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4 Near-Roadway Pollution in South Central Fresno, California

Can State-led, Place-based Community Engagement Advance Environmental Justice?

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Introduction

Racial and economic disparities in exposure to near-roadway air and noise pollution remain stubbornly persistent due to structural inequalities embedded in the built environment. In 2020, nearly a quarter (24%) of the population of the United States lived near a roadway with a high traffic volume, an increase from about one-fifth (19%) based on 2010 census data (Antonczak et al., 2023). This pattern raises public health concerns given people who live or spend time close to high-traffic roadways are more likely to be exposed to vehicle-related air pollutants such as ultrafine particles which are highly concentrated within 150 meters of roadways (Karner et al., 2010). Exposure to vehicle-related emissions is associated with a broad range of negative health effects including mortality, heart disease, asthma, reduced lung function, and adverse birth outcomes and exposure to roadway traffic noise has been associated with severe sleep disturbance and ischemic heart disease (Boogaard et al., 2022; Hänninen et al., 2014).

These patterns are particularly alarming from an environmental justice perspective given that research has consistently documented racial/ethnic and socioeconomic disparities in traffic exposures nationwide, including heightened exposure to heavy-duty diesel truck traffic, a significant source of roadway noise and pollution (Antonczak et al., 2023; Demetillo et al., 2021). Neighborhoods in the United States with higher concentrations of people of color and lower socioeconomic status are disproportionately impacted by roadway traffic noise (Collins et al. 2020). Schools in the United States with a higher proportion of students of color, higher enrollment, and serving younger children experience greater exposure to roadway noise, which could impact academic performance and student stress and health (Collins et al. 2019). Disparate diesel truck traffic impacts can be particularly intense for residents living along goods movement corridors or near ports or distribution centers (Fried et al., 2024; Houston et al., 2008; Nowlan, 2023).

Such disparities are the result of structural inequalities due to historically uneven land use development, racial segregation, discriminatory lending and

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zoning practices, and the exclusion of historically marginalized populations from decision-making (Lane et al., 2022; Rothstein, 2017; Houston et al., 2004). The construction of the Federal Interstate Highway System through low-income areas and communities of color in the center of many metropolitan areas in the United States after World War II divided once vibrant communities, facilitated the relocation of middle- and upper-class residents to the suburbs, and concentrated poverty, transportation infrastructure, and industrial and hazardous land uses in central urban areas, further exacerbating near-roadway environmental justice concerns (Dimento and Ellis, 2013; Rose and Mohl, 2012).

Although federal and state agencies have begun to compile technical guidance on strategies to reduce near-roadway exposures (CARB, 2017), we unfortunately know little about the implementation of these strategies in practice, particularly for historically underserved or disadvantaged communities and the extent to which state-sanctioned, place-based programs can meet dimensions of environmental justice such as participation, distributive fairness, and recognition. We address this gap by reviewing how residents and community leaders in South Central Fresno (SCF), California participated in three place-based initiatives to advance four strategies to address near-roadway impacts. In each, steering committees provided opportunities for residents to actively engage in decision-making processes, priority setting, funding allocation, and program implementation and accountability. Near-roadway strategies included transforming roadways and land use, rerouting trucks from sensitive receptors (i.e., residences, schools, and health care facilities), installing protective vegetative barriers, and limiting freeway and warehouse expansion. We introduce the case study area and initiatives, then recount how residents worked within, across, and outside state-sanctioned, place-based initiatives to prioritize, plan, and implement the four mitigation strategies by engaging land use, transportation, climate, and air pollution across multiple levels of government. We conclude by discussing an important epistemic resource – “multi-level awareness” – that emerged through resident engagement across the initiatives.

South Central Fresno: Place-Based Initiatives to Address Near-Roadway Impacts

The City of Fresno, California’s fifth-largest city located in the center of the San Joaquin Valley, provides a valuable case study of how residents have organized through place-based programs to address near-roadway impacts. SCF is one of the most heavily polluted communities in the state due to freight operations, industrial facilities, fossil fuel power generation, and multiple freeways (OEHHA, 2024) (Figure 4.1a). SCF residents experience some of the highest levels of pollution burden and social and health vulnerabilities in California (Werner, 2020).

