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Berkeley Public Policy Journal

Fall 2024

Photo by Max Wolf-Johnson

Photo by Chelsea Hall

A Note from the Editors

Dear Reader,

With the 2024 reelection of Donald Trump, the United States enters another chapter marked by division and questions about the resilience of our democratic institutions. This moment has amplified debates about the role of policy in guiding the nation through challenges that touch communities across the country—from climate to Gaza to income inequality.

As students and future practitioners of public policy at UC Berkeley, we are tasked with understanding and addressing these issues in a way that prioritizes intellectual rigor and justice for those marginalized by the systems that be. In an era of misinformation, siloed media consumption, and political polarization, it is even more crucial to bring together a variety of perspectives on policy issues and communicate them clearly to a wide audience.

It is our pleasure then to present the Fall 2024 edition of the Berkeley Public Policy Journal.

In this issue, we explore urgent policy themes that define our time. A study on educational equity in California's public schools, explored through a discussion on facilities funding, reminds us that public policy must address deep-rooted inequities if it is to serve all students.

Meanwhile, an examination of wildfires in Greece highlights the increasing global threat of climate change and underscores the challenges of coordinating local responses to it.

We also examine the evolving dynamic between the Bay Area and California's Central Valley, particularly under the economic influence of platform capitalism. This relationship spotlights the tension between urban innovation and rural livelihoods, raising critical questions about how tech-driven economies impact broader social and economic structures across the state.

This edition's fourth article, an analysis of California's strained energy grid, evaluates an alternative grid management model and decentralized energy infrastructure to meet mounting energy demands and resilience needs in the state.

Finally, an interview with Goldman School faculty on the new Democracy Policy Initiative reflects an ongoing commitment to fortifying democratic norms and exploring pathways to increased civic trust—both of which are vital.

These articles aim to illuminate the pressing issues of our age, advancing a conversation focused on the well-being of communities and the continuing importance of public policy. We are grateful to our editing staff, our authors, and our guest editors for their diligent efforts on this edition. We hope you come away from this edition more informed, engaged, and inspired about policy issues.

Sincerely,

Your editors-in-chief: Courtney Fong, Chelsea Hall, Alex Lei, John McPherson, Max Wolf-Johnson

Photo by Georg Eiermann on Unsplash

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Establishing an Equilibrium of Educational Equity

by Spencer Lively

Edited by
Maya Lawton
Carlos Flores
Bella Lalanne

Photo by
Kenny Eliason on Unsplash

Abstract:

Spencer Lively proposes an alternative system, the Index Model, for funding improvements to California's K-12 school facilities. By aligning funding amounts with the number of students served in each school district, he argues that the Index Model is more equitable than current funding distribution methods, which exacerbate the educational disparities between low-income districts and wealthier districts.

***Note from the Editors:** although AB 247 was proposed legislation at the time of authorship, it was approved and signed into law the summer of 2024.*

Introduction

The system used by California to distribute funding for the modernization of K-12 school facilities—the School Facilities Program (SFP)—is fundamentally inequitable. Between 1998 and 2022, the wealthiest school districts in California have received the largest amount of modernization funding, while the poorest districts have received the least. Modernization funding has the following goals:

> *"Modernization funding is designed to extend the useful life of existing facilities, or to enhance the physical environment of a school. Typical projects include, but are not limited to: structural upgrades, access compliance upgrades, air conditioning, plumbing, lighting, and electrical systems, roof replacement, fire safety improvements, and furniture and equipment." (Office of Public School Construction, 2016)*

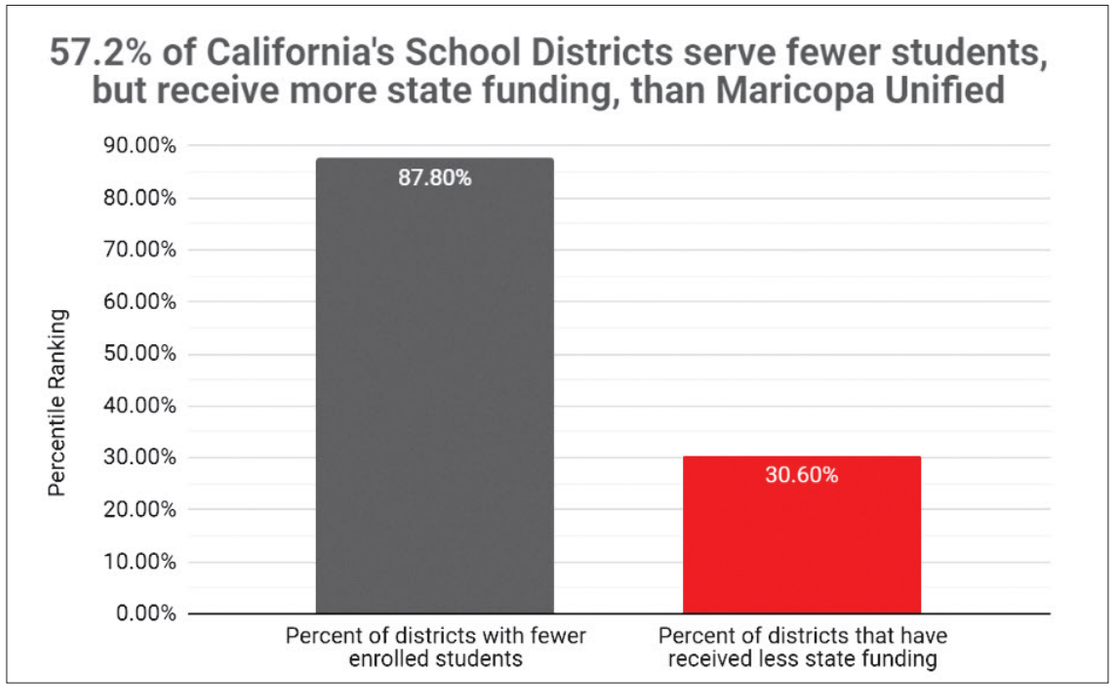
This has led to school districts with the lowest property values to face worsening facility conditions—directly impacting their students' educational outcomes. Students in substandard buildings can earn test scores 5 to 17 percent below and suspension rates up to 14 percent higher than students who receive instruction in buildings with good conditions.[1,2,3] Students from property-poor communities already face structural disadvantages limiting their intergenerational economic mobility.[4] The state of California has a moral and legal duty to equalize—not exacerbate—the opportunity of every student to succeed. However, the SFP does the opposite:

> *"Statewide, 38% of students go to schools that do not meet the minimum facility standards. 25% of students attend schools with damaged floors, walls, or ceilings, and 14% go to schools with malfunctioning electrical systems. 15% of students attend schools that have at least one extreme deficiency, with underlying issues like gas leaks, power failures, and structural damage. Districts with lower capital spending and smaller tax bases report higher levels of deficiencies." (PPIC, 2020)*

This article proposes a shift away from the district-level approach historically used to determine state funding for public school facilities to an Index Model, a system-level approach designed to more equitably prioritize funding for districts which have historically received the least. By definition, equity is relative. Much like Schrodinger's cat, the existence of equity is impossible to determine at the individual level. Therefore, it is only upon comparison of each district's funding *relative to its peers* that we can identify equity *or* inequity. California's reliance on a district-level approach to determine its funding for public school facilities is symbolic of a blindfolded child attempting to hit a mythological "equity piñata" by chance. As we have seen, *this does not work*.

Instead, California must consider the funding of these districts relative to one another—a system-level approach—in order to begin proactively, intentionally, and progressively improving the equity of its state funding. The specific approach recommended by this article is for the state to compare and prioritize access to funding for districts according to the difference between first, the number of districts compared to whom serve a greater number of enrolled students; and second, the number of districts compared to whom receive a greater amount of state modernization funding. By directly comparing these relative metrics of enrollment size and amount of funding received,

Figure 1: Maricopa Unified



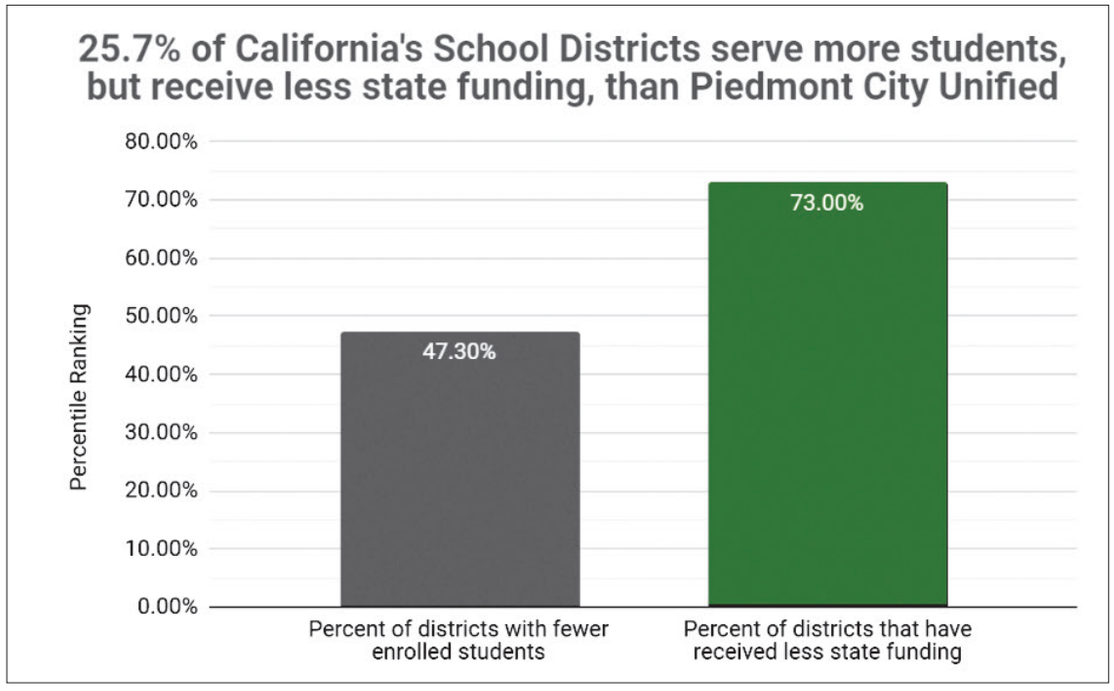
California will be able to *prioritize* funding to districts like Maricopa Unified and conversely *deprioritize* funding to districts like Piedmont City Unified—over time, bringing both districts closer to an amount of funding appropriate for their respective sizes (See Figures 1 and 2). As will be shown, this leads funding to largely be tied to the number of students each district serves and more effectively eliminates the effect of both property values and income than currently proposed legislation, such as Assembly Bill 247.[5] In short, the proposed funding model establishes an equilibrium of funding such that, over time, the funding each district receives is brought into alignment with the number of students they serve.

Background

Prominent studies have found that California's funding model for public school facilities, the School Facilities Program (SFP), greatly advantages districts in wealthier communities—particularly through its Modernization Program.[6,7,8] To fund their facility projects, school districts rely on capital revenue raised through local bond measures, funded by local property taxes. Consequently, the local property values of each district directly limit the amount they can raise for these projects. School districts in wealthier communities can raise substantially more capital revenue and this, combined with the matching system used to distribute state funding, leads these districts to receive substantially more state funding compared to districts in lower-wealth communities.

In California, the state funding available for the SFP to distribute is not refreshed each year based on the annual tax revenue generated. Instead, funding availability is conditional upon California voters approving bond proposals placed on their ballots by the legislature. One such bond proposal, AB 247, is currently in consideration by the legislature. In addition to refilling the funding available to the SFP, this proposal

Figure 2: Piedmont City Unified



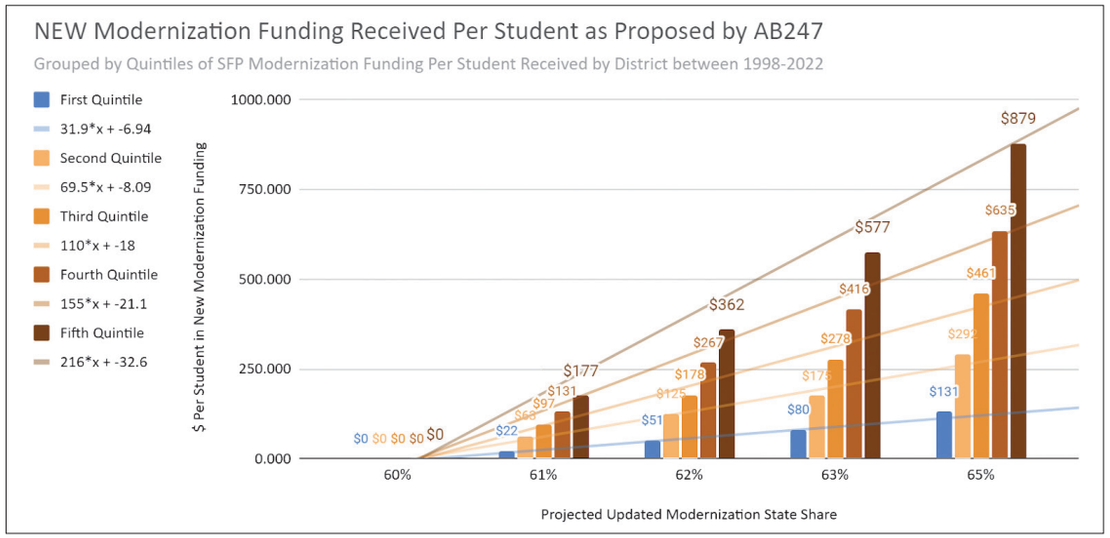
would make slight adjustments to the formula used to distribute this funding. However, as will be shown, these adjustments do not adequately reverse nor mitigate the inequitable funding distribution of the last 25 years. This has led the the nonprofit law firm and advocacy group, Public Advocates Inc., to send a letter to the Governor's office threatening legal action if their demands that California directly address these inherent inequities are not met.[9]

Assembly Bill 247 (AB 247)

Known as the "Transitional Kindergarten Through Community College Public Education Facilities Bond Act of 2024," AB 247 is a state general obligation bond act that would provide $14 billion to the state's SFP to construct and modernize education facilities. In response to concerns regarding funding disparities, AB 247 introduces a point system that would assess and modify a school district's *mandated local contribution* for each project funded by SFP. In descending order of importance, points earned are based on a district's 1) Unduplicated Pupil Percentage (UPP)[10], 2) Bonding Capacity Per Student (BCPS)[11], and 3) if a district has fewer than 200 students. However, this point system will not improve equity.

