DATE: December 17, 2020

TO: SJVUAPCD Governing Board

FROM: Samir Sheikh, Executive Director/APCO
Project Coordinator: Jonathan Klassen

RE: ITEM NUMBER 11: ADOPT PROPOSED COMMERCIAL UNDERFIRED CHARBROILING EMISSION REDUCTION STRATEGY

RECOMMENDATION:

Adopt the proposed emission reduction strategy for commercial underfired charbroiling, including the following elements:

1. Enhance the District's Restaurant Charbroiler Technology Partnership incentive program to increase participation by Valley restaurants in successfully demonstrating new PM2.5 emission reduction technologies.

2. Authorize staff to develop guidance for interested cities and counties to assist in promoting PM2.5 control technologies during the approval of new large restaurants equipped with commercial underfired charbroilers.

3. Direct staff to assist CARB in the development of their intended new statewide Suggested Control Measures to provide consistent guidance for equitably reducing emissions from commercial charbroiling operations throughout the state.

4. Direct staff to work with CARB and U.S. EPA to update the emissions inventory and attainment modeling, as appropriate based on the latest available information, to assist the District and CARB in developing new control strategies.

5. Authorize staff to form a new restaurant working group to collaboratively explore opportunities for underfired charbroiling control technologies.

BACKGROUND:

The *2018 PM2.5 Plan*, adopted by your Board on November 15, 2018, utilized extensive science and research in developing a strategy for bringing the Valley into attainment with the federal health-based 1997, 2006, and 2012 PM2.5 standards by the respective federal deadlines of 2020, 2024, and 2025. The attainment strategy includes a combination of innovative regulatory and non-regulatory measures for both stationary and mobile sources that build upon stringent air quality measures already in place from earlier District attainment plans and measures adopted by your Board. The *2018 PM2.5 Plan* was developed through an extensive public process, with wide-ranging input and support from involved parties representing environmental, business, and city interests. Among the measures identified is a commitment to seek additional emission reduction opportunities from under-fired charbroilers through an incentive-based approach to fund the installation of controls for commercial underfired charbroilers within urban boundaries in hot-spot areas of Fresno, Kern, and Madera counties, with a potential future year regulatory requirement to encourage participation by those restaurants.

The lack of commercially available and feasibly demonstrated control technologies has been the primary barrier in moving forward with control strategies for reducing emissions from restaurants equipped with commercial charbroilers. Other air districts in California and other regions have encountered similar difficulties in identifying and requiring emissions control technologies for underfired charbroilers. The unprecedented impacts of the COVID-19 pandemic to the restaurant industry has further exacerbated this challenge, with many existing restaurants facing limited revenue streams or closures in the coming months and beyond. In recognition of these impacts, District staff have developed a multipronged strategy to promote emission reductions from this category, while minimizing the impact on restaurants during the COVID-19 pandemic.

Today's proposed strategy establishes specific actions in support of the District's commitment to identify, evaluate, and pursue additional opportunities for reducing emissions from commercial underfired charbroilers. If approved by your Board, successful implementation of the proposed strategy will require continued and effective outreach to Valley restaurants, technology vendors, cities, counties, non-governmental organizations, and other stakeholders.

DISCUSSION:

Since 2002, the District has required the installation and operation of particulate matter control devices on chain-driven commercial charbroilers through District Rule 4692. Through current Rule 4692 requirements, affected chain-driven commercial charbroilers are required to have emissions control devices that achieve 83% control efficiency for particulate matter and 86% control efficiency for VOC. However, the unavailability of a feasible and cost-effective control technology has been the barrier to the District's attempt to impose similar requirements for underfired charbroiling operations. Other air districts in California have encountered similar difficulties in identifying and requiring compliant control technologies for underfired charbroilers.

Modeling conducted by the California Air Resources Board (CARB) and District staff for the District's latest PM2.5 attainment strategy showed that reducing emissions from underfired charbroiling is critical in helping bring the Valley into attainment, with emissions from commercial charbroiling estimated by current emissions inventory methodologies to represent over 5% of the total PM2.5 emissions in the Valley.

2018 Amendments to Rule 4692

To assist with better understanding of cooking operations from underfired charbroilers in the Valley, and as an early measure in support of the District's commitment in the *2018 PM2.5 Plan*, Rule 4692 was amended on June 21, 2018, to add reporting and registration requirements for commercial underfired charbroiler units including:

- Submittal of a one-time report to provide information about the location, size, fuel source, usage, and meat cooking throughputs of underfired charbroiler units;

- Record keeping of total quantity, in pounds, of meat cooked on commercial underfired charbroilers; and

- Permit-Exempt Equipment Registration (PEER) for units with a meat throughput greater than 400 pounds/week, or greater than 10,800 pounds/year, not to exceed 875 pounds/week.

Upon adoption of the regulatory amendment, the District conducted outreach to affected restaurants, with the vast majority of restaurants subject to the reporting requirement now having submitted the required information. To date, the District has received over 4,100 one-time reports, of which 878 restaurants have reported operation of an underfired charbroiler. Of these 878 restaurants, 145 have reported a cooking throughput of at least 400 lbs of meat per week and have subsequently obtained a required PEER.

District's Commercial Underfired Charbroiling Incentive Programs

In 2009, the District conducted research and outreach to Valley restaurants to determine whether Rule 4692 applicability could be expanded to include underfired charbroilers and determined that there was a lack of credible and verifiable information necessary to evaluate the costs and reliability in the field of these technologies. Technological feasibility issues and logistical issues requiring further evaluation included the need and cost associated with extensive hood, exhaust system, and roof modifications as well as the costs associated with installation, maintenance, and labor.

To help evaluate these issues, your Board directed staff to initiate the Charbroiler Incentive Program (ChIP) and authorized $500,000 in funding for the program. This program was open for 18 months, however, the program did not receive any applications. With the importance of achieving direct PM2.5 emissions reductions from underfired charbroilers to address ever-tightening federal standards, in 2015, your Board approved changes to the incentive program aimed at removing what were viewed as impediments by restaurant owners. Under the new program, the District formed the Restaurant Charbroiler Technology Partnership (RCTP) and took a more active role in identifying and screening potential technology vendors and reaching out to restaurant owners. The new program committed to provide the full cost of deploying these systems including installation and maintenance and increased funding to $750,000.

Despite the District's efforts in promoting available funding under the RCTP program, the District has faced difficulty in finding restaurants willing to partner with the District to demonstrate new technologies. To date, only one restaurant, the Habit Burger Grill, has successfully completed two years of demonstration of a Molitron wet scrubber in their Stockton restaurant. Initially, the project experienced hood fan sizing issues, resulting in the restaurant being smoked out and forced to close temporarily. This issue has been addressed and the restaurant has now been successfully operating for about three years with this control device. The Habit Burger Grill has now installed these control devices on seven other new restaurants, with five of these installations in the Valley.

The District, over the last two years has also been working with an additional contracted restaurant, Baja Fresh, to install a pollution control unit at one of their Valley locations. The control technology that was proposed for demonstration for this project was a diesel particulate filter (DPF) that had been modified by the technology manufacturer for application as a restaurant emissions control device. However, this new technology has not yet been certified to standards required for installation in Kern County. To address this, the manufacturer is currently working on obtaining required certifications for potential installation at a future date.

In 2019, the District made an even larger concerted effort to conduct outreach to restaurants in the San Joaquin Valley regarding incentives available through RCTP. Through this outreach effort, the District received only 15 RCTP interest cards out of the over 4,200 restaurants that were contacted to comply with the 2018 Rule 4692 reporting

and registration requirements. After discussing RCTP with these restaurants in more detail, none of these restaurants considered moving forward after this additional outreach.

In addition, the District tailored its approach and made direct contact with five prominent Valley restaurants, which resulted in a great deal of interest to evaluate the feasibility of installing the underfired emission control technology on their existing operations, with the understanding that all costs of the technology and two year maintenance would be covered through the RCTP program. District staff conducted multiple site visits to these operations, working with the restaurant owner/operator, engineering consultants, and technology vendors. Initial control system designs, quotes from vendors, and installation quotes from contractors were obtained and the feasibility of the technologies were fully assessed for each of the restaurants. However, after conducting a lengthy detailed analysis, none of the restaurants moved forward with the demonstration due to feasibility issues related to the installation of the control devices and local permitting challenges, as further described below, and concerns about the cost of maintenance after the funded two-year demonstration period concluded under RCTP.

Evaluation of Underfired Charbroiler Emission Control Technology to Date

Although a variety of technologies for capturing emissions from underfired charbroilers have been tested over the years, electrostatic precipitators (ESP) and mechanical or media filtration are the most widely installed technologies for controlling particulate emissions from commercial underfired charbroilers. Below are general descriptions of each technology.

- **Electrostatic Precipitator (ESP).** This technology uses electrostatic processes to capture particles on electrically charged plates. ESPs are complex technology, but highly automated, and the operation costs include electricity and water usage. In addition, wastewater collection and discharge requirements must be met, which involves washing collection plates. ESPs are more expensive to install initially, but have lower maintenance costs than the mechanical filtration units (generally about half of the maintenance costs of the filter units) and have a more effective control of the small particulates emitted by charbroiling.

- **Filtration (Mechanical or Media).** This technology uses groups of mechanical filters to capture particles. It is mechanically simpler than other technologies and the operation costs include electricity and filter replacements. Mechanical filtration units have been widely installed as pollution control devices for kitchen emissions, but maintenance of these units may be cost-prohibitive for mid-to high-volume underfired charbroiling operations due to the ongoing expense of changing the filters, and the large footprint of the units can make installation potentially infeasible.

The evaluation of installing emissions control technology on existing Valley restaurants through RCTP provided many insights as to the cost and technological feasibility of available controls. In addition to supporting and evaluating Valley-based underfired charbroiler control technology demonstrations, District staff has conducted an extensive review and assessment of underfired charbroiler control technology installations. This review included reaching out to other regulatory agencies in California and across the nation, technology manufacturers, the California Restaurant Association (CRA), and restaurants both inside and outside of the Valley to better understand the control technologies available for underfired charbroilers and real-world costs and experiences related to these technologies. While the District's evaluation has been successful in identifying potential underfired charbroiling control technologies, and while an increasing number of newer restaurants have begun to adopt these technologies, many questions remain with respect to understanding the feasibility and cost of these technologies, and whether restaurants can successfully operate and maintain these systems, as described in more detail below:

- **There has been an increasing number of underfired charbroiler control technology installations primarily at new or newer restaurants in response to local ordinances and nuisance concerns:** Based on discussions with control technology manufacturers and vendors, an increasing number of control technologies have been installed at restaurants in dense urban areas to address nuisance requirements and concerns. The majority of these installations have been at new or newer restaurants. It is unclear how many of these installations have been at restaurants with underfired charbroilers as it has been difficult to obtain this information from technology vendors and restaurants directly. Restaurants that the District has been able to identify as having installed underfired charbroiling control technologies include: Chipotle (multiple installations outside of Valley); Yard House (multiple installations outside of Valley); Bourbon's Steak & Pub at Levi's Stadium (San Francisco, CA), Deli Delicious (Visalia, CA); Season's 52 (multiple installations outside of Valley), Capital Grill (multiple installations outside of Valley); Texas de Brazil (installation outside of Valley); BJ's Restaurant and Brewhouse (installation outside of Valley); Jersey Mikes (installation outside of Valley); and the Habit Burger Grill (multiple installations both in the Valley and in other locations).

- **Retrofitting controls on existing restaurants can be prohibitively expensive and technologically infeasible:** Based on discussions with restaurant operators, technology vendors, and other regulatory agencies, it can be extremely difficult and cost-prohibitive to add controls on existing restaurants. The installation may require structural, electrical, or water-line modifications that may not be feasible. This makes installation costs much higher for existing restaurants compared to new restaurants that can integrate emissions controls into the design. The existing structure may not have the necessary space or structural support for the control unit. Installing the control equipment may require the restaurant to temporarily shut down, resulting in loss of revenue.

Furthermore, the existing restaurant may not have the authority to make changes to the building if the space is leased and the landlord is unwilling to accommodate any changes.

- **Installation cost of controls can be prohibitively expensive:** The cost of control units themselves are expensive, ranging from $16,000 up to $138,000 for the most complicated unit configurations.

- **Maintenance of controls can be prohibitively expensive:** Regular maintenance of control devices is critical to ensure control effectiveness. Depending on the control technology and the type and volume of food cooked, filter change-out is required on a monthly or quarterly basis, with more in-depth filter replacement or unit cleaning required annually. Annual maintenance costs including both labor and materials starts around $6,000 and can exceed $100,000 for the highest volume restaurants with solid-fuel fired underfired charbroilers.

- **Maintenance requires specially trained staff that may not be accessible to all restaurants:** Control device cleaning can be a complex process, requiring specially trained staff. Training restaurant staff to perform this task may not be feasible, and service companies capable of performing the maintenance may not be readily available nearby. Any delays in required maintenance could cause significant economic impacts to restaurants.

