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INFILL DEVELOPMENT: BARRIERS AND INCENTIVES

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Infill Development: Barriers and Incentives

A Survey of the Literature

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ABSTRACT

Why is the subject of infill important to certain cities and regions? As urban areas grow outward, travel times for commuters become longer, possibly affecting air quality. The increasing costs for infrastructure, both for initial construction and for on-going maintenance, become a concern. Sprawl, with all its associated negative connotations, has increasingly become an example of the type of development that many urban places hope to avoid or control. This paper summarizes a review of the literature on infill, and includes a discussion of a range of typical barriers to and incentives for infill, as well as recommendations addressing particular infill problems. As the Truckee Meadows region is grappling with the implementation of a new regional form and pattern through the promotion of infill development, this paper provides a sample of ideas to explore and may be a catalyst for further discussion and research. The maps on the following page illustrate the growth in the Truckee Meadows from 1950 to 2005, a fifty-five year period.

New Development in the Northeast Truckee Meadows



Truckee Meadows Urban Footprint

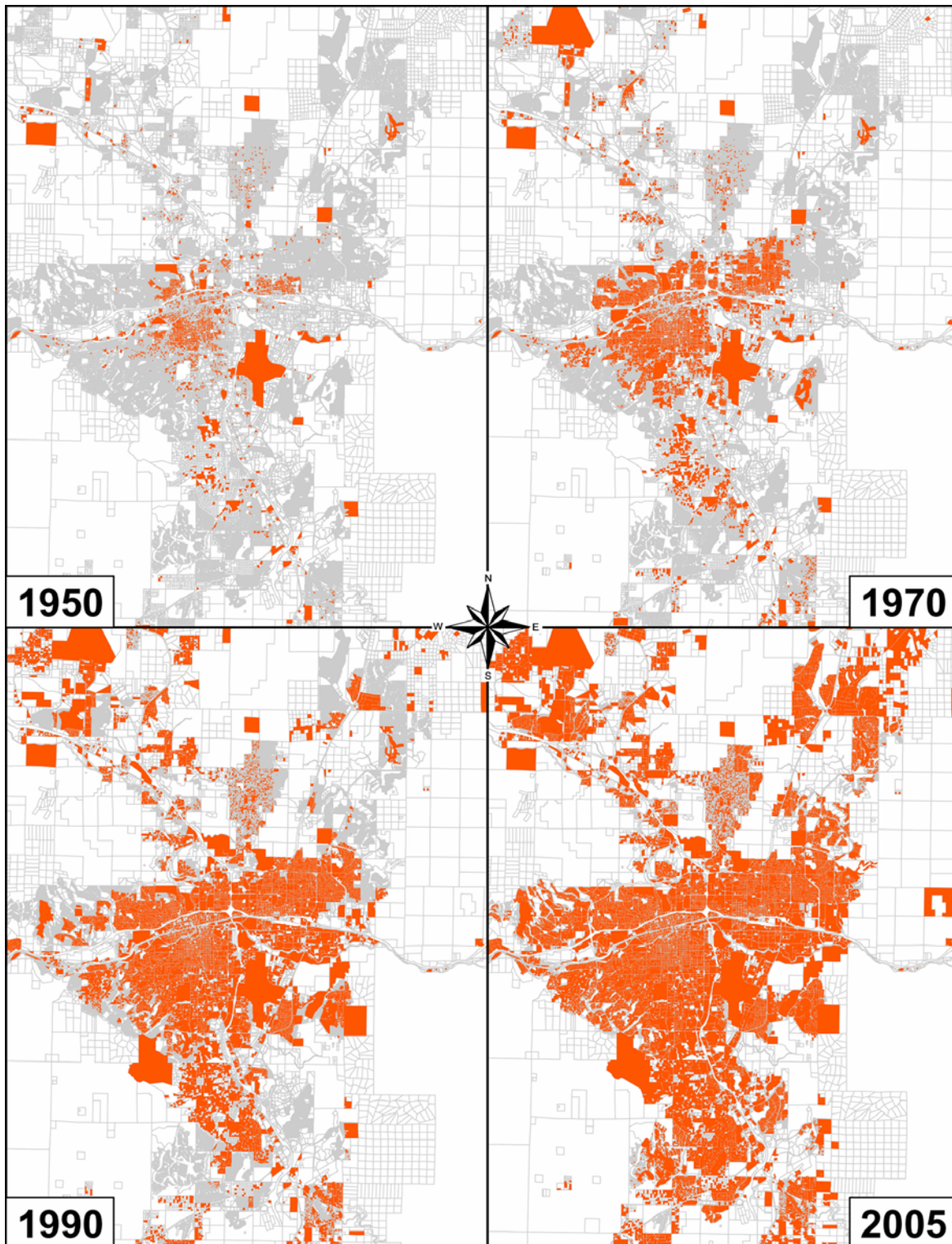


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INTRODUCTION

In 2002, the Regional Planning Governing Board updated the Truckee Meadows Regional Plan, as required by law, from the 1996 version of the Plan. The update diverged substantially from the 1996 plan in terms of a new direction for regional form and pattern, by creation of an urban services boundary and designation of centers and transit corridors where increased density and population growth are preferred. The planning principles relating to the new regional form and pattern state, “The plan will strongly promote infill development within centers and transit corridors to optimize existing infrastructure” (TMRPA, 2002, p. II.B.4). The plan adds, “To minimize sprawl and optimize infrastructure efficiency, the Regional plan will give priority to infill development within Centers and TOD Corridors, and within McCarran Blvd., and must take into account open space, facility and utility corridor plans” (TMRPA, 2002, p. II.B.6). Sprawl is defined in the Regional Plan as, “Premature growth or outward expansion of development. Low-density land-use patterns that are automobile-dependent, energy and land consumptive, and require a very high ratio of road surface to development served” (TMRPA, 2002, p. III.B.10).

Regional Plan policies supporting the principles are:

