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# The unintended consequences of greening America: an examination of how implementing green building policy may impact the dynamic between local, state, and federal regulatory systems and the possible exacerbation of class segregation

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## Abstract

**Background:** The aim of this paper is to analyze the unintended consequences of green government policies. This paper begins by providing a background on how the implementation of the Federal Housing Administration's (FHA) government policies supported or increased racial and socioeconomic segregation by causing urban sprawl and gentrification. Next, it provides background information on three green building publications: (1) Leadership in Energy and Environmental Design, which has been adopted by many local jurisdictions across the nation as the norm for green building; (2) CalGreen, which went into effect on 1 January 2011 as the nation's first mandatory statewide green building code; and (3) the San Francisco Green Building Ordinance that imposes green building requirements on newly constructed residential and commercial buildings, and renovations to existing buildings in San Francisco, California.

**Methods:** This paper will consider how the policies surrounding green buildings can (1) restrict local government power, (2) impact the dynamic between state and federal norms, and (3) create further separation between privileged and underprivileged classes.

**Results:** Although uncertain, it is possible that a negative situation similar to the FHA policy could evolve in underprivileged communities, causing greater economic and racial segregation within our communities as less privileged people cannot afford to live in green cities.

**Conclusions:** Ultimately, this paper will propose that further research on CalGreen should be conducted in order to determine whether CalGreen and similar standards will benefit those in underprivileged areas and, if not, what steps should be taken in response.

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## Background

The aim of this paper is to analyze the unintended consequences of government policies and how they can subvert their intended purpose or cause other great social harms [1]. In the case of social welfare policy, unintended consequences can often have dramatic effects on underrepresented and underprivileged groups [2]. The Federal Housing Administration's (FHA) implementation of new mortgage rules for home development is an example of one policy that was intended to benefit the majority of American citizens but, ultimately, created greater social divide between the 'haves and have-nots' [3]. Those in our society who could afford to take advantage of the FHA's policies benefited greatly, while those who could not found themselves at America's table without a place to sit [4].

Green building regulations are ubiquitous at the state and local levels. What is a green building regulation? What are the unintended consequences of green building regulations and the green revolution? Are there any? It is imperative that we consider the possible unintended consequences resulting from the recent green revolution ([5], p. 623). In particular, it is important to consider the relationship between the local and state regulatory systems, how implementing green building regulation on a state level will impact the dynamic between city/state and federal policies, and how green building policies could possibly exacerbate class segregation.

Though the policies implemented by the FHA were noble, they also caused major setbacks for social integration as white urban sprawl isolated the inner city as a place for only minority groups to live, thereby exacerbating the wealth divide in America by race. Similarly, the increase in green building regulation could have similar deleterious effects ([6], p. 23).

This paper will begin by providing a background on how the FHA's implementation of government policies supported or increased racial and socioeconomic segregation by causing urban sprawl and gentrification. Next, it will provide a summary of three green building publications: (1) Leadership in Energy and Environmental Design (LEED), (2) CalGreen, and (3) the San Francisco Green Building Ordinance (SFGBO). Then, the paper will consider whether CalGreen, like the FHA, could also cause further the separation between privileged and underprivileged classes. Ultimately, this paper will propose that further research on CalGreen should be conducted in order to determine whether CalGreen and similar standards will benefit those in underprivileged areas and, if not, what steps should be taken in response.

### FHA, urban sprawl, and gentrification

On 27 June 1934, the FHA implemented the National Housing Act (NHA), which was intended 'to encourage

improvement in housing standards and conditions, to facilitate sound home financing on reasonable terms, and to exert a stabilizing influence on the mortgage market' [7]. The Servicemen's Readjustment Act of 1944 or the 'GI Bill' created the Veterans Administration (VA) that assisted servicemen returning home from World War II in purchasing a home [8,9].

