

# DEMOCRACY IN THE AIR: UNCOUNTED EMISSIONS, DISCOUNTED COMMUNITIES

*Leehi Yona\**

Climate change is a collective action problem exacerbated by gaps in our democratic systems. These gaps include disrupted mechanisms for accountability, distorted systems of knowledge, and policies which exclude community participation. While many components of climate law produce these democratic failures, greenhouse gas accounting practices have, for the most part, received limited scrutiny for the ways they undermine progress on climate change.

Many subnational governments have committed to reducing greenhouse gas emissions as part of their climate policies. In so doing, they produce greenhouse gas inventories—accounts of jurisdictional emissions—against which they can assess the success of mitigation measures. Yet these greenhouse gas inventories may be incomplete, leading to “unaccounted-for”, or excluded, emissions. This Article illustrates the impacts that poor, incomplete, and inaccurate greenhouse gas accounting has in exacerbating environmental injustices. It focuses on Stockton, California, where it highlights how emissions from industries such as aviation, maritime shipping, and stationary sources are excluded from the City of Stockton’s greenhouse gas inventory. Finally, it illustrates opportunities to account for these emissions as an additional tool for environmental justice and democratic governance.

INTRODUCTION . . . . .	412
I. DEMOCRACY, CLIMATE CHANGE, AND ENVIRONMENTAL INJUSTICE. . . . .	414
A. <i>Democratic Accountability and Carbon Accounting</i> . . .	414
1. Greenhouse Gas Accounting and Emissions Omissions . . . . .	415
B. <i>Stockton, California</i> . . . . .	416

---

\* Assistant Professor of Law and Earns & Russo Faculty Fellow of Environmental Law, Cornell Law School. I am grateful to Sarah Hoffman, Jennifer Harder, the Environmental Law News editorial team, and the editors of the Cornell Journal of Law and Public Policy for thoughtful feedback and edits. This Symposium piece has been adapted from *Confronting Unaccounted-for Greenhouse Gas Emissions in Stockton, California*, 32 ENV’T L. NEWS (2023), revised with comments from symposium participants as well as additional analyses. Some portions are reprinted here with permission from the Environmental Law Section of the California Lawyers Association.

II. INADEQUATE GREENHOUSE GAS ACCOUNTING HARMS  
 COMMUNITIES . . . . . 420  
 A. *The Injustices of Unaccounted-for Emissions on the Ground: Stockton, California*. . . . . 420  
     1. International and Interstate Aviation . . . . . 420  
     2. Stationary Sources. . . . . 422  
     3. Maritime Shipping . . . . . 426  
 B. *Estimating Stockton’s Actual Greenhouse Gas Emissions* . . . . . 427  
     1. Annually Excluded Emissions Are Many Times More Than Stockton’s Climate Action Plan Goals . . . . . 428  
     2. Greenhouse Gas Accounting Practices are Undemocratic . . . . . 430  
 III. RECOMMENDATIONS . . . . . 430  
 A. *Leveraging the California Environmental Quality Act for More Just Emissions Accounting* . . . . . 431  
 B. *Advocacy Opportunities for More Just Greenhouse Gas Accounting* . . . . . 432  
 CONCLUSION . . . . . 433

INTRODUCTION

*“People who don’t live near refineries have no business knowing about it, but if you live near a refinery, it can emit, and often does repeatedly [emit], so much air pollution so quickly that the acute exposures are just radi- cally high.”<sup>1</sup>*

*“The smell is so bad . . . it turns your stomach and takes your breath away.”<sup>2</sup>*

Climate change is an urgent policy problem requiring action at every level of government, from the global to the local. With strong federal political headwinds in the United States, many look to the efforts of progressive states, such as California and New York, for leadership in passing

---

<sup>1</sup> Research Interview with Academic-Government Official, Stanford Research Protocol 61253 (Oct. 5, 2021). Name withheld per Institutional Review Board protocol.

<sup>2</sup> San Joaquin Valley Air Pollution Control District, *Stockton Community Emissions Reduction Program: Summary of Complaints, Enforcement Overview, App. F* (2021), [https://community.valleyair.org/media/z53nfts4/stockton-appenf\\_enforcement.pdf](https://community.valleyair.org/media/z53nfts4/stockton-appenf_enforcement.pdf) [<https://perma.cc/HM88-K34B>] [hereinafter Summary of Complaints] (community complaint concerning an unnamed facility that, based on location and description, is likely the DTE Stockton biofuel facility).

laws to address climate change.<sup>3</sup> California is at the forefront of this effort: for decades, the state has demonstrated that it is ahead of the curve in environmental protection, so much so that Congress granted California a waiver under the Clean Air Act to adopt its own, more stringent, vehicle emissions standards.<sup>4</sup> Many see California as the democratic poster child for climate action.

And yet, there is a critical gap in how the state implements its policies, resulting in a challenge to environmental democracy. Many government agencies exclude greenhouse gas (GHG) emissions sources from the official inventories which they use to assess progress toward emissions reductions goals. What's more, these emissions omissions harm local communities, particularly poor communities of color.

To address climate change, responsible actors such as governments and corporations must reduce their GHG emissions, often reporting inventories to measure progress.<sup>5</sup> However, these responsible actors often exclude some GHG emissions from their reports. As a result, accountability measures<sup>6</sup> such as the United Nations Paris Agreement<sup>7</sup> do not account for these excluded emissions when determining the progress actors make towards pledged emissions reductions. These “unaccounted-for” GHGs thus distort mitigation incentives and lead to potentially flawed perceptions of progress: responsible actors are less likely to mitigate the climate impacts of their unaccounted-for GHG sources than those of their accounted-for sources.

Unaccounted-for GHG sources, such as international aviation;<sup>8</sup> fuel extraction, production, and refining industries;<sup>9</sup> and maritime shipping contribute not only to climate impacts, but also to local air pollution via

<sup>3</sup> See, e.g., Craig Holt Segall, *Networked Federalism: Subnational Governments in the Biden Era*, ECOLOGY L.Q. (2021), <https://www.ecologylawquarterly.org/currents/networkedfederalism/> [<https://perma.cc/6QAS-JD7C>].

<sup>4</sup> 42 U.S.C. § 7543(e)(2)(a).

<sup>5</sup> Leehi Yona, Benjamin W. Cashore & Mark A. Bradford, *Factors Influencing the Development and Implementation of National Greenhouse Gas Inventories*, 5 POL'Y DESIGN & PRAC. 197, 197–225 (2022).

<sup>6</sup> See, e.g., *California Greenhouse Gas Emissions for 2000 to 2018*, CAL. AGENCY AIR RESOURCES BOARD (2020), at 10, [https://ww2.arb.ca.gov/sites/default/files/classic/cc/ghg\\_inventory\\_trends\\_00-18.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/cc/ghg_inventory_trends_00-18.pdf) [<https://perma.cc/XGE9-P3KE>] [hereinafter California Emissions Inventory]; Intergovernmental Panel on Climate Change [IPCC], *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (Simon Eggleston et al. eds., 2006).

<sup>7</sup> See, e.g., *Emissions from Fuels Used for International Aviation and Maritime Transport*, U.N. CLIMATE CHANGE, <https://unfccc.int/topics/mitigation/workstreams/emissions-from-international-transport-bunker-fuels> [<https://perma.cc/ZR32-NT8W>]; *GHG Inventory Data Archive*, CAL. AIR RESOURCES BOARD, <https://ww2.arb.ca.gov/ghg-inventory-archive> [<https://perma.cc/4CTD-WABN>].

<sup>8</sup> U.N. CLIMATE CHANGE, U.N. FRAMEWORK CONVENTION ON CLIMATE CHANGE, DRAFT HANDBOOK FOR THE REVIEW OF NATIONAL GREENHOUSE GAS INVENTORIES 93 (2021).

<sup>9</sup> See generally Jeffrey S. Rutherford et al., *Closing the Methane Gap in U.S. Oil and Natural Gas Production Emissions Inventories*, 12 NAT. COMM'N 1,1 (2021).

co-pollutants such as particulate matter (PM<sub>2.5</sub>) and Volatile Organic Compounds (VOCs).<sup>10</sup> Historically disadvantaged and marginalized communities (which are also by definition more vulnerable to climate change) located near these unaccounted-for GHG sources experience disproportionate air pollution impacts as a result. Accounting for unaccounted-for GHGs would help regulate industries that cause environmental harm through both local air pollution and locally felt, outsized climate impacts on communities. When “unaccounted-for GHG industries” are located near marginalized communities, their environmental justice impacts are thus twofold: one local and acute, the other global and with persistent long-term consequences.

Gaps in GHG accounting laws are a failure of democratic institutions that aim to reduce inequality. By obscuring the full emissions impact of government agencies, emissions omissions disrupt channels of accountability between the public and decision-makers. Additionally, by harming nearby communities via local air pollution, emissions omissions exacerbate racial and socioeconomic inequalities. And, when governments undercount their overall emissions, they also hamper how successful mitigation policies will be in addressing climate change.

This Article proceeds in three Parts: Part I discusses the role of GHG accounting in climate policy and introduces emissions omissions, in addition to providing background information on Stockton, California, the community at the center of this Article’s analysis. Next, Part II demonstrates how unaccounted-for GHG emissions from many industries harm local communities and perpetuate environmental injustices, highlighting how these omissions intersect with democratic failures. Finally, Part III highlights possible opportunities for democratic engagement to remedy some of these inequities.