- Policy 1.2.1 includes a table which outlines the desired distribution of forecasted population and employment growth in the region, including a forecast of at least 35% of population and job growth directed to total infill within McCarran Blvd., including centers and corridors, and no more than 65% of growth distributed to total development outside McCarran Blvd., including centers, corridors and unincorporated areas (TMRPA, 2002, p. II.B.13);
- Policy 1.2.11 directs local government master plans to include incentives, strategies, programs or policies to promote infill development, and to encourage public and/or private improvements in downtowns and other development target areas in order to conform with the Regional Plan (TMRPA, 2002, p. II.B.16). Policy 1.2.11 further directs that in order for local government master plans to conform to the Regional Plan, they must include appropriate incentives, programs, strategies or policies to promote infill within the McCarran Blvd., and supplies a list of strategies that may be incorporated in local government master plans (TMRPA, 2002, p. II.B.17).

Local governments in the region are in the process of developing the necessary master plan provisions to address such Regional Plan requirements as the promotion of infill development, in order to bring their plans into conformance with the Regional Plan. The Truckee Meadows Regional Planning Agency developed this paper in order to provide a sample of ideas to explore from a survey of the literature on infill and to be a catalyst for further discussion and research.

WHAT IS INFILL?

Generally, the definition of infill is the development of vacant, underdeveloped or underutilized sites within an urban area, rather than undeveloped land outside the city. In some urban areas, industry has abandoned the urban core and relocated on the urban fringe, leaving empty

buildings to deteriorate over time. The literature suggests that there are market incentives for new development to relocate to suburbia, or “greenfields,” as the urban fringe is often referred to; often land is cheaper, development approvals are more streamlined, and brownfields, or contaminated land, are virtually non-existent. When jobs and people leave the urban area, gaps occur and suburban sprawl begins to develop. The gaps that occur due to leapfrog development may become blighted over time. Properties begin to lose taxable value and cities face decreasing property tax revenue as their areas demand more municipal services.

Some sites remain vacant or underdeveloped in urban areas because property owners are unwilling to sell their land, in the belief that the land will appreciate over time and that future zoning changes will benefit them (Ellman, 1997, p. 1).



