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1 **Transportation and environmental justice: History and emerging practice**

2

3 **Alex Karner**

4 Assistant Professor  
5 Graduate Program in Community & Regional Planning  
6 The University of Texas at Austin  
7 alex.karner@utexas.edu

8

9 **Aaron Golub**

10 Associate Professor  
11 Nohad A. Toulan School of Urban Studies and Planning  
12 Portland State University  
13 agolub@pdx.edu

14

15 **Karel Martens**

16 Associate Professor & Leona Chanin Career Development Chair  
17 Faculty of Architecture and Town Planning  
18 Technion - Israel Institute of Technology  
19 Institute for Management Research  
20 Radboud University  
21 kmartens@tx.technion.ac.il

22

23 **Glenn Robinson**

24 Research Scientist  
25 School of Engineering and Institute for Urban Research  
26 Morgan State University  
27 glenn.robinson@morgan.edu

28

29

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1 **INTRODUCTION**

2 Transportation systems are fundamental to participation in modern societies. We need effective  
3 transportation systems to connect us to opportunities that are distributed throughout space.  
4 Access to work, healthy food, medical care, education, recreation, and social interaction are all  
5 facilitated by highways, public transit lines, and non-motorized facilities. But this access is not  
6 shared equitably across space or demographic groups (Bullard et al. 2004; Ihlanfeldt & Sjoquist  
7 1998; Lucas 2004; Taylor & Ong 1995). Historical and ongoing planning practices and  
8 investment decisions have tended to disadvantage those who live near to transportation  
9 infrastructure and who choose to or cannot afford to drive (Avila 2014; Golub et al. 2013;  
10 Henderson 2006; Mohl 2002). Most often those populations are low-income people and people  
11 of color. In the United States (US), this disconnect runs counter to federal and state law and the  
12 stated goals of regional transportation and public transit planners. Similar disparities have been  
13 reported in the European and Global South contexts (e.g., Lucas 2012).

14 This chapter provides an overview of the academic and applied understandings of how justice  
15 might best be achieved in the domain of transportation. The emphasis is on the US experience  
16 because of its fraught transportation policy and planning history, the subsequent creation of  
17 federal laws and regulations focused on public involvement and justice, and the emergence of  
18 advocacy and philanthropic organizations aimed at meaningful legal and regulatory enforcement.

19 We begin by outlining the academic evidence on environmental injustice in transportation related  
20 to three dimensions: (1) inequitable access to participation in the planning process, (2)  
21 inequitable exposure to localized environmental burdens, and (3) inequitable distribution of the  
22 benefits of transportation investments and systems. We also address how justice or fairness  
23 should be conceptualized along each dimension. Although our examples are drawn largely from  
24 the US, similar injustices can be identified across the globe. We then turn to the legal and policy  
25 framework for achieving (environmental) justice in the US and briefly discuss how  
26 transportation planning agencies address environmental justice in their practices. Finally, we turn  
27 to the role of civil society. Because of the tenacity of these injustices, communities, non-profit  
28 organizations, and public interest attorneys have begun to create their own frameworks geared  
29 towards the achievement of justice. The chapter concludes by synthesizing best practices from  
30 the academic literature, agency practice, and community activism to chart a path towards and  
31 develop an analytical framework to advance an equitable and just transportation system for the  
32 US and beyond.

33 **ENVIRONMENTAL JUSTICE AND TRANSPORTATION**

34 **Participation and transportation infrastructure siting**

35 The issue of participation in decision making has been subject of extensive study and theorizing  
36 and its scope reaches well beyond the environmental justice or transportation literature (e.g.,  
37 Arnstein 1969; Chess & Purcell 1999; Innes & Booher 2010). Two dimensions of fairness can be  
38 distinguished with respect to this area. The first concerns the *level* of participation: the extent to  
39 which citizens should be involved in public decision making. There is widespread agreement that  
40 more meaningful forms of public involvement are required, but opinions diverge about what  
41 level of participation is morally required and what is practically feasible. The second dimension  
42 relates to the question of *who* should be able to participate in decision-making. One key issue here  
43 is that the delineation of some level of participation does not automatically imply that all citizens  
44 have a comparable power to affect outcomes. Some forms of participation may formally be open  
45 to all, but still tend to exclude some groups from meaningful involvement, amongst others

1 because of the skills and resources required for participation (language, technical expertise,  
2 public speaking ability, time, etc.) or the need to organize. Thus, merely extending the  
3 possibilities for citizen participation without affirmative policies or actions to involve those  
4 traditionally excluded does not necessarily move the decision-making process towards justice, as  
5 particular groups may benefit much more from increased opportunities for involvement than  
6 others. Likewise, limiting involvement may do little to create a level playing field, as some  
7 actors have easy access to decision-makers irrespective of formal avenues for participation.