## I. DEMOCRACY, CLIMATE CHANGE, AND ENVIRONMENTAL INJUSTICE

### A. *Democratic Accountability and Carbon Accounting*

Climate change is a collective action problem that exacerbates inequities worldwide,<sup>11</sup> posing important challenges for democratic governance everywhere.<sup>12</sup> Responsible actors who contribute to climate change must be held accountable for their pollution; to do so, the public must know what these actors’ GHG emissions are in the first place. This is where GHG accounting comes in, underpinning many of today’s climate

---

<sup>10</sup> CARB Pollution Mapping Tool (v2.6), CAL. AIR RESOURCES BOARD, [https://ww3.arb.ca.gov/ei/tools/pollution\\_map/](https://ww3.arb.ca.gov/ei/tools/pollution_map/) (last visited June 12, 2022).

<sup>11</sup> Craig Holt Segall, *Democracy Defense as Climate Change Law Comments*, 50 ENV’T. L. REP. 10115, 10116 (2020).

<sup>12</sup> Marcello Di Paola & Dale Jamieson, *Climate Change and the Challenges to Democracy Symposium: Climate Wrongs and Human Rights*, 72 U. MIAMI L. REV. 369, 369 (2017).

laws and policies. In a previous work, I argued that GHG accounting practices represent an actor's *responsibility* as it relates to addressing climate change.<sup>13</sup> Here, I briefly synthesize the key elements of GHG accounting for the purposes of understanding how poor accounting undermines democratic environmental governance.

### 1. Greenhouse Gas Accounting and Emissions Omissions

Information disclosure is an essential pillar of a well-functioning democracy, and GHG accounting serves this role in climate mitigation. In order to demonstrate emissions reductions, government agencies need to find ways to tally their GHGs in the first place.<sup>14</sup> These GHG disclosure mechanisms are found in virtually every climate law and policy, from the United Nations Paris Agreement, to corporate climate disclosures, to local climate action plans.<sup>15</sup> In all of these cases, reporting entities use GHG accounting to demonstrate good faith emissions reductions, providing transparency around their roles in contributing to (and mitigating) climate change. Beyond transparency itself, GHG accounting also influences mitigation behavior; as they say in securities law, “you manage what you measure.”<sup>16</sup> When GHG emissions are excluded from actors' inventory reports, they are also excluded from the purview of these accountability mechanisms.<sup>17</sup>

Greenhouse gas accounting also intersects with democratic governance and equality, exacerbating or alleviating injustices. GHG emissions can have both globalized climate change impacts as well as localized air pollution impacts.<sup>18</sup> Many industries produce GHGs. When those industries are located on or near disadvantaged communities, their harms are twofold—one direct and immediate (“place-specific”); another indirect and long-term (“place-agnostic”). This Article strengthens the case for better GHG accounting practices by describing these dual environmental justice impacts (Figure 1) in communities with a high number of GHG-emitting industries. All GHG sources have place-agnostic impacts, since they all contribute to climate change. Many GHG sources also have place-specific impacts via local air pollution. This intersection between GHGs and locally polluting industries has doubly harmful impacts. It therefore

---

<sup>13</sup> For a more detailed analysis, see generally Leehi Yona, *Emissions Omissions: Greenhouse Gas Accounting Gaps*, 49 HARV. ENV'T L. REV. 597 (2025) [hereinafter *Emissions Omissions*] (demonstrating how GHG accounting impacts environmental law and policy, and how unaccounted-for GHG emissions undermine progress on climate change).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> See Louis Lowenstein, *Financial Transparency and Corporate Governance: You Manage What You Measure*, 96 COLUM. L. REV. 1335, 1335 (1996).

<sup>17</sup> *Emissions Omissions*, *supra* note 13.

<sup>18</sup> Leehi Yona, *Climate Injustice, Off the Books*, 123 UCLA L. REV. (forthcoming 2026) [hereinafter *Climate Injustice*].

follows that reducing GHG emissions from these GHG sources will also reduce co-pollution, thereby serving as an additional means of local harm reduction.<sup>19</sup> GHG accounting can thus be a tool to further environmental justice aims, by strengthening the incentives to reduce these emissions.<sup>20</sup>

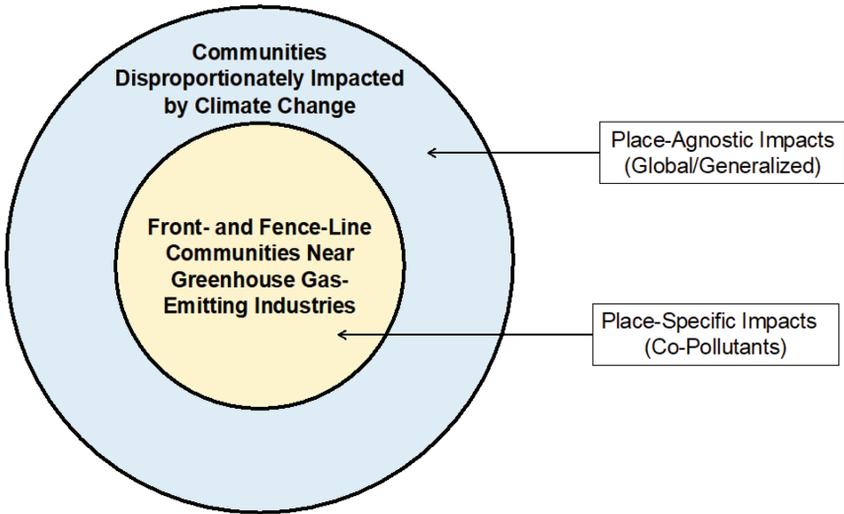


FIGURE 1. Conceptual Representation of the Dual Impacts of Greenhouse Gas Emissions on Environmental (in) Justice. All GHG Emissions Have Negative Place-Agnostic Climate Impacts; Many Also Have Place-Specific Impacts. Disadvantaged Communities Located Near GHG-Emitting Industries Are Thus Doubly Harmed by GHG Emissions.

### B. *Stockton, California*

In many ways, Stockton, California demonstrates how inadequate GHG emissions accounting undermines democratic governance and leads to environmental harms. First, Stockton is at the confluence of many historical and current environmental injustices,<sup>21</sup> and is a center for many unaccounted-for GHG industries, which makes it a suitable exemplar in an analysis of how unaccounted-for GHG emissions can exacerbate existing

<sup>19</sup> See, e.g., Richard L. Revesz, *Air Pollution and Environmental Justice*, 49 *ECOLOGY L.Q.* 187, 252 (2022).

<sup>20</sup> See *Climate Injustice*, *supra* note 18.

<sup>21</sup> See, e.g., McManus et al., *Industry: Reimagining the Future of Industry in Stockton, ArcGIS StoryMaps*, ARCGIS STORYMAPS (Apr. 14, 2021), <https://storymaps.arcgis.com/stories/e9d3eb43e4fa40e7a35a545bcd63c902> [<https://perma.cc/T55M-84YF>]; Little Manila Rising, *Why We Advocate for More Than Local Filipino American History*, LITTLE MANILA CENTER (2022), <https://littlemanila.org/more-than-history> [<https://perma.cc/743T-Z759>]; DAWN BOHULANO MABALON, *LITTLE MANILA IS IN THE HEART* (2013) (outlining the decades of struggle and injustices in Little Manila, Stockton); MICHELLE WILDE ANDERSON, *THE FIGHT TO SAVE THE TOWN* (2022) (exploring the impacts of environmental, racial, and social justice in rural and local California towns, including Stockton).

harms. It serves as a logistics and shipping hub to export agricultural goods from California's interior to the rest of the country and the world, while also serving as an important distribution hub for the San Francisco Bay Area.<sup>22</sup> Stockton's central role makes it home to a concentration of shipping, aviation, ground transportation, and trucking activities.<sup>23</sup> This industrial reality occurs within the context of a long and deep history of socioeconomic and racial injustices which still impact local communities.<sup>24</sup> This history is centuries old and includes colonizers' violence against Native American tribes in the nineteenth century, 1930s redlining entrenching intergenerational poverty, and the razing of communities of color as recently as thirty years ago.<sup>25</sup> These socioeconomic and racial injustices intersect with environmental injustices as well: Stockton's historically redlined neighborhoods also have fewer green spaces, poorer air quality, and more industrial activities than its whiter, wealthier areas.<sup>26</sup> Concurrently, however, Stockton is home to a vibrant and longstanding history of community organizing and local movement leaders fighting for social justice.<sup>27</sup>

Second, Stockton has both a local, city-level inventory for analysis as well as an established history of GHG-related public concerns. Specifically, the City agreed to produce GHG inventories pursuant to a settlement agreement with the Sierra Club and California Attorney General relating to a lawsuit that alleged the City's 2035 General Plan failed to adequately address climate change.<sup>28</sup> Third, states and local governments are playing an increasing role in addressing climate change, and these subnational contexts are opportunities to move climate policy forward.<sup>29</sup> Assessing unaccounted-for GHGs in Stockton might have an impact in motivating statewide climate action in California, since excluded emissions can undermine the state's credibility as a self-proclaimed climate leader.<sup>30</sup> The

---

<sup>22</sup> See, e.g., RS&H CALIFORNIA, APPS., DRAFT ENVIRONMENTAL ASSESSMENT, PROPOSED CARGO APRON AND FACILITIES PROJECT, STOCKTON METROPOLITAN AIRPORT, SAN JOAQUIN COUNTY, STOCKTON, CALIFORNIA app. D, at 4.1.1 (2019) (on file with author) (illustrating the role of Stockton Metropolitan Airport as a hub for Bay Area-bound cargo).

<sup>23</sup> See generally ANDERSON, *supra* note 21.

<sup>24</sup> *Id.*; Little Manila Rising, *supra* note 21.

<sup>25</sup> See generally ANDERSON, *supra* note 21, Little Manila Rising, *supra* note 21.