These stark disparities are the result of a long history of discriminatory policies and disinvestment in South Fresno. Racial segregation was well

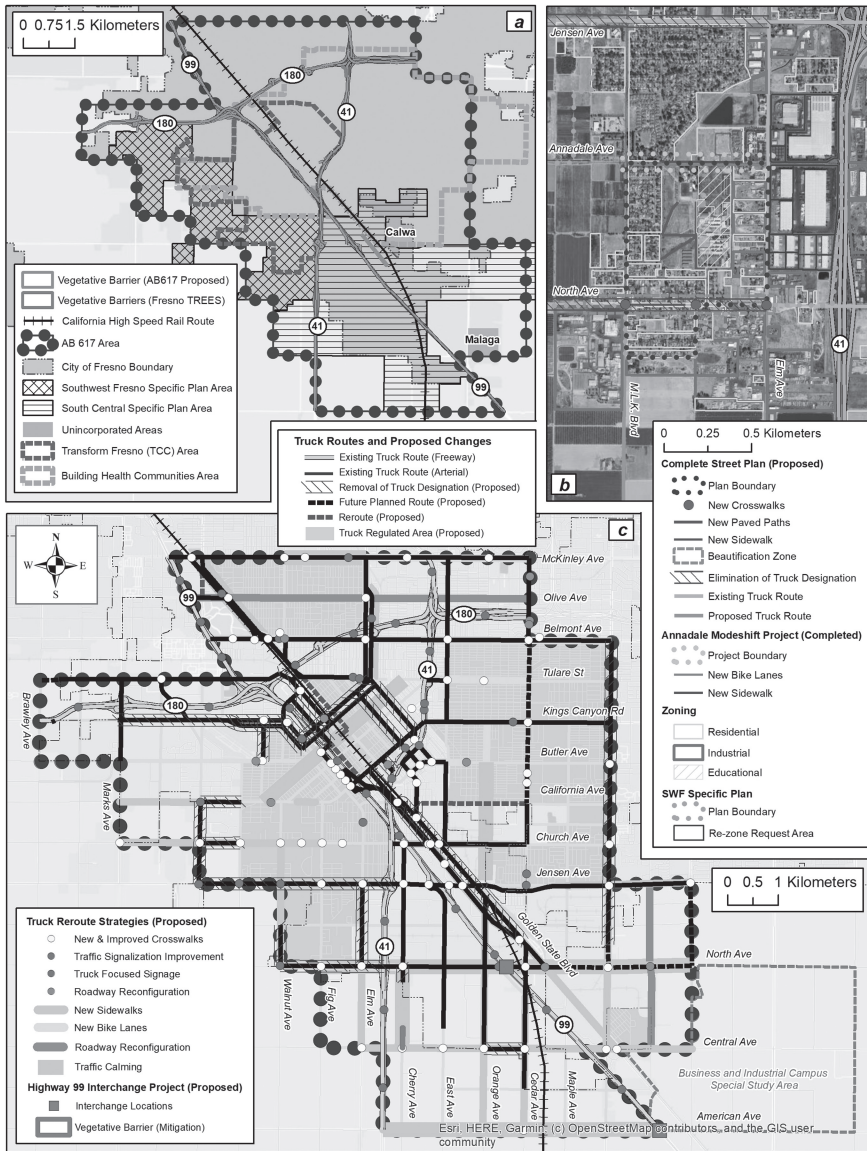


Figure 4.1 South Central Fresno case study area. (a) SCF boundaries (initiative, specific plans, city) and Tree Fresno vegetative barrier locations; (b) Roadway improvements and land use conflicts near North Avenue/Highway 41; (c) Proposed AB 617 roadway and truck reroute plans and Caltrans interchange project locations. Credit: Douglas Houston.

entrenched in the city through racial violence and discriminatory real estate practices by the time it adopted its first general plan in 1918, which further confined industrial operations and lower-income housing to the west and south of downtown (Chacon, 1988). In the 1930s, redlining practices limited the ability of SCF residents to build wealth through home ownership and spurred disinvestment. Urban renewal efforts of the 1950s and redevelopment efforts in the 1960s reinforced these patterns (Zuk, 2013). In the 1950s, Highway 99 was realigned parallel to the railroad tracks, demolishing diverse neighborhoods and further segmenting the city. Highway expansion accelerated white flight and urban sprawl toward northern neighborhoods such that by the year 2000, areas in central Fresno became mixed race or predominately Latino (Zuk, 2013). Although the city's 2002 revised general plan included smart growth principles to revitalize downtown and embrace more compact growth patterns, racial segregation and concentrated poverty were already well established within SCF, which had become a transportation and agricultural hub (Karner et al., 2019).

