

Balancing Sustainability Goals: Case Studies in Affordable Housing

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Executive Summary

Introduction

Sustainable development is becoming a standard goal for many organizations and governments. In North America, local governments are increasingly involved in supporting sustainability efforts whether through funding or policy. How these efforts are being implemented vary greatly and can include broad policy goals or more specific policies such as building codes that address energy efficiency. This paper looks at how affordable housing projects are using local resources to provide sustainable housing for low-income residents in Eugene. These case studies paint a picture of how residential development in general, and affordable housing in particular, can contribute to larger community sustainability goals. For this project, the following developments were analyzed:

- Greenleaf (Metropolitan Affordable Housing Corporation)
- West Town on 8th (Metropolitan Affordable Housing Corporation)
- Prairie View (Metropolitan Affordable Housing Corporation)
- Sheldon Village (Housing and Community Services Agency)
- Santa Clara (St Vincent de Paul)
- Aurora Building (St Vincent de Paul)

Residential development is an important part of community sustainability because of the relationship between housing and ecological footprints. Our urban form changed dramatically in the post-war era, from a more traditional walkable form, to larger and often sprawling communities. Some factors contributing to this change were easily accessible car ownership and the preference of homeownership over renting. As a result, we have an urban form that is more energy and land intensive. In addition to less compact urban forms, typical dwelling units have grown in size, resulting in more household energy consumption.

As organizations begin to define sustainability policies, they typically use some variation of the ‘Three Es, (Environment, Economy, and Equity). These elements have given planners and policy makers a reference point for encouraging growth that will remain sustainable into the future. Local governments that are exploring ways to contribute to overall sustainability often begin with the building and construction process, which can be a very site-specific result. Green building technologies are one way to improve energy efficiency, health, and durability of specific buildings. These case studies will look at how these types of residential development impact neighborhood and community sustainability.

Local Context

The City of Eugene is in the process of planning and visioning for future sustainability policies. Recent community discussions surrounding sustainability have resulted in a green building policy for public buildings and the creation of a citizen sustainability

commission. Mayor Kitty Piercy is actively engaging citizens through the Climate Challenge, which encourages residents to make a commitment to reduce their carbon footprint.

Throughout this process, it is important to understand how current practices are influencing community sustainability. Green building and renewable energy projects are great starting points for looking at ways to improve sustainability, but they do not always highlight other important issues such as social equity. These case studies provide an analysis of the ‘state of sustainability’ for affordable housing development. Affordable housing is one vital way in which the City of Eugene is supporting all three factors of sustainability.

Methodology

Using indicators derived from a literature on urban form, green building, and affordable housing development, this analysis evaluates six case studies on their overall sustainability performance. Major sources of data include project proposals and plans, Census data, utility data from Eugene Water and Electric Board, and GIS walkability analysis.

Findings

These case studies indicate that the projects represent some of the most sustainable housing in Eugene. The quality of these developments stems from a number of policies and standards related to affordable housing development in Eugene. Constraints such as funding and land availability have created an environment in which developers must be efficient with resources, which supports the overall sustainability of a project. Furthermore, since providing quality housing is their top priority, developers address key sustainability issues through project siting and construction methods. Addressing these issues calls for a balancing act, in which social benefits, economic benefits, and environmental benefits are all considered.

All the developments were sited with consideration of access to transportation, facilities, and open space. Construction practices used in these developments increased energy efficiency for all projects, which lowers resident utility bills and decreases negative environmental impacts. Resident services are provided at all developments that contribute to self-sufficiency as well as social connections.

Major differences between the projects were a result of neighborhood urban form and connectivity. Three projects Aurora, West Town, and Sheldon Village were outstanding in their access to facilities, walkability, and transportation network. On the other hand, Santa Clara, Greenleaf, and Prairie View typically had more access to open space and public schools. These differences are a result of both the type of developments as well as the target populations served.

Implications for Policy

The current state of affordable housing development in Eugene is well above the average residential development throughout the community. These projects are part of a development process that does not have a mandated sustainability policy. Because of the success of these projects, the primary policy focus should be supporting these developments through other means. The following areas are starting points for supporting a sustainable affordable housing stock:

- Incentives for affordable housing developers that incorporate sustainability into project development
- Reduction of barriers to financing sustainable measures
- Increased education surrounding sustainability issues
- Continue to support citywide sustainability issues such as urban form, transportation, and affordability

Introduction

This project is part of a larger community wide effort to understand sustainability issues. The City of Eugene in particular, would like to be a role model for promoting and recognizing sustainable practices. As part of this effort, the city is interested in understanding how their investments in affordable housing are influencing overall community sustainability. This paper is an analysis of six case studies of affordable housing projects. It is broken into five sections,

1. Background Literature
2. Methodology
3. Cross-Site analysis
4. Case Studies
5. Findings
6. Discussion

Background Literature

The following section provides background information about sustainable development in a broad sense as well as how planners and developers are using the elements of sustainability to address future urban forms. This section examines how sustainability became a broad policy goal at a global, national, and local level. It also explores the unique problems associated with North American urban form as it has progressed postwar. Finally, this section will discuss the three elements of sustainability and their application to affordable housing development.

Sustainable Development Policy

As public awareness of energy issues and climate change grows, local governments are increasingly recognizing the need to plan for a sustainable future. Unfortunately, the broad acceptance of sustainability as an overarching policy goal does not mean that there is any one agreed upon definition of sustainability (Agyeman, Bullard et al. 2002). Many definitions are based on the idea that natural systems are sustained when they maintain and maximize themselves over time. Expansion of this definition to include human and economic systems led to the development of the three elements of sustainability, economy, ecology, and society. These elements are present in the triple bottom line accounting model and other three-pronged approaches to sustainability.

The push for sustainable development policies gained more widespread acceptance in the early 1980s among global organizations, governments, institutions and private companies. Many histories of sustainability reference The United Nations Commission on Environment and Development as the first major body to research sustainability (Campbell 1996; Nordstrom 1998; Jepson 2004). The commission surveyed global development practices and concluded that economic development must change to dramatically to incorporate the concept of sustainability, which the defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”(Nordstrom 1998). The UN’s agenda 21 sets goals for the integration of the three elements of sustainability at a local level. Many cities across the world adopted

the agenda and it has played a significant role in the establishment of sustainable growth management policies. Adoption of Agenda 21 is not widespread in the United States, however, many communities are incorporating elements of the document into their own sustainability goals.

Despite global acceptance, opinions remain divided about what sustainability is and how it should be used as a conceptual guide in the formulation of public policy. This uncertainty has led to a wide range of interpretations of how and when to apply sustainability criteria. As a result, many local jurisdictions are defining what sustainability means to their community and how they can use the three elements of sustainability to evaluate programs and define future policies. Indeed much of the current literature identifies strategies for catering sustainability to individual community values (Guy and Kibert 1998; Levett 1998; Valentin and Spangenberg 2000; Jepson 2004; Krajnc and Glavic 2005; Newman 2005).

This trend is observable in the development of sustainability offices as well as specific policies. Notable examples include Portland, Oregon's Office of Sustainable Development, Austin, Texas's Green Building program, and New York City's Office of Sustainable Design. Green building policies tend to be at the forefront of local governmental introduction to sustainability policies. This may be because planners have more of a direct influence on building practices through tools such as building code, zoning, and funding opportunities. Many local governments such as Salt Lake City, Utah and Washington DC are required that publicly owned developments must meet certain Leadership in Energy and Environmental Design (LEED) standards. Stricter standards are required for developments over 10,000 square feet (Webb 2007).

As local governments explore ways to increase sustainability in future growth, it is important to understand the ways in which our current urban form came into existence. The following section provides a brief overview of the American urban form.

Cities and Sustainability

The growth pattern of North American cities is deeply rooted in postwar development. Typical metropolitan areas consist of a major city and its surrounding suburbs. Larger cities have suburbs that are separate jurisdictions, while smaller cities experience fringe development and sprawl within their boundaries. During the 1920s-1960s, US cities experienced a dramatic decentralization that created a large population shift from inner cities to suburbs. This population shift also brought commercial activity to the suburbs resulting in more urbanized suburbs.

As city populations grow, the geographic scope of service areas also expanded. The European approach to outward growth was to develop regional agencies that coordinated public services including fire, police, and health services (Wheeler 2000). In the US, many cities used annexation as way to expand services and increase tax-bases (Wheeler 2000). This temporarily solved the issue of service distribution, but did not address the urban form. Annexation also had geographical limitations, when extending the city limit was no longer politically or economically viable.

During the process of this development, early regionalist planners hoped to create communities similar to the English Garden Cities that were small, interconnected communities surrounded by green space (Fishman 2000). Many of the theories behind the garden city movement are now resurfacing in New Urbanism¹ and Transit-Oriented Developments². Proponents of the Metropolitanist planning tradition idealized the central city's power to sustain into the future. Neither tradition handled the postwar challenges well (Fishman 2000).

The federal supported highway system and disjointed collaboration among jurisdictions created a much different urban form. These suburbs were not the idealized communities that early regionalist pictured, but rather characterized by edge development and sprawl (Fishman 2000). In addition to the massive highway systems, David Rusk identifies a number of drivers for sprawling growth including; cheap gasoline, easily accessible car ownership, and a housing finance systems that favored homeownership over renting (Rusk 2000).

These issues directly affect community sustainability. For example, key sustainability policies such as transportation, economic development, land use, and affordable housing are affecting by a sprawling urban form. These issues do not fall within just one category of sustainability, but often interact within a complex system of economy, environment, and society. Rusk identifies three ways these issues are influencing social equity:

1. "Greater dispersion of jobs, placing low-skilled jobs beyond the reach of many low-skilled potential workers
2. Growing fiscal disparities, which impair the quality of services in inner cities and older suburbs
3. Greater concentration of poverty, which have devastating impacts on the education of inner-city children" (Rusk 2000).

In Eugene-Springfield, these systems exist in a different form. The urban growth boundary prevents unlimited sprawl, but sprawl-like development exists within this boundary. Furthermore, as the regional economic center, the Metro area provides jobs and shopping to nearby communities, creating a transportation network that extends beyond the metro UGB.

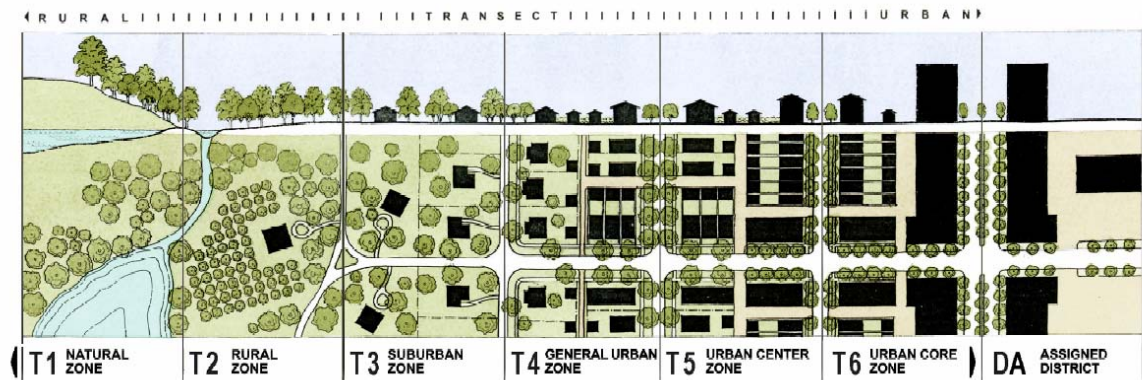
Planning as a profession has more or less agreed that the current form of development is unsustainable, and has made strides to move towards a more compact urban form that promotes walking, biking, and diversity of residential and commercial uses (Duany and Talen 2002). This type of development is most prominent in New Urbanism and Transit Oriented Developments. Complimentary to these development theories, is the idea of

¹New Urbanism is a set of community principles for land use planning that encourage a diverse range of land uses, housing diversity, and jobs. There is a focus on walkability and proximity to alternative transportation.

² Transit –Oriented Developments focus on the creation of compact, walkable communities that are located near high quality transportation systems. Ideally, this decreases resident dependence on a car for mobility.

transect planning. This theory is loosely based on the method used to study ecological phenomenon (Duany and Talen 2002). Transects planning employs a continuum of human environments based on intensity of development and urban characteristics ranging from rural to urban. Development practices that maintain and enhance the characteristics of that habitat are encouraged through transect planning. The following diagram represents typical transect zones.

Figure 1



Source: Duany Plater-Zyberk and Company

The Transect has six zones, moving from rural to urban:

- Zone 1 and 2: Natural and Rural Preserve include protected areas as well as areas of high scenic quality.
- Zone 3: The Suburban Zone consists of edge development, which is the transition zone between countryside and town. It is primarily single-family, but can have some mixed-use.
- Zone 4: General Urban zone is the largest zone in most neighborhoods. General is primarily residential, but more urban in character (somewhat higher density with a mix of housing types and a slightly greater mix of uses allowed).
- Zone 5: The Urban Center is a mixed-used neighborhood that can be a small center or a larger town center.
- Zone 6: The Urban Core is a larger mixed-used area that is typically a central business district and serves the region.

In addition to broad theories such as New Urbanism and TOD, there a number of general concepts that can be applied to sustainable urban forms individually or as a set of criteria. Many of these ideas are not new, but take cues from earlier human settlements focusing on efficiency of land use. Key urban design concepts include:

- Compactness
- Sustainable Transport
- Density

- Mixed Land Uses
- Diversity
- Passive Solar Design
- Green Building

As planners try to incorporate these ideas into urban systems they struggle with the balances and trade-offs of the three elements of sustainability. The following section explores the difficulties of planning for sustainable development as it applies to the economy, the environment, and social equity.

Three Elements of Sustainability

Cities contain a complex interconnected set of economic, environmental, and social patterns. Campbell calls this tension between the economy, the environment, and social equity the planner's triangle. In this triangle, sustainability emerges from the resolution of property, development, and resource conflicts (Campbell 1996). Resolving these conflicts is one way to create sustainable development policies that benefit the entire region.

Economy

The economy is essential to long-term community subsistence. In the world of sustainability, many people associate this category with environmental business practices, energy efficiency, and sustainable businesses (those selling environmental products such as biofuels, solar panels or organic tofu). Indeed, the recent recommendations from Sustainable Business Initiative task force asked that the City of Eugene “publicly commit to sustainable business practices and to businesses that produce sustainable products and services”(2006). Encouraging sustainable industries is an important tool in building local and regional economies that create multiplier effects within communities.

The Apollo Alliance describes this type of economic development *equitable development*. Equitable development encourages local policies that create more affordable housing, mass transit systems, living wage jobs, quality education, and health care. Part of realizing equitable economic development is attracting businesses that have job opportunities for multi-skilled and low-income populations. Providing a living wage for these jobs is a vital part of a green economy.

While many communities are encouraging this type of economic activity, general long-term economic well-being is equally important in the quest for a sustainable community. This may include, economic diversity, wages commensurate with cost of living, and educational opportunities. Many cities are planning for economic growth through planning documents such as Madison's Model for a Forward City. This plan presents a vision for future economic growth that includes a place-based economy, livability, and equity (2004). Planning for economic growth creates the opportunity for communities to define what their economy will look like in the future.

Peter Calthorpe argues that a globalizing economy has put regions, not nations at the center of economic growth (Calthorpe 2000). This is largely due to the need for a 'network metropolis' where businesses have access to multiple networks of jobs,

resources, ideas, vendors, and services. For business to be successful, they must be located in an area that has access to all of these networks. These networks include multiple political jurisdictions but the economic benefits such as taxes are generally based on political boundaries or regulations.

An alternative, regional approach may distribute these benefits more equitably as well as help jurisdictions better understand how these economic patterns are influencing the regional economy. State and Federal resources are often distributed based on population size or a designation such as urban or rural. Better understanding of how regional economies interact at a state level might lead to more effective funding distribution.

Environment

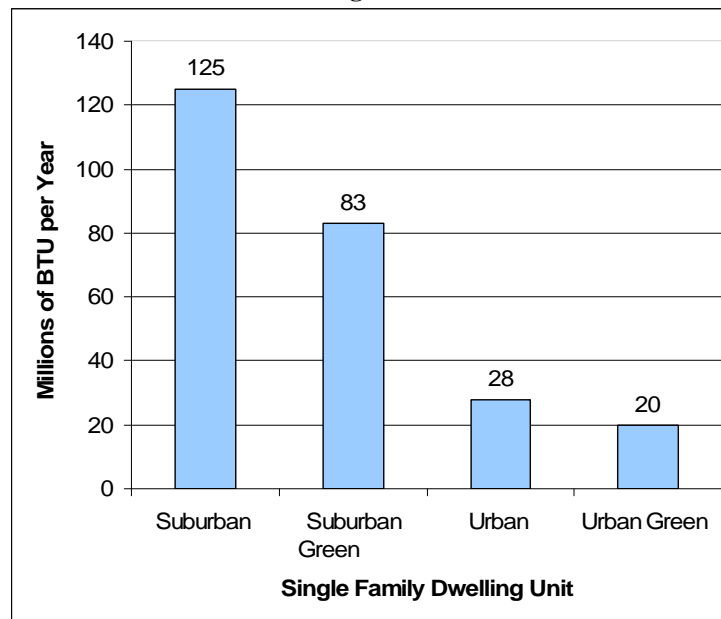
Environmental issues are the heart of the sustainability movement and are intricately involved with both the economy and society components of the planner's triangle. A community's relationship with the environment is complex, involving resource extraction and consumption that affects both local and global eco-regions. The issue is further complicated by the fact that environmental impacts are shared inequitably across populations and generations. The US Environmental Protection Agency has noted that on certain days, 25 percent of the polluting matter in Los Angeles air originated in coal-fired power plants and factories in China (Hopkins 2006). It is likely that pollution generated by LA's traffic is impacted another community's air quality. The choices and impacts made by individuals and local communities do not adhere to political boundaries.

Environmental impacts are by nature regional issues. Ecological regions such as watersheds, wildlife habitat, and vegetation systems cover multiple political boundaries. Urban systems significantly influence ecological regions and negative impacts are not contained within the urban systems that created them.

This issue came to prominence when air pollution from industrial cities began to affect surrounding communities. Environmental policies were originally focused on micro-scale approaches, but have been moving towards more eco-regional strategies. For example, watershed policies and habitat preservation are considering multiple urban systems as they interact within an eco-region.

Furthermore, urban development in itself dramatically changes the environment in which it occurs. Development patterns such as sprawl support automobile dependency and loss of agriculture and open space. In addition, suburban developments tend to have larger dwellings, thus increasing household energy consumption. The differences in transportation energy consumption between urban and suburban development are shown in the following graph.

Figure 2



Source: DOE Household Consumption and Energy Expenditure Survey
Copyright: Jonathan Rose Companies, by Jon Vogel

Transportation energy consumption is the highest for conventional suburban homes. These dwelling units use on average 125 million BTUs per year of energy solely for transportation. On the other hand, dwelling units that use green technologies for transportation save approximately 42 million BTUs of energy a year compared to conventional dwelling units. Transportation consumption in urban areas is much less than in suburban areas. A conventional urban dwelling unit will use approximately 97 million less BTUs for transportation energy a year than a similar suburban dwelling. Green urban dwelling units use approximately 8 million less BTUs than similar conventional urban homes.

Social Equity

Social equity in terms of sustainability is often considered as inter-generational in that our actions today will dramatically affect the communities of the future. However, existing social patterns play a significant role in future community sustainability. One notable example is the income, race, and class divide between many inner cities and their suburbs. The concentration of poverty in inner cities, strains city services and perpetuates generations of poverty. Keith Ihlanfeldt describes how cities and suburbs are socially connected:

- “Central cities continue to serve as the location of many regional amenities.
- They provide a sense of place valued by both residents and outsiders that suburbs simply lack.
- They offer specific economic opportunities, often tied to the density of employment.
- Fiscal problems of declining inner cities may raise tax burdens in suburban areas especially as those problems spill into older suburbs” (Ihlanfeldt 2001).

Furthermore, social justice is embedded in land use issues, economic development, and transportation. A common problem in urban/suburban conflict is that of housing affordability. This can result in concentrated poverty, transportation mismatches, and other inequitable distributions of civic services.

Social equity concerns are increasingly apparent in economic class divides. Organic food, home location, and access to environmentally safe buildings are often restricted to the wealthy. Access is restricted by affordability as well as education and awareness of these issues.

The following section describes how individuals and communities are using indicators are to understand the interactions of the environmental, economic, and social issues.

Developing Sustainability Indicators

Developing community indicators of sustainability is a complex process that includes multiple stakeholders such as local government (both city and regional partners), local business owners, and citizens. Indicator should both help communities identify how current practices are performing through policy relevant and scientifically valid measurements (Levett 1998). According to Levett, communities should ask, “what sort of things do we need to measure to form a sensible picture of sustainable development?” Indicators often serve as a comparison of how something is performing beyond the status quo. This may vary greatly by community as well as by what aspect of sustainability the indicators are evaluating.

In the building industry, a variety of indicators, measures, and requirements have been developed to determine certification levels. Perhaps most well known is the United States Green Building Council (USGBC) Leadership in Energy and Environmental Design. The LEED program is recognized for promoting green building practices, recognizing leaders in the green building industry, and providing standards for the holistic sustainable development of green buildings. According the USGB website, LEED was created to:

- Define “green building” by establishing a common standard of measurement
- Promote integrated, whole-building design practices
- Recognize environmental leadership in the building industry
- Stimulate green competition
- Raise consumer awareness of green building benefits
- Transform the building market

The LEED rating system is based on general rating criteria with specific standards for each. Buildings can be certified in four categories based on their overall energy efficiency, holistic design, and sustainability. The four certification levels are certified, silver, gold and platinum. The levels of certification are achieved through a point system specific to the type of construction, retrofit, and/or project.

Over the past few years, focus has shifted to include residential homes and entire neighborhoods. Currently, LEED is in the process of developing standards for single-family residential homes as well as low and mid-rise housing developments (1-3 stories and 4-6 stories). The LEED H is currently in the pilot phase with over 125 LEED certified builders constructing over 700 units. The pilot phase of this project includes the development of the units as well as revision and refinement of the LEED H standards.

Along with standards for the Homes program, LEED is also developing standards for affordable housing projects. Currently, LEED and affordable housing developers are participating in the LEED H pilot project. These projects will be reviewed by the USGBC's affordable housing working group to determine the opportunities and constraints of implementing LEED for Homes in affordable housing development.

While LEED is often considered the industry standard for green building, there are many similar certifications that provide resources for specific markets such as affordable housing developers. The Enterprise Foundation's Green communities program uses criteria similar to LEED's to award grants and loans for the production of green affordable housing. Additionally, many utilities offer rebates and incentives that use some degree of certification or evaluation. Eugene Water and Electric Board uses the Energy Star Program which provides guidance and financial incentives for achieving a certain level of efficiency.³

Previously, LEED certifications have been applied exclusively to building development. LEED is currently piloting a neighborhood design certification, LEED for Neighborhood Design. The USGBC collaborated with the Congress for New Urbanism and Natural Resources Defense Council to develop neighborhood design guidelines that incorporate smart growth principles. The pilot guidelines include criteria that closely resemble community sustainability indicators such as transportation networks, housing diversity, accessibility, and local food production. These criteria may provide a 'big picture' look at how economic, environmental, and social patterns interact with a building, neighborhood, and community. Standard criteria like LEED for Neighborhoods may be a jumping off point for communities to develop sustainability indicators.

In Eugene, The Sustainable Business Initiative recommended that the City government develop citywide indicators. They further recommended the following examples for indicators that measure community sustainability:

- Air quality
- Carbon and Methane Emissions
- Waste reduction
- Reuse and recycling
- Household Income
- Percent of people living at or below poverty level
- Health care

³ EWEB's program Super Good Cents, was the predecessor to Energy Star.

Specific community wide indicators would need to be developed from public processes that engaged citizens in a conversation about current goals and future needs. The City could use these indicators to set annual goals for improvement. By periodically assessing these goals, the indicators work as feedback system that allows the community to assess their progress and redirect efforts if needed.

Sustainability and Residential Development

Housing is at the core of long-term community wellbeing. Housing development affects all three Elements of sustainability. It is a critical part of family security and future financial success and thus influences social equity. Housing development dramatically affects the environment both in resource consumption for construction and lifestyle choices shaped by residential and commercial development patterns. Finally, housing has a significant economic impact often stimulating local economies by increasing household net worth and creating private sector jobs. The Oregon Housing and Community Services (OHCS) estimate that \$1 invested in affordable housing development generates as much as \$15 in economic benefit across the state. Furthermore, these impacts are felt not only by the private developer and the residents, but by the broader community as well.

However, conventional building development, construction and operation practices can significantly contribute to the degradation of air and water quality, depletion of natural resources, and low-density green field development. Conventional building is characterized by building design that emphasizes minimum construction costs. Furthermore, conventional building rarely incorporates energy analysis or lifecycle operating cost calculations beyond those necessary to comply with local building codes.

The Environmental Protection agency estimates that the development and operation of buildings consumes 35% of the total US energy output, 35% of all materials produced in the US, and 25% of the world's harvested wood (2001; 2007). This impact has played a significant role in the movement among developers and consumers to implement more sustainable development practices.

Green development incorporates two themes: green building and sustainable development. Green building is concerned with building systems and their impacts on the environment. Green building practices allow developers to build more efficient and healthy buildings while reducing negative environmental impacts. Green buildings incorporate designs that attempt to minimize environmental impacts, reduce water and energy consumption, improve occupant health, increase durability, and reduce operating costs. These outcomes are a direct result of whole system planning that incorporates thorough design and site planning with materials and construction plans.

Sustainable development is concerned with the spatial relationship of development to the broader neighborhood or community. In terms of sustainable development, building planning is not isolated from the community, but generally includes transit-oriented development with bicycle and pedestrian access. Incorporating both concepts to the

whole system approach means major investments in time and money occur early on in the project, but overall life cycle costs are minimized.

Sustainability and Affordable Housing

The increasing cost of housing has made the expansion and preservation of affordable housing a priority for many local communities. Additionally, inefficient energy systems and concerns about building elements can affect energy and health care costs for low-income residents. Sustainable development techniques can help meet local and regional goals for affordable housing. Improving sustainability in these developments can improve the quality of life for low-income residents by lowering energy costs and providing healthier living environments.

In addition to lower operating costs and better indoor air quality, appropriately sited homes can provide better transportation access to services and employment. Since a majority of affordable housing projects is at least partially financed through public funds, community acceptance and quality of affordable housing are critical issues for taxpayers and policy makers.

Affordable housing providers nationwide have begun to embrace more sustainable practices; incorporating the whole systems approach into their projects. Organizations such as the Green Affordable Housing coalition and Global Green are providing developers with resources to build more sustainable housing. Financial support for sustainability that did not previously exist can be found from both Enterprise Green Communities and the Hope Depot Foundation.

Providing this support can have many benefits for both the developer and the resident, but there are also some challenges to increasing the sustainability of affordable housing. The biggest challenge to developers is the perceived or actual increase in project cost. Furthermore, the skills and knowledge required to use new materials and technologies presents further cost expenditures for affordable housing providers. Additional challenges to incorporating sustainability include increasing competition for funding sources and possible regulatory burdens from building codes.

For local governments, there are significant challenges to defining a policy that addresses sustainability in affordable housing. First, sustainability is a matter of balancing priorities. The balance and trade offs associated with the three goals of sustainability are of particular concern for housing. The city must decide what degree of sustainability they should strive for, and if achieving this level will be detrimental to social equity goals. For example, if increasing green building dramatically affected the overall number of new affordable housing units in the community.

A second challenge to policy makers is a lack of analysis of current projects. There are many case studies that document the successful completion a project, but little analysis of the projects as they operate and function as part of the community. Additionally, these case studies lack the depth of analyzing all three components of sustainability focusing on financing, costs, and expected energy savings.

Problem Statement and Methodology

This section describes the methodology used to evaluate six affordable housing developments in Eugene, OR. It includes a brief explanation of the affordable housing problem in Eugene, a description of the case study selection process, and the indicators used for evaluation. The final section describes the analysis methods used to compare the developments.

Problem Statement

Many affordable housing providers are beginning to incorporate sustainable development practices into their projects. Much of the research surrounding this type of residential development has focused on environmental impacts. To appreciate how these projects are influencing sustainability, the analysis should be expanded to include all three elements of sustainability, economy, environment, and social equity. In order to understand policy directions, there is a strong need for concrete analysis of the impacts of these projects in respect to citywide sustainability issues. This project will provide this analysis by looking at six affordable housing projects in Eugene, OR.

Affordable Housing in Eugene and Lane County

Eugene has a severe affordable housing problem primarily due to housing cost increases that are outpacing wage increases. HUD identified the Eugene-Springfield Metropolitan area as a high-cost housing market. Tight market conditions exist for both homeownership units and rentals (HUD 2004). Vacancy rates for the metropolitan area are around 1.3% (Duncan and Brown 2006). Typically, 5% vacancy rates are generally considered more healthy balance point for property owners and tenants (HUD 2004). The rental market will continue on this trend because large developable parcels are limited and causing prices to increase beyond the reach of affordable housing developers (U.S. Housing Market Trends Report, 4th Quarter 2006).

In the homeownership market, Eugene-Springfield ranks 130 out of 212 Metro Areas for Housing Affordability based on housing sale prices (NAHB Housing Opportunity Index, 4th Quarter 2006). The 2006 Area Median sale price was \$230,600, which ranks 44th among MSAs (National Association of Realtors).

Wages and income levels further exacerbate this problem. The median income in Eugene is \$39,237 and the community has 17.9% poverty rate (US Census 2000). There are 11,880 rental households very low-incomes (a household that earns below 50% of the area median income). Three out of five very low-income renter households (60 percent) in Eugene currently experience a severe housing hardship, meaning these households pay more than 50 percent of their income for housing. Another 20 percent of very low-income households experience a moderate housing hardship, meaning they pay between 30 and 50 percent of their income for housing (US Census 2000).