The FHA and VA transformed the housing industry by insuring long-term mortgage loans made by private lenders for home construction and sale by having the full weight of the US Treasury behind the contract ([10], p. 337). The FHA increased the number of American families who could purchase homes through four main transformations: (1) down payments for homes were reduced to roughly 10%, instead of previous limitations of one half or two thirds of the appraised value of the property, because the lender was able to lend about 93% for an FHA-secured loan; (2) the FHA repayment period for its guaranteed mortgages was drawn out to 25 or 30 years and fully amortized; (3) minimum home construction standards were established by the FHA which became the standard in the industry; and (4) the interest rates fell by 2 or 3 percentage points because there were fewer risks to the banker if the loan were guaranteed by the government under the FHA ([7], p. 338).

Arguably, these are significant achievements. However, the outcome was that the FHA programs accelerated 'the decay of inner-city neighborhoods by stripping them of much of their middle-class constituency' [7]<sup>a</sup>. There are three key reasons that this occurred: (1) the construction of single-family projects was favored and the construction of multi-family projects was discouraged; (2) loans to repair existing structures were small and for short duration, allowing a family to more easily purchase a new home than to remodel an old one; and (3) an 'unbiased professional estimate' was required prior to any loan guarantee because maximum mortgage amounts were related to the 'appraised value,' and this mandatory judgment included a rating of the property itself, a rating of the mortgagor or borrower, and a rating of the neighborhood - the purpose of the neighborhood evaluation was 'to determine the degree of mortgage risk introduced in a mortgage insurance transaction because of the location of the property at a specific site' [7].

In addition, the FHA allowed personal and agency bias in favor of all-white subdivisions in the suburbs to affect the kinds of loans it guaranteed or, equally important, refused to guarantee ([10], p. 337). The FHA established eight different criteria for underwriters to measure the quality of residential areas. These eight categories were (1) relative economic stability (40%), (2) protection from adverse influences (20%), (3) freedom from special hazards (5%), (4) adequacy of civic, social, and commercial

centers (5%), (5) adequacy of transportation (10%), (6) sufficiency of utilities and conveniences (5%), (7) level of taxes and special assessments (5%), and (8) appeal (10%) [7]. The italicized numbers in parentheses are the percentage weight given to each category.

Although FHA directives insisted that no project should be insured that involved a high degree of risk with regard to any of the eight categories, “economic stability” and “protection from adverse influences” together counted for more than the other six combined. Both were interpreted in ways that were prejudicial against heterogeneous environments. The 1939 *Underwriting Manual* taught that “crowded neighborhoods lessen desirability”, and “older properties in a neighborhood have a tendency to accelerate the transition to lower class occupancy”. Smoke and odor were considered “adverse influences”, and appraisers were told to look carefully for any “inferior and non-productive characteristics of the areas surrounding the site”. The agency endorsed restrictive zoning and insisted that any single-family residence it insured could not have facilities that allowed the dwelling to be used as a store, an office, or a rental unit ([7,9], p. 326).

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The FHA helped turn the building industry against the minority and inner-city housing market, and its policies supported the income and racial segregation of suburbia. For perhaps the first time, the federal government embraced the discriminatory attitudes of the market place. Previously, prejudices were personalized and individualized; The FHA exhorted segregation and enshrined it as public policy. Whole areas of cities were declared ineligible for loan guarantees.

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This withdrawal of financing often resulted in an inability to sell houses in a neighborhood, so that vacant units often stood empty for months, producing steep decline in value [7].

Though the FHA increased the possibility for American families to purchase homes by reducing down payments, allowing a fully amortized mortgage of 25 to 30 years, providing home construction standards, and reducing interest rates for home buyers, the reality was that only certain demographics benefited. By having a list of criteria that directly discriminates against minorities and inner-city residents, the FHA policy created segregation based on race and income. The homes that were not financed, because they were not approved for financing dropped in home value, created even greater isolation of people from low socioeconomic backgrounds.

### LEED, CalGreen, and the SFGBO

In the last 10 years, there has been an increase in the private adoption of green building construction practices. Though, like the FHA, as these practices become government policies, there is the possibility for city, state, and federal roles to become lost in the transition. Additionally, policies surrounding green buildings could have similar impacts on demographics as the FHA.

