

# The Promise of Community-Based Participatory Research for Health Equity: A Conceptual Model for Bridging Evidence With Policy

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Insufficient attention has been paid to how research can be leveraged to promote health policy or how locality-based research strategies, in particular community-based participatory research (CBPR), influences health policy to eliminate racial and ethnic health inequities. To address this gap, we highlighted the efforts of 2 CBPR partnerships in California to explore how these initiatives made substantial contributions to policymaking for health equity. We presented a new conceptual model and 2 case studies to illustrate the connections among CBPR contexts and processes, policymaking processes and strategies, and outcomes. We extended the critical role of civic engagement by those communities that were most burdened by health inequities by focusing on their political participation as research brokers in bridging evidence and policymaking. (*Am J Public Health*. 2014;104:1615–1623. doi:10.2105/AJPH.2014.301961)

Landmark studies have helped keep race and ethnic health inequalities on the national political agenda for more than 3 decades. These studies have included the Secretary's Task Force on Black and Minority Health,<sup>1</sup> Unequal Treatment,<sup>2</sup> and Examining the Health Disparities Research Plan.<sup>3</sup> Despite the continued research evidence of disproportionate adverse health impacts on racial/ethnic minorities,<sup>4</sup> insufficient attention has been paid to the role of governmental action or inaction on these health disparity outcomes. How research can be leveraged to promote health equity policy, or the role of locality-based research strategies, in particular community-based participatory research (CBPR), is less understood. Two major challenges inhibit our knowledge about the link between research and policy change: (1) the gap between scientific evidence and policy action based on evidence, and (2) the difficulty of mobilizing civic engagement for policymaking in the United States.

We sought to help fill these gaps by exploring 2 locality-based CBPR initiatives that have effected policy change to promote health equity. After brief overviews of the social justice basis for CBPR and health equity, the literature on CBPR policymaking for health equity, and the issues underlying the research to policy gap, we presented a new conceptual

model for better understanding of the pathways and connections between CBPR contexts and processes, policymaking strategies, and policy outcomes. We summarized our case studies and then used detailed findings to illustrate the model's utility for showcasing how CBPR might contribute, along with other efforts, to local and regional policy change. We concluded by comparing our findings with those of earlier research, and highlighted how further refinement of the conceptual model might assist CBPR partnerships in promoting health equity policy.

## THE SOCIAL JUSTICE PRINCIPLE

Community-based participatory research is an orientation to research that emphasizes "equitable" engagement of partners throughout the research process, from problem definition, through data collection and analysis, to dissemination and use of findings to help effect change.<sup>5–7</sup> Increasingly, CBPR partnerships link research to the policy level "as a means of taking their work to scale to eliminate health disparities."<sup>8(pS81)</sup> Minkler et al. described these CBPR policy strategies as addressing both distributive justice (equal protection and fair allocation of burdens and resources)<sup>9,10</sup> and procedural justice (fairness in how the

decision-making process takes place, with marginalized communities participating in the policymaking process).<sup>8,11</sup> CBPR policy-focused efforts for distributive and procedural justice align with health equity, and are defined as the absence of systematic disparities in health among groups with different levels of wealth, income, power, or prestige.<sup>12</sup> Both types of justice share values fundamentally rooted in social justice and human rights.

## LINKING SCIENCE AND POLICY

Although most CBPR literature emphasizes equitable engagement, CBPR policy research provides a more expanded link to social justice and health equity principles through policy-directed action. Many CBPR policy partnerships, especially those that focus on environmental justice and occupational health, also highlight the utility of bridging "street science" with academic-based evidence and advocacy.<sup>8–10,13–18</sup> In each of these partnerships, the following strategies are emphasized as facilitators of policy-oriented outcomes: raising public awareness of the impact of socioeconomic factors in health, engaging low-resourced and racial/ethnic communities in policymaking, building momentum of coalitions and intersectoral partnerships for grass roots organizing, media advocacy, and strengthening leadership, research and policy-advocacy skills of communities most burdened by health inequities. In each of these case studies, the CBPR partners intentionally set policy goals and directed their strategies toward policy-oriented outcomes, such as modifying local, regional, or state laws so that the political "playing field" was more fair. In most instances, incremental, yet important changes were achieved, with all cases seeking policy changes at local, regional, or state levels.