8 Public participation efforts in transportation have evolved from an early period of stark injustice  
9 to include some contemporary efforts with promising outcomes aimed at inclusivity and impact.  
10 The profound shortcomings of the early efforts were clearly on display during the construction of  
11 the interstate highway system, which began in earnest following the passage of the 1956 Federal-  
12 Aid Highway Act. Requirements for public participation at that time were virtually non-existent  
13 and limited to a single hearing at which representatives of the state department of transportation  
14 would announce that a particular highway had been sited and construction was planned. After  
15 widespread negative reactions to this policy, the requirements were increased to two hearings by  
16 1969 (Weiner 2008, pp.59–60). But the toll on low-income and communities of color had  
17 already been taken. As summarized by Mohl (2002), entire African American business districts  
18 were decimated (pp. 30-38). In some cities, tens of thousands of black, mostly low-income  
19 residents were displaced by freeway construction. This type of community destruction was not  
20 limited to highways. In the San Francisco Bay Area, construction of the Bay Area Rapid Transit  
21 (BART) system wiped out a thriving black business district in West Oakland (Self 2005).

22 It is difficult to imagine that robust public involvement campaigns would have mitigated the  
23 worst of these excesses, but they certainly would have made these issues salient prior to, rather  
24 than after, construction. According to Schlosberg (2004), procedural justice – access to the  
25 process and an opportunity to have your voice heard – is a key element in achieving a just  
26 distribution of outcomes. The oft-cited EJ mantra “We speak for ourselves” embodies a similar  
27 sentiment (Cole & Foster 2001). Despite increased emphasis on and development of methods for  
28 conducting robust public engagement efforts in the wake of the 1991 Intermodal Surface  
29 Transportation Equity Act (ISTEA), problems remain. Aimen and Morris (2012, pp.1–17)  
30 helpfully make a distinction between mere “public involvement” and “meaningful involvement.”  
31 While the former emphasizes a one way flow of information from agencies to the public and  
32 seeks to manage interactions with the public, meaningful involvement seeks to provide the  
33 opportunity for individuals to change the outcome of a particular course of events or a particular  
34 project.

35 There have been promising practices in meaningful involvement, subsequent to the end of major  
36 interstate construction in the late 1970s. Although these facilities continue to act as dividing lines  
37 in many communities, there are examples where freeway teardowns or reconstructions have  
38 resulted in mitigation of early injustices (Mohl 2012). These usually involve robust public  
39 engagement efforts. In Oakland, California, the Loma Prieta earthquake destroyed part of  
40 Cypress Freeway. Constructed in 1957, the highway divided the vibrant black community of  
41 West Oakland. Despite the high costs of construction and right-of-way acquisition, the new  
42 alignment avoided the community, reconnecting what had previously been separated (FHWA  
43 2000). Part of the justification for the Atlanta Streetcar project in 2014 was to provide a link for  
44 the black community in Downtown Atlanta that had been separated by interstate construction  
45 (Ball 2014). Yet despite these successes, projects and plans strongly opposed by advocates and

1 community members, and which tend to benefit wealthier, whiter transportation system users  
2 continue to be pursued. In the San Francisco Bay Area, a rail connection to Oakland  
3 International Airport opened in 2015 to much fanfare, but the project was earlier found to run  
4 afoul of civil rights laws and was opposed by transit equity advocates who argued that the  
5 funding could be better spent to meet the needs of transit dependent populations in the region.  
6 Clearly, historical patterns of transportation decision making continue to shape contemporary  
7 space, especially for disadvantaged populations in the US (Golub et al. 2013).