In order to analyze this possibility, this paper examines three different green building publications: (1) LEED, which has been adopted nationally by local jurisdictions as the standard for green building; (2) CalGreen, the first ever statewide green building code adopted by the state of California; and (3) the SFGBO, which is the green building ordinance established by the city of San Francisco.

LEED is a rating system created by the U.S. Green Building Council (USGBC) in August 1998. LEED is a voluntary system that building developers, designers, and architects can use to identify their buildings as high performing on environmental and energy dimensions. LEED-certified buildings are divided into five main categories: (1) sustainable sites, (2) water efficiency, (3) energy and atmosphere, (4) materials and resources, and (5) indoor environmental quality. There are two additional categories that provide extra credit: (a) innovation in design for environmental measures not covered under the five main categories and (b) a regional bonus for measures that have special regional importance [11].

LEED evaluates a building's environmental design and offers multiple levels of certification (*Certified, Silver, Gold, or Platinum*). The level of certification depends on the number of LEED elements a building adopts. Each LEED element corresponds to a particular credit and is awarded a specific number of points. To achieve a Certified building, 40 to 49 points must be earned; Silver certification requires 50 to 59 points; Gold certification requires 60 to 79 points; and to reach Platinum certification, at least 80 points must be achieved [11]. LEED points are awarded only once documentation has been submitted to prove that the requirements of particular credits were met. The credits and points structure of LEED provides a various cost impact. For example, awarding a point for including bike racks under category 1 (sustainable sites) does not have the same cost as having solar panels under category 3 (energy and atmosphere).

CalGreen is a building code and the Chapter 11 of *California Code of Regulations Title 24* [12]. CalGreen went into effect on 1 January 2011 and is the nation's first mandatory statewide green building code. This regulatory code is for all residential, commercial, hospital, and school buildings. This new green building code is broken into five general categories: (1) planning and design, (2) energy efficiency, (3) water efficiency and conservation, (4) material conservation and resource

efficiency, and (5) environmental quality. CalGreen is further broken into three different components: a mandatory component as well as two voluntary components or 'tiers' that local jurisdictions can adopt. Tier 1 and Tier 2 represent the levels of stringency of green building measures implemented into a building, Tier 2 being the most stringent.

The SFGBO is an ordinance that imposes green building requirements on newly constructed residential and commercial buildings, and renovations to existing buildings in San Francisco, California [13]. The SFGBO often references LEED and, in specific sections, requires a higher threshold above that set by LEED.

## Methods

The methods used in the 'Results and discussion' section below are pulled from local government literature, law, and policy. This paper considers how the policies surrounding green buildings can (1) restrict local government power: to the extent which local government power is restricted by state regulations, (2) impact the dynamic between state and federal norms, and (3) create further separation between privileged and underprivileged classes, the potential for greater race and class segregation resulting from mandating green building development.

## Results and discussion

It has yet to be determined whether CalGreen is in fact beneficial for low-income neighborhoods. Mandating a green building code, while excellent in theory, like the FHA, could cause negative consequences as people in low-income areas are unable to meet the new requirement and, thus, unable to build new sustainable buildings.

As mentioned above, the FHA arguably had good intentions in trying to provide housing for more Americans; the ultimate outcome was that the FHA created gentrification and urban sprawl. Similarly, the recent increase of green building codes derives from good intentions; however, there may be unintended and negative consequences. As a result, three issues arise that are of concern: (1) the extent to which local government power is restricted by state regulations, (2) the dynamic between cities and states and what the federal norm regarding green buildings will be, and (3) the potential for greater race and class segregation resulting from mandating green building development.

### Local government power restricted by state regulations

Local self-government advocates defend city power because it enables citizens to participate in local decision-making, which is a fundamental component of a democratic government [14]. Limiting 'city power to state delegated authority would be an infringement on an

important aspect of human freedom' [14]. If a locality cannot decide for itself the kind of community it is to have, then local democracy would have no meaning at all [7]. 'When cities, (like individuals) meet to contract, they can refuse to go along with any proposal they don't like; what each city agrees to will depend on what the people within it want' [7].

