

Green Building Practices
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I. Executive Summary

In 2011, the City of Northfield, Minnesota updated its zoning code, referred to as the Land Development Code (LDC) to align regulations closer with the stated goals from its 2008 Comprehensive Plan (CP). Despite Northfield's revised LDC, certain new developments and zoning designations remain problematic if the City hopes to achieve certain economic and environmental goals. In order to further benefit Northfield, this report focuses on the importance of the zoning code and its implementation in furthering sustainable development by integrating economic, environmental and social perspectives. The report also poses several recommendations, such as adopting a hybrid zoning code and offering incentives for developers to adopt green building features. These recommendations aim to help the City sustainably achieve its stated goals.

II. Introduction

In the United States, many local and state governments are currently at the forefront of the sustainable development movement. Through the implementation of policies that encourage healthier and greener communities, local governments are making advances in fighting climate change, increasing renewable energy use, and the conservation of natural resources. One of the most important processes that governments use to accomplish this through is city planning and, more specifically, through land use zoning. City planning and land use zoning policies regulate the use of land and other natural resources to ensure that cities are able to grow properly in conjunction with increasing populations while maintaining valuable resources. To complicate things further, local governments must navigate a maze of regulations at the federal, state, county and city levels while also trying to address issues within the local community such as: growing

populations, lack of sustainable and renewable energy sources, unemployment, and a lack of affordable housing, amongst a variety of other social and economic issues. Thus, it is critical for Northfield to use green building practices along with efficient and effective land use planning and zoning to further sustainability within the City. For the purposes of this report, we define a ‘green building practice’ as “the practice of creating and using healthier and more resource-efficient models of construction, renovation, operation, maintenance and demolition”.¹ Green building practices include building features such as proper insulation, renewable energy generation, and material conservation.

In Northfield—the city of focus in this report—officials are faced with a diverse set of challenges ranging from “maintaining natural, historic, and cultural resources,” to a changing climate that poses an increasingly high economic risk for businesses located on the Cannon River, to a population that is growing at twice the rate of the general U.S. population.² In response to these and other challenges, Northfield’s 2008 Comprehensive Plan (CP) lays out a set of developmental goals that take into account environmental, economic, and social perspectives.³ In the CP, Northfield acknowledges that the City’s zoning code, which Northfield has the right to amend as it sees, has an impact in “preserving natural areas and agricultural resources, a strong and vibrant downtown, and [promoting] sustainable planning practice”.⁴

Unfortunately, Northfield is unable to promote green building practices by implementing a green building code due to state legislation:

¹ “Green Building,” Environmental Protection Agency, accessed May 27, 2018, <https://archive.epa.gov/greenbuilding/web/html/>.

² “Comprehensive Plan for Northfield” (Northfield, Minnesota, USA: City of Northfield Minnesota, November 17, 2008), https://www.ci.northfield.mn.us/DocumentCenter/View/331/NfldCompPlan_2008_LoRes_20090615; “US Population Growth (Annual %).” The World Bank. Accessed May 06, 2018. <https://data.worldbank.org/indicator/SP.POP.GROW?locations=US&view=chart>.

³ “Comprehensive Plan for Northfield,” 1.1.

⁴ “Comprehensive Plan for Northfield,” 1.6.

“The State Building Code preempts and supersedes all local regulation for the construction of buildings. A key purpose of the legislature establishing a single State Building Code was to promote uniformity of construction standards throughout Minnesota”.⁵

Thus, the city has no legislative power over its building code and must use other methods to encourage green building practices.

Though Northfield does not have control over its building code, the City can use its zoning codes to accomplish specific goals relating to green building practices. Zoning codes balance different land uses in an area and regulate the types of developmental usages permitted in those areas. In practice, Northfield’s Land Development Code (LDC) interacts with the Minnesota State Building Code to create a set of regulations that all developers and citizens in Northfield face when considering construction of a new project, whether that be a new housing development, opening a business in the downtown, or constructing a new office park.

