 to 2025 with 0.02 g/bhp-hr with Local Funds, Prop 1B	895	\$ 100,000	\$ 89,500,000	-		-		0.60	
<b>District-21</b>	Replace 100 HHD Trucks between 2022 to 2025 with 0.02 g/bhp-hr with Federal Funding	100	\$ 100,000	\$ 10,000,000	-		-		0.05	
	<b>Ag Equipment (tractors, harvesters, etc)</b>									
<b>ARB-19</b>	Replace 20,649 Agricultural Tractors/Other Equipment by 2019 with Tier 4 with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 65,000	? For ARB	23.36		20.47		14.82	
<b>District-22</b>	Replace 21 Agricultural Tractors/Other Equipment by 2019 with Tier 4 with currently allocated Cap and Trade funding	21	\$ 65,000	\$ 1,350,800	0.02		0.02		0.01	
<b>District-23</b>	Replace 969 Agricultural Tractors/Other Equipment by 2019 with Tier 4 with Local, Moyer funds	969	\$ 66,000	\$ 63,008,200	1.10		0.96		0.70	
<b>NRCS-2</b>	Replace 969 Agricultural Tractors/Other Equipment by 2019 with Tier 4 with NRCS funds	969	\$ 66,000	\$ 63,008,200	1.10		0.96		0.70	
<b>District-24</b>	Replace 84 Agricultural Tractors/Other Equipment by 2019 with Tier 4 with Federal funding	84	\$ 66,000	\$ 5,477,700	0.10		0.08		0.06	

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<b>ARB-20</b>	Replace 8,669 Agricultural Tractors/Other Equipment through 2020-2021 with Tier 4 with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 75,000	? For ARB			4.04		4.04	
<b>District-25</b>	Replace 465 Agricultural Tractors/Other Equipment through 2020-2021 with Tier 4 with Local District, Moyer	465	\$ 75,000	\$ 34,907,000			0.22		0.22	
<b>NRCS-3</b>	Replace 465 Agricultural Tractors/Other Equipment through 2020-2021 with Tier 4 with NRCS Funds	465	\$ 75,000	\$ 34,907,000			0.22		0.22	
<b>District-26</b>	Replace 67 Agricultural Tractors/Other Equipment through 2020-2021 with Tier 4 with Federal funding	67	\$ 75,000	\$ 5,000,000			0.03		0.03	
<b>ARB-21</b>	Replace 2,471 Agricultural Tractors/Other Equipment through 2022-2025 with Tier 4 with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 95,000	? For ARB					1.17	
<b>District-27</b>	Replace 817 Agricultural Tractors/Other Equipment through 2022-2025 with Tier 4 with Local District, Moyer	817	\$ 95,000	\$ 77,610,000					0.39	
<b>NRCS-4</b>	Replace 817 Agricultural Tractors/Other Equipment through 2022-2025 with Tier 4 with NRCS Fund	817	\$ 95,000	\$ 77,610,000					0.39	
<b>District-28</b>	Replace 105 Agricultural Tractors/Other Equipment through 2022-2025 with Tier 4 with Federal funding	105	\$ 95,000	\$ 10,000,000					0.05	
<b>ARB-22</b>	<b>Off-Road Equipment</b> Replace 18,000 Vehicles by 2019 with Tier 4 with new state regulation and or funding for incentives programs	? For ARB	\$ 40,000	? For ARB	15.50		14.60		11.90	
<b>ARB-23</b>	<b>Freight Locomotives</b> Replace 64 Locomotives by 2019 with Tier 4 with new state funding (Cap and Trade, AB 118, Others)	? For ARB	\$ 2,000,000	? For ARB	6.73		6.30		5.24	
<b>District-29</b>	Replace 12 Locomotives by 2019 with Tier 4 with Prop 1B	12	\$ 2,000,000	\$ 23,500,000	1.23		1.19		1.01	
	<b>Projected Reductions Based on Current Information</b>				<b>137.1</b>		<b>126.4</b>		<b>93.5</b>	