Figure 3 separates districts according to quintiles of funding received per student between 1998 and 2022 and the proportion of state funding per project each district is projected to receive under AB 247.[12] Logically, an equitable model would see the districts which have historically received the least—the 1st quintile—receive more than the 5th. That would not happen under AB 247. Instead, Figure 3 shows that those in the 5th quintile, even districts whose projected state share of project costs would only increase by 1 percent, would still receive significantly more in new funding than those in the 1st quintile—even districts whose projected state share of project costs would increase by the maximum 5 percent. Thus, the largest beneficiaries of AB 247 would be

Figure 3: Under AB 247, the smallest increase in funding (61%) to the most well-funded districts (5th) is larger than the biggest increase (65%) given to the least funded (1st).



the districts that already receive the greatest amount in funding—a result that would increase, not reduce, the disparity.[13]

Index Model

While AB 247 further increases existing disparities, the Index Model would instead establish a self-correcting equilibrium of equity. This model would ensure that as districts become overfunded over time, it gradually becomes more difficult to receive funding, and as districts become underfunded, it gradually becomes easier.

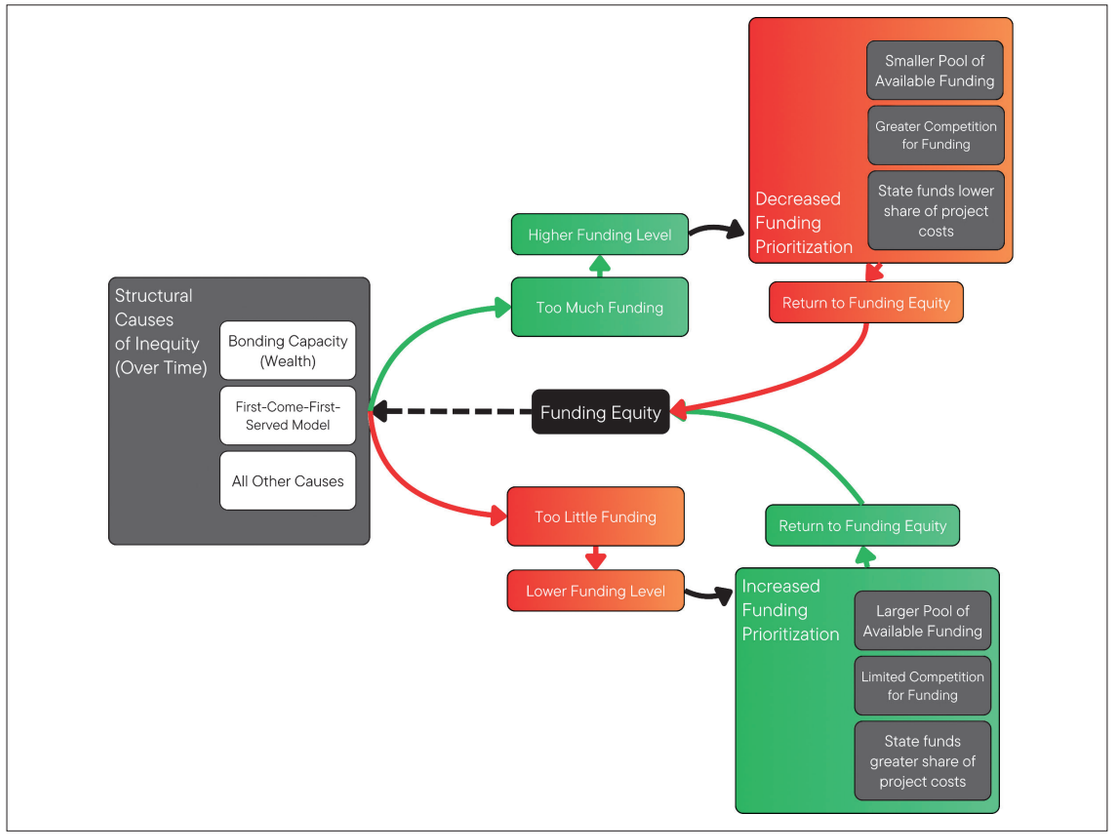
Fundamentally, the Index Model alters the financial incentives of districts on the two extremes of the funding distribution, such as Piedmont City Unified and Maricopa Unified, to bring them closer to an acceptable funding level relative to their enrollment. For example, the model would prioritize funding to Maricopa Unified until there are no more than 10 percent of school districts in California that are smaller in size yet more funded than that district.

This emulates California's Local Control Funding Formula's (LCFF) mandated funding per student formula while recognizing the inherent differences in funding for school facilities compared to its operations. Put simply, it is impossible to ensure complete equality of facilities funding per student.[14] Instead of an annual mandate, this model directly prioritizes funding opportunities until each district achieves adequate funding parity relative to their peers.

To accomplish this, the Index Model:

1. Compares the difference in percentile ranking of enrollment size to the percentile ranking of state funding for each school district in California, and sorts each district into one of five funding levels from most underfunded (e.g. Maricopa Unified) to most overfunded (e.g. Piedmont City Unified). Each funding level is then assigned a different:
    a. Amount of state funding reserved exclusively for applications by districts in that level, with the most underfunded being reserved the most funding for their applications and applications from the most overfunded limited to the smallest amount of funding.

Figure 4: Diagram of Equilibrium Effect



    b. State share of project costs, with the state covering 80 percent of the costs for each project by the most underfunded districts, but only covering 40 percent of the costs for the most overfunded.
2. Optionally, the state can decide to weigh the enrollment of certain students more heavily than others for the purposes of generating the percentile ranking of enrollment. This prioritizes the amount of funding received by districts with those students. In other words, this allows the state to shift districts with, for example, greater proportions of low-income students to the right on the X-axis of the relative enrollment distribution—otherwise, the model only adjusts the Y-axis by altering the rate of new funding received by each district relative to its peers.

Funding levels

The state can create five levels of funding, in addition to the existing Financial Hardship program, to prioritize funding to the most underfunded and deprioritize the most overfunded. Below is an example of how these levels might be assigned.

For example, the district that is more underfunded than 90 percent of other underfunded districts would be eligible for funding from Bucket A. Likewise, the district that is more overfunded than 50 percent of other overfunded districts would only be eligible to receive funding from Bucket D. Additionally, it is recommended the state continue to provide financial hardship funding to, for example, extremely small districts and the Los Angeles Unified School District (LAUSD), as both cases

Figure 5: Assignment of Funding Levels

Level	Severity	Percentile Thresholds	Percentiles Comparing:
A	Extreme	66.67%-99.99%	Underfunding
B	Moderate	33.34%-66.66%	
C	Mild	0.01%-33.33%	
	N/A (LAUSD)	Outlier	N/A
	Mild	0.01%-33.33%	Overfunding
D	Moderate	33.34%-66.66%	
E	Extreme	66.67%-99.99%	

Figure 6: Available Funding & Proportion of Project Costs Funded by State

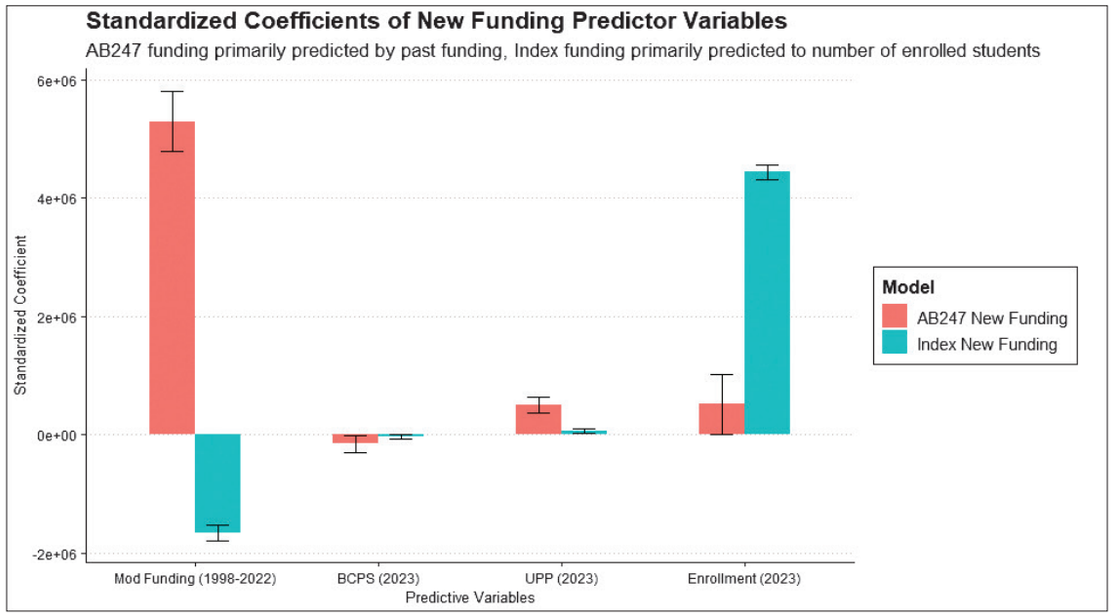
Level	Amount Allocated	Enrollment	Available $/Student	% State Share
A	$3 billion	716,162	$4,189	80%
B	$2.5 billion	817,331	$3,059	70%
C	$6 billion	3,109,795 478,721 1,176,057	$1,929	60%
D	$1 billion	613,448	$1,630	50%
E	$0.5 billion	366,734	$1,363	40%

represent extreme outliers for which their inclusion in any universal funding model would distort equity outcomes statewide.

As the thresholds are determined by the enrollment and funding of each district, relative to all other districts in the state, the state can periodically update them to reflect changes in enrollment and improvements to funding equity. Over time, by improving the funding equity across districts, the 'deviation' from zero of the entire distribution will decrease, causing the thresholds between each funding level to become more stringent over time (though the number of districts in each funding level would remain roughly the same). Rather than set a single standard in stone, this model would ensure the state's standard for equity will continue to improve over time until it can reach an eventual acceptable goal, such as the 10 percent threshold mentioned earlier.

The above distribution would cause the most historically underfunded districts to receive $4,189 in new funding per student—triple the amount made available to districts that have historically been overfunded. Notably, nothing would change for districts assigned to Level C. However, if any district currently assigned to Level C receives an inordinate amount of funding in the future, or receives an atypically low amount of funding relative to their size, then they would eventually shift up into Level D or down into Level B, respectively.

Figure 7: Comparing the Predictors of New Funding Received Under Each Model



If a district shifts from Level C to Level D, they would become restricted to a smaller funding pool, competing against better-resourced districts, and the state would only cover 50 percent of the costs for any projects. If an overfunded district in Level D *needs* more funding, they would still have access to the smaller funding pool and simply be expected to cover more of the costs themselves. However, if they only *want* a project, then it would make greater financial sense for them to wait until they shift back down into a lower funding level for the state to cover a substantial amount more of the costs.

Conversely, if a district shifts from Level C to Level B, then they would be given access to a greater funding pool, compete only against other under-resourced districts, and only be expected to cover 30 percent of the project costs until their funding reaches relative parity. These factors directly address two of the most significant reasons for districts to become underfunded:

1. the 'first-come-first-served' system disadvantaging under-resourced districts, and

2. low-wealth districts being unable to match 40 percent of the project costs given their limited bonding capacities.

Regardless of the reason for any district to become underfunded over time, simply being underfunded causes those districts to receive greater access to funding than their peers until they can reach adequate parity. Notably, while these underfunded districts are incentivized to apply for more state funding, they would still be effectively prevented from abusing this privileged access because of their limited bonding capacities, required local voter approval of General Obligation (GO) bonds, and the review of the State Allocation Board (SAB).