Vacant Lot in the Fourth Street TOD Corridor – Reno

An article published by the City of Mesa (2003, pp. 2-8), notes the following definitions of infill from various cities, counties and states:

Maryland – Infill refers to new development in a Priority Funding Area on vacant, bypassed, and underutilized land within built up areas of existing communities, where infrastructure is already in place.

Albuquerque, NM – Infill is vacant parcels served by utilities and surrounded by urban development. These parcels have been by-passed in the normal course of urbanization.

Grand Junction, CO – Infill is the development of a vacant parcel, or assemblage of parcels, within an established area of the City, and which is bordered along at least three-quarters of the parcels’, or combined parcels’, perimeter by developed land. In addition, such a parcel generally has utilities and street access available adjacent to the parcel, and has other public services and facilities available nearby.

Fontana, CA – The infill program targets all residential, commercial, and industrial vacant parcels within a roughly 30 square mile boundary. Within the project there are approximately 4,200 vacant sites, more than half of which are one to five acres in size.

Boise, ID – Infill takes place on a vacant piece of land where 80 percent of the parcels within 300 feet are developed and there is existing infrastructure.

Grand Forks, ND – Infill takes place on city-owned vacant lots in older neighborhoods.

Baton Rouge, LA – Infill is the development of pockets of vacant land or structures within predominantly developed areas.

Clark County, WA – Potential infill parcels are no more than 2.5 acres gross and surrounded by at least 50 percent urban development; all public facilities are immediately available and adequate to the site and the site is in a residentially zoned area.

Sacramento, CA – Infill is the development, redevelopment, or reuse of vacant and underutilized sites substantially surrounded by urban uses, where the median age of the surrounding urban development area is 20 years or more, and where the proposed project is consistent with the general plan and zoning.

Phoenix, AZ – Infill is vacant parcels that have either been skipped over by earlier development or have been cleared of older structures but not yet reused.

Peoria, AZ – Infill takes place on vacant urban parcels of land. Infill development includes projects that are proposed for vacant property or replacement of dilapidated buildings within the incentive area. Major infill development includes projects that:

- Result in at least 20 new primary jobs (or 5 new primary jobs in the Downtown Redevelopment Area);
- Result in at least \$50,000 in new annual sales tax revenue to the City (or \$25,000 in the downtown redevelopment area); or
- Result in the development of 10 acres of land (or four lots or 28,000 square feet in the downtown redevelopment area).

Other definitions of infill include these:

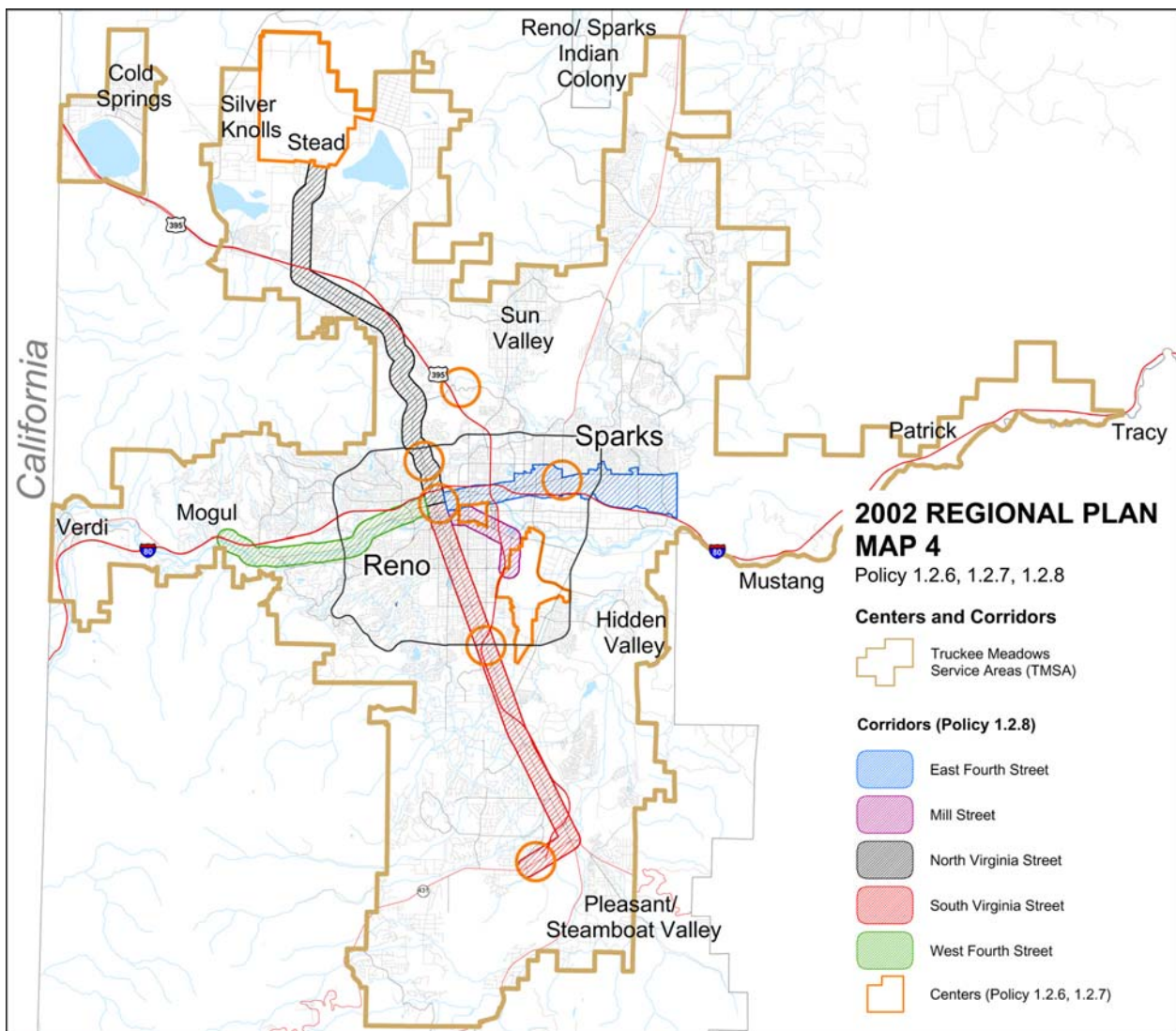
- Las Vegas, NV - “Infill is the development or redevelopment of vacant or underutilized sites in economically or physically static or declining areas” (SNRPC, 2002, p. 9).
- The Center for Livable Communities and the Greenbelt Alliance - “Infill is building homes, businesses and public facilities on unused and underutilized lands within existing urban areas. Infill development keeps resources where people already live and allows rebuilding to occur. Infill development is the key to accommodating growth and redesigning our cities to be environmentally and socially sustainable” (CLC, 2001, p. 48).
- The Regional Comprehensive Plan for San Diego says that growth will be channeled into existing urban incorporated communities and will occur as redevelopment and urban infill. The urban form should be universally embraced to ensure infrastructure is in place or concurrent with land use decisions (SANDAG, 2004, p. 308).
- The Infill Development Plan prepared for the Southern Nevada Regional Planning Coalition (SNRPC, 2002) describes three policy strategies related to infill taken from national research:
 - “As a growth management strategy, infill offers an alternative to the continued horizontal expansion of metropolitan areas.
 - “As an environmental conservation strategy, infill provides opportunities for growth without consuming additional agricultural or environmentally sensitive

land areas; and compact development contributes to non-renewable energy savings.

- o “As a redevelopment strategy, infill enhances the vitality, diversity and economic health of cities” (SNRPC, 2002, p. 9).

The Truckee Meadows Regional Plan describes infill as a development strategy to support the regional form and land use pattern outlined in the 2002 update. The Regional Plan gives priority to infill development within centers and TOD corridors to minimize sprawl and optimize infrastructure efficiency.

Centers and Corridors Map from the Truckee Meadows Regional Plan



Communities that are interested in slowing the spread of sprawl and bringing economic vitality back to the urban core often invest in infill planning for their community. “A major solution to

the problems created by conventional development patterns is infill development – the creative recycling of vacant or underutilized lands within cities and suburbs.” One suggestion to help communities plan for successful infill development is to “build a common vision and create a plan” (Bartsch and Deane, 2002, pp. 3-4).