<sup>26</sup> See generally ANDERSON, *supra* note 21; Little Manila Rising, *supra* note 21.

<sup>27</sup> MABALON, *supra* note 21, at 299–334.

<sup>28</sup> Memorandum of Agreement Between Sierra Club & City of Stockton and Cal. Att'y Gen. (Sept. 10, 2008), [https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910\\_docket-CV-034405\\_settlement-agreement.pdf](https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910_docket-CV-034405_settlement-agreement.pdf) [<https://perma.cc/Z6CW-MK3M>] [hereinafter Mem. of Agreement].

<sup>29</sup> See, e.g., Vicki Arroyo, Kathryn A. Zyla, Gabe Pacyniak & Melissa Deas, *State Innovation on Climate Change: Reducing Emissions from Key Sectors While Preparing for a New Normal*, 10 HARV. L. & POL'Y REV. 385, 586–89 (2016).

<sup>30</sup> See, e.g., Evan Halper, *Ambitious Climate Summit Gets Underway in San Francisco*, L.A. TIMES (Sept. 12, 2018, 12:15 PM), <https://www.latimes.com/politics/la-na-pol-climate-summit-starts-20180912-story.html> [<https://perma.cc/7ECB-SC3U>].

following section summarizes Stockton’s historic and ongoing environmental (in)justices, recognizing that the literature on this topic is too extensive to comprehensively describe here.

By every metric, pollution and environmental harm have severely impacted Stockton communities. Indeed, some argue that “[t]he air quality challenges that the communities in the San Joaquin Valley face are unmatched by any other region in the nation.”<sup>31</sup> By Clean Air Act National Ambient Air Quality Standards,<sup>32</sup> the region is in “Serious Nonattainment”—the highest classification possible<sup>33</sup>—for PM<sub>2.5</sub> air concentrations,<sup>34</sup> and “Extreme Nonattainment”—the highest classification possible<sup>35</sup>—for ozone air concentrations.<sup>36</sup> The human impacts of this negative air quality are substantial: a nationwide study placed Stockton twelfth on a list of the top U.S. cities impacted by PM<sub>2.5</sub> concentrations, responsible for sixty-one excess deaths and over 50,000 “adversely impacted days” (days where people missed school and work or otherwise needed to restrict their activity) in 2017 alone.<sup>37</sup> Because they emit co-pollutants, unaccounted-for GHG industries contribute to these negative impacts on human health.

These substantial air quality impacts exacerbate existing racial and socioeconomic inequalities. Both CalEnviroScreen and EJScreen, the most widely referenced environmental justice tools—metrics that integrate environmental, demographic, and socioeconomic data in California and nationally, respectively—place Stockton at the top of lists for air pollution, traffic pollution, lead pollution, and general adverse exposures, often at the 99th percentile.<sup>38</sup> Stockton is also a “Disadvantaged Community,”<sup>39</sup>

---

<sup>31</sup> SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT, COMMUNITY EMISSIONS REDUCTION PROGRAM: STOCKTON FEBRUARY 2, 2021 DRAFT 1 (Mar. 18, 2021), [https://community.valleyair.org/media/2301/draft-stockton-cerp\\_02032021.pdf](https://community.valleyair.org/media/2301/draft-stockton-cerp_02032021.pdf) [<https://perma.cc/APF4-HB63>] [hereinafter DRAFT CERP].

<sup>32</sup> 40 C.F.R. § 50 (2025).

<sup>33</sup> 40 C.F.R. § 51.1002(b)(2) (2025).

<sup>34</sup> DRAFT CERP, *supra* note 31, at 10.

<sup>35</sup> Ozone Designation and Classification Information, U.S. ENV’T PROT. AGENCY, <https://www.epa.gov/green-book/ozone-designation-and-classification-information> [<https://perma.cc/2YYP-K3TC>] (last updated Sept. 13, 2024).

<sup>36</sup> DRAFT CERP, *supra* note 31, at 10.

<sup>37</sup> Kevin R. Cromar, Laura A. Gladson & Gary Ewart, *Trends in Excess Morbidity and Mortality Associated with Air Pollution above American Thoracic Society–Recommended Standards, 2008–2017*, 16 ANNALS AM. THORACIC SOC’Y 836, 838 (2019).

<sup>38</sup> Cal. Office of Env’t Health Hazard Assessment [OEHHA], *CalEnviroScreen 4.0*, CAL. ENV’T PROT. AGENCY (2021), [https://experience.arcgis.com/experience/11d2f52282a54cee6cac7428e6184203/page/CalEnviroScreen-4\\_0](https://experience.arcgis.com/experience/11d2f52282a54cee6cac7428e6184203/page/CalEnviroScreen-4_0) [<https://perma.cc/AKZ7-29K3>]; *EJScreen: Environmental Justice Screening and Mapping Tool*, U.S. ENV’T PROT. AGENCY (2022), <https://www.epa.gov/ejscreen> [<https://perma.cc/9V7G-HGQE>]; OEHHA, *CalEnviroScreen Scoring and Model*, CAL. ENV’T PROT. AGENCY (2022), <https://oehha.ca.gov/calenviroscreen/scoring-model> [<https://perma.cc/U2ED-2PD9>].

<sup>39</sup> OEHHA, *SB 535 Disadvantaged Communities*, CAL. ENV’T PROT. AGENCY (2022), <https://oehha.ca.gov/calenviroscreen/sb535> [<https://perma.cc/M4K3-A9R5>] [hereinafter *Disadvantaged Communities*]; see also CAL. HEALTH & SAFETY CODE § 39711.

a designation for cities “disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation”<sup>40</sup> and “with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.”<sup>41</sup> Community members are vocal about this environmental racism.<sup>42</sup>

Stockton’s demographics further compound these increased risks and rates of environmental harm. Notably, Stockton has larger Latinx and Asian communities compared to nearby major cities and nationally.<sup>43</sup> Indeed, its Little Manila neighborhood was home to “the largest population of Filipinos in the world outside of the Philippines from the 1920s to the 1960s,”<sup>44</sup> a history marred by subsequent zoning laws that demolished and tore Little Manila apart.<sup>45</sup> Stockton also has fewer residents with undergraduate degrees, as well as both lower median household and per capita incomes, compared to national averages.<sup>46</sup>

In 2007, amidst these inequities, the City of Stockton released a 2035 General Plan that outlined “a blueprint for growth for the City.”<sup>47</sup> In 2008, the Sierra Club sued Stockton, alleging that the City “failed to adequately analyze or mitigate the [2035 General] Plan’s impacts on . . . air quality, . . . water supply and quality, wastewater, . . . safety, biological resources, and climate change,”<sup>48</sup> among others, as required by AB 32.<sup>49</sup> The California Attorney-General was poised to join the Sierra Club in the litigation when all three parties signed a settlement agreement that required the City to, among other things, produce a “Climate Action Plan”, as well as a GHG emissions inventory, in exchange for the Plaintiffs dismissing the case.<sup>50</sup> For all these reasons, Stockton provides a useful case study regarding the ways in which unaccounted-for GHGs exacerbate existing environmental harms.

<sup>40</sup> CAL. HEALTH & SAFETY CODE § 39711(a).

<sup>41</sup> *Id.*

<sup>42</sup> *See, e.g., AB 617 Stockton*, RISE STOCKTON (Oct. 16, 2020), <https://risestockton.org/current-work-1/2020/10/16/ab-617-stockton> [<https://perma.cc/CSJ8-CU9D>]; *What is Environmental Justice?*, RISE STOCKTON, <https://risestockton.org/environmental-justice-overview> [<https://perma.cc/D6SB-UBBY>].

<sup>43</sup> SimplyAnalytics and U.S. Census Bureau American Community Survey and P.R. Community Survey, *Community Demographics Data*, SIMPLYANALYTICS (2021), <https://app.simplyanalytics.com/index.html> [<https://perma.cc/MU74-D5R3>] [hereinafter SIMPLYANALYTICS].

<sup>44</sup> Little Manila Rising, *supra* note 21.

<sup>45</sup> Mabalon, *supra* note 21, at 284.

<sup>46</sup> SIMPLYANALYTICS, *supra* note 43.

<sup>47</sup> Verified Petition for Writ of Mandate at 5, *Sierra Club v. City of Stockton*, No. CV034405 (Cal. Super. Ct., San Joaquin Div. Jan. 9, 2008).

<sup>48</sup> *Id.* at 7.

<sup>49</sup> CAL. HEALTH & SAFETY CODE §§ 38500–38599.11.

<sup>50</sup> Mem. of Agreement, *supra* note 28, at 3–4, 11.

## II. INADEQUATE GREENHOUSE GAS ACCOUNTING HARMS COMMUNITIES

### A. *The Injustices of Unaccounted-for Emissions on the Ground: Stockton, California*

There are many sources of emissions omissions—in California as well as in Stockton in particular—which produce these dual environmental harms. Here, this Article will outline three of those primary sources: international and interstate aviation, stationary sources, and maritime shipping.

#### 1. International and Interstate Aviation

The State of California does not account for international or interstate aviation emissions in its GHG inventory.<sup>51</sup> However, the state measured (but excluded) 58.5 million metric tonnes of carbon dioxide equivalent from aviation in 2018.<sup>52</sup> Stockton’s local airport, the Stockton Metropolitan Airport, is currently a hub for both cargo as well as military operations.<sup>53</sup> The airport’s number of total operations has been trending upward for over a decade<sup>54</sup>—in some cases “an 80% year over year growth”—which is expected to continue into the future.<sup>55</sup> A proposed expansion would allow for a substantial increase in traffic use in the region, a project that is explicitly classist: the proposed project lists “[I]ower than average property costs” as reasons that “make [Stockton] an ideal site” for expanded cargo operations that deliver materials and goods serving all of northern California, including the San Francisco Bay Area,<sup>56</sup> which is the largest destination for Stockton’s incoming ground-based cargo.<sup>57</sup> In other words, the socioeconomic context caused by historical redlining, discrimination, and poverty, make Stockton desirable for industrial aviation.<sup>58</sup>

Furthermore, Stockton Metropolitan Airport’s GHG emissions are also sizable. This Article estimates that the airport’s flights emitted approximately 108,000–1,400,000 metric tonnes of carbon dioxide

<sup>51</sup> California Emissions Inventory, *supra* note 6.