Although CBPR can play an important role in linking science and policy, there remain

difficulties in moving evidence into the policy-making process. First, a fundamental disconnect typically exists between policymakers and researchers. A study of policymakers' use of evidence in their daily work demonstrated the need for improving their understanding of the relative merits of different evidence, and for researchers to better understand the needs of, and demands upon, policymakers to better provide customer-sensitive products.<sup>19</sup>

Second, research competes with other political and world events highlighted in the media: institutional constraints (e.g., constitutional rules), interest group pressure, and citizens' values.<sup>19-21</sup> The likelihood for evidence to be used in policymaking increases if the research is perceived as useful, with 76% of policymakers in one study citing lack of research relevance, thus preventing its use.<sup>22,23</sup> Policymakers need real-life and timely analysis, availability of financial and staff resources to produce research to meet demands, high technical quality of evidence, research tailored to different decision needs, and translation of evidence into user-friendly materials.<sup>10,19,24,25</sup>

To bridge this divide between evidence and policymaking, research must be shepherded through the political process, from policy

formulation to implementation and evaluation.<sup>26</sup> The influence of research on policy relies on the willingness of social scientists to engage in the political process with community partners, using a mix of strategies open to them, that is, advocacy, media, policymaker alliances, legal actions, or corporate boycotts, to create policy change.<sup>27,28</sup> Growing evidence suggests that civic engagement (individual and collective actions designed to identify and address issues of public concern), by communities most affected by health inequities in research and policy deliberations, can help move the agenda from low to high importance, bringing about innovative and sustainable health equity solutions.<sup>14,29</sup> Therefore, CBPR deserves greater theorizing for how the interplay of civic engagement, political participation, and evidence can contribute to policy changes that advance health equities.

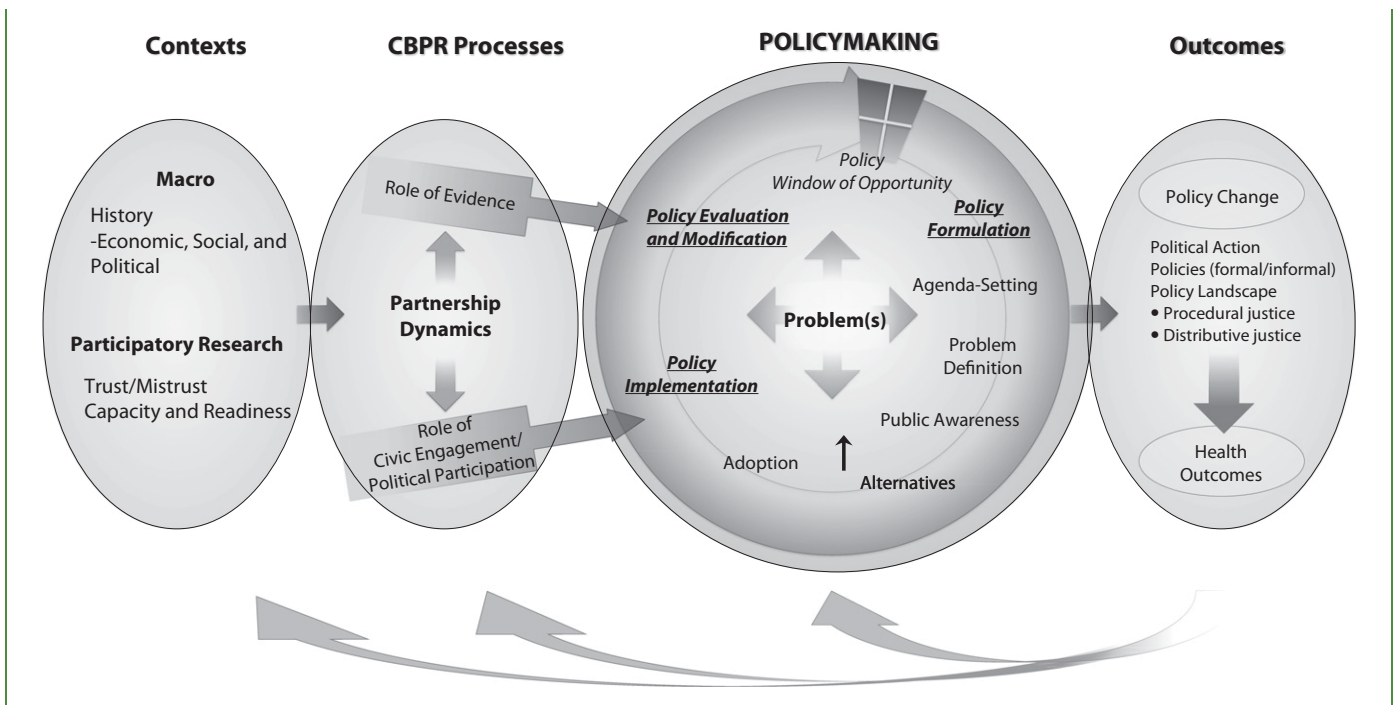
**A CONCEPTUAL MODEL FOR RESEARCH AND POLICYMAKING**

Numerous US-based conceptual policymaking models exist<sup>26,30,31</sup>; these share the common stages of

1. problem definition,
2. creating awareness and setting (or getting on) policymaker agendas,
3. constructing policy alternatives,
4. deciding on the policy to pursue,
5. implementing the policy, and
6. evaluation.<sup>30,31</sup>