One example of building a common vision and creating a good infill plan is the Infill Development Plan developed for the Southern Nevada Regional Planning Coalition (SNRPC). The SNRPC received a grant provided by the U.S. Environmental Protection Agency (EPA) to develop the plan for Clark County, the Clark County School District, and the Cities of Las Vegas, North Las Vegas, Henderson and Boulder City. SNRPC established a collaborative planning effort designed to reach a shared understanding of infill, including priority areas, common barriers, development strategies and incentives (SNRPC, 2002, p. 7).



Senior Housing Complex in the Prater TOD Corridor – Sparks

WHY INFILL?

The Greenbelt Alliance says “infill development can help address many of the problems resulting from rapid, poorly planned regional growth” (Wheeler, 2002, p. 7).

The Center for Livable Communities lists several reasons why a jurisdiction should build within the existing urban area:

- **We are spreading out more and driving more.**

The more land use patterns sprawl, the more time we spend in the car. According to the Surface Transportation Policy Project, 69 percent of the increase in driving from 1983 to 1990 was due to factors influenced by sprawl, such as longer car trips and a switch to driving from walking or transit. Population growth itself was only responsible for 13 percent of the growth in driving.

- **The fiscal impacts on government from inefficient planning are very significant.**

Increasingly, communities are finding it impossible to keep up with the cost of stretching infrastructure out to the suburbs. The Southern California Association of Governments (SCAG) reports that while the total transportation needs of its region over 20 years amounts to \$34.8 billion; only \$18.4 billion is available – leaving a deficit of \$15.4 billion. The San Francisco Bay area reports a 20-year shortfall of \$4.7 billion for operations and maintenance costs.

- **Inefficient land use patterns have negative financial impacts for the business community and individuals alike.**

The California State Department of Transportation (Caltrans) estimated in 1990 that more than 197,000 hours per day were being lost due to traffic congestion, costing California businesses more than \$2 million a day. A study in 1998 by Criterion Planners/Engineers of Portland, Oregon, comparing infill and greenfield development, found that infill development would cut travel time, reduce environmental impacts, lower travel costs and infrastructure costs, and improve community livability.



Portland's Orenco Station is an example of infill development that promotes residential development and affordable housing near employment opportunities.

- **There is room to grow within existing city boundaries while maintaining historic population levels.**

Portland's regional plan calls for an additional 50,000 new housing units in Portland by 2015. A report to the city, titled *Infill and Redevelopment Strategies*, demonstrates that this growth can be accommodated through infill development.

In a study of 900 jurisdictions, Rolf Pendall of UC Berkeley's Institute of Urban and Regional Development found that there is enough land to accommodate around six million new households within existing urban areas if all the land zoned for multi-family use is developed.

- **We can no longer afford to continue building communities in an inefficient manner when there is a viable alternative.**

The 1995 report titled *Beyond Sprawl*, produced by the Bank of America, the California Resources Agency, the Greenbelt Alliance and the Low Income Housing Fund, states that the cost of housing another generation through sprawl is "potentially crippling" to government and society (CLC, 2001, pp. 1-5).

The Greenbelt Alliance, in its document *Smart Infill*, addresses several "burdens" imposed on jurisdictions by sprawl that infill development can help reduce:

- A loss of as many as 490,000 acres of Bay Area open space;
- The total mileage that Bay Area residents drive each day is expected to grow by nearly 50 percent by 2025;

- There is a lack of affordable housing in the Bay Area and about sixty percent of residentially-zoned land is for single family homes with a median price of \$500,000;
- There is uneven growth in the Bay Area and the per capita tax base varies by a factor of five between wealthy cities like Atherton and poor communities like East Palo Alto;
- There is a serious jobs/housing imbalance caused by communities zoning much more land for commercial or industrial land than residential land due to the state fiscal system; sprawl has led to disinvestment in city services and schools and has contributed to a declining community livability;
- Sprawl development leads to inefficient use of infrastructure as portrayed in a study by Rutgers professor Robert Burchell which found increased road costs of 23.9 percent and sewer and water increased costs of 7.6 percent compared with more compact infill development costs (Wheeler, 2002, pp. 11-14).