## 8 **Environmental burdens**

9 Transportation systems produce environmental burdens including air, soil, and noise pollution,  
10 related health impacts, and traffic safety risks for users as well as non-users. Furthermore, as  
11 noted above, transportation infrastructure physically alters urban space, creating barriers between  
12 places that were previously connected, or, when placed in dense urban environments, razing  
13 entire neighborhoods (Bullard et al. 2004; Mohl 2012; Schweitzer & Valenzuela 2004).

14 There seems to be some convergence about the appropriate justice “standard” regarding  
15 environmental burdens. The general agreement, both in the academic literature and in US  
16 regulations and guidelines, seems to be that burdens from transportation infrastructure as well as  
17 other sources of environmental pollution should not be disproportionately carried by  
18 disadvantaged populations (e.g., Bullard & Johnson 1997; Mohl 1993; Schweitzer & Valenzuela  
19 2004). More specifically, burdens should be distributed so that each group’s share is roughly  
20 comparable to its size, with deviations from the ideal of perfect equality between population  
21 groups acceptable as long as they remain within reasonable boundaries. While intuitively  
22 attractive, the proportionality principle is difficult to apply to transport systems in practice for a  
23 number of reasons. First, by their very nature interventions in the transportation system have  
24 disparate impacts over space. It may therefore be practically infeasible to avoid disproportional  
25 impacts (whether in favor or not of disadvantaged groups). Second, the proportionality standard  
26 largely ignores processes of residential mobility. As long as residential location patterns are  
27 largely the result of market factors, it may be expected that higher income groups will  
28 disproportionately reside in neighborhoods with low levels of traffic-related pollution and a high  
29 quality of life. As long as race, ethnicity and gender are strongly correlated with income levels, it  
30 may be expected that these groups will thus carry a disproportionate share of the burdens  
31 generated by transportation systems, *even if transportation interventions live up to the*  
32 *proportionality standard*. The proportionality standard is thus by no means beyond scrutiny.

33 Academic research has shown that people of color and low-income populations indeed carry a  
34 disproportionate share of transport-related burdens. The most blatant injustice has already been  
35 discussed above: the displacement of entire neighborhoods housing mostly poor people of color  
36 to clear the way for massive highway building schemes. These deliberate forms of injustice may  
37 largely be a thing of the past, but more subtle forms of injustice are very much present in all  
38 major cities in the US. For instance, Rowangould (2013) found that, while almost 20% of the US  
39 population lives within 500 m of a road carrying a volume of 25,000 average annual daily  
40 vehicle-trips, approximately 24% of the black population and 30% of the Latino population live  
41 within that same buffer. Air pollution concentrations are known to be elevated within these short  
42 distances from roads, yet regional monitoring stations are not sited to capture near-roadway  
43 conditions (Karner et al. 2010). This proximity translates directly into health outcomes including  
44 increased risk of cardiovascular and respiratory illness and cancer (Chakraborty 2009;  
45 Gauderman et al. 2007). While these patterns may partly be the result of market-driven processes

1 of residential competition and selection, they are a main concern for the environmental justice  
2 movement, not in the least because in neighborhoods with high concentrations of people of color,  
3 air pollution concentrations routinely exceed regional averages and other traffic-related impacts  
4 including noise, vibration, and safety, can be severe (Morello-Frosch et al. 2001; Karner et al.  
5 2009; Rowangould 2015; see also Martens 2011).

6 Higher use of non-motorized modes, lower likelihood of automobile ownership, and roadway  
7 proximity also combine to create safety risks for low-income and minority populations.  
8 Specifically, the risk of injury or death from motor vehicles is higher for people of color than the  
9 population as a whole in the US. Daniels et al. (2002) reported that, overall, blacks account for  
10 approximately 40% of all traffic-related injuries in the country, compared to their 13%  
11 population share. Walking is particularly dangerous for black Americans. Using data from the  
12 Fatality Analysis Reporting System, Hilton (2006) demonstrated that a disproportionate number  
13 of non-occupant children killed by motor vehicles are black. Increased risk of death as a  
14 pedestrian also extends over the lifetime and affects other people of color as well. Campos-  
15 Outcalt et al. (2003), reporting results from Arizona, found that Latino and black males were  
16 1.33 and 1.75 times more likely to be killed as a pedestrians than non-Hispanic whites,  
17 respectively.