<sup>52</sup> Rhodium Group & Breakthrough Energy, *2021 Baseline Transportation Emissions: State Comparison*, CLIMATEDECK, <https://climatedeck.rhg.com/app/main#/dashboards/60dd03f5dfdbb534407160ac> (last visited June 16, 2022).

<sup>53</sup> RS&H CAL., DRAFT ENVIRONMENTAL ASSESSMENT, PROPOSED CARGO APRON AND FACILITIES PROJECT, STOCKTON METROPOLITAN AIRPORT, SAN JOAQUIN COUNTY, STOCKTON, CALIFORNIA 1-3 (2019) (on file with author) [hereinafter 2019 DRAFT ENV’T ASSESSMENT].

<sup>54</sup> Fed. Aviation Admin., *Terminal Area Forecast, Stockton Metropolitan Airport*, U.S. Dep’t of Transp., <https://taf.faa.gov/> (last accessed May 21, 2024) (to run report, select “facility,” search for “Stockton Metro” in “find” dropdown, select “2022” for “from” and “to” year options). Notwithstanding COVID pandemic-era decreases, total combined operations (itinerant as well as local) have been on an increasing trend since 2012 and are forecasted to only increase on a year-to-year basis through 2049.

<sup>55</sup> 2019 DRAFT ENV’T ASSESSMENT, *supra* note 53, at 1-3.

<sup>56</sup> *Id.*

<sup>57</sup> RS&H CALIFORNIA, *supra* note 22, at 4.1.1.

<sup>58</sup> *See, e.g.,* MCMANUS ET AL., *supra* note 21.

(MTCO<sub>2</sub>e) in 2018.<sup>59</sup> Additionally, the airport's semi-truck operations produced a total of 1,461,209 Vehicle Miles Traveled,<sup>60</sup> amounting to additional emissions of approximately 2,500 MTCO<sub>2</sub>e that year.<sup>61</sup> Further, a proposed airport expansion would increase emissions of criteria pollutants such as carbon monoxide, VOCs, NO<sub>x</sub>, and particulate matter.<sup>62</sup> Stockton doesn't account for any flights' emissions in its GHG inventory, yet the air pollution impacts on the local community are nonetheless taking place.<sup>63</sup> An Environmental Impact Assessment for an airport expansion

---

<sup>59</sup> I used two approaches in this analysis, first using Federal Aviation Administration (FAA) data and second using Bureau of Transportation Statistics (BTS) data.

(I) FAA Approach: There are only three commercial routes to/from SCK: LAS, AZA/PHX, and DEN airports. *Stockton Metropolitan Airport to Add New Weekly Flights to Denver*, FLYSTOCKTON, <https://flystockton.com/stockton-metropolitan-airport-to-add-new-weekly-flights-to-denver> [<https://perma.cc/5HGR-JB7B>]. These calculations will focus on the routes from SCK to LAS and PHX only. The SCK-LAS flight has an average Aircraft Fuel Burn of 3,469 kg of kerosene for the journey, while the SCK-PHX route is 4,791 kg. Carbon Emissions Calculator, Int'l Civil Aviation Org., <https://www.icao.int/environmentalprotection/Carbonoffset/Pages/default.aspx> [<https://perma.cc/6PXQ-UN52>] (select "Passenger", under "Departure, enter "SCK", under "Destination", enter "LAS" or "PHX", respectively, select "One-Way" for "Trip Option", and the resulting aircraft fuel burn/journey is either 3,469 kg or 4,791 kg). Total CO<sub>2</sub> emissions are 3.16 kg per kg of fuel burned. M. Klöwer et al., *Quantifying Aviation's Contribution to Global Warming*, 16 ENV'T RSCH. LETTERS 1, 2 (2021). Multiplying the emissions per fuel burned, and adding the number of flights in Stockton for 2018, we have 3,469 kg fuel per flight x 3.16 kg CO<sub>2</sub>/kg fuel x 87,649 flights x 0.001 metric tonnes/kg = 960,811.8MTCO<sub>2</sub>e emitted. Fed. Aviation Admin., *Terminal Area Forecast*, U.S. Dep't of Transp., <https://taf.faa.gov> (to get the number of flights from SCK, select "Facility", "Summary Report", choose "2018" for both "From" and "To" date range, search "SCK" in the "Find" bar, and then press "Run Report"). Calculated for PHX using the same methodology, the emissions from SCK-PHX are 4,791 kg fuel per flight x 3.16 kg CO<sub>2</sub>/kg fuel x 87,649 flights x 0.001 metric tonnes/kg = 1,326,967.3MTCO<sub>2</sub>e emitted. *Id.* A third estimate of emissions was taken by dividing CARB's total reported aviation emissions in 2018 (58.5 million MTCO<sub>2</sub>e) by the proportion of flight operations in Stockton compared to the entire state's total flight operations (87,649 flight operations in Stockton/10,623,104 flights statewide = 0.00825079), which is 482,671.2 MTCO<sub>2</sub>e. *Id.* (select "State", "Summary Report", 2018 to 2018, search for CA, and press "Run Report").

(II) BTS Approach: Another approach uses flight data submitted to the Bureau of Transportation Statistics. Leehi Yona, *Stockton Aviation Emissions*, OPEN SCI. FRAMEWORK (Sept. 13, 2025), <https://osf.io/92yn3/> (Contains full data and methods for this approach. Click "R Files and Code" then "methods BTS.docx"). This approach relied on flight data for 2018 that included the total distance flown, number of flights, and aircraft type recorded at Stockton Metropolitan Airport (SCK). *Id.* Using R statistical software, the data were combined to analyze the total emissions based on BTS and ICAO data as well as an emissions estimator. *Id.* This approach estimated emissions conservatively at 108,000 MTCO<sub>2</sub>e. *Id.*

<sup>60</sup> RS&H CALIFORNIA, APPS., DRAFT ENVIRONMENTAL ASSESSMENT, PROPOSED CARGO APRON AND FACILITIES PROJECT, STOCKTON METROPOLITAN AIRPORT, SAN JOAQUIN COUNTY, STOCKTON, CALIFORNIA APP. D, at 4.1.1 (2018) (on file with author).

<sup>61</sup> Assuming that semi-trucks produce an average of 1.7kg of CO<sub>2</sub> per mile traveled. See Jason Mathers et al., *The Green Freight Handbook*, ENVIRONMENTAL DEFENSE FUND: NET ZERO ACTION 11 (2015), <https://netzeroaction.org/app/uploads/2023/07/EDF-Green-Freight-Handbook-1.pdf> [<https://perma.cc/7YEP-XBQG>]. 1,461,209 miles traveled x 1.7 kg CO<sub>2</sub>/mile x 0.001 tonnes/kg = 2,484.06 tonnes of CO<sub>2</sub>.

<sup>62</sup> 2019 DRAFT ENV'T ASSESSMENT, *supra* note 53, at 4-4.

<sup>63</sup> See, e.g., Steve H.L. Yim et al., *Global, Regional, and Local Health Impacts of Civil Aviation Emissions*, ENV'T RSCH. LETTERS 10, 1, 6-8 (2015).

project claimed that there would be no environmental justice impacts on the community.<sup>64</sup> Yet increased air traffic would almost certainly cause environmental justice impacts, since aviation activities release pollutants such as lead<sup>65</sup> and VOCs.<sup>66</sup> Moreover, the Stockton Metropolitan Airport is located<sup>67</sup> in an area rated highest for cumulative pollution impacts by the state-level environmental justice indicator.<sup>68</sup> Increased air traffic would increase GHG emissions and thus exacerbate existing environmental harms in an area already at risk.

## 2. Stationary Sources

Many industries, such as manufacturing and energy production, refining, and storage facilities, emit unaccounted-for GHGs via stationary sources. Stockton has many such industries,<sup>69</sup> and six in particular<sup>70</sup>—including biofuels, food manufacturing, and the Pacific Gas and Electric (PG&E) McDonald Island underground storage facility (“McDonald Island”), “PG&E’s largest gas storage field”<sup>71</sup>—have large air pollution impacts, such as particulate matter and carbon dioxide emissions. While some GHG inventory methods account for stationary sources’ direct (place-specific) but not indirect (place-agnostic) emissions, Stockton, surprisingly, excluded both direct *and* indirect stationary sources from its inventory, arguing they “are regulated by the CARB and the SJVAPCD [San Joaquin Valley Air Pollution Control District]. In addition, Stockton has no large stationary sources . . . GHG emissions and potential mitigation would therefore be negligible compared to other inventory sectors.”<sup>72</sup> However, while CARB’s Mandatory Reporting Rule requires that certain stationary sources *report* their emissions to CARB, this rule does not regulate emissions *reductions*. In fact, to the extent that CARB does enforce reductions for certain emissions sources, CARB’s regulation

---

<sup>64</sup> 2019 DRAFT ENV’T ASSESSMENT, *supra* note 53, at 4-4, 4-5; ICF, ADDENDUM TO THE SAN JOAQUIN COUNTY 2035 GENERAL PLAN FINAL ENVIRONMENTAL IMPACT REPORT FOR THE AIRPARK 599 PROJECT AT THE STOCKTON METROPOLITAN AIRPORT, at 3-12–3-13 (2020).