Although some policy scholars have criticized these models for oversimplifying complex political processes,<sup>32</sup> such models have contributed practical insights, emphasizing the cyclical and interconnected nature of policymaking, and the role of contextual factors and "windows of opportunity" when factors converge to increase the likelihood of policy change.<sup>26</sup>

Themba-Nixon et al.,<sup>33</sup> Ritas,<sup>34</sup> Freudenberg et al.,<sup>35</sup> and Glover-Blackwell et al.<sup>4</sup> described advocacy frameworks for policy change and the role of CBPR partnerships in constructing grassroots policy initiatives. However, none of the peer-reviewed literature has included a conceptual pathways model of how CBPR can contribute to policy change. Figure 1 shows an initial attempt to tailor a CBPR model toward policy change by building on a generic model that connects CBPR



**FIGURE 1—Conceptual model for illustrating the link between community-based participatory research (CBPR) and policymaking.**

contexts (political–societal and specific collaborative histories), partnership processes (e.g., equitable decision-making or leadership) to intermediate research and system or capacity outcomes, and to distal health outcomes.<sup>36,37</sup> Although both models share generic context and partnering dimensions, this adapted CBPR model adds policymaking stages and highlights the interaction between evidence and civic engagement to shift political power, with a targeted focus on policy outcomes as an intermediate step toward health equity. Although no model can fully capture CBPR policy processes within their larger societal context, we attempted to describe such dynamism (arrows in Figure 1) and the definitions of each component of the model in the examples that follow.

The first oval, “Context,” refers both to macrolevel contextual factors and the participatory research context. Macrolevel factors include economic pressures, political trends and leadership, public attitudes, and corporate-financed media outlets that influence policy outside CBPR research partnerships. The participatory research context includes patterns of historic trust among the community, agency, and university partners; organizational characteristics; and their capacities for high-quality collaborative research.

The second oval, “CBPR Processes,” includes partnership (stakeholder) dynamics, such as the extent of democratic decision-making among partners or the level of involvement of policymakers. This policy-adapted model proposes a dynamic focus, more than the generic model, on the interplay between the role of evidence (academic and street science) and the role of civic engagement and political participation. To be included in the policymaking process, research evidence and science must be perceived as useful, high quality, available in real time, and tailored to decision users.<sup>10,19,37</sup> Such research includes both traditional outside-expert studies and compelling street science, in which community members take the lead in data collection, capturing their often-sophisticated understanding of the issues that affect their neighborhoods.<sup>16</sup> Civic engagement refers to the role of community partners in organizing and advocating for improved quality of life in a community. Such engagement may occur through both political and nonpolitical processes.<sup>38</sup>

Political participation, as an extension of civic engagement, refers to the collective actions of community members at the local, state, or national level (or corporate practices through government) that support or oppose government authorities or decisions to allocate or re-allocate public goods.<sup>39</sup> Such advocacy participation may be more restricted for academic or government agency partners (e.g., in prohibitions on lobbying).

The “Policymaking” circle includes the problem(s) to be addressed, and around the periphery, the stages in which CBPR partnerships can engage in policy formation, implementation, evaluation, and modification. The policy formation stage involves multiple dynamics (although these are not necessarily linear) and strategies, including setting the agenda, defining and prioritizing problems within a given political environment, creating awareness of issues among key policymakers and the public, constructing timely and feasible policy alternatives, deciding on which to pursue, and advocating for proposed changes and policy adoption (typically drawing on both research findings and community members’ stories and experiences). Choices tend to be made when the right combination of conditions, politics (e.g., leadership turnover), and likelihood of the policies (acceptance of ideas, favorable public opinion) converge, creating “policy windows” of opportunity. These windows may occur at any stage of the policymaking process.<sup>26</sup>

Finally, the “Outcomes” oval focuses on policy changes, such as catalyzing political action (i.e., lobbying, increased voting), developing or passing formal and informal policies (ordinances, action plans), and changes in the policy landscape. These outcomes, in turn, may increase the likelihood of future policy change, both distributive and procedural justice,<sup>8,11,40</sup> and contribute to distal health outcomes as a direct result of policy changes.

## METHODS

The 2 case studies we described were conducted in 2008 to 2010 as part of a California research project to explore the role of CBPR in linking place-based work and policy to promote healthier communities.<sup>10</sup> Funded by The California Endowment, a statewide scan

uncovered 36 policy-focused CBPR efforts. Six were selected for in-depth analysis, based largely on their fidelity to CBPR principles,<sup>6,41</sup> and the extent to which they appeared to contribute to changes in policy or the policy environment. Within a multiple case study approach,<sup>42</sup> individual in-person interviews, focus groups, policymaker phone interviews, archival media and document review, and participant observation took place under the University of California–Berkeley institutional review board protocol and formed the basis of our present analysis.<sup>10</sup> Although detailed descriptions of these cases can be found elsewhere,<sup>14,15</sup> our analytical purpose was to illustrate the utility of the model for understanding cases like these, and in particular, to focus on the pathways that helped connect research to the policymaking process in the formulation stage.