This chapter examines three place-based initiatives with geographic overlap that used a steering committee approach to engage SCF residents and industry representatives to address a range of environmental, land use, and public health issues, including near-roadway pollution. The first initiative is the City of Fresno's Southwest Fresno Specific Plan (SWFSP), which has been hailed as a model of equitable, community-driven planning (Werner, 2020). Adopted in 2017, SWFSP grew out of resident experiences with the city's 2014 General Plan process. It included guidelines for infrastructure, development, land use, housing, and public health that more directly addressed the needs of SCF residents (City of Fresno, 2017). SCF residents, city staff, community-based organizations, school district representatives, business owners, and developers participated in a public engagement process led by a Project Steering Committee comprised of 21 members who worked closely with city staff and consultants.

The second initiative is Transform Fresno, which is part of the Transformative Climate Communities (TCC) program run by California's Strategic Growth Council (SGC). TCC provides local-level integration in disadvantaged communities for California Climate Investment projects that are funded by the state's Cap-and-Trade program, including renewable energy, low-carbon transport, sustainable land use, and urban greening (Turner et al., 2023). Transform Fresno, which was selected by the SGC and awarded \$66.5 million in 2018, grew out of a community engagement process led by a Community Steering Committee (CSC) to produce a shared understanding of community needs and priorities. Residents overwhelmingly approved the plan after an unprecedented level of engagement and the city's largest participatory budgeting effort (Karner et al., 2019).

The third initiative is the Community Air Protection Program administered by the California Air Resources Board (CARB) under Assembly Bill 617 (AB 617). Disadvantaged communities selected under the program engage in monitoring and emissions reduction planning to address neighborhood-scale air

quality. The SCF AB 617 initiative engages residents and industry representatives through a CSC that is facilitated by the San Joaquin Valley Air Pollution Control District (SJVAPCD). In 2020, CARB approved the SCF CSC's Community Emissions Reduction Program (CERP), which identifies strategies to reduce emissions of criteria and other air pollutants. As of February 2024, the SCF CERP has been allocated \$47 million (SJVAPCD, 2019a; SJVAPCD, 2023).

This case study focuses on four strategies to address near-roadway impacts: transforming roadways and land use, rerouting trucks from sensitive receptors, installing protective vegetative barriers, and limiting freeway and warehouse expansion. Through interviews with AB 617 CSC members (not reported here), we learned that these strategies were deeply informed by participation in the SWFSP and Transform Fresno processes that preceded it, during which residents and community leaders learned about agency processes, requirements, and multilevel governance challenges. Each initiative focused on different but interconnected dimensions of structural inequality in SCF – land use, greenhouse gas (GHG) emissions, transportation, air quality, and public health – that together provide a more comprehensive understanding of the challenges and potential for addressing near-roadway impacts via community-engaged processes.

Our case study is based on an analysis of a variety of sources. We utilized studies of the history, goals, and actions of three initiatives in the peer-reviewed academic literature, media accounts of related projects and decision-making processes, and initiative and agency documents and media. In addition, we reviewed the approved SWFSP and related city council meeting agendas; AB 617 CERP documents, monthly CSC meeting agendas, agency presentations, and meeting recordings; and Caltrans environmental review documents, public comments, and interagency communications. Case study maps were generated using ArcGIS based on data from the City of Fresno's GIS portal and initiative websites. Roadway improvement and land use GIS layers (Figure 4.1b) were adapted from the City of Fresno complete streets plan and the Transform Fresno 2023 Progress Report (City of Fresno, 2015; Turner et al., 2023). GIS layers for the proposed AB 617 roadway and truck reroute plans (Figure 4.1c) were obtained from the AB 617 Community Truck Remote Study (ARCADIS et al., 2024). Finally, the GIS layers for the Caltrans interchange project were adapted from the project's Final Environmental Impact Report (FEIR) (Caltrans, 2023).