Enrollment Weighting

There are a number of endogenous factors that may lead some school districts to require additional funding per student relative to others. To account for these differences, the state can choose to weight the enrollment of certain groups in its calculation of the enrollment percentile rankings

Figure 8: Enrollment Pct. Rank & Past Funding Pct. Rank, grouped by Quintile of Past Funding Received Per Student

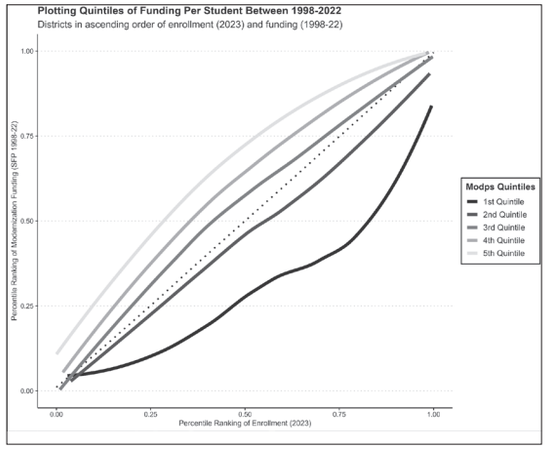


Figure 9: Enrollment Pct. Rank & Index Model Funding Pct. Rank, grouped by Quintile of Past Funding Received Per Student

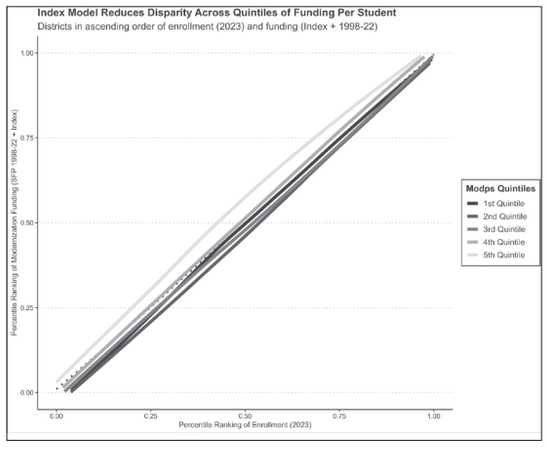
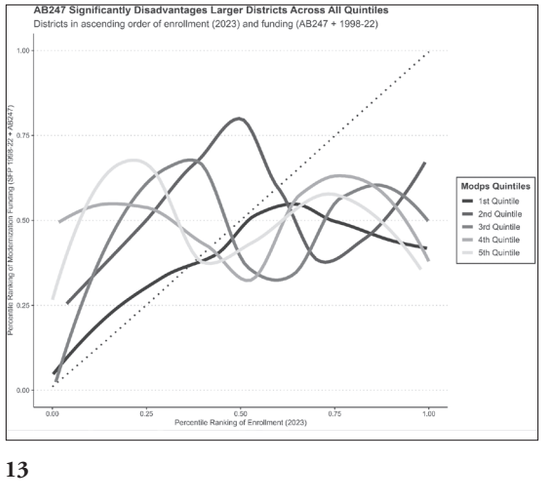


Figure 10: Enrollment Pct. Rank & AB 247 Funding Pct. Rank, grouped by Quintile of Past Funding Received Per Student



used to determine which funding level each district is assigned into. For example, similar to the LCFF, districts with higher UPP could be given greater funding priority reflective of the lack of resources available to that district. This also allows the state to better discern high-density, low-income urban districts whose high property values may lead them to appear wealthier than they are, from the suburban districts whose high property values are more reflective of their actual wealth.

An example: Unduplicated Pupil Percentage (UPP)

If District A has 90 students who are English Language Learners (ELL) and/or eligible for Free & Reduced Price Meals (FRPM) of 100 students total (90 percent UPP), and UPP is weighted an extra 10 percent, then District A would be considered as having a weighted enrollment of 109 [(90 x 1.1 = 99) + 10 = 109] for the purpose of determining their enrollment percentile relative to other districts in California. If District B has 0 ELL and/or FRPM students of 105 total (0 percent UPP), then the weighted enrollment of District B would not change from 105 total students. Consequently, the weighting would result in District B losing funding priority compared to District A, which went from 100 (unweighted) to 109 (weighted).

However, for this small nudge to result in an actual change in funding for these two districts, they would need to already straddle the border of two funding levels. This makes these weights particularly useful for more effectively sorting districts found in those gray areas without touching those that are clearly under- or over-funded.

Comparing model equity

Figure 7 compares the predictive power of each variable on the amount of new funding

Figure 11: Modernization Funding Per Student Percentile & Projected Funding Per Student for Different Enrollment Sizes

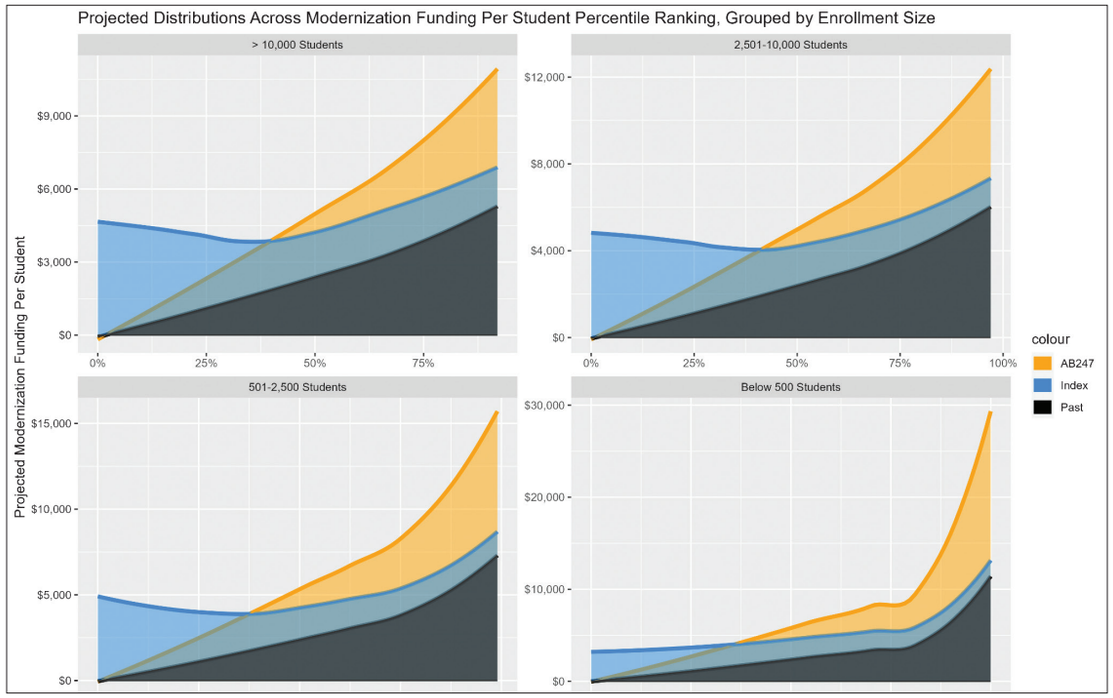


Figure 12: UPP Percentile Rank & Projected Funding Per Student for Different Enrollment Sizes

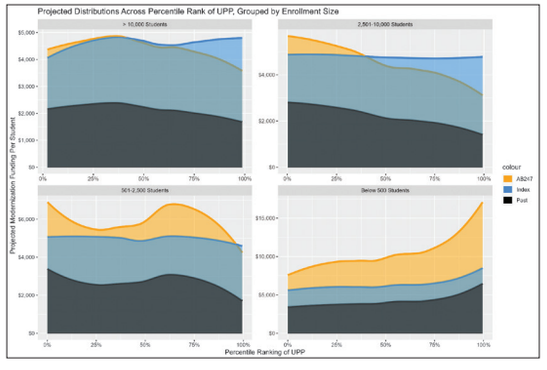
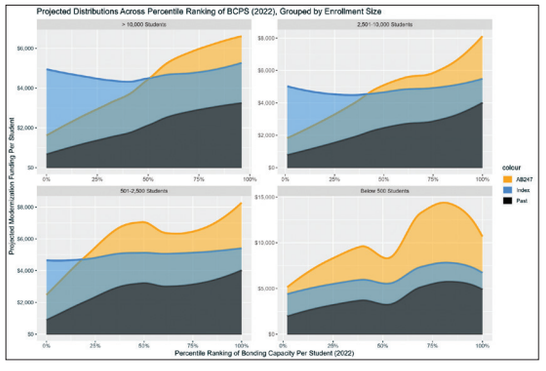


Figure 13: BCPS Percentile & Projected Funding Per Student for Various Enrollment Size



that would be distributed under AB 247 or the Index Model. This chart shows that AB 247 is largely continuing past funding trends, with very minor shifts. However, the Index Model is shown to directly reverse past funding inequities, diminish the significance of BCPS (aka wealth), and largely determine each district's funding according to the number of students they serve. In the short term, the Index Model will shift funding toward the districts that have historically received the least and, in the long-term, bring us closer to funding parity per student.

Figures 8 through 10 plot districts in each quintile of modernization funding per student received between 1998-2022, with districts ranked by enrollment (X-axis) and funding (Y-axis), and the dotted line representing "per student parity." Figure 8 shows the relationship between enrollment and funding for districts in each of the five

quintiles of funding per student since 1998, Figure 9 shows how these positions would shift after adding $13 billion in funding via the Index Model, and Figure 10 shows the same under AB 247. As can be seen, the

Index Model would dramatically reduce the disparity in funding between the quintiles of funding per student, whereas AB 247 would create a skewed funding distribution toward the smaller districts in each quintile. For the state to align its facilities funding formula with the per-student equality of the LCFF, it should adopt the Index Model.

Figures 11 through 13 show the effect of applying the new funding from the Index

Model or AB 247 across UPP (proxy for low-income) and BCPS (proxy for wealth), grouped by enrollment size. Figure 11 shows that AB 247 will only further increase the difference in Modernization Funding Per Student received by each district, whereas the Index Model would distribute more of the new funding to the districts that have historically received the least. This is represented by the flatter slope of the Index Model (blue) relative to AB 247 (orange). This is also true for UPP and BCPS, with the Index Model shown to negate (flatten) the effect of income and wealth in determining the amount of state funding each district receives.

Conclusion

California will come much closer to achieving meaningful equity through distribution of its modernization funding via the Index Model, which has been shown to 1) improve funding parity per student, 2) reverse and negate the effect of property wealth on the amount of state funding received, and 3) resolve the 'first-come-first-served' issue faced by under-resourced districts. This alternative is a more equitable approach to school funding compared to both the current SFP model and the new point model proposed by AB 247.

Endnotes

1. California Department of Education. School Facilities Improve Learning. (n.d.) https://www.cde.ca.gov/ls/fa/re/documents/learnercenter.pdf.

2. Earthman, Glen I. "School Facility Conditions and Student Academic Achievement." Los Angeles: UCLA Institute for Democracy, Education, and Access, 2002.

3. Boese, Stephen, and John Shaw. "New York State School Facilities and Student Health, Achievement, and Attendance: A Data Analysis Report." Albany, NY: Healthy Schools Network, Inc., 2005.

4. Chetty, Raj, and Nathaniel Hendren. "The Impacts of Neighborhoods on Intergenerational Mobility II: County-Level Estimates." The Quarterly Journal of Economics 133, no. 3 (August 2018): 1163-1228. https://doi.org/10.1093/qje/qjy006.

5. As of 2023, Piedmont City Unified has an enrollment size larger than 47.3 percent of other districts in California. However, between 1998 and 2022, the district has received more modernization funding from the state than 73 percent of other districts. Conversely, Maricopa Unified, which is the 87.8 percent most enrolled district in the state, has only received more funding than 30.6 percent of other districts.

6. Lafortune, Julien, and Nikolay Gao. "Improving K–12 School Facilities in California." Public Policy Institute of California, 2020. https://www.ppic.org/publication/improving-k-12-school-facilities-in-california/.

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8. Brunner, Eric J., and Jeffrey M. Vincent. "Financing School Facilities in California: A Ten-Year Perspective." Getting Down to Facts II. Stanford, CA: Stanford University, 2018. https://gettingdowntofacts.com/publications/financing-school-facilities-california-10-year-perspective.

9. Fensterwald, John. "Property-Poor Districts Demand Fairer Funding for School Facilities." EdSource, February 22, 2024. https://edsource.org/2024/property-poor-districts-demand-fairer-funding-for-school-facilities/706323.

10. UPP: Free & Reduced Price Meal eligible students and/or English Language Learning students.

11. BCPS: bonding capacity of each district is determined as a percentage of its assessed property values (2.5 percent for unified districts, 1.25 percent otherwise), which is then divided by the number of students enrolled as of 2022-23.

12. For example, the 5th quintile includes districts which received more funding than at least 80 percent of other districts in the state.

13. As the 60 percent tier is the SFP status quo of 60 percent state share for modernization projects, those districts do not receive any new funding, which is why they are shown to receive $0 in new funding.

14. For reasons such as the funding being per-project, on a match-based system, dependent on statewide bond approval and local bond approval, and the immense heterogeneity of California's 900+ school districts.

Institutional Inferno: Addressing Wildfire Impacts in Greece

by Chelsea Hall

Edited by
Claire Sullivan
Alex Lei

Photo by
Alika Obrazovskaya

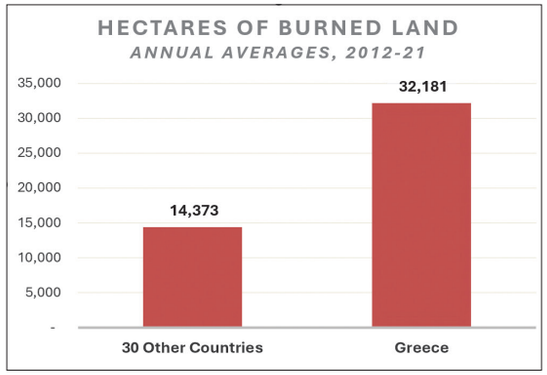
Abstract:

Chelsea Hall explores tradeoffs among two alternative policy approaches for mitigating wildfire impacts in Greece: creating a prescribed burn insurance program while leveraging the goat population, and partnering with the Greek Fire Service to fund community wildfire protection plans. Ultimately, she advocates for the establishment of community wildfire protection plans in order to foster community and interagency partnerships, arguing that these locality-specific adaptation policies constitute a more integrated and equitable approach to fire management.