### 18 **Benefits of transportation infrastructure: Accessibility**

19 Clearly, transportation generates not only (environmental) burdens, but also benefits, and  
20 accessibility has been proposed as the fundamental benefit conferred by transportation (Grengs  
21 2015a; Martens 2006; Martens 2012). Accordingly, analyses of social equity in transportation  
22 systems often emphasize accessibility metrics both in practice and in the academic literature  
23 (e.g., Golub & Martens 2014; Páez et al. 2010). In a transportation context, accessibility refers to  
24 the ability to reach desired destinations which are separated in space (Geurs & Van Wee 2004;  
25 Handy & Niemeier 1997). Greater accessibility is associated with shorter travel times, lower  
26 costs, as well as closer proximity to activity locations.

27 Some authors have sought to establish criteria by which a particular distribution of accessibility  
28 could be judged to be equitable or which could be used to guide planning efforts (e.g., Golub &  
29 Martens 2014; Grengs 2015b; Lucas et al. 2015; Martens et al. 2012), but there is little  
30 agreement in the literature or in practice about what constitutes a just or fair distribution of  
31 accessibility benefits. While academic studies into the patterns of accessibility abound, few are  
32 informed by a well-defined justice standard for accessibility. Philosophies of justice been  
33 invoked to develop explicit justice standards in transport (e.g., Beyazit 2011; Mullen et al. 2014;  
34 van Wee 2011) drawing on prior work that made initial steps in a similar direction (Bullard &  
35 Johnson 1997; Rosenbloom & Altshuler 1977; Schaeffer & Sclar 1980). Golub and Martens  
36 (2014) calculate the ratio between automobile and public transit accessibility for a particular area  
37 and argue that below a particular threshold an area would experience “access poverty” and  
38 transportation disadvantage. Martens et al. (2012) describe how a maximax principle can be used  
39 to guide transportation planning, whereby the average accessibility of a population is maximized  
40 subject to the constraint that the gap between the least and most accessible groups is held below  
41 a maximum acceptable value. More recently, drawing heavily on the contract theory of social  
42 justice, Martens (2016) has proposed a sufficiency standard for accessibility, arguing that a  
43 transportation system is fair if, and only if, it provides every person with a sufficient level of  
44 accessibility. The latter approach resonates clearly in the more qualitative social exclusion  
45 literature, which defines transport-related social exclusion as the “process by which people are

1 prevented from participating in the economic, political and social life of the community because  
2 of reduced accessibility to opportunities, services and social networks, due in whole or in part to  
3 *insufficient* mobility” (Kenyon et al. 2002, p.148, emphasis added). This broad definition is,  
4 again, intuitively appealing. But while the literature provides some direction on how to define a  
5 sufficiency standard, establishing such a standard would be contentious in practice, regardless of  
6 its exact form. Thus, while substantial progress has been made exploring possible principles for  
7 the distribution of the benefits of transportation, agreement about the most appropriate standard  
8 is still far away.

9 While typically not framed using environmental justice discourse, there is a host of literature  
10 studying patterns of accessibility and inaccessibility. Much of this literature focuses on  
11 accessibility to employment opportunities. These studies typically apply location-based measures  
12 of accessibility and compare job accessibility by car and transit (e.g., Blumenberg & Ong 2001;  
13 Kawabata & Shen 2006; Shen 1998). Other work exists that measures disparities in access to  
14 healthy foods and the locations of food deserts (e.g., Farber et al. 2014; Widener et al. 2013) as  
15 well as access to health care services of various types (e.g., Harrison & Wardle 2005; Martin et  
16 al. 2008). These literatures vividly illustrate the vast disparities in accessibility between persons  
17 with and without access to a car. Certainly in the US context, public transport services tend to  
18 provide very low levels of accessibility, severely inhibiting the ability of car-less households to  
19 gain access to employment, health care, education or even healthy food.