<sup>65</sup> Marie Lynn Miranda et al., *A Geospatial Analysis of the Effects of Aviation Gasoline on Childhood Blood Lead Levels*, 119 ENV’T HEALTH PERSP. 1513, 1513 (2011).

<sup>66</sup> See generally M.E.J. Stettler et al., *Air Quality and Public Health Impacts of UK Airports. Part I: Emissions*, 45 ATMOSPHERIC ENV’T 5415 (2011).

<sup>67</sup> 2019 DRAFT ENV’T ASSESSMENT, *supra* note 53, at 3-26.

<sup>68</sup> *Disadvantaged Communities*, *supra* note 39.

<sup>69</sup> *Id.*

<sup>70</sup> CARB Pollution Mapping Tool (v2.6), *supra* note 10.

<sup>71</sup> *Natural Gas Storage*, PAC. GAS & ELEC., <https://www.pge.com/en/about/pge-systems/gas-systems/natural-gas-storage.html> [<https://perma.cc/UEY3-95EX>].

<sup>72</sup> ICF INTERNATIONAL, CITY OF STOCKTON CLIMATE ACTION PLAN ch. 2, at 2 (Aug. 2014), [https://cms3.revize.com/revize/stockton/Documents/Government/City%20Manager/Sustainability/Climate\\_Action\\_Plan\\_August\\_2014.pdf](https://cms3.revize.com/revize/stockton/Documents/Government/City%20Manager/Sustainability/Climate_Action_Plan_August_2014.pdf) [<https://perma.cc/M8M2-BWDC>] [hereinafter STOCKTON INVENTORY].

explicitly does not pre-empt<sup>73</sup> local governments and other jurisdictions from mandating their own emissions reductions. Finally, the SJVAPCD also expressly states that local governments with land use jurisdiction are typically most responsible for the environmental impacts of stationary sources.<sup>74</sup> Stockton both can and should account for GHG emissions from stationary sources but, instead, excludes them.

Yet current standard practices for GHG accounting explicitly include stationary sources as “in-boundary” (direct) emissions in city GHG inventories.<sup>75</sup> Moreover, these facilities’ impact is far from “negligible”: they directly emitted over 765,000 MTCO<sub>2e</sub> in 2018 alone, along with PM<sub>2.5</sub>, Volatile Organic Compounds (VOCs), and other co-pollutants.<sup>76</sup> Even more so, based on Stockton’s own approach of including “emissions that occur outside the jurisdictional boundary, but only to the extent that such emissions are due to land uses within the City,”<sup>77</sup> even indirect (“place-agnostic”) emissions should arguably be counted in its GHG inventory. It is thus unclear why Stockton excluded these emissions since they both should have been included using standard GHG accounting practices and substantially contribute to GHG emissions. Below, this Article describes the place-agnostic emissions of three such facilities: McDonald Island, DTE Stockton, and the Alto Ingredients ethanol plant (“Alto Stockton”).<sup>78</sup>

First, PG&E opened McDonald Island in 1958.<sup>79</sup> The utility chose Stockton to site the facility because it was “scarcely populated,”<sup>80</sup> presumably due to the risks involved with proximity to underground natural gas storage and the potential for leaking.<sup>81</sup> Indeed, ongoing leaks at McDonald Island directly emit approximately 550 MTCO<sub>2e</sub> annually,<sup>82</sup>

<sup>73</sup> CAL. CODE REGS. tit. 17 § 95676 (2024).

<sup>74</sup> San Joaquin Valley Air Pollution Control District, *Guidance for Assessing and Mitigating Air Quality Impacts* 50 (2015), <http://www.valleyair.org/transportation/GAMAQI.pdf> [<https://perma.cc/9PRW-AD4K>].

<sup>75</sup> ICLEI—Local Governments for Sustainability USA, U.S. Community Protocol for Accounting and Reporting of Greenhouse Gas Emissions 17 (2019), <https://static1.squarespace.com/static/5d1e51dd2a98da000183bc20/t/5db598dd118b996830f7e679/1572182240017/ICLEI+U.S.+Community+Protocol+-+July+2019+-+v1.2.pdf> [<https://perma.cc/3ULK-R7XE>].

<sup>76</sup> CARB *Pollution Mapping Tool* (v2.6), *supra* note 10.

<sup>77</sup> STOCKTON INVENTORY, *supra* note 72, ch. 2, at 1.

<sup>78</sup> The three other facilities (Mizkan America, Campbell Soup Supply Company, and Ingredient Incorporated) are all food manufacturing facilities and thus outside the scope of this Article’s indirect emissions analysis.

<sup>79</sup> Charles A. Lee, *McDonald Island Gas-Storage Field, San Joaquin County, California*, in 1–2 NATURAL GASES OF NORTH AMERICA 102, 103 (B. Warren Beebe & Bruce F. Curtis eds., 1968).

<sup>80</sup> *Natural Gas Storage*, *supra* note 71.

<sup>81</sup> See generally Lee, *supra* note 79.

<sup>82</sup> There are 10,038.87 mscf annual leak-related natural gas emissions from McDonald Island. SoCALGAS, Rulemaking (R.) 15-01-008 to Adopt Rules and Proc. Governing Comm’n Regulated Nat. Gas Pipelines and Facilities to Reduce Nat. Gas Leaks Consistent with S.B. 1371, Leno. and In Response to Data Request SoCalGas R15-01-008 2017 June Report app. 7 at 1–8 (2017). Using an equivalency calculator, these leaks emit 550 MTCO<sub>2e</sub>. *Greenhouse Gas Equivalencies Calculator*, U.S. Env’t Prot. Agency, <https://www.epa.gov/>

a general estimate that does not include higher emissions during years where more leaks were discovered (such as 2016).<sup>83</sup> McDonald Island has a storage capacity of 82 BCF of natural gas,<sup>84</sup> the combustion of which alone would emit approximately 4,500,000 MTCO<sub>2</sub>e, calculated based on U.S. Department of Energy estimates for natural gas.<sup>85</sup> Furthermore, upstream emissions from McDonald Island, calculated using the same Department of Energy estimates, are approximately 350,000 MTCO<sub>2</sub>e.<sup>86</sup>

Second, DTE Stockton is among the largest sources of PM<sub>2.5</sub> pollution in Stockton<sup>87</sup> and reported 555,368 MTCO<sub>2</sub>e in 2018.<sup>88</sup> DTE Stockton creates 320,000 tons of woody biomass-derived fuel yearly,<sup>89</sup> producing a total of 315 GWh annually for PG&E.<sup>90</sup> A conservative estimate for these emissions, drawing on recent peer-reviewed modeling,<sup>91</sup> estimates that life cycle emissions from DTE Stockton alone are approximately 35,000–42,000 MTCO<sub>2</sub>e per year.<sup>92</sup> Finally, the Alto Ingredients (formerly Pacific Ethanol) Stockton facility produces sixty million gallons of corn ethanol per year,<sup>93</sup> reporting 63,015 MTCO<sub>2</sub>e direct emissions to CARB

energy/greenhouse-gas-equivalencies-calculator [https://perma.cc/8DN2-HX5N] [hereinafter *Greenhouse Gas Equivalencies Calculator*] (select “Energy Data”, then “MCF natural gas” (1 mscf = 1 MCF), then enter “10,038.87” as amount).

<sup>83</sup> *Natural Gas Storage*, *supra* note 71.

<sup>84</sup> *Id.*

<sup>85</sup> The EPA equivalency calculator estimated that 82 BCF of natural gas would emit 4,494,810 MTCO<sub>2</sub>e. *Greenhouse Gas Equivalencies Calculator*, *supra* note 82.

<sup>86</sup> Using an average footprint of 8.4 gCO<sub>2</sub>e/MJ of natural gas, emissions would be 347,155 MTCO<sub>2</sub>e (1 tonne/1,000,000g x 8.4gCO<sub>2</sub>e/MJ x 3.6 MJ natural gas/kWh x 0.14kWh/MCF natural gas x 1,000,000,000 MCF/BCF x 82 BCF). Off. of Fossil Energy, U.S. Dep’t of Energy, *LIFE CYCLE ANALYSIS OF NATURAL GAS EXTRACTION AND POWER GENERATION* 46 (2014).

<sup>87</sup> Benek Robertson & Ashley Song, *Reviewing Air District Permitting for Stationary Sources of Air Pollution in Stockton’s Boundary Zone 3* (Apr. 14, 2021) (unpublished report) [https://docs.google.com/document/d/1fkUZEmEdjo4uTppKPiMNV3L\\_EyJ\\_sJo5YgTyVAObFc0/edit?tab=t.0](https://docs.google.com/document/d/1fkUZEmEdjo4uTppKPiMNV3L_EyJ_sJo5YgTyVAObFc0/edit?tab=t.0) [https://perma.cc/4S3S-FPFJ].

<sup>88</sup> *CARB Pollution Mapping Tool* (v2.6), *supra* note 10.

<sup>89</sup> *DTE Stockton, LLC*, Cal. Biomass Energy Alliance, <http://www.calbiomass.org/facilities/dte-stockton-llc/> [https://perma.cc/XZ6V-HREV].

<sup>90</sup> Res. E-4336, Pacific Gas and Electric Company (PG&E) Requests Approval of a Renewable Power Purchase Agreement with DTE Stockton, LLC, at 2 (Cal. 2010).