Wildfires in Greece: exploring the problem

Human-caused climate change is exacerbating wildfires in Greece, ravaging the land, displacing residents, and claiming lives. Studies show that climate change has extended wildfire seasons and increased the number and intensity of wildfires as landscapes dry out and ineffective fire management practices continue.[1] Few countries have faced such intense global attention in these areas as Greece.

Data shows that Greece's wildfires are especially numerous and intense. Last year's wildfires numbered in the hundreds. In July 2023 alone, fires burned 190,200 hectares of land.[2] In August, a blaze that broke out in the northeast of the country quickly became "the largest single wildfire recorded in the EU."[3] These fires are merely a continuation of a stark trend: the summer months of 2021 saw an immense heatwave, resulting in a high of 47.1°C that helped ignite 84 separate wildfires. These fires comprised the largest swath of burned land in Greece in over a decade.[4,5] Average hectares of burned land between 2012 and 2021 was about 2.2 times larger in Greece than the combined average of 30 other countries.[6]



Greece's catastrophic wildfires are razing the land and destroying native species. Between 2001 and 2022, wildfires destroyed 155,000 hectares of tree cover in Greece, representing 63% of total tree cover loss. Narrowing in on 2021, wildfires accounted for 93% of that year's tree cover loss.[7] In light of such drastic changes to the landscape, "species abundance and biodiversity are expected to decline." Particularly vulnerable are the abundant conifer forests of the Peloponnese region comprising native species that thrive in lower temperatures.[8]

Recent wildfires in Greece left a multifaceted human toll. The aforementioned August 2023 blaze in the northeast destroyed several homes and claimed 20 lives, including 18 asylum seekers who are believed to have been trapped by the flames.[3] Rural subsistence communities are disproportionately affected: a community whose main industry is the harvesting of pine resin lost its livelihood after the 2021 fires, while an elderly farmer lost his entire flock of sheep.[9] Olive trees, fig trees, and other species upon which local agriculture depend are also severely impacted with each wildfire season.[8] The Rhodes fire in July 2023 spurred the evacuation of over 20,000 people, the "largest wildfire evacuation Greece has seen." Roughly 10,000 British tourists were among the evacuees[10], highlighting a central aspect of Greece's economy: tourism. The "crucial resource" of tourism is expected to take massive hits from worsening wildfire seasons.[8] To further illustrate the socio-economic impacts, research prior to the 2021 fires predicted a roughly 2% lapse in overall Greek GDP due to climate change, a projection that will have only worsened after the unprecedented fires of 2021 and 2023.[11]

Greece's current approach

Climate change is the main driver of the severity of Greece's wildfire problem.[12,13] However, this article focuses on what the Greek Forest Service could do to adapt to

and mitigate the impacts. Compared to similarly situated countries in the Southern European Union, "Greece emerges as ineffective in coping with forest fires,"[14] primarily due to inadequate forest and fuel management practices and deficient use of available funding.

Governmental emphasis on prevention of fires is sparse. Mitigatory policies in Greece are weak and focus mainly on "influencing behaviors so as to reduce negligence and deter arsons,"[14] rather than more prevalent sources and causes of ignition such as poor vegetation management. Greek Law 998/1979 remains the most influential regulation for fire management, but it was passed over 40 years ago and includes outdated and restrictive measures.[15] In the EU more broadly, there is a marked "lack of exchange between key stakeholders in forest fire management," causing regulatory stagnation.[16] For Greece specifically, the national budget completely deprioritizes fire prevention.[15]

Further, the Greek government is not making full use of the *external* funding available for forest management and climate adaptation. Under its National Strategic Reference Framework for 2021-2027, the EU has allocated €336 million to Greece, "earmarked particularly for the prevention and management of fire risk."[17] This presents an excellent opportunity for the country to enhance its wildfire risk mitigation strategies. However, Greece has historically struggled to spend down EU funds for such purposes: through the Greek Rural Development Program for 2014-2022, €148 million was set aside for sustainable forest management. As of May 2023, only €63.9 million, or 43%, had been spent.[17]

Greek government must intervene

The Greek Forest Service has the social and legal responsibility to help the nation and region adapt to ever-escalating wildfire risk. Vulnerable populations such as rural, low-income, and migrant communities will continue to be disproportionately impacted by catastrophic fires, representing an environmental justice crisis. Legally, Greece is obligated as a signatory of the 2015 Paris Agreement to make good on its commitment to "[increase] the ability to adapt to the adverse impacts of climate change and foster climate resilience" (Article 2).[18] Finally, three-quarters of forested land in Greece is publicly owned, either entirely by the State or under mixed public-private ownership,[15] presenting an opportunity for the Greek Forest Service to leverage recent funding and showcase innovative, large-scale wildfire prevention strategies.

Criteria for an effective policy solution

Given the inherent urgency of climate adaptation, potential policy solutions should be effective, equitable, and politically feasible. In assessing effectiveness, I ask whether the proposed solution would decrease the number and severity of climate-related wildfires in Greece. In assessing equity, I ask whether the proposed solution would benefit the populations most impacted by the climate crisis in Greece. And in assessing political feasibility, I ask whether the proposed solution would achieve passage by the Greek government given current political and social conditions in the country.

Analysis

The status quo: reactive fire suppression

Current wildfire prevention and adaptation measures are minimal in Greece, as "fire management… is generally focused on fire suppression" after a blaze begins.[19] National law bans all intentional fire use, including prescribed burns. Instead of instituting meaningful wildland-urban interface (WUI) vegetation management programs such as prescribed burning or clearing of low-lying vegetation, recent policy changes embrace punishment-oriented, after-the-fact approaches such as escalating arson fines.[20] The Greek Forest Service is small and deals mainly with violations of forestry law, such as complaints of illegal logging and hunting.[21] Despite its name, it currently "has little involvement" in wildfire planning, adaptation, or community engagement efforts.[15]

There are two EU-sponsored initiatives that had potential for fostering improvement, but upon closer inspection, fall flat against the immediacy of Greece's climate emergency: 1) the ARCFUEL project of 2014 created maps of fuel types for the Mediterranean region, which would enable "production of reliable and accurate estimations of wildfire spread and behaviour for improved decision-making"[16], but the datasets do not appear to be publicly available online and outcomes are unclear; and 2) despite its ambitions, the LIFE-IP AdaptInGreece project, which would implement various national strategic plans for "adapting Greece to climate change" and is in effect for the 2016-2025 policy cycle, does not yet have specific, actionable objectives for climate change adaptation on its website.[22]

Existing wildfire management practices in Greece are incredibly deficient. Its fire suppression policies have led to dangerous fuel buildup, but Greece lacks meaningful WUI vegetation management programs.[23] The Greek Forest Service, Greek Fire Service, and local communities are siloed in their approaches to wildfire, if approaches exist. Meanwhile, fires are only getting worse: scientists predict that climate change will widen the annual period of extremely high fire risk in Greece to an additional 20 days between 2021 and 2050 and 40 days between 2071 and 2100.[8] Without policy changes, Greece will continue to see record-breaking wildfires, and therefore the status quo is ineffective.

The status quo contributes to an inequitable distribution of climate impacts among residents of Greece. Migrants, asylum seekers,[24] and rural and low-income residents[9] are bearing the brunt. The consequences of worsening wildfires for nations "beyond Europe's borders, in countries with less capacity to prepare, respond and adapt, will be even greater."[25] Unfortunately, climate justice in Europe is still a long way off from being properly quantifiable[26], but the current rate of catastrophic wildfires in Greece carries an inequitable human toll.

Status quo policies are already in effect, ordinarily deeming them highly politically feasible. However, existing conditions are becoming less and less palatable for Greeks. A storm of criticisms against the Greek Forest Service and Fire Service followed the 2021 blazes, and in 2023 environmentalists called for government investments in prevention with renewed vigor.[27,28] These considerations reduce long-term feasibility.

Policy alternative 1: Create prescribed burn insurance program and leverage goat population

This alternative entails legalizing prescribed burns in Greece, conducting prescribed burns on State-owned land, incentivizing private participation by establishing an insurance program to lighten liabilities for prescribed burns, and utilizing herds of grazing goats to supplement the effects of prescribed burns. The insurance program would mimic California's SB 926, signed into law by Governor Gavin Newsom in September 2022.[29] Private landowners in California had long balked at prescribed burning for fear of neighbor lawsuits. In response, SB 926 funds $20 million in "prescribed fire

damages" in the event of claims. According to Michael Wara, director of Stanford's Climate and Energy Policy Program, risks remain "really low," and the main driver for the insurance program is to alleviate public apprehension.[30] For greatest impact, Greece's prescribed burn legalization and insurance program would be heavily marketed in border-urban areas.[31] Targeted grazing "works best when it's used in combination with other wildfire reduction measures, especially prescribed burning," according to Lynn Huntsinger, professor of rangeland ecology and management at UC Berkeley.[32] Conveniently, Greece has the largest goat population of any country in Europe, an asset that the Greek Forest Service could leverage in its wildfire adaptation approach.[33]

Research is favorable to implementing fuel reduction practices such as prescribed burning in Europe.[34] Evidence suggests that prescribed burning in the U.S. has been tremendously successful, especially "if conducted before an area is impacted by wildfire."[35] A study of wildfires in Oregon and Arizona discovered a correlation between sizeable prescribed burns administered between 2015-2020 and fewer wildfires in 2020, "[suggesting] that prescribed burns may help reduce fuel load in future large wildfires."[36]

Although data is not yet available on the effects of California's prescribed burn insurance program, communications to Greek residents should emphasize that 99.84% of prescribed burns in the U.S. go exactly to plan. When they do not, consequences are typically minimal.[35] This rhetoric, coupled with the insurance program, could increase private participation in the prescribed burn program.

The use of grazing goats in tandem with the above efforts augments this alternative's effectiveness. A goat grazing program yielded immense benefits to fire risk reduction in Portugal. Since implementing the program in 2018 following catastrophic wildfires in 2017, the number of annual wildfires has decreased by 50%.[37]

By effectively reducing the number and severity of wildfires, evidence suggests that this alternative would also lessen the unequal social and economic impacts.[34] The prescribed burn insurance program would lower potential costs for low-income Greeks, equalizing risk across income groups. To further increase equity, the Greek Forest Service should consider generous compensation amounts for participating goat farmers. However, because Forest Services resources would be devoted largely to its own prescribed burns, it is assumed that farmer compensation would be somewhat limited, rendering this alternative moderately equitable.

With increasing pressure from citizens, the Greek legislature may be primed for changes to existing fire management law. However, the legalization of prescribed burning would be a lengthy and fraught process due to persistent political and social apprehensions. A U.S. Forest Service survey of 106 wildfire-impacted or -knowledgeable Greeks bodes ill for the political feasibility of this alternative. Over 75% of survey respondents rejected the idea that there is a "fire deficit in Greek landscapes." Only 9% of respondents expressed that fuel reduction "can play a major role" in mitigating wildfires.[15] As a result, political feasibility appears to be a dim prospect.

Policy alternative 2: Partner with Greek Fire Service to fund Community Wildfire Protection Plans

This alternative entails establishing closer working relationships with the Greek Fire Service and local officials to deliver funding for the development of Community Wildfire Protection Plans (CWPPs). "Collaborative planning" in wildfire adaptation strategies is central to successful implementation.[38] In direct consultation with residents and fire management experts, localities would each develop their own CWPP complete with a community map, establishment of WUI boundaries, risk assessment, and proposed projects unique to proximate conditions. Authorizing legislation would need to be somewhat vague, as case studies indicate that the presence of few parameters "[encourages] communities to develop CWPPs that reflect their local social and ecological contexts."[39] However, there would need to be provisions stipulating early and intense inclusion of residents to ensure their long-term buy-in.[40] The CWPP funds would be concentrated in urban-border and rural areas, as a study published last year found that funding for fire prevention needs to be concentrated in high fire-risk areas rather than distributed evenly.[41]

CWPPs have been part of a long-standing federal program in the U.S.[42], but citizen involvement in wildfire adaptation was slow to earn scholarly attention in the European context.[43] However, new evidence suggests that fire-related initiatives in Southern Europe are especially effective when approached from the "bottom up."[44]

In the U.S., the CWPP program has achieved impressive geographic scope: "the vast majority of the land base of the fire-prone western U.S." is covered by the programs.[45] However, existing literature fails to establish a direct link between CWPPs and fewer or less severe wildfires, instead principally highlighting the benefits of community cohesion.[46] Further, a 2021 analysis notes issues with "implementation, plan updates, effective communication, engagement strategies and more" over time.[47] This alternative would necessitate thoughtful and iterative programming on the part of the Greek Forest Service.