Even though Northfield must comply with the State building code, there are instances in which Northfield regulates building standards in its LDC as a way to accomplish the City’s goals.⁶ In the 2008 CP, Northfield acknowledged that it must amend its LDC to a form-based code that ensures “the charm of [the] community for years to come”.⁷ In general, form-based code focuses on form rather than function. By adopting a form-based code, districts would be designed in a way to promote uniformity amongst buildings’ appearances rather than solely on the use of the building in the community.

However, the City’s most recent LDC (adopted in 2011) still maintains a Euclidian zoning approach that emphasizes isolation among districts. Therefore, we believe that a clearer,

⁵ “Minnesota Guide to the State Building Code” (Minnesota, USA: http://www.dli.mn.gov/ccld/PDF/guide_to_code.pdf, n.d.), http://www.dli.mn.gov/ccld/PDF/guide_to_code.pdf.

⁶ “Chapter 34, Land Development Code.” Northfield, Minnesota, USA: City of Northfield Minnesota, April 7, 2015. <https://www.ci.northfield.mn.us/DocumentCenter/View/3556/LAND-DEVELOPMENT-CODE>.

⁷ “Comprehensive Plan for Northfield.”

more detailed, and zoning code would have the most impact on encouraging green building practices. The policy options for doing so include the city evaluating its current CP and LDC, perhaps with the aid of an outside consultant. Along with this suggestion, the City should also adopt a more flexible zoning code for developers to ensure that sustainable, green building practices are upheld throughout development. Finally, the City could incentivize developers to implement green building practices such as increased energy efficiency, overall waste reduction, and resource efficiency.

In the following sections, we outline the current state of Northfield's developmental landscape and how the City's current zoning code does not effectively promote green building practices amongst current and future development. Then, we identify key points regarding new developments and sustainability measures (or the lack thereof) that, we feel, have not been addressed within the past decade. Following this, we suggest specific recommendations for the City to consider adopting in order to resolve some of the issues we identified concerning the lack of green building practices. Finally, we conclude by providing specific ways the City may implement our recommendations.

III. Why Green Building Practices Matter

Green building practices offer several important benefits to Northfield. Zoning codes offer a way to develop a tighter social community that also confers economic benefits for cities. Greener buildings practices not only offer economic advantages but are also a step towards greater environmental sustainability. Components of green building practices such as green building codes and zoning codes can then be classified as an effort towards sustainability, as they encourage greater economic, social, and environmental development.

A. *The Issue*

Zoning codes are an influential factor that impacts the sense of community in a town or city. Northfield's zoning code, found in Chapter 34 of the Northfield Code, primarily employs a Euclidian zoning approach in which land is divided into districts that serve only one use (either residential, commercial, or industrial).^{8,9} Since the majority of zones in Northfield are not mixed-use districts, residential zones have become isolated from commercial retailers and employment opportunities. Suburban sprawl and a lack of community and employment centers often result in deeply unhappy residents who are forced to commute long distances to work. Increased time commitments for commuters can have an adverse effect on the long-term happiness of residents and perhaps inadvertently lead to low retention of those residents in the city. This is not a unique problem as Euclidian zoning has been critiqued as a contributor to "urban dysfunction" and a hindrance for towns and cities trying to further their environmental, social and economic development.¹⁰

Similarly, green building practices also have substantial impacts on sustainability. Proper insulation is necessary, given the harsh Minnesota climate, and can greatly reduce the amount of energy needed to heat a building. This also has important economic impacts, as heating costs are a significant burden to many families.¹¹ Additionally, while updated development codes do not necessarily have as large of an effect on existing buildings, "efficiency upgrades for buildings, motor vehicles, and major appliances represent the individual behaviors that have the most

⁸ "Chapter 34, Land Development Code."

⁹ Jay Wickersham, "Jane Jacob's Critique of Zoning: From Euclid to Portland and Beyond," (Boston College Environmental Affairs, 2000) 547.

¹⁰ Orion Planning and Design. "Title 19 Zoning Code Audit, Final Report - March 2018." Maui, Hawai'i, USA: Count of Maui, Planning Department, n.d. <https://www.mauicounty.gov/DocumentCenter/View/112081/MCC-Title-19-Zoning-Audit-Report-and-Appendices-March-2018->.