Before CalGreen was mandated by the state of California, local jurisdictions were able to determine whether they wanted to adopt a specific level of LEED certification as their requirements for green buildings. For example, this is the case for San Francisco, which has implemented the SFGBO that primarily references LEED throughout the city provisions for building development. Now that CalGreen has gone into effect as the first state-adopted green building code, cities do not have the flexibility of selecting whether implementing green building practices for construction projects is appropriate for that locale.

Specifically, CalGreen Tier 2, while similar to LEED in its requirements, does not share a common language with LEED. This creates a disconnect between local jurisdictions and state regulation because localities that choose to also implement LEED for its national recognition must still require builders to meet CalGreen Tier 2. Should the SFGBO adopt CalGreen Tier 2 because it is similar to LEED but shares common language mandated by the state? Will this make LEED obsolete even though LEED really began providing building standards for a more efficient way to have sustainable building practices?

Local ordinances, like the SFGBO, which mainly reference building developments to meet or exceed LEED guidelines, need to adopt Tier 2 CalGreen provisions. If SFGBO adopts Tier 2 CalGreen provisions, to be completed for new projects or major renovations, there will be greater consistency of language within the state. This will not only allow San Francisco to continue to show leadership on a local level, but also allow for improved synergy throughout what the state regulatory system requires. Additionally, LEED, as a private non-profit organization, will need to advance its Gold or Platinum certification requirements or potentially become less relevant.

The comparison between LEED and CalGreen is an important one because since the time LEED was created in 1998, there have been over 5,000 LEED-certified buildings constructed in California. It is still too early to determine if or how CalGreen will impact the rate at which LEED certification is awarded, but the similarities between the two publications may mean that LEED will need to adapt beyond the standards listed in CalGreen or it will lose relevancy.

Figure 1 demonstrates how this concern has been recognized by the USGBC, which governs LEED, and recognizes that as building codes advance to address