Strategies to Address Near-Roadway Impacts

Strategy 1: Transform Roadways and Land Use

The challenges and potential for complete street and city land use strategies to address near-roadway impacts are illustrated by the ongoing zoning disputes in the portion of SCF located west of Highway 41 at North Avenue along the southern city boundary (Figure 4.1b). This focus area contains a mix of

residential, educational, and community uses near large distribution centers along Highway 41 to the east and the Cargill meat processing facility to the southwest, facilities which generate heavy-duty truck trips along arterial routes near sensitive receptors.

In 2015, Fresno’s “Highway 41 + North Corridor Complete Street Plan” examined truck traffic and transportation infrastructure in this heavily burdened community (City of Fresno, 2015). Funded by the Caltrans Environmental Justice grant program, the plan revealed significant gaps in sidewalks and pedestrian pathways necessary to access nearby schools and highlighted vehicle conflicts and safety concerns. It recommended crosswalk improvements, new signalization and sidewalks along North Avenue, and the installation of paved trails to connect the area’s school campuses with residential streets and neighborhood uses nearby (Figure 4.1b). During plan workshops, Cargill facility representatives supported the evaluation of whether truck traffic to their facility should be rerouted to a southern route connecting to Highway 41.

Although the 2015 plan was not implemented, Transform Fresno utilized \$343,000 in TCC funding and \$150,000 in city funding to complete the Annadale Modeshift Project in the area in 2021. It installed over 14,000 square feet of sidewalk, nearly 1,200 linear feet of Class II bikeways, and signage and street lighting along Annadale Avenue. It closed the gap in pedestrian and bikeway connectivity and enhanced safety for travel among local schools, a community center, a health center, and affordable housing (Turner et al., 2023).

Residents also fought to reduce incompatible, traffic-generating land uses by participating in the development of the SWFSP. Empowered by a public engagement process led by a Project Steering Committee as well as previous experience with the city’s 2014 General Plan update, residents succeeded in prohibiting further industrial development in order to promote a more balanced mix of housing, educational, commercial, and park space (Werner, 2020). For example, industrial parcels were rezoned from “Light Industrial” to “Neighborhood Mixed Use,” a more pedestrian-supportive urban form that encourages ground-level retail and upper-level housing or office space (City of Fresno, 2017).

The victory was tenuous. While the SWFSP allowed for existing industrial operations to continue as a nonconforming use, property owners filed a rezoning application in April 2021 to revert a 92.5-acre, 15-parcel site back to “Light Industrial,” asserting the SWFSP zoning change jeopardized their ability to obtain financing (Figure 4.1b). This action was strongly opposed by residents and organizations who had worked diligently for two years to adopt the SWFSP and by state and regional government officials who said it would enable expansion of industrial operations and undermine state investments through Transform Fresno and AB 617 initiatives to mitigate pollution in one of the state’s most heavily burdened environmental justice communities (California Department of Justice, 2022b; CARB, 2021).

Despite the opposition, the Fresno City Council unanimously approved the requested rezone for four of the parcels (36.8 acres) in October 2022 but

postponed consideration of the remaining 11 parcels (55.7 acres), directing city staff to seek a compromise between business owners and the community (City of Fresno, 2022). Community representatives and state and regional officials maintain their strong opposition, and the Fresno City Council has yet to act on the rezoning request for the remaining parcels.

Strategy 2: Reroute Trucks away from Sensitive Receptors

To complement its vision to phase out industrial uses, the SWFSP included a community-driven vision for eliminating truck routes that pass through residential neighborhoods to reduce near-roadway air pollution and address safety concerns. Although a SWFSP truck route policy has not been implemented, the SCF AB 617 CSC prioritized and funded a Community Truck Reroute Study for the entire SCF AB 617 area (Figure 4.1c) to update the city's outdated 2005 truck route designations (SJVAPCD, 2019b). The study is managed by the City of Fresno, but a CSC subcommittee was involved in selecting a consulting firm, ARCADIS, to identify, analyze, and evaluate strategies to reduce truck impacts including air and noise pollution, traffic congestion and crashes, bike and pedestrian conflicts, excess wear and tear on roads, and impacts to schools and residential areas while maintaining goods movement operations (ARCADIS et al., 2024).

