

Update on District's Commercial Underfired Charbroiling Strategy

San Joaquin Valley Air Pollution Control District
Governing Board Meeting
August 20, 2020

Purpose of Today's Item

- District in process of evaluating options for reducing emissions from restaurants equipped with commercial underfired charbroilers
 - Included as commitment in District's *2018 PM2.5 Plan*
- Major hurdles in identifying feasible control technologies (no region has adopted successful regulation)
- Severe impacts of COVID-19 pandemic to the restaurant industry further exacerbates challenge, with restaurants facing limited revenue streams or closures in the coming months and beyond (commitment in Plan developed prior to COVID-19)
- Today's discussion to provide update and receive feedback on efforts to evaluate potential emission reduction strategies for commercial underfired charbroilers

What is a Commercial Charbroiler?

- Two main types of charbroilers used in commercial cooking: chain-driven and underfired
 - Chain-driven charbroilers are automated devices typically used in fast food restaurants (Burger King, etc.) with an exhaust stack on top of the unit
 - Underfired charbroilers are similar to a home BBQ, employing a metal grill with a heat source below, exhaust vents through the restaurant's hood system



Source: Neico, 2020

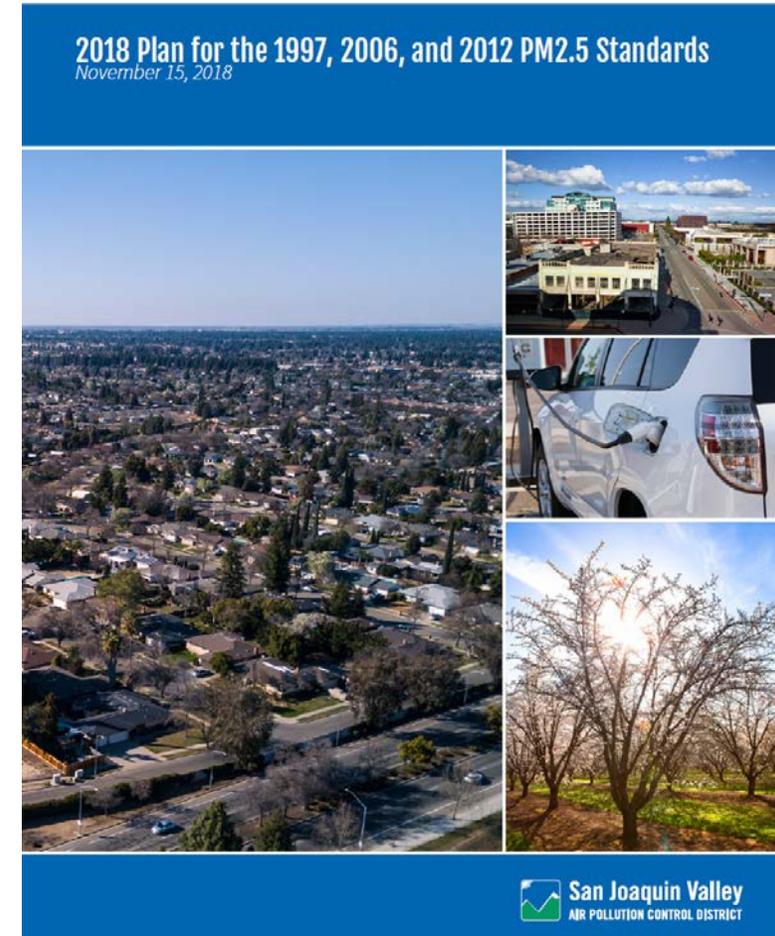


Valley Efforts to Reduce Emissions from Commercial Charbroilers

- District adopted Rule 4692 (Commercial Charbroilers) in 2002 to reduce emissions from chain-driven charbroilers
 - Rule strengthened in 2009 to further reduce emissions
- Chain-driven charbroilers are required to be equipped and operated with a certified catalytic oxidizer control device
 - Required control efficiency of at least 83% for PM and 86% for VOC
 - Record keeping requirements of total quantity of meat cooked per week on each chain-driven charbroiler on the premises
 - Active permitting and enforcement for these units
- Unavailability of feasible and cost-effective controls has been barrier to establishing requirements for underfired charbroilers