¹¹ DeRusha, Joshu. "How Do You Save Money On Heating Bills?" CBS Minnesota. October 18, 2011. Accessed May 28, 2018. <http://minnesota.cbslocal.com/2011/10/18/good-question-how-do-you-save-money-on-heating-bills/>.

potential to reduce energy use”.¹² These issues are especially challenging for Northfield to resolve, given how the city is constrained by the Minnesota State Building Code. Therefore, the city must find a way to encourage home and business owners to go beyond Minnesota’s minimum building standard requirements by building or renovating using green building practices.

B. Opportunities

Northfield typically updates its CP every ten years.¹³ This will likely entail a subsequent update to the LDC too, as in 2011 when the City of Northfield updated its LDC to follow the 2008 CP more thoroughly so as to further ensure that the City’s sustainability goals could be met. Since the last CP was published in 2008, the city is currently due for an update, which poses an opportunity to adopt new zoning policies to further green building practices and would not be a financial barrier.

New developments to accommodate the growing population present the city with an important opportunity to introduce better green building codes. Considerable new development will be undertaken in the upcoming years, including the opening of a new business park by the Hoisington Koegler Group.¹⁴ If the city can introduce better codes and practices before development of this and other new projects then the city can take an important step towards sustainability.

IV. Current State of Green Building Practices in Northfield

Northfield has previously recognized the importance of an integrated zoning code that works to ensure both prosperity and sustainable development within City boundaries.

¹² Dernbach, John. “HARNESSING INDIVIDUAL BEHAVIOR TO ADDRESS CLIMATE CHANGE: OPTIONS FOR CONGRESS.” *Virginia Environmental Law Journal* 26, no. 107 (2008): 128–29.

¹³ “Comprehensive Plan for Northfield.”

¹⁴ HKGI. “Northfield Project Information.” Hoisington Koegler Group Inc. Accessed May 06, 2018. http://www.hkgi.com/projects/northfield/project_info.php.

Consequently, the 2011 LDC makes explicit references requiring that all development codes fit within the principles laid out in the 2008 CP, which provides a sort of blueprint for the entire municipality's economic, environment, physical, and social development.¹⁵

Northfield has worked to incorporate several environmentally friendly policies in its LDC. It has done so by modeling several of its regulations on the zoning codes of other sustainable, environmentally-conscious cities such as Seattle.¹⁶ These attempts have been realized through the development of a comprehensive sustainability plan, which states goals to encourage the development of LEED certified buildings and additional regulations to prevent erosion.¹⁷

The city also adopted the GreenStep Cities program to guide future progress in 2010 which provides a series of checkpoints to work on towards the goal of sustainability.¹⁸ Northfield is in step 3 of the GreenStep program, which shows the commitment that the city has to sustainability.¹⁹ This is supported by citizen activist groups like The Greater Northfield Sustainability Collaborative, which is an umbrella organization for many sustainability initiatives in town.²⁰

The city also has plans to make further progress on the GreenStep program. Two plans that have been started but have yet to be completed in Northfield is the renovation of existing public and private buildings to make them more energy efficient. The city has highlighted in the CP several potential next steps to take on these fronts. Two potential new programs would be to

¹⁵ "Chapter 34, Land Development Code."

¹⁶ "Seattle Sets the Standards for Green Buildings." C40 Cities. November 4, 2011. http://www.c40.org/case_studies/seattle-sets-the-standards-for-green-buildings.; Zweifel, Erica. "Interview with Erica Zweifel." Interview by author. April 16, 2018.

¹⁷ "Comprehensive Plan for Northfield."

¹⁸ Behrendt, Tim. "GreenStep Cities Actions." City of Northfield Minnesota. Accessed May 09, 2018. https://www.ci.northfield.mn.us/DocumentCenter/View/700/GreenStep_Actions.

¹⁹ Zweifel, interview.

²⁰ "About." Greater Northfield Sustainability Collaborative. Accessed May 09, 2018. <http://northfieldsustainability.org/about/>.

provide meaningful incentives to homeowners who renovate according to a green building code and to create an internal loan fund that could be used for public sustainability improvements.²¹ It is unclear whether these goals have timelines associated with them, but the city has assigned departments to look into these goals, presumably to gauge feasibility and project implementation details.