Interagency coordination was overseen primarily through the study's Technical Steering Committee (TSC) which included city, county, Council of Governments, SJVAPCD, and University of California (UC) Merced staff who provided guidance on logistical and project issues and feasibility. Community input was gathered through the study's Community Advisory Committee, which included SCF AB 617 CSC members, other residents, business leaders, and representatives of community-based organizations and school districts. In addition, the study's community outreach included an online health survey conducted by UC Merced, community-wide pop-up booths and displays, and stakeholder interviews (ARCADIS et al., 2024).

The study's draft recommendations were presented during a January 2024 CSC meeting (SJVAPCD, 2024). They include nine strategies to improve roadway conditions and a map of recommended locations for the improvements and proposed revisions to truck route designations (Figure 4.1c). Recommendations include infrastructure improvements to enhance safety and accessibility for pedestrians and cyclists which align with complete streets and active transportation goals, such as closing gaps in existing sidewalk networks, adding new or restriping crosswalks to increase visibility, and adding dedicated bike travel lanes. Recommendations also include roadway repaving to remove potholes and cracks, traffic calming measures such as speed bumps or narrower lanes to reduce truck speeds, and roadway configurations to alter truck movements and accommodate alternative modes (ARCADIS et al., 2024).

Within the AB 617 planning area, proposed revisions to the existing 2005 truck route network include eliminating truck routes within newly designated

“truck regulated areas” that correspond with several areas of SCF where sensitive receptors such as residences and schools are concentrated (Figure 4.1c). This includes the elimination of several routes in the SWFSP area including portions of east-west California, Church, Jensen, and North Avenues and portions of north-south Walnut and Elm Avenues, which could help address conflicts identified in the 2015 complete streets plan. The plan also proposes new alternative truck routes on surface streets along the northwest-southeast Highway 99 and high-speed rail corridor. The unincorporated community of Malaga is designated as a “truck regulated area,” even though it currently lacks an adjacent truck route, perhaps in anticipation of proposals to expand industrial uses nearby. The public review of the truck reroute plan was extended through June 2024 and city officials reported to the CSC members that it must be reviewed by the city’s planning commission before it is submitted to the city council for approval.

Strategy 3: Install Protective Vegetative Barriers

Residents also devoted considerable attention and analysis to proposals to install roadside vegetative barriers, which consist of continuous plantings of bushes, shrubs, or trees along a freeway or major arterial to limit exposure to particulate matter and gaseous pollutants via dispersion (upward deflection and deceleration) and deposition (e.g., interception and settling). Vegetative barriers offer a tangible, near-term mitigation option for highly impacted locations for which longer-term strategies such as fleet conversion or truck rerouting are more distant, less targeted, or marred by interagency and funding delays. Their effectiveness varies based on the type of near-roadway pollutant, barrier configuration, and plant composition.

Few studies have examined the impact of near-roadway vegetative barriers on gaseous air pollutants even though urban vegetation in general can uptake and permanently remove gaseous air pollutants through absorption into leaf stomata and plant surfaces (Linden et al., 2023). Although one study documented near-roadway trees were associated with a 24–56% reduction in carbon monoxide, the few available measurement studies indicate that vegetative tree barriers are associated with both reduction and increase in near-roadway nitrogen dioxide concentrations (Abhijith and Kumar, 2019).