### The Toxics Free Campaign in Old Town National City

Once a dynamic Latino residential community, Old Town National City (OTNC) in San Diego, California, has, in recent decades, “become a dumping ground for polluting industry and warehouses.”<sup>43(p2)</sup> Residents’ high rates of asthma and other respiratory conditions appear to be related in part to the high burden of toxic air contaminants, more than two-thirds of which come from the community’s many noncompliant auto body and paint shops.<sup>43</sup> The OTNC was formally established in 2006, but evolved from a long history of social justice work and research by the Environmental Health Coalition (EHC) since the late 1980s. Visually powerful in-house geographic information system (GIS) mapping used by the lead partner, the EHC, in a door-to-door survey by community health workers or *promotoras* and external quantitative studies by the Southern California Environmental Health Sciences Center at the University of Southern California (USC), were all used in testimony, one-on-one meetings with city officials, and other forums to press for policy-level changes. The partnership’s work was widely credited with having played a significant role in the passage of both an ordinance phasing out polluting industries and the 2010 passage of a specific plan requiring that health impacts and community input be included in all further city decision-making.<sup>14</sup>

## Trade, Health, and Environment Impact Project

The Trade, Health, and Environment (THE) Impact Project involves a regional effort to address goods movement through the Los Angeles and Long Beach ports, which together handle 40% of imports into the United States.<sup>44</sup> The California Air Resources Board (CARB) calculated that the goods movement in this region was responsible for 2400 premature deaths and 62 000 cases of asthma symptoms yearly, disproportionately affecting low-income communities of color.<sup>45</sup> Formally established in 2006, THE Impact Project was built on a long history of collaboration between 2 academic partners (the University of Southern California [USC] and Occidental College) and the Center for Community Action and Environmental Justice, and later added 3 more partners.<sup>15</sup> The genesis of this project dates back to 2 town hall meetings in 2001 and 2005, both of which featured both science and community testimonies on various environmental health issues, ranging from lead poisoning to air pollution. The combined science of the academic partners, community data collected by community partners, and effective organizing were credited with helping to achieve several distributive and procedural justice victories. Prominent among these were passage of the Clean Air Action Plan in 2006, integration of health language in official port and transportation documents, delay of a major freeway, and inclusion of community members in decision-making bodies overseeing the ports' goods movement.<sup>10,15</sup> Although both CBPR partnerships used research, THE Impact Project had the additional benefit of partnering directly with USC academics, whose previous nationally recognized, non-CBPR epidemiological asthma and environmental pollutants research on the populations surrounding the ports also had implications for similar populations across the country.

## RESULTS

Consistent with the conceptual model, both case studies illustrated the linkages between the Contexts, CBPR Processes, Policy Strategies, and Outcomes (Figure 1). More notably, these cases highlighted the interplay of civic engagement, political participation, and evidence in

influencing the policymaking process for advancing health equity (Table 1).

### Context

Macrolevel contextual circumstances set the stage for using CBPR processes in developing policies strategies.<sup>26</sup> Each case study community was exposed to detrimental long-term air pollution effects from the unhealthy mixture of industry, such as auto body shops, ship railroad yards in close proximity to residential areas, and diesel exhaust from trucks. In each site, historically entrenched "political elites" set the ground rules that favored corporate-industrial interests over the health of residents (e.g., through the failure to pass or enforce emission control measures). For instance, the macrolevel context in OTNC included an economically driven decision by an all-White San Diego city council in the 1960s to transform OTNC from a residential community to a "light industrial/mixed use neighborhood," enabling numerous polluting industries to move into this low-income area.<sup>14,43</sup>

Each partnership invested several decades of wide intersectoral collaboration, providing a foundation of personal trust for participatory research. In addition, each partnership applied for and received new funding or leveraged existing resources, strengthening partnership trust, capacity, and readiness for health policy change. The establishment in 1980 of the OTNC's EHC proved an important vehicle for enhancing community capacity, which was also aided by active church organizing and a local school with much parent involvement. The EHC staff's inclusion of a trained public health researcher, and its history of good relationships with environmental health academics at USC, paved the way for an academic-community partnership. This groundwork facilitated EHC's receipt of a National Institutes of Health grant in 2000 to support participatory research on environmental injustice in OTNC. The Toxic Free Neighborhoods Campaign later included a second academic partner, the Environmental Law Clinic of the University of San Diego, which proved particularly important during the action phases of the work.