V. Key Issues in Creating and Maintaining Green Building Practices in Northfield

The City's population has been increasing at around 1.6% each year, almost double the U.S. average of around 0.7%, which poses additional challenges.²² To accommodate this influx, the city will need to construct new housing developments, as well as new commercial properties for potential business ventures. Yet, simply increasing housing opportunities would put Northfield at risk of turning into a "bedroom" community, where the vast majority of its inhabitants commute to the Twin Cities for work.²³ This is an important obstacle for sustainable development in Northfield, as developing a truly sustainable city requires an invested and involved community unlike one in a "bedroom" settlement.

Each district in Northfield has certain limitations for developmental opportunities, so greener building standards are applied differently in every zoning district. This poses a serious challenge to Northfield when considering the multitude of zoning districts. For example, a policy that seeks to ease the process of installing solar panels on buildings would have to be considered in its effect on the visual aesthetics of the City. While the aesthetic value of a solar panel might be unimportant in the Highway-Commercial district, those in the Historic Downtown Center might be opposed to such visual impediments. This especially challenging given the cities

²¹ Behrendt, "GreenStep Cities Actions."

²² Planning Commission, Comprehensive Plan, 11.5.; "US Population Growth (Annual %)." The World Bank. Accessed May 06, 2018. <https://data.worldbank.org/indicator/SP.POP.GROW?locations=US&view=chart>.

²³ "Comprehensive Plan for Northfield."

emphasis on infill development, which means that new developments will occur in a variety of different districts.²⁴ Thus, green codes and regulations must be considered holistically across all zoning designations so as to decrease the time and effort to comprehensively integrate these practices into the zoning code.

Another challenge to implementing sustainable practices in the current zoning and building code is the changing natural environment. Northfield's Cannon River has flooded several times in recent years, and these floods only grow more dangerous each year as bank erosion has increased and weather patterns grow more severe.²⁵ This threatens nearby areas that have been previously safe from flooding, increasing the risk of property damages dramatically since these buildings do not have adequate flood protection. To adjust for these new realities, Northfield's zoning code must consider how current and future developments in the downtown and commercial areas zones near the river may be affected by an increase in extreme weather events.

Moreover, Northfield's zoning code also suffers from unnecessary complexities. It had originally been written by a consultant who largely copied a code from a Florida town and included many clauses and provisions that are not applicable to Northfield.²⁶ The City has worked to rectify this and rewrite the code, but some vestigial clauses still exist. As an example, the code contains rules for a Neighborhood Floating Center district, but, according to the zoning map, there is only one lot with this code located on 1001 Division Street South.²⁷ This indicates that an entire section of the zoning code is devoted to a single lot, only further complicating the regulatory process for new building development.

²⁴ "Comprehensive Plan for Northfield," 1.6.

²⁵ "Climate Change Indicators: Weather and Climate." EPA. August 02, 2016. <https://www.epa.gov/climate-indicators/weather-climate>.

²⁶ Zweifel, interview.

²⁷ Northfield Planning Division. "Northfield Zoning Map." City of Northfield Minnesota. <https://www.ci.northfield.mn.us/DocumentCenter/View/441/Northfield-Zoning-Map-PDF>.

Part of Northfield's identity as a city is contained within the Historic Downtown Center which has strict design standards in relation to building aesthetics in order to maintain the historical legacy of the city. Yet, these rules also hinder sustainable development, as they make it very expensive to modernize historical buildings with 'green features'. The limitations of the Historic Downtown Center restraints the number of effective sustainability policies that can be applied to the district, forcing Northfield to target a smaller number of policies to implement that will have outsized impact.

One more factor to consider is the difficulty for individual homeowners to meet green energy standards and reap the benefits associated with them, especially when their homes are older and do not already contain energy-saving technologies. The participation rate in a green energy program is a better predictor of a program's energy savings than the actual stated goals laid out in the program.²⁸ Therefore, Northfield needs to ensure that policies that target individual homes are convenient and easy to perform in order to maximize these policies' effectiveness.