- **Several regulations to reduce emissions from underfired charbroilers exist but have yet to demonstrate effectiveness:** The District's analysis has shown that there are no air districts or other regulatory agencies that have yet to effectively implement or enforce a regulation for underfired charbroiling restaurants. While there are currently several regulations for this source category, they are predominantly focused on new installations, most allow for multiple exemptions, have ineffective applicability thresholds, rely on unavailable certified equipment, or have poor to nonexistent enforcement, which results in very few restaurants actually being subjected to the control requirements in these regulations. Existing regulations in other air districts will be discussed in more detail below.

Control Technology Installation Requirements in Other Regions

Since 2009, the District has partnered with the South Coast Air Quality Management District (SCAQMD), Bay Area Air Quality Management District (BAAQMD), and EPA to further the research and evaluation of emission control technologies for underfired charbroilers. Through this effort, underfired charbroiler technology assessments have been conducted at UC-Riverside College of Engineering's Center for Environmental Research & Technology (CE-CERT). The District provided in-kind technical support and the research was funded with over $500,000 in contributions provided by

SCAQMD, BAAQMD, and EPA. This effort led to the establishment of published testing methodology, SCAQMD Method 5.1, which has been used as a benchmark methodology to standardize the testing of control efficiencies of kitchen exhaust pollution control units.

District staff conducted a thorough search and review of regulations adopted by other agencies for underfired charbroiling emissions and contacted these agencies to better understand the requirements and how they have been implemented. Regulations identified include:

- *Bay Area Air Quality Management District Regulation 6, Rule 2 (Commercial Cooking Equipment)*: This rule applies to new and existing restaurants with underfired charbroilers that purchase more than 1,000 pounds of beef per week, with an aggregate grill surface area of ten (10) square feet or more, to control emissions using a certified control device and registration of charbroilers and associated control devices. The rule exempts low-use charbroilers that grill less than 800 pounds of beef per week. No restaurants have been subjected to requirements under this regulation given wide ranging exemptions, enforceability challenges, and lack of certified control devices.

- *South Coast Air Quality Management District Rule 1138 (Control of Emissions from Restaurant Operations)*: This rule applies only to chain-driven charbroilers. Due to lack of demonstrable cost-effective and affordable control technologies, the 2017 South Coast air quality management plan included a rule for underfired charbroilers only as a contingency measure if they fail to reach attainment. The SCAQMD has yet to adopt this contingency rule.

- *New York City - Title 24 of the Administrative Code, Section 24-149.4 (Emission Reduction Technologies for Char Broilers)*: Adopted in May 2016, this rule requires the installation of control devices certified to provide at least 75% emissions reductions for new restaurants with underfired charbroilers that cook 875 pounds or more of meat per week. The New York Department of Environmental Protection is working with the NY Department of Buildings to require the installation of a certified control device prior to new restaurants opening, as a part of the permitting process. Based on staff-level discussions, the retrofit installation of control devices on existing operations is not being required at this time.

- *City of Aspen, Colorado - Municipal Code: Sec. 13.08.100. Restaurant grills*: The City of Aspen, CO (population 6,658) requires the installation of a control device to reduce PM10 emissions by at least 90% for underfired charbroilers installed on or after January 1, 1993, with restaurants in operation prior to 1993 receiving additional flexibility or exempted from control requirements. Based on discussions with the City of Aspen, restaurants that have installed control technologies under this rule struggle with compliance due to the frequency and the high costs of the maintenance of the control equipment.

- *Other local ordinances and requirements related to underfired charbroiling*: The District has identified several other local ordinances and requirements that require the use of advanced filtration or other systems to reduce grease and smoke from restaurant operations. While these requirements do not specifically require PM2.5 control technologies, some restaurants with underfired charbroilers have recently installed particulate control technologies in response to these requirements. In all cases, enforcement of these requirements has been difficult and minimal due to resource constraints and lack of enforceability mechanisms.

Impact of COVID-19 Pandemic on Restaurant Industry

Your Board has taken proactive steps to discuss and consider actions for moving forward efforts to reduce emissions from commercial underfired charbroiling operations, while also recognizing the unprecedented impacts experienced by Valley restaurants due to the COVID-19 pandemic. Consistent with your Board's direction, the District utilized a third-party economic consultant to prepare an analysis of the impacts of COVID-19 on the restaurant industry in the Valley (attached).

Beginning in mid-March of this year, restaurants throughout California have been required to significantly modify or curtail their operations to prevent the spread of COVID-19. As the state transitioned to Stage 2 reopening in mid-July, California restaurants were taking mandated steps, including purchasing personal protective equipment and installing partitions between dining tables, in order to reopen with restrictions. However, in late July, the state's coronavirus cases spiked, and California restaurants were mandated to again implement measures that have had significant impacts on revenue.

In the last several months, California has continued to develop increasingly stringent COVID-19 requirements, with the most recent regional stay-at-home order currently in place for the San Joaquin Valley, including additional restrictions on seating at Valley restaurants. Valley restaurants now face requirements that they close dine-in business operations, operating under a "takeout only" business model. Many Valley operators have offered extra services, including special pricing, delivery services, and curbside pick-up. The take-out, delivery, and outside dining operating models may not be feasible for all restaurants, and so the financial impact on these businesses has been even more severe.

In addition to the direct restrictions on restaurant operations mandated by the state in order to slow the spread of disease, the restaurant industry is also being severely affected by other economic impacts related to the pandemic. Supply chain disruptions have interrupted the availability of resources, and the typical prices of commodities have increased due to scarcity, further impacting restaurant revenues. The restaurant industry is also experiencing a negative shift in consumer spending due to financial uncertainty across the nation. Consumer spending has shifted away from discretionary

categories, including restaurants, focusing spending on essentials such as grocery and household items. A top marketing company has estimated that consumer spending at restaurants is down 30-49% throughout the U.S. Unemployment rates in the Valley are generally higher than the U.S. average, and consumer discretionary spending may be further impacted locally by this higher-than-average rate of unemployment. The most recent unemployment data shows the Valley average unemployment rate (as of October 2020) at 9.6%, with a high of 10.9% in Tulare County, compared to the California average of 9.0%, and the U.S average of 6.7%.

Due to these economic hardships related to the pandemic, restaurant owners and operators are facing an extremely uncertain future and are currently struggling to keep their businesses open. At the beginning of the pandemic, the California Restaurant Association (CRA) predicted the permanent closure of 20-30% of California restaurants. However, after the second wave of restaurant shutdowns mandated in mid-July, CRA is now predicting that rates of restaurant closure will be closer to 30% throughout the state. Over 900,000 restaurant workers in California have lost their jobs since the beginning of the pandemic, and it is estimated that 1 in 10 jobs are tied to the restaurant industry throughout California. According to the National Restaurant Association, the foodservice industry has lost $165 billion in revenue between March–July and are expected to exceed $240 billion in losses by the end of 2020 nationwide. The lasting impact of the coronavirus pandemic on the restaurant industry remains unknown.

Some financial assistance measures have been provided to restaurants through various state and federal relief efforts. However, due to the dire economic circumstances currently facing restaurant owners and operators, the Independent Restaurant Coalition is seeking economic relief through the RESTAURANTS Act, which would establish a $120 billion grant program to provide relief to small restaurants. The program seeks to cover a variety of eligible expenses for restaurants, such as payroll, rent, and supplies. Additionally, the RESTAURANTS Act seeks to approve a second round of Paycheck Protection Program (PPP) funding. While these measures may provide short-term assistance to restaurant owners, operators, and employees, over 30,000 restaurants are expected to close throughout California by the end of 2020 as a result of the pandemic. Recently extended COVID-19-related restrictions will likely increase the severity of the economic impacts to the service industry and further delay recovery efforts.

DISTRICT'S PROPOSED COMMERCIAL UNDERFIRED CHARBROILING EMISSION REDUCTION STRATEGY:

Based on the District's analysis described above, staff recommend adoption of the following proposed emission reduction strategy for commercial underfired charbroiling:

1. Enhance the District's Restaurant Charbroiler Technology Partnership incentive program to increase participation by Valley restaurants in successfully demonstrating new PM2.5 emission reduction technologies.

Under the Restaurant Charbroiler Technology Partnership (RCTP), the District offers incentive funding for participating Valley restaurants to install underfired charbroiler control technology. Participating restaurants are allowed to keep the equipment after the demonstration period has concluded.

Through the experiences the District has had in implementing the RCTP program, and based on feedback from restaurant stakeholders, the District proposes the following actions:

- **Develop Enhancements to RCTP Incentive Program:** While there has been some interest in the District's RCTP program, the District recommends that enhancements be developed to significantly increase participation by restaurants in successfully demonstrating a variety of control technologies. Specific areas of focus include:

    - Providing extended funding to cover maintenance and operating costs associated with new controls: Additionally, currently through the RCTP program, all costs of the technology, installation, and two (2) years of maintenance are covered. However, to help incentivize Valley restaurants to participate in a technology demonstration, the maintenance and operational costs could potentially be extended to up to five years in addition to continuing to cover the costs of the control system and installation. With the understanding and confidence that operation and maintenance costs would be covered for a longer period, Valley restaurants may be more willing to install and operate an emission control system through the RCTP program.

    - Prioritizing and conducting additional outreach to restaurants that may be impacting nearby residents or other sensitive receptors: This outreach could be supported by locations in communities where significant numbers of complaints have been received by the District, city, or county, or through other mechanisms by which the District is made aware of community impacts or concerns.

If approved by your Board, the District would work with Valley restaurants through the new restaurant working group to identify potential opportunities for enhancing the program, and return to your Board as appropriate for any necessary actions regarding program guidelines and funding as early as feasible in 2021.

- **Work with Valley Restaurants to Develop More Effective Outreach:** To promote the District's RCTP program, the District proposed to work closely with Valley restaurants to develop a more effective outreach strategy for disseminating information about the program and address any questions or suggestions from Valley restaurants evaluating the potential of installing control technologies. The District would also work with cities, counties and vendors for underfired charbroiler control technology to promote the incentive program. Through working with cities/counties, promotion of the RCTP program would be especially valuable early in the permitting process when a new restaurant is planned to be constructed, providing for an easier path for the installation of an emissions control system through the building design process.

- **Advocacy for State Funding Support:** The District would continue to work with Valley stakeholders to advocate for state funding resources to support implementation of the RCTP program. In addition to the Valley's needs in this area, there may be additional opportunities to seek out funding support in the context of state efforts to develop a statewide Suggested Control Measure for commercial underfired charbroiling controls.

2. Authorize staff to develop guidance for interested cities and counties to assist in promoting PM2.5 control technologies during the approval of new large restaurants equipped with commercial underfired charbroilers

In the assessment of commercial cooking emissions control requirements across the nation, the District found that some cities have in place local ordinances that require emission reductions from commercial underfired charbroilers. Many of the local ordinances established in areas across the nation are focused on responding to odor nuisance and complaints, or only require that emissions control systems be placed in newly constructed restaurants. Currently within the communities of the San Joaquin Valley, there are no cities or counties with commercial underfired charbroiler ordinances. The District has heard some interest from local policy makers in receiving guidance from the District regarding potential opportunities for reducing emissions from commercial underfired charbroiling operations, particularly with respect to the siting of new restaurants and responding to complaints and potential nuisance situations.

As a part of the commercial underfired charbroiling strategy, the District proposes to work closely with cities and counties to develop ordinance and land use guidance, and conduct outreach on the health impacts and potential opportunities associated

with commercial underfired emissions, with particular focus on considerations related to the siting of new restaurants (taking into consideration impacts on nearby residences and other sensitive receptors) and grant funding opportunities. Areas of potential focus include:

- Information regarding emissions from commercial underfired operations and negative health effects of inhalation of meat cooking-related PM emissions

- Potentially available control technologies to reduce emissions and address potential nuisance issues

- Potentially available grant funding through the District's RCTP program to raise awareness of the program and to allow planning agencies an opportunity early in the permitting process to connect the project proponents with the District's incentive program to cover the cost and operation of commercial underfired charbroiling emission control systems

- Distance considerations with regard to the siting of large new restaurants with commercial underfired charbroilers or large commercial outdoor cooking operations, to minimize potential impacts to residents or other nearby sensitive receptors

- Other areas of interest to Valley cities and counties

If this recommended action is approved by your Board, the next step in developing District guidance for Valley cities and counties is to reach out to our local municipalities and host a forum to discuss interest levels, areas of interest, and potential areas of focus. Based on feedback received, the District would develop and make available guidance tailored to Valley cities and counties, for use based on individual municipality interest.

3. Direct staff to assist CARB in the development of their intended new statewide Suggested Control Measure to provide consistent guidance for equitably reducing emissions from commercial charbroiling operations throughout the state.

At the state level, CARB is currently considering the development of a statewide Suggested Control Measure (SCM) for underfired charbroiling to provide guidance for all air districts across California to consider adopting. Through the development of this SCM, and through local district adoptions, a more uniform approach of the control of underfired charbroiling emissions across California could be achieved. If successful, a uniform approach across the state would also assist in continuing the

development of successful emission control technology. To support this current effort by CARB, the District recommends the following actions:

- Participate in the development process to provide a Valley perspective on what has been learned locally through our investigation of this source category, including potential opportunities.