For THE Impact Project, initial funding from the National Institute of Environmental Health Sciences in 1996 for the USC Environmental Health Children's Center and subsequent

sustained funding enabled the addition of new partners, including the Long Beach Alliance for Children with Asthma, whose involvement broadened the partnership's focus to include pollutants from a proposed highway expansion. The other new partners brought a history of work on railroads and trucking issues, which were both relevant to the regional goods movement focus of the project. The winning of \$50 million in a lawsuit against the Port of Los Angeles by a public and private partnership further changed the context of THE Impact Project's work, by highlighting the culpability of the Port for insufficient emission mitigation strategies of a planned large shipping terminal. Funding from The California Endowment enabled formalization of THE Impact Project in 2006, with 6 advocacy partners that tackled regional environmental policy.

### Community-Based Participatory Research Processes

To gain the attention of policymakers faced with other competing priorities, both evidence (from street science and epidemiology) and civic engagement (public testimony in town hall meetings, public hearings, and media advocacy) were purposefully used by both sites to alter public opinion and increase awareness of the problem.<sup>32,44,46,47</sup> The Toxic Free Neighborhoods Campaign included a range of research methods from secondary data analysis and GIS mapping to air sampling and survey research.<sup>14</sup> "Visual footprints" created by EHC's in-house academic researcher of GIS mapping compared toxic releases for OTNC with those of 3 adjacent areas with startling results: 23 000 pounds of toxic air contaminants were released in OTNC in 2005, whereas nearby footprints contained 6000, 3500, and 0 pounds respectively.<sup>14,43</sup> The EHC hired and trained 17 *promotoras de salud* community health workers and organizers. Their training on land use, environmental health, survey design and implementation, and effective testimony and media advocacy not only built the individual capacity of these residents, but also enabled organizational capacity. The *promotoras'* use of hand-held ultrafine particulate counters to measure the smallest and most dangerous particulate matter demonstrated a dramatic difference in air quality, from 25 000 particles per cubic



**TABLE 1—Themes Illustrating the Community-Based Participatory Research to Policy Model**

Variable	Toxic Free Neighborhood Campaign in OTNC, San Diego	THE Impact Project Los Angeles and Long Beach Ports
<b>Contexts</b>		
Macro	> 4 decades of dumping in low-income neighborhoods	Long-term effects of air pollution from ships, cars, and trucks moving goods via port cities
History	History of “White political elites” calling the shots, including allowing polluting industries into formerly residential neighborhood	\$50 million lawsuit against Port of Los Angeles supported new partner collaborations, leading to regional coalitions and alliances; shifted political power and spurred political momentum
Partnership research	Long-standing EHC composed of community and academic (USC) partners as vehicle for neighborhood mobilization	25-year history of collaboration between USC, Occidental College, and Center for Community Action and Environmental Justice, a nonprofit, working together on superfund site clean-up
Capacity and readiness	EHC and USC obtained NIH grant, funding via government and foundations	NIH/NIHES grant in 1996 established USC EHC and sustained financial support from governmental and private funders; enabled extension to other nonprofits
History of or expansion of wide-intersectoral collaboration	EHC and USC obtained NIH grant, funding via government and foundations	California Endowment Foundation funded 6 regional partners in 2006 to tackle regional environmental health policy
Infusion of and/or leveraging financial resources	EHC and USC obtained NIH grant, funding via government and foundations	NIH/NIHES grant in 1996 established USC Environmental Health Center and additional support extended to other non-profits. California Endowment Foundation funded six regional partners in 2006
Trust/mistrust	Good relationship of EHC and USC laid groundwork for funding and research	25-year history established strong foundation of trust
CBPR processes/role of evidence	Range of research methods used including GIS mapping (visual footprints) comparing toxic releases, door-to-door survey by <i>promotoras</i> , tracking of ultra-fine particulates; policy and stakeholder interviews, power-mapping process	Epidemiological studies of traffic exposures, creation of Neighborhood Assessment Teams (A-Teams) trained in “street science” data collection; development of protocols
Use of diverse data collection methods and sources	Translation of data into principles and recommendations for action, media campaign using the data, <i>promotoras</i> visible role in town hall meetings	First Town Hall meeting in 2001, with 300 people, as first open sharing between non-governmental organizations, community residents, and USC scientists; continued town hall meetings every few years, and more frequent testimony at other venues by CBO directors, A-team members, and partners
<b>Role of civic engagement/political participation</b>		
Policy formulation	Broad-based awareness campaign—that is, public testimony, media advocacy, door to door canvassing, briefing public officials	Substantial public testimony: community protests, public hearings, town hall meetings
Setting the agenda and prioritizing the problem through mobilization and media advocacy	Intersectoral partnerships and alliances with media and advocates	Alliances between scientists, lawyers, and community organizers at neighborhood level and new political leadership
Constructing and pursuing policy alternatives and actions	Mobilization and change, policy/media advocacy training for <i>promotoras</i> ; large public turnout for hearings	Increased compliance via partners’ vigilance and citations
Outcomes: Policy landscape	Reviewing and selecting amortization ordinance as an incremental policy and Specific Plan for OTNC as long-term policy goal	
Political activity/civic engagement	Mobilization of community supporters; former EHC <i>promotora</i> now Vice Mayor; Specific Plan gives increased voice to community members in decision-making	Changing the conversation or nature of the public debate; expansion to regional collaboration; ongoing town hall meetings keep “goods movement” on the policy agenda
Policies (formal and informal)	Amortization ordinance	Clean Air Action Plan; multilevel policy linkages across city, regional, state, and federal authorities
Procedural justice	Enhanced community engagement as part of procedural justice; increased involvement of community members and growing youth advocacy (second generation)	New elections and political appointments from among the partners (advisory boards, government task force)