The Role of the City of Eugene

Many local governments play a role in the development and rehabilitation of affordable housing. The degree to which city government is involved in the process varies greatly. The City of Eugene places affordable housing among its priorities. While the city does

not own or operate housing it does allocates federal, local, and private funds towards housing. The following list describes the housing resources provided by the City of Eugene:

- **Land Bank Program:**
Through the Landbanking Program, the City of Eugene acquires land suitable for affordable housing and makes these parcels available through a competitive application process. Since the purchase of the Landbank's first site in 1979, nearly 90 acres have been acquired using a combination of federal and local funds. Thus far, over 500 units of affordable rental and homeownership units have been developed on Landbank parcels.
- **Homebuyer Assistance Program**
Eugene's HAP Program is available to low-income residents for the first-time purchase of a home in Eugene. The City of Eugene may loan up to \$10,000 to help with the down payment and other costs related to the purchase of an "approved" home in Eugene. HAP loans are interest-free and no payments are made until the borrower sells or no longer occupies the home. HAP loans are funded from a grant from the Department of Housing & Urban Development (HUD) and are reserved on a "first come, first served" basis.
- **City of Eugene Rehabilitation Loan Program**
The City of Eugene has low-interest and interest-free loans available to low-income homeowners for the purpose of correcting factors that threaten the health and safety of the occupants, or the structural integrity of the home. Homes must be located within the city limits and homeowners must meet certain income requirements.
- **Emergency Minor Home Repair Loan and Grant Program**
The City of Eugene has deferred loans of up to \$5,000 for emergency minor home repairs. Help is available for very low-income property owners to correct conditions that create an immediate threat to the health and safety of the occupants or could cause rapid deterioration of the structure. Very low-income homeowners and tenants with disabilities may be eligible for assistance with removal of architectural barriers, installation of ramps, modifications to doorways, and installation of grab bars, handrails, and lever hardware. Homes must be located within the city limits and homeowners must meet certain income requirements.
- **City of Eugene Rental Rehabilitation Loan Program**
The City of Eugene has low-interest and interest-free loans available to repair rental housing. Applications for the Rental Rehabilitation Loan program are accepted on an on-going basis, as long as funds are available. Rents must be affordable and likely to remain affordable to low-income tenants. Priority is given to multi-family properties.

Additionally, Eugene “landbanks” sites for future low-income housing. Through these programs, the city is making a long-term investment in the creation of affordable housing.

Eugene’s affordable housing issues are deeply connected to the surrounding communities and the region as a whole. Regional issues are dealt with through the Housing Policy Board. This intergovernmental committee advises the Board of Commissioners and the Springfield and Eugene City Councils on the housing needs of the low-income residents, and develops a budget and work plan for targeting local government resources for housing related activities. The board meets on a monthly basis to discuss these issues and included representation from Eugene, Springfield, and Lane County, citizens and a low-income representative.

Allocations for new construction and acquisitions take place through a public "request for proposal" process. High standards of quality are required for each affordable housing development supported by the City of Eugene. The city monitors housing quality through several measures. First is the public Request for Proposal (RFP) process in which affordable housing developers must submit a comprehensive description of the project. Housing developers present their development proposal to the Housing Policy Board. To qualify for support by the City of Eugene, projects must rent 20% of housing units at or below 50% of median area income. Each component of the RFP is examined by city staff to ensure that the entire proposal is of high quality.

After a development concept is chosen and plans are developed, the City of Eugene Planning and Development Department reviews the plans based on the city’s land use and building codes. The final level of quality is assured through the affordable housing development organization. Each organization designs, develops and is ultimately responsible for the long-term management of the development for up to 50 years. Sound construction and high standards of quality will ensure that residents will have a functioning building well into the future.

The City of Eugene’s Approach to Sustainability

The City of Eugene has been exploring the use of the triple bottom line in many of their policies including the Sustainable Business Initiative and the recent green building resolution. In recent years, the Eugene City Council has been working on issues of sustainability through the adoption of resolutions number 4618, 4884, and 20379. Council adopted resolution number 4618 in February of 2000, which defined sustainability principles as they apply to city policies and actions. In the summer of 2006, Council revisited the idea of sustainability through resolution number 4884; a green buildings policy for city owned and occupied buildings.

With the increase in attention to sustainability, the city recognized the need for dedicated citizens to work on these issues. In March 2007, council approved ordinance number 20379, which created a sustainability commission to acts as a policy advisor to the

council and city management. This commission will consist of 12 citizens and one city councilor. Complete text of these resolutions is included in the appendix.

While these policies do not explicitly address affordable housing development, sustainable development has been included as a selection criterion in recent RFPs related to affordable housing and downtown development. With investments from the city, local non-profits are leading the way in building sustainable affordable housing units. Indeed, these projects are one important way the city is addressing all three elements of sustainability. However, in depth analysis of these developments is limited.

Case Study Selection

Local affordable housing developers have taken leadership roles in using energy efficiency technologies. As more and more housing providers begin to incorporate sustainability into their projects, an evaluation of these projects is useful, particularly as the city of Eugene is thinking about ways to promote sustainability writ large. This project analyzes case studies of six local developments:

- Greenleaf (Metropolitan Affordable Housing Corporation)
- West Town on 8th (Metropolitan Affordable Housing Corporation)
- Prairie View (Metropolitan Affordable Housing Corporation)
- Sheldon Village (Housing and Community Services Agency)
- Santa Clara (St Vincent de Paul)
- Aurora Building (St Vincent de Paul)

I used the following criteria to determine which developments would be included in case studies. The developments chosen represent the major affordable housing providers in Eugene. The primary developers of rental affordable housing in Eugene are Metropolitan Affordable Housing, St Vincent de Paul of Lane County, and Housing and Community Services Agency of Lane County. Because each agency has different development strategies and often, different target populations I wanted to study developments from each of the organizations actively working in Eugene.

Because building efficiency varies throughout the lifetime of the development, I wanted the developments to be in similar stages in the building lifecycle. All the developments included in the case studies were constructed within the last 7 years. Housing rehabilitation projects were not included. Exclusively looking at new construction (rather than rehabilitation) provides a better understanding of the current practices in building code as well as current technologies that contribute to building efficiency.

Each development used some form of technology/technologies aimed at promoting energy efficiency. The nature and degree to which these technologies were incorporated vary among the developments with some including New Urbanism design techniques, passive solar design, solar panels, or geothermal heating.

Additionally, there is a spectrum of development stages represented across the urban transect; there are both urban and suburban developments included in the case studies. While not all urban transect stages are represented, the prominent types of development

in Eugene are included. This is primarily due to the nature of development in Eugene. The downtown area does not contain highly dense areas as one might see in Manhattan of Chicago, nor do these case studies look at rural developments outside the urban growth boundary.

Indicator Identification

Indicators used for evaluation were developed through examination of city documents pertaining to sustainability, particularly the Sustainable Business Initiative’s Report, and standard criteria used in LEED and Green Communities evaluation forms. These indicators do not represent official community sustainability indicators, but were developed specifically for this project. Each indicator was chosen to represent a component of each of the three legs of sustainability environment, ecology, and society. Additionally, indicators were chosen that would highlight the potential impacts and benefits of these developments on residents, the neighborhood, and the broader community.

Indicators

The following tables provide a definition of indicators as well as describe the type of measurement used in each of the three categories.

Table 1

Environmental Indicators Definitions	Measurement
Compactness: Street network and development pattern	Average block size, average parcel size, and intersection density.
Sustainable transport: bus/bike routes/form and scale appropriate to walking, cycling, and public transport	distance to bus stop, bus stop density/ distance to bike path network, square miles of bike path within block group
Density: the number of actual dwelling units in a given area	ratio of dwelling units/land area and population density
Proximity to facilities: distance to commonly used facilities such as banks, schools, and grocery stores	number of facilities within 1/4 mile of site/diversity of facilities
Mixed land use: the diversity of current and planned land use.	zoning and land use mix
Passive solar design: the layout of buildings and neighborhood along the solar axis.	building layout, street solar orientation
Open space: parks, farmland, and recreational lands	parks/square mile
Energy: Energy consumption in Kilowatts hours	Average kwh/per square foot used over a year

Indoor air quality: materials used to improve indoor air quality	number and type of measures included to increase indoor air quality/ air quality data from the EPA
Site Improvements: Steps taken prior to development as a result of an Environmental Review or for the purposes of managing water	Environmental remediation, erosion and sedimentation control, surface water management
Material Cycles	construction materials, waste management, building reuse

Table 2

Social Indicators Definitions	Measurement
Social Diversity: Income/Age/Race/	neighborhood characteristics, age, race, and income
Housing dispersal: the location of affordable or low-income housing developments throughout the community	proximity to other housing developments, number of subsidized units per blockgroup
Summary Results from the 2006 Resident Survey	Level of satisfaction with housing, safety, issues with management
Resident Services: additional services offered to residents	Presence, number, and participation in resident services
Housing Diversity: the variety of housing types and densities	Percent Single Family housing, percent multi-family, housing prices, rental rates

Table 3

Economic Indicators Definitions	Measurement
Lifecycle costs	capital costs, operating expenses (per year), future replacement costs
Affordability	continued affordability since built, expected in future
Economic activity	employment, diversity of work, varied economic base (1-2 mile area)
Utility Costs	Utility cost savings compared to standard construction

For each development, the indicators were applied (where applicable) across three spatial scales, the individual building or development, the block group (neighborhood), and the City of Eugene as a whole. This type of analysis provides an understanding of the development compared to the neighborhood standards as well as citywide norms. This provides a context for what types of living environments exist within the community and what is available to the residents of these developments.

Furthermore, this comparison places development in a neighborhood context and pattern rather than comparing high-density urban environments to suburban environments. In addition, this type of comparison places developments within community and regional networks and systems such as schools and transportation.

Data Collection

Each case study provides a variety of information about the development to understand the impact of these projects on the community. This data is broken into three categories;

Environment, Economy, and Society. There are five main sources of data; RFP project descriptions, follow up discussions with developers, local utilities, the 2006 City of Eugene Resident Survey Summary, and walkability data collected with PDAs.

Analysis and Products

The intention for these case studies is to contribute to a broader understanding of the current state of sustainable building and affordable housing in the city of Eugene. Additionally, these case studies provide an important analysis that stakeholders can use to expand or adjust their programs for future development. These stakeholders include, but are not limited to:

- Residents
- Affordable Housing Developers
- The City of Eugene staff
- Housing Policy Board
- Eugene Water and Electric Board
- Investors and Funders
- Green Building evaluators such as Earth Advantage and LEED
- The public

While the case studies may benefit all stakeholders this analysis target opportunities to improve the process as well as identifying recommendations to inform city policies and procedures.

The data analysis process uses a cross-site analysis that provides comparisons among the six projects as well as citywide standards. In addition to the case studies, the paper also includes a discussion of the role of affordable housing in Eugene's overall sustainability, comparison of development practices, and recommendations for next steps.

Research Limitations

Sustainability is often a difficult thing to define and analyze. As such, there are a number of limitations to a study such as this. The following is a discussion of some of these issues.

- The method for estimating 'built to code' energy consumption is far from definitive. There are multiple paths to meeting code requirements, and two buildings that meet Oregon code can use very different construction techniques and materials. Furthermore, energy consumption varies greatly between units based on appliances and resident patterns within the building.
- The data I used for measuring commute times, mode of transportation, and social diversity was taken from the 2000 Census. The case studies in this project were all built post-2000 and were not included in the data.
- For some indicators, I was not able to obtain data across all three spatial scales. For example, car ownership and commute times were taken from census data, but were not available for residents of the specific developments. In this case, the neighborhood results were used for each site.

Case Study Format

The following section contains six case studies of affordable housing projects in Eugene. Each case study uses the following format:

- **Project Overview:** description of the development overall, the location within the community, target population, and parcel size
- **Indicator summaries:** each indicator is applied to the case study with specific comparisons across the three spatial scales, development, block group, and citywide.
- **Sustainability Map and Discussion:** description of sustainability map and how development fits into broader community sustainability
- **Maps and figures used in analysis**

Cross-Site Analysis

The following section provides an analysis of indicators across the sites and citywide where applicable. The analysis section will follow the organization of the case studies; each indicator is discussed using the results from the cross-site comparisons.

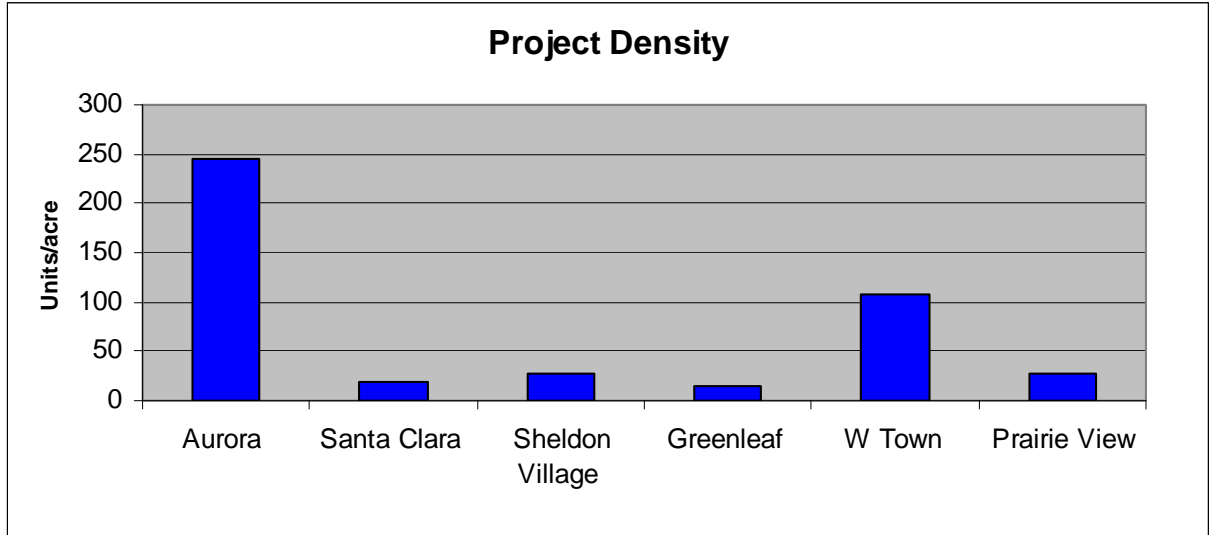
Environment

Compactness

The six case studies are located in vary diverse neighborhoods throughout Eugene, from downtown to north Eugene. This was evident in the measurements for compactness.

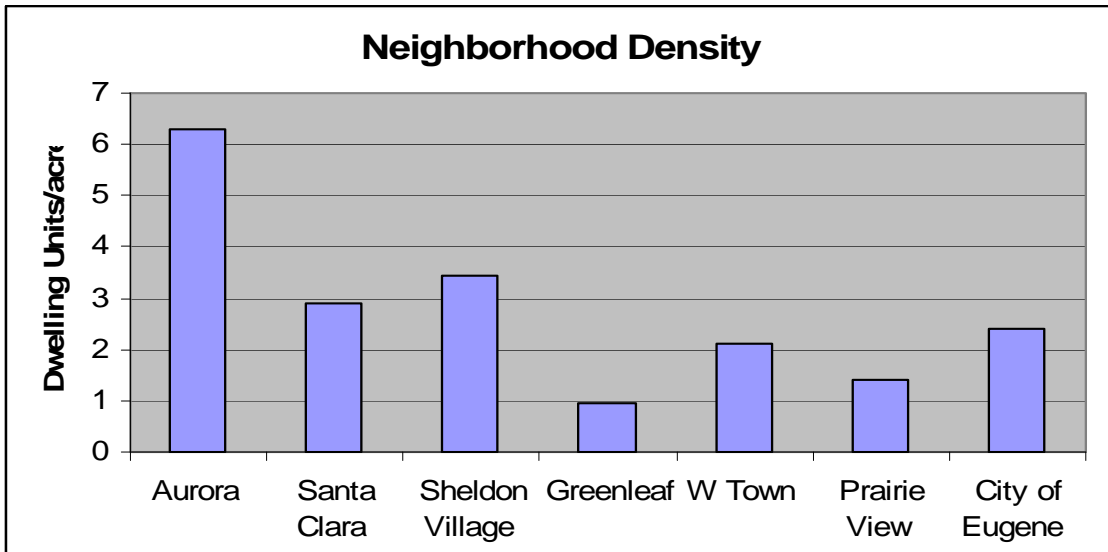
Aurora and West Town had the most density per project, due to their project design and the zoning requirements for the sites. Sheldon Village and Prairie View are dense projects compared to their surrounding neighborhoods.

Figure 3



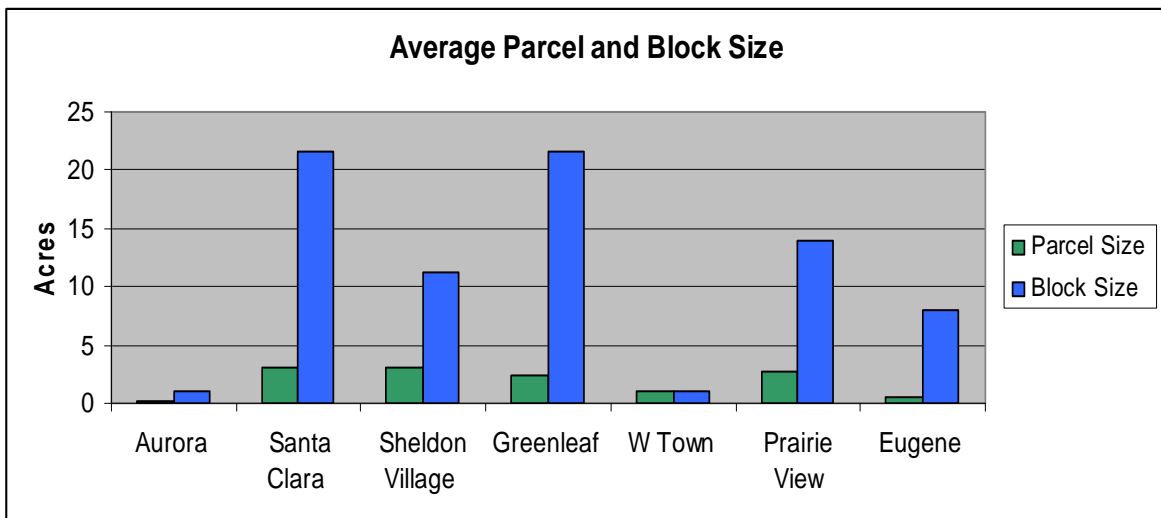
When the measurement was expanded to include the surrounding neighborhood, Aurora and Sheldon Village were the most residentially dense neighborhoods; Santa Clara was close behind with 2.9 residential units per acre. West Town was not as residentially dense because of the prevalence of commercial use in that block group.

Figure 4



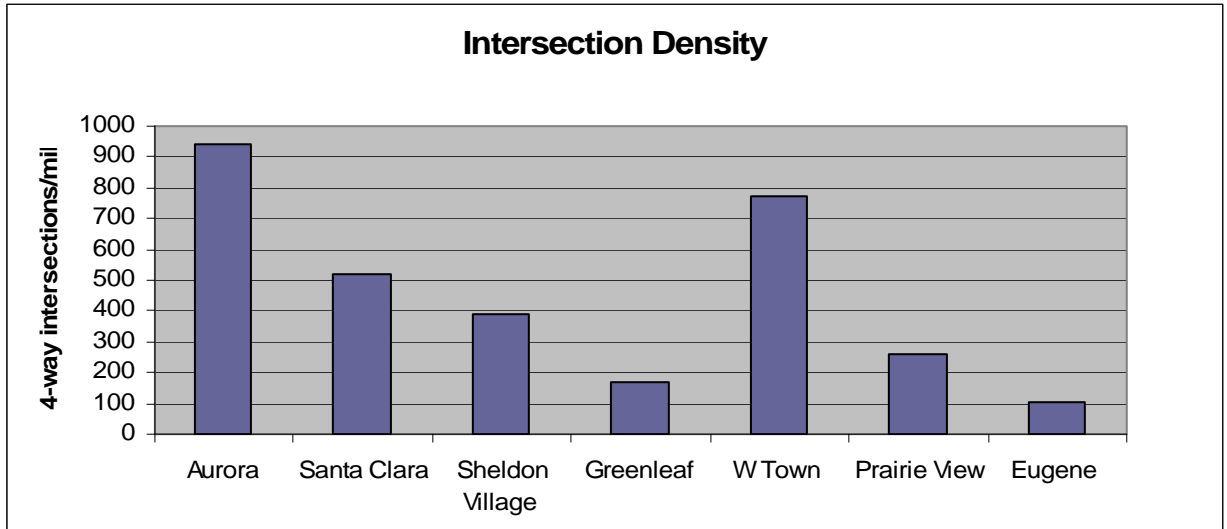
Parcel and block sizes throughout the neighborhood are an indication of connectivity and intersection density. The three suburban projects have larger average parcel and block sizes than the citywide average. West Town and Aurora were well below the citywide average for block sizes and just slightly lower for parcel sizes.

Figure 5



Similar patterns can be found when looking at four-way intersection density. The following graph shows a summary of intersection densities for each of the sites. Aurora and West Town had the highest intersection densities, which are understandably denser than the citywide average. Santa Clara and Sheldon Village also had relatively high intersection density; with Greenleaf, having the lowest prevalence of four-way intersections and the highest prevalence of dead-ends.

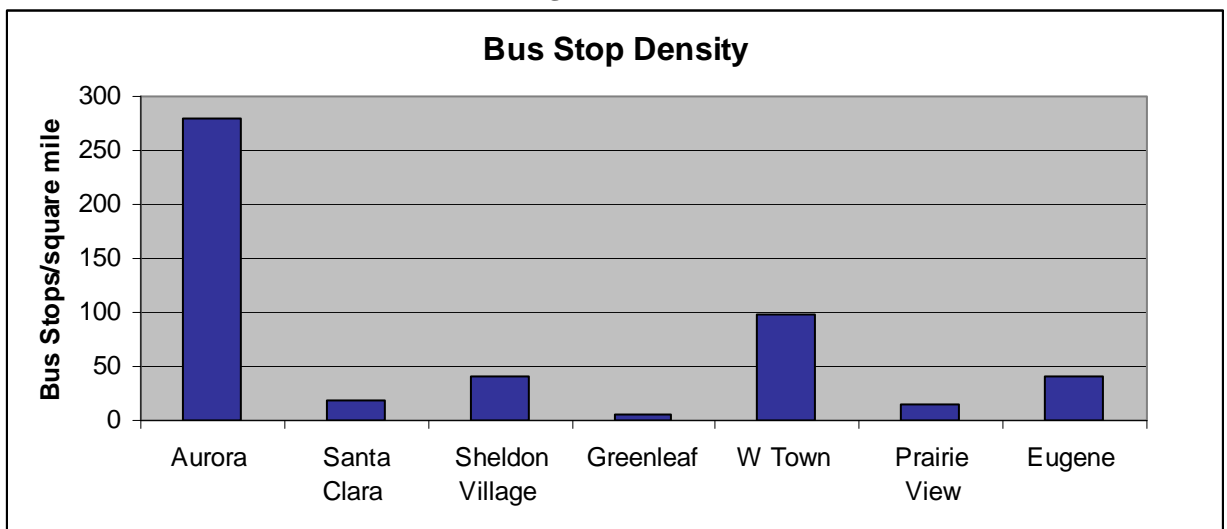
Figure 6



Transportation

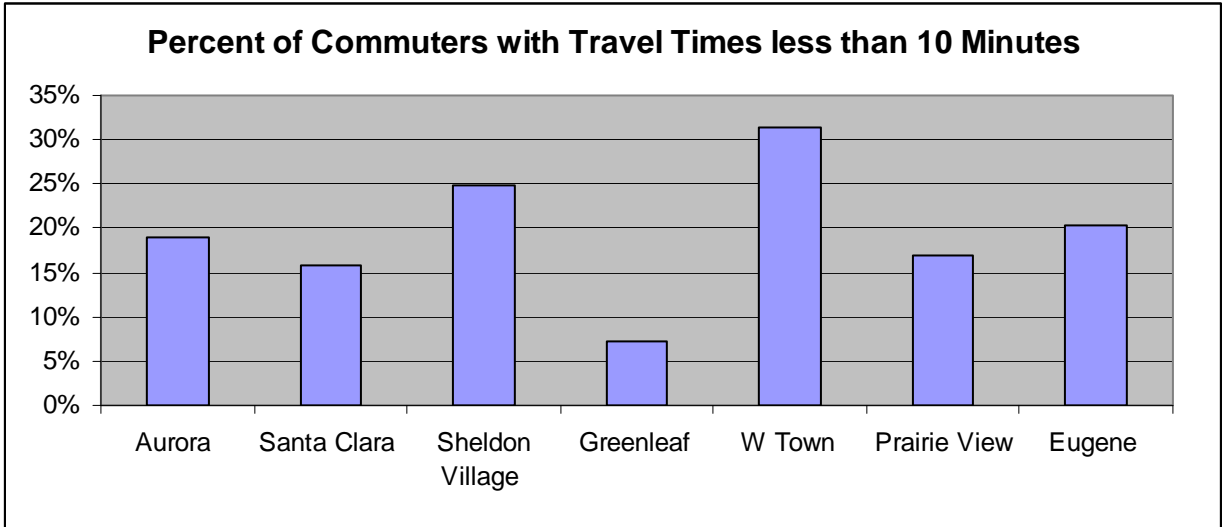
Access to alternative transportation is more than adequate throughout the city of Eugene. However, there are some significant differences in both the ease and likeliness of access. For example, if it is easier to own and drive a car or easier to walk, bus or bike throughout the neighborhood. Bus stop density is significantly higher in the downtown projects primarily due to the proximity to the downtown bus station. Sheldon Village is on par with the citywide average, which is slightly higher than bus stop density for Santa Clara and Prairie View. Sheldon Village also has a better bike connectivity than Santa Clara, Prairie View, and Greenleaf. All three projects are landlocked by busy streets that must be crossed to reach bike paths.

Figure 7



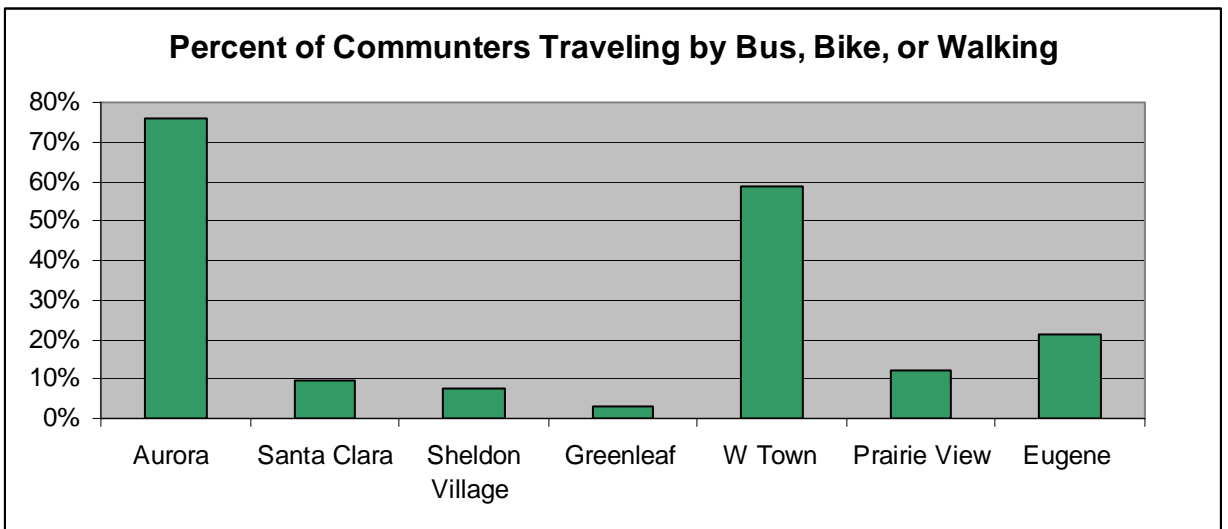
Commute times in all the projects were relatively low overall. However, the West Town and Sheldon Village block groups had the largest percentage of commuters traveling less than 10 minutes to work. The following graph shows the percent of commuters that have travel times less than 10 minutes.

Figure 8



Since commute times are relatively low in these block groups it is also useful to consider the mode of transportation in these block groups. The majority of commuters in the Aurora and West Town block group traveled by alternative modes. The other four projects were lower than the citywide average of alternative commuters. However, when carpooling is included in the analysis, these neighborhoods are much closer to the citywide average.

Figure 9



Facilities

All of the projects are located near facilities such as grocery stores and banks. Location to facilities is generally included as a criterion for many forms of funding for affordable housing. There are differences between the amount and diversity of facilities that are nearby these projects. The downtown projects have access to very different facilities than those located in more suburban areas. For example, the Aurora Building is has access to both the Saturday and Tuesday farmers market and a local health food store. On the other hand, Sheldon Village is located adjacent to a large mainstream grocery store (Safeway).

Land Use

Land use diversity varies greatly between projects. The downtown projects have a significantly more diverse land uses in their block group than the suburban projects. However, the suburban projects are located in areas that the city has designated as nodal developments or mixed use. This means that these primarily residential areas have the potential for growth that promotes more diverse land uses.

Energy Efficiency

Each of these projects used technologies that would promote energy efficiency. For example, every project used energy efficient appliances from Energy Star. Aurora, Santa Clara, Sheldon Village, and Greenleaf all participated in EWEB's Super Good Cents program. This program used a third party certification to ensure energy efficiency.

Water Conservation

Water conservation was less likely to be addressed in these projects than energy efficiency. Santa Clara was the first project that SVDP used low-flow toilets. The success at this development has allowed them to add this to their list of standard building techniques.

Indoor Air Quality

The most common technology to be installed for indoor air quality was continuous ventilation systems. All of the projects included this type of ventilation system, which is used to reduce mold in wet rooms such as bathrooms and kitchens. It is also used to ventilate unhealthy air from cooking or smoking. Projects that participated in the Super Good Cents program were also certified for indoor air quality. EWEB inspected various aspects of these projects including window vents and ventilation methods such as fans.