20 Not all studies along these lines are sensitive to typical environmental justice concerns. For  
21 instance, much of the work assessing job accessibility tends to ignore the suitability of particular  
22 workers for particular jobs. This is especially important in light of the typical structure of US  
23 cities. Thus, while “measured accessibility” may be quite high for minority populations living  
24 close to the central business district, few of these jobs may actually match their skills or  
25 expertise. It is precisely this problem that has been highlighted by the extensive spatial mismatch  
26 literature. Given the close correlation between education level and minority status, it can be  
27 argued that many accessibility studies are ‘color blind’ by failing to take into account the match  
28 between workers’ abilities and job requirements (see Hu and Giuliano (In press) and Golub and  
29 Martens (2014) for counterexamples). While these accessibility analyses can thus tell us a great  
30 deal about the interactions between land use and transportation in a particular region, they tell us  
31 relatively little about the conditions faced by a particular person or demographic group.

32 Importantly, travel behaviors and the use of particular pieces of transportation infrastructure are  
33 known to differ between demographic groups. Low-income people and people of color generally  
34 own automobiles at lower rates, make shorter trips, and use transit and carpool more readily than  
35 higher income, generally whiter populations (Clifton & Lucas 2004; Pucher & Renne 2003).  
36 This means that a transportation policy emphasizing highway capacity expansion will tend to  
37 disproportionately benefit these non-disadvantaged populations. A historical example is  
38 instructive. Part of the outcome of interstate freeway and rapid transit construction in the 1950s  
39 and 1960s was to allow relatively wealthy whites to access employment opportunities in central  
40 cities while living in suburban locations (Henderson 2006; Pulido 2000). Commonly referred to  
41 as “white flight,” the construction of transportation infrastructure has been identified as a causal  
42 agent in the depopulation of US central cities as regions continued to grow during the second  
43 half of the 20th century (Baum-Snow 2007). This massive investment of public dollars  
44 undoubtedly benefitted wealthy white populations while exacting a profound cost on people of  
45 color and low-income.

## 1 **LEGAL AND POLICY FRAMEWORKS FOR ACHIEVING JUSTICE**

2 Recognizing the existence of injustice across multiple issue domains, governmental entities in  
3 the US have enacted an array of laws and regulations to prevent further disparate impacts. The  
4 threat of legal action, administrative censure, and/or loss of funding are thus powerful tools  
5 wielded by environmental justice advocates and activists against transportation agencies and  
6 decision makers. In the absence of supportive public policies, members of the public seeking  
7 justice would have far less recourse in the face of potential disparate impacts.

8 Federal guidance on environmental justice applies to the transportation sector through various  
9 regulations promulgated by the US Department of Transportation and its modal agencies  
10 including the Federal Highway Administration and the Federal Transit Administration (e.g.,  
11 Federal Highway Administration 2012; Federal Transit Administration 2012a; Federal Transit  
12 Administration 2012b; US Department of Transportation Office of the Secretary 2012; see also  
13 Karner & Niemeier 2013; Golub & Martens 2014). These regulations are influenced by and  
14 derived from laws like Title VI of the 1964 Civil Rights Act and executive actions like the 1994  
15 Executive Order 12898 on environmental justice. In general, agencies that receive federal  
16 funding must provide for full and fair participation in transportation planning processes, ensure  
17 that the impacts of their actions do not disproportionately affect protected populations, and  
18 guarantee that those same populations are not denied the timely receipt of benefits from public  
19 investments.

20 Two types of transportation planning agencies are particularly important for implementing US  
21 federal regulations in this area: metropolitan planning organizations (MPOs) and public transit  
22 agencies. MPOs are responsible for transportation planning in all urbanized areas that exceed  
23 50,000 in population. Those in larger urban areas have additional authority, with direct control  
24 over some funds, and various planning and programming responsibilities. Regions are generally  
25 defined by commute patterns and include many different city and county governments. One key  
26 mission of an MPO is to address issues that cross the boundary of single jurisdictions. The  
27 planning of a commuter rail system, implementing high-occupancy toll lanes, or providing work  
28 trip reduction incentives are all activities that an MPO would undertake. In the wake of interstate  
29 highway development, regions are also home to cities and counties with widely differing fiscal  
30 resources, a phenomenon that has been identified as regional inequity (Orfield 2002; Pastor et al.  
31 2000). Suburban sprawl and gentrification are two other major issues whose mitigation falls  
32 outside of the responsibilities of a single jurisdiction.