San Joaquin Valley PM2.5 Attainment Strategy

- *2018 PM2.5 Plan* adopted by your Board in November 2018:
 - Regulatory measures
 - Incentive-based measures
 - State mobile source strategy
 - Targeted “hot-spot” strategy
 - Public outreach and education
 - Technology advancement and demonstration efforts
 - Call for action by state and federal governments to do their part in reducing emissions in Valley
- Developed through extensive public process
- Plan portions related to 2006 Standard approved by EPA in June, 2020



2018 PM2.5 Plan Commitment

- *2018 PM2.5 Plan* includes commitments to evaluate potential emission reductions from underfired charbroiling sources through incentive-based and regulatory approach in urban areas hot-spot counties of Fresno, Kern, and Madera
- Analysis and modeling for Plan indicates underfired charbroiler reductions critical to attainment of health-based standards
 - Significant portion of PM2.5, particularly at peak urban PM2.5 “hot spot” locations in Fresno, Kern, Madera counties
- Plan commitment includes regulatory action by 2020, with implementation of emissions reductions by 2024
- District staff have been evaluating options for reducing emissions from commercial underfired charbroilers

District's Ongoing Work on Development and Assessment of Control Technologies

- 2009: Board approved Charbroiler Incentive Program authorizing \$500K in funding to install control technologies
 - No restaurant interest after District outreach and 18 month open application period
- 2009: Partnered with South Coast AQMD, Bay Area AQMD, and EPA on laboratory testing of potential control technologies
 - Technology testing at UC Riverside and development of South Coast AQMD testing method
- 2015: Board approved enhanced Restaurant Charbroiler Technology Partnership (\$750K to pay for full cost of installation and maintenance)
 - Extensive outreach to Valley restaurants - 1 successful demonstration project
- Extensive review of charbroiler regulations and installations in other regions to better understand real-world costs and experiences
- 2018: Rule 4692 amended to include survey reporting and registration requirements for underfired charbroilers

Valley Underfired Charbroiler Restaurant Survey

- 2018 amendments to Rule 4692 provided District with valuable underfired charbroiling inventory and activity data
- District has received over 4,100 reports from Valley restaurants
- Quantity and throughput of underfired charbroilers in Valley may be significantly less than previously assumed
 - *2006 Area Source Emissions Inventory Methodology* estimates more than 50% of all restaurants operate underfired charbroilers
 - New data suggests that percentage is under 20% Valley-wide
 - Throughput of meat cooked on average substantially lower than estimates in current inventory
- District staff will continue to evaluate information and discuss findings through the public engagement process

Potential Emissions Reduction Technologies

- Mechanical Filtration Systems
 - Banks of filters (pre-filters, metal mesh screens, MERV filters, may have HEPA or charcoal filters)
 - Large footprint: space and weight considerations
 - For wood-fired or highest volume restaurants, may have prohibitively high maintenance costs due to required filter replacement
- Electrostatic Precipitators (ESPs)
 - Prefilters, followed by ESP cells that ionize pollution particles
 - May have self-washing feature for daily maintenance (monthly maintenance required by service company)
- Wet-Scrubbers
 - Prefilters, followed by water wash tank
 - Increased plumbing/water costs
 - Requires maintenance includes changing wash solution, changing prefilters

Restaurant Charbroiler Technology Partnership

- Established by Board in 2015, program funds full cost of purchase, installation, and maintenance of control equipment for two years
- One completed project to date
 - Molitron wet scrubber installed in The Habit Burger in Stockton
- District staff worked closely with 5 large local restaurants to evaluate underfired charbroiler technology retrofit options
 - Each restaurant encountered feasibility issues
 - In addition to feasibility issues, operators were also concerned about significant ongoing cost of unit maintenance after demonstration program concludes
- Ongoing outreach to interested restaurants in the Valley
 - Only 15 interest cards received as a result
 - After additional follow-up, none interested in moving forward with demonstration
- Approximately \$600,000 available in RCTP program funding