Material Cycles

Metropolitan affordable housing was the most progressive in material cycles. They recycled construction materials on construction sites and made a conscious decision to use as many recycled materials for building construction. St Vincent de Paul also collaborated with BRING recycling to help with construction waste that might be reused or recycled.

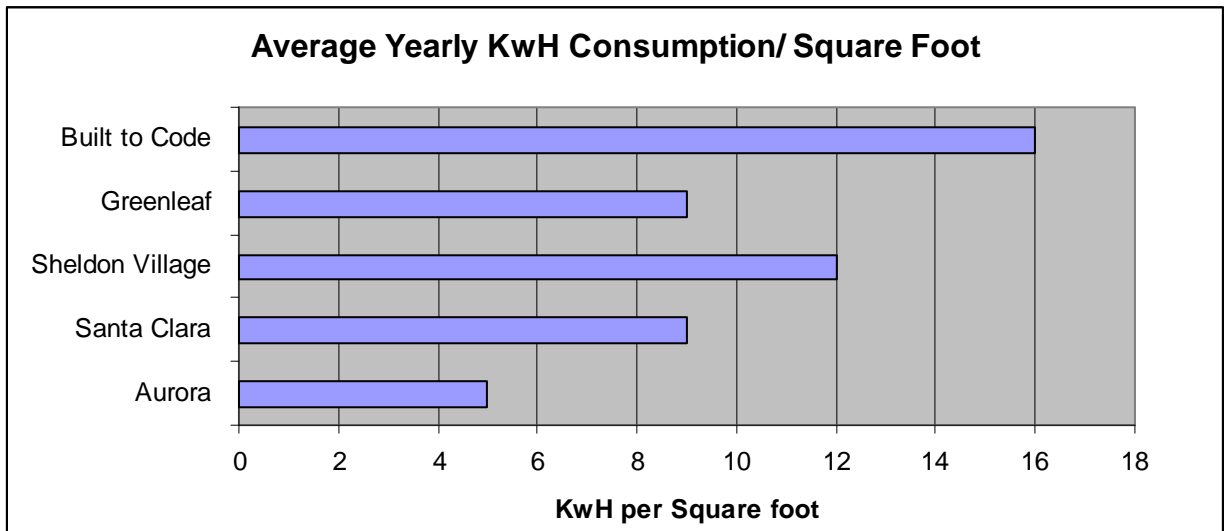
Passive Solar Design

Every project made use of site orientation to maximize solar exposure for each unit. The two apartment buildings, Aurora and West Town have the most solar access because the entire building is oriented north-south. In multi-building projects such as Santa Clara and Greenleaf, some buildings had to be oriented east-west due to site constraints. Sheldon Village also used the east-west orientation for the buildings to minimize shadows from adjacent buildings. HACSA chose to maximize density, which made passive solar design more complicated. As a compromise, the buildings face east west, but windows are located throughout the building to maximize solar exposure while avoiding shadowing from adjacent buildings.

Energy Use

Each of these projects was designed with energy efficiency in mind. This is evident when comparing the yearly energy consumption with that of a standard built to code building. These developments generally performed about 30% better than a built to code unit of similar size. While the Aurora building appears to have the lowest energy use, this is slightly misleading because of some missing data. St Vincent de Paul pays for the energy costs of common areas, including the cost to run the geothermal heat pump. This consumption data was not included in the energy analysis. However, the data in this graph accurately represents what Aurora residents are using and paying for out of pocket.

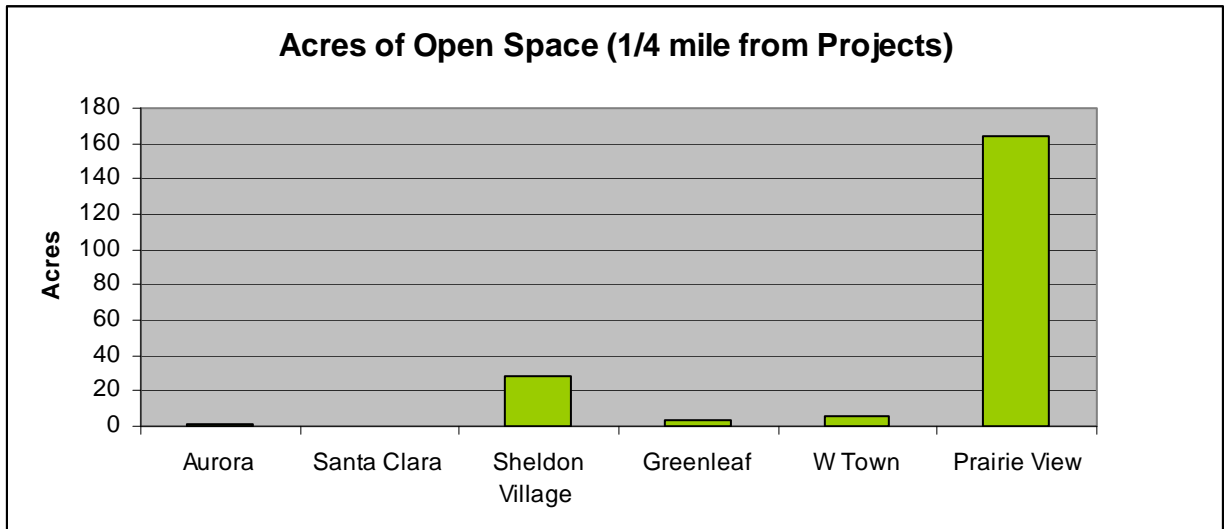
Figure 10



Open Space

Prairie View clearly is the leader in proximity to open space. The future project will directly abut a planned city park. It is also within a quarter mile of Danebo Pond and Meadowlark Prairie two natural areas. Sheldon Village is also located near a large city park, Sheldon Sports Park. Greenleaf, W Town, and Aurora are all within a ¼ mile of open space and have access to smaller neighborhood parks within a ½ mile of the site. Aurora and West Town have excellent access to the River Parks and Trails within a ½ mile from the site. Santa Clara does not have immediate access to public parks, but if the study area is expanded to ½ mile, Lone Oak Park is included.

Figure 11



Site Improvements

Site improvements were minimal on most of the projects, except for Aurora and W Town. As these are both redevelopment sites, they are minimizing impacts on green fields in other areas of town. Their location downtown created some unique construction issues as well as more noise reductions and environmental remediation. Prairie View is the only site that has wetlands on planned developable area, but the environmental review deemed them low quality.

Social Equity

Housing Diversity

The block groups with the most diverse housing stocks were Aurora, W Town, and Sheldon Village. Each had a good mix of single family and multi-family housing. The median rent in these block groups was also significantly less (\$430-\$700) than the two predominately single-family block groups (\$800-\$915). Greenleaf and Santa Clara were predominately single-family, with perhaps the only multi-family housing being the project itself. Prairie View is similar in its concentration of single-family development, but the only multi-family housing is a 100-unit mobile home park east of the site.

Social Diversity

There were not any significant differences in social diversity between the neighborhoods. All neighborhoods were predominately white, with non-white residents making up 5% or less of all residents. There were some variations in age groups, families and the elderly were more concentrated in the suburban block groups, while the 20-30 year age groups were more represented in the Aurora and West Town block groups.

Resident Services

The resident services varied greatly between projects, primarily due to the different populations served. St Vincent de Paul of Lane County services focused more on case

management and family oriented activities. METRO services include classes and presentations that focus on homeownership and job skills. HACSA provides some family oriented activities on site such as movie night, but residents requested more classes about job skills and financial management would be useful.

Economy

Lifecycle Costs

Since the developers of these projects are building long-term affordable housing, they have balanced construction costs and durability to ensure that these buildings will remain in quality condition for the life of the building. Increased construction expenditures not only help with maintenance costs, but also contribute to the overall efficiency of resource use for the building. Each of the projects included high quality products to minimize replacement costs, and maximize long-term durability.

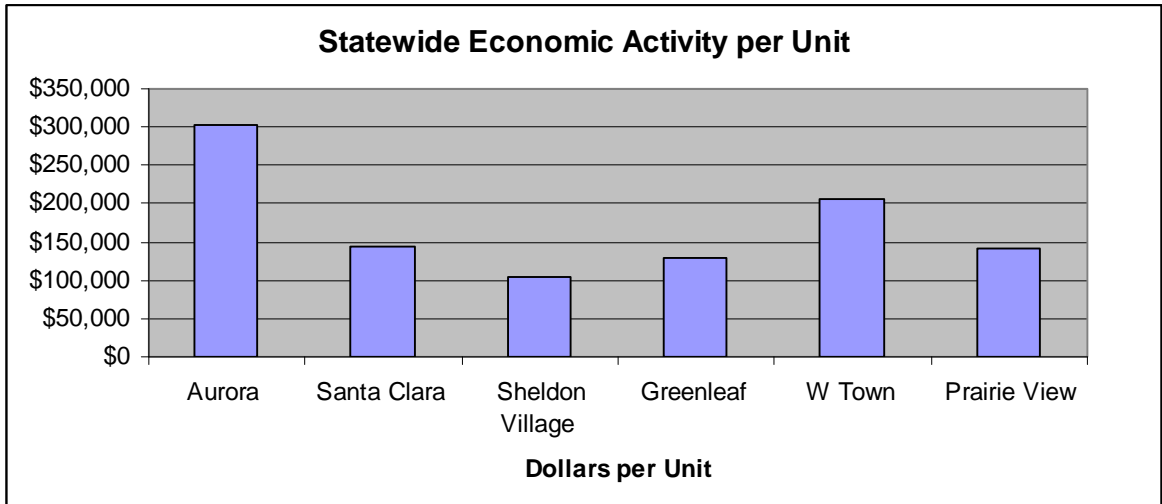
Affordability

Each of these projects have target populations that they have pledged to serve for 40-60 years. What makes them difficult to compare is that they often serve very different income levels. St Vincent de Paul typically serves low to very low-income people, with some developments serving people that make 30% of the median income. However, they also serve people with incomes at 40-50% of median income. Metropolitan Affordable housing's target population is people at 50-60% of median income. HACSA serves diverse populations, but Sheldon Village targets residents at or below 50% of median income. This diversity is part of what makes affordable housing successful in Eugene.

Economic Activity

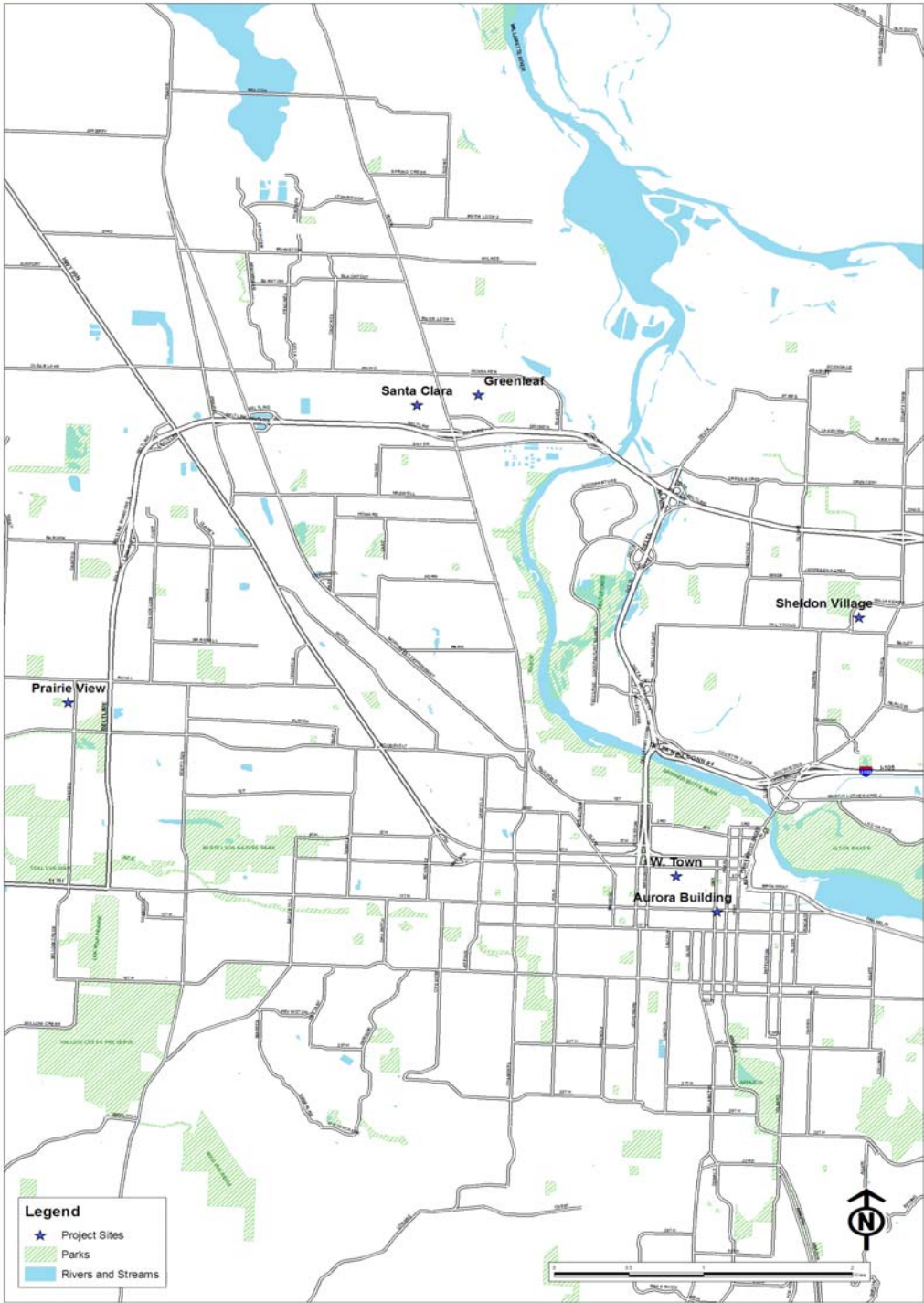
Oregon Housing and Community Services reported on the statewide economic activity of affordable housing in their paper Housing as an Economic Stimulus. This paper provided specific information about the activity for Aurora building, but also some general guidelines for estimating economic activity for other projects in Oregon. Using those estimates, I compared the case studies based on economic activity per constructed unit. These estimates are based on construction costs only. The following graph shows the estimated activity for each project. Overall, all affordable housing development dramatically increases economic activity, whether it is through job creation or supporting Oregon businesses. This important aspect of public funding for affordable housing is not always recognized. Aurora and West Town were estimated to have the most economic activity per unit.

Figure 12



Case Studies

Project Site Locations: Eugene, OR



Aurora Building

St Vincent de Paul of Lane County

Project Overview

Location

Address: 100 E. 11th Avenue
 Map and Tax Lot: 17-03-31-41-10200

Site

Parcel Size: .22 acres
 Zoning: C-3
 Units per acre: 245

Design Team

St Vincent de Paul,
 Developer
 Richard Bryant and Anne Delaney; WBGs Architecture
 Walter Daffe, Chambers Construction Company



Project Features

Project Completion: 2003

- 54 affordable rental units
- Affordable units targeted to families, individuals, and seniors at or below 50% and 60% of median income
- Mixed-use development includes commercial on the first floor.

Table 4

Building	Square Foot
Aurora	
Studio	575
One Bedroom	720
Two Bedroom	900

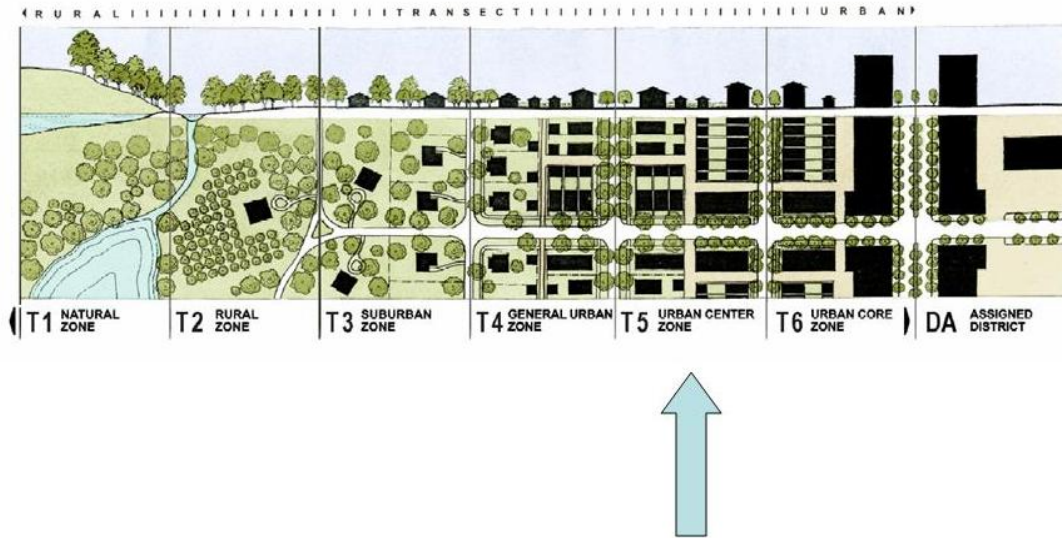
Environment

Neighborhood Features

This development is located downtown within a mile of a natural foods store, the public library, and the downtown Lane Community College campus. It is located across the

street from the downtown transit center, with access to new Bus Rapid Transit system and all major bus routes.

Figure 13



Compactness

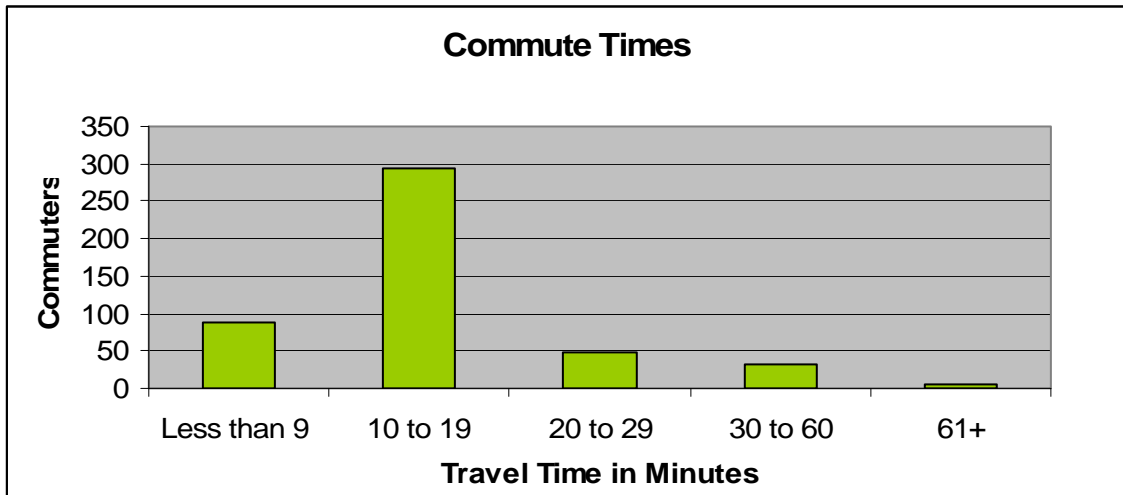
Downtown Eugene, generally has a higher density than the rest of the community. The average block size in this neighborhood is 1 acre, and the average parcel size is 6908 square feet, or 1/6 of an acre. Smaller block sizes usually relate to more connectivity and intersection density. In this block group, there are no dead ends, and 100% of intersections are three or four way intersections. The intersection density is 939.6 intersections per square mile, compared with 105.2 intersections per square mile citywide.

Transportation

The location and walkability of this project make alternative transportation methods such as walking, biking, and public transportation highly accessible modes. In addition to close proximity (300 feet) to the downtown bus station, the Aurora Building neighborhood has high bus stop density and bike connectivity. There are 280 bus stops per square mile in the block group, including the downtown station. The building is located on 11th and Pearl, within close proximity to 12th Avenue, a main bike thoroughway in Eugene. Additional bike connectivity exists throughout downtown, with bike routes to Oakway center, the University, and West Eugene.

The commute time for people living in this block group in 2000 is in the following graph:

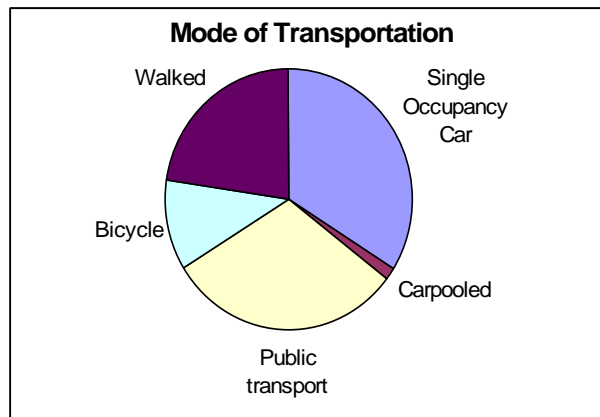
Figure 14



The commute times for this block group indicate a significant amount of residents work close to home as 81% of employees commute time was 19 minutes or less. Nineteen percent of employees' commute times were 9 minutes or less. Thirty-six percent of residents said they used public transportation as their primary mode of commuting.

The following chart shows the mode of transportation for workers in this block group in 2000. Sixty-eight percent of people used an alternative mode of transportation to travel to work. Thirty-two percent commuted to work with an automobile, and 2% of those that drove, carpooled.

Figure 15



Facilities

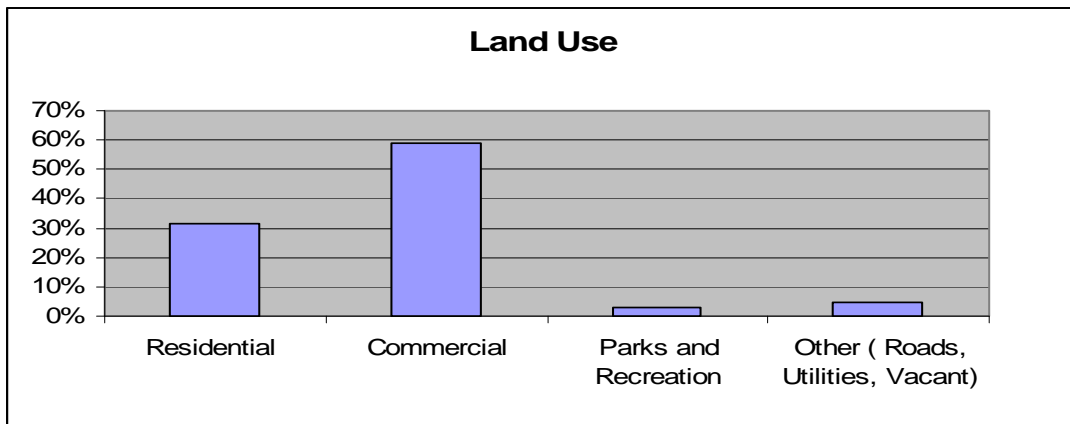
Facilities are accessible in this neighborhood due to the downtown location and density. The following gives a representation of the types of facilities located within a ¼ mile of this project:

- Grocery Store
- Lane Community College
- Eugene Public Library
- Peace Health Medical Group
- City Center Police Station
- Eugene Fire Station 1
- Downtown Bus Station
- Pharmacy/drug Store

Land Use and Zoning

The following table shows the distribution of land uses in this block group. General Services is the largest category of land use represented in this neighborhood. This generalized category includes specific land uses such as banks, laundry mats, and barbershops. Other large land uses represented include retail trade and both single and multi-family housing.

Figure 16



In addition to current land use, the current zoning designations may indicate future growth areas in the neighborhood. Commercial zoning makes up the majority of the area in this block group (72%), with high and medium density residential making up 19% of the total area. The current zoning mix in the Aurora block group is in the table below.

Table 5

Zone	Percent of Total
Community Commercial	31%
Major Commercial	41%
Medium Density Residential	3%
Limited High Density Residential	16%
Special Area Zone	9%
Historic	0.11%

Detailed zoning and land use maps are included in the appendix.

Energy Efficiency Measures

- Geothermal Heat Pump provides heating/cooling system for units and water.
- EWEB Super Good Cents Energy Efficiency Standards
- Energy Star Appliances

Indoor Air Quality Measures

- Low VOC Paints and Adhesives
- Continuous ventilation throughout building

Material Cycles

- Recycled Glass tiles for exterior design
- Bring Recycling helped with demolition
- Use of recycled materials during construction
- Used general contractor with strong commitment to waste reduction

Passive Solar Design

The Aurora Building is located on W. 11th ST, which is on an east-west axis. This allows for the maximum amount of solar exposure as the building faces north/south. This type of solar exposure is important for reducing energy use for lighting during the day. Sunlight might also reduce heating cost during the winter months. A neighborhood scale map of street solar orientation is in the appendix.

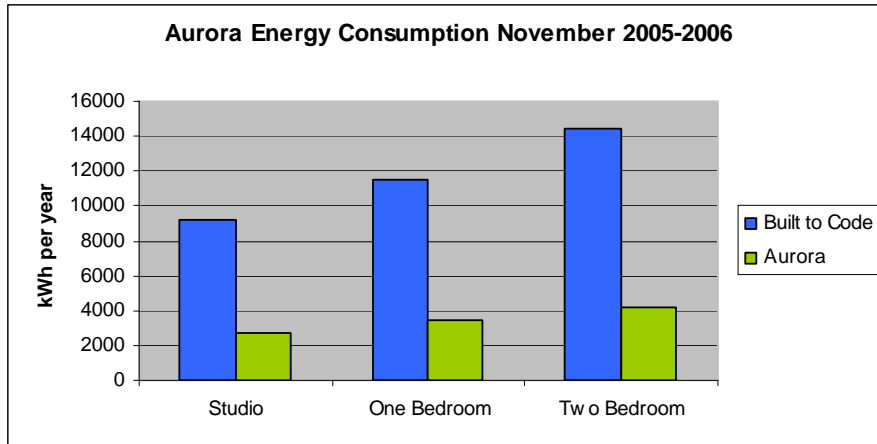
Open Space

Although the Aurora building is located downtown, it does have .55 acres of park/public space within a ¼-mile radius. This includes the park blocks, which host the Saturday and Tuesday farmer's markets, as well as the Broadway plaza. Within a half-mile radius, there are 2.63 acres of parks, including Charnel Mulligan Park and the West University Park. The Aurora Building also has outdoor patio areas for residents and some units have balconies.

Energy

The Aurora Building has a unique heating system using geothermal heat that provides heat up to 60 degrees. This significantly impacts the residents' out of pocket expense for energy. St. Vincent de Paul pays for the operation of the pump, as well as all energy used in common area lighting and elevators. The following graph shows the average energy consumption for Aurora units compared with an estimate for a built to code apartment of a similar size.

Figure 17



Site Improvements

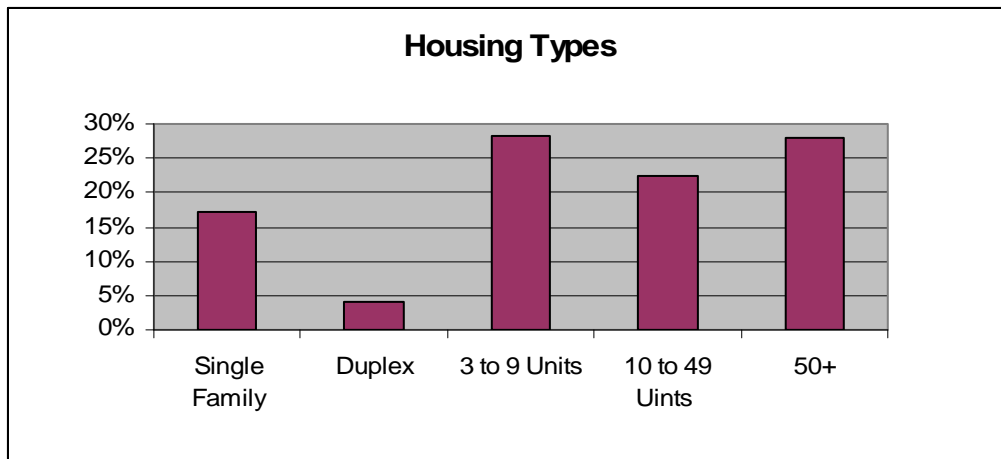
St Vincent de Paul built this development on an underused parcel in downtown Eugene. The redevelopment of this site not only benefited downtown development, but also avoided the degradation of green sites elsewhere in the community. During the environmental review, two areas required mitigation due to soil contamination. Noise levels were also a consideration during the review. SVDP used Brownfield redevelopment funds to address these issues.

Social Equity

Housing Diversity

The 2000 census reported that there were 649 housing units in this block group. The following table shows the types of housing units represented in this area. The majority of housing is multi-family housing, but housing types in this block group are diverse. There is representation of all major housing types.

Figure 18

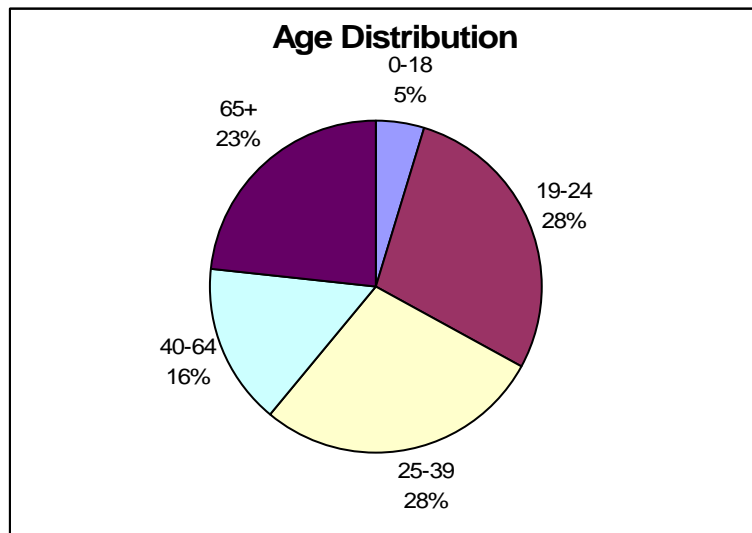


The median gross rent for this area was \$432.00 in 2000. Median gross rent as a percent of income was 30.8%. This suggests that residents in the downtown area are experiencing a housing cost burden. Of the 881 residents of this block group, 27% had incomes below the 1999 federal poverty line.