- Advocate for statewide funding to assist in technology development and installation and operation at restaurants, as needed to support the successful deployment of control systems in the Valley and across the state.

- Work with CARB and other air districts to develop a technology clearinghouse for commercial underfired charbroilers, along with a technology certification process to assist with the ongoing development of new technologies.

4. Direct staff to work with CARB and U.S. EPA to update the emissions inventory and attainment modeling, as appropriate based on the latest available information, to assist the District and CARB in developing new control strategies.

As discussed earlier, through the recent reporting and registration requirements established in the 2018 amendments to Rule 4692, the District has collected a valuable set of information regarding the number of restaurants across the Valley that operate commercial underfired charbroilers, as well as their throughput of meat cooked on a weekly basis. Data collected through the District's Rule 4692 reporting requirement has shown that the quantity of underfired charbroilers in the Valley is significantly lower than previously assumed. The *2006 Area Source Emissions Inventory Methodology* estimates that more than 50% of all restaurants operate underfired charbroilers. However, the collected data from Valley restaurants suggests that the percentage is under 20% Valley-wide. These reports also reveal that the throughput of meat cooked is substantially lower than reflected in the emissions inventory. The current methodology assumes that over 3.52 tons of meat is cooked per device per month on average. However, the survey data shows that Valley restaurants on average cook under 1.33 tons of meat per device per month, 62% lower than the assumptions from the current inventory methodology.

The District is continuing to refine the analysis of this data obtained through the underfired charbroiler reporting and registration process, in order to develop potential updates to the existing inventory methodology. The District recommends that staff work closely with CARB and U.S. Environmental Protection Agency (EPA) staff to incorporate this information into the emissions inventory through an approved inventory update.

5. Authorize staff to establish a new restaurant working group to collaboratively explore opportunities for underfired charbroiling control technologies.

Over the years, and through the consideration of opportunities and strategies to reduce emissions from commercial underfired charbroiling operations in the Valley, the District has worked with a variety of local restaurant owners, technology vendors, installation vendors, and the California Restaurant Association (CRA) to gain perspectives on the opportunities that are available, and the challenges that the restaurant industry is facing. During the current pandemic, recent meetings and discussions with local Valley restaurants and the CRA have been critical to understanding their current severe economic hardships.

Going forward, the District recommends that the Board authorize staff to establish a new restaurant working group to collaboratively explore opportunities for underfired charbroiling control technologies. This new workgroup would serve as a forum to guide potential enhancements to the RCTP program, stay connected to the Valley restaurant community and the real-world costs and experiences, and review the ongoing development of emissions control technologies, which will also be key in pursuing a potential future regulation on commercial underfired charbroilers.

Next Steps

If approved by your Board, the District will move forward with implementing the specific actions included in the proposed commercial underfired charbroiling emission reduction strategy. This effort will require significant effort by the District through creating enhancements to the RCTP program, developing and providing guidance to local agencies for the development of ordinances, providing education to local agencies on the health impact of commercial cooking emissions, working with CARB as they consider developing a statewide Suggested Control Measure, working with CARB/EPA in making improvements to the emissions inventory for commercial underfired charbroiling, and formalizing the restaurant workgroup to stay in touch with current industry conditions and to continue to develop and deploy underfired charbroiler technology. Benefiting from any information gained through these efforts, and in anticipation of economic recovery in the coming year, staff will continue evaluating potential amendments to Rule 4692 (Commercial Charbroiling) in 2021 to achieve additional emissions reductions from commercial charbroiling operations, as technologically and economically feasible.

FISCAL IMPACT:

The District's Budget currently includes $750,000 in appropriations for the RCTP program. The District will return to your Board to request any additional appropriations, as necessary.

Attachment:
Commercial Charbroiling Socioeconomic Profile (41 pages)

San Joaquin Valley Unified Air Pollution Control District
Meeting of the Governing Board
December 17, 2020

ADOPT PROPOSED COMMERCIAL UNDERFIRED CHARBROILING EMISSION REDUCTION STRATEGY

Attachment:

COMMERCIAL CHARBROILING SOCIOECONOMIC PROFILE
(41 PAGES)

FACILITIES SUBJECT TO RULE 4692—COMMERCIAL CHARBROILING

SOCIOECONOMIC PROFILE

Final

December 11, 2020

Submitted to:

San Joaquin Valley Air Pollution Control District
1900 East Gettysburg Avenue
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Submitted by:

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District Agreement No. CONT-00656

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1. INTRODUCTION

This report contains a socioeconomic profile of restaurants subject to San Joaquin Valley Air Pollution Control District (SJVAPCD or District) Rule 4692 (Commercial Charbroiling). This work was performed by ERG under District Agreement No. CONT-00656.

In this report, ERG:

- Describes the broader demographic and economic trends in the District over the past decade (Section 2).
- Discusses the impacts of the pandemic on restaurants in the United States and California, with continued reductions in diners and revenue even after some degree of recovery since Spring 2020 (Section 2.2.2).
- Presents an industry profile of the restaurants covered by District Rule 4692 (Commercial Charbroiling) that takes into account the impacts of the COVID-19 pandemic that reduced restaurant revenue and employment by between 45 and 50 percent (IMPLAN, 2020a) (Section 4).

The 324 facilities in the District engaged in commercial charbroiling are subject to District Rule 4692 (last amended in 2018). That rule is designed "to limit VOC and PM-10 emissions from commercial charbroiling" and applies to charbroilers used to cook meat at commercial cooking operations (with certain exemptions based on the amount of meat cooked) (SJVAPCD, 2018a).

Rule 4692 covers two types of commercial charbroilers: chain-driven and underfired. A chain-driven charbroiler is a semi-enclosed broiler that moves food mechanically through the device on a grated grill to cook the food for a specific amount of time. Chain-driven charbroiling is often used in fast food restaurants (SJVAPCD, 2018b). An underfired charbroiler uses a metal grid, a heavy-duty grill similar to that of a home barbecue, with gas burners, electric heating elements, or solid fuel (wood or charcoal) located under the grill to provide heat to cook the food. Based on current permitting, reporting, and registration data, there are 179 chain-driven and 145 underfired charbroilers in the District subject to permitting and registration requirements under Rule 4692.

The smoke and vapors generated by cooking on either type of charbroiler contain water, volatile organic compounds (VOCs), and particulate matter (PM). Some of these smoke and vapors are exhausted outside the restaurant unless a secondary control (such as a catalytic oxidizer) is installed.

Rule 4692 has required the use of particulate matter control devices for chain-driven commercial charbroilers since 2002, but does not require control devices for under-fired commercial charbroilers because of the lack of technologically feasible and cost-effective control options available at the time (SJVAPCD, 2018b). The 2018 amendments required facilities with under-fired commercial charbroilers to register them and submit a one-time report including facility and charbroiler characteristics (SJVAPCD, 2018a-b).

2. REGIONAL DEMOGRAPHIC AND ECONOMIC TRENDS

In this section ERG considers larger demographic and economic trends in the District, which includes eight counties that are home to over 4 million people.[1] These counties have become more populous over the last decade, and the median income (adjusted for inflation) has also increased. Utilities, wholesale and retail trade, and transportation, along with agriculture and oil and gas extraction, are the predominant industries within the District both in terms of establishments and employment.

2.1. REGIONAL DEMOGRAPHIC TRENDS

This section presents the demographic shifts within the District's jurisdiction over the past decade. The District has experienced greater population growth rate than the state as a whole, but the median income has lagged the state. The poverty rate throughout the District, while decreasing over time, is doing so at a slower pace than California as a whole.

The San Joaquin Valley contains almost 11 percent of the state of California's population. Table 1 shows how this population has changed over the last 10 years. Table 1 also shows the compound annual growth rate (CAGR) between 2010 and 2019. The CAGR is the constant rate the population would have changed annually to go from the 2010 level to the 2019 level.

The region has seen small amounts of population growth, an annual average growth rate marginally higher than the state of California. Kings and Madera Counties, the two counties with the smallest population of the counties in the District, saw little growth in their populations from 2010 to 2019, and were the only counties to have population declines in any one year over the last ten years. San Joaquin County saw the most growth, increasing at 1.16 percent annually.

[1] While only part of Kern County falls into the District's boundaries, all of Kern County is included in the data presented in this section, as the data were only available at the county level.

Table 1. Population Trends by County

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	CAGR 2010-2019
Fresno	932,039	939,406	945,045	951,514	960,567	969,488	976,830	985,238	991,950	999,101	0.78%
Kern [a]	840,996	847,970	853,606	862,000	869,176	876,031	880,856	887,356	893,758	900,202	0.76%
Kings	152,370	151,868	150,991	150,337	149,495	150,085	149,382	149,665	151,382	152,940	0.04%
Madera	150,986	151,675	151,527	151,370	153,456	153,576	153,956	155,423	156,882	157,327	0.46%
Merced	256,721	259,297	260,867	262,026	264,419	266,353	267,628	271,096	274,151	277,680	0.88%
San Joaquin	687,127	694,354	699,593	702,046	711,579	722,271	732,809	743,296	752,491	762,148	1.16%
Stanislaus	515,145	517,560	520,424	523,451	528,015	533,211	539,255	544,717	548,126	550,660	0.74%
Tulare	442,969	446,784	449,779	452,460	455,138	457,161	459,235	462,308	464,589	466,195	0.57%
SJVAPCD [a]	**3,978,353**	**4,008,914**	**4,031,832**	**4,055,204**	**4,091,845**	**4,128,176**	**4,159,951**	**4,199,099**	**4,233,329**	**4,266,253**	**0.78%**
California	**37,319,502**	**37,638,369**	**37,948,800**	**38,260,787**	**38,596,972**	**38,918,045**	**39,167,117**	**39,358,497**	**39,461,588**	**39,512,223**	**0.64%**

Source: U.S. Census Bureau, 2020a.

Note:

[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

Table 2 shows the median income by county for 2010 through 2018 U.S. Census Bureau (2019a).[2] Median income growth rates varied across counties from 2010 to 2018, though the counties in the District as a whole had a CAGR of 0.63 percent overall; this is significantly lower than the growth rate of median income for the state of California (1.60 percent). Kern and Tulare Counties experienced declines in median income (-0.17 percent and -0.26 percent respectively) while all other counties experienced some level of growth. Kings and Merced Counties have notably higher growth rates of 2.34 percent and 2.13 percent, respectively. These are the only two counties in the District where median income increased at a rate faster than the state.

[2] 2018 is the most recent data year currently available in the U.S. Census Bureau (2019a) median income data from the American Community Survey.

Table 2. Median Income by County [a]

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	CAGR 2010-2018
Fresno	$52,859	$49,014	$46,766	$48,496	$47,071	$50,369	$51,728	$53,987	$53,547	0.16%
Kern [b]	$53,213	$51,781	$51,578	$51,758	$51,647	$55,082	$52,990	$51,959	$52,478	-0.17%
Kings	$52,144	$57,645	$51,606	$50,538	$46,378	$49,078	$56,527	$59,985	$62,738	2.34%
Madera	$56,421	$53,323	$47,229	$43,896	$45,998	$50,585	$54,852	$53,448	$57,287	0.19%
Merced	$49,619	$45,863	$48,979	$44,921	$47,788	$45,056	$50,692	$49,750	$58,752	2.13%
San Joaquin	$58,458	$58,227	$56,984	$56,785	$55,999	$57,617	$63,199	$63,746	$65,237	1.38%
Stanislaus	$56,159	$50,467	$52,134	$52,954	$55,376	$56,177	$57,664	$62,027	$61,373	1.12%
Tulare	$50,727	$47,136	$45,277	$43,525	$46,191	$45,503	$48,719	$48,219	$49,668	-0.26%
SJVAPCD [b][c]	**$53,990**	**$51,459**	**$50,426**	**$50,318**	**$50,550**	**$52,467**	**$54,674**	**$55,614**	**$56,791**	**0.63%**
California	**$67,455**	**$65,594**	**$65,529**	**$66,454**	**$67,136**	**$69,198**	**$71,929**	**$74,837**	**$76,589**	**1.60%**

Source: U.S. Census Bureau, 2019a.

Notes:

[a] Inflated values to 2019$ using the BEA (2020) GDP deflator.

[b] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

[c] Median income for SJVAPCD is a weighted average by population.

Poverty rates by county for the same nine-year period are shown in Table 3. The poverty rate decreased in every county in the District in that time frame. Poverty rates within the District are higher than state average, and declining at a slower rate overall compared to the state of California's rate of -2.60 percent. Fresno and Tulare Counties consistently had the highest poverty rates while Stanislaus and San Joaquin Counties had the two lowest. San Joaquin and Stanislaus Counties were also the only two counties in the District with a lower CAGR lower than the state. Despite Merced County's notable CAGR of median household income, its poverty rate has declined at one of the slowest rates (-0.55 percent) in the District.

Many the District's leading industries, including agriculture, transportation, and manufacturing, typically employ a higher percentage of low income and less educated employees than other industries, and have unstable or seasonal employment needs (Abood, 2014), likely leading to the relatively high rates of poverty.