Vegetative barriers are more consistently associated with reductions in near-roadway concentrations of particulate air pollution. Dense and porous vegetation can mix and dilute polluted air. Particles can also deposit on leaf surfaces upon contact, thereby reducing their overall concentrations in ambient air. Expected reductions vary by the category of particulate air pollution considered. “Ultrafine” particles, or particles less than 100 nm in diameter, typically refer to the smallest exhaust particles in fresh emissions and are measured in terms of particle number concentration (PNC) rather than mass concentration metrics. PNC decreases rapidly downwind of roadways, falling by at least 50% within 150 meters and reaching background levels roughly 400 meters from a

roadway (Karner et al., 2010). When vegetative barriers are placed downwind from roadways, they can be associated with a roughly 30% reduction in UFP concentrations within 10 meters of roadways (Abhijith and Kumar, 2019). Deposited particles, however, can be resuspended in ambient air during strong winds, washed from leaf surfaces during rainfall, or deposited on the ground via fallen leaves, resulting in soil or water contamination (Baldauf, 2017).

To maximize the effectiveness of vegetative barriers, they should be constructed as a continuous barrier within meters of high-traffic arterials and freeways that pass near sensitive receptors. Generally, taller barriers result in greater reductions in downwind pollutant concentrations by forcing air up and over vegetation, increasing dispersion. In addition, less porous, more dense vegetation reduces air flow and passage of air pollutants through the barrier. Where possible, multiple rows and types of vegetation such as a combination of bushy shrubs and trees should be installed to provide full vegetative coverage from ground level to the top of the canopy. Trees and shrubbery that do not undergo substantial seasonal change, such as coniferous plants, could have a more consistent impact throughout the year; vegetation with waxy or hairy leaf surfaces tends to remove more particulates than plants with smooth leaves (Baldauf, 2017).

Several projects implemented by Tree Fresno raised awareness in SCF about the potential benefits of vegetative barriers (Figure 4.1a). Since 2016, Tree Fresno has partnered with Sonoma Technology to operate Fresno TREES, a Supplemental Environmental Project (SEP) funded by CARB. SEPs are environmental or public health projects that are designed to provide tangible benefits to communities affected by violations of environmental laws (CARB, 2022). In 2000, Fresno TREES worked with Caltrans to install a row of trees between residences and Highway 99 near Highway 41 (Lopez, 2020). In 2022, Fresno TREES planted a barrier between Tehipite Middle School's athletic fields and the interchange of Highways 41 and 180 in SCF (Panoo, 2022).

The SCF AB 617 CSC also allocated \$1 million toward a vegetative barrier strategy and selected Tree Fresno to implement 2–3 vegetative barriers within the AB 617 boundary area. In December 2022 and January 2024 presentations to the CSC, Tree Fresno described their partnership with the City of Fresno to implement the first vegetative barrier within the center median of Golden State Boulevard between Fourth Street and Orange Avenue (SJVAPCD, 2022a; SJVAPCD, 2022b). This northwest-southeast roadway segment runs between and parallel to Highway 99 and the tracks of the future California High Speed Rail project (Figure 4.1a). Although a Tree Fresno representative stressed that this barrier would reduce overall air pollution within this major transportation corridor, residents observed that the proposed barrier location is surrounded by vacant, industrial, and commercial properties. They questioned why the community-approved intervention was not sited near sensitive receptors and understood it would do little to reduce pollution for residents closest to the transportation route, including residents of the unincorporated census-designated place of Calwa adjacent to the high-speed rail tracks and a

multitrack railroad transfer yard. Tree Fresno reiterated their experience in implementing vegetative barrier projects and stressed that additional projects could be located adjacent to schools or public housing in the future.

Strategy 4: Limit Freeway and Warehouse Expansion

SCF residents and organizations also organized to address potential increases in near-roadway pollution by opposing freeway and warehouse expansion and the attendant increase in heavy-duty truck traffic through SCF. In January 2023, Caltrans released its FEIR for the South Fresno State Route 99 Corridor Project in South Fresno with a Finding of No Significant Impact on the human environment (Caltrans, 2023). The proposed project seeks to rebuild two existing partial interchanges along Highway 99 where it intersects the east-west routes of North and American Avenues (Figure 4.1c). Constructed in the 1960s, the interchanges do not meet current Caltrans design standards, have pavement that is old and deteriorated, and have tight dimensions that make them difficult to navigate. The project seeks to reconstruct the overcrossings of North and American Avenues to create interchanges with full on- and off-ramps, sidewalks, curbs, lighting, signalization, and drainage improvements.