Social Diversity

The 2000 census reported that 91% of residents in this block group identified themselves as white only. Native Americans made up 1% of the residents and 2% identified as Asian. Five percent identified themselves as two or more races. The primary age group in this block group is 19-39, but there are a large percentage of residents over 65. Children under 18 are the smallest group in this neighborhood.

Figure 19



Resident Services

The Aurora Building has a resident services coordinator and a resident council. The resident council develops ideas for services and activities offered at the development. Coordinators also work with residents to access services throughout the community. Weekly onsite activities/services include:

- Computer room with high-speed internet
- Community Room
- Planting areas in outdoor terraces
- Bread delivery
- Bingo
- Arts and Crafts
- Spanish classes

- Parenting classes

Ongoing activities include assistance with bills, assistance with social services; resume writing and job applications, grocery shopping trips, and field trips to the Oregon coast and local state parks.

2006 Resident Survey

During the summer of 2006, the City of Eugene distributed 54 surveys to the residents of the Aurora Building. They received 16 responses. Although the response rate was less than 30%, the survey indicated high levels of satisfaction with their current home and facilities.

The majority of respondents was happy with the maintenance of common facilities and reported feeling safe in their home. However, a small number of residents indicated that they did not feel safe in their home and neighborhood.

Respondents indicated they were generally satisfied with management services. Residents stated the building managers responded to issues or problems in their homes in a timely manner. Most residents were pleased with the resident services offered at the Aurora Building.

Economy

Project Financing

Total Project Cost: \$7,500,000

Local Financial Subsidies

- HOME funds
- EWEB/City of Eugene SDC waivers
- Funding from Lane Community College
- 20-year property tax exemption

Other Significant Subsidies

- Federal Low Income Housing Tax Credits (4%)
- EWEB Super Good Cents Energy Rebate
- Brownfield Grant and Loan
- Oregon Department of Energy Tax Credit
- Federal Home Loan and Bank of Seattle

Lifecycle Costs

SVDP does not currently have data about lifecycle costs. They work closely with their general contractors and architects to choose materials with durability within their price range. Since the organization has started to incorporate sustainable building features into

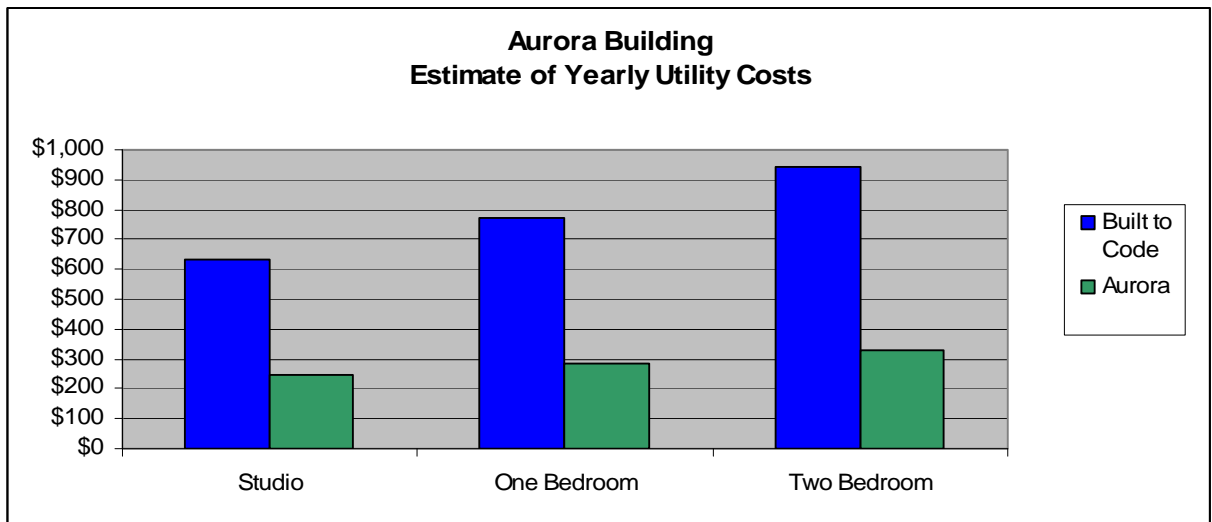
projects, they have built up a list of products that work well for their developments. Once they know a product is durable and efficient, they often use those materials for repairs and retrofits in other developments.

Affordability

Aurora units will be affordable to residents for a 40-year period. Quality construction and materials contribute to long-term affordability by decreasing costs of maintenance. SVDP will be granted the first right of refusal to purchase to property when the tax credit compliance period ends. The limited partner expects this project will be transferred for little or no fee.

Utility Costs

Residents of the Aurora Building see significant savings in utility costs throughout the year. The following graph provides a comparison between a built to code apartment and the Aurora. On average Aurora tenants pay about 63% less in yearly utility bills. Compared to larger single-family dwellings, the savings is even greater.



Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the Aurora Building in Housing as an Economic Stimulus. They used a modeling software called IMPLAN to estimate the short term economic impact of developing the Aurora Building. They estimated that:

- Statewide the project generated \$16.3 million in economic activity and created 173 jobs.
- For every dollar spent, the project generated \$1.15. Based on Aurora project costs, that is \$8,625,000.
- In Lane County, construction generated \$14.4 million and 168 jobs.

Santa Clara Place
St. Vincent de Paul of Lane County, Inc.

Project Overview

Location

Address: Santa Clara Avenue
 Map and Tax Lot: 17-04-11-43-00801



Site

Parcel Size: 3 acres
 Zoning: GO: General Office
 Units per acre: 20

Design Team

St Vincent de Paul, developer
 Meili Construction, contractor
 Bergsund and Delaney, Architects

Project Features

- Completed in 2004
- 60 studios, 1 bedroom and 2 bedroom rental units, including 10 units reserved for developmentally disabled adults and first-time teen parents.
- Targeted to families, individuals, and Seniors at or below 50% of median income
- Community center, central plaza, garden, and play area

Table 6

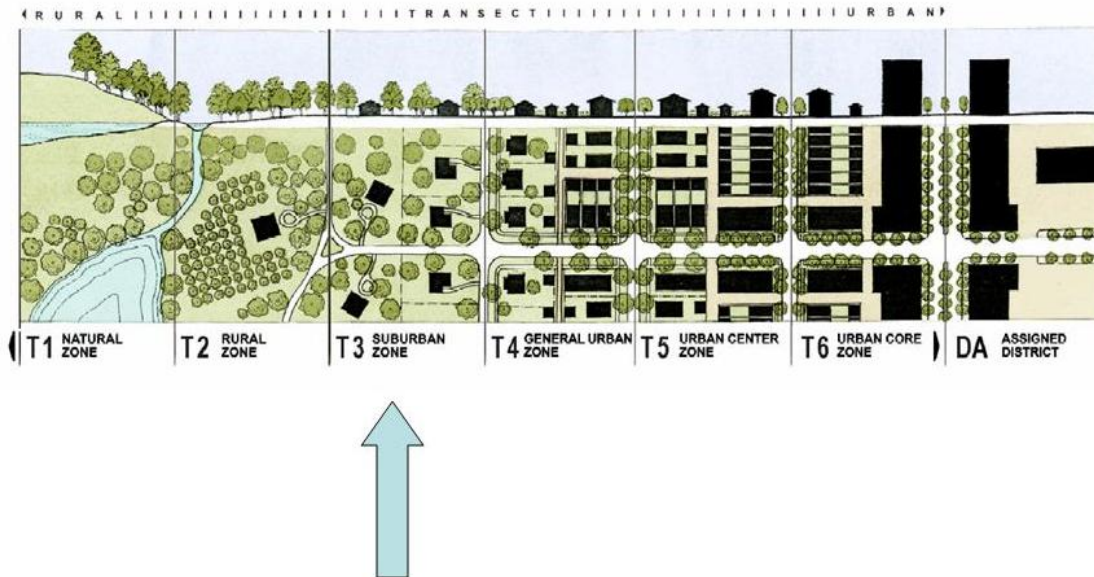
Building	Square Foot
Santa Clara	
One Bedroom	640
Two Bedroom	900
Three Bedroom	1100

Environment

Neighborhood Features

This development is located near two shopping with grocery store and other retail. The site has access to public transportation through the River Road transit center and bike connectivity to the river trails.

Figure 20



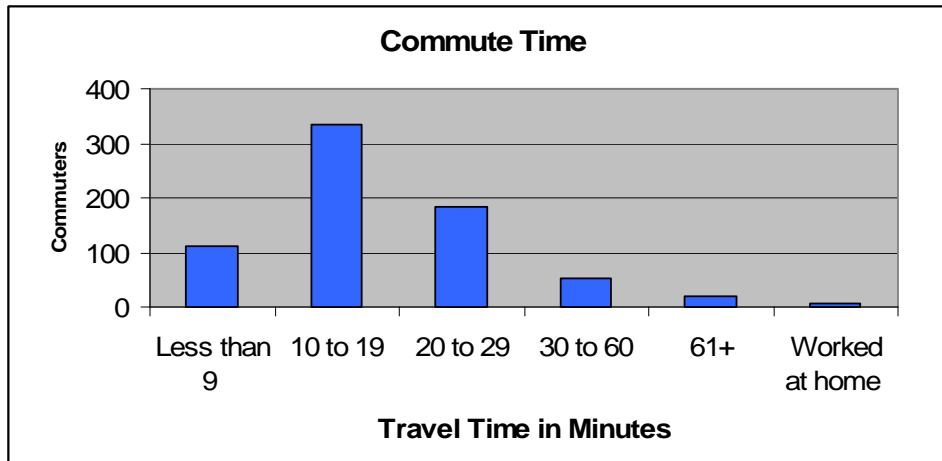
Compactness

Santa Clara is located in North Eugene in a primarily suburban area. The average block size is 21.5 acres and the average parcel size is .5 acres. Because of these large parcels, there is less street connectivity. Sixty-seven percent of all streets in this block group were three or four way intersections. This is slightly higher than the city average, where 57% of all streets end in a three or four-way intersection. The dead-end density in this block group is 39 dead ends per square mile. This is also the average dead-end density citywide.

Transportation

Santa Clara is located just off River Road with connections to the bus and bike systems. The bus stop density in this area is 18 bus stops per square mile. There is a River Road transit center, with a park and ride .4 miles away. However, there are significant barriers to walking to this bus station. The route is along a particularly busy section of River Road, which passes under Beltline Highway. River Road also has a bike path that connects to the river paths, which provides a safe connection to Valley River Center and downtown areas. The commute times for people living in this block group in 2000 are in the following graph:

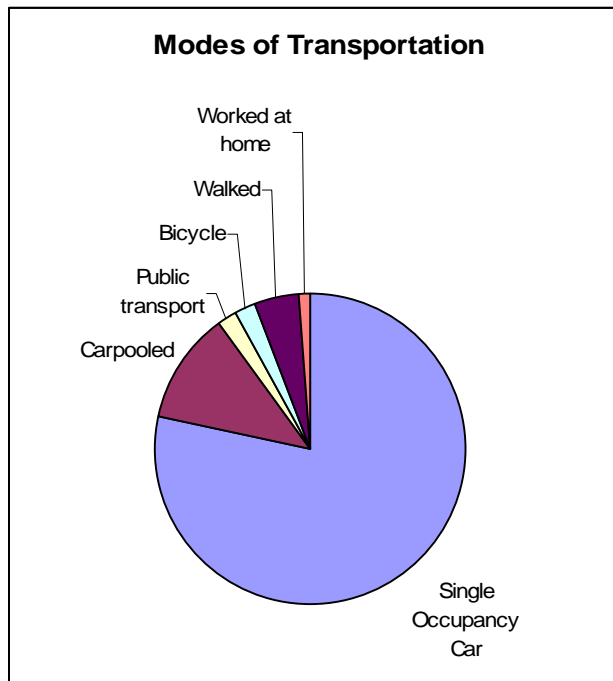
Figure 21



The majority of commute times were in the 10-19 minute range, with 16% of residents commuting for 9 minutes of less. Very few people had commute times over 25 minutes.

The majority of commuters in this block group drove to work in a car, truck or van. Of those drivers, 12% carpooled. Seven percent of commuters in this block group walked or biked to work, which is slightly higher than the citywide average.

Figure 22



Facilities

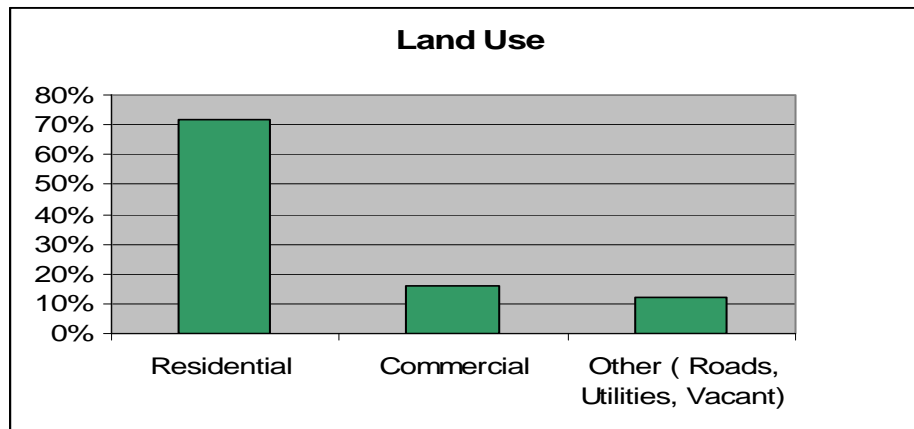
Because of the close proximity to River Road, Santa Clara has access to quite a few facilities. The following list gives a representation of facilities within a quarter mile of this development:

- Santa Clara Shopping Center including an Albertson's
- Grocery Outlet
- Oregon Community Credit Union

Land Use and Zoning

The following table shows the distribution of land uses in this block group. Sixty-six percent of this block group is currently single-family housing. General services and retail make up about 12% of the total land use.

Figure 23



In addition to land use, zoning designations can give an indication of potential future growth areas in a neighborhood. In the Santa Clara area, the majority of land is zoned low density residential. The current zoning designations are in the following table.

Table 7

Zone	Percent of Total
Low Density Residential	76.0%
Community Commercial	10%
General Office	5%
Agricultural	3%
Medium Density Residential	3%
Public Land	2%
Neighborhood Commercial	1%

Energy Efficiency Measures

- Eugene's first Earth-Advantage multi-family complex

- Solar hot water heating,
- Increased insulation levels and
- Energy efficient thermostats
- Cove heaters
- Compact fluorescents used throughout development

Water Conservation Measures

- Low-flow toilets

Indoor Air Quality Measures

- Continuous Ventilation fans

Material Cycles

- Bring Recycling helped with demolition
- Use of recycled materials during construction
- Used general contractor with strong commitment to waste reduction

Passive Solar Design

Santa Clara was designed with consideration of solar access. The project uses solar exposure for both solar hot water heating and passive solar warmth. Many of the buildings are oriented on an east-west access to maximize solar exposure. A neighborhood scale map of street solar orientation is in the appendix.

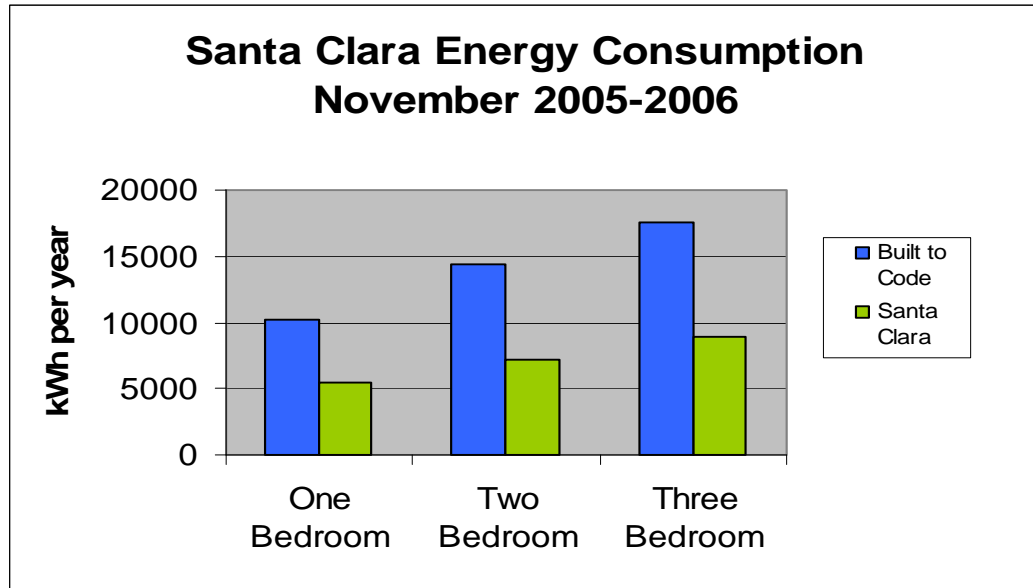
Open Space

Santa Clara has a plaza within the project and one major park in the surrounding neighborhood. There is a 1.6-acre field located at North Eugene High School .5 miles away and Lone Oak Park is less than a mile away with 3.9 acres of open space.

Energy

Santa Clara Plaza experiences significant energy savings from the solar hot water heating system. The following graph shows the average energy consumption for Santa Clara residents compared to an estimated energy use per year for a similar built to code unit.

Figure 24



Site Improvements

The site used for Santa Clara did not initiate any large scale environmental remediation. The was a large undeveloped parcel. SVDP mad an effort to maintain as much open space as possible. In addition to the public plaza, they used grasspave a product that provides

- Pervious load-bearing surface
- Stormwater Pollution Filtration and Treatment
- Airborne Dust Capture and Retention
- Heat Energy Reflection Reduction, “Cool” Surface

Social Equity

Housing Diversity

The 2000 Census reported that there were 606 housing units in this block group. At the time of this Census, Santa Clara had not been completed and no multi-family housing was recorded. The entire housing stock consisted of single-family housing and duplexes.

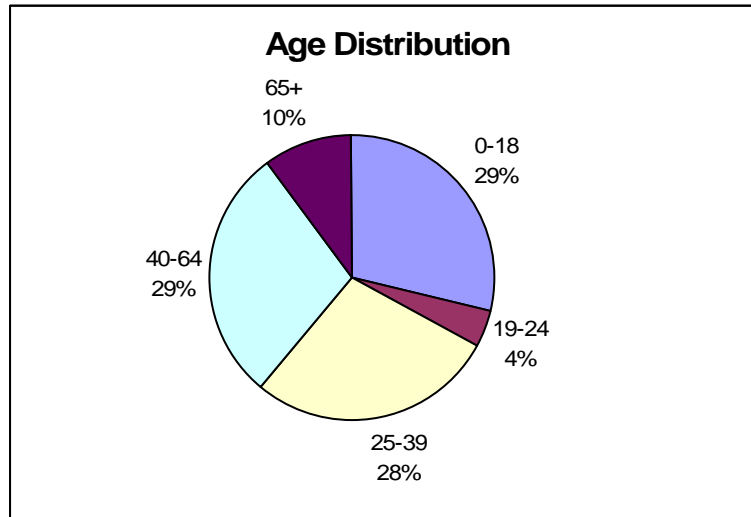
The median gross rent for this area was \$825.00 in 2000. Median gross rent as a percent of income was 20.5%. Of the 1,555 residents living in this block group 10% were below the 1999 federal poverty line.

Social Diversity

The 2000 census reported that 92% of residents in this block group identified as white only. Other races represented include 1% African American, 4% Asian, and 3% two or

more races. This is a neighborhood with primarily family aged residents with children making up the second largest age category. The age distribution in 2000 is as follows:

Figure 25



Resident Services

Santa Clara has resident services coordinator as well as a resident council. The resident council develops ideas for services and activities offered at the development. Coordinators work with residents to access services throughout the community. Weekly activities/services include

- Bingo
- Movie Night
- Bread delivery
- Homework help
- Walking group
- Gardening Club
- Kid's Day

On going activities, include potlucks, parent's night off, holiday parties, and a summer camp for children six years and older.

2006 Resident Survey

During the summer of 2006, the City of Eugene distributed 60 surveys to the residents of the Santa Clara. They received 14 responses. Although the response rate was just above 20%, those that responded indicated a high level of satisfaction with their current home and facilities.

The majority of respondents were happy with the maintenance of common facilities. Most residents indicated that they felt safe in their home and neighborhood, but only 36% of residents indicated that they were satisfied with their neighbors and neighborhood.

Respondents indicated they were generally satisfied with management services. Residents stated they could approach Santa Clara management without fear and management addressed issues and problems in a timely manner. Residents were pleased with the resident services offered through the Santa Clara complex.

Economy

Project Financing

Total Project Cost: \$7,827,308

Local Financial Subsidies

- CDBG (land)
- HOME Funds
- Lane County Road Funds
- Eugene SDC Waivers

Other Significant Subsidies

- Federal Low Income Housing Tax Credits

Lifecycle costs

SVDP does not currently have data about lifecycle costs. They work closely with their general contractors and architects to choose materials with durability within their price range. Since the organization has started to incorporate sustainable building features into projects, they have built up a list of products that work well for their developments. Once they know a product is durable and efficient, they often use those materials for repairs and retrofits in other developments.

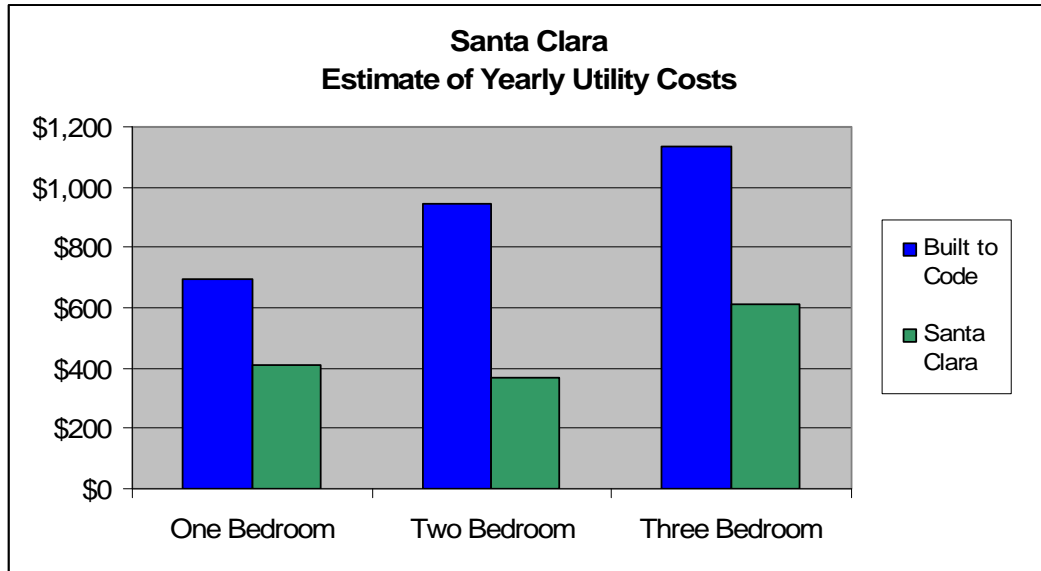
Affordability

Santa Clara units will be affordable to residents for a 40-year period. Quality construction and materials contribute to long-term affordability by decreasing costs of maintenance. SVDP will be granted the first right of refusal to purchase to property when the tax credit compliance period ends. The limited partner expects this project will be transferred for little or no fee.

Utility Cost

Residents of the Santa Clara Plaza see significant savings in utility costs throughout the year. The following graph provides a comparison between a built to code apartment and Santa Clara. One average Santa Clara tenants pay about 50% less in yearly utility bills. Compared to larger single-family dwellings, the savings is even greater.

Figure 26



Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the affordable housing development in the report *Housing as an Economic Stimulus*. They used a modeling software called IMPLAN to estimate the short term economic impact of developing affordable housing. They estimated that for every dollar spent on affordable housing construction generates \$1.10 in economic activity across the state. Based on this estimate Santa Clara generated \$8.6 million.

Sheldon Village

Housing and Community Services Agency of Lane County

Project Overview

Location

Address: 2475 Sheldon Village Loop
Map and Tax Lot: 17-03-20-10-04421

Site

Parcel Size: 3.05 acres
Zoning: R-3
Units per acre: 28

Design Team

Jim McCoy, HACSA Project Manager
David Edrington and Sara Bergsund, Architects
Brad Stangeland, Landscape Architect
Gary Meili, Contractor



Project Features

- Completed in 2003
- 86 units, including “twins”, one-bedroom, two-bedroom, and three-bedroom rentals.
- Targeted to families, individuals, and seniors at or below 50% of median income
- Community center, garden, and play area

Table 8

Building	Square Foot
Sheldon Village	
One Bedroom	602
Two Bedroom Flat	714
Two Bedroom Townhouse	1025
Three Bedroom	1148

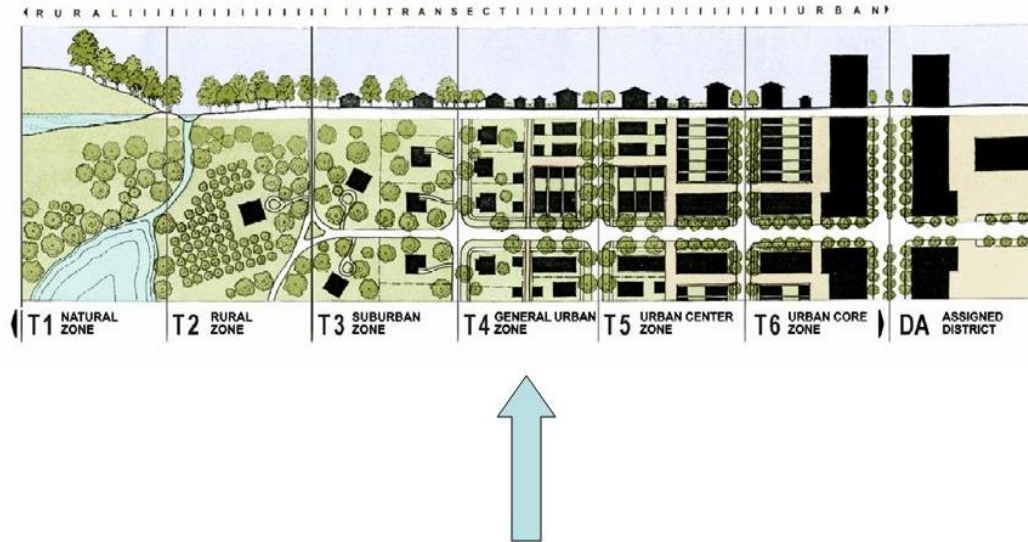
Environment

Neighborhood Features

- Located adjacent to a neighborhood retail shopping center that includes a grocery store.
- Walking distance to Sheldon High School

- Site located near four public transportation routes with connectivity to downtown and University of Oregon.

Figure 27



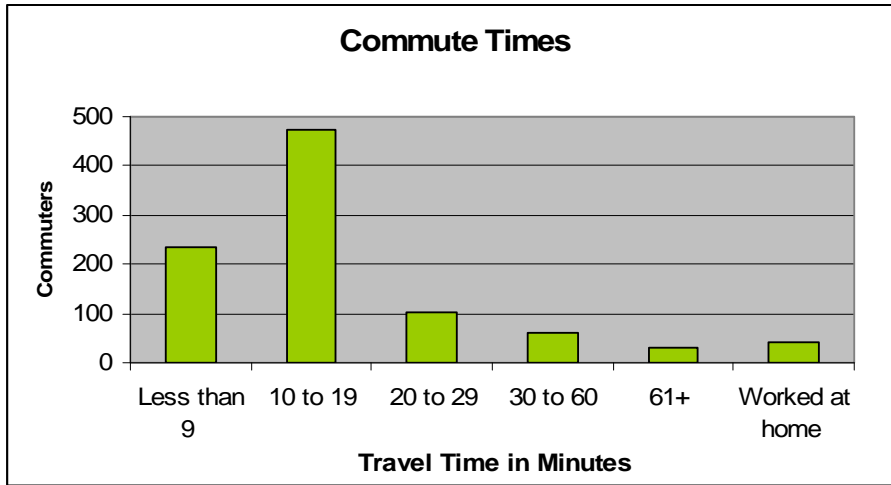
Compactness

Sheldon Village is located in a suburban area of northeast Eugene. In general, blocks and parcels are larger than those of downtown and other central neighborhoods. The average block size in this neighborhood is 11 acres and the average parcel size is .4 acres. There are a number of high-density residential developments nearby this project. The intersection density is somewhat typical of suburban neighborhoods: 85.84% of roads have three or 4-way intersections and 9.73% are dead-ends.

Transportation

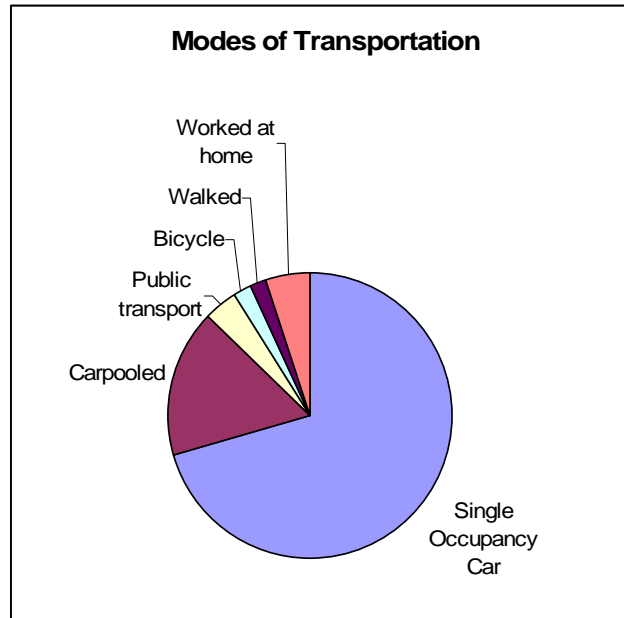
While the block group as a whole is not conducive to walking, the proximity of Sheldon Village to a commercial center makes walking convenient for grocery shopping. For a suburban area, bus routes are accessible and stops are frequent. The closest bus stop is 300 feet and the density of bus stops is 39 bus stops per square mile. Bike connectivity is present through bike lanes on Coburg Road and Cal Young Road. These routes connect to Valley River Center, downtown, and the river paths. Even though bike lanes are present, both connecting roads are high traffic roads are not suitable for all cyclists. The commute time for people living in this block group is in the following graph:

Figure 28



Although commute times were relatively short, 89% of residents reported using car, truck, or vans to get to work. Of those that drove, 17% said they carpooled. Four percent of residents walked or biked to work, slightly higher than the citywide average.