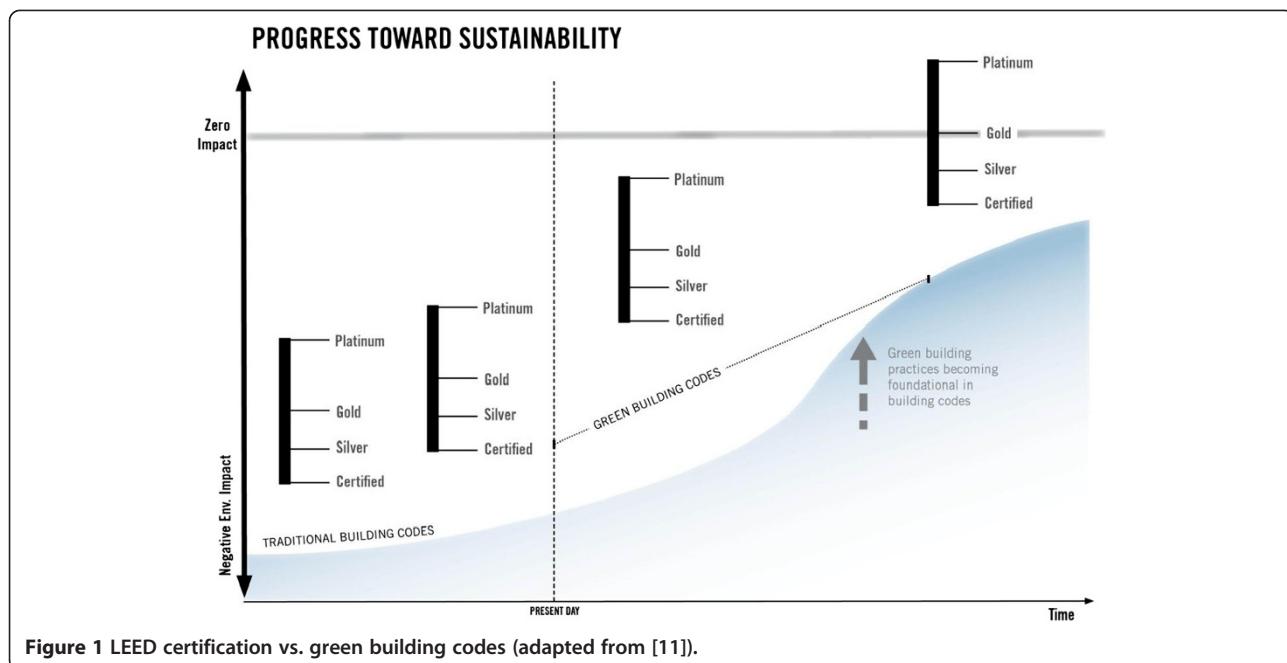


Figure 1 LEED certification vs. green building codes (adapted from [11]).

sustainable building construction and operation, LEED certification will need to respond by advancing its requirements for certification.

The SFGBO and other local jurisdictions that were once able to decide what type of green building practices they wanted to implement are now not able to do so because of the newly implemented state green building code, CalGreen. The fundamental component of a democratic government, however, is being able to have local self-government and participation in local decision-making [14]. The city should be able to choose their own green policies based on the citizens' desire on how 'green' they want to be, are willing to be, and can afford to be. The locality should be able, to a certain extent, to decide what kind of community it is going to have. Additionally, LEED as a non-profit organization, which has traditionally shown leadership in this sector, needs to continue to show that leadership in order to continue to be referenced in local jurisdictions as the 'go-to' publication for green building development.

#### State dynamic vs. federal norm

'The ability of cities to exercise independent power requires independence not only from the states but also from the federal government' ([10], p. 236). The task of establishing the right relationship on a national, state, and local government level is a major political issue in the USA ([10], p. 236).

Currently, local jurisdictions across the nation choose to adopt LEED as their green building provision. Though the majority of cities that require LEED adopt a minimum certification level of LEED Silver, those cities have

the independence to determine what green provisions in their building construction practices are suitable. For example, there are higher costs associated with becoming LEED-certified; each progressive level of LEED certification reflects greater financial output for items such as solar panels or tools to monitor the energy performance of a building. The cost associated with the new technologies involved in implementing some of the LEED requirements may not be available to some residents in various jurisdictions.

CalGreen changes the way local jurisdictions can regulate building development. If other states follow California and mandate a similar green building code, this can change the dynamic between state and federal regulations. Should there be a national green building code? Is building development so specific to the type of terrain that this could not be done?

It would be interesting to see where this progresses. If CalGreen proves to be wildly successful, there is a high probability that other states will be interested in also mandating their own specific green building code, making LEED even more obsolete.

If the nation adopts a policy surrounding green building practices, then states and local governments could lose their independent power to govern as they see fit. The balance between local, state, and federal government regulations is a major political issue in the USA. Deciding which level of government should have the power to determine the level of sustainability a building should have will be difficult. Enforcing sustainable building practices to preserve the natural environment for future generations should be an issue of national concern.

However, if achieving these sustainable practices remains prohibitively expensive, a situation similar to the outcome of the FHA policy could evolve.

### Race and class segregation

Thoughtlessly mandating green building codes and policies may potentially result in greater segregation between communities. When the FHA implemented the NHA, its intent was 'to encourage improvement in housing standards and conditions, to facilitate sound home financing on reasonable terms, and to exert a stabilizing influence on the mortgage market' ([10], p. 337). The reality, however, was far different. Ultimately, the 'FHA helped turn the building industry against the minority and inner-city housing market, and its policies supported the income and racial segregation of suburbia' ([10], p. 341). The FHA is evidence that government policy around buildings can transform the layout and way people live in the USA, often in unforeseen and unintended ways (or at least one hopes so).