In *Strategies for Successful Infill Development*, the authors say that communities with vision are planning neighborhoods that mix apartments and town homes with single-family homes. This houses a diverse population, including all kinds of families, single people, retirees and people of different incomes. Market studies show growing demand and strong sales for in-town housing, live-work units and other alternatives to the single-family house (Bartch et al., 2001, p. 9).

BARRIERS TO INFILL DEVELOPMENT

One of the reasons for the outward territorial expansion of metro regions is a failure of local governments to charge developers for the full cost of public infrastructure investments. Other factors are mortgage interest subsidies under the federal income tax system and failure to price congestion externalities on roadways linking metro centers and fringe communities. Federal and state grant formulas sometimes reward towns and cities for adopting low-density zoning rules. For example, state reimbursement of pupil busing costs is a subsidy that encourages local school boards to ignore the land use implications of their school siting decisions (England, 2004, p. 8-10).

In the Infill Development Plan of the Southern Nevada Regional Planning Coalition, the section “Reduction in Fringe Growth and Greenfield Development Patterns” reported that the City of Henderson requested the BLM delay the auction of several thousand acres so that the City could conduct a fiscal analysis of the implications of annexation (SNRPC, 2002, p. 24). This action was reported as an incentive in the 2002 plan, as the City observed a significant increase in infill and redevelopment activity during the interim. However, a 2005 newspaper article (Boxall and Cart, 2005), points out that only a fifth of the land has been auctioned and will take over a decade to sell. While the auction of federal land was delayed, providing an incentive to infill in the short-run, in the long-run the auction of federal land may prove to be a barrier for infill development in the Las Vegas Valley, as developers opt for cheaper land on the urban fringe.

A review of the literature on infill development reveals some common barriers and challenges that communities face when trying to implement infill policies and revitalize their urban areas. Some of these challenges are:

- Difficulty in obtaining necessary finances for developers;
- Substandard infrastructure;
- Regulatory policies;
- Land assembly and cost of land;
- Resistance from local residents;
- Political leadership;
- Public perceptions of increased density; and
- Unwillingness to condemn targeted sites.

Financing Barriers

Infill developers striving to provide mixed use projects in the urban core run into financing barriers, particularly on small projects, which make financing more expensive than in less-developed suburban areas. Because infill and redevelopment projects are often concerned with providing amenities such as transit and pedestrian orientation, access to retail and employment opportunities and green space and residential dwelling units located above commercial development, the capital lending markets consider such projects as risky. New infill projects do not fit the development profile of high-end office development, for example, in many urban core areas. Private financing sources are generally more expensive than the standardized capital lending markets available on the urban fringe (FWG, 2003, p.4).

Infrastructure Barriers

Deteriorated infrastructure, patterns of disinvestment and abandonment, and lack of such supporting facilities and services as grocery stores and convenience retail stores are challenging to a developer interested in infill projects. One popular view is that existing infrastructure is underused and constitutes an asset for infill development. However, relying on excess capacity in existing infrastructure is not always that easy. Often, existing infrastructure is out of date or nonexistent, and capacity needs be added for the kinds of mixed use infill projects that are being developed in the urban core. “High-density infill housing on existing lots may require additional infrastructure investment (e.g., alley upgrades, underground cable, or drainage) to comply with market demand for off-street parking and garbage removal” (Farris, 2001).

In Portland, Oregon, residents in the southwest portion of the city questioned whether planners had determined that existing infrastructure was adequate to support rezoning requests for substantially higher densities for residential and commercial development. The city commissioners, on request of the planning commission, are updating the city’s 9-year old public facilities plan. The planning commission reported that the public facilities plan lacked consistency (Farris, 2001).

Regulatory Barriers

Zoning ordinances are one of the most common barriers for developers in infill areas. Conventional zoning codes tend to encourage lower-density, single-use and automobile-dependent land use (FWG, 2003, pp. 7-8). Zoning codes limiting densities and building heights may work in direct conflict with the types of high density or mixed-use projects suitable for infill areas. For example, Oakland's (California) zoning code requires that development provide 150 square feet of open space per unit, which may be difficult or impossible to achieve (Wheeler, 2002, p. 29). When zoning codes are not conducive to infill development, developers must pursue rezoning ordinances or numerous variances which can impact a project to the point where it may be no longer financially feasible to build (SNRPC, 2002, p. 16).