Current State of Underfired Charbroiler Control Technologies

- ***Increasing number of control technology installations primarily at new or newer restaurants in response to local ordinances and nuisance concerns***
 - Difficult to obtain info from technology vendors and restaurants directly
- ***Retrofitting controls on existing restaurants can be prohibitively expensive and technologically infeasible***
 - Structural, electrical, or water-line modifications may be required, space for unit may be significant barrier, prohibitive costs
 - Installation may interrupt operations, may require other upgrades to meet codes
 - Restaurant owner may not have authority to make changes to building if space is leased and landlord is unwilling to accommodate
 - Cost of control units are expensive

Current State of Underfired Charbroiler Control Technologies (cont'd)

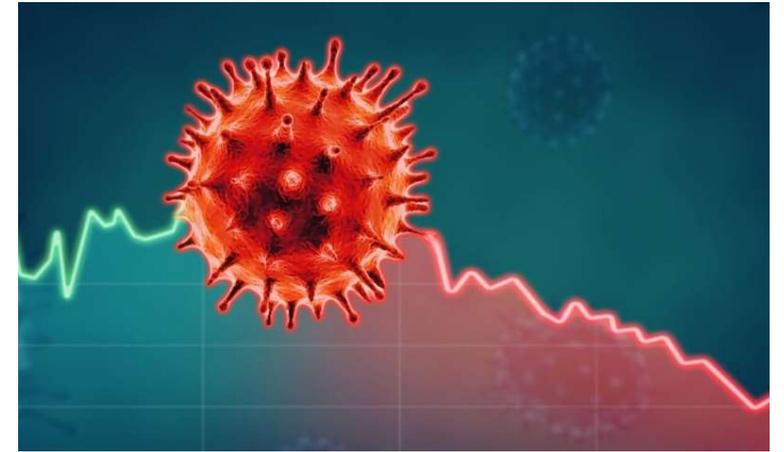
- ***Maintenance of controls can be prohibitively expensive***
 - Maintenance of control devices critical to ensure control effectiveness
 - Filter change-out required on monthly or quarterly basis with more extensive replacement/cleaning required annually (can exceed \$100,000 per year for highest volume restaurants)
- ***Maintenance requires specially trained staff that may not be accessible to all restaurants***

Current State of Underfired Charbroiler Control Technologies (cont'd)

- ***Several regulations to reduce emissions from underfired charbroilers exist, but have yet to demonstrate effectiveness in promoting controls***
 - No air districts or other regulatory agencies have yet to effectively implement or enforce regulation for underfired charbroiling
 - Predominantly focused on new installations
 - Most allow for multiple exemptions
 - Have ineffective applicability thresholds
 - Rely on unavailable certified equipment
 - Have poor to nonexistent enforcement
 - As a result, very few restaurants actually required to install controls under the existing regulations in other regions

Impact of COVID-19 on Restaurant Industry

- COVID-19 pandemic severely impacts restaurant industry
 - Restaurants in California mandated to restrict operations to take-out and outdoor dining only
 - Supply chain disruptions and decreased consumer spending adversely affect revenues
- National and California economic impacts
 - National Restaurant Association predicts \$240 billion loss by end of 2020
 - Over 30,000 California restaurants are expected to close by end of 2020
 - Over 900,000 restaurant workers in California have become unemployed
- District will continue to analyze impacts to industry as they develop
- Socioeconomic consultant analysis will be key as measure develops



Credit: Shutterstock

Next Steps

- Continue outreach to Valley restaurants, California Restaurant Association, and other stakeholders to gain additional insights regarding potential opportunities and issues
 - Critical to understand current economic impacts and opportunities during recovery and through grant funding
- District to continue public engagement process to discuss potential next steps for addressing PM2.5 Plan commitment – particularly important in light of current challenges
- Will return to your Board with recommendations by end of year