Note. CBOs = community-based organizations; CBPR = community-based participatory research; EHC = Environmental Health Coalition; GIS = geographic information system; NIHES = National Institute of Environmental Health Sciences; NIH = National Institutes of Health; OTNC = Old Town National City; THE = Trade, Health, and Environment; USC = University of Southern California.

centimeter at a control site (City Hall), to 150 000 particles per cubic centimeter near a truck from the driving school located opposite the primary school.<sup>10,14</sup> The *promotoras* provided powerful testimony on their findings at town hall meetings, public hearings, and for local media.

In THE Impact Project, the interplay between evidence and civic engagement had its genesis in the collection and dissemination of neighborhood data. In 2003, the USC Environmental Health Children's Center collaborated with 2 of the advocacy partners to form Neighborhood Assessment Teams (A-Teams) to collect data on truck counts and use handheld counters for ultrafine particulate matter. Coupled with USC non-community based participatory research epidemiological research linking local traffic exposures to asthma and adverse lung development in children,<sup>48,49</sup> the A-Teams then disseminated findings at schools, churches, and other venues to help galvanize a community organizing effort. Effective use of town hall meetings, with the first in 2001 attracting 300 people, was key for consolidating policy strategies around the ports, and added 2 advocacy partner groups that were working on strategies independently to combat air pollution from railroad yard and highway sources.

### Policymaking

The majority of policy strategies developed and executed by the diverse policy partners across the 2 sites were instrumental in facilitating policy formulation (the focus of these examples) through systematic problem identification, setting the agenda by bringing legitimate attention to community issues, constructing policy alternatives, and adopting politically feasible policy objectives. In each case, partners took active roles to package, frame, and broker the policy context with policymakers, raise public awareness, and shift political decisions and debate in favor of the partners' policy goals.

In both cases, the relationship with the media was instrumental in connecting the research to the larger political climate and public venue. For instance, a staff member from EHC stated: "There's been a lot of press coverage. . . probably 20 articles over the last four years, and we'd have several spots where news

channels come out." An academic partner with THE Impact Project reflected on the media's involvement in a critical event:

My whole life has been different since that meeting where people were saying, "the ports are growing exponentially." . . . Ship emissions are completely unregulated, which none of us believed, but it was completely true. A reporter who was there for KCRW said, "that can't be possible. We can't have all these ships coming in from other countries and their emissions aren't regulated."

At both sites, broad-based awareness campaigns aimed at policymakers and other political elites included repeated public testimonies and stories to humanize the problem, moving beyond the data and numbers.

The OTNC publication of its survey and GIS findings and recommendations in a widely cited report<sup>43</sup> played an important role in refining the problem and formulating policy strategies. Specific policy-related activities included media advocacy, door-knocking, briefing public officials, and testifying at hearings. Although the academically trained research partners participated in providing such testimony, EHC worked to ensure that the *promotoras* and other residents were at the center of such efforts, including identifying policy strategies that were most likely to be effective in helping achieve their goals.<sup>14</sup>

For THE Impact Project partners, framing the goods movement problem in public health terms enhanced the potential for policy change, with USC-sponsored town hall meetings in 2001, 2005, and 2007 keeping the issues at the forefront of public debate. For example, the partners demanded accountability from the businesses responsible for goods movement, seeking to shift the debate from support for an economic engine to adverse health impacts on local communities.<sup>15</sup>

THE Impact Project and OTNC each forged alliances with traditional partners and other advocates, such as lawyers and political elites (i.e., city councilors and a new mayor in Los Angeles) to help formulate more equitable policies. The OTNC EHC, for example, worked with the University of San Diego Environmental Law Clinic to develop the legal grounds for its amortization ordinance (to phase out polluting industries) and help advocate for its adoption.

For THE Impact Project, the policy formulation phase included continued A-Team involvement, public testimony, community protests, and community-based organization leadership to increase public awareness and present policy alternatives to public bodies, such as the Harbor Commission. Mobilized by THE Impact Project, in addition to the town hall meetings, more than 200 people attended 2 Harbor Commission hearings on a proposed railroad yard, with testimony by community-based organization directors, scientists, and A-team members. The specific language for the Commission's Clean Air Action Plan (CAAP) was built because of these efforts, including measurement matrixes by USC.