Another issue is the relationship between the City and the two colleges. The colleges are part of their own self-contained environments, and only pay a limited amount of taxes to the city which lead to funding issues for the City government.²⁹ However, the colleges also boast an outsized number of students, faculty, and staff who support green initiatives in Northfield. Thus, it is crucial to get these members of the community involved with local sustainability issues. Unfortunately, students are only temporary members of the town community. This is an especially significant obstacle for building and zoning codes since it will take years until construction is completed according to the new standards. This makes it imperative for the

²⁸ Stern, Paul C. "Energy Efficiency in Buildings: Behavioral Issues." Washington, D.C.: National Research Council, 1985.

²⁹ Zweifel, interview.

campaign for green building practices to set well defined goals and checkpoints which will give students a sense of accomplishment and in turn increase student involvement.

This slow time frame is even more exacerbated when considering buildings that are already in existence. These buildings may not be renovated to meet current standards for years, which is an important sustainability concern and a major issue for proposed new green building practices. One option to speed up this timeframe would be to penalize homeowners with additional taxes or fines for not renovating their house if it falls below certain standards. Eagle County Colorado has instituted such a policy and have found that the proceeds from these fines gave them sufficient funding to also adopt a positive incentive program.³⁰ This complementary program rewards residents for renovating to levels above minimum standards, such as reaching silver or higher LEED status.

VI. Recommendations for the City of Northfield

There are several potential opportunities for the city that would improve green building practices. First, we suggest that the City update the current CP and evaluate the LDC, possibly through hiring an outside consultant. Additionally, we recommend that the city incentivize implementing green building practices beyond minimum standards mandated by the State building code.

A. *Re-evaluating the Comprehensive Plan and Land Development Code*

Throughout this evaluative process, the most prominent finding was the lack of intentional implementation of the codes and regulations that are set forth in the CP and LDC. In other words, many of the regulatory measures defined in the CP and LDC were not or have not actually been pursued by the City government or by developers. We believe this may be related

³⁰ “Going Beyond Code: A Guide to Creating Effective Green Building Programs for Energy Efficient and Sustainable Communities,” Building Technologies Program (U.S. Department of Energy, n.d.), <https://www.energycodes.gov/sites/default/files/documents/GoingBeyondCode.pdf>.

to the lack of consistency between the goals of the CP and the regulations of the LDC.

Therefore, our first recommendation for the City of Northfield would be to address discrepancies that lie between the CP, LDC, and zoning code (found in Article 2 of the LDC). For example, in Chapter 5 of the CP (“Environmental Resources”), various protection programs and regimes as well as other tools and strategies were suggested (i.e. Purchase of Development Rights, Bonus/Incentive Zoning, Conservation or Preservation Easement, etc.) but none were explicitly mentioned throughout the LDC nor have they been implemented throughout Northfield, aside from Overlay Zoning. Regulations in Overlay Zoning districts, according to the Land Development Code, “apply in addition to the regulations governing the underlying base,” the latter of which can be thought of as having a single-use with set regulations. We will discuss this in further detail in the next section.³¹

While addressing these discrepancies, we believe that the City of Northfield should look into the current CP, LDC, and zoning code being evaluated and audited by an outside planning and design firm. This would provide the city and its planning department a new perspective on the status of Northfield’s current zoning code and would, consequently, result in the identification of weaknesses in the code that can be remedied by the incorporation of more detailed requirements of each land use district as well as the incorporation of any updated contributions from community stakeholders. Because the City must follow building code regulations that are set forth by the State, hiring an outside consultant could also provide insight on the legal issues that could arise with regards to the implementation of new sustainable features and practices in buildings, such as installing solar panels on individual buildings. Moreover, this outside consultant would conduct additional research on sustainable building practices from other cities and ways to help Northfield move towards building efficiency, work

³¹ “Chapter 34, Land Development Code,” 7.

of which could be relieved from current personnel. This method has been successful in other cities, such as Portland, Oregon and Maui County, Hawai‘i, where both municipalities benefited from additional advising on how best to reorganize its current planning policies.^{32,33}

Though this endeavor may seem to be a costly one in both time and money, Northfield does in fact have the budget to fund hiring an outside consulting firm.³⁴ In addition, hiring an outside consultant would require that the consultant seek thorough guidance and input from community stakeholders. Community stakeholders, in this sense, would include community groups and/or individuals who have an interest in and are concerned with social and economic well-being of the community. That is, community stakeholders in Northfield would include, but are not limited to, the City Planning Department and Administration, state Department of Health, state Department of Transportation, Department of Natural Resources, various developers, and representatives from Carleton and St. Olaf colleges. Input from these stakeholders will be critical for consultants in determining the most relevant and necessary development that would best benefit the Northfield community. Overall, hiring an outside consultant to evaluate and audit the CP, LDC, and zoning code would prove to be beneficial not only for the City’s Planning Department, but would also make more space for community input on what is currently necessary for the City.