Figure 29



Facilities

Facilities are accessible in this neighborhood due to the location near Coburg and Cal Young Roads, major commercial centers in Eugene. The following gives a representation of the types of facilities located with a ¼ mile of this project:

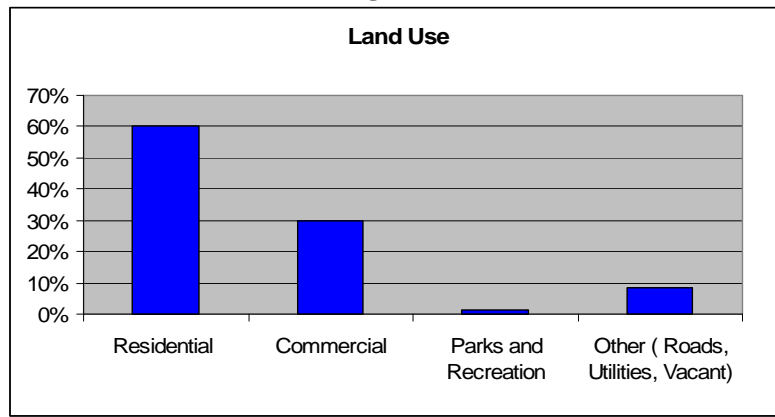
- Safeway

- Market of Choice
- Pharmacy
- Alternative Health Clinic
- Sheldon High School

Land Use and Zoning

The following graph shows the distribution of land uses in this block group. Low-density residential occupies 46% of the total area. Schools and educational facilities are the second most represented land uses, 16.36%. There is also a significant amount of multi-family housing, 10.5%.

Figure 30



In addition to existing land use, the current zoning designations may indicate future growth areas in the neighborhood. The zoning mix mirrors the current land use with a little over 60% of the block group zoned for low density residential and 17% dedicated to public land.

Table 9

Zone	Percent of Total
Neighborhood Commercial	2%
Community Commercial	6%
General Office	2%
Public Land	17%
Low Density Residential	61%
Medium Density Residential	6%
Limited High Density Residential	6%

Energy Efficiency Measures

- Energy Star Appliances
- HASCA partnered with the Eugene Water and Electric Board to install photovoltaic panels on the roof of the community center

- Windows, doors, equipment, and lighting meet EWEB Super Good Cents standards.

Indoor Air Quality Measures

- Continuous operating ventilation system
- Feathercove bathtubs

Passive Solar Design

HACSA developed the vision for Sheldon Village with solar orientation in mind. However, for this project the density of the project posed a unique problem. Because the project uses a village model there are high-density buildings in close proximity that would create shadows for neighboring units. Because of this design element, the lanes are oriented north south and the buildings are oriented east west. This allows one side of the building solar access at all times. A map of neighborhood scale solar orientation is in the appendix.

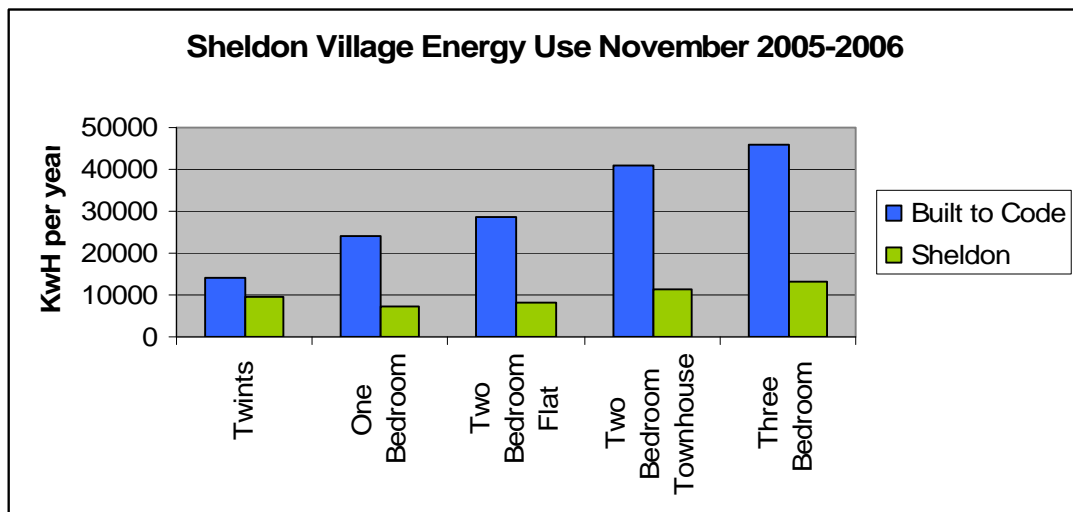
Open Space

Sheldon Village is located .2 mile from Sheldon Sports Park, a 28 acre park that includes a multiple sport facilities including a track, and soccer field.

Energy

Sheldon Village has five, 2.5 kW photovoltaic arrays that provide electricity to the common area. The following graph shows a comparison between Sheldon Village energy consumption and an average built to code unit of the same size. On average, energy use in these units is about 63% less than a built to code unit.

Figure 31

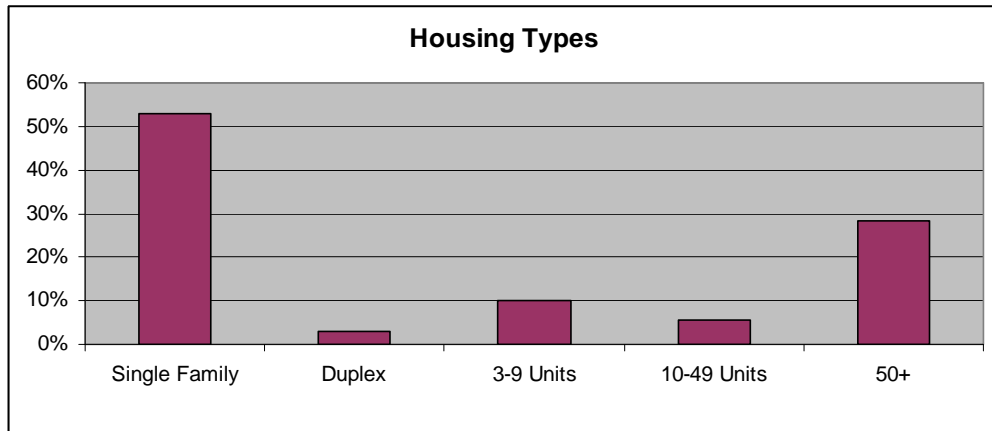


Social Equity

Housing Diversity

The 2000 census reported there were 1107 housing units in this block group. The following graph shows the types of housing units represented in this area. The majority of housing is single-family housing. Large multi-family housing development is also a significant housing type.

Figure 32

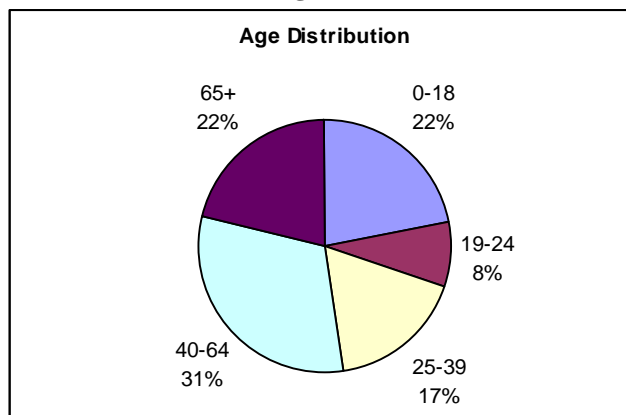


The median gross rent in this area was \$730 in 2000. Median gross rent as a percent of income was 38.9%, which suggests that residents of this block group are experiencing a housing cost burden. Of the 2143 residents of this block group, 11% had incomes below the federal poverty line.

Social Diversity

The 2000 census reported that the primary race in this block group was white (92%). Other races represented in this block group are Asian (2%), Black (1%), and two or more races (3%). The age distribution in the block group is fairly diverse, with 40-64 making up the largest category and 19-24 the smallest.

Figure 33



Resident Services

- Computer Room
- Children’s library
- Bread delivery
- Movie Nights

Resident Survey

Seventy-eight surveys were distributed to Sheldon Village residents. Twenty –four surveys were returned yielding a 31% response rate. Residents at Sheldon Village reported an overwhelmingly positive experience. When asked about safety, respect from management, and response of management to maintenance issues all (100%) residents stated satisfaction. Residents were also pleased with their neighborhood and neighbors. When asked about resident services tenants responded with satisfaction, but noted that parenting, homeowner/financial, and job skills classes would be beneficial.

When asked about improvements in their home residents indicated minor repairs (carpet and paint), not enough parking, and increased storage. Residents also stated that they would spend money on playgrounds (18%), maintenance (17%) and landscaping (11%) to improve Sheldon Village.

Economy

Project Financing

Total Project Cost: \$8,155,307

Local Financial Subsidies

- CDBG (land)
- HOME Funds
- City General Funds
- Lane County Road Funds
- Eugene SDC Waivers
- Eugene Water and Electric Board demonstration grant

Other Significant Subsidies

- Federal Low Income Housing Tax Credits

Lifecycle Costs

HACSA has a number of construction standards that are intended to extend the life of the building. These standards focus on durability and livability. These include,

- Upgraded sound mitigation between units
- Fully separated walls and insulation
- Insulated pipes and drains between stories
- Solid wood backing on commonly damaged areas such as doors and handrails

- Steel, powder coating, and stainless steel exterior handrails, brackets, etc
- Concrete and metal pan balconies and decking
- Commercial 20-gauge steel exterior doors, commercial removable core lock sets, strike reinforcement packages, and extra long screws

Affordability

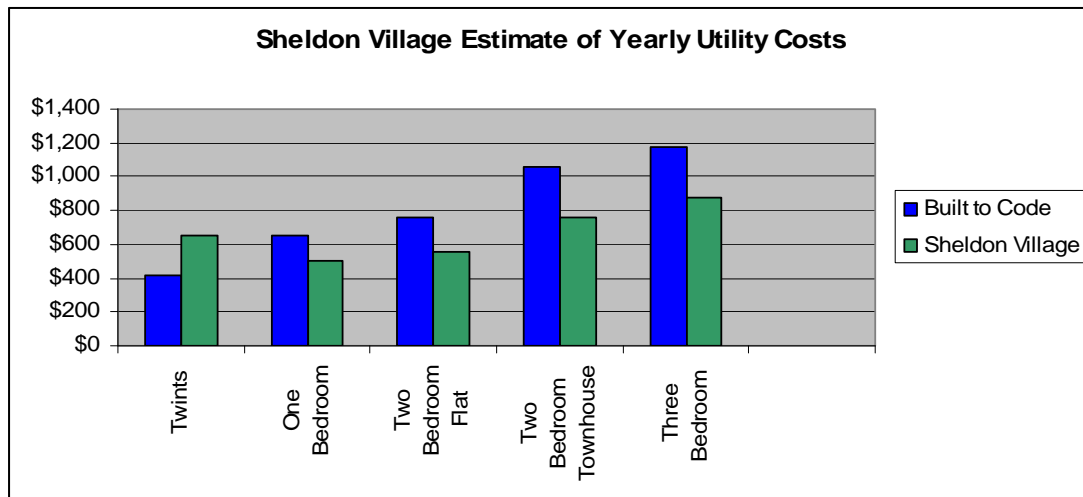
Prior to construction HACSA conducted a survey of north Eugene apartment units. This survey indicated that the demand for rental housing in was high, with a vacancy rate of 1.8%. According to the most recent Duncan and Brown apartment report (Fall 2006), the vacancy rate in this neighborhood is now .38%. Average rents at that time were one bedroom apartment--\$490, two bedroom \$594, and 3 bedroom \$731. They estimated that renters at or below 50% of median area income would experience a rent burden of 45% of before tax income.

HACSA plans for this project include a 50-year period of affordability. The sponsorship and eventual ownership of this project result in permanent affordability. HACSA is using the Low-income Housing Tax Credits to finance this affordability.

Utility Costs

Residents of the Sheldon Village see significant savings in utility costs throughout the year. The following graph provides a comparison between a built to code apartment and Sheldon Village. On average Sheldon Village tenants, pay about 18% less in yearly utility bills. Compared to larger single-family dwellings, the savings is even greater.

Figure 34



Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the affordable housing development in the report Housing as an Economic Stimulus. They used a modeling software called IMPLAN to estimate the short term economic impact of developing affordable housing. They estimated that for every dollar spent on

affordable housing construction generates \$1.10 in economic activity across the state. Based on this estimate Sheldon Village generated \$8.9 million statewide.

Greenleaf

Metropolitan Affordable Housing Corporation

Project Overview

Location

Address: 2755 E Lone Oak
Map and Tax Lot: 17-04-
12-33-00503

Site

Parcel Size: 2.31 acres
Zoning: R-2
Units per acre: 15

Design Team

METRO, Developer
Paul Bentley, Architect
Schirmer, Schlesinger, and Associates; Landscape Architects
Gale Roberts, Contractor



Project Features

- Projected Completion: 2002
- 34 affordable rental units, including nine transitional housing units.
- Affordable units targeted to families and individuals at or below 41% of median income.
- Drug and Alcohol free development
- Pedestrian plaza and community center
- Traffic calming devices such as planted median, crosswalks with contrasting paving material, and raised crosswalks
- Varying degrees of private, semi-private and public space throughout development

This project won the '2005 Excellence in Housing award from the State of Oregon Housing and Community Services' and the '2002 People's Choice Award for Multi-Family Residential landscaping architecture'

Table 10

Building	Square Foot
Greenleaf	
Studio	438
Studio	539
One Bedroom	623
Two Bedroom	874
Two Bedroom Townhouse	1060
Three Bedroom Townhouse	1280

Environment

Neighborhood Features

This project is located in a nodal development in Santa Clara with access to employment, medical services, grocery stores, and the River Road transit station.

Figure 35



Compactness

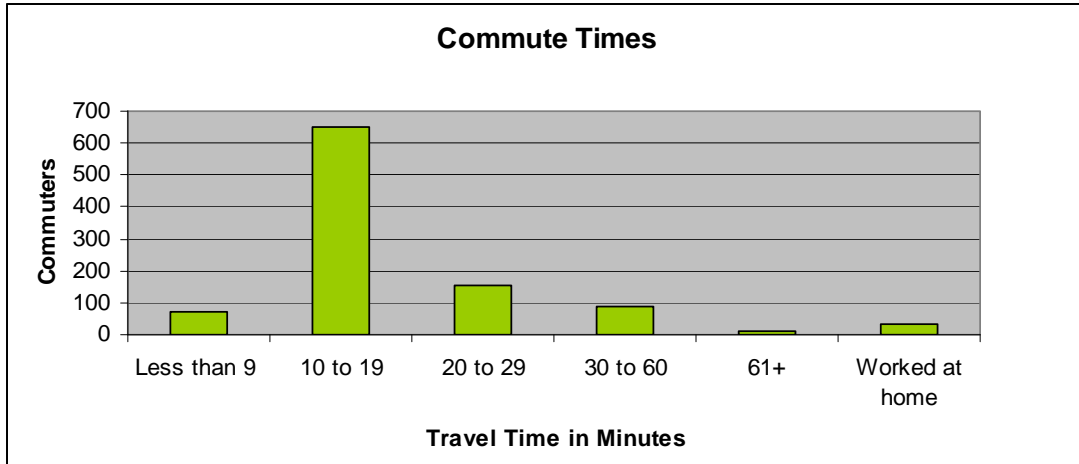
Greenleaf is located in a suburban area of North Eugene. This means blocks and parcels are typically larger and more spread out. The average block size in the neighborhood is 21 acres and the average parcel size is .4 acres. The larger block sizes impacts walkability and connectivity. Sixty percent of streets have a 3 or 4-way intersection, and 11.5% of streets dead end. Intersection density in this block group is 168 intersections per square mile. Dead end density is 32 per square mile. In respect to intersection density and connectivity, the Greenleaf neighborhood average is better than the citywide average.

Transportation

The suburban layout with large blocks and dead ends make it difficult to use walking as a mode of transportation. However, the Greenleaf neighborhood has access to other

alternative modes of transportation such as bus and bike routes. The closest bus stop is 250 feet and the River Road Transit center is .8 miles from Greenleaf. The bus stop density in this neighborhood is five bus stops per square mile. The commute time for people living in this block group in 2000 is in the following graph:

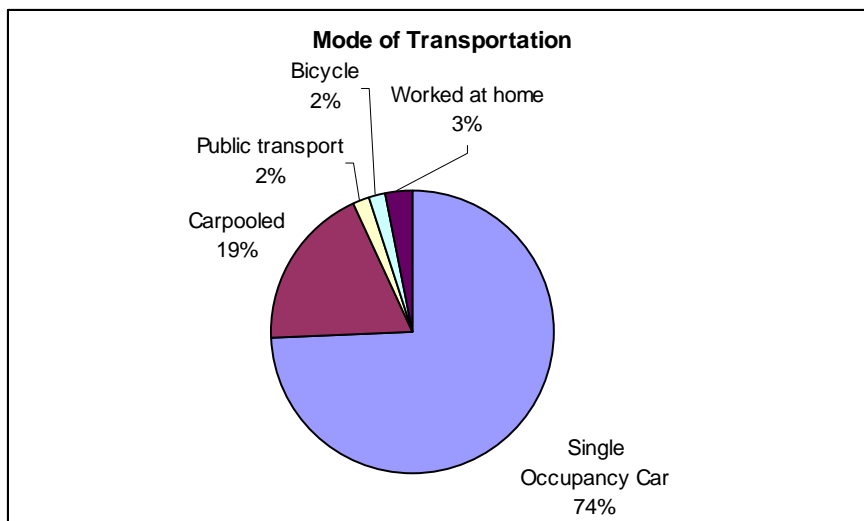
Figure 36



The majority of residents had commute times between 10-19 minutes, with only a small percentage commuting less than 9 minutes.

The vast majority of commuters in this block group drove to work in a car, truck, or van. However, this block group had the highest percentage of carpoolers at 19%. This is well above the citywide average of 11%. Two percent of commuters rode a bicycle, but no one reported walking to work.

Figure 37



Facilities

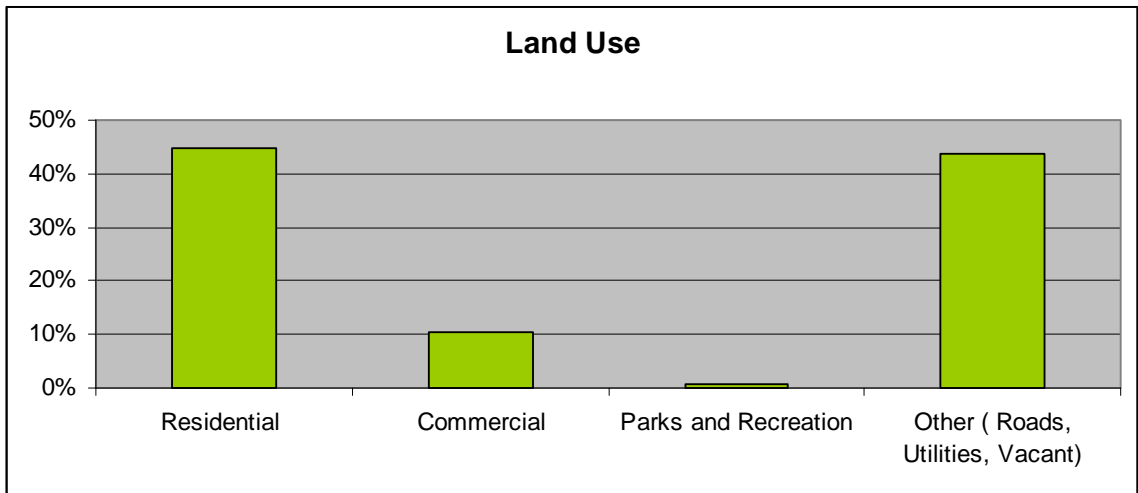
Facilities are accessible in this neighborhood due to the location near River Road, a major commercial center in Eugene. The following gives a representation of the types of facilities located within a ¼ mile of this project:

- Santa Clara Shopping Center, including an Albertson’s and Fred Meyer and other retail
- Grocery Outlet
- Post Office
- Park
- Transit Station
- US Bank

Land Use and Zoning

The following table shows the distribution of land uses in this block group. This is a primarily residential block group with the largest percent of area currently used for single-family housing. There is also quite a bit of vacant land, which may be used for future development. Other significant land use categories are agriculture and retail trade.

Figure 38



In addition to current land use, the current zoning designations may indicate future growth areas in the neighborhood. Low-density residential is the zoning designation for more than half of the total area. The agriculture zoning category is also significant with 21% of the total area. The current zoning mix for the Greenleaf block group is below:

Table 11

Zone	Percent of Total
Agricultural	22%
Neighborhood Commercial	1%
Community Commercial	9%
Public Land	6%
Low Density Residential	54%
Medium Density Residential	9%

Detailed zoning and land use maps are in the appendix.

Energy Efficiency Measures

- Energy Star Appliances
- Materials and construction practices to increase insulation

Indoor Air Quality Measures

- Low VOC mastics and paints
- Advanced ventilation system

Material Cycles

- Recycled framing materials
- Construction waste managed for recycling

Passive Solar Design

All buildings in the Greenleaf development are built on a north south access, giving them the maximum solar exposure. Windows on the north and south ends of the buildings allow for daylighting and direct gain heating during the winter months, reducing lighting and energy needs. A neighborhood scale map of solar orientation can be found in the appendix.

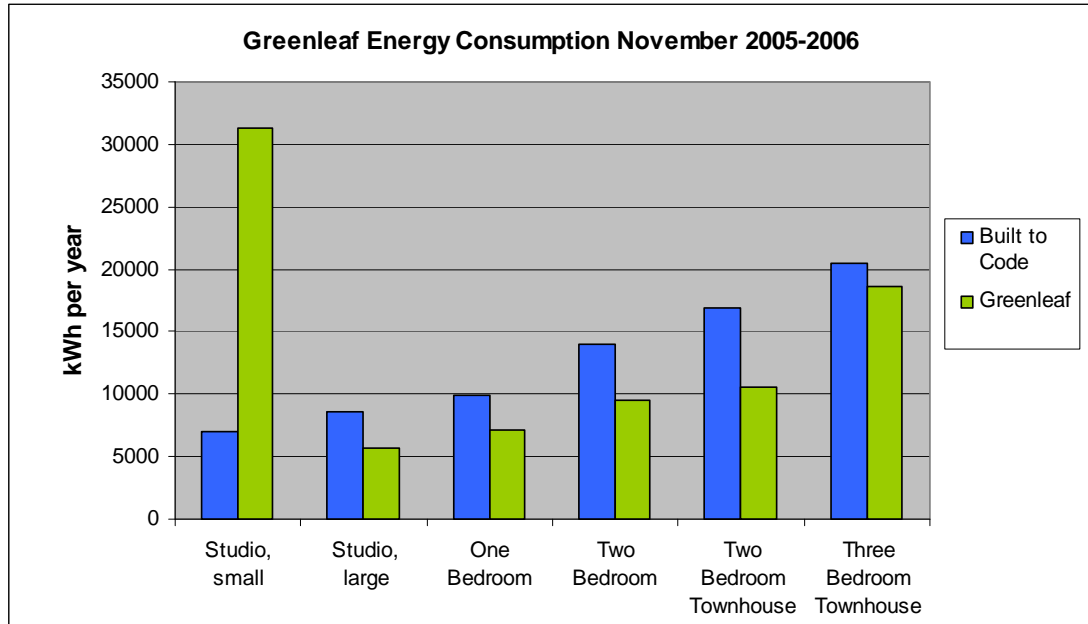
Open Space

The Greenleaf block group has a large percentage of agricultural land compared with other areas in Eugene. Additionally, it has one large park, Lone Oak Park within a quarter mile of the site. The park is 3.9 acres.

Energy

The Greenleaf Development used a variety of energy efficiency measures such as Energy Star appliances to help residents keep their consumption down. The following graph shows the average yearly energy consumption for Greenleaf residents. On average, these units had better performance than a built to code unit. Only one apartment was used in the small studio category, and may be an outlier in this instance as the energy use is significantly higher than all units.

Figure 39



Site Improvements

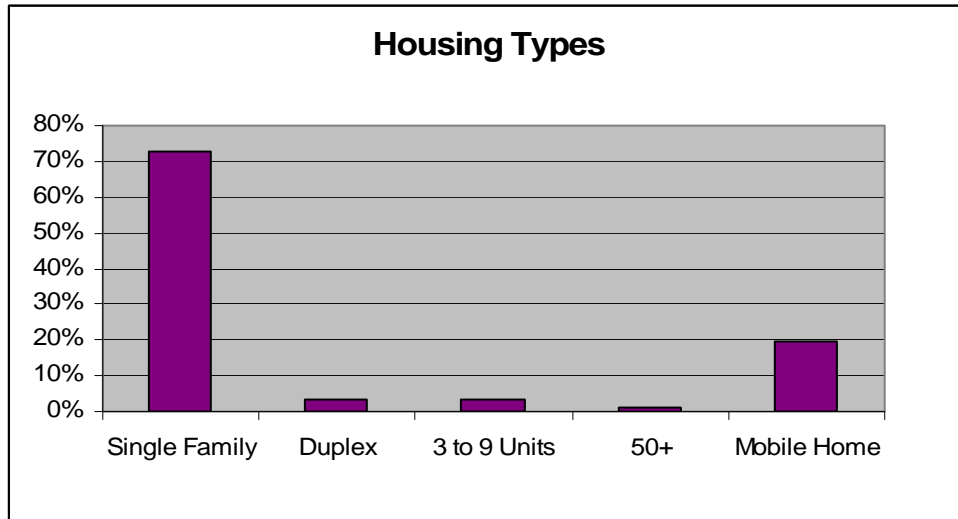
The site used for this project did contain some wetlands along the southeast portion near the Amazon Diversion Channel. Developers minimized impacts on these wetlands by avoiding development near the channel and maximizing open space throughout the development.

Social Equity

Housing Diversity

According to the 2000 census, there were 825 housing units in the Greenleaf block group. The following table shows the types of housing represented. The majority of housing was single family, but there were also a significant amount of mobile homes. Very few multi-family housing developments existed in this neighborhood.

Figure 40

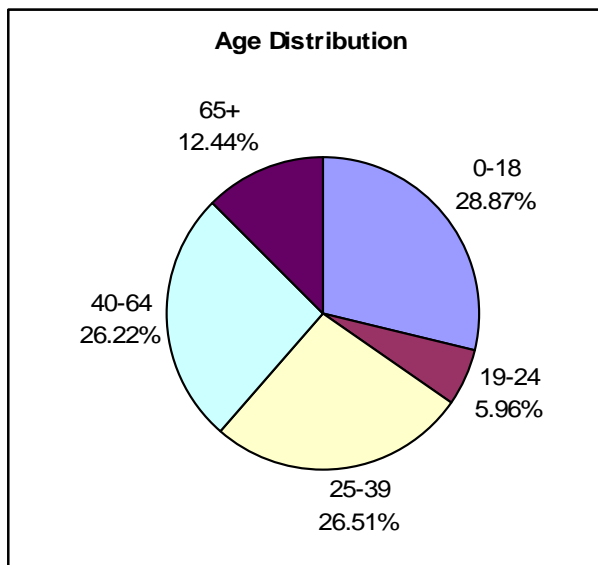


The median gross rent for this area was \$656 in 2000. Median gross rent as a percent of income was 24.9%. This block group had the lowest instance of incomes at or below the federal poverty line, 5.4%.

Social Diversity

The majority of people in this block group identified themselves as white, 90%. Greenleaf had the most residents identify themselves as a non-white race with 1% identifying as black, 1% Native American or Alaskan, 2% Asian, and 4% two or more races. The largest age groups are family-age including ages 40-64 and 0-18. The smallest age group represented was 19-24.

Figure 41



Resident Services

- A community center with free internet access
- Nutrition and home ownership classes
- After-school Kids Club program with games, arts and crafts activities, and access to the community playground.
- Summer Lunch program sponsored by Food for Lane County
- Narcotics Anonymous meeting
- Metro collaborates with Willamette Family Treatment Center and Looking Glass Youth Pathways, setting aside units for clients completing their programs

Resident Survey

The City of Eugene distributed 38 surveys to the residents of Greenleaf. Only five people responded, for a response rate of 13%. Because of the low response rate, it is difficult to use this survey for comparison purposes.

