

SUSTAINABLE DEVELOPMENT:

Incorporating Sustainability into Thornton's
Development and Zoning Code

Executive Summary

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EXECUTIVE SUMMARY

INTRODUCTION

The City of Thornton is a 38 square-mile suburban municipality within the north-central portion of the Denver Metropolitan Area, situated about 10 miles north-northeast of downtown Denver. Its current boundaries are from approximately 88th Avenue on the south to Highway 7 (168th Avenue) on the north and from Zuni Street on the west to approximately Yosemite Street on the east. Thornton has experienced substantial growth over the last decade. With a 2020 population of 145,688, its population increased by 23% from 2010 and is now the 6th largest city in Colorado.

Thornton is aware of its responsibility to grow new areas and redevelop existing developed areas in ways that are economically, socially, and environmentally sustainable. Thornton's 2020 Comprehensive Plan, Tomorrow Together outlines the city's long-term vision for its future growth and how it can invest to enhance the overall quality of life for current and future residents. To guide the city toward a more sustainable future, Thornton recently completed a Sustainable Action Agenda (2020) and an Energy Action Plan (2020). Thornton plans to conduct a major update of its zoning and development code from mid-2022 to 2023, and the Planning Department wishes to incorporate meaningful sustainability measures into the revised code.

This capstone focused on developing a comprehensive report that provides recommendations to Thornton's Policy Planning Office to help support the sustainability vision and goals into the upcoming code update. The research included a review academic literature, case studies, and development code best practices from similar suburban communities that strongly support sustainable growth. Based on this research and the students' understanding of Thornton's sustainability vision and goals, the report provides a series of specific recommendations that can help support and guide the upcoming development and zoning code updates. The

recommendations are organized by suggestions for residential code and commercial code.

BACKGROUND RESEARCH

Findings from existing city and regional plans, academic and practitioner research, and relevant case studies helped the project team understand the complexities of zoning and development code and the ways in which other municipalities have tried to incorporate sustainability into their code.

Existing Conditions: Thornton Plans

The exhibit below highlights the key takeaways from the relevant Thornton plans as it relates to sustainable visions and goals.

KEY TAKEAWAYS FROM THORNTON PLANS		
	COMMERCIAL	RESIDENTIAL
	<ul style="list-style-type: none">Provide quality services and amenities.Support economic vitality.Provide more opportunities to live, work and play.Grow smarter and greener.	<ul style="list-style-type: none">Create a mix of housing options for different lifestyles.Create neighborhood connections.Create high-quality, walkable neighborhoods.Promote sustainable development practices.
	<ul style="list-style-type: none">Incorporate businesses that work in sustainability.Create more higher paying jobs.Establish TOD areas.	<ul style="list-style-type: none">Promote energy efficiency and sustainable design.Enhance safe transit, walking, and bike connections.Increase open spaces and parks, promote active living.
	<ul style="list-style-type: none">Upgrade lighting fixtures.Reduce greenhouse gas emissions.Increase energy efficiency in businesses.	<ul style="list-style-type: none">Reduce greenhouse gas emissions by 50% by 2030.Promote smart, green, equitable development.Promote energy efficiency programs and education.

Zoning and Sustainability

Urban planners use their understanding of place and spatial interactions to help shape the character of their communities. Zoning codes and land use regulations is one of the tools that reflects the best uses and spatial organization of a place. Incorporating sustainability into these codes and regulations has become a popular direction that municipalities have taken; a study reveals that ordinances related to sustainability often correlate with more recent plans and updates (Jepson, 2014).

Conventional zoning codes were made to separate various types of land uses so that a factory was not adjacent to residential properties which would negatively impact people's lives. However, the impact of these conventional zoning codes often ended up separating people, activities, and work opportunities which will be a challenge to reverse (Garvin). This separation created a car-centric society in the United States, which requires a significant amount of energy and produces greater amounts of air pollution to navigate the levels sprawl that have taken place (Garvin, 2013). Using zoning to locate amenities, goods, and services in close proximity to each other will cut down the amount of energy required to travel to destinations, leading to better sustainability (Colorado, 2015).