As part of their project outreach, Caltrans staff made two presentations to the SCF AB 617 CSC. In July 2019 during the project's initial notification phase, resident CSC members asked to be included in a more substantial way throughout the Caltrans planning process and recommended that Caltrans consider vegetative barriers as a mitigative action given Caltrans' previous partnership with Tree Fresno (SJVAPCD, 2021). In December 2021, during the public comment period for the Draft Environmental Impact Report (DEIR), resident CSC members expressed disappointment that Caltrans had not engaged them further, that the CSC had not been directly notified about the DEIR comment period, and that the DEIR was not made available in Spanish until CSC members requested it, leaving many with inadequate time to review its contents (SJVAPCD, 2021).

Additional CSC member concerns align with those outlined in a December 2021 DEIR comment letter by the Leadership Counsel for Justice and Accountability (LCJA), an environmental justice nongovernmental organization based in Fresno. First, residents contested DEIR claims that no sensitive receptors were located close to the project area. They documented residential areas, schools, and places of worship located within two miles of the project, as well as a 1,400-bed juvenile detention center immediately adjacent to the American Avenue interchange. Caltrans responded that the DEIR incorrectly stated that a 2-mile distance was used to identify impacted populations; the FEIR applied a half-mile distance and claimed that there were no sensitive land uses within that radius. Second, residents called for Caltrans to coordinate with the City of Fresno's South Central Specific Plan, under development, which will reconsider the distribution of industrial land uses immediately west of the interchange projects (Figure 4.1c). They also called for Caltrans to delay

project approval until completion of the AB 617 Community Truck Reroute Study, which will provide a more comprehensive vision for rerouting heavy-duty trucks. Caltrans rejected the need to align the project with land use and transportation planning efforts for surrounding areas. Third, residents argued that expanding the capacity of two Highway 99 intersections would support the continued expansion of industrial operations within SCF and unincorporated areas nearby. Again, Caltrans stated that they had no legal authority over land use or development decisions and that the interchange project was necessary regardless of future land use decisions. They concluded that the project alone would not cause an increase in traffic, which was projected to grow regardless of the project. In fact, they indicated that without improvements to the deteriorating interchanges, highway congestion would increase and result in deteriorating air quality (SJVAPCD, 2021; Caltrans, 2023).

Concerns that the interchange project was linked to industrial expansion are warranted given the County Board of Supervisors' recent approval of comprehensive revisions to the Fresno County General Plan. The updated General Plan designates 2,940 acres east of the Caltrans projects as a Business and Industrial Campus Special Study Area (Figure 4.1c) (County of Fresno, 2024). Emails between Caltrans and Fresno County staff indicate that Caltrans was aware of and considered this planned industrial expansion in its project design but did not account for increased heavy-duty truck traffic associated with industrial expansion as part of the environmental review (Friends of Calwa and Fresno Building Health Communities, 2023). Furthermore, the California Attorney General claimed that Fresno County's Draft General Plan did not meet state requirements under SB 1000 to "address unique or compounded health risks in disadvantaged communities" because it prioritized large-scale industrial development without taking adequate measures to reduce pollution exposure for Calwa and Malaga (California Department of Justice, 2022a).

In response to community concerns raised to Caltrans by the SCF AB 617 CSC, the FEIR includes a proposal to build a vegetative barrier within SCF as part of the project's GHG mitigation measures (SJVAPCD, 2021). The proposed mitigation includes a sidewalk and adjacent vegetative barrier along the eastern side of South Cherry Avenue from Central Avenue to the Orange Center Elementary School with the stated goal of reducing GHG emissions (Figure 4.1c). The proposed segment is located over 3.5 kilometers east of the intersection of Highway 99 and Central Avenue, which is located midway between the two project interchanges. It is over 300 meters east of Highway 41, a distance at which near-roadway pollutants would likely have already substantially declined. Although this barrier could advance greening goals for SCF and improve aesthetics and pedestrian safety, it is not well placed to reduce pollutant concentrations near a heavily trafficked roadway. Alternatively, a barrier could be placed on the eastern edge of the residential area to reinforce the sparsely vegetated berm separating it from the major Ulta Beauty Distribution Center immediately to the east as well as a major Amazon Distribution Center about 600 meters east along Central Avenue.