Economy

Project Financing

Total Project Cost: \$4,134,000

Local Financial Subsidies

- HOME Funds
- Eugene System Development Charge Waivers
- EWEB System Development Charge Waivers
- 20-year property tax exemption

Other Significant Subsidies

- Federal Low Income Housing Tax Credits (9%)

Lifecycle Costs

Metro used a number of strategies to maintain this project over time. They invested in higher quality in more durable materials up front as well as budgeting for routine and non-routine maintenance reserves. Some things they used in Greenleaf are

- Commercial foundation system
- Union journeyman used on framing and siding and finish
- Above minimum grade dried framing lumber
- Cement based siding materials
- 25-year roof materials providing a 25% increase in life span over and industry standard
- Above grade metal flashing and water proofing system to prevent leaking
- Quality grade door hardware

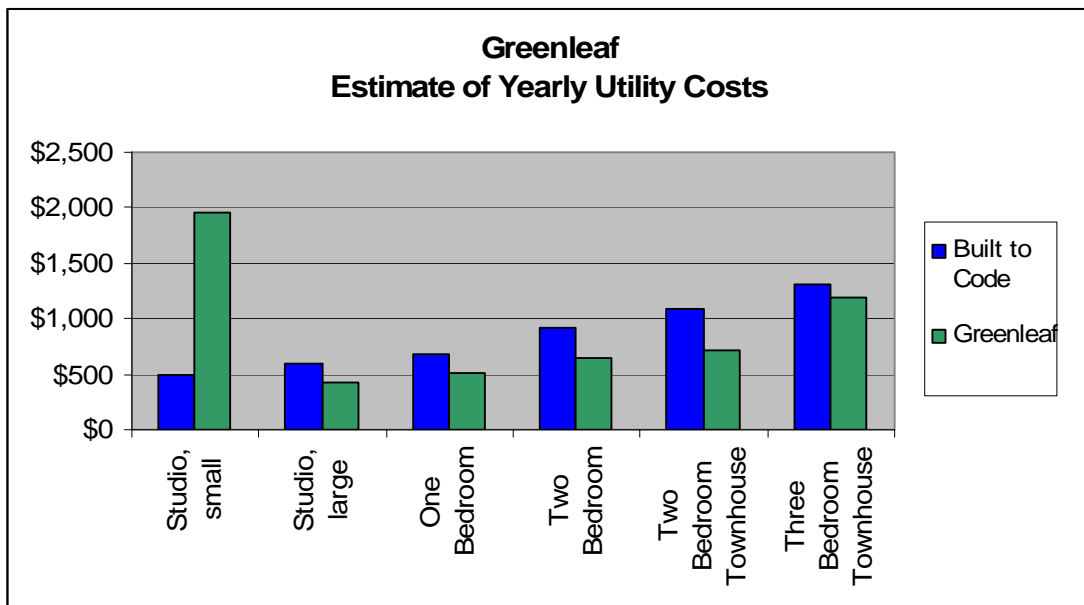
Affordability

Metro will use funding from HELP Funds as well as the OAHTC program to reduce initial rents. Using this funding will restrict rent increases to inflation for the 60-year period of affordability.

Utility Costs

Residents of the Greenleaf see significant savings in utility costs throughout the year. The following graph provides a comparison between a built to code apartment and Greenleaf. On average tenants, pay about 25% less in yearly utility bills (Excluding the small studio results). Compared to larger single-family dwellings, the savings is even greater.

Figure 42



Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the affordable housing development in the report Housing as an Economic Stimulus. They used a modeling software called IMPLAN to estimate the short term economic impact of developing affordable housing. They estimated that for every dollar spent on affordable housing construction generates \$1.10 in economic activity across the state. Based on this estimate Greenleaf generated \$4.4 million statewide.

West Town on 8th
Metropolitan Affordable Housing Corporation

Project Overview

Location

Address: 265 West 8th
 Map and Tax Lot(s): 17-03-31-12-13700, 17-03-31-12-14100, 17-03-31-12-14200



Site

Parcel Size: .95 acres
 Zoning: C-2
 Units per acre: 107

Design Team

Richard Herman, Executive Director
 Kent Jennings and Greg Pitts, Development Consultants and Property managers
 Don Vallister and Mike Corl, Architects
 Michael Roberts, General Contractor

Project Features

- Projected Completion: December, 2007
- 102 affordable rental units and 9 market rate live-work rental units
- Affordable units targeted to families, individuals, and seniors at or below 60% of median income

Table 12

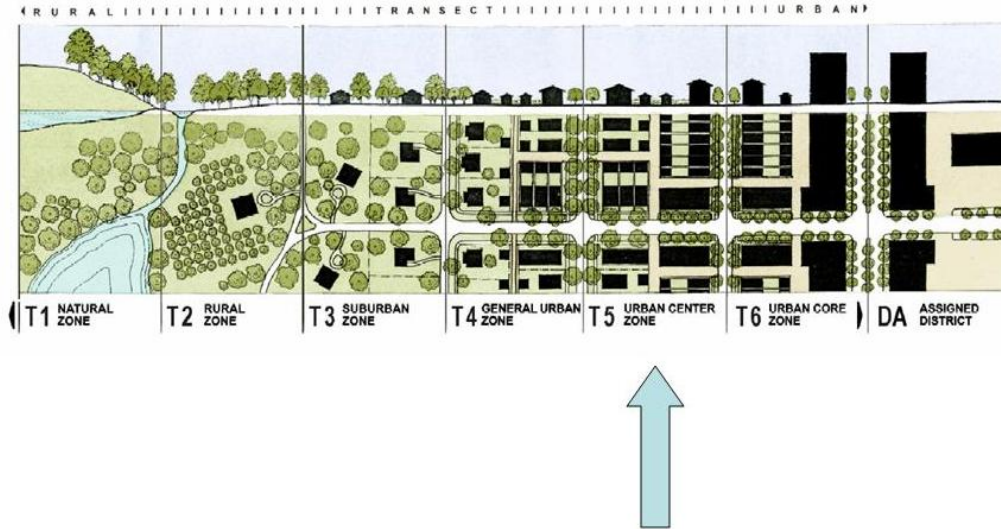
Building	Square Foot
West Town	
Studio	527
One Bedroom	646
Two Bedroom	950
Live-Work Units	918

Environment

Neighborhood Features

This development is planned for a downtown location within a mile of grocery store and retail areas. It is close to the downtown transit center with access to new Bus Rapid Transit system and all major bus routes.

Figure 43



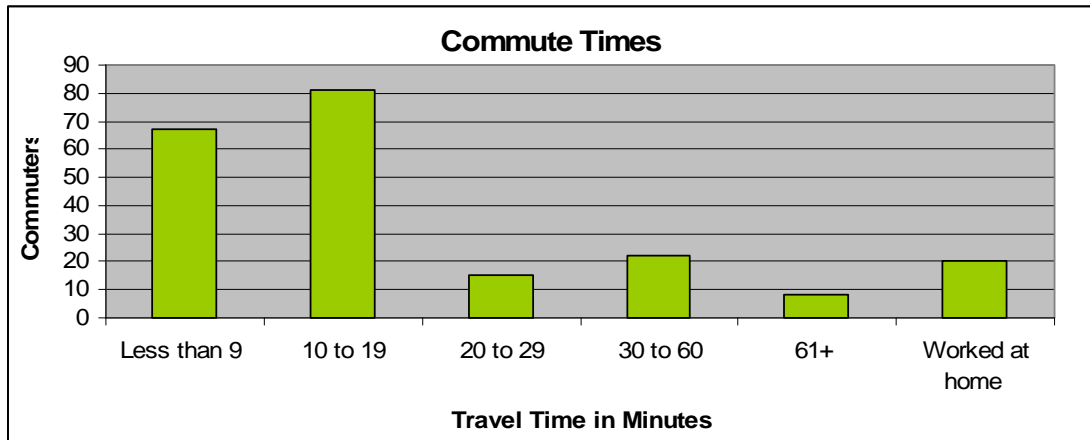
Because of the downtown location, the neighborhood is relatively compact with higher densities and more street connectivity. The average block size in this area is 1 acre and the average parcel size is 6908 square feet or 1/6 of an acre. There are only three dead ends in this block group and the density of three or four way intersections is 775 per square mile.

Transportation

The downtown location of this project makes alternative transportation highly accessible. The downtown bus station is within walking distance and bike connectivity is high. This block group has a bus stop density of 99 bus stops per square mile. It is located on 8th avenue a main bike throughway in Eugene that connects to the greater downtown area as well as bike paths to the west and north of the project site.

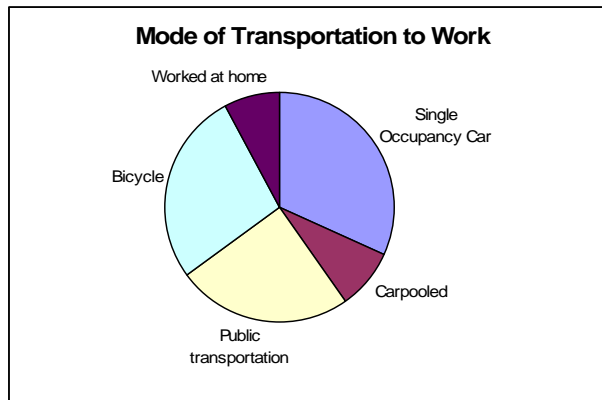
The commute times for residents living in this block group in 2000 are in the following table. Seventy percent of commuters in this block group had a travel time of 19 minutes or less and 22% of commuters had a commute time of 9 minutes or less.

Figure 44



Given that commute times are relatively short for residents of Eugene, it is also of interest to look at modes of transportation to and from work. The following table provides a summary of these modes for W Town's block group:

Figure 45



Like other downtown block groups, residents use alternative modes of transportation frequently. Only 46% of commuters used an automobile to travel to work, with 10% percent of those residents using carpools. While walking was not used frequently, 31% of residents reported using a bicycle to get to work and 28% used public transportation.

Facilities

There are a quite a few accessible and diverse facilities with a quarter mile from this project. The following gives a representation of the types of facilities located nearby.

- Eugene Library
- Grocery Store
- Convenience Store
- Restaurants

Land Use and Zoning

Figure 46

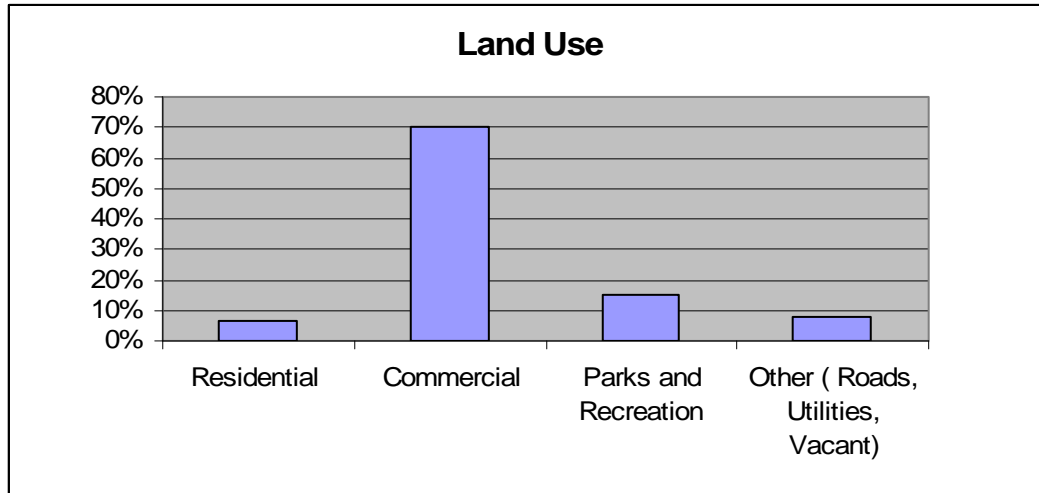


Table 13

Zone	Percent of Total
Community Commercial	25%
Major Commercial	30%
Special Area Zone	20%
Public Land	19%
Light Industrial	4%
Historic	1%
Limited Heavy Industrial	1%

Energy Efficiency Measures

- Energy Star Appliances
- Insulation and window materials improve energy efficiency
- Applying for EWEB's Super Good Cents program

Indoor Air Quality

- Low VOC mastics and paints

Material Cycles

- Recycled steel Framing material
- Construction waste will be managed for recycling

Passive Solar Design

Eighth Avenue runs east west, allowing for the maximum amount of solar exposure for West Town units. The use of different scale buildings also helps to minimize shadows on

neighboring buildings and street fronts. A neighborhood scale of street solar orientation is in the appendix.

Open Space

Open space is limited in the downtown area, but West Town is well connected to the citywide park system. In addition to the planned courtyard within the development there are 5 acres of parks within a quarter mile of the project. This includes the park blocks, which host the Tuesday, and Saturday Farmers Markets. Just a mile from West Town there is 276 acres of parkland, including the river parks and bike trails.

Site Improvements

The primary concern with this site is the proximity to WOW hall, a historic music venue. METRO’s approach to this issue is two fold, they have set aside \$50,000 of their budget to work on sound mitigation improvements to the WOW hall. Additional materials and construction methods will be used to help dampen sound.

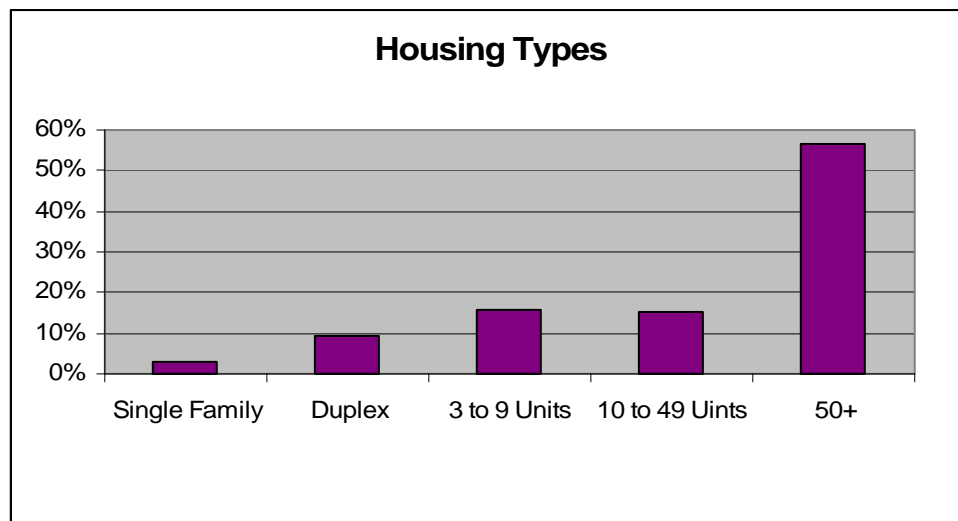
- Mid-gauge steel construction with poured concrete floors
- East and west walls concrete poured in place steel reinforced walls
- Multiple articulations designed into walls facing the courtyard to minimize sound reflection

Social Equity

Housing Diversity

The 2000 census reported there were 410 total housing units in W Town’s block group. The following graph shows the types of housing represented there. The majority of housing was overwhelmingly multi-family, which makes sense for downtown density requirements. There were a small amount of single family and duplexes as well.

Figure 47

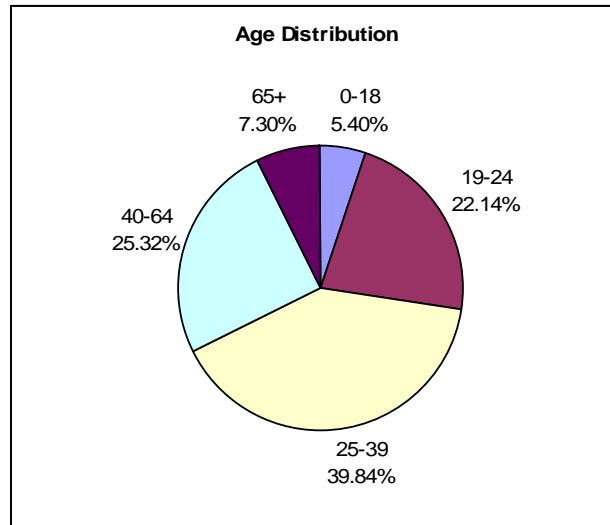


The median gross rent for this area was \$586.00 in 2000. Median gross rent as a percent of income was 43.3. This is higher than the other developments in this study as well as significantly higher than the citywide average of 31%.

Social Diversity

The primary race in this block group is white (94%). Other races represented are black or African American (2%), Native American (1%), and two or more races (3%). The primary age groups in this block group are 24-39 and 40-64. There are also a large percent of 19-24 year olds. The smallest age groups are the elderly and children.

Figure 48



Resident Services

METRO has tentatively planned to have the following services available for residents of W Town

- Job and Career Workshop Series
- Debt and financial workshops
- Nutrition classes
- Food preparation and grocery budgeting

METRO uses an evaluation method to determine whether services are being used and whether they should be continued or used in future sites. Staff provide quarterly reports to the board of directions.

Economy

Project Financing

Total Project Cost: \$19,700,808

Local Financial Subsidies

- CDBG (land cost)
- Eugene General Funds
- Lane County Road Funds
- HOME Funds
- Eugene System Development Charge Waivers
- EWEB System Development Charge Waivers

Other Significant Subsidies

- Federal Low Income Housing Tax Credits (4%)
- Conduit Bond Financing

Lifecycle Costs

Metro used a number of strategies to maintain this project over time. They invested in higher quality in more durable materials up front as well as budgeting for routine and non-routine maintenance reserves. Some things they used in Greenleaf are

- Commercial foundation system
- Union journeyman used on framing and siding and finish
- Above minimum grade dried framing lumber
- Cement based siding materials
- 25-year roof materials providing a 25% increase in life span over and industry standard
- Above grade metal flashing and water proofing system to prevent leaking
- Quality grade door hardware

Affordability

West Town will remain affordable for a 40-year period. Metro is using financing through low-income tax credits as well as property tax waivers to help maintain affordable rents throughout this time.

Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the affordable housing development in the report Housing as an Economic Stimulus. They used a modeling software called IMPLAN to estimate the short term economic impact of developing affordable housing. They estimated that for every dollar spent on affordable housing construction generates \$1.10 in economic activity across the state. Based on this estimate West Town will generate \$21 million statewide.

Prairie View
Metropolitan Affordable Housing Corporation

Project Overview

Location

Address: Royal Avenue
 Map and Tax Lot: 17-04-28-21-00101
 Census Tract 25.02
 Block group 1

Site

Parcel Size: 2.76 acres
 Zoning: R-2
 Units per acre: 28



Design Team

Richard Herman, Executive Director
 Kent Jennings and Greg Pitts, Development Consultants and Property managers
 Harriet Cherry and Ray Dobson, Architects
 Michael Roberts and Brent Stutz, General Contractor

Project Features

- Projected Completion: 2009
- 76 rental units including studios, one bedroom, two bedroom units
- 4 fully accessible units
- Targeted to families, individuals, and Seniors at 38% and 45% of median income
- Bump outs, raised walkways, and trees used as traffic calming devices

Table 14

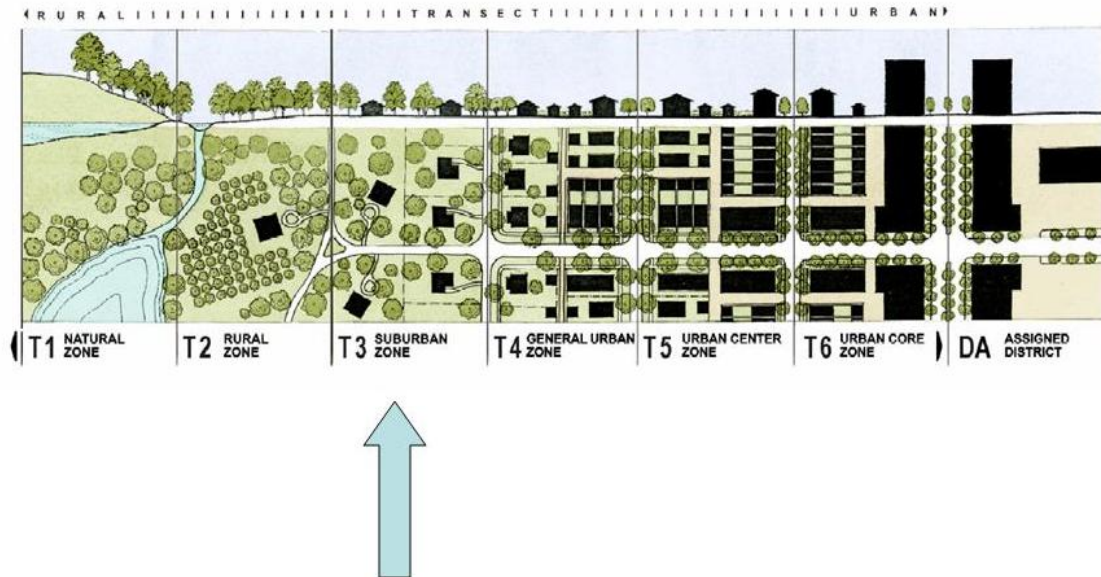
Building	Square Foot
Prairie View	
Studio	450
One Bedroom	660
Two Bedroom	885
Three Bedroom, Flat	1213
Three Bedroom, Townhouse	1325

Environment

Neighborhood Features

- Grocery stores and a retail center located adjacent to the site.
- Served by public transportation
- Adjacent to land designated for new City park
- Site is part of the Danebo Mixed Use Center

Figure 49



Compactness

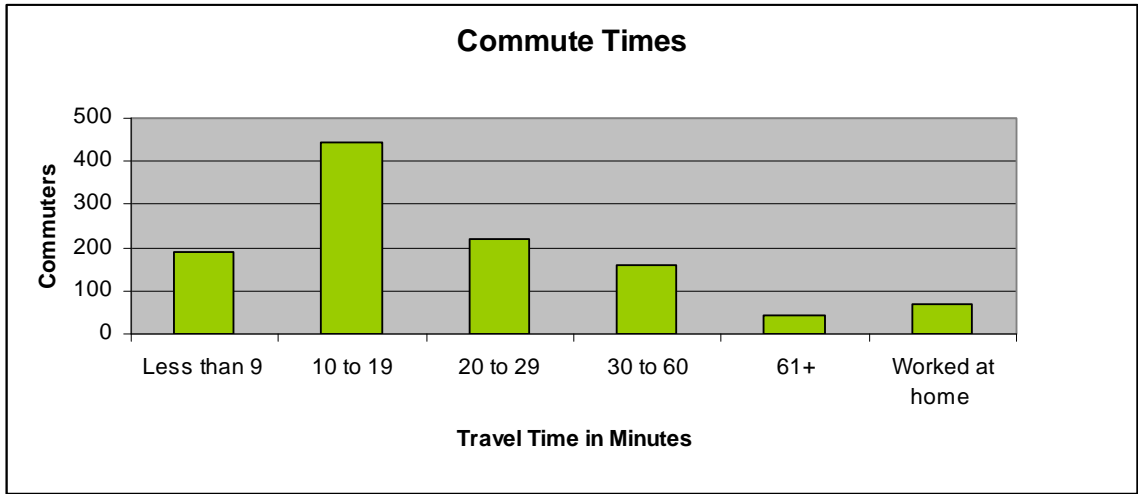
Prairie View is located in the Bethel area of Eugene, a primarily suburban area. The average block size in this neighborhood is 13 acres and the average parcel size is .5 acres. The size of parcels and blocks in this area translates into the intersection and dead end densities. Eighty percent of all street segments in this block group end in a 3 or 4 way intersection while 7% dead end. There are 261 good intersections per mile and 22 dead ends per square mile.

Transportation

The suburban environment of this development makes walking and biking within the neighborhoods viable, however connectivity to the broader community is slightly more difficult. There are quite a few stops and two park and rides in the Bethel area, however there is only one route that services this area. This route goes to the downtown station, which provides service to other areas in the community. The closest bus stop is 750 feet away and the bus stop density is one bus stop per square mile. Bike path connectivity is limited, with two busy roads Danebo and Royal Avenue. Both contain bicycle lanes, but are heavy traffic roads.

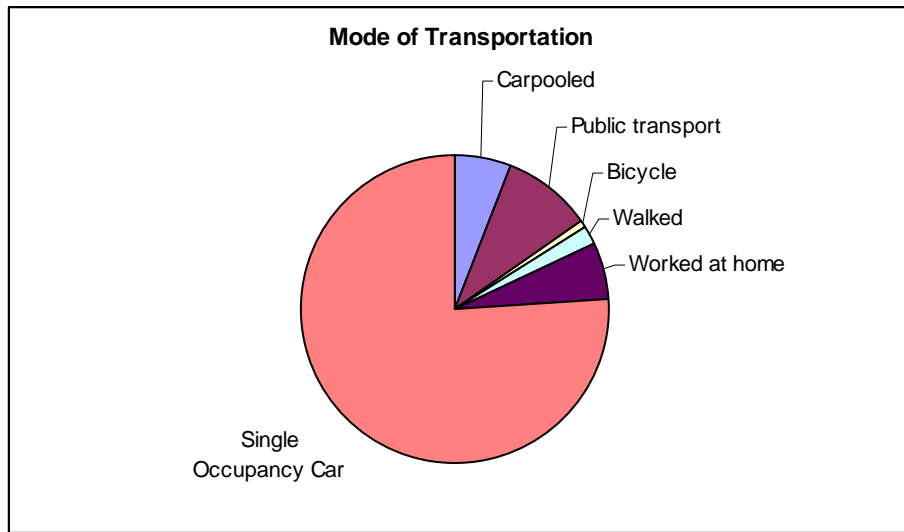
The commute time for people living in this block group in 2000 is in the following graph:

Figure 50



In addition to commute times, the form of transportation to work is of interest. The following table shows the types of transportation used for commuting in this block group:

Figure 51



Over 85% of workers used an automobile to get to work. Of those people, only 6% carpooled. Two percent of residents walked or bicycled to work. Citywide about 6% of the population walk and about 6% ride a bicycle to work.

Facilities

The Prairie View site is located in the Royal-Danebo Mixed use center. There is a large shopping center to the north of the site. The following list gives a representation of the types of facilities and services located within a ¼ mile of Prairie View:

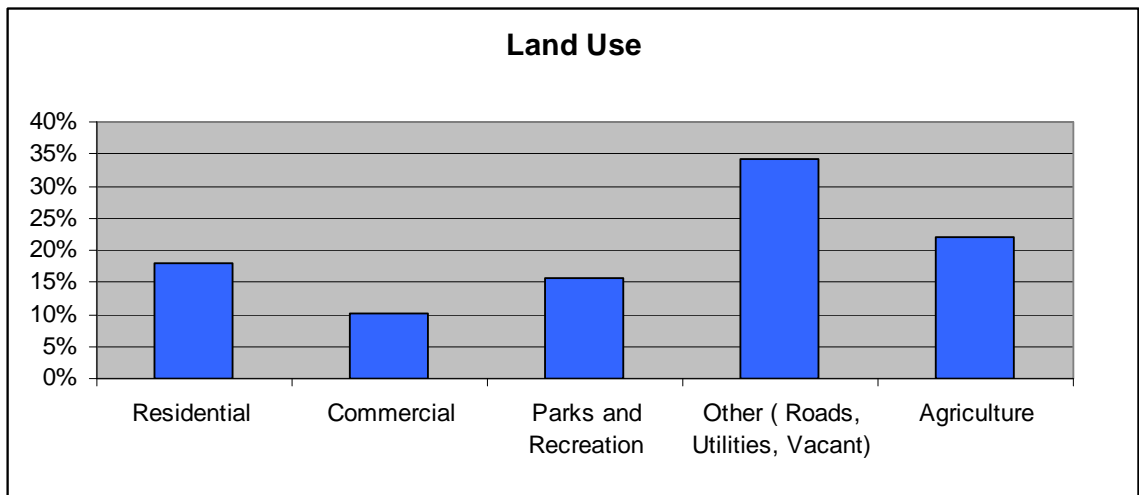
- Grocery Store
- Convenience Store

- Bank
- Bi Mart Store with pharmacy
- Future city park directly west of the site

Land Use and Zoning

The following table shows the distribution of land uses in this block group. The majority of land is currently dedicated to agriculture, followed closely by single-family housing. Parks also make up about 10% of the land. A significant amount of the land, 25%, had an unknown land use at the time of this report.

Figure 52



In addition to current land use, zoning is an important indicator of future development in the area. The following table shows the distribution of zoning in this block group. The zoning designation in this area indicates it will continue to be a primarily low-density residential neighborhood with some agricultural lands, and a small percentage of commercial uses.

Table 15

Zoning Designation	Percent of Total
Agricultural	13%
Community Commercial	1%
Limited Heavy Industrial	15%
Public Land	0.24%
Low Density Residential	69%
Medium Density Residential	2%

Energy Efficiency Measures

- Energy Star appliances
- Photovoltaic cells

- Building design that maximizes natural light

Water Conservation Measures

- Bio-swale for storm water management
- Water efficient landscaping
- Low-flow toilet, shower, and faucets

Indoor Air Quality Measures

- Interior bathroom and kitchen fans vent to the exterior of building
- Low VOC (volatile organic compounds) paints and adhesives
- Green label building and insulation materials
- Construction techniques that reduce the potential for mold including timing of sheetrock and under-floor insulation installation

Material Cycles

- Use of recycled materials during constructions
- Recycle waste from construction process
- Lumber, doors, windows, siding, and cabinets locally sourced
- 50% of wood products FSC certified

Passive Solar Design

The site plans for Prairie View include streets that are oriented on an east-west access and most of the buildings will be facing north south, giving them the maximum solar exposure. The current budget for the project includes funding for photovoltaic cells to reduce the long-term cost of operation.

Open Space

Of the six projects, Prairie View has the most acres (164) of parks and open space within a ¼ mile of the development. There is a future park directly west of the project about 2 acres in size. Two natural areas Meadowlark Prairie and Danebo Pond are located just south of the site. Less than a mile from the site, there are two other developed parks Peterson and Candlelight.

Site Improvements

This project will minimize site disturbance by maximizing the open space areas within the project. Greater than 20% of the site will remain as open space and will be planted to reduce storm water runoff. There will also be improvements to include a bio-swale.