Despite the lack of direct empirical evidence for this alternative's effectiveness, individual success stories abound. For example, the community of Montecito lost only seven buildings to the 2017 Thomas Fire out of the 1,000 buildings destroyed in total. Montecito's CWPP and community buy-in were paramount to its successful mitigation of structural impacts.[48] Because of accounts like this, this alternative achieves moderate effectiveness.

This alternative is the most transformative in terms of agency approaches to collaboration and societal engagement. Truly effective disaster risk reduction requires such bold changes: "challenging existing structures, power relations, vested interests, and dominant narratives that persist within systems and… perpetuate poverty, inequality, and vulnerability."[49] Targeting fire-prone rural areas with funding and resources ensures equitable distribution to localities that need it most, such as low-income farming communities. Scholarly work finds that the same influences both affect climate vulnerability and restrict "access to power and resources, thus perpetuating social inequities."[42] This alternative does the most to address these social phenomena through integrated community engagement and resource distribution, rendering it highly equitable.

Enhanced collaboration and partnership with the Greek Fire Service and local communities, especially in cases of joint public-private land ownership, would alleviate the uncertainties around "fuzzy boundaries" that currently stifle fire prevention efforts.[15] In addition, this alternative does not depend upon legislative changes, although legaliza-

tion of prescribed burns would undoubtedly aid in building robust CWPPs on the community level. Importantly, the United States Forest Service survey of Greek residents indicated a strong majority who believed that "improved collaboration among the fire management agencies" will be the most effective policy strategy for mitigating wildfire risk, and that the Greek Forest Service specifically "should become more engaged on all stages of wildfire planning and suppression."[15] Therefore, this alternative is highly feasible.

Policy recommendation

Ultimately, I recommend that the Greek Forest Service pursue Alternative 2: Partner with the Greek Fire Service to Fund Community Wildfire Protection Plans. Alternative 2 is highly equitable and politically feasible because of its community-level emphasis and presence of few structural constraints, which outweigh its relatively moderate effectiveness. As disaster researcher Janne Parviainen points out, "natural hazards become disasters only when they exceed the capacities of those affected to cope with their impacts."[50] The Greek Forest Service must expand its capacity by establishing enduring community and agency partnerships that will combat the catastrophic and inequitable impacts of wildfire, thereby ensuring the longevity of Greece's rich environmental and social landscapes.

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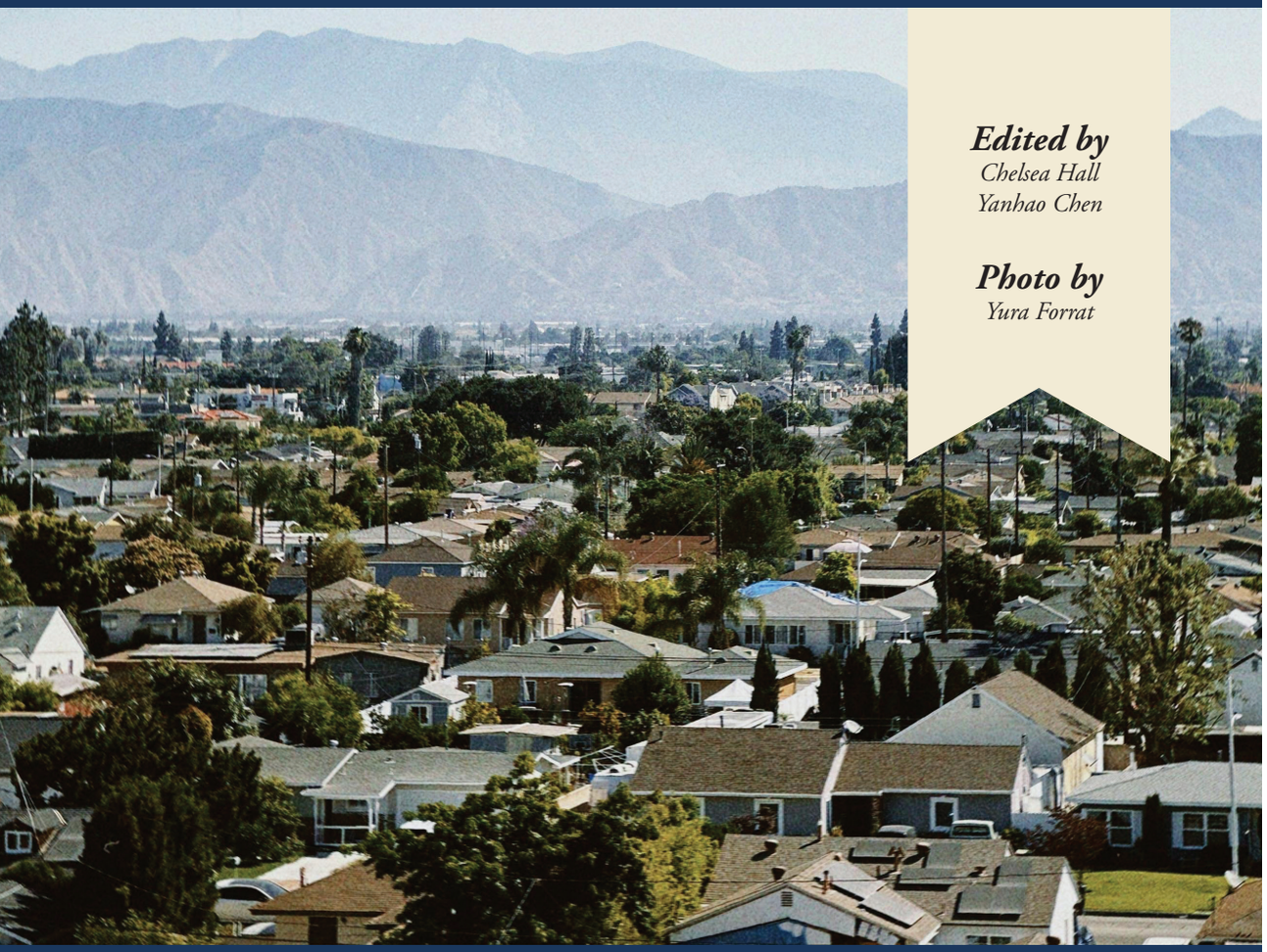
Cycles of Movement: The Bay Area and Central Valley in the Era of Platform Capitalism

by Alexis Atsilvsgi Zaragoza



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Abstract:

Alexis Atsilvsgi Zaragoza explores the shifting relationship between California's San Francisco Bay Area and the Central Valley through the lens of platform capitalism, and examines how digital platforms, such as those used in real estate transactions, logistics, and surveillance, have deepened economic and social disparities between these two dynamic regions. By examining these interconnected issues, the article argues for urgent policy reform and coordinated activism to address the systemic challenges faced by both urban and rural communities in an increasingly digital economy.

Introduction

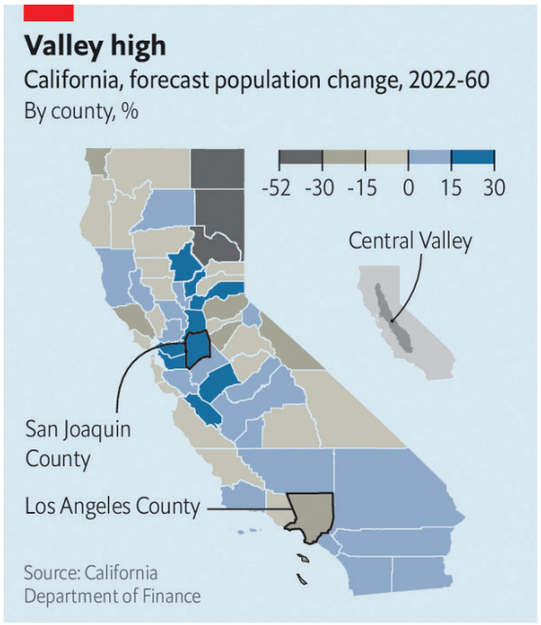
The first thing you notice are the hills—green for two months and yellow for the rest of the year, a color as dull as it is vibrant. The canyons have seen the changing seasons, a living canvas painted and stratified with the passage of time. Animals circle in and out of burn scars, coexisting with the haunting specter of human-induced droughts. Yet, in this landscape, their human counterparts often feel just as fragile. For the residents here, their landscape is home to a trail of imprisonment, displacement, and a future in the hands of the digital but ever-present Amazon empire built on soil so rich, they once called it "the land of fertility." This is the once-great Central Valley of California.

One hundred miles west lies the San Francisco Bay Area. While most residents have only been through the valley for a short time—such as passing through on their way to Los Angeles or Yosemite—the economic activity of Central Valley residents is entirely intertwined with the urban center. However, this connection is not one-way. Issues that affect Bay Area citizens are often formed outside its borders—gentrification, carcerality, and the housing crisis are examples of cycles (as opposed to isolated phenomena) that harm people of color across both spaces. These cycles include urban residents being pushed out of their city via gentrification, then landing in rural regions. Alternatively, the workers of those rural regions often commute to the urban centers for better jobs, as opposed to accepting the low wages of the Central Valley.[1] The California prison system, which lines Highway 99 in the Central Valley, puts those who are arrested and convicted in urban regions out into the periphery—financially destabilizing their families and providing more low-income work for Valley residents.[2] Famed for social movements, the urban centers often fight against the injustices of this one-way relationship of displacement and unjust arrest, but there is a geographic cutoff for how far that activism reaches. Even if the space between these two regions is intimately connected, the hour-long drive to the Central Valley could not feel farther.

In this article, I investigate the less visible bidirectional processes between the urban Bay Area to the rural Central Valley, as well as the new challenges embedded into their shared story: platform capitalism. Platform capitalism can be defined as digital platforms, platforms for social networks, e-commerce, cloud services, and data analytics which are utilizing data, predictive technology, algorithmic bias, targeting, and complex systems management to alter their economic relationships, particularly with other platforms and the physical environments in which they are based. Platforms like Amazon and Airbnb can be useful, but they can also become vessels for alternative forms of exploitation, such as violating personal privacy and utilizing user's preferences against them.[3] I will focus on three platforms and their effect on the urban-rural relationship between the Bay Area and Central Valley. These include carcerality and surveillance, the enhancement of supply chain logistics (from urban port cities to rural warehouse towns), and online platforms for real estate and rentals. The patterns on display are intentional, forthright, and largely ignored because half the process occurs within the rural periphery—a policy blind spot. Finally, I will suggest policy routes to create spaces of shared advocacy that cross the operational landscape.

This is a story of the ebb and flow of capital accumulation that lines Interstate 5.

Movement through gentrification



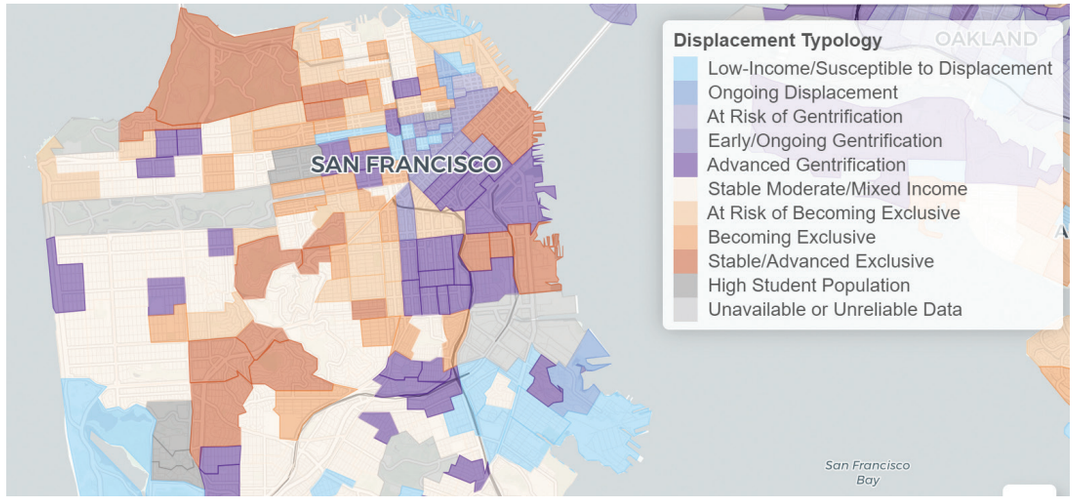
The Economist

In San Francisco alone, there are over 30,000 empty homes, despite the growing housing crisis. The price of homes, lack of rent control, and the new rental economy have caused a nightmare for those looking to stay in the Bay Area.

While platform economies do not single-handedly displace people, they can accelerate pre-determined processes and make displacement and inequality happen faster. These algorithms being used by various corporations and city governments are, "by definition, designed to render complicated social problems, with distinct histories and geographies, as technical [and neutral]"[4], and are trained by data that reflects historical inequality, reproducing outcomes that are often steeped in racist and classist assumptions. Market Value Analysis (MVA) has become a quiet monster in the world of gentrification. MVA tells city officials and investors what neighborhoods are "ripe for opportunity" and expansion, leading to investment and disinvestment from certain areas. This technology is common in local and city government, often used with the widespread trust of policy practitioners and city developers alike.

