

Undergraduate Thesis Prospectus

Land Development: How to Best Prepare for New Hotel Construction

(technical research project in Civil Engineering)

The Movement for Zoning Reform in the United States

(sociotechnical research project)

by

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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General research problem

How can US city governments best meet their long-term sustainability needs?

Currently, our nation's cities are spatially very spread out, often lack accessible public transportation systems, and inefficiently manage the natural environment which they exist in. More than ever, cities are experiencing traffic congestion, flooding, crumbling roads, housing shortages, over-pollution, etc. just to name a few issues. Especially with the ongoing climate crisis, city governments need to re-engineer their infrastructure in order to reduce the carbon footprint of their daily operations (Norris, 2023; Thompson, 2019).

There are many ways to achieve this such as through ballot initiatives, media campaigns, grassroots collaboration with community and professional organizations, political lobbying, etc. In the form of a written essay, I seek to analyze and determine what the most successful efforts have been, and what kind of zoning regulations should be modeled nationwide to create long-term sustainability regarding both climate change and the overall livability of a city for its citizens.

Land Development: How to Best Prepare for New Hotel Construction

What is the optimal site design and development plan for a new hotel in Pantops, Charlottesville?

For my civil engineering capstone project, four other CEE students and myself are working alongside professional engineers from the Timmons Group, a local land development company, in order to create construction design and development documents for the site of a new hotel to be built in the Pantops area of Charlottesville. Our team will be advised by professor Arsalan Heydarian. The site design will require determining the best location and orientation of the building that complies with county code, designing a parking lot that meets county requirements, developing final grading of the site, stormwater management design that complies with DEQ requirements and utility design.

Our site plans will be drawn using CAD (computer-aided design) software, and in the drawings we will be tying together land surveys, underground boring tests, groundwater flow information, etc. gathered by Timmons Group. Furthermore, we will be thoroughly researching Albemarle County and Virginia codes on proper construction sediment runoff control, traffic closures, maximum allowable land grading, maximum rainwater flow rates on public land, and safe and efficient electrical utility design.

A challenge for our group will be balancing the desires of the architecture firm designing the hotel, and creating an economical design for the hotel owner that meets all legal codes intended to limit environmental damage, and one that is usable for all guests. By the end of the school year, we will have crafted complete construction plans for a general contractor to easily adhere to.

The Movement for Zoning Reform in the United States

In the US, how have advocates of zoning reform advanced their agendas?

Cities in the United States have been shaped through enacting zoning ordinances that dictate what types of buildings may be constructed in certain areas, and to create distinct neighborhoods of homogenous types of housing, businesses, aesthetics, etc. throughout urban areas. This resulted in cities that require traveling by car in order to move between places of residence, work, school, etc., and has made it hard for people of low-income to be able to afford quality homes (Thompson, 2019). Outdated zoning laws that require low density, single-family homes in American cities artificially increase the value of land and the number of homes that are able to be constructed.

Furthermore, these laws increase the carbon footprint of cities by complicating traffic and transportation patterns (Meyersohn, 2023; Norris, 2023). Zoning reform that supports diverse housing choices is essential in creating a sustainable future. It creates lighter density where it is most needed: in inner city and suburbs that are best served by public transit. It also mitigates sprawl and the environmental impacts of auto-centric development and supports public transportation. Moreover, research has established that urbanism results in lower levels of obesity and associated health impacts. Additionally, walkable communities provide opportunities for impromptu social gatherings, local businesses, and shared green spaces to support emotional and mental health (Barrie, 2023). There are a number of ways which zoning reform advocates have been seeking to make our American cities environmentally sustainable and more livable for its inhabitants.

One way in which zoning reform has advanced is through the formation of grassroots organizations within localities across the country. One such example is DesegregateCT, a community organization in Connecticut of volunteers led by a Mexican-American lawyer that pushes for zoning reform in a state full of single-family detached homes (Prevost, 2021). DesegregateCT staff members conduct research on how zoning impacts the daily lives of Connecticut residents, and one of their main organizational activities is attending municipal and state government meetings to discuss how zoning ordinances can be changed to be more sustainable and reduce racial inequality influenced by current zoning. One recent proposed initiative is for the state to force cities, counties, and towns to amend their zoning code to allow multi-family and dense housing construction near downtowns and public transportation centers such as Amtrak that can be used to travel in-and-out of the CT suburbs and into NYC and New England. This would proliferate the use of efficient and environmentally friendly public transit, while also making living in the suburbs more equitable for lower income individuals. Another similar effort by grassroots organization is from Gainesville YIMBY and the Florida Housing Coalition (FHC) who jointly pushed city council members at a meeting to adopt a reformed zoning law that allows for the construction of duplexes, triplexes, and multi-family homes in parts of the city that were previously zoned solely for single-family units (NLIHC, 2022). After seven hours of deliberation and presenting research at the meeting, they successfully persuaded attending residents and city council members to amend its 2020 Housing Action Plan to allow multi-unit development. FHC legal director Kody Glazer commented “we hope Gainesville’s efforts to increase housing options will be a model for the rest of the state as cities and counties tackle local barriers to increasing the supply of affordable housing.”