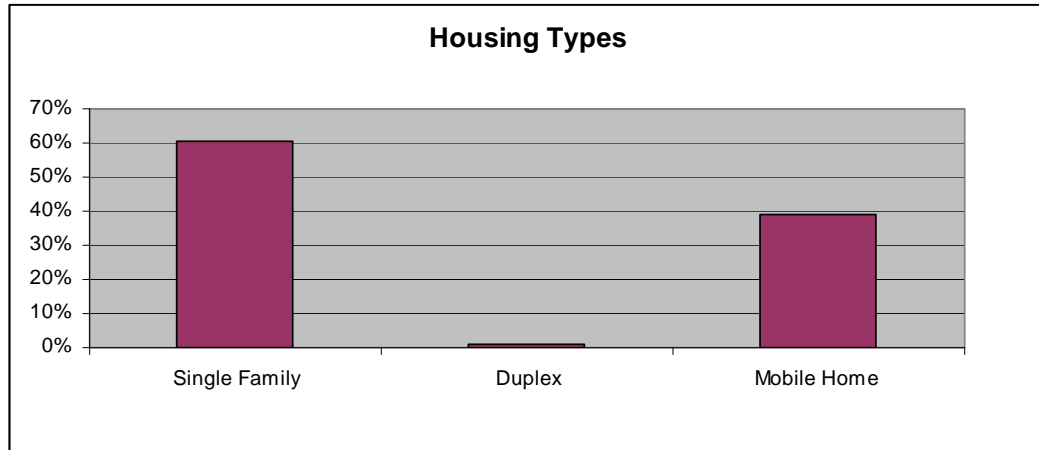
A wetland delineation report determined there were 2613 square feet of wetlands on the site. However, these wetlands are of very low quality, and Metro is requesting a wetland fill permit.

Social Equity

Housing Diversity

The following graph shows the types of housing present in this block group in 2000. There were 1026 housing units in this block group, primarily single-family housing. Mobile homes are also prevalent in this block group as there is a large mobile home park across the street from the future site of Prairie View.

Figure 53



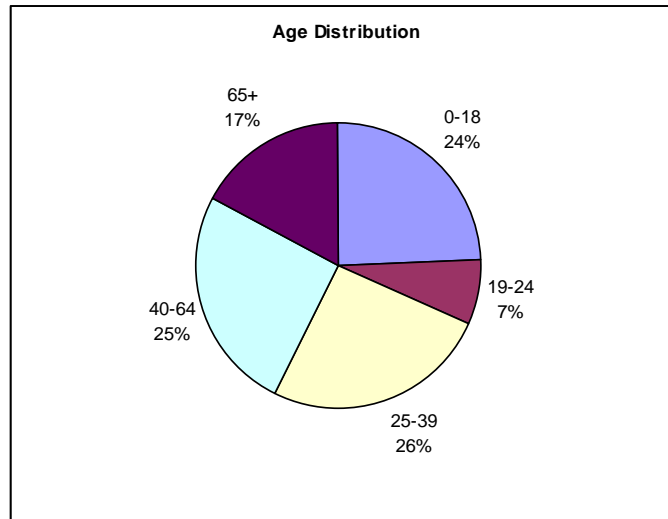
The median rent for this area was \$913 and median gross rent as a percentage of income was 30.3%. Of the 2457 residents of this block group, 13% were below the federal poverty line.

Social Diversity

Like most of Eugene, the primary race in this block group is white alone (91%). Three percent of the residents identified as Asian and 3% identified themselves as some other race. One percent of residents identified as black or African American, 1% as Native American or Alaskan native, and the remaining 1% were two or more races.

The Prairie View neighborhood is diverse in terms of age distribution. The representation is of family aged residents, 25-64 and 0-18. There is also a significant amount of elderly people. Only seven percent of the residents were between 19-24.

Figure 54



Resident Services

- Nutrition, budgeting, and home ownership classes
- After-school Kids Club program with games, arts and crafts activities, and access to the community playground.
- Parenting classes
- Extra Helping food provided by Food for Lane County
- Job training

Economy

Project Financing

Total Estimated Project Cost: \$9,727,680

Local Financial Subsidies

- Eugene General Funds (land)
- HOME Funds
- Eugene SDC Waiver
- EWEB SDC Waiver
- Lane County Road Funds

Other Significant Subsidies

- Federal Low Income Housing Tax Credits (will apply in August 2007)
- Business Energy Tax Credit

Lifecycle Costs

Metro will use a number of strategies to maintain this project over time. They plan to invest in higher quality in more durable materials up front as well as budgeting for

routine and non-routine maintenance reserves. Some things they plan to include in this project are:

- Commercial foundation system
- Union journeyman used on framing and siding and finish
- Above minimum grade dried framing lumber
- Cement based siding materials
- 25-year roof materials providing a 25% increase in life span over and industry standard
- Above grade metal flashing and water proofing system to prevent leaking
- Quality grade door hardware

Affordability

Prairie View will serve families with rents at 38% and 48% of the median income. The following table compares the rental rates of apartments in the Royal-Danebo area and those of Prairie View.

Table 16

Room Type	Royal Danebo	Prairie View
Studio	N/A	\$311, \$401
One Bedroom	\$649	\$322, \$422
Two Bedroom	\$720	\$377, \$497
Three Bedroom	\$990	\$559, \$414
Average Savings		\$331

Economic Activity

Oregon Housing and Community Services reported on the economic activity surrounding the affordable housing development in the report Housing as an Economic Stimulus. They used modeling software called IMPLAN to estimate the short-term economic impact of developing affordable housing. They estimated that for every dollar spent on affordable housing construction generates \$1.10 in economic activity across the state. Based on this estimate Prairie View will generate \$10.7 million statewide.

Conclusion

Findings

Determining sustainability is an ambiguous process that does not provide a black and white picture of what is sustainable and what is not. There are inevitable many forms and levels of sustainability and the indicators serve as a measure of how these developments perform compared to similar projects, neighborhoods, and citywide. The following list provides some overall themes of the sustainability case studies that were present in all projects:

- Buildings outperformed standard buildings in energy efficiency
- Fill a much needed affordable housing need in their neighborhoods and the community as a whole
- Provide valuable resident services to low-income residents
- Create statewide and local economic activity as a result of construction and regular maintenance
- Were located within walking distance of alternative transportation
- Were designed to maximize solar exposure and natural light

In addition to the things the case studies had in common, there are a number of findings that distinguish the projects. In general:

- West Town and Aurora were more walkable based on urban form measures
- Sheldon Village and Prairie View had access to more open space and public schools
- Access to and prevalence of alternative transportation varied between the projects
- Aurora and West Town had more diversity of uses and access to facilities
- Commuting times and modes of transportation were correlated with more compact urban forms

The primary differences between projects were due to differences in project scope and target populations. For example, the populations of Santa Clara and Greenleaf would not be served as well in a downtown location. Preferences in housing types and locations as well attention to the City of Eugene housing dispersal policy make comparisons based on neighborhoods unique. While there is a clear environmental benefit of densification and diversification of neighborhoods, it is not the only factor in affordable housing construction.

Implications for Policy

The current state of affordable housing development in Eugene is well above average residential development throughout the community. These types of projects may be outperforming much of the residential housing stock in terms of density, transportation

and energy efficiency, and affordability. The non-profit developers of these projects were leaders in recognizing the need for more sustainable housing, particularly in respects to energy efficiency. Low-income residents often struggle with the cost of energy, exacerbated by inefficient housing. These organizations made a choice to address these issues through more efficient building practices.

As a result of this choice, the case studies in this project and affordable housing throughout the community are some of the most sustainable residential developments in the community. While developers did take advantage of funding sources that were ‘green building specific’, these developments were built without the mandate of a specific policy. The growth of green building features took place over time, as developers were able to test out different technologies and materials. The developers typically have a portfolio of tried and tested building standards that they know will be successful in future projects.

The competitive nature of affordable housing developments also helps increase the quality and efficiency of these projects. Funding is very limited, which encourages innovation and excellence in design and project proposals. Projects that receive funding are the best of the best.

Mandating sustainability would be another burden on non-profit developers who are providing an essential community service. The current competitive process has been largely successful in creating sustainable projects. The City of Eugene process for funding could be expanded to include further incentives such as fast track permitting.

In addition to methods for getting the project constructed, educational programs should also be explored. The building we live in can influence our impact on sustainability; it is not a definitive tool for changing behavior. Sustainable development should work hand in hand with an educational process to help residents reduce their energy and resource consumption. The building footprint is actually a small part of how these developments interact with the broader community. The actions of residents are the determining factor in the majority of indicators used in this evaluation.

Directions for Further Research

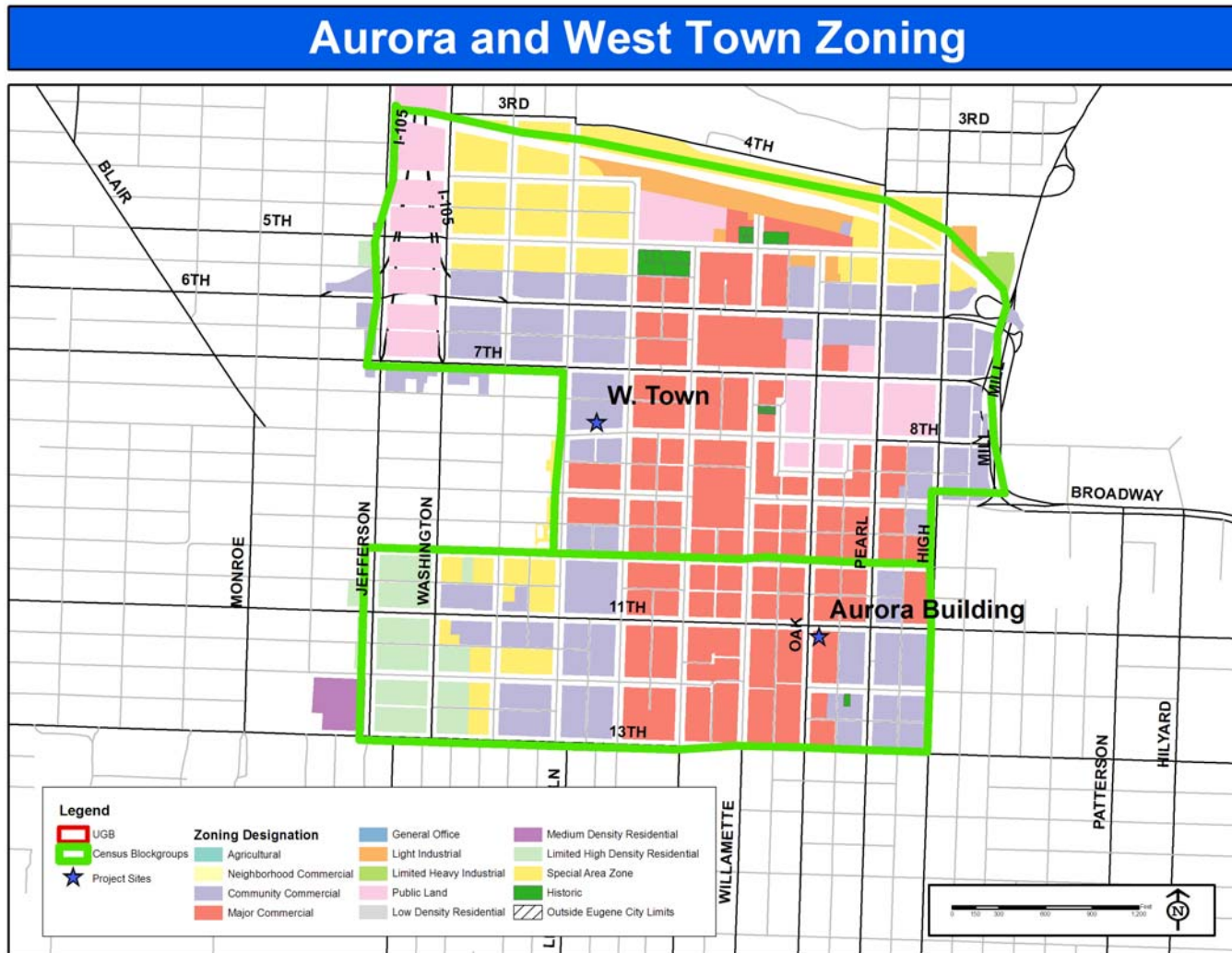
There are a number of opportunities for further research in this area. The following list is selection of possible opportunities to expand on this topic.

- Comparison of affordable housing projects in different communities
- Detailed case studies related to specific policies
- Research into long term economic benefits
- Comparison of affordable housing projects to other multi-family housing

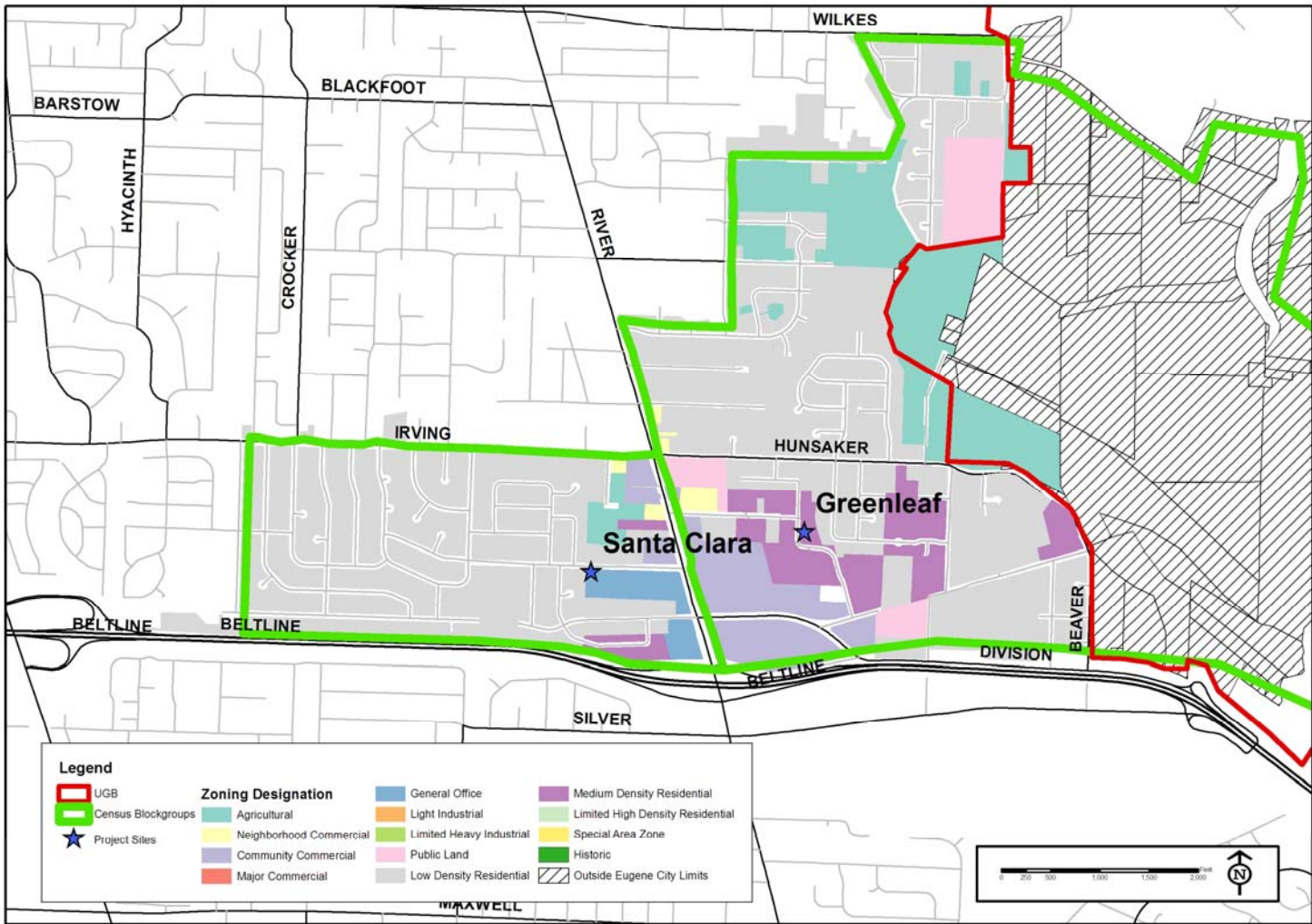
Appendix A: Comparison Data Summary Table

Measure	Aurora	Santa Clara	Sheldon Village	Greenleaf	West Town	Prairie View	Citywide
Parcel Size (acres)	0.22	3	3.05	2.31	0.95	2.76	0.5
Block Size (acres)	1	22	11	22	1	14	8
Site Density (units/acre)	245	20	28	15	107	28	N/A
Neighborhood Density (Units/square mile)	4039	1859	2206	608	1358	902	1533
Intersection Density per square mile	940	521	387	169	775	261	105
Bus Stop Density per square mile	280	18	40	5	99	15	40
Commute Time Minutes less 9 minutes	19%	16%	25%	7%	31%	17%	20%
Prevalence of Alternative Commuting (including carpooling)	78%	21%	24%	22%	69%	18%	33%
Prevalence of Alternative Commuting (Bike/Bus/Walk)	76%	9%	8%	3%	59%	12%	21%
Open Space (Acres within 1/4 mile)	1.23	0	28.07	3.95	5.6	164.4	N/A
Energy Consumption (avg yearly kWh per square foot)	5	9	12	9	N/A	N/A	N/A
Economic Activity (Statewide)	16.3 million	8.6 million	8.9 million	4.4 million	21 million	10.7 million	N/A
Economic Activity per unit (Statewide)	\$301,852	\$143,333	\$104,706	\$129,412	\$205,882	\$140,789	N/A