### Outcomes

In both the OTNC and THE Impact Project, outcomes included the formation and adoption of formal or informal policies aimed at both distributive justice and creating a landscape for future environmental justice work, which, in turn, enhanced procedural justice, enabling the active participation of traditionally marginalized residents in the policymaking process. Policy action plans and ordinances were adopted to effect change (e.g., a new truck route ordinance and a harbor action plan), and at least in theory, to increase accountability and on-going monitoring and enforcement.

In OTNC, policymaker interviews, review of mass media and other documents, observations at hearings, and interviews with other key stakeholders suggested that the EHC partnership played a key role in the unanimous passage, by the City Council, of an amortization ordinance in August 2006. A city council member thus noted the importance of the partnerships' research, saying that numbers can "make or break" an argument, and both the powerful GIS data and the survey findings, combined with residents' own stories, helped sway the council toward passage.<sup>41</sup> Another policymaker commented on the partnership's ability to "fill up the meeting rooms" with a sea of colorful blue T-shirted supporters and their children, and their impact on council members during critical votes on the issue. Evidence of increased procedural justice was also seen, including enhanced community engagement in implementing an action plan, involvement of community members in city

council meetings, growing youth interest in the advocacy work their parents began, and the fact that a former *promotora* not only won a seat on the council but went on to serve as the town's vice mayor.

In THE Impact Project, the Harbor Commissioners' passage of the first CAAP in the country in 2006, which created a 5-year goal of reducing pollution from the ports by 45%, was a major policy victory for which the partnership was given substantial credit. The formalization of THE Impact regional partnership was described as a key change in the policy landscape, enabling ongoing regional dialogue and increased procedural justice. The new political opportunity of an environmentally friendly Los Angeles mayor helped get 5 of the 6 partners invited to serve on advisory boards and CAAP implementation task forces; 4 of these partners were invited to the Southern California Association of Governments and state task forces on goods movements.<sup>10</sup> A Clean Trucks Plan was adopted by both ports based on CAAP implementation proposals. Ultimately, a major goal was achieved: THE Impact Project helped shift the policy debate to make the goods movement industry accountable for its decision-making, and as noted by one of the partners, included "trying to get environmental health and ports written into [surrounding] cities' general plans."

Each of these 2 case studies moved beyond traditional notions of civic engagement, placing political participation as the bridge between evidence and policy. The CBPR partnerships intentionally set policy-oriented goals and directed their collective actions to influence government authorities to adapt or change decisions regarding the allocation of public goods and environmental resources. Key contributors included the use of media advocacy, the election and appointment of community members to political and leadership positions, and training of a new generation of advocates to be research brokers who make the connections between evidence (both academic and street science) and policy. These activities, in turn, supported a movement of "bottom-up" change from the communities most affected by social inequities and more effective policymaking for social justice—equalizing political power and distribution of social resources between groups.

## DISCUSSION

A growing body of literature has pointed to the importance of policy-focused CBPR for helping study and address health inequities,<sup>5,16,17,35,50,51</sup> and in transforming policy landscapes with newly recognized civic engagement or more direct political participation.<sup>46</sup> Our findings echoed other studies that suggested that participation of communities most affected by health disparities in the production of research could influence policy change for health equity.<sup>8,14,17,29,51–55</sup> National initiatives, which favored a top-down approach to investigating and addressing the health disparities crisis, largely ignored the profound contributions of civic engagement. To explain this expanded role of civic engagement from general public involvement to collective political action as fundamental to social change, political process theorists suggested that social movements are nurtured through sustained pressure against powerful opponents (whether corporate or within government). Political action could open opportunities to influence the allocation or redistribution of goods, power, and privilege through policy change.<sup>56,57</sup> More specifically, partnerships in CBPR that directly confronted political and social power with evidence and action were more likely to achieve policy change.<sup>58</sup> Although previous scholarship described specific contributions of CBPR and advocacy to the policymaking process,<sup>14,15,59</sup> our illustrative model used examples from the 2 case studies to highlight the role of political participation over time. This political participation required sustained advocacy actions to confront political power and policy-broker actions that brought research results to policy attention to change the policy environment.

In each case we examined, an existing relationship of trust between the partners, use of multiple forms of evidence, advocacy of community members, and alliances with supportive policymakers became the catalyst for creating an environment of what political scientists have termed "policy-oriented learning."<sup>60</sup> The strategic use of research by an array of actors and partnerships who brokered the research to a policy audience evolved into "policy subsystems" or networks that were sustained over a longer period of time.<sup>61</sup> Essentially, to gain the attention of policymakers over many

competing priorities, both evidence and civic and political engagement, were purposefully used by a network of community-academic research brokers to alter public opinion and build awareness of the impact of the problem on historically marginalized communities. Change in circumstances, leadership, and enhanced partnerships shifted the power dynamics to allow the policy networks of actors to work toward common policy goals. The partnership dynamics and CBPR processes played an important interconnected role in generating new knowledge and formulating policy ideas into directed and coordinated political action. The people burdened most with the impact of pollution moved to center stage of policy action, playing effective roles in town halls, media campaigns, production of reports, and public testimonies.