Commercial Development Code

Sustainable practices are best achieved when a community comes together with an understanding of what needs to be done to ensure a prosperous future. This creates a sense of responsibility and buy-in from the community members. With the reality of climate change, how we develop our cities must change to include living within the means of natural systems to create a livable future for all levels of socioeconomic status. Many researchers and practitioners believe that finding a balance between economic vitality, respect for the environment, and social equity is a pillar of a sustainable future (Jepson, 2014).

Residential Development Code

Despite the trending topic of the important role that city planners need to play in making cities more sustainable, the planning literature is not rich with studies on how to integrate sustainability into planning tools like zoning ordinances (Ives-Dewey, 2019). There is substantial variation in the presence of regulatory items related to sustainability in zoning ordinances across the country. One reason for the variation may be that zoning ordinances are often static and only have major overhauls every 10 years, but a study found that even newer ordinances lacked sustainability items (JAPA, Vol. 80, p. 249). This presents a great opportunity for Thornton to become a leader as it incorporates sustainable regulatory items into its code.

In suburban communities like Thornton developed after World War II, the zoning standards reflect larger-lot residential development. When thinking about zoning for more sustainable residential redevelopment, infill, and planned unit developments, it may be necessary to revise dimensional standards (e.g., lot size, yard setbacks, and impervious coverage) in the existing residential zoning districts to allow for and encourage development on smaller lots (Garvin, 2013). Specific revisions may include: 1) increasing permitted residential density floor-area ratio or square footage, 2) reducing or eliminating minimum lot sizes, 3) establishing build-to lines closer to the right-of way or property line or reducing minimum building setbacks, and 4) allowing increased lot coverage (Garvin, 2013, p.3). Some of these standards are particularly relevant to Thornton's future growth area where new planned unit developments will take place in greenfield areas.

METHODOLOGY

The methods for analysis and recommendations for updates to the commercial and zoning code included:

1. Identify the sections of current residential code that have the greatest opportunity for improvement to meet Thornton's sustainability goals.
2. Analyze the code to explain the tie between it and the importance to sustainability.
3. Research best practices to offer relevant recommendations to Thornton.
4. Highlight a specific best practice or example that is most relevant to Thornton and can be used as a model to consider.

RECOMMENDATIONS FOR COMMERCIAL AND RESIDENTIAL

The analysis explored a selection of the current code of ordinances for commercial and residential development standards for the City of Thornton. This included relevant sections from Article II and Article V. Each section of code that was analyzed includes a relevant excerpt of the existing code, an explanation of its importance to sustainability, recommendations for Thornton to consider in its code updates, and a related best practice example as a reference.

The following exhibit shows a summary of the primary recommendations for commercial and residential code.

Recommendations: Commercial

CREATE A MENU-BASED SUSTAINABLE DESIGN MODEL

Define a series of detailed **sustainability standards** by category: water efficiency, energy efficiency, design, materials, connectivity, landscaping, parking, etc.

Develop a **point system** by defining point values for each standard and defining as optional or required.

Create a **tiered-system** where new construction and remodels must adhere to a certain number of points based on the size and complexity of the project.

Provide **additional incentives** and density bonuses for new developments that comply with innovative or more costly sustainable standards.



Recommendations: Residential

CREATE A MENU-BASED SUSTAINABLE DESIGN MODEL

Define a series of detailed **sustainability standards** by category: water efficiency, energy efficiency, design, materials, connectivity, landscaping, parking, etc.

Develop a **point system** by defining point values for each standard and defining as optional or required.

Create a **tiered-system** where new construction and remodels must adhere to a certain number of points based on the size and complexity of the project.

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CONCLUSION

While the environmental, economic, and social challenges that the country and world is facing are monumental, there is an important role for local governments to play by adopting more sustainable practices. For this capstone project, the project team sought to use background research and the analysis of academic literature, case studies and best practices to provide the City of Thornton with recommendations for how to incorporate sustainability standards into its upcoming zoning and development code update. The selection of recommendations for commercial and residential development was designed to be consistent with the stated goals and strategies presented in Thornton's adopted Comprehensive Plan and a variety of visionary and strategic documents, including the Sustainability Action Agenda and the Energy Action Plan. Thornton has the opportunity to become a leader in sustainable development.



Photo Credit: City of Thornton