Table 3. Poverty Rate by County

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	CAGR 2010-2018
Fresno	26.8%	25.8%	28.4%	28.8%	27.7%	25.3%	25.6%	21.1%	21.5%	-2.72%
Kern [a]	21.2%	24.5%	23.8%	22.8%	24.8%	21.9%	22.7%	21.4%	20.6%	-0.36%
Kings	22.2%	20.5%	21.2%	21.4%	26.6%	23.6%	16.0%	18.2%	19.2%	-1.80%
Madera	21.0%	24.3%	23.6%	23.6%	22.2%	23.4%	20.3%	22.6%	20.9%	-0.06%
Merced	23.0%	27.4%	24.3%	25.2%	25.2%	26.7%	20.3%	23.8%	22.0%	-0.55%
San Joaquin	19.2%	18.1%	18.4%	19.9%	20.9%	17.4%	14.4%	15.5%	14.2%	-3.70%
Stanislaus	19.9%	23.8%	20.3%	22.1%	18.0%	19.7%	14.2%	13.5%	15.6%	-3.00%
Tulare	24.5%	25.7%	30.4%	30.1%	28.6%	27.6%	25.2%	24.6%	22.5%	-1.06%
SJVAPCD [a]	**22.5%**	**23.8%**	**24.2%**	**24.6%**	**24.3%**	**22.7%**	**20.6%**	**19.7%**	**19.3%**	**-1.91%**
California	**15.8%**	**16.6%**	**17.0%**	**16.8%**	**16.4%**	**15.3%**	**14.3%**	**13.3%**	**12.8%**	**-2.60%**

Source: U.S. Census Bureau, 2019b.

Note:

[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

Table 4 shows the population below the poverty line from 2010 to 2018. While there was a decline in the number of people below the poverty line from 2010 to 2018, the number fluctuated during this period. The number of people in poverty grew by over 100,000 between 2010 and 2014, but has declined since 2014.

The CAGR of population below the poverty line varies across counties. Fresno County had the largest population below the poverty line as of 2018, which coincides with its large population and relatively higher poverty rate. Conversely, San Joaquin County has a notable decline in CAGR at -2.56 percent, one of three counties to see declines in poverty at a rate faster than the state (along with Fresno and Stanislaus Counties). Kern, Madera, and Merced Counties have positive CAGR and have seen an increase in population below the poverty over the nine-year period.

Table 4. Population Below Poverty Line by County

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	CAGR 2010-2018
Fresno	246,196	238,706	264,738	270,072	263,220	242,083	247,507	205,291	209,799	-1.98%
Kern [a]	171,950	201,230	196,625	189,484	208,388	186,501	193,133	184,619	178,239	0.45%
Kings	30,425	27,101	27,819	28,473	35,623	31,453	21,565	24,935	26,299	-1.81%
Madera	29,936	34,148	33,936	34,242	32,432	34,227	29,736	33,482	31,191	0.51%
Merced	58,360	70,243	62,448	64,552	65,405	70,118	53,314	63,485	59,283	0.20%
San Joaquin	128,748	123,258	126,610	137,663	146,601	123,817	103,399	113,136	104,622	-2.56%
Stanislaus	101,335	122,212	104,559	114,628	94,586	104,801	76,191	73,254	85,073	-2.16%
Tulare	107,660	113,515	135,194	135,066	129,485	125,728	114,290	112,524	103,711	-0.47%
SJVAPCD [a]	**874,610**	**930,413**	**951,929**	**974,180**	**975,740**	**918,728**	**839,135**	**810,726**	**798,217**	**-1.14%**
California	**5,783,043**	**6,118,803**	**6,325,319**	**6,328,824**	**6,259,098**	**5,891,678**	**5,525,524**	**5,160,208**	**4,969,326**	**-1.88%**

Source: U.S. Census Bureau, 2019b.

Note:

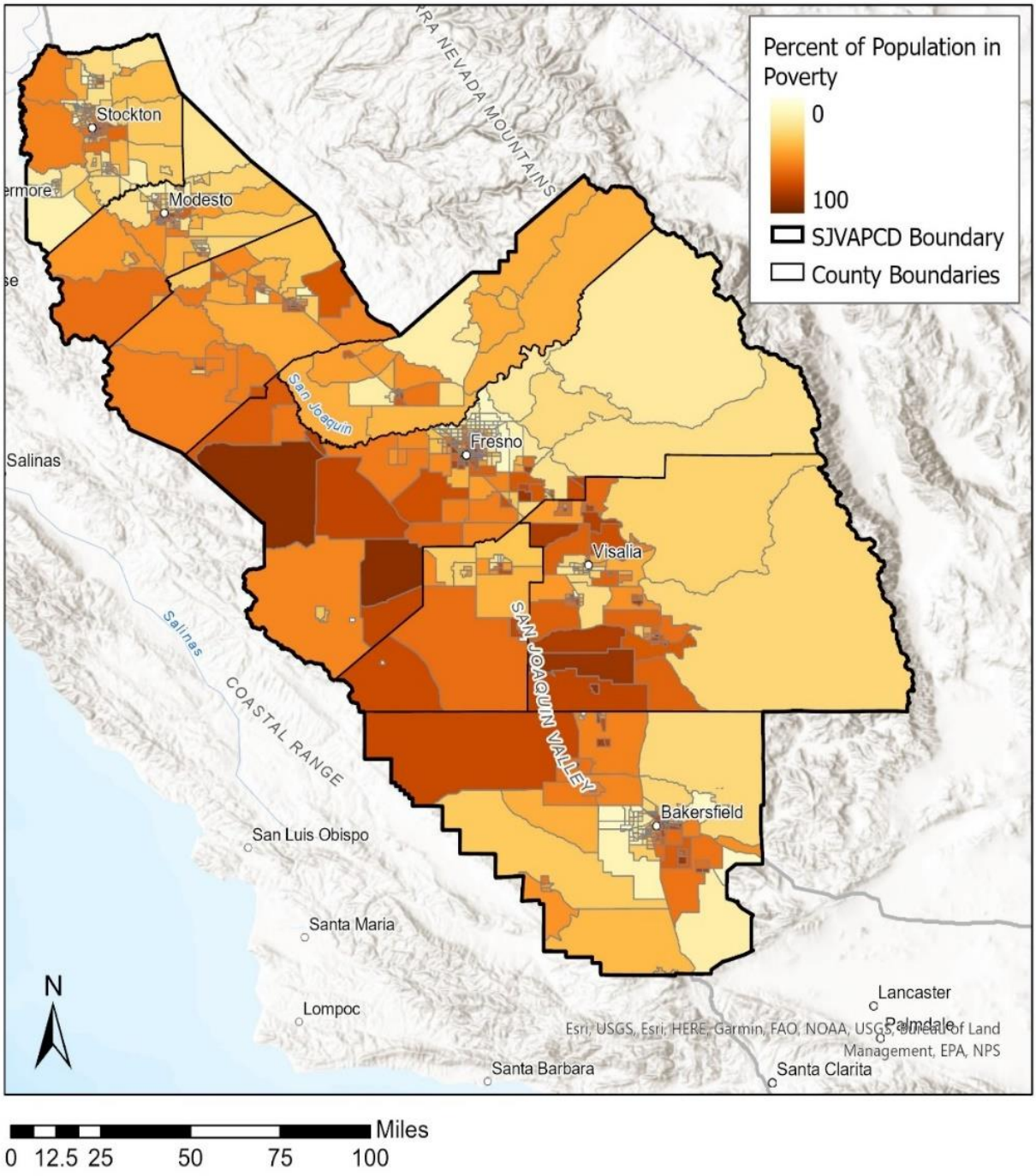
[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

Figure 1 shows where the population in poverty or at risk of poverty lives within the District[3] using CalEnviroScreen 3.0 (OEHHA, 2018) data on the percent of population living below two times the federal poverty limit. CalEnviroScreen poverty data is derived from the US Census Bureau's American Community Survey 5-year estimates for 2011 to 2015. CalEnviroScreen uses a poverty threshold of two times the poverty level to account for the higher cost of living in California compared to other parts of the country (OEHHA, 2017).

As shown in Table 3 above, roughly 20 percent of the District population is below the federal poverty limit, depending on the year. Using the higher CalEnviroScreen 3.0 threshold, nearly half (48.7 percent) of District residents are below twice the federal poverty limit (OEHHA, 2018), reflected in the high poverty rates in the map in Figure 1 below.

[3] Note that only the part of Kern County included in the SJVAPCD is shown. There are four census tracts on the eastern border of Kern County that are in the Eastern Kern Air Pollution Control District. The portions of these census tracts that fall outside of the SJVAPCD border are not shown.

Figure 1. Percentage of the Population Living below Two Times the Federal Poverty Level by Census Tract (2018)



Source: OEHHA, 2018.

2.2. REGIONAL ECONOMIC TRENDS

This section describes economic trends in the District over time, beginning by presenting trends in all industries, and then for the restaurant industry in particular.

2.2.1. Regional Economic Trends in All Industries

This section tracks the economic trends in the District over the past decade. Total employment growth in the District is slightly below that of California. Overall, employment, the number of establishments, and average pay have all increased across the District during that period.

Table 5 presents employment trends over the same 10-year span. During that period, overall employment throughout the District has also increased. The District as a whole saw a CAGR of 1.48 percent in employment over the last decade, slightly below that of the entire state of California (1.64 percent). No individual county experienced a decline in employment, although Kings County has a notably lower growth rate (0.72 percent) than the other counties in the region.

San Joaquin County was the only county in the District to experience an employment growth rate greater than that of California as a whole. This may be in part due to the California Central Valley Economic Development Corporation's (CCVEDC) efforts to encourage companies to locate within the District through tax credits and incentives and grants (CCVEDC, 2020). A few large employers (Amazon, Tesla, etc.) have moved to San Joaquin County in recent years, creating numerous job opportunities within the county. Some people have also moved from the more expensive Bay Area and Los Angeles-San Diego area to the Central Valley, with San Joaquin County being one of the more popular areas to relocate (Lillis, 2019).

Table 5. Employment Trends by County

County	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	CAGR 2010-2019
Fresno	366,200	370,200	373,500	379,800	387,500	395,700	402,700	407,400	412,783	418,092	1.48%
Kern [a]	313,400	325,700	340,400	347,200	351,700	350,500	348,000	349,500	354,892	360,783	1.58%
Kings	49,900	49,700	50,000	50,400	50,600	51,700	51,500	52,300	53,025	53,233	0.72%
Madera	51,400	52,000	53,500	54,400	54,900	53,500	55,400	56,100	56,958	57,642	1.28%
Merced	93,200	94,500	96,200	98,000	99,700	101,200	102,300	104,600	105,650	106,875	1.53%
San Joaquin	260,000	261,000	267,100	274,600	279,200	286,600	292,600	301,100	304,617	307,842	1.89%
Stanislaus	202,200	202,400	205,900	209,800	213,700	218,200	222,000	224,400	227,533	228,750	1.38%
Tulare	168,100	168,700	168,800	172,200	172,100	178,700	180,700	183,500	183,300	184,350	1.03%
SJVAPCD [a]	**1,504,400**	**1,524,200**	**1,555,400**	**1,586,400**	**1,609,400**	**1,636,100**	**1,655,200**	**1,678,900**	**1,698,758**	**1,717,567**	**1.48%**
California	**16,091,900**	**16,258,100**	**16,602,700**	**16,958,400**	**17,310,900**	**17,681,800**	**18,002,800**	**18,285,500**	**18,460,433**	**18,623,900**	**1.64%**

Source: CA EDD, 2020a.

Note:

[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

Table 6 shows the economic trends by sector in the District by presenting three snapshots from 2009 to 2019 using data from the Bureau of Labor Statistics' (BLS, 2020) Quarterly Census of Employment and Wages (QCEW). The recent influx of new employers explains the continued growth in the utilities, trade and transportation industries. These industries have been the largest employers in the District for the last 11 years, followed closely by agriculture and oil and gas extraction. The education, health and social services industry has seen the greatest net growth (i.e., new establishments less closures) of establishments in the District over the past decade, although it is the one industry that has experienced a decrease in average pay over that same time frame. The information sector is the smallest industry in the District and has decreased over the last 11 years.