B. Adopting a Hybrid Zoning Code

As previously mentioned, Northfield’s current zoning code is rooted mostly in Euclidian zoning. Though familiar to city officials and easy to administer, Euclidian zoning is outdated and limited in use, as its focus on land use rather than form isolates districts and is ultimately

³² “City Approves Streamlined Green Building Policy for Affordable Housing,” City of Portland, October 25, 2017. <https://www.portlandoregon.gov/phb/article/660784>.

³³ Orion Planning and Design, “Title 19 Zoning Code Audit, Final Report - March 2018.”

³⁴ Smith, Kim. “Interview with Kim Smith.” Interview by author. May 15, 2018.

inflexible in allowing mixed uses of the land. In Northfield, we see this kind of inflexibility as random, isolated zoning designations are located within areas that are designated otherwise (*see Appendix I, Areas A and B*). Furthermore, other areas are considered “Overlay Districts” which require developers to follow both a set of land use regulations for the “Base District” as well as additional ‘special’ regulations in order to protect certain aspects of the land, such as FEMA Floodways or the Historic Preservation district (*see Appendix I, Area C*). As a consequence of this complexity, there has been minimal enforcement and encouragement of sustainable building practices in the development of these areas, as evidenced by the lack of detail in the LDC and CP.

Thus, we recommend that, in order to abate the unnecessary complexity of district regulation, Northfield consider adopting a more simplified, hybrid zoning code. A hybrid zoning code “attempt[s] to maximize the benefits of different zoning approaches while minimizing the disadvantages or challenges each type is known for”.³⁵ In other words, a hybrid zoning code not only uses Euclidian zoning as a general framework, but also incorporates other types of zoning, such as form-based code and performance-based zoning. By adopting a hybrid zoning code, Northfield wouldn’t need to eliminate a Euclidian structure entirely, but would instead increase the flexibility throughout different land use designations by including criteria from form- and performance-based zoning types.

To elaborate, form-based code, as the name suggests, focuses on the appearance and form of the development and the ways in which it relates to established, surrounding development³⁶ rather than on the actual use of the development within the community. Form-based code would encourage the implementation of specific design standards so that future urban development resonates with the ‘small-town feel’ of Northfield. Contrastingly, performance-based zoning is

³⁵ Orion Planning and Design, “Title 19 Zoning Code Audit, Final Report - March 2018.”

³⁶ Anthony Flint, “Braving the New World of Performance-Based Zoning,” CityLab, August 12, 2014, <https://www.citylab.com/equity/2014/08/braving-the-new-world-of-performance-based-zoning/375926/>.

concerned with establishing sets of performance criteria of the development itself, rather than use districts that decide what is permitted where. Ultimately, performance-based zoning increases flexibility for developers by allowing them to find innovative ways to meet requirements set forth by the City's Planning Department. Performance-based zoning has proven to be successful in other cities such as Fremont, California, where sustainability goals, such as requiring certain levels of energy efficiency in buildings or standards for a low-carbon footprint were mandated in addition to economic goals like providing a certain number of jobs or affordable housing units.³⁷