33 Public transit agencies manage the day-to-day operations of public transit systems. In the US,  
34 although individual routes may cover their costs, in general, agencies require public subsidies.  
35 This is because transit agencies seek to provide both revenue generating service as well as  
36 service that is more explicitly oriented towards geographic or social equity (Walker 2012).  
37 Transit agencies must assess the equity impacts of their fare and service changes, following  
38 guidance laid out by the FTA (Karner & Golub 2015).

39 Both MPOs and transit agencies play key roles in environmental justice analysis and mitigation.  
40 MPOs are important because of the regional nature of travel patterns, mobility, and injustice.  
41 There are at least two problems with this emphasis. First, such agencies play mostly a  
42 coordination and aggregation role, rather than a leadership role in terms of regional project  
43 prioritization (Goldman & Deakin 2000). They are often bound by decisions made at both lower  
44 and higher levels of government (e.g., Crabbe et al. 2005). Second, their overarching goal  
45 appears to be conflict minimization. Because of this, the analyses undertaken by MPOs have



1 historically not uncovered evidence of injustice either at the project or plan level (Karner 2016;  
2 Karner & Niemeier 2013; Sanchez et al. 2003). Transit agencies play a role because transit  
3 dependents are a key constituency and they overlap with environmental justice populations.  
4 However, these agencies exist in a rather severe fiscal environment; even when new revenues are  
5 made available, calls to mitigate congestion often dominate and transit agencies can find  
6 themselves left out. Consequently, new funding for transit and new transit projects tend to  
7 promote mobility and accessibility for wealthier, whiter transit riders as opposed to transit  
8 dependents.

9 As mentioned above, both agencies assess the equity of their plans and decisions (Karner &  
10 Golub 2015; Karner & Niemeier 2013; Martens et al. 2012). Analyses of the patterns of  
11 accessibility have become quite common over the past decade. These analyses, however,  
12 typically fail to account for the differences in car ownership between various population groups.  
13 As a result, they hardly ever result in findings of inequity (Golub & Martens 2014). Moreover,  
14 these analyses are typically only weakly linked to decision making (Karner & Niemeier 2013;  
15 Rowangould et al. 2016; Sanchez et al. 2003). For example, an analysis demonstrating that  
16 accessibility to destinations by automobile is high in central city areas where the low-income  
17 population is also high tells us very little given that low-income people own vehicles at low  
18 rates. Other analyses have examined the distribution of transit accessibility across the population  
19 and have demonstrated that disadvantaged population groups tend to enjoy relatively high rates  
20 of (job) accessibility (Al Mamun & Lownes 2011; Currie 2004; Foth et al. 2013). Yet again,  
21 these analyses tell us little about the sufficiency of transit service or its performance relative to  
22 the car.

### 23 **COMMUNITY-BASED RESPONSES**

24 It seems clear that the agencies tasked with mitigating environmental injustice often conduct  
25 analyses that shed little light on the problem. To communities struggling with environmental  
26 burdens and often profound disparities in accessibility, the situation can seem intractable. A  
27 promising way forward can be found in emerging community-based responses to environmental  
28 injustice that are founded on the principle of achieving meaningful public participation in the  
29 transportation planning process, consistent with the evolution of public involvement in  
30 transportation planning decisions discussed earlier. Although this type of meaningful  
31 participation is not a panacea for all transportation injustice, as we will illustrate below, it has  
32 generated promising and concrete wins in several planning processes and related to specific  
33 projects. Marcantonio and Tepperman-Gelfant (2015) summarize several successful practices in  
34 the realm of public participation, noting three factors that appear to be vitally important for  
35 success. These include: 1) establishing a shared agenda for what constitutes “success” across  
36 diverse stakeholders, 2) rewiring the process so that the agency is not the only entity defining  
37 how and when key decisions will be made, and 3) combining “inside” and “outside” tactics,  
38 blending participation in formal structures with traditional community organizing and advocacy  
39 approaches. These methods have been applied successfully in several cases as of the mid-2010s.  
40 Below, we discuss promising examples of the application of these principles in Los Angeles and  
41 the San Francisco Bay Area.