Table 6. Economic Trends in the San Joaquin Valley, 2009-2019—All Industries [a]

NAICS	Sector	2009			2014			2019		
		Establish-ments	Employ-ment	Average Annual Pay [b] [c]	Establish-ments	Employ-ment	Average Annual Pay [b] [c]	Establish-ments	Employ-ment	Average Annual Pay [b]
11, 21	Agriculture, Oil and Gas Extraction	7,789	189,766	$29,692	7,438	217,769	$33,068	7,430	217,649	$36,568
23	Construction	6,099	50,178	$55,144	5,377	56,011	$54,022	6,637	70,498	$59,475
31-33	Manufacturing	2,640	105,142	$52,640	2,531	107,702	$53,749	2,715	110,892	$55,863
22, 42, 44-45, 48-49	Utilities, Trade and Transportation	14,041	219,813	$40,871	14,500	246,596	$41,428	16,026	282,861	$43,587
51	Information	602	13,482	$59,608	510	11,035	$68,525	498	6,127	$60,315
52-53	Finance Activities	5,747	44,703	$52,430	5,652	41,123	$55,695	6,443	42,638	$59,747
54-56	Profession and Business Services	7,944	97,494	$45,994	8,391	106,412	$45,985	9,054	116,895	$50,424
61-62	Educational, Health and Social Services	7,503	140,416	$54,050	39,280	184,959	$47,321	53,489	223,552	$48,667
71-72	Leisure and Hospitality	5,960	97,885	$17,407	6,224	111,610	$16,859	7,424	130,279	$19,906
81	Other Services	38,938	53,413	$24,934	5,124	32,856	$33,084	5,603	24,860	$35,245
99	Unclassified	1,730	2,112	$34,651	1,917	3,006	$31,870	4	4	$25,752
SJVAPCD Total/Average [b]		**98,993**	**1,014,404**	**$40,664**	**96,944**	**1,119,079**	**$41,095**	**115,323**	**1,226,255**	**$43,903**

Source: BLS, 2020.

Notes:

[a] Includes all of Kern County.

[b] Annual average pay is a weighted average of the eight counties in the SJV APCD weighted by employment in sector.

[c] Annual average pay is adjusted to 2019 dollars using the BEA (2020) GDP deflator.

Table 7 presents the CAGR of the economic data from Table 6. The number of establishments, employment, and average annual pay have all increased over the last 11 years across the District. Health, education, and social services has seen the greatest net growth in establishments and employment over that time frame, but it is the one industry that experienced a decrease in average pay (outside of the unclassified businesses). There are fewer establishments in the agriculture, oil, and gas extraction industry today than there were a decade ago, but employment and pay have both increased. The information industry has experienced the greatest decrease in employment across the District.

Table 7. Compound Annual Growth Rate of Establishments, Employment, and Annual Pay [a]

NAICS	Sector	Establishments			Employment			Average Annual Pay		
		2009-2014	2014-2019	2009-2019	2009-2014	2014-2019	2009-2019	2009-2014	2014-2019	2009-2019
11, 21	Agriculture, Oil and Gas Extraction	-0.92%	-0.02%	-0.47%	2.79%	-0.01%	1.38%	2.18%	2.03%	2.10%
23	Construction	-2.49%	4.30%	0.85%	2.22%	4.71%	3.46%	-0.41%	1.94%	0.76%
31-33	Manufacturing	-0.84%	1.41%	0.28%	0.48%	0.59%	0.53%	0.42%	0.77%	0.60%
22, 42, 44-45, 48-49	Utilities, Trade and Transportation	0.65%	2.02%	1.33%	2.33%	2.78%	2.55%	0.27%	1.02%	0.65%
51	Information	-3.26%	-0.48%	-1.88%	-3.93%	-11.10%	-7.58%	2.83%	-2.52%	0.12%
52-53	Finance Activities	-0.33%	2.65%	1.15%	-1.66%	0.73%	-0.47%	1.22%	1.41%	1.32%
54-56	Profession and Business Services	1.10%	1.53%	1.32%	1.77%	1.90%	1.83%	0.00%	1.86%	0.92%
61-62	Educational, Health and Social Services	39.25%	6.37%	21.70%	5.67%	3.86%	4.76%	-2.62%	0.56%	-1.04%
71-72	Leisure and Hospitality	0.87%	3.59%	2.22%	2.66%	3.14%	2.90%	-0.64%	3.38%	1.35%
81	Other Services	-33.34%	1.80%	-17.62%	-9.26%	-5.42%	-7.36%	5.82%	1.27%	3.52%
99	Unclassified	2.07%	-70.90%	-45.50%	7.31%	-73.40%	-46.58%	-1.66%	-4.17%	-2.92%
SJVAPCD Total/Average		**-0.42%**	**3.53%**	**1.54%**	**1.98%**	**1.85%**	**1.91%**	**0.21%**	**1.33%**	**0.77%**

Source: BLS, 2020.

Notes:

[a] Includes all of Kern County.

2.2.2. Regional Economic Trends in the Restaurant Industry

This section presents data on trends in the restaurant industry in the District.

Table 8 shows trends in the restaurant industry specifically using BLS' (2020) QCEW data (i.e., the same data shown in Table 6 but at a more granular level). The number of restaurant establishments and employees have grown steadily over the past decade, at an average of around 4 to 5 percent per year in the District (higher than California as a whole, at 2 to 3 percent). Kern and Kings Counties saw the highest growth, averaging between 5 and 9 percent per year, while Fresno County grew at the lowest rate, averaging around 2 to 3 percent per year. Average pay per employee, by contrast, has increased at a lower rate, between 0.4 and 1.4 percent per year.

Table 8. Economic Trends in the San Joaquin Valley, 2009-2019—Restaurants [a]

County	2009			2014			2019			CAGR, 2009–2019		
	Establish-ments	Employ-ment	Average Annual Pay [c]	Establish-ments	Employ-ment	Average Annual Pay [c]	Establish-ments	Employ-ment	Average Annual Pay [c]	Establish-ments	Employ-ment	Average Annual Pay
Fresno	1,163	20,044	$16,661	1,219	23,181	$16,734	1,475	27,328	$19,211	2.4%	3.1%	1.4%
Kern [b]	726	12,462	$18,940	1,002	18,880	$16,538	1,200	22,155	$19,654	5.2%	5.9%	0.4%
Kings	84	1,284	$16,603	150	2,592	$15,243	166	3,119	$18,142	7.0%	9.3%	0.9%
Madera	100	1,288	$17,091	143	2,018	$15,496	163	2,326	$18,538	5.0%	6.1%	0.8%
Merced	164	2,450	$17,441	248	4,427	$15,393	289	5,121	$18,239	5.8%	7.7%	0.4%
San Joaquin	636	10,412	$18,358	827	14,974	$16,037	1,007	18,029	$19,577	4.7%	5.6%	0.6%
Stanislaus	504	9,730	$17,924	681	13,864	$15,965	797	15,457	$19,039	4.7%	4.7%	0.6%
Tulare	362	5,434	$17,258	494	8,744	$15,315	579	9,950	$18,616	4.8%	6.2%	0.8%
SJVAPCD [b]	**3,739**	**63,104**	**$17,675**	**4,764**	**88,680**	**$16,176**	**5,676**	**103,485**	**$19,191**	**4.3%**	**5.1%**	**0.8%**
California	**51,158**	**1,010,934**	**$21,870**	**61,926**	**1,172,444**	**$19,958**	**73,769**	**1,356,637**	**$23,895**	**3.7%**	**3.0%**	**0.9%**

Source: ERG estimate based on BLS, 2020.

Notes:

[a] The 2014 and 2019 QCEW data use the 2012 NAICS nomenclature, where the relevant NAICS code is 7225 Restaurants and Other Eating Places. The 2009 data uses the 2007 NAICS nomenclature, where the equivalent NAICS codes are NAICS 7221 Full-Service Restaurants and 7222 Limited-Service Eating Places. ERG sums the 2009 data for those two NAICS.

[b] Includes all of Kern County.

[c] Annual average pay is adjusted to 2019 dollars using the BEA (2020) GDP deflator.

Table 9 shows the entry rate[4] of new establishments from the U.S. Census Bureau's (2020d) Business Dynamics Statistics for 2009 to 2018 (the most recent year for which data are available). Data are available at the 2-digit NAICS code level by county and state and at the 4-digit NAICS code level for the entire U.S. (but not at the 4-digit NAICS code level by county or state).

While the rate of establishment entries varies from year to year, it has been between approximately 8 and 10 percent over the past decade. The rate calculated by ERG for the District as a whole is similar to the U.S Census Bureau's (2020d) rate for California.[5] Stanislaus County has tended to have a lower establishment entry rate than the District as a whole (in eight of the 10 years), and Fresno County has tended to have a higher rate than the District as a whole (in eight of the 10 years).

The county- and state-level data are for NAICS 72 (Accommodation and Food Services), which includes a number of non-restaurant industries (such as hotels, motels, RV parks and vacation camps, caterers, drinking places, etc.). However, the entry rate for NAICS 72 in both the District and the state is largely similar to the nationwide rate for the more specific NAICS 7225 (Restaurants and Other Eating Places), indicating that the NAICS 72 entry rate for the District is probably representative of the restaurant entry rate in the District.

Table 9. Establishment Entry Rate by Year, 2009–2018

County	Year									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
NAICS 72 (Accommodation and Food Services)										
Fresno	10.7%	10.0%	8.6%	8.8%	8.3%	9.4%	8.8%	10.1%	9.5%	9.7%
Kern [a]	10.4%	8.4%	7.3%	10.3%	8.2%	9.7%	9.3%	10.5%	9.8%	9.4%
Kings	10.3%	8.7%	8.6%	5.5%	11.1%	8.8%	11.2%	6.5%	6.6%	6.9%
Madera	10.1%	9.0%	10.6%	7.9%	8.8%	9.7%	6.9%	9.5%	9.3%	7.7%
Merced	9.5%	8.4%	8.3%	6.5%	9.2%	7.3%	11.5%	10.8%	8.9%	10.8%
San Joaquin	7.9%	7.2%	8.9%	6.8%	8.3%	8.8%	9.9%	9.7%	9.1%	9.7%
Stanislaus	9.9%	7.5%	8.1%	7.2%	10.0%	7.0%	8.2%	8.3%	9.0%	5.7%
Tulare	10.6%	9.3%	8.3%	7.7%	5.7%	8.6%	11.1%	8.1%	8.8%	7.7%
SJVAPCD [a]	**9.9%**	**8.6%**	**8.3%**	**8.2%**	**8.4%**	**8.8%**	**9.4%**	**9.6%**	**9.2%**	**8.8%**
California	**9.7%**	**8.7%**	**9.1%**	**9.4%**	**9.8%**	**10.0%**	**10.0%**	**10.2%**	**9.9%**	**9.1%**
NAICS 7225 (Restaurants and Other Eating Places)										
U.S.	**10.1%**	**9.9%**	**9.9%**	**9.8%**	**9.6%**	**9.9%**	**9.5%**	**9.5%**	**9.2%**	**8.7%**

Source: ERG estimates based on U.S. Census Bureau, 2020d.

Note:

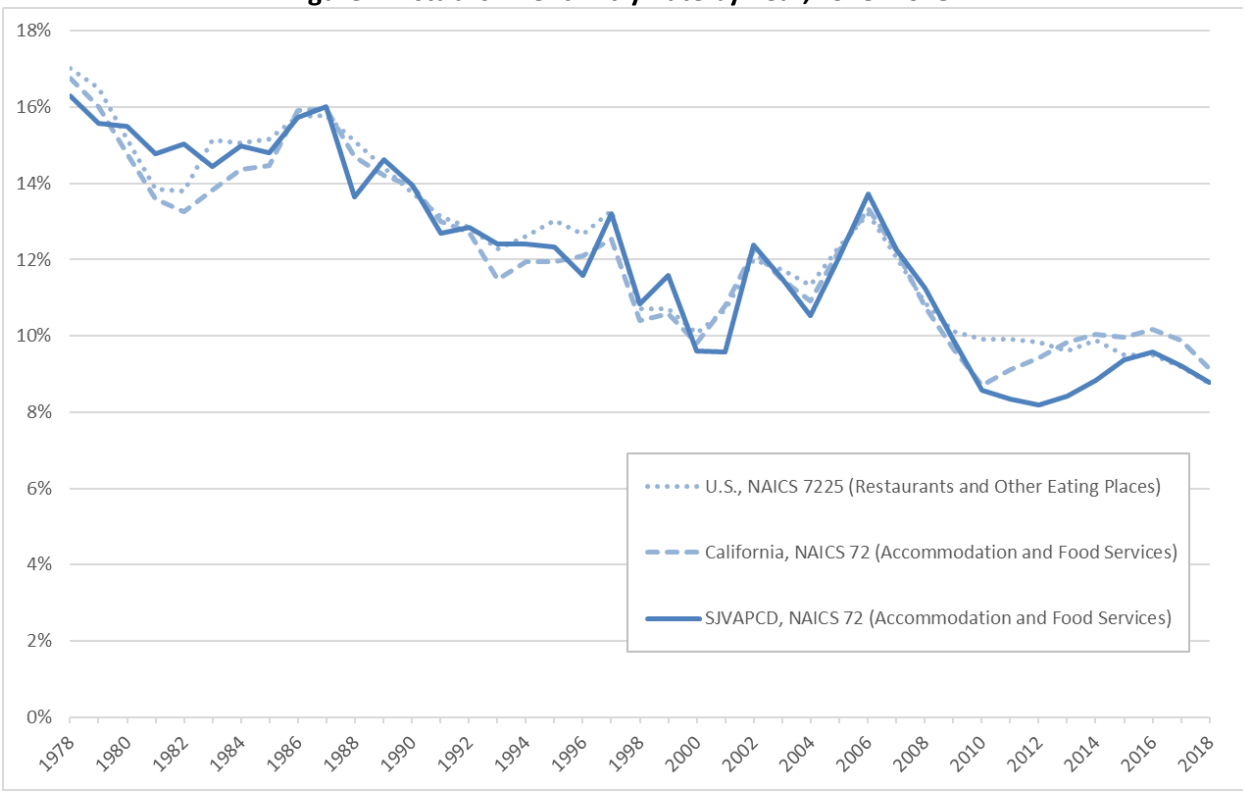
[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

[4] The entry rate is calculated as the number of establishment entries divided by the sum of establishments and establishment exits.