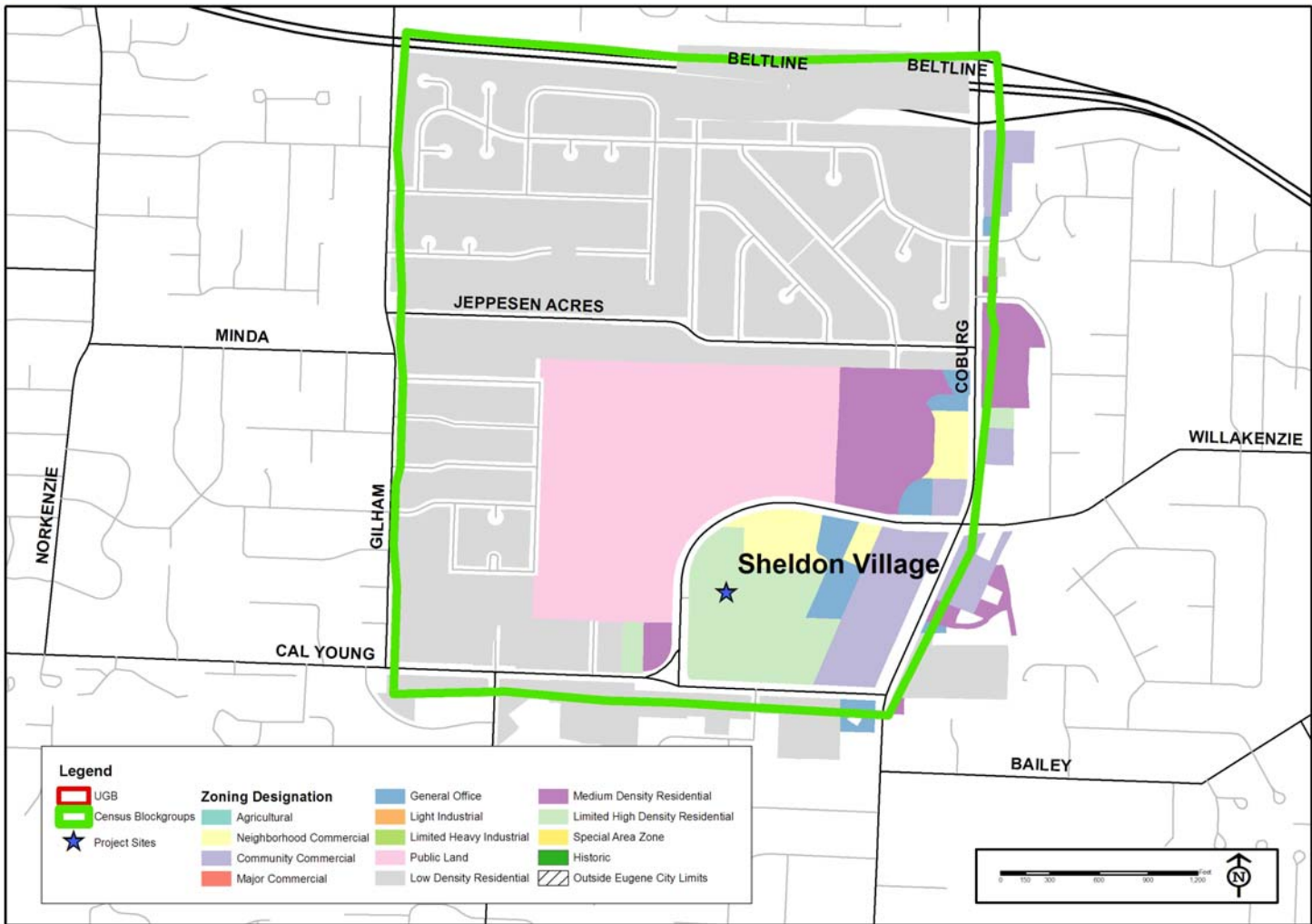
Appendix B: Project Zoning Maps



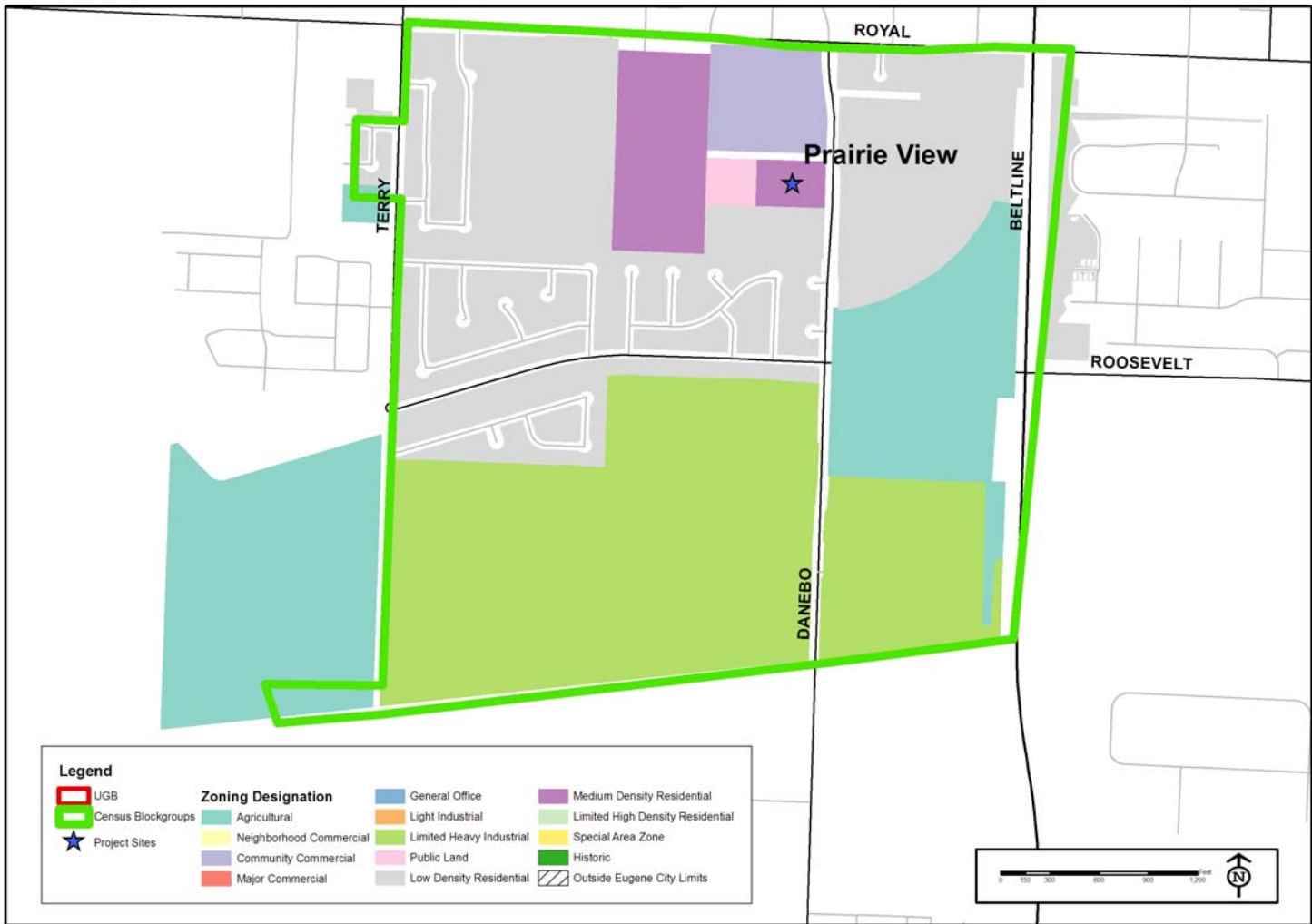
Santa Clara and Greenleaf Zoning



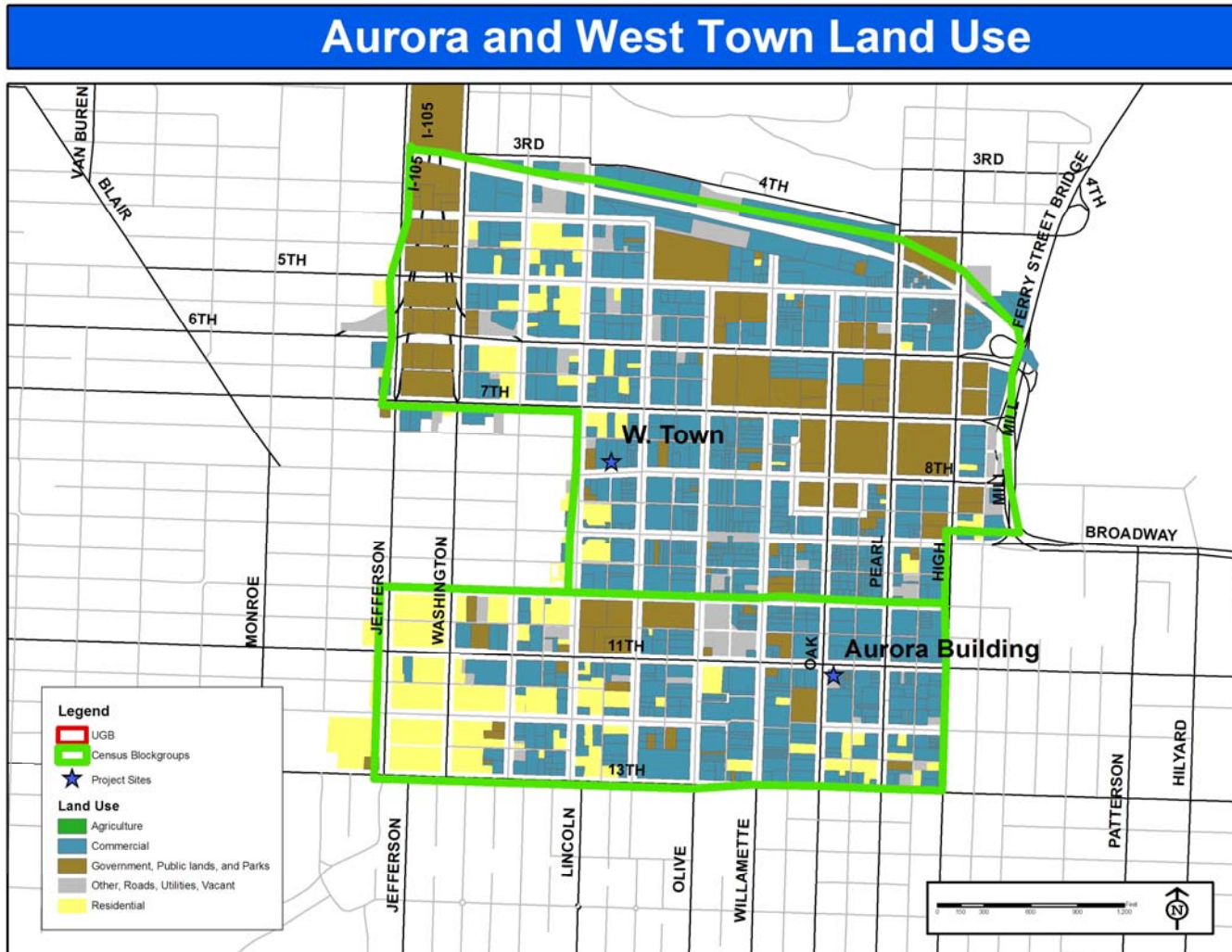
Sheldon Village Zoning



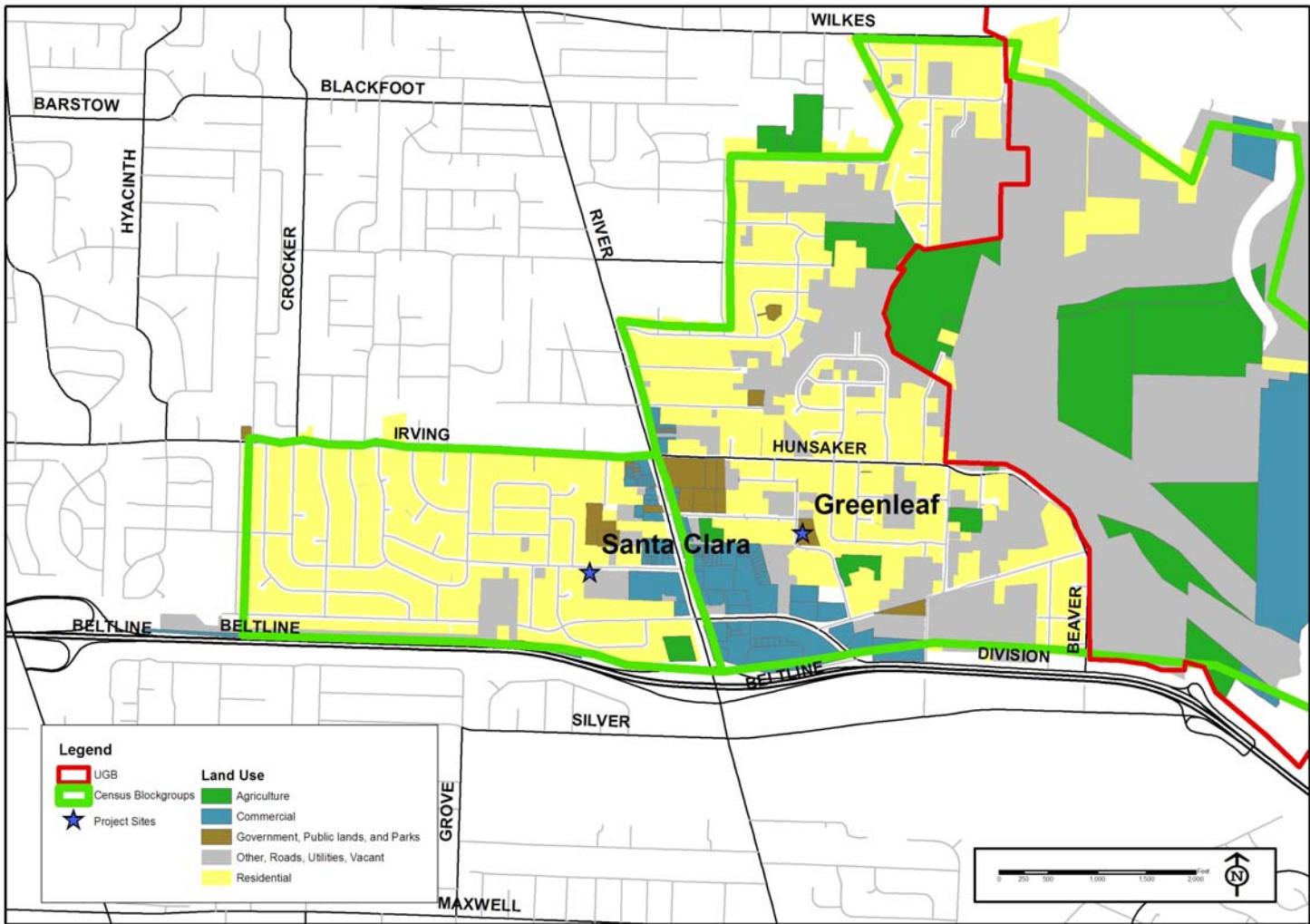
Prairie View Zoning



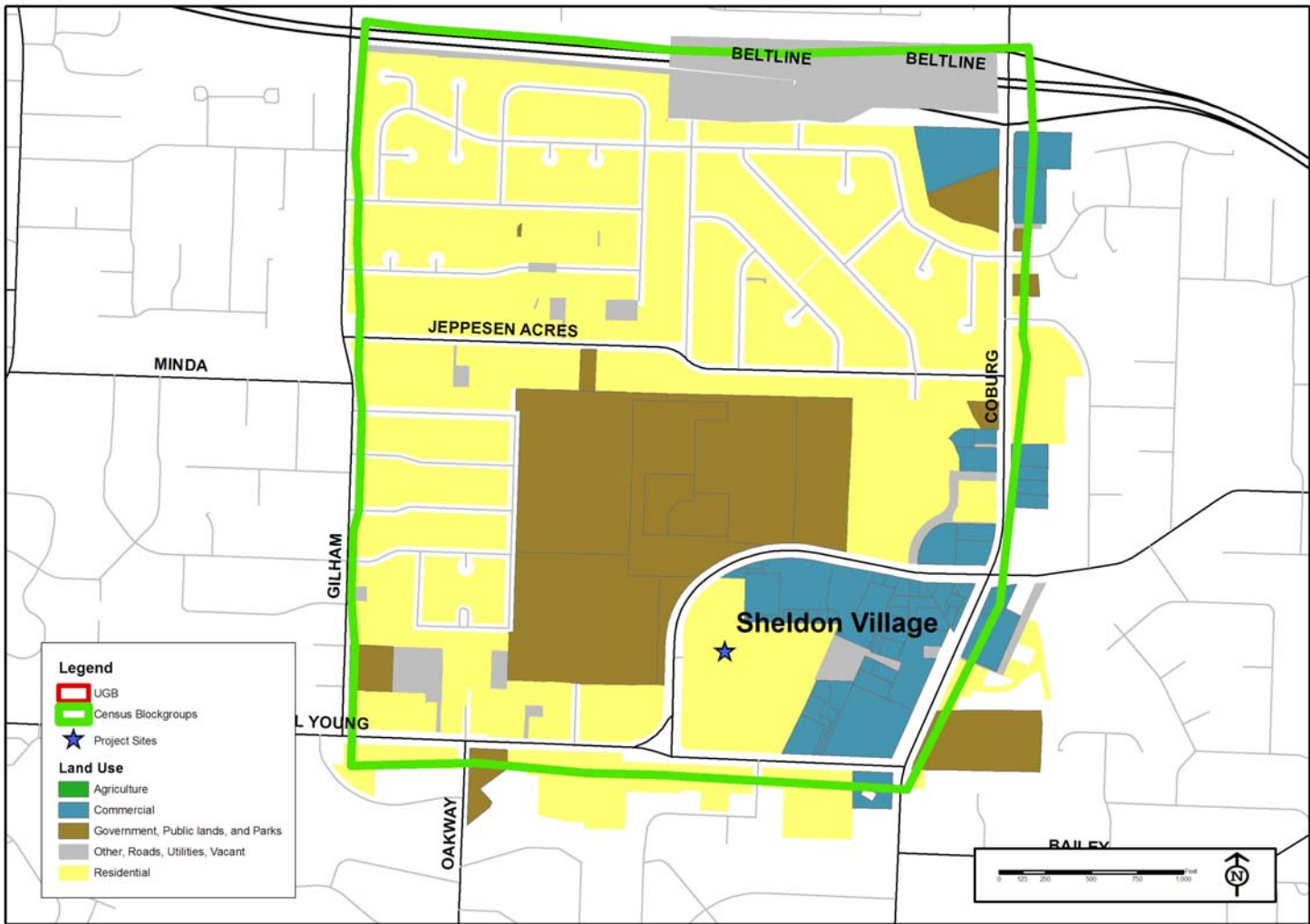
Appendix C: Project Land Use Maps



Santa Clara and Greenleaf Land Use



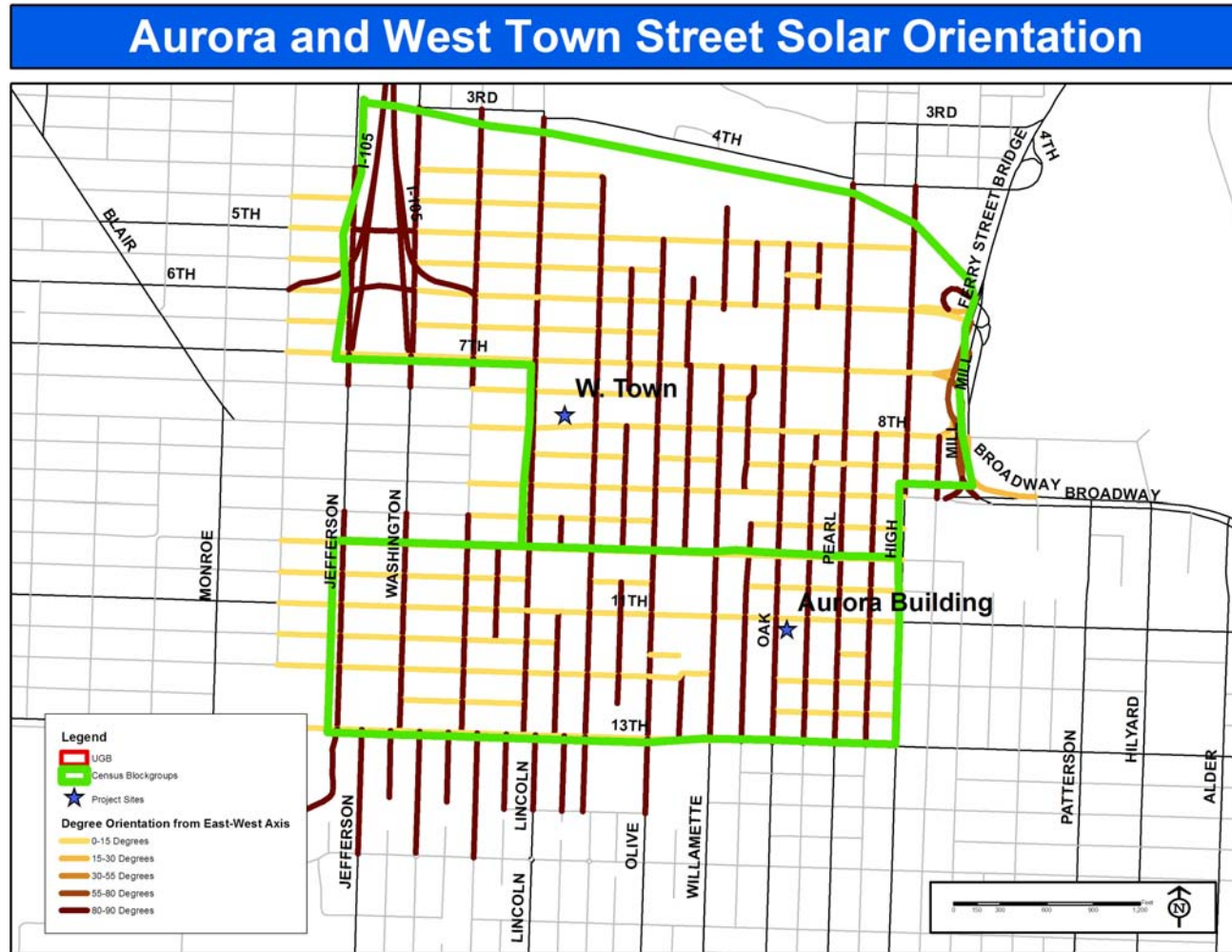
Sheldon Village Land Use



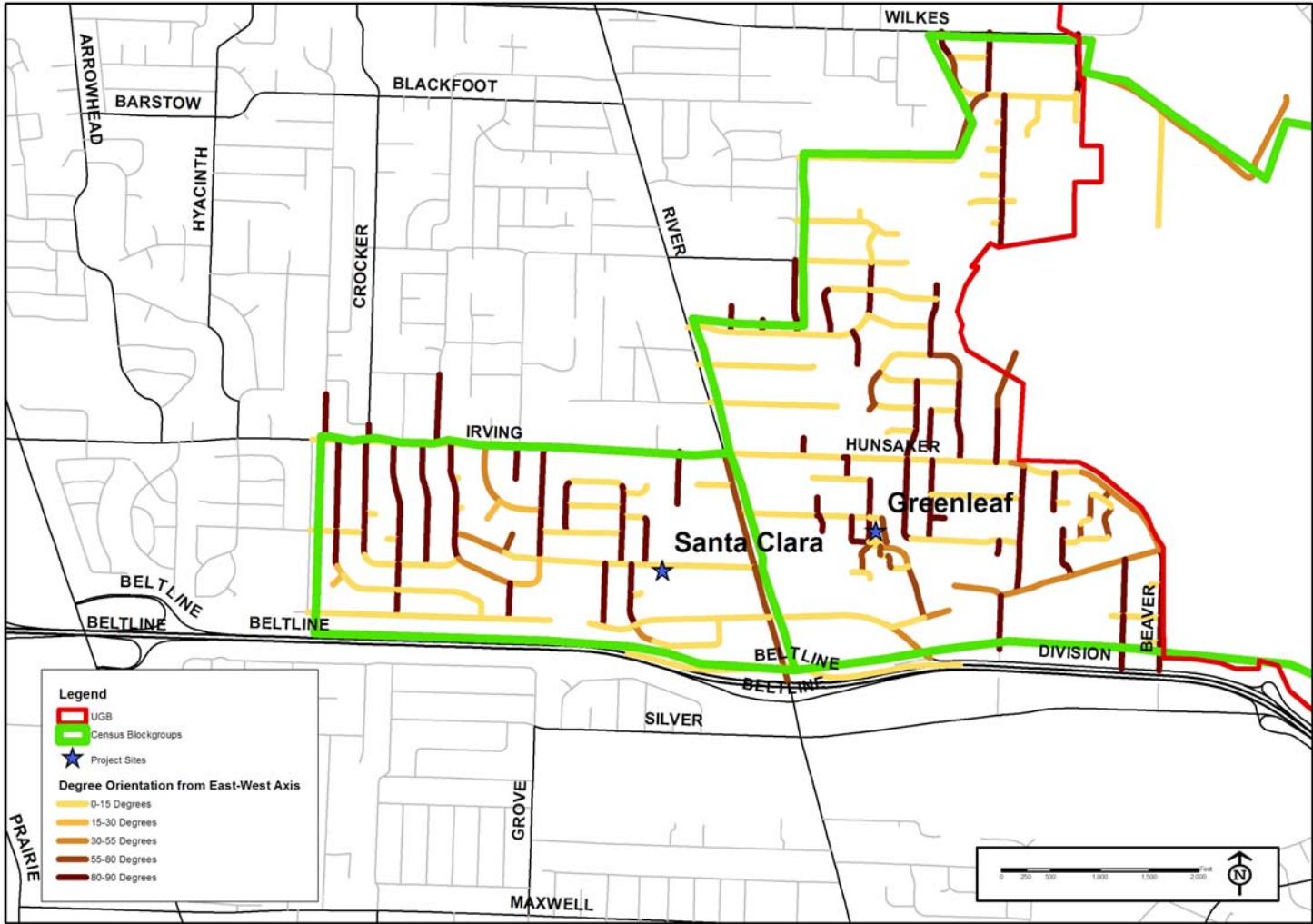
Prairie View Land Use



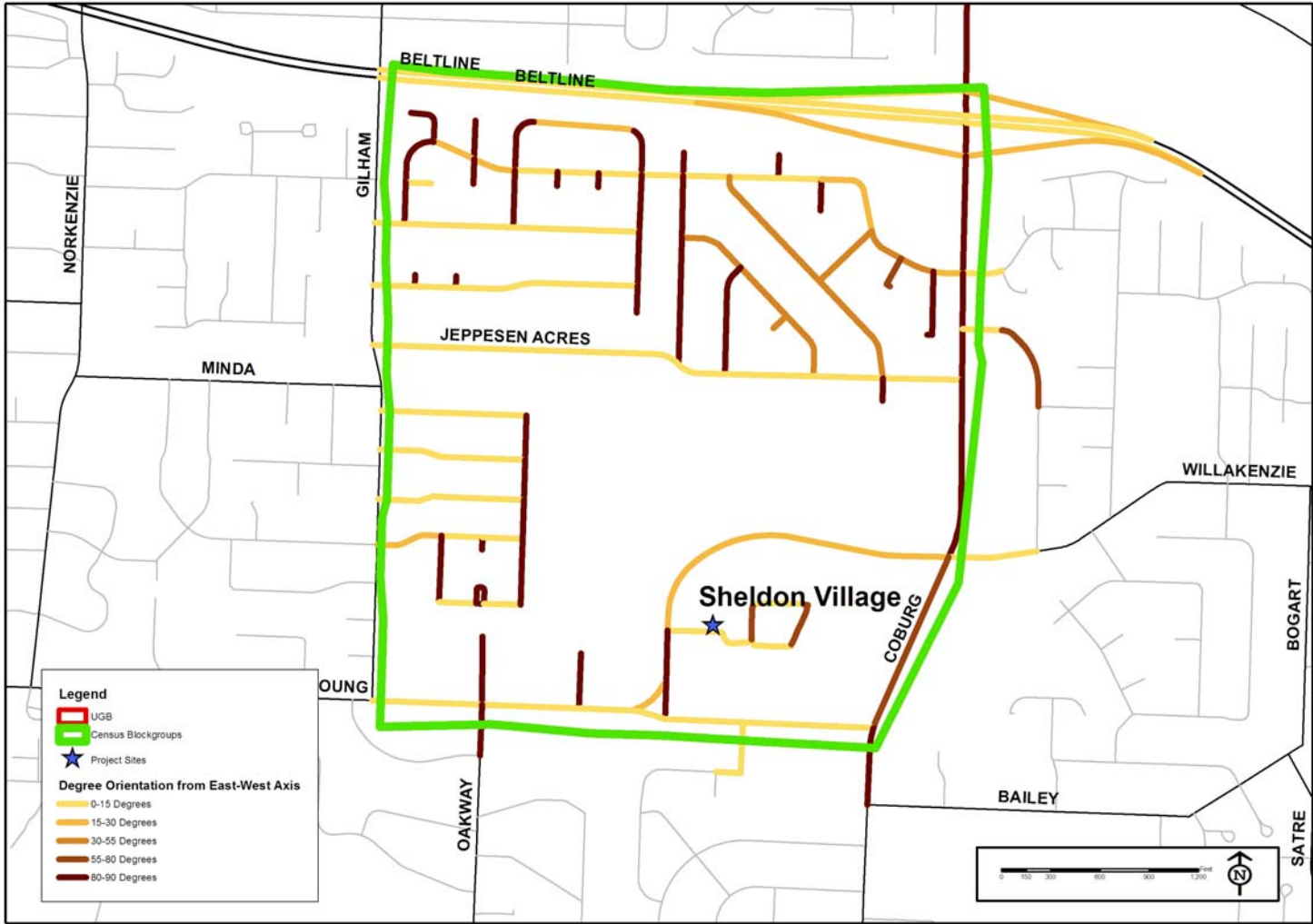
Appendix D: Solar Street Orientation



Santa Clara and Greenleaf Street Solar Orientation



Sheldon Village Street Solar Orientation



Prairie View Street Solar Orientation



Appendix E: City of Eugene Environmental Policy

The City of Eugene exists in a special and unique environment framed by conifer and oak forested hills at the south end of the Willamette River Valley. It lies between the confluence of the McKenzie and Willamette Rivers to the north, and Spencer Butte to the south, from whose slopes Amazon Creek flows to the west, through the wetlands of west Eugene and on to Fern Ridge Reservoir. Eugene's residents enjoy its clean air and water, views of the Cascade Range and Coburg Hills, diverse forest, wetland and riparian habitats, and many bike paths, trails and parks. The City of Eugene recognizes the value of these natural resources and takes responsibility for its environmental impacts both locally and regionally within the larger Willamette River watershed.

The Eugene City Council has adopted policies that direct the City to pursue sustainability (Resolution #4618), protection of natural resources (Growth Management Policy #17) and recovery of threatened Upper Willamette Spring Chinook Salmon (Resolution #4615) in its activities.

Therefore, the City of Eugene is committed to protecting, preserving and restoring the natural environment. City decision-making will be guided by the goals of increasing environmental benefits and reducing or eliminating negative environmental impacts in all aspects of the City's activities, while maintaining the City's fiscal integrity and the community's economic vitality.

To achieve these goals, the City is committed to:

1. Ensure that each employee understands that they are expected to take personal responsibility for the environmental effects of their actions while performing City work.
2. Provide the leadership, training and resources needed to enable all City employees to implement this policy, and to continue to build the capacity of the organization to achieve continual environmental improvement.
3. Meet or exceed compliance with all applicable environmental statutes, regulations, and standards.
4. Reduce environmental impacts in all activities, including operations, maintenance, construction and waste disposal. Therefore, the City is committed to continually review all activities to identify and carry out cost-effective and achievable strategies to:
 - prevent pollution
 - reduce energy consumption and increase energy efficiency
 - conserve water
 - reduce consumption and waste
 - reuse, recycle, and purchase recycled content products
 - reduce reliance on non-renewable resources.

5. Consider long-term as well as short-term environmental consequences when making planning, designing, engineering, purchasing, contracting, and budgeting decisions, including the impacts of producing, using, and disposing of materials.
6. Provide leadership and share information about the City's environmental practices to encourage and support efforts to protect, preserve and restore the natural environment.
7. Work in partnership with local, state and federal agencies, local businesses, educational institutions, community groups and the general public to protect, preserve and restore the natural environment in our community and the surrounding region.

Appendix F: RESOLUTION NO 4618

A RESOLUTION ADOPTING A DEFINITION AND STATEMENT OF INTENT REGARDING THE APPLICATION OF SUSTAINABILITY PRINCIPLES TO THE CITY OF EUGENE

The City Council of the City of Eugene finds that:

A. In March and April, 1999 the City Council held a series of work session on Council Goals for the 1999 -2001 biennium. In those work sessions, the Council discussed the meaning of the term "sustainable" as it related to proposed Council Goal #2. The City Council directed staff to provide information on the sustainability concept at a future Council meeting.

B. On September 8, 1999 the City Council held a work session to discuss the sustainability concept and its application to Council Goal #2, and to the government of the City of Eugene. Following that discussion, the City Council directed staff to prepare a resolution that adopts a definition for the term "sustainable" and outlines further actions that the City might take to incorporate sustainability principles in local government activities.

C. Issues related to community sustainability cut across jurisdictional borders and political boundaries. The application of measures to insure a sustainable future requires intergovernmental cooperation and support from private sector business entities, community and neighborhood organizations, non-governmental organizations, and educational institutions.

NOW, THEREFORE,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EUGENE, a Municipal Corporation of the State of Oregon, as follows:

Section 1. Based on the above findings, we, the elected officials of the City of Eugene agree to uphold the Sustainability Principles outlined in Section 2. The City of Eugene is committed to promoting a sustainable future that meets today's needs without compromising the ability of future generations to meet their needs, and accepts its responsibility to:

Support a stable, diverse and equitable economy

Protect the quality of the air, water, land and other natural resources

Conserve native vegetation, fish, wildlife habitat and other ecosystems

Minimize human impacts on local, regional and worldwide ecosystems

Section 2. Sustainability Principles: City elected officials and City staff will uphold the following principles in carrying out their duties:

1. ***The concept of sustainability guides city policy and actions.*** The City of Eugene is committed to meeting its current needs without compromising the ability of future generations to meet their own needs. The City will ensure that each of its policy decisions and programs are interconnected through the

common bond of sustainability as expressed in these principles. The cumulative and long term impacts of policy choices will be considered as we work to ensure a sustainable legacy.

2. The City will lead by example. The City of Eugene has an opportunity and responsibility to set an example for other organizations by operating its facilities and services in a sustainable manner. The City is committed to assessing its current practices and programs with respect to their conformance with sustainability objectives. The City is further committed to developing strategies for implementing sustainable practices that address purchasing of products and services, maintenance, facility design, and municipal operations.

3. The quality of the environment and the health of the economy are interdependent. A healthy environment is integral to the long-term economic interests of the City. The City is committed to protecting and restoring the natural environment as growth management and economic development decisions are made. The City is also committed to ecological decision-making where-in environmental criteria are integrated into municipal decision-making processes. As we protect the health of the environment and provide for expansion of the economy, we must also ensure that inequitable burdens are not placed on any one geographic or socioeconomic sector of the population.

4. Community awareness and education are fundamentally important to successful implementation of sustainability policies and programs. Every member of the community has some impact on the environment. Individuals, businesses, governments, and community-based groups must be encouraged to take responsibility for actions that harm the environment. The City will assume a leadership role in creating, sponsoring, and promoting sustainability awareness and education within the community. The City will focus on solutions and will facilitate citizen participation in developing those solutions.

5. Local actions have regional, national and global implications. Eugene does not exist in isolation; it is part of a larger community of interests. Similarly, local issues cannot be separated from their broader context. The City will recognize the relationship between local, regional, national and global issues in its policy and program development. The City will also assume a leadership role in developing model environmental programs and innovative approaches to economic development that reflect this linkage to the regional, national and global communities.

The foregoing Resolution adopted the 28th day of February 2000.

/s/ Warren G. Wong

City Recorder

Appendix G: RESOLUTION NO. 4884

A RESOLUTION ADOPTING A SUSTAINABLE BUILDINGS POLICY FOR BUILDINGS OWNED AND OCCUPIED BY THE CITY.

The City Council of the City of Eugene finds as follows:

A. On February 28, 2000, the Eugene City Council adopted Resolution No. 4618 which defined “sustainability” and set out a statement of intent regarding the application of sustainability principles to the City of Eugene. That Resolution also affirmed the commitment of City elected officials and City staff to upholding those principles.

B. The principles of sustainability recognize the interdependence of the built and natural environments, providing the framework and tools to build and operate facilities in an efficient, healthy, and ecologically responsible manner. Green buildings are important in that they seek to harness natural energy flows and biological processes, reduce or eliminate reliance on fossil fuels and toxic materials, and improve resource efficiency.

C. When applied to the siting, design, construction, maintenance and operation of buildings, sustainable principles encompass the following broad topics: efficient management of energy and water resources; management of material resources and waste; protection of environmental quality; protection of health and indoor environmental quality; reinforcement of natural systems; and integrating the design approach.

D. It is in the public interest to adopt a sustainable buildings policy for buildings owned and occupied by the City in order to demonstrate the City’s commitment to enhance the region’s environmental resources, and to yield cost savings to the taxpayers through reduced operating costs.

NOW, THEREFORE, based upon the above findings,

BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF EUGENE, a Municipal Corporation of the State of Oregon, as follows:

Section 1. The Sustainable Buildings Policy for Buildings Owned and Occupied by the City attached as Exhibit A is adopted.

Section 2. A copy of this Resolution shall be appended to Resolution No. 4618.

Section 3. This Resolution shall become effective immediately upon its adoption.

The foregoing Resolution adopted the 10th day of July, 2006.

City
Resolution

Recorder

Appendix H: ORDINANCE NO. 20379

AN ORDINANCE CREATING A SUSTAINABILITY COMMISSION; AMENDING SECTION 2.013 OF THE EUGENE CODE, 1971; AND ADDING A NEW SECTION 2.380 TO THAT CODE.

THE CITY OF EUGENE DOES ORDAIN AS FOLLOWS:

Section 1. Subsection (1) of Section 2.013 of the Eugene Code, 1971, is amended by adding the following entry for the Sustainability Commission in alphabetical order therein:

2.013 City Council - Boards, Commissions and Committees.

(1) Except for boards, commissions or committees established pursuant to ordinance, state statute, or intergovernmental agreement, the following are the presently constituted boards, commissions and committees of the city with the number of members and names of the appointive authority indicated thereafter, together with the term and the authority for such board, commission or committee:

Sustainability Commission

No. of Members 12 Citizens

1 Councilor

Appointment Process 1 Citizen appointed by each

Councilor

4 Citizens appointed by full

Council

1 Councilor appointed by

Mayor

Term 4 years citizen members

Councilor during term of office

Authority EC 2.01 3 and EC 2.380

Section 2. A new Section 2.380 is added to the Eugene Code, 1971, to provide:

2.380 Sustainability Commission.

(1) Created. A sustainability commission is hereby created to act as a policy advisory body to the council and city manager in the development or initiation of programs or actions that will enhance, develop and create Ordinance - 1

sustainable practices within the community. The commission shall advise on policy matters related to a) sustainable practices, b) businesses that produce sustainable products and services, c) city building design and infrastructure, and d) related issues that directly affect sustainability efforts considered by the city council.

(2) Membership. The commission shall consist of 12 citizen members and one city councilor. Members to be selected are to represent a diverse range of interests and experiences with due regard to the geographic distribution of the membership. The members of the commission shall be selected from, but are not limited to, several but not necessarily all of the

following groups: youths, students of the University of Oregon and Lane Community College, persons with a demonstrated interest in sustainable business practices, building and design, energy conservation or alternative energy sources, economic development, educators, members of community or neighborhood groups, persons with a diversity of ethnic and cultural affiliations, and persons with diverse economic backgrounds and interests.

(3) Appointment and Term of Office. Each councilor shall appoint a single member to the commission, four members shall be appointed by vote of the full council, and the mayor shall appoint the councilor member. The councilor member shall serve during his or her term of office, and citizen members shall serve for four-year terms, except for the first appointees, who shall serve for the following terms: four members shall serve initially for four-year terms (appointed by councilors for wards 1 through 4); four members shall serve initially for three-year terms (appointed by councilors for wards 5 through 8); and four members shall serve initially for two-year terms (appointed by full council). All members shall be limited to two consecutive terms. A vacancy shall be filled in the same manner as the original appointment, and the appointee shall hold office for the remainder of the unexpired term. A member who is absent from three consecutively scheduled meetings without having been excused by the chair of the commission may be removed by the council and the vacancy filled.

(4) Officers, Meetings and Rules of Procedure. The officers of the commission shall be a chair and vice-chair, elected by majority vote of the commission. The chair shall preside at meetings of the commission and shall have the right to vote. The vice-chair shall, in case of absence or disability of the chair, perform the duties of the chair. Officers shall serve for terms of one year or until their successors are regularly elected and take office. The commission shall hold meetings at such times as it deems necessary, and shall also meet upon the call of the chair. The commission shall meet not less than four times each calendar year. The commission shall adopt bylaws, operating agreements, and may make and alter rules for its conduct and procedure, providing they are consistent with state law and applicable provisions of the city charter, ordinances and policies. Seven members of the commission shall constitute a quorum. The concurring vote of a majority of members present shall be required for approval or disapproval
Ordinance - 2

of any motion or other action of the commission. All meetings shall be open to the public. No formally constituted committee of the commission may be created unless the purpose, scope and tenure of the committee is included in the annual work plan and is approved in advance by the city council.

(5) Powers and Duties. The commission shall:

(a) Make recommendations to the council and city manager for programs or actions designed to implement the recommendations contained in the Sustainable Business Initiative Task Force Report

- as accepted by the city council on October 23, 2006;
- (b) Create and present an annual work plan to the city council;
 - (c) Meet annually with the city council to secure approval of the work plan;
 - (d) Provide a forum for addressing public concerns related to sustainable policies and practices;
 - (e) Work on sustainability-related projects as directed by the council and city manager;
 - (f) Provide input on sustainability policies and practices that reflect community values; and
 - (g) Assist the city council and city manager in balancing community priorities and resources by advising them on sustainability issues.

Section 3. The City Recorder, at the request of, or with the concurrence of the city attorney, is authorized to correct any reference errors contained herein or in other provisions of the Eugene Code, 1971, to the provisions added, amended or repealed herein.

Passed by the City Council this Approved by the Mayor this
26TH day of February 2007

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