<sup>91</sup> Emissions estimated using the data from Hui Xu et al., *Regionalized Life Cycle Greenhouse Gas Emissions of Forest Biomass Use for Electricity Generation in the United States*, 55 *Env’t Sci. & Tech.* 14806, *supp.* at 14 (2021). Note: the authors in the referenced paper list two life cycle emissions factors for wood pellets: 110.8g CO<sub>2</sub>e/kWh (softwood and pulpwood) and 132.8g CO<sub>2</sub>e/kWh (softwood only).

<sup>92</sup> Calculated as such: Annual production of 315 GWh = 315,000,000 KWh of energy, multiplied by (lower range) 110.8g CO<sub>2</sub>e/kWh (life cycle GHG emissions for biomass production from wood pellets as illustrated) is 34,902,000,000g CO<sub>2</sub>e, which is 34,902 tonnes CO<sub>2</sub>e (divided by 1,000,000). *Id.* For upper range values: Annual production of 315 GWh = 315,000,000 KWh of energy, multiplied by 132.8g CO<sub>2</sub>e/kWh (life cycle GHG emissions for biomass production from wood pellets as illustrated) is 34,902,000,000g CO<sub>2</sub>e, which is 41,832 tonnes CO<sub>2</sub>e (divided by 1,000,000). *Id.*

<sup>93</sup> *Press Release, Pacific Ethanol Inc., Pacific Ethanol Announces Com. Operation of Stockton, Cal. Ethanol Prod. Facility and Schedules Grand Opening Ceremony* (Sept. 29, 2015

in 2018.<sup>94</sup> Peer-reviewed scientific evidence suggests that indirect life cycle emissions of sixty million gallons of corn ethanol are approximately 350,000–410,000 MTCO<sub>2</sub>e.<sup>95</sup>

Many stationary industrial facilities produce upstream and downstream GHGs, such as fuel production facilities, refineries, and power plants. Refineries are a major source of local air pollution in California,<sup>96</sup> notwithstanding that the largest portion of refinery GHG emissions occur during extraction (upstream) as well as combustion (downstream).<sup>97</sup> Indeed, refineries impact human health beyond unaccounted-for GHGs. For example, refineries emit mercury that pollutes the air, water, and soil.<sup>98</sup> Biofuel refineries also illustrate the impact of unaccounted-for GHGs.<sup>99</sup> The California Air Resources Board (CARB) treats biofuels as carbon-neutral in accounting,<sup>100</sup> despite substantial scientific evidence that they are net GHG sources.<sup>101</sup> As a result, refineries converting their facilities to biofuels from fossil fuels can claim overall GHG reductions,<sup>102</sup> while refinery facilities' pollutant emissions still impact local communities' air quality.<sup>103</sup>

---

8:30 AM), <https://ir.altoingredients.com/news-events/press-releases/detail/78/pacific-ethanol-announces-commercial-operation-of-stockton> [<https://perma.cc/5FGX-73MY>].

<sup>94</sup> CARB *Pollution Mapping Tool* (v2.6), *supra* note 10.

<sup>95</sup> The Department of Energy estimates that a gallon of ethanol contains 76,330 BTU of energy. U.S. DEP'T OF ENERGY, ALTERNATIVE FUELS DATA CENTER FUEL PROPERTIES COMPARISON 2 (2021), [https://afdc.energy.gov/files/u/publication/fuel\\_comparison\\_chart.pdf?6672adf47d](https://afdc.energy.gov/files/u/publication/fuel_comparison_chart.pdf?6672adf47d) [<https://perma.cc/DA2W-WWRU>]. 1 BTU is 0.0011 MJ. As such, 60,000,000 gallons x 76,330 BTU/gallons x 0.0011MJ/BTU = 5,037,780,000 MJ. Based on the most up-to-date research which suggests that corn ethanol has a life cycle GHG footprint of 76 gCO<sub>2</sub>e per MJ, the total footprint of the Alto Stockton facility is 5,037,780,000 MJ x 76 gCO<sub>2</sub>e/MJ x 0.000001 tonnes/g = 382,871.28 MTCO<sub>2</sub>e. Assuming a possible range of 55,000,000–65,000,000 gallons for the facility produces a range from 350,965.34 to 414,777.22 MTCO<sub>2</sub>e. See Michael Wang et al., *Well-to-Wheels Energy Use and Greenhouse Gas Emissions of Ethanol from Corn, Sugarcane and Cellulosic Biomass for U.S. Use*, 7 ENV'T RSCH. LETTERS 1, 9 (2012).

<sup>96</sup> See, e.g., GREG KARRAS, DECOMMISSIONING CAL. REFINERIES: CLIMATE AND HEALTH RISKS IN AN OIL STATE 92 (2020).

<sup>97</sup> See, e.g., Bret Strogen & Arpad Horvath, *Greenhouse Gas Emissions from the Construction, Manufacturing, Operation, and Maintenance of U.S. Distribution Infrastructure for Petroleum and Biofuels*, 19 J. INFRASTRUCTURE SYS. 371, 371 (2013).

<sup>98</sup> See generally S. Mark Wilhelm, *Estimate of Mercury Emissions to the Atmosphere from Petroleum*, 35 ENV'T SCI. TECH. 4704 (2001).

<sup>99</sup> See, e.g., Strogen & Horvath, *supra* note 97, at 364–72; KARRAS, *supra* note 96, at 25.

<sup>100</sup> Cal. Air Resources Board, *California's 2000–2014 Greenhouse Gas Emissions Inventory: Technical Support Document* 61–62 (Sept. 2016), [https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/pubs/reports/2000\\_2014/ghg\\_inventory\\_00-14\\_technical\\_support\\_document.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/pubs/reports/2000_2014/ghg_inventory_00-14_technical_support_document.pdf) [<https://perma.cc/SA97-DPR7>].

<sup>101</sup> See, e.g., Joseph Fargione et al., *Land Clearing and the Biofuel Carbon Debt*, 319 SCIENCE 1235, 1235 (2008).

<sup>102</sup> See, e.g., Cal. Air Resources Board, *California's 2000–2014 Greenhouse Gas Emissions Inventory: Supplement to the Technical Support Document* 61–62 (June 2016), [https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/ghg\\_inventory\\_tsd\\_00-14.pdf](https://ww2.arb.ca.gov/sites/default/files/classic/cc/inventory/ghg_inventory_tsd_00-14.pdf) [<https://perma.cc/UG4V-UCNQ>] (illustrating that biofuel emissions are considered carbon-neutral based on the California Air Resources Board's GHG accounting methodologies).

<sup>103</sup> Benek Robertson & Ashley Song, *Reviewing Air District Permitting for Stationary Sources of Air Pollution in Stockton's Boundary Zone* 12 (Apr. 14, 2021) (unpublished report), <https://>

Community complaints about an unnamed biofuel facility in Stockton—based on location, likely the DTE Stockton biomass processing and fuel production facility (“DTE Stockton”)—stated that “[t]he smell is so bad . . . it turns your stomach and takes your breath away,”<sup>104</sup> illustrating the harms impacting human health. Unsurprisingly, the DTE Stockton facility emits pollutants such as benzene, VOCs, formaldehyde, nitrogen oxides (NO<sub>x</sub>), sulfur oxides, and particulate matter,<sup>105</sup> the latter three of which are criteria pollutants under the Clean Air Act.<sup>106</sup> Accounting for upstream and downstream refinery GHG emissions would internalize what are otherwise externalities to many climate policies, incentivizing mitigation by factoring refinery emissions into the City of Stockton’s emissions reduction pledges. At the same time, reducing refinery GHG emissions would reduce co-pollutants, such as NO<sub>x</sub> and particulate matter,<sup>107</sup> improving local air quality.

### 3. Maritime Shipping

Statewide, CARB measured thirteen million MTCO<sub>2</sub>e emitted by residual marine bunker fuel combustion.<sup>108</sup> The Port of Stockton is a major source of local air pollution, emitting GHGs, PM2.5, NO<sub>x</sub>, VOCs, and other airborne compounds impacting human health.<sup>109</sup> Community members frequently reported nauseating smells and thick smoke plumes emanating from docked ships.<sup>110</sup> The Port of Stockton reported 19,565 MTCO<sub>2</sub>e in a GHG inventory 2018,<sup>111</sup> but explicitly omitted Scope 3 emissions from its analysis.<sup>112</sup> The full life cycle footprint for these maritime shipping activities is certainly higher than the Port’s GHG inventory, possibly between 600,000 and 800,000 MTCO<sub>2</sub>e.<sup>113</sup> Since these are maritime

---

docs.google.com/document/d/1fkUZEmEdjo4uTppKPiMNV3L\_EyJ\_sJo5YgTyVAObFc0/edit [https://perma.cc/CNM4-4RBV].

<sup>104</sup> Summary of Complaints, *supra* note 2, at 12.

<sup>105</sup> CARB *Pollution Mapping Tool* (v2.6), *supra* note 10.

<sup>106</sup> 42 U.S.C. § 7473.

<sup>107</sup> Robertson & Song, *supra* note 103, at 3.

<sup>108</sup> California Emissions Inventory, *supra* note 6, at 5.

<sup>109</sup> See generally McManus et al., *supra* note 21; Eva Merico et al., *Shipping and Air Quality in Italian Port Cities: State-of-the-Art Analysis of Available Results of Estimated Impacts*, 12 *ATMOSPHERE* 536 (2021).

<sup>110</sup> Summary of Complaints, *supra* note 2, at 12.

<sup>111</sup> STARCREST CONSULTING GROUP, INVENTORY OF AIR EMISSIONS FOR THE CALENDAR YEAR 2018, PORT OF STOCKTON, CALIFORNIA, ES-2 (Feb. 2021) <https://www.portofstockton.com/wp-content/uploads/2023/02/Port-of-Stockton-2018-EI-Report.pdf> [https://perma.cc/QCL7-NAUD].