As green building policies begin to mature and take root, greater awareness and analysis of their potential impacts is crucial. One can easily imagine that mandating green building codes could be a gateway for gentrification and class segregation. Though it is too soon to statistically predict whether having a mandatory code will deter people who live below a certain median household income from developing green buildings, if LEED increases the requirements to receive LEED Platinum or Gold certification, it is likely that CalGreen will also eventually increase and have a revision to the requirements of the building code. As both LEED and CalGreen improve their provisions to become greener, the increased building costs caused by these revisions will have a greater impact on people who cannot afford the costs associated with building green. As the CalGreen and LEED requirements become more stringent, the requirements for new building construction will predictably become more stringent. Although it is premature to predict the amount of costs associated with new green building codes, the eventual increase will hamper the ability of the underprivileged to build new homes in areas that need more housing. Thus, the same way the FHA turned the building industry against minorities, so too could the regulations requiring green buildings.

Usually, 'greener' buildings require more advanced technologies, which carry with them higher costs. To earn a Certified LEED building or LEED Silver building, there are often minimal additional costs associated with the points necessary to earn those certification levels. There is, however, a LEED registration fee which ranges from US\$450 to US\$600 and a certification fee, which averages US\$2,000, varying based on the project size. When certification gets up to the Gold and Platinum

levels, there are often costs associated with receiving the points available because there are technologies used that either have not become accessible or are mainstream enough to be reduced in price, such as solar cell technology or wind turbines.

Mandatory CalGreen has minimal, if any, costs associated with it. CalGreen Tier 1 and Tier 2 are higher standards, which are more costly and likely to be implemented in areas with populations able to afford any increased costs. As cities do not adopt Tier 1 and Tier 2 standards, social and economic segregation may result. As being green becomes *in vogue*, and the next way to compete with the 'Joneses', communities will market themselves to the wealthy as 'green'. Conceivably, 'green' may become a code word for safe, rich, professional, and privileged<sup>b</sup>. The result for less affluent cities that are unable to keep up with the green building movement will be that, because of their decision to not implement more costly green standards, they cannot compete in keeping and drawing the residents they need to build thriving communities. In a recently published study by Kok and Kahn from the University of California at Berkeley, green building labels increased the value of California homes by 9% [15]. This issue is only exacerbated by the current economic downturn. For example, many of California's cities are on the brink of bankruptcy. How then does a city like Richmond compete with the likes of Palo Alto? Similarly, how does Oakland compete with San Francisco? Without more research, however, all of this could be hyperbole and conjecture. Nevertheless, unintended consequences often have the greatest impacts.

### Conclusion

Green building policies will impact the ability of local communities to self-govern and make decisions, which are a fundamental component of a democratic government ([14], p. 118). As such, it is important to fully consider what level of government should have the power to determine green building policies. Though the preservation of the natural environment must be an utmost national concern, implementing national policies in favor of local control may not be the best method for making America green. Although uncertain, it is possible that a situation similar to the FHA policy could evolve, which may create greater segregation within our communities as less privileged people cannot afford to live in green cities.

Further research on the impacts of green building policies and certification systems should be conducted in order to determine whether green buildings will benefit those in underprivileged areas and, if not, what steps should be taken in response. For example, more research should be conducted that analyzes city-specific data, like

the level of certification received, socioeconomic information, and the types of building development that exist in city neighborhoods, along with the education levels of those neighborhoods. This type of research would provide greater insight and prediction for whether green building policies are exacerbating social and economic ills. If further research supports the initial conclusions found in this paper, then the resulting state and national policies regarding green building could potentially have the same effects as the FHA on creating segregation based on race and income.

## Endnotes

<sup>a</sup>In practice, FHA insurance went to new residential developments on the edges of metropolitan areas, to the neglect of core cities.'

<sup>b</sup>We use the term privilege here because it represents a spectrum of the issues dealt with between different classes, races, and sexes. As we move into the twentieth century, we believe that the historical comparisons of non-white vs. white, rich vs. poor, and male vs. female will become less relevant. Instead, the same root issues, the struggle between the oppressed and the oppressor, will be played out and discussed in terms of privilege and how one's privilege, which is not static, is exerted over others.

## Competing interests

The authors declare that they have no competing interests.

## Authors' contributions

RM was responsible for all research planning and research design and assumed final word on all writing. MF is listed as co-author due to his indispensable effort in editing advice. Both authors read and approved the final manuscript.

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