If you are on the market for a home, technology can be beneficial, such as being able to search the area you want to live in and find dozens of homes and realtors online. However, online websites have algorithms that choose where to advertise and to whom they will advertise. In a complaint filed by the Assistant Secretary for Fair Housing and Equal Opportunity to the U.S. Department of Housing and Urban Development, there was revealed to be algorithmic bias by Facebook in utilizing characteristics—such as race, religion, familial status, disability, and more—to prevent people of certain demographics from seeing housing advertisements.[5] Facebook allowed external real estate advertisers to use tools based on demographics and current zip code to, in effect, "draw a red line" around those neighborhoods, enshrining the history of redlining and systemic racial bias within the new form of algorithms.[6] In 2022, it was revealed that various online real estate had been using property technology—known as Proptech—to create house-flipping algorithms, which uses data systems to price various houses, buy them, fix them up, and then sell them at higher margins.[7] This crisis is not only harming the unhoused population in San Francisco, but it is causing people all across the Bay Area region, largely people of color, to leave and move into other areas, which are typically fringe urban-rural.[8]

Where are these fringe urban-rural spaces? While some move to other states, or to California metropolitan areas such as Los Angeles and San Jose, many find themselves in Bay Area edgelands. The cost of living in the



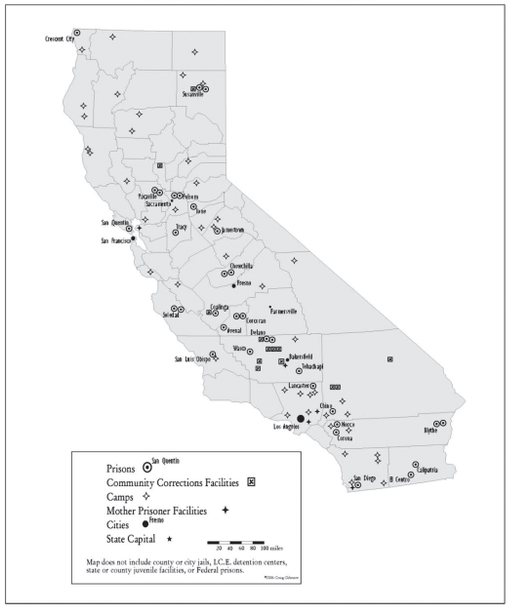
Central Valley and the edgelands are more affordable to those who work higher-paying jobs in the Bay Area, but the Central Valley is home to low-skill, low-wage jobs, and most longtime residents find that they are not high-paying enough to afford the prices of homes. This is especially true as more people move into the Valley and the demand for homes increases. This causes a secondary movement: some residents of the rural edgelands move toward the Bay Area to attain higher-wage jobs. These rural regions have little to no infrastructure and therefore necessitate car travel, adding extra costs to residents and contributing to horrendous commute times and traffic along the highways, causing losses in wages, leisure, and health.[9]

There is a third movement, or lack thereof, that controls the rural economy. Unable to afford homes and unable to commute, many residents find themselves stuck. The logistics and supply chain industry as well as the prison industry use these immobile workforces to create trapped regional economies, disrupting social mobility for rural residents.

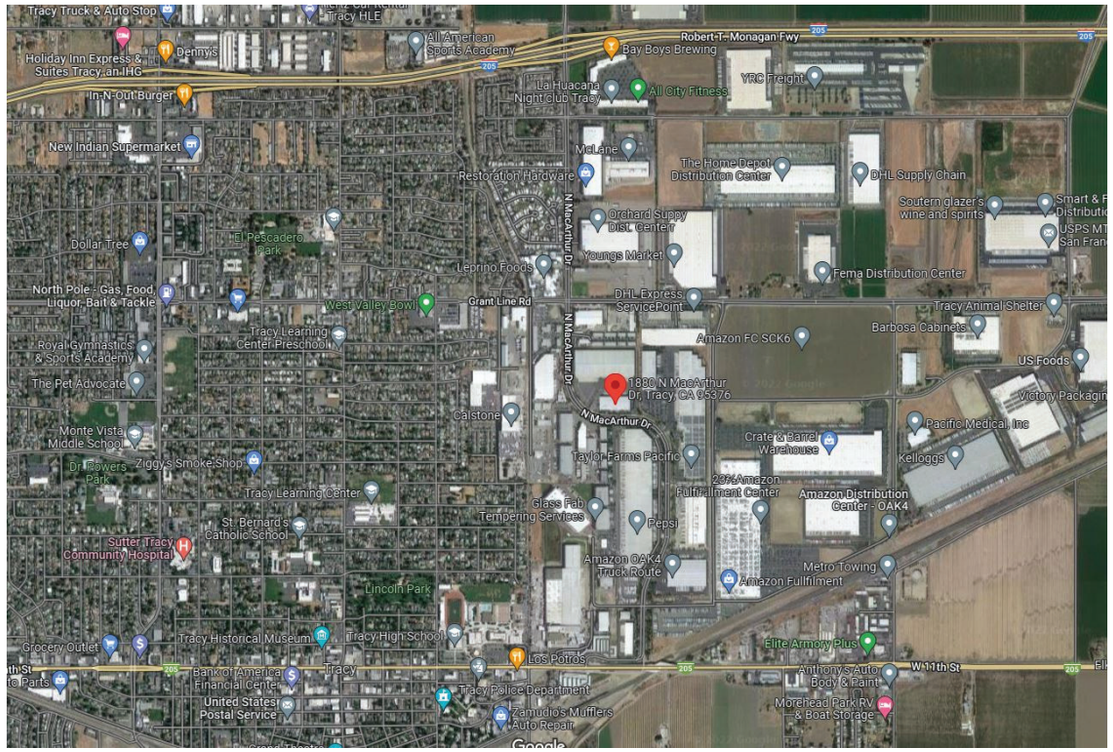
Movement through incarceration

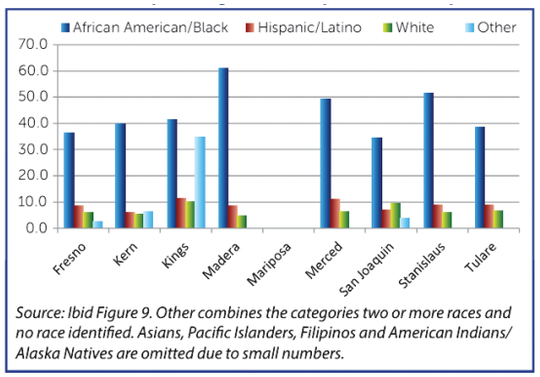
When someone is incarcerated in California, they are sent to one of the state-owned correctional facilities, which consists of 34 prisons and 114 jails. Prisons, the highest form of punishment, are almost exclusively located in California's Central Valley.[10]

Figure 1: Map of California Adult Prisons by Craig Gilmore. Reproduced with Permission of Craig Gilmore



In the 1980s, most of California's incarcerated population came from urban areas and were sent to the state's rural prisons. The geographic location of these prisons created a phenomenon with lasting effects: today,

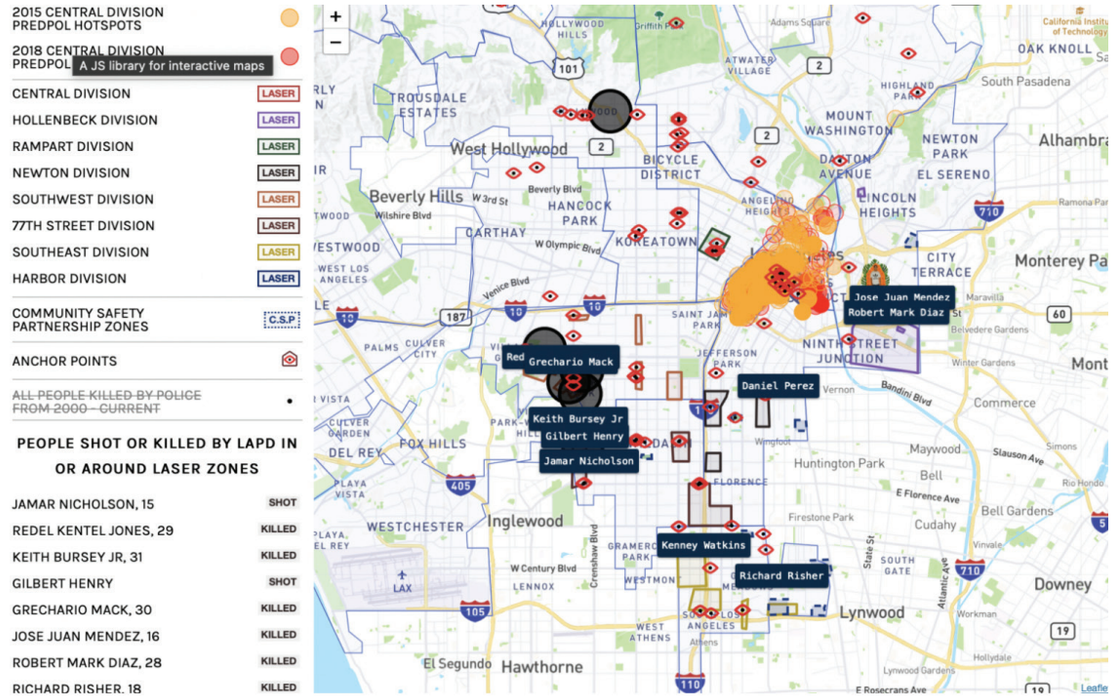




Source: Ibid Figure 9. Other combines the categories two or more races and no race identified. Asians, Pacific Islanders, Filipinos and American Indians/ Alaska Natives are omitted due to small numbers.

the Central Valley has the highest rates of incarceration.[11] This movement over time from urban to rural indicates three factors. First, the mass movement of people from urban areas who are being incarcerated and, upon release, remain in the places where they were imprisoned, or simply never leave prison. Second, the movement of people who are leaving urban centers due to gentrification—a process that causes destabilization and sometimes the increasing spatial displacement of crime.[12] Third, the incarcerated person's family, who often move closer to prisons in order to see their loved one and advocate for their release.[13] Other metrics coming out of the Central Valley, such as limited economic opportunity, low education rates, and high poverty rates, make the environment conducive to higher rates of incarceration. This system in which humans are shuttled *out* to invisible spaces was not accidental. The displacement of crime and mobility of incarcerated people and their families is necessary to the broader prison economy.

The presence of prisons also affects surrounding communities—people in the Central Valley face the "work at the prison or go to prison" dilemma, a saying often expressed to youth in the Valley when discussing their futures. The proximity to prisons creates prison towns economically dependent on the carceral system's survival. Central Valley prison economies are highly dependent on the jobs and wealth prisons give them: "when the corporations pick up that a town



is economically struggling, they come in promising economic security, jobs, and other benefits… affluent cities have the power to say no… that option doesn't exist in smaller depressed cities."[14] Instead, these small towns often fight against decarceration efforts, even as their own citizens are harmed by the carceral system. Central Valley counties incarcerate youth ages 10-17 at significantly higher rates than the rest of the state, and display the same racial disparities.[15]

In the age of decarceration, the closure of child prisons, and scrutiny of police, how do these prisons stay alive in the modern California landscape? Over the past decade, there has been an immense growth of carceral surveillance technologies, leading to more unjust arrests. However, the most harmful form is *predictive policing*. In both rural and urban cities, technology such as ShotSpotter—microphones that triangulate gunshot sounds—and PredPol—software that intakes historical data on an area and runs algorithms predicting where crime will occur next—are being used with no public oversight.[16] Research shows that using historical knowledge of an area will then cause over-policing of the area, destabilizing communities of color and perpetuating impoverished conditions.[17] The adjacent map displays a visual guide to the geographic makeup of PredPol technology use in Los Angeles.[18] If these algorithms are built on historically biased data, they will continue to perpetuate harm. Increased surveillance contributes to the active destabilization of communities of color in both urban and rural areas, whether it is from the carceral economy or the logistics economy.[19]

Movement through logistics and unsustainable supply chains

While the Central Valley economy used to be agricultural, there has been an extreme concentration of those who can own farmland, as over 50% of the farmland in California is held by just 5% of landowners.[20] Many farmers began to move out of the state as prices increased, leaving behind land for sale. Corporate actors such as Amazon

and Walmart began buying up the land and building massive fulfillment centers. Many of these warehouses are at least an hour away from a local university or community college.[21] The lack of public transportation, little to no proximity to higher education, and distance from urban jobs—particularly due to long commute hours—make the residents vulnerable, but to a company like Amazon, it is a perfect place for developing a lifelong workforce.[22]

Local high schools have begun conducting warehouse industrial training for students as young as fourteen to learn skills like forklift driving and logistics management, often in lieu of advanced courses and extracurriculars.[23] These programs often promise a guaranteed $16 per hour job upon graduation—a significant amount for a school district that is majority students of color and the children of farmworkers.[24] While these programs provide some financial opportunity, participation often keeps students away from pursuing college or other industries, keeping them physically tied to their workplace.

The digitized surveillance that causes harm in these other industries does the same for logistics. Surveillance in warehouses has been a policy void for the past decade, with certain regulations only recently being proposed because of public outcry. Surveillance robots are pointed at workers every shift, which monitor their productivity—often flagging mistakes that have nothing to do with the product or placement. Amazon survey results found that 53 percent of Amazon workers almost always "feel a sense of being watched or monitored in [their] work."[25] The group that reported feeling that they are watched at the highest rate was Black women, at 60 percent. Videos of potential errors are sent across the world for review by people working in painstaking conditions—who avoid blinking for hours in order to maintain "good metrics" for an income of $200 a month.[26] Even if there is never a real mistake made, having enough potential errors flagged by the system leads to a write-up.[27] More recently, the public has realized these issues through stories of delivery drivers peeing in water bottles to avoid getting written up, which has led to more political scrutiny over workers' rights.[28] While these issues appear to be industry-specific, the harm that is caused is geographically and racially discriminatory, which necessitates advocacy within both urban and rural spheres.