<sup>112</sup> *Id.* at 59.

<sup>113</sup> Data were not readily available to measure these indirect emissions for Stockton specifically, so to estimate Scope 3 emissions, I researched every port GHG inventory listed in the EPA Ports Initiative and found four inventories which included Scope 3 emissions from the Port of Seattle. See U.S. ENV’T PROT. AGENCY, *Best Port-Wide Planning Practices to Improve Air Quality*, <https://www.epa.gov/ports-initiative/best-port-wide-planning-practices-improve-air-quality> [https://perma.cc/D2SX-A5BQ]. I then used the Port of Seattle’s Scope 3 emissions

shipping emissions, which are an excluded GHG inventory category, the entirety of the Port's emissions is excluded from local and state government GHG inventories, despite being both measurable *and* already calculated by the Port.

### B. *Estimating Stockton's Actual Greenhouse Gas Emissions*

Here, I present empirical analyses to assess Stockton's GHG inventory. Stockton is home to many industries<sup>114</sup> that emit unaccounted-for GHGs and co-pollutants, primarily<sup>115</sup> aviation, stationary sources,<sup>116</sup> and maritime shipping.<sup>117</sup> The following section of the Article will describe these different industries and estimate<sup>118</sup> their total emitted unaccounted-for GHGs, using 2018 as a reference year.<sup>119</sup> Some unaccounted-for GHGs are "place-specific", located within Stockton's geographical boundaries, while others are "place-agnostic," meaning that they are part of the supply chain<sup>120</sup> of those same Stockton-based activities, but located upstream and downstream (outside of geographical boundaries, also known as

---

inventory to extrapolate Scope 3 emissions from Stockton's Port. See PORT OF SEATTLE, *Maritime GHG 2023*, [https://www.portseattle.org/sites/default/files/2025-02/Maritime%20Scope%203%20GHG%20Inventory\\_v2.pdf](https://www.portseattle.org/sites/default/files/2025-02/Maritime%20Scope%203%20GHG%20Inventory_v2.pdf) [<https://perma.cc/WU95-DH7T>]. Assuming that the types of activities across different U.S. ports are comparable, I extrapolated the proportion of the Scope 3 to combined Scope 1 and 2 emissions from the Seattle inventories and applied them to Stockton, finding a possible range of emissions from 591,404 to 842,818 MTCO<sub>2</sub>e based on Stockton's Scope 1 emissions. More data are needed to estimate Scope 3 emissions from shipping, but the Port of Seattle here serves as a suggestive (and imperfect) comparison. To reflect this uncertainty, estimated Scope 3 emissions for the Port of Stockton are rounded to the nearest one significant figure.

<sup>114</sup> McManus et al., *supra* note 21.

<sup>115</sup> Many mobile sources, including trucking activities, are important GHG and local air pollution sources.

<sup>116</sup> CARB *Pollution Mapping Tool* (v2.6), *supra* note 10.

<sup>117</sup> Yanju Chen et al., *A New Mobile Monitoring Approach to Characterize Community-Scale Air Pollution Patterns and Identify Local High Pollution Zones*, 272 *ATMOSPHERIC ENV'T* 1, 3 (2022).

<sup>118</sup> This Article used many data sources to estimate unaccounted-for GHGs, with methods for each estimation included in a footnote when appropriate. In some cases, exact GHG emissions data were available for these estimates, which are reflected in the precision of the estimates themselves. In other cases, data were limited and the GHG estimates include assumptions based on existing literature and/or comparable GHG inventories. In those cases, GHG emissions are stated as a "best estimate" range, referring to upper and lower limits of rounded numbers when materially different, and emissions rounded accordingly. Estimates were rounded to two significant figures.

<sup>119</sup> This Article used 2018 as the reference year to estimate Stockton's unaccounted-for GHG emissions because it was the only year for which the most reliable data for all the three categories of unaccounted-for GHGs listed here (aviation, stationary sources, and shipping) were available, although some of these sectors had more recent yearly data (up to 2020). Finally, 2018 is a more representative reference year relative to 2020, which included many industry disruptions due to the onset of the COVID-19 pandemic which impacted GHG emissions-related activities.

<sup>120</sup> See, e.g., CDP, *Guidance for Companies*, <https://www.cdp.net/en/guidance/guidance-for-companies> [<https://perma.cc/T4N5-N8X7>]; World Resources Institute and World Business

“Scope 3” or “indirect” emissions). This Article estimates both these unaccounted-for GHG types.

### 1. Annually Excluded Emissions Are Many Times More Than Stockton’s Climate Action Plan Goals

This Article describes and estimates unaccounted-for GHGs in Stockton, California, displayed in the table below. To put this number into context, Stockton’s unaccounted-for GHGs are twelve to fifteen times the city’s proposed emissions reductions,<sup>121</sup> and three and a half to five times the most generous estimates<sup>122</sup> of Stockton’s accounted-for GHGs.<sup>123</sup> The unaccounted-for emissions in this Article alone not only eclipse the city’s entire mitigation plans, but they are also many times the city’s total accounted-for GHG emissions. As a result, Stockton’s unaccounted-for GHGs are so large that, if left unaccounted for, they could render the city’s proposed GHG emissions reductions meaningless.

---

Council for Sustainable Development, *The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard* (rev. ed. 2015).

<sup>121</sup> Climate Action Plan: City Council Meeting, City of Stockton, attach. A at 2 (Dec. 2, 2014), <http://stockton.legistar.com/gateway.aspx?M=F&ID=f658358d-2a29-4535-bd2c-f407da9f26cb.docx> [<https://perma.cc/2FX8-BHZ6>]. Note: this is the only GHG inventory that Stockton has published; while the City’s website references that a new inventory will be released in Fiscal Year 2021–2022, it had not been posted as of Sept. 15, 2025.

<sup>122</sup> The City of Stockton has, as of Sept. 2025, only produced a GHG inventory for the year 2005. STOCKTON INVENTORY, *supra* note 72, at ES-5. In that inventory, however, the City also included a Business-as-Usual (“BAU”) projection for GHG emissions in 2020, as well as the projected GHG emissions for 2020 that incorporates state and local-level climate mitigation policies. *Id.* Since 2020 emissions are certainly higher than 2018 emissions (emissions are consistently projected to trend upward), using both the BAU and projected emissions as a range (2,122,000–2,672,519 MTCO<sub>2</sub>e) is certainly an overestimation of reported/included GHG emissions and thus can serve as a conservative estimate of reported emissions for 2018. *Id.*

<sup>123</sup> STOCKTON INVENTORY, *supra* note 72, at ES-5.

TABLE 1. Estimated Unaccounted-For (Excluded) Greenhouse Gas Emissions Sources in Stockton, California, in 2018.

<b>Emissions Source</b>	<b>Emissions (MTCO<sub>2</sub>e)</b>
<i>Place-Specific (Direct) Emissions</i>	
Aviation Emissions	
Aircraft Emissions	108,000–1,400,000
Semi-Truck Vehicle Emissions	2,500
McDonald Island Measured Leaks	550
Shipping and Maritime Emissions	19,565
<i>Stockton's Omitted Direct Stationary Source Emissions</i>	
	765,584
<i>Total Direct Excluded Emissions</i> <sup>124</sup>	900,000–2,200,000
<i>Place-Agnostic (Indirect) Emissions</i>	
Stationary Source Emissions	
McDonald Island Facility Upstream	350,000
McDonald Island Facility Downstream	4,500,000
DTE Stockton Biomass Facility	35,000–42,000
Alto Stockton (Pacific Ethanol) Facility	350,000–410,000
Shipping and Maritime Emissions	600,000–800,000
<i>Total Indirect Excluded Emissions</i>	5,800,000–6,100,000
<i>Total Excluded Emissions from Direct and Indirect Sources</i>	6,700,000–8,300,000
<i>Conservative Estimate of Stockton's Maximum Total Reported Emissions</i> <sup>125</sup>	2,102,000–2,672,519
<i>Increase in Total Reported Emissions When Adding Total Excluded Emissions</i> <sup>126</sup>	3.5x – 5x
<i>Stockton Climate Action Plan Emissions Reduction Goal (Total)</i> <sup>127</sup>	565,005–570,746

<sup>124</sup> To accurately represent the precision of this summed range, numbers have been rounded to the nearest two significant figures, as that matches the precision of the largest contributors to that sum.

<sup>125</sup> STOCKTON INVENTORY, *supra* note 72, at ES-5.

<sup>126</sup> Range estimated by calculating ratio of total emissions/reported emissions and rounding to two figures. Lower bound:  $(6,700,000+2,672,519)/2,672,519 = 3.51$ . Upper bound:  $(8,300,000+2,102,000)/2,102,000 = 4.95$ .

<sup>127</sup> *Id.* at ES-10.

## 2. Greenhouse Gas Accounting Practices are Undemocratic

The climate crisis has and always will expose failures in our democratic systems.<sup>128</sup> Current GHG accounting policies, however, represent yet another instance of how existing governance systems strain to address climate change. These challenges are important for several reasons.

First, emissions omissions undermine democratic ideals of transparency and accountability. When GHG inventories exclude emissions, the public loses the ability to access and understand a government agency's full GHG footprint. In so doing, an agency's full impact on climate change is obscured, making it challenging for democratic participation in climate mitigation policies. Moreover, undercounting emissions allows agencies to absolve themselves of some of the responsibility for their GHG emissions.