Additionally, Floating Districts that were discussed in both the CP and LDC have yet to be fully utilized. Floating Districts are land use districts whose designations portray them to be 'floating' within areas that are mostly designated to be of another land use type. According to the LDC, Floating Districts can be separated into two types: "Economic Development Floating Districts" (ED-F) and "Neighborhood Center Floating Districts" (NC-F). The realization of Floating Districts in Northfield could greatly benefit from the mixed nature of a hybrid zoning code. We found that there is potential for substantial improvement in the current code if city officials and planners were to address and intentionally implement ED-F and NC-F districts, as mentioned in Section 2.6.1 and 2.6.2 of the LDC, respectively. These districts seem to have similar goals: providing a mix of uses within districts that either follow the social, economic, and/or environmental goals of the community. NC-F districts provide opportunities to "develop nonresidential or mixed-uses in existing neighborhoods where the principal building is designed to be consistent with the size, scale, and massing of the surrounding residential uses", while ED-F districts are "for employment with an urban campus type character with a focus on sustainable, high quality development that is designed in a way to preserve the city's natural resources while simultaneously promoting economic development... land uses within the district shall be

³⁷ Flint, "Braving the New World of Performance-Based Zoning."

designed to minimize impact on any residential uses or environmental resources by appropriate buffering and overall subdivision design”.³⁸

Though the motivations of both NC-F and ED-F districts seemingly resonate with the goals of form-based code and performance-based zoning, respectively, they are nearly non-existent in the current zoning map, except for a small parcel designated as NC-F within a “Low Density Residential” (R1-B) area (*see Appendix 1, Area D*). To this day, an ED-F district still does not exist in the City. As previously mentioned, Northfield’s land use regulations have successfully encouraged developers to build at higher densities, but the style and layout of housing within new developments has typically remained unchanged and mismatched with the change in density patterns. To address population density issues, we suggest that the City consider changing its current zoning designations of Low-, Medium-, and High-Density Residential areas to NC-F. This would, presumably, equalize the density of residential development across the city rather than having varying levels of residential development littered randomly throughout Northfield. In addition, this could increase the amount of affordable housing in the City, and, under the current standards of NC-F districts, could allow for mixed and nonresidential uses in the district too.

Similarly, an influx in population would lead to an increased pressure on resource use as well as a need for jobs. Designating an area as ED-F could potentially achieve both social and environmental goals with the creation of more job opportunities and implementation of sustainability features within buildings. Hybrid zoning and, more specifically, ED-F districts address both these issues, as ED-Fs not only aim to increase employment opportunities but also encourage sustainable practices for businesses to preserve and conserve the City’s natural resources. Following this logic, we also suggest that certain areas -- specifically those around the

³⁸ “Chapter 34, Land Development Code,” 27.

Cannon River -- be transformed into ED-F districts to accomplish the sort of urban-economic and environmentally-conscious development that Northfield seeks.

It is important to note that without the realization of these types of multifunctional districts, incorporating them into the city's planning and land use designation code is a waste of time and resources. It may be the case that these designations have not been effectively implemented because of a lack of detail that would support changes in zoning for certain residential and commercial districts or, even, a change in the zoning code altogether. These facts then lead us to suggest that regulations for each district be further elaborated upon in the LDC so that future planners and developers may anticipate all possible uses within each district type.

Altogether, adopting a hybrid code would address nuances between "Base Districts" and "Overlay Districts" and instead allow for more uses within each district as well as require more sustainable features throughout each district's development. Though a hybrid zoning code may be more complicated to administer given the complexities of defining sustainability and design standards that follow the values of Northfield, we believe that it could make a critical impact on the successful implementation of sustainable building practices throughout the City.

C. Incentivizing the Implementation of Green Building Standards

Though Northfield cannot necessarily create nor enforce new green building practices due to its jurisdiction under the Minnesota State building regulations, incentivizing developers to go beyond what is required can be beneficial for both Northfield and developers. These green building standards can range from installing energy-efficient appliances (i.e. light bulbs, electronics) to reducing construction-related waste through recycling programs during the development process and within the development itself. Moreover, Northfield could reward

developers who seek out such certifications such as LEED and ENERGY STAR³⁹ with such incentives like expedited permitting and plan review, certification-fee reimbursement, reductions in property taxes, and reduced utility rates based on energy consumption.⁴⁰ Such policies would also satisfy steps in the cities GreenSteps program which has been successful in helping other cities towards greater sustainability.