[5] ERG calculated the District entry rate by summing the number of establishments, establishment entries, and establishment exits for the counties in the District by year, and then using these number to calculate the entry rate in the same manner as the U.S. Census (2020d) calculates it the number of establishment entries divided by the sum of establishments and establishment exit).

Figure 2 further illustrates how the entry rates for the District, California, and U.S. tend to follow the same trends, showing data for 1978 to 2018. The entry rate was at its highest value in 1978 (between approximately 16 and 17 percent) and has decreased to the approximately 9 to 10 percent levels seen in recent years, with some fluctuations in between (for example an increase in the entry rate in the years leading up to the "Great Recession" in 2008, with a marked decrease after that.

Figure 2. Establishment Entry Rate by Year, 1978–2018



Source: ERG estimates based on U.S. Census Bureau, 2020d.

Table 10 shows the exit rate[6] of existing establishments from the U.S. Census Bureau's (2020d) Business Dynamics Statistics for 2009 to 2018. As with the entry rate data above, data are available at the 2-digit NAICS code level by county and state and at the 4-digit NAICS code level for the entire U.S.

The exit rate has varied from year to year, between about 6 percent and 10 percent in the District. The District rate is usually slightly lower than the rate for California or the U.S. Stanislaus County had a lower exit rate than the District as a whole in seven of the last 10 years and San Joaquin County had a higher exit rate than the District as a whole in eight of the last 10 years.

[6] The exit rate is calculated as the number of establishment exits divided by the sum of establishments and establishment exits.

Table 10. Establishment Exit Rate by Year, 2009–2018

County	Year									
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
NAICS 72 (Accommodation and Food Services)										
Fresno	10.5%	8.4%	8.1%	8.7%	7.3%	6.8%	7.3%	6.8%	7.6%	7.1%
Kern [a]	8.0%	8.1%	6.4%	8.2%	8.6%	7.2%	6.3%	7.1%	8.8%	6.7%
Kings	10.3%	7.1%	9.2%	9.9%	8.3%	8.8%	7.5%	8.2%	4.4%	5.3%
Madera	8.5%	11.9%	7.1%	8.9%	8.8%	9.2%	9.4%	7.0%	6.8%	8.7%
Merced	7.5%	8.1%	8.6%	10.1%	7.2%	7.6%	8.0%	5.8%	8.6%	7.0%
San Joaquin	9.9%	8.9%	7.6%	9.1%	7.6%	4.6%	7.8%	5.4%	7.3%	8.0%
Stanislaus	11.0%	8.5%	7.9%	6.7%	5.7%	7.8%	5.3%	5.6%	5.8%	4.9%
Tulare	7.7%	10.2%	6.6%	7.8%	8.4%	8.2%	4.5%	6.6%	5.3%	6.3%
SJVAPCD [a]	**9.4%**	**8.7%**	**7.5%**	**8.4%**	**7.6%**	**7.0%**	**6.8%**	**6.4%**	**7.3%**	**6.8%**
California	**9.4%**	**8.5%**	**7.9%**	**8.2%**	**8.2%**	**7.8%**	**7.7%**	**7.2%**	**7.8%**	**7.6%**
NAICS 7225 (Restaurants and Other Eating Places)										
U.S.	**9.7%**	**8.5%**	**8.4%**	**8.2%**	**8.4%**	**8.2%**	**7.7%**	**7.0%**	**7.4%**	**7.6%**

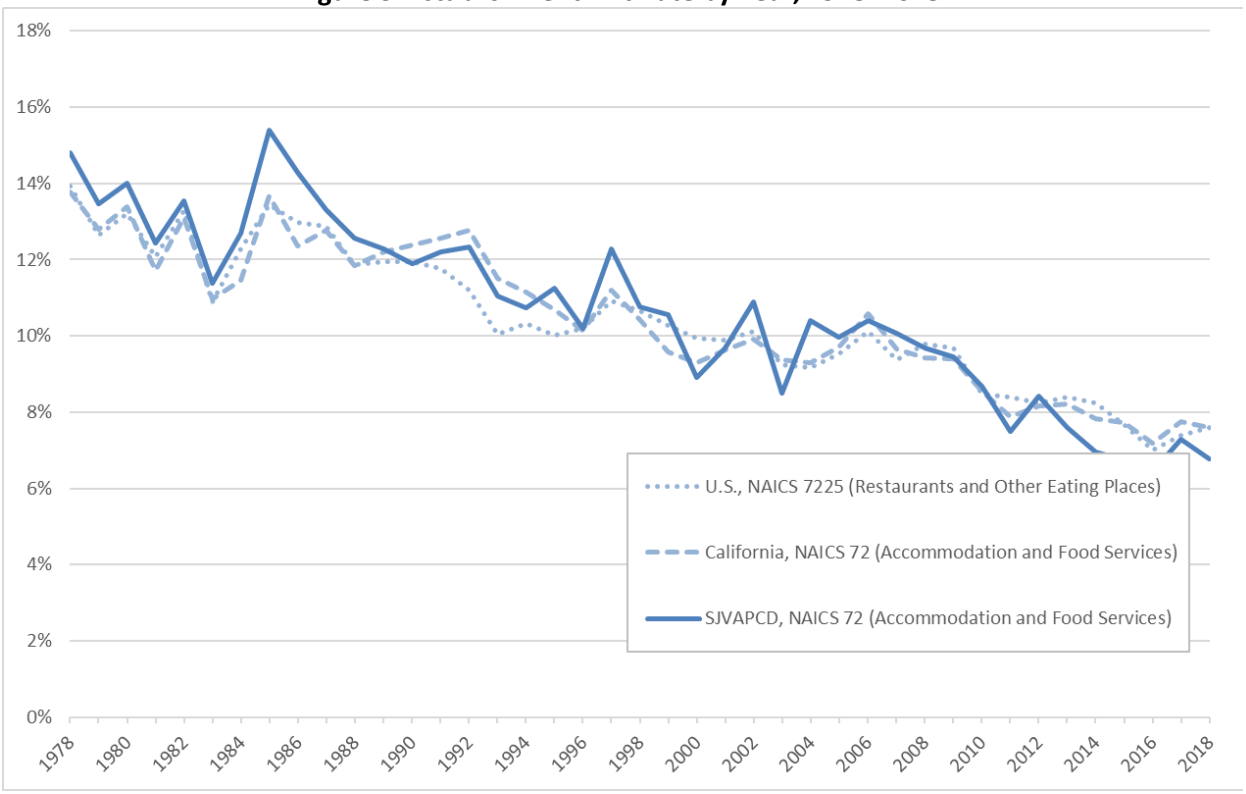
Source: ERG estimates based on U.S. Census Bureau, 2020d.

Note:

[a] While the SJVAPCD only includes a portion of Kern County, the data shown here are for the whole of the county.

Figure 3 shows the exit rate in the District, California, and U.S. between 1978 and 2018. As with the entry rates (shown in Figure 2 above), the exit rate for the District for NAICS 72 (Accommodation and Food Services) has largely followed the same trends as the exit rate for the U.S. for NAICS 7225 (Restaurants and Other Eating Places), declining since the mid-1980s to its current level around approximately 7 percent.

Figure 3. Establishment Exit Rate by Year, 1978–2018



Source: ERG estimates based on U.S. Census Bureau, 2020d.

ERG estimated the number of restaurant entries and exits based on the number of exits and entries in the U.S. Census Bureau (2020d) Business Dynamics Survey for the District at the two-digit NAICS level (72: Accommodations and Food Services), but with the number scaled to reflect the number of restaurants in the District in 2018 in the BLS (2020) QCEW data. The results suggest there have been roughly 450 to 550 new restaurant establishments opening in the District per year and 350 to 450 restaurant establishments closing per year over the past decade.[7]

[7] The estimate of restaurant entries and closures was calculated using the BLS (2020) QCEW estimate that there were 5,530 restaurant establishment in the counties in the District in 2018. This 2018 comes from the same data presented in Table 8 above for 2009, 2014 and 2018, but 2018 data were used because that is the most recent year that U.S. Census Bureau (2020d) Business Dynamics Survey entry and exit rate data are available. The ranges used for the entry and exit rates represent the maximum and minimum values for the District between 2009 and 2018 (see Table 9 and Table 10 above).

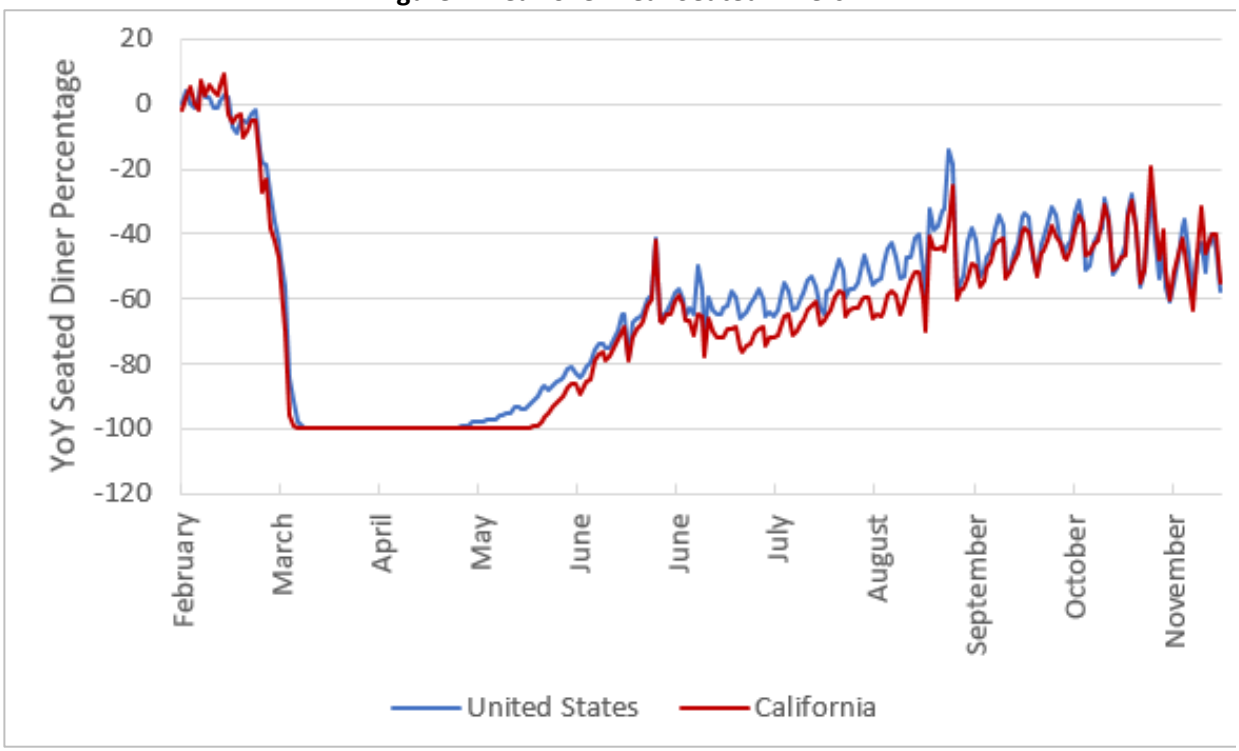
3. IMPACTS OF THE COVID-19 PANDEMIC IN THE U.S. AND CALIFORNIA

This section describes the effects of the pandemic on restaurants in the U.S. and California (with Section 4.1.2 below discussing the impact on restaurants in the District). Overall, while metrics such as the number of diners, revenue, and restaurant openings have seen some recovery since the early phases of the pandemic in Spring 2020, the restaurant industry is still operating below its pre-pandemic levels.

The restaurant industry has been one of the industries most negatively impacted by the COVID-19 pandemic. With all states preventing restaurants from providing dine-in experiences for varying amounts of time, losses were estimated at $120 billion over the first three months of the pandemic (Grindy, 2020). For those states that had shelter-in-place orders by late March 2020 (including California's on March 19), households cut spending most dramatically (Baker et al, 2020). These spending cuts in March especially impacted restaurants, with restaurant spending declining by about 33 percent that month. As a result of the pandemic, dine-in restaurants have reconfigured their entire business model by offering takeout and delivery. Some restaurants even started selling groceries due to the lack of demand for dining out.

Restaurants across the country have seen greatly diminished foot traffic. Figure 4 shows the year-over-year changes in seated diner visits since mid-February for both California and the United States (Open Table, 2020). By mid-March, no one was sitting down to eat in restaurants, with a year-over-year decrease of nearly 100 percent. Restaurants have seen diners come back in recent months as pandemic-related restrictions have eased, but still at a much lower level than at the same time in 2019. California restaurants have recovered slightly above the U.S. average; this was not the case in September, where California was below the U.S. average. A little over 70 percent of all restaurants in the U.S. were taking reservations in November 2020, while exactly 70 percent of restaurants in California are doing the same. The Regional Stay Home Orders announced for California December 3, 2020 (COVID19.ca.gov, 2020) will likely reduce the number of seated diners to the lower levels seen in the spring.