Second, emissions omissions exacerbate inequities and environmental harms. As Part II demonstrates, unaccounted-for GHG emissions sources also emit harmful co-pollutants which negatively impact the local air quality of nearby communities in Stockton. Furthermore, in a separate analysis, I also demonstrate how these co-pollutant impacts extend beyond Stockton and reflect the status quo at many maritime shipping ports in the United States.<sup>129</sup> Indeed, the harms of inadequate GHG accounting undermine democratic ideals of equality in many other contexts nationwide.

Third, emissions omissions hinder participatory efforts to shape local government. By excluding GHG emissions sources which disproportionately and negatively impact marginalized communities, GHG accounting practices do not serve the public interest.

### III. RECOMMENDATIONS

This Article highlights how better GHG accounting can serve environmental justice goals due to the overlap between unaccounted-for GHG sectors and the local air pollution, as well as climate impacts, that those sectors produce. Many legal and policy advocacy opportunities to address Stockton's unaccounted-for GHGs exist; the Article outlines a subset of options as illustrative potential approaches specifically targeting the City of Stockton. Other options—including broader statewide advocacy or legal action against individual industries such as the Port of Stockton—merit future analysis but are beyond this section's scope. Nevertheless, this Article illustrates the underrecognized potential of GHG accounting as an additional tool for environmental justice and democratic governance.

---

<sup>128</sup> See Marcello Di Paola & Dale Jamieson, *Climate Change and the Challenges to Democracy Symposium: Climate Wrongs and Human Rights*, 72 U. MIAMI L. REV. 369 (2017).

<sup>129</sup> See *Climate Injustice*, *supra* note 18.

A. *Leveraging the California Environmental Quality Act for More Just Emissions Accounting*

There are a few avenues to leverage legal action to account for unaccounted-for GHGs in Stockton. One option concerns the California Environmental Quality Act (CEQA), a state-level procedural statute which requires any governmental agencies—including municipalities or county governments—to adequately assess and mitigate negative environmental impacts from agency projects.<sup>130</sup>

The civil suit provision under CEQA was the basis for legal claims that the Sierra Club and California Attorney General brought against the City of Stockton in 2008, alleging that Stockton’s 2035 General Plan insufficiently addressed climate change concerns.<sup>131</sup> The parties later reached a settlement agreement between the Sierra Club, the California Attorney General, and the City of Stockton, and the city’s Climate Action Plan and its accompanying GHG inventory (in fact, the only inventory Stockton has yet published) were among the settlement terms.<sup>132</sup> Generally, any new CEQA claims related to this General Plan from 2008 would be time-barred per CEQA’s statute of limitations for filing a claim, which requires parties to file claims within thirty-five days in the most generous instances.<sup>133</sup> (In any event, the 2008 General Plan has been overtaken by the 2018 updated General Plan.) However, parties to the 2008 settlement (the Sierra Club and/or California Attorney General) could file a breach of contract claim, arguing that the City failed to uphold its settlement obligations. One potential challenge to this legal option is the City’s statement in a letter—accompanied by letters from counsel for the Sierra Club and California Attorney General that concurred with its contents<sup>134</sup>—that its obligations under the agreement pertaining to the GHG inventory and Climate Action Plan would be discharged upon “consideration” and “adoption” of the Climate Action Plan,<sup>135</sup> which

---

<sup>130</sup> CAL. PUB. RES. CODE §§ 21000(g), 21002.1(a), (b).

<sup>131</sup> See generally Verified Petition for Writ of Mandate, *supra* note 47.

<sup>132</sup> Mem. of Agreement, *supra* note 28, at 3–4.

<sup>133</sup> CAL. CODE REGS. tit. 14, § 15112 (2025).

<sup>134</sup> Letter from Rachel B. Hooper, Attorney at Shute, Mihaly & Weinberger L.L.P., representing Sierra Club, to Alliance for Responsible Planning (Oct. 7, 2008), [https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910\\_docket-CV-034405\\_settlement-agreement.pdf](https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910_docket-CV-034405_settlement-agreement.pdf) [<https://perma.cc/Z6CW-MK3M>]; Letter from Cliff Rechtschaffen, Special Assistant Attorney General, for Edmund G. Brown, California Attorney General, to Alliance for Responsible Planning (Oct. 7, 2008), [https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910\\_docket-CV-034405\\_settlement-agreement.pdf](https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910_docket-CV-034405_settlement-agreement.pdf) [<https://perma.cc/Z6CW-MK3M>].

<sup>135</sup> Letter from J. Gordon Palmer, Jr., Stockton City Manager, to Alliance for Responsible Planning 2 (Oct. 7, 2008), [https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910\\_docket-CV-034405\\_settlement-agreement.pdf](https://climatecasechart.com/wp-content/uploads/case-documents/2008/20080910_docket-CV-034405_settlement-agreement.pdf) [<https://perma.cc/Z6CW-MK3M>].

was released in 2014.<sup>136</sup> Notably, the 2008 agreement is silent regarding enforcement mechanisms.<sup>137</sup>

A second approach could involve using CEQA to intervene in future administrative actions taking place in Stockton. These actions can include elements of the General Plan that need to be updated regularly or any updates that may trigger new Environmental Impact Reports, such as large industrial activities requiring City approval and other “projects” that potentially have environmental impacts per CEQA.<sup>138</sup> Examples of such projects include zoning ordinances as well as conditional use permits,<sup>139</sup> and also include projects “capable of causing indirect physical changes in the environment,”<sup>140</sup> not just direct ones. More recent requirements under California Senate Bill 1000, which stipulate that General Plans must include an “environmental justice element,”<sup>141</sup> can also bolster these interventions. Under CEQA, administrative actions deemed projects would require proper assessment and mitigation of environmental impacts, including a requirement that lead agencies “describe, calculate or estimate” GHGs “based to the extent possible on scientific and factual data.”<sup>142</sup> In such a way, individuals and groups can intervene through litigation by claiming that an Environmental Impact Report is insufficient because it underestimates GHG emissions by excluding unaccounted-for GHGs. Additionally, the timeliness of such interventions makes this approach more promising than action connected to the Sierra Club’s 2008 litigation. Moreover, any party may submit comments in upcoming administrative actions, which would enable a much broader number of actors and organizations to intervene, compared to the limitations in the Sierra Club litigation.

### *B. Advocacy Opportunities for More Just Greenhouse Gas Accounting*

Advocacy strategies are another option to make unaccounted-for GHGs count, in the absence of sufficient opportunities within the legal system. For example, community organizations could underscore Stockton’s lack of regular GHG inventories and its poorly produced inventory to begin with. They could further pressure the City (and, to a certain extent, state government, since Stockton receives state support to reduce emissions)<sup>143</sup> and argue that Stockton’s Climate Action Plan

---

<sup>136</sup> See generally STOCKTON INVENTORY, *supra* note 72.

<sup>137</sup> For instance, it does not include a C.C.P. § 664.6 enforcement provision. See generally Mem. of Agreement, *supra* note 28.

<sup>138</sup> CAL. PUB. RES. CODE § 21065 (2023).

<sup>139</sup> CAL. PUB. RES. CODE § 21080(a) (2023).

<sup>140</sup> Union of Med. Marijuana Patients, Inc. v. City of San Diego, 7 Cal. 5th 1171, 1199 (2019).

<sup>141</sup> See, e.g., CAL. GOV’T CODE § 65302(h)(1) (2023).

<sup>142</sup> See, e.g., CAL. CODE REGS. tit. 14 § 15064.4(a) (2023).

<sup>143</sup> See, e.g., STOCKTON INVENTORY, *supra* note 72, at ES-10 (illustrating that the majority of Stockton’s GHG emissions reductions are due to state measures); *Disadvantaged Communities*,

must be much more robust to adequately reduce GHG emissions, which may then reduce local pollution because of GHG emissions reductions in previously unaccounted-for sectors with co-pollutants. They could further argue that Stockton's unaccounted-for GHGs render the City's 2021 Community Emissions Reduction Program deficient.<sup>144</sup> Such public pressure may lead to a more stringent Climate Action Plan that would be otherwise unachievable through legal action.

Stockton has a deep history of community organizing, with RISE Stockton,<sup>145</sup> a coalition of at least sixteen organizations including Restore the Delta, Little Manila Rising, the Environmental Justice Program of the Catholic Charities Diocese of Stockton,<sup>146</sup> and organizations advocating for food security, affordable housing, and energy justice. That being said, Stockton is not the only city where opportunities to advocate for better GHG accounting exist. Many local governments in California produce GHG inventories. While the Article here outlined Stockton-specific advocacy opportunities, these opportunities could serve as a blueprint for other communities as well.

## CONCLUSION

Current greenhouse gas accounting practices undermine democratic governance and pose challenges for environmental justice. When governments exclude emissions sources from their greenhouse gas inventories, they undercut efforts to hold emitters accountable for their contributions to climate change. Here, I present Stockton, California, as an exemplar of how emissions omissions hinder progress on climate change and harm local communities.

Greenhouse gas accounting represents the challenges to law and democracy at the subnational level through the lens of environmental (in) justice. It is essential for those responsible for climate change to fully account for their emissions contributions, both to address the climate crisis, but also to uphold the democratic values of accountability, transparency, and equal participation that form the core of our modern society.

---

*supra* note 39; CAL. HEALTH & SAFETY CODE § 39711 (outlining investments in designated “Disadvantaged Communities”).

<sup>144</sup> See generally Draft CERP, *supra* note 31.

<sup>145</sup> *Meet the Partners*, RISE STOCKTON, <https://risestockton.org/partners> [<https://perma.cc/DCT9-K7TW>].

<sup>146</sup> *About Us*, ENVIRONMENTAL JUSTICE STOCKTON, <https://ejstockton.org/about/> [<https://perma.cc/7ZPR-ZSST>].