Policy and Activism

Platform capitalism exists under the radar of the citizens it monitors. While many of these technologies can make life better for residents, without a framework that prioritizes individual rights, fairness, and transparency, they instead cause harm across multiple geographies.

As the connections between urban and rural become more and more clear, there is a desperate need to combine the activism from the Central Valley with that of the Bay Area. This pattern should be realized in the spaces of the Inland Empire and Los Angeles, alongside other intimately tied urban spaces with industrialized edgelands. While the rural must always think about the urban, the urban rarely offers a thought to its periphery: the field of urban studies, famously the center of localized activism and key issues such as gentrification, identify rural regions surrounding the urban in terms of what they do for the city rather than being important spaces in their own right. Corporations can get away with the creation of "Amazon cities" and putting forklift classes in high schools because they exist in that periphery. By the time these experiments are robust enough to be implemented in cities, stopping them from expanding becomes more difficult. Rural regions are often vocal about these issues and host some of the largest activist groups in the state, meaning that the combined effort of these two regions—urban and rural—could shift the policy realm across the state and even the nation.

There needs to be a major push for stopping the use of surveillance technology in California and in the United States. Recent legislation includes California bills like SB 21, originally proposed in 2017. The bill required agencies to submit Surveillance Use Policies to their governing bodies at a public meeting for approval, and mandates discontinuance of such technologies if not approved. The bill has been brought back multiple times, but continues to die in committees.

The State of California needs to commit to full anti-surveillance and labor policy re-structuring and enforcement to curb the uncontrolled and overused spying software in multiple industries. Local jurisdictions in Southern California have implemented indirect source rules (ISRs) to address the environmental aspects of warehouses, but they only apply to a handful of cities.[29] A recent law, AB 701, protects warehouse workers from productivity quotas and performance tracking algorithms, signaling a step in the right direction, but many warehouse workers across the Central Valley still cite unsafe workplace conditions, particularly with extreme heat.[30] Cal/OSHA is set to approve protections for workers in extreme heat conditions in the summer of 2024, and while this aims to help most workers, imprisoned people were recently struck out of these protections.[31] While workplace safety has finally gotten attention, the extreme surveillance in warehouses has yet to gain any policy ground.

To protect citizens from policing surveillance, there needs to be a bill similar to that of SB 21 as well as SB 1186, which requires law enforcement agencies to submit detailed uses of surveillance technology and get approval before they can acquire them.[32] Similarly, SB 3131, which would have created public oversight before acquisition, made it through the legislature but was vetoed by Gavin Newsom in 2018.[33] Organizations like the Surveillance Technology Oversight Project frequently introduce and track bills across the United States with the goal of protecting everyday citizens from these same technologies. Without policy intervention, the fundamental issues that plague communities—gentrification, over-policing, labor abuse, and exploitative economic development—will only increase more rapidly and become enshrined in law.[34]

Conclusion

The interconnectedness of urban spaces like the San Francisco Bay Area and rural regions such as California's Central Valley reveals a complex web of socioeconomic issues driven by gentrification, carcerality, and the exploitation of platform economies. While the Bay Area grapples with a housing crisis and technological advancements that displace marginalized communities, the Central Valley faces its own challenges, including environmental degradation, incarceration, and limited economic opportunities. The movement of people between these spaces, whether forced by housing unaffordability or incarceration, highlights the bidirectional processes shaping both urban and rural landscapes. Furthermore, the convergence of digital platforms with physical spaces exacerbates these issues, perpetuating systemic inequalities and marginalization.

To address these challenges effectively, there is a pressing need for collaborative activism

and policy interventions that recognize and respond to the shared struggles of urban and rural communities. By fostering greater awareness, advocacy, and equitable resource distribution, we can work toward creating spaces of shared advocacy and mitigating the pervasive issues facing people of color in both urban and rural settings. Ultimately, understanding the dynamics at play in both urban and rural areas is crucial for developing holistic approaches to address systemic injustices and promote sustainable, inclusive communities across California.

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Toward a More Resilient Electrical Grid for California

by Alex Lei

Edited by
John McPherson
Jacqueline Shore

Photo by
Kindel Media

Abstract:

Alex Lei considers two policy options to improve the resilience of California's electrical grid in the face of climate change: performance-based regulation for utilities and tax incentives for microgrids. After analyzing their effectiveness, equity, and political feasibility, he makes the case for the State to adopt performance-based regulation, which would require investor-owned utility companies to achieve pre-negotiated goals or face lost profits.

Executive Summary

Human-caused climate change due to carbon emissions has become a major issue. Extreme weather events made worse by climate change pose a major threat to California's energy grid, and it is up to policymakers to take initiative and adapt California's electrical grid to be more resilient through public policy. This article will examine two policies that have potential to accomplish these aims: instituting performance-based regulation for California's utility companies, and creating tax incentives for building more microgrids. This article provides a brief summary for each proposed policy and the status quo. It also evaluates both policies and the status quo based on three criteria: effectiveness, equity, and political feasibility. This article ends with a recommendation to support the instituting performance-based regulation, as it is the potential impact it can have on California's grid resilience that makes it the overall best option.

Background

There is not enough policy in California that addresses the resilience of the electrical grid, and the state will need more of it to adapt to the effects of climate change. Accompanying this continuing rise in greenhouse gas (GHG) emissions, including from California itself (the state is the second highest emitter of carbon dioxide among the fifty states in the U.S., in absolute terms[1]) is a host of secondary effects: heat waves, wildfires, more severe storms, and floods, to name a few, all of which pose dangers to the reliability and resilience of the electrical grid in California. Power outages, rolling blackouts, faulty infrastructure causing natural disasters (such as the Camp Fire in 2018), and other negative side effects of an unreliable, non-resilient electrical grid will cause direct harm to California's communities.

The disasters above necessitate policy solutions to address grid resilience and reliability. While reducing emissions is a vital goal, adapting to the current impacts of climate change is also necessary, as these extreme weather events and natural disasters are now too frequent to disregard as statistical anomalies and too damaging to leave unaddressed with policy.

California should implement adaptation strategies in its electrical grid that enable itself to improve both its grid resilience and reliability in the face of more frequent climate disasters, particularly on the energy grids of underserved communities.

The current grid in California is not resilient enough to extreme weather events fueled by climate change. Aging infrastructure has already been responsible for several disasters on its own.[2] Blackouts and other power issues caused by extreme weather events interacting with aging grid infrastructure are increasingly becoming a problem. Rolling blackouts in North America in particular have been shown to affect racial and ethnic minorities, people of lower socioeconomic status, and people in rural areas more significantly than average.[3] In the meantime, utility rates have also been steadily increasing and are poised to outstrip inflation[4], which places heavier burdens on lower-income households as they must devote more of their budget to energy costs.

The communities that will suffer the severest effects of a non-resilient grid (such as power failures) are often lower-income and belong to racial and ethnic minorities.[5,6] The lack of

more resilient infrastructure alternatives and the current management scheme of California's utilities are only adding to the problem, placing additional burdens on these communities. Addressing this concern is of great importance to the state of California's stated goals of climate justice.[7] Adequately addressing the issue would ensure that the most vulnerable Californians do not have their lives upended by a lack of climate-adapted energy infrastructure.

Rationale for state government intervention

The Infrastructure Investment and Jobs Act (IIJA) and Inflation Reduction Act (IRA) both provide funds for climate change adaptation strategies, and California has the jurisdiction, and therefore the responsibility, to ultimately implement them. As many climate disasters such as wildfires occur within state borders, the state government has a heightened responsibility to plan and execute state-level climate adaptation strategies. California's state government also has jurisdiction over its investor-owned utility companies, such as Pacific Gas & Electric (PG&E), Southern California Edison (SCE), and San Diego Gas & Electric (SDGE), through the California Public Utilities Commission (CPUC). Therefore, the state government has the authority to encourage utilities to shift focus toward adaptation and emissions reduction in the electrical grid.

The need to reduce GHG emissions by building clean energy infrastructure that is climate resilient presents both a problem and an opportunity. A well-designed policy will address both, reducing carbon emissions across the board in its energy infrastructure while making said infrastructure resilient and adaptable enough to withstand severe weather events. Two such policies will be discussed below, namely instituting performance-based regulation for utilities and providing tax credits for building microgrids, which are small, controllable power systems that power specific geographic areas that can be operated with, or independently from, the larger grid. This article will also provide an analysis of the status quo regarding the issues the former two policies will intend to address.

Policy alternatives

Status quo

Current state targets for climate goals are 60 percent renewable power by 2030 and 100 percent carbon-free electricity by 2045.[8] Most recent legislation has been devoted to reducing GHG emissions and expanding renewable energy sources. However, less attention has been paid to grid resilience or expansion—few of the major climate and energy bills signed into law in California from 2022-2023 focus on either topic.[9,10] While there has been momentum with regard to microgrids, much of it is in the regulatory phase: the CPUC is currently working on writing regulations to implement microgrid legislation passed by the California State Legislature.[11] There has been some federal support for grid resilience in California. Earlier in 2023, the Department of Energy granted California $67.5 million in funds from the IIJA in order to improve storage and grid resilience.[12]

California's current energy regulation system is based on multi-year rate-plans (MRP), a system in which there are other factors taken into account apart from the investment and operating costs of the utility company, such as resilience. The factors are negotiated upon between the regulators and the utilities in MRP schemes.[13] In return for adhering to these factors and often a cap on revenues, utilities under MRPs are allowed to set their own prices on the energy they provide for a certain number of years.[14]

Adopt performance-based regulation

Performance-based regulation (PBR) is a method of regulating utilities that can be an important tool for adapting grid infrastructure to climate change. PBR ties the financial returns of investor-owned utilities to how well the utilities perform according to certain metrics, such as resilience, equity, grid interconnection, and decarbonization, among others.[15] If a utility does not meet its PBR goals, it will lose revenue. PBR allows utilities to set multiple-year rate cases, effectively granting themselves larger budgets. These rate cases allow them to invest money over longer periods of time and help them reach their performance goals.[16]

In California's case, it would mean that utilities such as PG&E, SCE, and SDGE would all face new regulations from the CPUC directing them to be more resilient to climate disasters, more affordable, and less carbon-intensive. PBR has been fully implemented in Hawaii[17], and at least sixteen other states as of 2022, such as Colorado and North Carolina, are investigating PBR as an new method of regulating utilities.[18] Hawaii's PBR system relies on multiple metrics, including but not limited to affordability, customer equity (measured by percentage of low-income customers), greenhouse gas reduction, and grid resilience.[19] Hawaii's system appears to be delivering mixed benefits, with increased equity for consumers, decreases in greenhouse gas emissions, and expanded renewables and resilient infrastructure into Hawaii's power grid; however, energy has become less affordable for consumers since implementation.[20,21,22]

Create tax incentives for microgrids powered by renewables

As described earlier, microgrids are small electrical grids that are often connected to the main electrical grid in an area but can operate independently of it. There are two kinds of microgrids: front-of-meter (FOM) and behind-the-meter (BTM). FOM microgrids are connected to the main grid and are often operated by utility companies. BTM microgrids are located behind a customer's meter and are usually not operated by utility companies. There is little regulatory framework for BTM microgrids compared to FOM microgrids, and as such, many of the projects that are approved belong to the latter category.

State-level incentives for microgrid production exist, namely the Microgrid Incentive Program, a competitive grant program authorized by the CPUC.[23] However, as not every microgrid owner or operator qualifies for a grant, this may not be inclusive enough for communities or individuals who may need a microgrid for their energy supply.

Therefore, offering tax credits to either microgrid developers or individuals for building new microgrids can offset some of the financial costs associated with building and maintaining them. Generally, both kinds of microgrid provide independence from the main grid, self-reliance, and resilience for local communities. If the main grid is down, the microgrid can provide a reliable source of energy, though this still incurs costs on the locals who use it. Ideally, in a climate resilient electrical grid, these microgrids would be powered by renewables and not fossil fuels, as renewables have become much cheaper over time.

Analysis

The following analysis of these policies is based on their effectiveness (how much more resilient would the chosen policy make California's electrical grid), equity (how much will the policy aid the communities affected most by climate change in California), and political feasibility (how likely the chosen policy is to become law given the current political context in California).

The status quo

The status quo is not very effective. Under current conditions we can expect the issues with grid resilience to continue. The lack of grid resilience policy discussed above may impede progress on California's climate goals, despite the recent increase in installments of more renewable energy across California. An increased risk of infrastructure failures and power outages may reduce climate benefits from existing legislation.

The current electrical grid in California is still providing electricity, albeit in a centralized way that makes the grid more vulnerable to large-scale disruption and difficulties with power management. The MRP system, while more resilient than a traditional cost-of-service regulation (COSR) scheme under which most utilities operate, still has room for improvement with regard to affordability, as rates are increasing in California. Existing infrastructure would still be in serious need of upgrading and resilience.

The current status quo is not very equitable. Utilities often cut off power to vulnerable communities in times of crisis. Simultaneously, rates have been increasing steadily, placing additional burdens on lower-income Californians. Rolling blackouts tend to affect lower-income and minority communities more significantly under the current regulatory paradigm. Current efforts to boost grid resilience often incur costs that utilities pass on to consumers.