Professional organizations have been important vehicles for pushing zoning reform measures. The American Planning Association (APA) is a group of professional civil engineers and urban planners that lobbies government leaders by educating and persuading them on legislation that progresses social equity in urban development (Pasi, 2021). One such example is the APA's support of the YIMBY Act, which would require localities that receive Community Development Block Grant (CDBG) funding to publicly report on whether or not they have adopted a suite of local policies that affect housing affordability and availability. Some companies have acted independently, such as the land surveying company Millman National Land Services who advocates in favor of environmentally friendly zoning reform. They vouch for environmental review processes as “a powerful way for local municipalities to regulate the development in their jurisdictions” (Millman, 2021). Many localities have mandated such practices as a result of professional lobbying. For example, Camden, NJ in 2015 began requiring all developments to submit an Environmental Impact and Benefits Assessment to be reviewed by the planning and zoning board, and Newark, NJ in 2016 passed an ordinance that requires industrial and commercial developments to submit an environmental checklist with their application. Professional organizations have been such tremendous supporters of zoning reform as they have the opportunity to earn revenue from being hired to oversee/regulate new construction.

Online media campaigns have been implemented in order to educate citizens and lawmakers on the negative consequences on current zoning situations. The state of Montana has strict zoning laws on single-family homes, parking requirements, and minimum lot sizes, and housing density, which creates many barriers to homeownership for low-and-middle-income citizens. Thus, professional organizations such as the Montana Building Industry Association

(MBIA) and the Frontier Institute collaborated on digital advertisements to “demonstrate the broad impact that strict zoning regulations have on all facets of the state of Montana,” stated Cory Shaw, MBIA executive director, who is featured in one of the videos (MBIA, 2023). Furthermore, the Frontier Institute created the Montana Zoning Atlas 2.0 to demonstrate how strict zoning laws worsen the state’s housing shortage and skyrocketing house prices, and how it increases the carbon output of the state’s communities by encouraging high energy consumption and driving (Frontier Institute, 2023). The site uses maps, statistics, and political appeals from across the spectrum in order to persuade lawmakers to continue efforts to make living in Montana sustainable and affordable for all.

Community Benefits Agreements (CBA) have been enacted in order to shape the ways in which new large-scale construction developments come to life. A CBA is an agreement between a land developer and local community members, businesses, and affected entities that promise not to oppose a project or try to enact any legal complications if the developer in return provides the community with jobs, affordable housing, or environmental improvements (Been, 2010). This can include promises to hire a certain percentage of labor from local residents, that a certain amount of the housing will be low-to-middle-income level rent, promises to pay “living wages” to labor during the development, promises to meet certain environmental criteria, aesthetics, etc. The first use of a CBA was in 2001 with the Los Angeles Staples Center agreement. This agreement was between the Los Angeles Sports and Entertainment District development, the Figueroa Corridor Coalition for Economic Justice (FCCEJ), and labor unions such as the Los Angeles Federation of Labor (LAFL). City representatives said they’d approve of the deal if the FCCEJ and LAFL negotiated a CBA. The agreement included a commitment of \$1M for a recreation park for the community, funding of \$25K annually for five years to fund residential

parking permit program, construction of 100-120 affordable housing units, labor hiring preference to those whose homes were displaced by the development, etc. “I kept thinking of this as two airplanes approaching an airport at the same time,” said David Koff, a research analyst who served as an official LA Federation of Labor observer in the CBA negotiations (Romney, 2001). “The idea was to get both to make a soft landing at the same time.” A local resident Manuel Galvan stated how “almost everything we asked for we got... in the beginning it didn’t seem possible, but now we see that it’s a reality. This will mean some change for all of us.” The success and positive feelings of the Staples Center development by local residents has resulted in the adoption of similar CBAs in cities across the US.

Emphasizing research on global sea level rise has accelerated zoning changes in coastal cities. Published research indicates that global average sea level is expected to rise about 0.4 inches annually by 2050, which means that many low-lying areas will experience land loss (Sweet et al., 2017). In Norfolk, Virginia, city leaders conducted a complete overhaul of its zoning code—to prepare for and adapt to the increased frequency and severity of coastal flooding. (Velasco, Zelaya, & Burton, 2023). Its reforms established new zoning overlays across the city that encourage new development on higher ground, mandate elevated foundations and other stringent measures in coastal areas most vulnerable to flooding, and create zoning incentives for developers to relinquish their land rights on flood-prone properties and place them into conservation easements (City of Norfolk, VA, n.d.). This helps protect Norfolk from continued economic and physical damages due heavy flooding that is only expected to worsen.

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