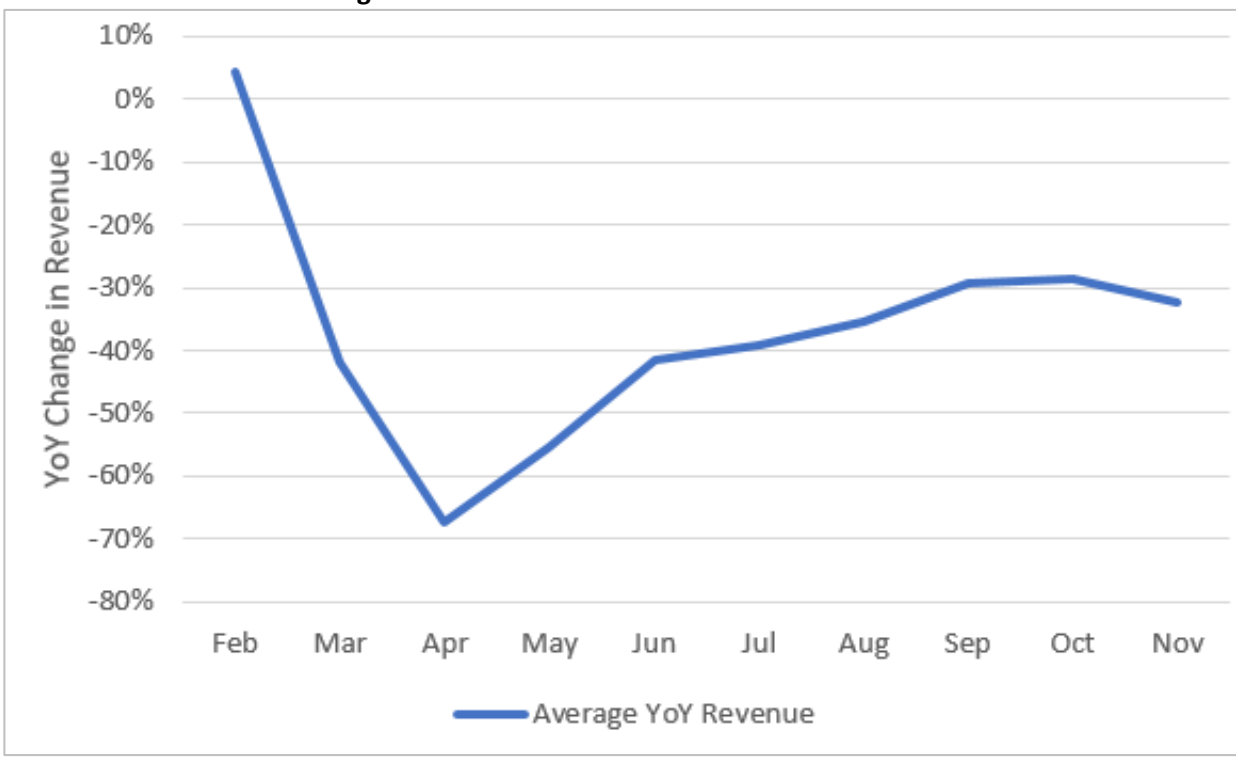
Figure 4. Year-over-Year Seated Diners



Source: Open Table, 2020

Restaurants in California have, as a result, seen negative impacts to their revenues. Figure 5 shows the drop in revenue that California restaurants have experienced as the response to the pandemic changes over time, with an average year-over-year increase in revenues of 4 percent in the month of February followed by dramatic double-digit decreases in every month thereafter (Rally for Restaurants, 2020). Some recovery was seen into the summer and fall, but revenue was still roughly 30 percent below its 2019 level. With the Regional Stay at Home Orders announced in December 2020, revenue is likely to drop to levels seen in the spring of 2020 once again, although restaurants are able to operate with some modifications (COVID19.ca.gov, 2020).

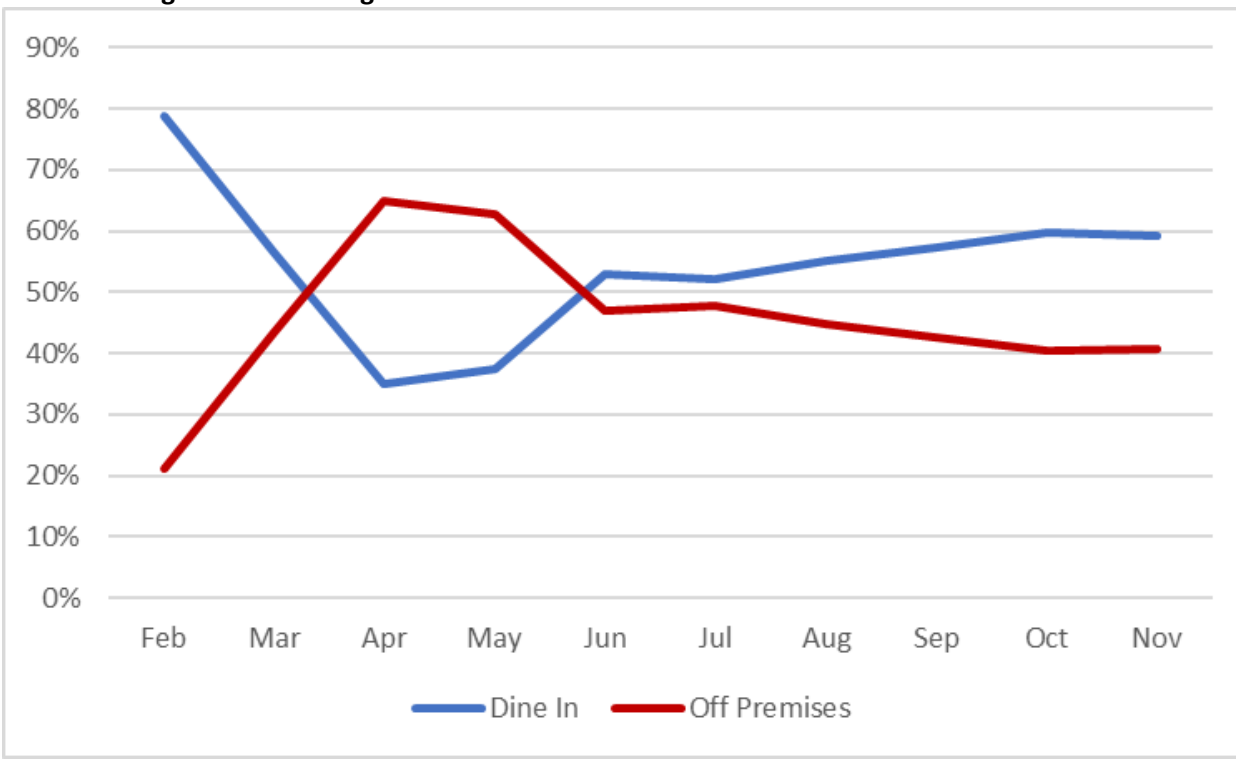
Figure 5. Year-over-Year Restaurant Revenue



Source: Rally for Restaurants, 2020

California restaurants have also experienced stark changes in revenue sources. Before state-enforced restrictions on dine-in restaurant operations, restaurants received approximately 79 percent of revenue from dine-in customers (Rally for Restaurants, 2020). That percentage of restaurant revenue from dine-in customers, as shown in Figure 6, has changed dramatically, dropping to a low of 35 percent in April and since leveling out at about 60 percent of restaurant revenue the last couple months. With the December 2020 Regional Stay Home Order (COVID19.ca.gov, 2020), the percentage of revenue from dine-in customers is likely to drop once again.

Figure 6. Percentage of Restaurant Revenue from Dine-In versus Off Premises



Source: Rally for Restaurants, 2020

Nationwide, over 32,000 restaurants had closed as of August 31, 2020, with 61 percent of those closures expected to be permanent (Yelp, 2020a). In some cases, restaurants have been able to stay open, but only by laying off employees (Goger & Loh, 2020). Closures and layoffs have been highest in larger cities, where rents are higher and pandemic-related restrictions are more stringent (Yelp, 2020a). Closures within the restaurant industry have also been more abundant among smaller establishments. Chain restaurants are more likely to have extra cash on hand to be able to weather an economic downturn, whereas smaller restaurants are operating month-to-month (Lucas, 2020).

Closures have varied by type of restaurant, with "breakfast and brunch restaurants, burger joints, sandwich shops, dessert places and Mexican restaurants" the most affected (Yelp, 2020a). Restaurants with drive-throughs or delivery service already established have fared better than restaurants that previously focused on full-service dining. As a result, fast food restaurants have recovered more quickly than their full-service counterparts, with many returning to pre-pandemic sales levels (Lucas, 2020).

Even against the backdrop of abundant closures, there are some signs of recovery or shifts to new "pandemic-optimized" restaurants. Restaurants have opened since the start of the pandemic, including those operating outside, food trucks, and bakeries sending items like cakes and cupcakes for socially-distanced celebrations. Compared to the third quarter of 2019, restaurant openings in the third quarter of 2020 are only down 10 percent, with between 6,000 and 7,000 restaurants opening per month between July and September of 2020 (Yelp, 2020b).

4. PROFILE OF FACILITIES SUBJECT TO RULE 4692 (COMMERCIAL CHARBROILING)

This section profiles the restaurant facilities subject to existing Rule 4692 (Commercial Charbroiling). ERG describes the methodology used to create the profile, shows the facilities' characteristics (such as location, number of employees, revenue, and profits), and discusses the impacts of the COVID-19 pandemic on restaurants in the District.

4.1. DATA SOURCES AND METHODLOGY

This section describes the data sources used to create the baseline industry profile and how this profile was adjusted to capture the impacts of the COVID-19 pandemic

4.1.1. Baseline Industry Profile Estimates

SJVAPCD (2020) provided ERG with an initial list of facilities engaged in underfired commercial charbroiling, including fields for facility ID, facility description, Standard Industrial Classification (SIC) code, number of emissions sources, and unit location.

ERG identified additional data points for use in the analysis. For instance, SJVAPCD's (2020) facility data includes a SIC code, and ERG converted these to the North American Industry Classification System (NAICS) codes that are used with other sources of economic data used in the analysis based on U.S. Census Bureau (2020b) concordances.[8] All the Facilities subject to District Rule 4692 fall under SIC code 5812 (Eating and Drinking Places - Full Service Restaurants), which maps to NAICS code 7225 (Restaurants and Other Eating Places).

Employment and revenue data were drawn from the U.S. Census Bureau's (2020c) Economic Census, using 2017 data for California. To estimate average payroll per employee, data for private entities by sector come from BLS' (2020) QCEW.

ERG estimated profits for private industries by multiplying revenue figures by the average profit rate for each NAICS for 2010 through 2013 using data from the Internal Revenue Service (IRS, 2016) "SOI Tax Stats - Corporation Source Book." The profit rate was calculated as "Net Income (less deficit)" divided by "Total Receipts."[9] (See Appendix A for profit rates by year).

4.1.2. COVID-19-Adjusted Baseline Industry Profile Estimates

To reflect the impact of the COVID-19 pandemic, ERG estimates a "COVID-adjusted" baseline, which alters employment, revenue, and payroll figures for each facility using IMPLAN (2020a) data. IMPLAN's "Evolving Economy" data use economic data points from the second quarter of 2020 to reflect the impacts on the pandemic, taking into account industry losses, shifts in household spending and behavior, stimulus checks and unemployment benefits, and Paycheck Protection Program (PPP) loans

[8] SIC codes were last updated in 1987, and NAICS codes were first issued in 1997. The U.S. Census Bureau's (2020b) concordances map 1987 SIC codes to 1997 NAICS codes, and from there to the NAICS codes that are revised every five years (thus far in 2002, 2007, 2012, and 2017). SIC and NAICS codes are available at different levels of granularity. The SIC codes used in SJVAPCD's (2020) data are 4-digit SIC codes, and ERG mapped these to 4-digit NAICS codes.

[9] 2013 is the most recent year for which profit rate data are available.

(Demski, 2020). IMPLAN uses only the second quarter 2020 data, adjusts it for seasonality, and annualizes the single quarter of data to an entire year. This annualization approach means that IMPLAN models 2020 as if the entire year had an economy like in the early stages of the pandemic, without the relatively normal first quarter of 2020 and without any level of recovery later in the year (Clouse, 2020).

While the IMPLAN data for 2020 reflect the impacts of the COVID-19 pandemic and government response, it is important to note other trends may also be captured in the changes between 2018 and 2020 (Clouse, 2020).