Although not explicitly stated, it was apparent that researchers worked expediently with local leaders and community residents to gather and translate data in a timely manner, making the evidence relevant and visible. These partners brokered research findings to reach a policy audience. Other policy scholars concur that moving data into the policymaking process requires leadership trained with unique skills for both packaging and disseminating their research, knowledge of the political underpinnings of policymaking, and knowledge of relationships with politicians and the media.<sup>62–64</sup> Gamble and Stone<sup>65</sup> argue for the role of political action as a catalyst for both research and policy. As they noted:

Thirty years of scholarship on agenda-setting and issues framing have shown that societal problems do not become policy issues just because they exist as problems or even because careful scientific research has documented that they are problems; they must be converted into political issues by an array of leaders and defined in a way that government can do something about them.<sup>65(p95)</sup>

## Limitations

Our study had several limitations. Recall problems might have led to interviewer over- or under-emphasis on the role of partnership research and advocacy efforts, or the role of politicians and other stakeholders, as well as contextual factors. Triangulation of data sources was helpful, however; we found high

consistency among academic and community partner responses, which were further well corroborated by policymaker interviews and archival reviews. It remained impossible to fully determine the 2 partnerships' contribution to policy outcomes. As Sterman<sup>20</sup> noted, the often-lengthy time delays in policy-related work precluded understanding the long-term consequences of the actions of individual actors. As a result, "follow-up studies must be carried out over decades or lifetimes."<sup>20(p505)</sup> These follow-up studies should also recognize the limited role that research played, and assess the larger political and economic forces that influenced the political decisions of society's elites, including corporations and special interests groups that fund political campaigns, lobbyists, and the media.<sup>66</sup> Finally, the strategies elucidated by the model might be especially salient for state and local policymaking, as we illustrated, and have not yet been explored in the national or global contexts.

Further testing of the conceptual model with other partnerships addressing diverse issues would help determine its broader utility and model refinements. For better elucidating "Context," a more detailed look at societal shifts from federal government oversight and resources to states or local governments would be critical. Increased philanthropic interest in policy-focused CBPR, moreover, and growing capacities of community-academic research partnerships might positively contribute to the contexts and policy landscapes in which CBPR takes place.

Partnership dynamics also deserves longitudinal studies, as academic researchers and community-based organizations develop longer histories of engagement and expand into policy change. As partnerships gain a reputation for delivering credible data with strong community stakeholder support, calls from funders and policymakers might provide important new entry points for change-focused collaborations.

Study of diverse partnerships might also elucidate creative ways in which CBPR partnerships help make policy along the full spectrum of policy strategies, and lead to a better understanding of facilitators and barriers to contributing to outcomes within policy environments and in actual policy success.

## Conclusions

The 2 case studies we explored suggested that the conceptual model we developed and tested might be a useful guide for understanding connections and potential pathways between CBPR contexts, processes, policy strategies, and policy outcomes. We did not intend to overstate the role of CBPR in policy change. Rather, our model and case analysis could help elucidate a theoretically based understanding of the interplay of civic engagement, or more directly, political participation, with evidence and the role of research brokers to move both street and academic science into political action. Over sustained periods of time, these partnerships might increasingly evolve into policy subsystems that are actively engaged in promoting health equity and social justice through policy change. We recommend that CBPR scholars who adapt this model to their own research carefully consider the larger economic and political circumstances and history within their partnered communities, and the opportunities for integration of science and civic advocacy on local and regional levels. ■

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This article was accepted February 21, 2014.

## Contributors

N. Wallerstein and L. Cacari-Stone played a primary role in developing the model being tested in this article. A. P. Garcia and M. Minkler conceptualized the case study analysis and conducted, with N. Wallerstein, data collection and analysis of the 2 case studies. L. Cacari-Stone conducted a review of the political science literature on policymaking and analyzed the key themes across the 2 studies using the CBPR model. All authors contributed to conceptualizing, writing, and editing the article.

## Acknowledgments

This study was supported by a grant from The California Endowment. The authors thank Makani-Themba Nixon,

Nicholas Freudenberg, Cassandra Ritas, Rachel Morello-Frosch, Victor Rubin, and other colleagues at PolicyLink, whose collaboration on earlier work on CBPR and policy contributed to our thinking in this area. The authors also thank the community and academic partners, as well as policymakers, who gave of their time and shared their perspectives on the 2 case studies examined in this article.

## Human Participant Protection

This study was approved by the institutional review board of the University of California, Berkeley (protocol # 2010-01-542). All key informants and focus group participants signed informed consent letters prior to their participation.

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