After final project approval in January 2023, LCJA and Stanford Law School's Mills Legal Clinic filed a complaint in March 2023 on behalf of Friends of Calwa and Fresno Building Healthy Communities. The complaint raises many of the community concerns that Caltrans failed to address during project review and approval. It asserts that Caltrans and FHWA failed to acknowledge sensitive receptors, consider the cumulative impacts of the project, analyze the project's impacts on vehicle miles traveled under CEQA, or prepare an Environmental Impact Statement for the project under NEPA. In December 2023, the U.S. Secretary of Transportation ordered a reevaluation of the FHWA's Clean Air Act conformity determination for the Highway 99 interchange expansions. In response, agencies and the public will be able to comment on elements of the technical analysis that resulted in the conformity determination (Weaver, 2024).

Discussion

Our case study of state-sanctioned, place-based programs to address environmental impacts featured a variety of approaches to address near-roadway pollution. The three initiatives considered in this chapter operated within and across multiple sectors and policy frameworks, including land use, transportation, climate policy, and air quality. Each sector structures and limits problem identification, strategy development, and public participation in decision-making in unique ways. Working within and across each sector holds the potential to instill "multi-sectoral" awareness, build knowledge of governmental processes, and establish relationships with agency officials.

For example, residents engaged in general plan updates learned how land use planning can solidify a particular vision for future development that can be instilled into legally binding zoning ordinances. This awareness informed robust participation during SWFSP development that resulted in a community-informed vision to phase out industrial land uses. Residents gained an understanding of connections among zoning, traffic generation, and air pollution which led to a truck rerouting proposal, a strategy being implemented on a larger scale through the SCF AB 617 Community Truck Reroute Study. These multisectoral approaches were complemented by an SCF AB 617 CSC-approved vegetative barrier strategy to reduce near-roadway exposures and Transform Fresno's active transportation roadway projects to reduce vehicle travel and GHG emissions. The same organizations that gained multisectoral awareness and knowledge through these processes are now at the forefront of bringing legal action to implement a community-engaged environmental review for the proposed Highway 99 interchange expansion.

This case study also demonstrates the importance of multilevel approaches and oversight in addressing near-roadway impacts. Both the Transform Fresno and AB 617 initiatives resulted from state legislation that directed substantial resources to spur local investment and mitigative actions in disadvantaged communities. These programs enable the California SGC and the CARB to

influence local implementation through a competitive process of community selection and approval of community-proposed climate projects and emission reduction strategies, respectively. This structure enhanced multisectoral and multilevel awareness of the substantial interagency coordination necessary to implement regulatory, incentive, and enforcement programs. This case also instilled awareness that higher levels of government can provide critical oversight of local zoning and infrastructure decisions.

Although we found that the state-led, place-based initiatives analyzed were characterized by significant participation, the impact of resident engagement was often muted due to epistemic injustices embedded in steering committee decision-making (Ottinger, 2024). Each initiative used a steering committee structure through which residents and organizations could engage in decision-making, priority setting, funding allocation, and program implementation and accountability (Karner et al., 2019; Nguyen et al., 2022). While multilevel awareness led residents to prioritize four strategies to address near-roadway impacts and push for the multi-sectoral collaboration necessary for implementation, steering committee members were largely relegated to a consultative role in the design of the four near-roadway strategies analyzed. CSC meetings did increase the acknowledgment and consideration of resident concerns derived from their embodied experiences living within impacted communities. However, local knowledge was often deflected or dismissed within state-led processes that were heavily driven by agency priorities and timelines, and which deployed scientific justifications and interagency policy knowledge to deprioritize or obfuscate community concerns, often in favor of industry priorities and voluntary and incentive-based regulatory approaches (Harrison and Contreras, 2023).

Despite these limitations, our case study details several areas in which resident engagement influenced implementation strategies, secured substantial state mitigation funding, and provided multisectoral and multilevel awareness that community groups are now leveraging to advance a broad-based environmental and health justice agenda within the San Joaquin Valley. Future research should consider resident and community leader perspectives on how place-based participatory processes can more effectively utilize an equity lens, support community power sharing, and facilitate transparency, enforcement, and accountable environmental planning.

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