Using outputs of the IMPLAN model, ERG estimates the percentage change in employment, revenue, and payroll by NAICS between 2018 (the second-most recent year for which data are available) and 2020 (the "Evolving Economy" dataset, the most recent estimate). District-wide, this approach suggests that revenue contracted by 8 percent, and employment contracted by 9.8 percent (see Table 11); however, this likely underestimates the impacts of COVID because of continued economic growth through 2019 into the start of 2020. The impact of COVID is more appropriately evaluated by comparing revenue and employment against a baseline that incorporates this additional growth. Such a baseline would be higher than in 2018, and the economic decline in the second quarter of 2020 due to COVID shown in Table 11 would likely be even larger when compared against the later baseline (were such data available).

Table 11. District-Wide COVID-19 Impacts

	2018	2020 Q2 [a]	% Change
Revenue	$333.1 billion	$306.5 billion	-8.0%
Employment	2.0 million	1.8 million	-9.8%

Source: IMPLAN, 2020a.

Note:

[a] Data are modeled for an entire year if it were like the second quarter of 2020, i.e., the early stage of the pandemic.

To estimate the impacts of the COVID-19 pandemic on individual industries, ERG multiplied the percentage change from 2018 to the second quarter of 2020 in the IMPLAN model by the baseline data to produce "COVID-adjusted" estimates for each industry.

The restaurant industry subject to Rule 4692 has seen dramatic impacts from the COVID-19 pandemic, a 46.7 percent decrease in revenue and 49.6 percent decrease in employment (see Table 12). There was an increase in the average payroll per employee, reflecting the fact that more workers in lower-paid occupations have been laid off than workers in higher-paid administrative and executive occupations (Clouse, 2020).

Table 12. COVID-19 Impacts for Facilities Subject to Rule 4692—Commercial Charbroiling

NAICS	Industry	COVID-19-Adjusted Change in Baseline		
		Revenue	Employment	Average Pay
7225	Restaurants and Other Eating Places	-46.72%	-49.64%	9.83%

Source: ERG estimates based on IMPLAN, 2020a.

4.2. CHARACTERISTICS OF FACILITIES SUBJECT TO RULE 4692 (COMMERCIAL CHARBROILING)

This section describes the restaurants with underfired and chain-driven charbroilers subject to Rule 4692 (Commercial Charbroiling), reflecting the impact of the COVID-19 pandemic as detailed in Section 4.1.2.

Table 13 shows the characteristics of all restaurants in the District subject to Rule 4692. Of the approximately 5,676 restaurants in the District in 2019 (see Table 8 above), there are 145 restaurants with underfired charbroilers and 179 restaurants with chain-driven charbroilers subject to Rule 4692 permitting/registration requirements with a combined total of 2,933 employees, total revenue of $206.3 million, and profits of $7.5 million.

Table 13. Profile of Facilities Covered by Rule 4692—Commercial Charbroiling

Sector	Total, All Facilities			
	Facilities	Employees	Revenue	Profits
Underfired	145	1,313	$92,346,808	$3,362,793
Chain-Driven	179	1,621	$114,000,543	$4,151,310
Total	**324**	**2,933**	**$206,347,351**	**$7,514,104**

Sources: ERG estimates based on SJVAPCD, 2020; U.S. Census Bureau, 2020c; BLS, 2020; IMPLAN Group LLC, 2020a; IRS, 2016.

ERG estimated the number of restaurant entries and exits based on the number of exits and entries in the U.S. Census Bureau (2020d) Business Dynamics Survey, but with the number of establishments scaled to reflect the number of restaurants in the District's list of facilities operating underfired charbroilers (SJVAPCD, 2020). This suggests there would be between 11 and 14 new restaurants with underfired charbroilers subject to the registration requirements of Rule 4692 per year and 10 to 13 existing facilities that close each year.[10]

[10] This estimate was produced by assuming that there were also 145 underfired charbroiling facilities in 2018 (as in the District's latest facility list), and then scaling the U.S. Census Bureau (2020d) Business Dynamics Survey entry and exit rate numbers for NAICS 72 (Accommodation and Food Services) for the counties in the District proportionally to these charbroiling facilities.

Table 14 shows the characteristics of the average facility in this sector (for both underfired and chain-driven charbroilers, which belong to the same 4-digit NAICS code). These restaurants (adjusted to the impacts of the COVID-19 pandemic) have an average of nine employees, revenue of $636,875 per facility, profits of $23,192 per facility, and average pay of $21,863 per employee. With full recovery from the economic impacts of the COVID-19 pandemic, employment averages 18 people per facility and profits are $43,527 per facility.

Table 14. Characteristics of Average Facilities Covered by Rule 4692—Commercial Charbroiling

Sector	Average per Facility			Average Annual Pay per Employee
	Employees	Revenue	Profits	
0% COVID-19 Recovery	9	$636,875	$23,192	$21,863
100% COVID-19 Recovery	18	$1,195,311	$43,527	$19,906

Sources: ERG estimates based on SJVAPCD, 2020; U.S. Census Bureau, 2020c; BLS, 2020; IMPLAN Group LLC, 2020a; IRS, 2016.

While Table 14 above shows the average across all restaurants, this does not capture the range of restaurants large and small restaurants. Table 15 shows the characteristics of firms in NAICS 7225 (Restaurants and Other Eating Places) using U.S. Census Bureau (2015) Statistics of U.S. Businesses data for California for 2012, with dollar values inflated to 2019 dollars using the BEA (2020) GDP deflator.[11] The Statistics of U.S. Businesses data include estimates by firm employment size class.[12] (Note that while these data give a sense of the distribution of restaurant employment and profits, the fact that they were collected in 2012 mean that they should only be considered an approximation of the current state of the industry.)

As seen in Table 15, most restaurants are small, with 60 percent falling into the size class for firms with fewer than 20 employees. Taking into account the economic impacts of the COVID-19 pandemic (as described in Section 4.1.2), the average number of employees per restaurant ranges from one to 17, and profits from only about $4,000 to about $40,000 per facility. With full recovery from the pandemic, the number of employees ranges from two to around 30 per facility, and profits from about $8,000 to just under $80,000 per facility.

Table 15. Characteristics of Facilities Covered by Rule 4692—Commercial Charbroiling by Firm Size

Employment Size Class	% Est. in Size Class	Average per Facility			Average Annual Pay per Employee
		Employees	Revenue	Profits	
0% COVID-19 Recovery					
0-4	28%	1	$116,559	$4,244	$28,499
5-9	16%	3	$231,783	$8,440	$16,818
10-19	15%	7	$407,539	$14,840	$18,100
<20	60%	3	$223,059	$8,123	$19,116
20-99	18%	15	$889,881	$32,405	$21,383
100-499	7%	17	$1,102,083	$40,132	$19,637
500+	16%	17	$1,133,835	$41,288	$20,511
All	100%	8	$544,960	$19,845	$20,360
100% COVID-19 Recovery					
0-4	28%	2	$218,763	$7,966	$25,948
5-9	16%	7	$435,020	$15,841	$15,312
10-19	15%	13	$764,885	$27,853	$16,480
<20	60%	6	$418,645	$15,245	$17,405
20-99	18%	30	$1,670,164	$60,819	$19,469
100-499	7%	34	$2,068,434	$75,322	$17,879
500+	16%	33	$2,128,027	$77,492	$18,675
All	100%	16	$1,022,803	$37,245	$18,538

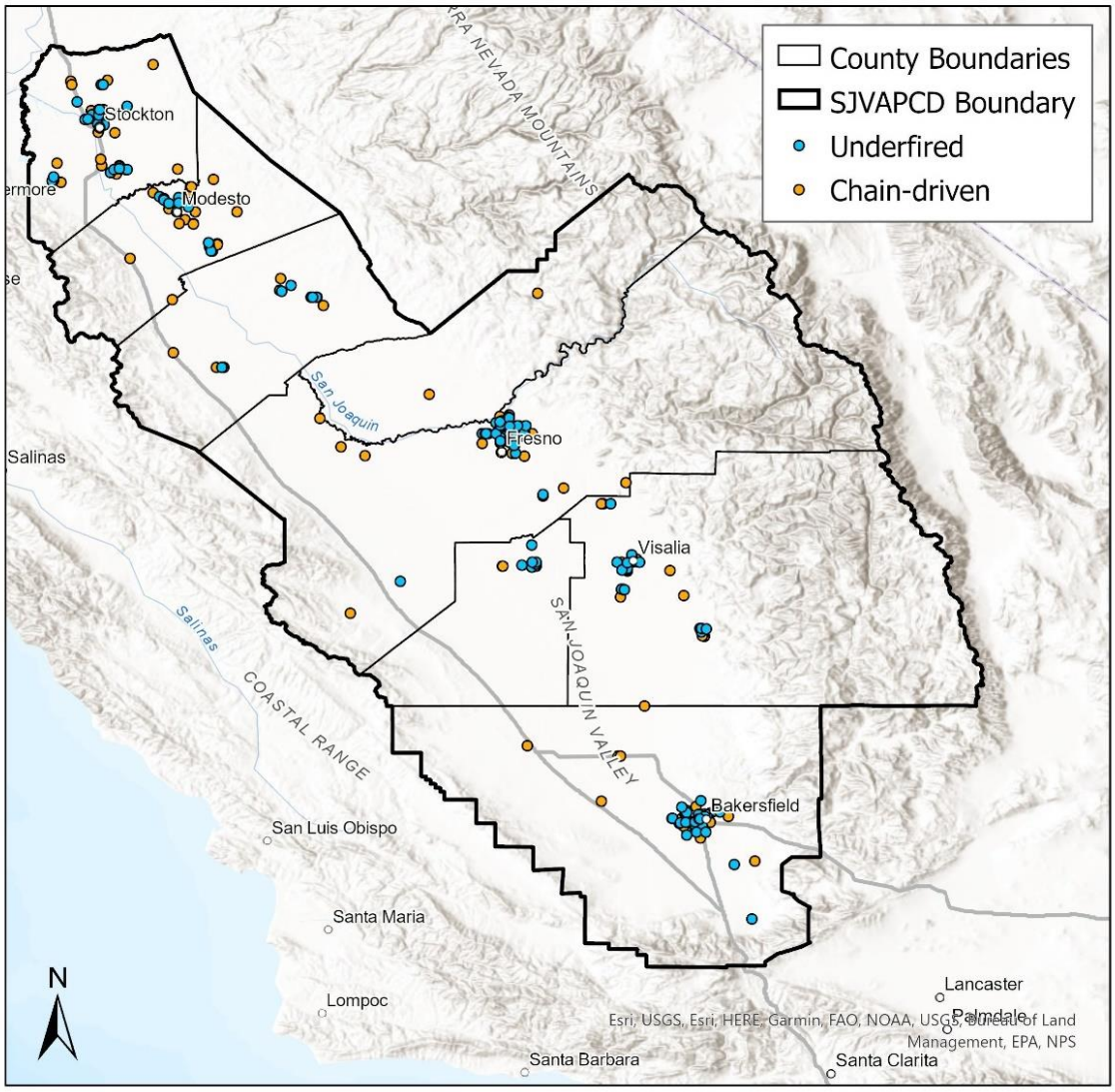
Source: ERG estimates based on U.S. Census Bureau, 2015; IRS, 2016; IMPLAN, 2020, BEA, 2020.

[11] The U.S. Census Bureau (2015) 2012 data are the most recent dataset for which state-specific revenue estimates are available at the time of this writing.

[12] Note that while the U.S. Census Bureau's (2015) Statistics of U.S. Business data is arranged by firm size class, the subsequent columns in the table show the average number of employees, revenue, and profits for individual restaurant facilities, whether or not they are part of the same larger company.

Figure 7 shows the geographic distribution of facilities with underfired and chain-driven charbroilers. Facilities were mapped using ArcGIS Pro 2.6.0 to geocode the affected facilities. Out of the 324 facilities, 272 were mapped while the remaining facilities did not have sufficient location information to be displayed. Most of the restaurants operating charbroilers are clustered around the larger cities within the District. Chain-driven charbroilers (which, as noted in Section 1, are typically used in fast food restaurants) are more likely than underfired charbroilers to be located in smaller population centers and rural areas. Kern County has the largest number of commercial charbroiling facilities within the District while there are only two facilities subject to the permitting requirements of Rule 4692 located within Madera County.

Figure 7. Map of Facilities Engaged in Charbroiling [a]



Source data: SJVAPCD, 2020; CARB, 2020; ERG estimates
Map created by ERG using ArcGIS® software by Esri

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APPENDIX A. PROFIT RATES BY NAICS INDUSTRY

Table A-1 shows the profit rates used for private industry, which were estimated using the average rate for 2000 through 2013 data from the Internal Revenue Service (IRS, 2016) "SOI Tax Stats - Corporation Source Book."

Table A-1. Profit Rate by NAICS Industry for Facilities Subject to Rule 4692—Commercial Charbroiling

NAICS	Industry	Average	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
7225	Restaurants and Other Eating Places	3.64%	2.30%	1.84%	2.43%	2.42%	2.97%	5.70%	4.36%	4.24%	2.37%	3.87%	4.06%	4.29%	4.82%	5.30%

Source: ERG estimates based on IMPLAN, 2020a.

Note: Profit rate calculated as "Net Income (less deficit)" divided by "Total Receipts."