As the status quo has already been adopted and is still in place, we can rate its political feasibility as high.

Alternative 1: Performance-Based Regulation (PBR)

The current MRP system in California has enough similarities to PBR that a transition to true PBR is easier.[24] Like in PBR, the current MRP program requires that utilities adhere to certain metrics, although these metrics are negotiated between the government and utilities. PBR uses goals determined via simulations or projections and requires that utilities adhere to those in order to maximize revenue. This is a potentially effective method of ensuring that existing infrastructure is managed in a more resilient, adaptable manner, since the factors are determined exogenously and not through negotiations.[25]

While it does not address the deterioration of California's infrastructure as directly as Alternative 2, PBR is a potentially effective option for making the Californian energy grid more resilient to extreme weather events amplified by climate change. Additionally, the scale at which this reform would take place would have a much larger effect on grid resilience in California than the other alternatives. We can therefore rate the potential effectiveness as high.

Rate reform for California's utilities has been discussed due to revelations of systemic inequities in California's utility ratemaking.[26]

If PBR is implemented in California, the additional requirements placed on utilities could reduce energy prices across the board. Energy equity would therefore increase as lower-income communities face less of a financial burden from energy prices, though as the results from Hawaii around affordability are mixed, this portion of the analysis concerning rates is more speculative.

However, PBR is a more collaborative and inclusive process than the traditional COSR under which utilities have historically operated. In the case of Hawaii, the metrics were agreed upon through negotiations with a diverse group of stakeholders, from utilities to regulators to environmental groups.[27] A similar process could take place in California and allow communities greater input on how their energy supplies are managed, as opposed to the status quo. Adopting PBR would therefore be an equitable alternative to the status quo.

Utility companies in California, which operate as natural monopolies, may resist shifting to a new statewide regulatory scheme. However, emphasizing that this policy will bring energy costs down may give it support among the public. Additionally, the creation of Hawaii's PBR program and the surge in interest in PBR occurring in other states with diverse political contexts will add credence to PBR that may alleviate skepticism from the public or from utilities. Emphasizing the benefits of PBR and the bipartisan support it enjoys nationwide may make this option feasible. As states across the country continue to implement PBR and develop best practices over time, it will become easier for other states to do the same.

In the event that California shifts its energy regulation system to true PBR, it would be a more feasible transition, as the status quo under MRP is already similar to PBR in some ways, as discussed earlier in this article. We can therefore rate this option as moderately feasible.

Alternative 2: Increased Renewable Microgrid Capacity

Increasing renewable microgrid capacity could be an effective method of providing a resilient, reliable, local source of energy to many communities without needing to connect to a larger grid. This self-reliance can help communities better withstand power outages caused by extreme weather events. The smaller scale may also make repairs less time-consuming in case the microgrid were to fail.

Concerns about costs from microgrid developers or individuals interested in owning their own microgrids can be assuaged to some extent by offering them a tax credit for microgrid construction. Concerns about the actual construction will be more difficult to handle. Front-of-house microgrids in particular face unique engineering challenges during construction, as they must be integrated very carefully into the energy grid in order to be properly installed.[28] Deployment of such microgrids will be slower as a result.

Microgrid capacity has the potential to be an equitable way to ensure grid resilience and reliability. Although economies of scale in utility infrastructure (i.e., decreases in a firm's average costs as its output increases) make it less likely that a microgrid, being smaller in output, can provide lower average energy costs to its users, the independence from the main grid that a microgrid would provide ensures some self-reliance and local resilience for underserved communities.

In this scenario, higher energy costs can be justified. For example, various Native American tribes in California have begun turning to microgrids to generate power when local utility infrastructure has been insufficient for their needs.[29] Offering a tax credit may therefore ease the financial burden that

underserved communities may face when deploying microgrid projects.

Due to the political challenges facing microgrid adoption, the feasibility of this option is low. Microgrids are not a common climate adaptation solution in the United States. At the start of 2023, there were only 4.4 gigawatts of microgrid capacity installed nationwide.[30] Public awareness of microgrids may be low, though tax credits tend to be popular with residents, so Alternative 2 is not entirely infeasible.

Legal obstacles also prevent large-scale adoption of microgrids. Section 218 of California's Public Utilities Code, or the "over-the-fence rule," ensures that only regulated utility companies are allowed to share or sell electricity across property lines.[31] This places a strict limitation on any microgrid project that aims to provide electricity for multiple properties. The regulatory focus on FOM microgrids and lack of regulations regarding BTM microgrids create a legal gray area that disincentivizes BTM adoption, despite the potential for BTM microgrids from the amount of rooftop solar projects in California.[32]

Final recommendations

Alternative 1, Performance-Based Regulation, would be the best of the options above as a solution to the problem of grid resilience in California. After holistically considering the effectiveness, equity, and political feasibility of all three policy options, it had the highest scores overall. While it does not address the underlying issue of aging infrastructure and the need to build more resilient infrastructure, it is the best method of managing the infrastructure that currently exists.

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Goldman School of Public Policy launches the Democracy Policy Initiative

A BPPJ Interview with the Leadership of the DPI

Interview by Francesca Bitton

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In early 2024, the Goldman School launched the Democracy Policy Initiative (DPI), which leverages expertise from UC Berkeley faculty, community members, and academic partners to build an evidence base for policies that promote a healthy, responsive, and multi-racial democracy. To learn more about the DPI's structure and ambitions, BPPJ reached out to three key leaders of the Initiative: Angela Glover Blackwell, DPI Chief Vision Officer and Professor of Practice; Jacob Grumbach, Associate Professor; and David Wilson, Dean of the Goldman School and Professor of Public Policy.

The following interview was conducted via email. Responses have been edited for clarity and conciseness.

Francesca Bitton (BPPJ): Dean Wilson, what is the DPI, and how will it be unique relative to existing efforts in this space?

David Wilson (DW): The Democracy Policy Initiative provides a framework for how the Goldman School will leverage its presence at UC Berkeley and its standing as a leading school of public policy to address the challenges facing American democracy. We will advance actions that address four key gaps—knowledge, resource, innovation, and communication.

The first is a knowledge gap. Through the DPI, we will develop a new field of "democracy policy" that provides a framework for how public policy can advance and strengthen participation in the activities of government.

Given our expertise, we will work to fill the resource gap, by serving as a university partner to community organizations, governments, media, and the most engaged individuals and intellectuals to share information, tools, and knowledge.

We will leverage UC Berkeley's outstanding scholarly assets to also identify, test, and advance ideas, policies, and programs that strengthen democratic engagement and public trust in government, thereby filling the innovation gap.

And lastly, we will bring together experts, government, media organizations and journalists, and community groups to "interrogate democracy" through communication, such as conversations, social media outlets, and publications. We will raise and answer questions about democratic governance, federalism, party systems, and public opinion.

Ultimately, the DPI will allow GSPP to make meaningful contributions to democracy by uplifting the consequences of public policy as our system's most impactful practice.

BPPJ: What does it mean to establish democracy policy as a new interdisciplinary field of study?

DW: It means that scholars, students, and the public will have new language, new research, and new frameworks to understand how our U.S. democracy operates and the tools that the government has at its disposal to strengthen participation. Just as the U.S. has an economic policy, a defense policy, a health policy, and an education policy, it must have a democracy policy to signal that it cares about equal, equitable, and knowledgeable participation, and therefore, have legitimacy in the eyes of the public.

BPPJ: Looking down the road five to ten years, what are the outcomes that would signal to you that this initiative has been successful?

DW: The Initiative will have been successful if in five to ten years, GSPP and Berkeley are known for being the world's leading location for understanding how public policy and government can advance democracy, so that it works for everyone. The pathways to this success are groundbreaking research, a curriculum that enriches understanding, tools for practitioners that work, and conversations and programs renowned for providing insights and access to leading figures.

BPPJ: Professor Glover Blackwell, as the Initiative's Chief Vision Officer, how do you see your role contributing to the goals that have been set forth?

Angela Glover Blackwell (AGB): As Chief Vision Officer, my role is to help define and shape the Initiative's mission and vision, as well as lead in the development and articulation of the Initiative's goals and objectives. Another key part of my role will be to identify social and academic opportunities for research and partnerships, which means that I will also work to attract external funders and collaborators so that our work can continue to scale.

The DPI has a vision for a flourishing democracy, which calls for a unique and essential approach to what is possible, particularly for our political and social institutions and what they can achieve when they genuinely prioritize and serve the needs of both people and the planet. I have spent my entire career advocating for equity, including the policies and programs needed to support a flourishing democracy, so I'm eager to begin.

BPPJ: What does a "flourishing democracy" mean to you, and how will the DPI contribute to this vision?

AGB: A flourishing democracy is a democracy that supports the things we all need to be able to have a good life—things like affordable housing, good schools, safe communities, a sustainable environment, jobs that provide for people to support themselves and their families, high quality healthcare, and a strong and reliable infrastructure upon which people can depend on shared economic and social advancement.

This support is provided systematically and structurally through strong government and public investment—through policies, programs, institutions, and funding at all levels, be it city, county, region, state, or federal. We can institutionalize human flourishing so everyone can have a good life.

BPPJ: Both you and the Dean have highlighted that community partnerships are a key area for the Initiative. How will the DPI work to bring in the voices of grassroots organizations and those leading on-the-ground engagement efforts within communities?

AGB: PolicyLink, the organization I founded 25 years ago, lifts up the wisdom of people living and working to solve problems within their communities. We have known that those closest to the problems are closest to articulating lasting solutions. The vision and mission of DPI will be infused with the same sensibilities and values.

The DPI will partner with, and be guided by, grassroots voices, recognizing that the wisdom and creativity within every community is essential to solving problems. And, when we solve problems with nuance and specificity for those who need support the most—like those who the data and historical record make clear have systematically and structurally been kept behind—we create the conditions for everybody to flourish.

BPPJ: Professor Grumbach, democracy is a monumental issue. Where do you begin?

Jacob Grumbach (JG): Democracy is a big concept, which is why political-philosophical debates about democracy over centuries, if not millennia, have been crucial. My own views have been informed by philosophies of different kinds of democracy—most importantly electoral democracy, liberal democracy, and egalitarian or social democracy.

Electoral democracy is about the people making their voices heard through voting in free, fair, and competitive elections, and that people's votes should count equally. Liberal democracy is about civil rights and liberties, freedom from authoritarianism, equality

under the law, and all that. Egalitarian or social democracy suggests that electoral and liberal democracy aren't realized if there isn't some kind of material equality.

BPPJ: It sounds like the Initiative will explore a few different avenues when it comes to the characteristics of a well-functioning democracy. What other areas of research do you hope to explore through the Initiative?

JG: I do research on varying democracy issues—some is straight up quantitative research on voting and elections, fair legislative districting, and other times it's looking at the impact of money in politics and political inequality. Another line of research focuses on how to build social solidarity across racial groups, which I think is necessary to prevent democracy from failing.

I've also looked at how the labor movement has contributed to the fight for voting rights and democracy. With the DPI, I'm not only ramping up these lines of research, but also doing more to connect the research to organizations, policymakers, and ordinary people who want to know about the state of democracy, and how to protect and expand it.

BPPJ: Are there areas where you see the greatest opportunities for advancement?

JG: Well for starters, we don't actually have a ton of tools to protect or advance democracy. A lot of commentators talk about running better election campaigns with better "messaging" to ensure that anti-democratic candidates don't get to office. Sure, I guess. But there have been so many major transformations over the past 50 years or so—economic, technological, demographic, and even environmental. We need to think about designing policy, electoral institutions, and mass membership organizations that can operate in this new world. In terms of institutions, we need to think hard about proportional representation and other setups that can handle our nationalized, multi-dimensional mass politics. In terms of organizations, I believe the labor movement is our last, and best, hope to build solidarity between, like, the barista Gen-Z kid and the middle-aged guy in the trades.

BPPJ: Professor Glover Blackwell, what are three things that you want the Goldman, and broader Berkeley, community to know about this Initiative?

AGB: Limiting it to three will be difficult, but I'll say this—democracy policy has twin pillars: participation and promise. These are central tenets of democracy.

Participation as a pillar of democracy is well established. The DPI will leverage the expansiveness of the field with a focus on protecting the processes of democracy, by developing strategies for ensuring all people have the ability to participate, as equals, in the processes impacting our lives. This is an emerging and fast growing field in democracy policy and this space will benefit from the kind of community-driven, expert assisted approach being put forward by the DPI.

Second, defining and scaffolding the promise of democracy, particularly for human flourishing, remains a vast and exciting opportunity for the Initiative. What policies, practices, and institutions meet the demands of a democracy that functions in service of human flourishing? What are the north stars for governance? What political and social strategies support the transition towards a democracy that centers human flourishing? All these remain important and exciting open questions for the DPI to answer.

As I mentioned, this will be an academic research institute guided by the wisdom and

experience of people on the ground working towards solutions for their communities. While there is an abundance of high-quality research, policy, and practice institutions aimed at democracy policy, the Initiative is positioned to fill the gap in terms of bringing together top tier researchers, policy practitioners, and community-driven solutions to transform democracy in the state of California and, ultimately, the nation. The truly equal and collaborative partnerships forged through this work will set another standard in what is essential as we work towards building a flourishing democracy for all.

Notes