New development opportunities present a unique chance for companies and developers to incorporate new green technologies into new development. For example, the new business park being developed by the Hoisington Koegler Group is a chance for private business owners to be more energy efficient by generating their own electricity through the establishment of nearby solar farms.⁴¹ This would not only provide clean energy for commercial activity in the business park but would also ease pressure off the City's electrical grid. By ensuring sufficient regulation supporting sustainable building practices (such as self-sufficient energy generation) before these types of projects have begun, the City could benefit by avoiding costly renovations to these buildings in the future.

The City could also take several different approaches to promote green building practices. For example, instead of incentivizing green building practices, the City could penalize existing buildings or current development that are not energy and resource efficient. Penalization could be accomplished through additional taxation so as to encourage building owners and developers to install sustainable features to reduce resource consumption and waste generation.⁴² However, there is one substantial drawback with penalization, as this would be financially-

³⁹ "ENERGY STAR Certification," n.d., <https://www.energystar.gov/buildings/about-us/energy-star-certification>.

⁴⁰ "Going Beyond Code: A Guide to Creating Effective Green Building Programs for Energy Efficient and Sustainable Communities."

⁴¹ Hoisington Koegler Group Inc., "Northfield Project Information."

⁴² Dernbach, "HARNESSING INDIVIDUAL BEHAVIOR TO ADDRESS CLIMATE CHANGE: OPTIONS FOR CONGRESS."

difficult and burdensome for current building owners who would be forced to pay this tax, possibly harming affordable housing.⁴³ Ultimately, this is only a suggestion that Northfield could use as a stepping-stone toward a more effective way to motivate current building owners to renovate buildings with green building features.

Alternatively, the city could attempt to advocate for changes in the state building code that would then impact Northfield. However, Northfield is a small city and likely doesn't have the political or economic capital to undertake such a lobbying effort. For this reason, we believe that the course of action that we have laid out previously is more impactful than these alternatives.

To conclude this section, we have suggested that the City of Northfield reevaluate its current CP and LDC so that it reflects the most recent, relevant, and important issues that the city currently faces. One way in which the City could accomplish this is through the hiring of an outside consultant to guide the Planning Department on how best to navigate the complexities of possibly adopting a new hybrid zoning code. Additionally, we also recommended that the City begin incentivizing developers to adopt and implement green building features in current and future development. Overall, these recommendations would help the City by not only simplifying the current zoning code, but also encouraging the further implementation of green building practices. This would provide economic, social, and environmental benefits.

VI. Conclusion

To date, Northfield has made important strides towards greater sustainability over the past decade. The city has successfully coupled its LDC and CP to pursue a neotraditional agenda which has helped to ensure that the city maintain its character and remain truly independent. The city has also made concerted efforts towards sustainable practices in its CP by emphasizing the

⁴³ Morlan, Bruce. "Interview with Bruce Morlan." Interview by authors. May 17, 2018.

importance of utilizing clean, sustainable energy sources, as well as moving forward with its GreenSteps agenda.

Nonetheless, the city still has a distance to go before it can truly consider itself as ‘sustainable’. There are a significant number of impediments blocking the city, such as an increasing population and, consequently, a lack of housing, a changing natural environment, and an outdated, complex zoning code that hinders development. Moreover, the city must incorporate the voices of community stakeholders such as citizen activist groups like the Greater Northfield Sustainability Collaborative to account for the current needs of the community, whether they be economic, social, or environmental.

Going forward, we have suggested that the city must first have its current CP and LDC evaluated and audited by an outside source. This is a critical step for the City as old and outdated information can be forgone and new information from other sources can be recommended on how best to proceed with Northfield’s changing environment. Along with this suggestion, the City should also try to adopt a hybrid zoning code that would allow more flexibility for developers while also assuring that sustainable, green building practices are upheld throughout development. With the implementation of a hybrid zoning code, the City would be able to not only address issues of housing for an increasing population but would also provide more jobs for the expanding workforce while assuring that these new developments are up to par with the City’s sustainability standards. Lastly, we suggested that the City incentivize developers to implement sustainable building practices such as increased energy efficiency, overall waste reduction, and resource efficiency through certification processes (i.e. LEED, ENERGY STAR), property tax reductions, and reduced utility rates. Together, these recommendations would push Northfield towards greater economic, social, and environmental sustainability.

Appendix 1.