42 In Los Angeles, the expansion of Interstate 710, to accommodate projected growth in truck  
43 traffic along a key goods movement route leading north from the ports of Los Angeles and Long  
44 Beach, was vehemently opposed by residents proximate to the facility (East Yard Communities  
45 for Environmental Justice 2015) They viewed the agency’s plan to expand the capacity outright

1 as a losing strategy that would only result in induced demand and additional noise and air quality  
2 impacts while providing few benefits. Supported by a number of attorneys from the Natural  
3 Resources Defense Council and Earthjustice, a coalition of local advocacy organizations  
4 developed “Community Alternative 7” proposing no mixed flow capacity expansion, only an  
5 increase in capacity along facilities that would be dedicated to heavy vehicle use. Agency  
6 analysis demonstrated that the community alternative would meet the stated project needs at  
7 lower cost and with fewer environmental and social impacts.

8 In the San Francisco Bay Area, the Six Wins Coalition united around multiple related, but  
9 previously disparate ideas including affordable housing, local transit service, public health, and  
10 displacement (Marcantonio & Karner 2014). Again supported by foundation funding and public  
11 interest attorneys, the coalition proposed a community-defined alternative – entitled the “Equity,  
12 Environment, and Jobs” (EEJ) scenario – after the MPO declined to include it in an earlier round  
13 of modeling. The alternative directly spoke to needs that had been identified by community  
14 members in advance and was aggressively pursued and advocated for in formal venues like  
15 board and advisory committee meetings. Key public meetings where votes on EEJ were held  
16 were heavily populated by supporters. In this sense the definition and application of the EEJ can  
17 be said to be consistent with the definition of meaningful public involvement. Surprisingly, once  
18 the alternative was simulated using standard transportation modeling approaches, it was found to  
19 outperform the preferred alternative. By running more frequent local transit service and locating  
20 affordable housing near to job centers, the environmental impacts of EEJ were much lower than  
21 the alternative plan while key environmental justice goals were met simultaneously.

22 Both of these cases illustrate that community-led processes can surface alternatives that  
23 otherwise would not be considered and which can lead to improved plan and project performance  
24 as well as superior distributive outcomes. Yet in both cases, substantial resources were required  
25 to develop the alternative plans, especially resources to hire personnel to engage with agencies  
26 and to provide technical assistance and advice on plan design. One final emerging best practice  
27 for moving towards environmentally just outcomes is thus the provision of funding for groups  
28 seeking to engage in planning processes. Such practices are not without precedent. In their 2014  
29 regional transportation plan, the Fresno County Council of Governments provided small grants  
30 (\$1,000 - \$3,000) to community-based organizations to support their engagement with the  
31 process.

## 32 **CONCLUSION AND FUTURE DIRECTIONS**

33 The early history of transportation planning was rife with unjust practices, creating a system in  
34 which low-income travelers, people of color, and transit dependent people were substantially  
35 disadvantaged relative to whiter, wealthier, riders. Mid-twentieth century legal and regulatory  
36 requirements to address environmental injustice in transportation, while leading to incidental  
37 success, have not led to fundamental changes in policy and planning actions. Consequently,  
38 historical disparities in burdens and benefits persist.

39 The demographics of the US are changing, and new challenges have presented themselves to  
40 transportation planners in terms of evolving passenger travel and goods movement patterns,  
41 aging infrastructure, funding constraints, the threat of climate change, and a growing  
42 appreciation for the potential environmental, public health and social consequences of  
43 transportation systems and services and transportation decisions. Many of these changes offer the  
44 promise of advancing environmental justice goals. But in order to deliver results, environmental

1 justice analyses, of both burdens and benefits, have to become much more rigorous. Since both  
2 the burdens and benefits of transportation investments vary across a variety of social and  
3 geographic dimensions, it is of particular importance they are not only examined in the  
4 aggregate, but also in terms of their incidence upon particular populations or communities.  
5 Furthermore, it is vitally important that environmental justice analyses become a key component  
6 of the transportation planning process and are carried out *before* policies and plans are created.  
7 There are few signs that this change will happen from the top down, so continuing involvement  
8 and pressure from communities will be required to make the case for rigorous, well-timed  
9 analyses that can inform planning and decision making. Indeed, the most promising opportunities  
10 for achieving just transportation systems appear to be originating from communities themselves  
11 in partnership with skilled attorneys and researchers and with support from philanthropic  
12 foundations. Empowering these types of efforts runs counter to existing practice but may hold  
13 the greatest hope for success in delivering state, regional, and local transportation plans capable  
14 of redressing past injustices.

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