Another barrier is the complexity of the planning review and permitting processes. Most municipal codes and regulations prohibit or discourage mixed use, narrow streets and driveways, and wider sidewalks. The time and complications associated with lengthy review processes are usually compounded in infill areas (FWG, 2003, pp. 7-8).

Land Assembly and Cost of Land Barriers

Another common barrier to infill development is the inability to assemble land in parcels large enough to attract developers. Small projects on small parcels may not be economically feasible for a developer. Assembling urban parcels can be expensive and complicated when dealing with multiple landowners, property owners who will not sell, existing neighbors, and a variety of existing land uses (SNRPC, 2002, pp. 15-16).

Few cities maintain a current and accurate vacant properties inventory. If a developer interested in an infill project is unable to determine what land is available and how to acquire it, it may not be worth pursuing. A city with a current and accessible vacant lands inventory will be able to market itself to developers (Tarnay, 2004, p. 4).

Infill development is a specialized niche, “not a standard, repetitive template of development.” The needs and issues associated with infill projects are unique. Risk is a big factor for developers and infill projects are subject to a greater level of uncertainty than greenfield development (SNRPC, 2002, pp. 15-16).

Brownfield Infill Sites Barriers

The EPA defines a brownfield as an “abandoned, idled, or underused industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination” (Bartsch and Deane, 2002). Service stations are one of the most common brownfields found in communities. Abandoned mill



Brownfield Site – Reno

or mining sites are also prevalent in the West. Leaking gas tanks can cause a service station to close and because of cleanup costs the property owner may just abandon the property. If the site is sold, the new buyer is still required under federal law to pay for cleanup (Wheeler, 2002, p. 41).

Resistance from Neighbors Barriers

Negative public perception about deteriorated or vacant buildings can pose barriers to infill development. Such structures may attract criminal activity or vagrants. A public safety risk deters developers who perceive that it may be impossible to attract people without substantial public reinvestment in the greater area.

Plans to increase densities in existing neighborhoods are often of concern. Neighbors are concerned that the safety, health and well being of residents of the area will not be compromised by the development. Neighbors may be opposed to infill due to perceptions of increased traffic and parking concerns, particularly if parking is already inadequate.

Political Leadership Barriers

Weak political leadership can be a barrier to successful infill, such as a proposed mixed use development around a transit station in El Cerrito, California, where the surrounding community wanted a much smaller-scale development. Politics prevailed and the smaller project proved to be economically infeasible and wouldn't support transit ridership. The site remains undeveloped (Bartsch et al., 2001, p. 49). Lack of strong political leadership may cause an infill developer to decide to locate on the fringe of an urban area where there are no neighbors to complain.

INCENTIVES FOR INFILL DEVELOPMENT

Providing a regional land use plan and a regional tax base with managed growth may redirect growth to areas with adequate infrastructure, as an incentive to infill development according to Myron Orfield, in his book *Metropolitics*.

Orfield says that a fragmented metro tax base promotes low density development patterns and fosters unnecessary outward movement with new houses on the fringe and housing vacancies accumulating in the older urban core. As the tax base disintegrates in the urban core, crime rises and services drop (Orfield, 1997, p. 85).

Education of Citizens Regarding Infill

In reviewing the literature on infill, one of the first steps to consider when developing an infill plan is to involve the community so that they can be educated regarding infill development and be involved in creating an infill vision. Most of the cities that have successful infill or downtown development have engaged their citizens, elected officials, stakeholders, businesses and the media in the process of constructing an infill plan, including a vision, that reflects their community character.

When communities have an agreed-upon vision, conflict is reduced when projects are proposed and conform to the vision. Community groups that have been educated and involved in long

range planning in their neighborhoods are better equipped to review and comment on specific infill projects being proposed. Trust develops with involvement and the community understands and is in agreement with necessary actions to speed up infill development, such as streamlining the development process or “by right” zoning regulations (CLC, 2001, pp. 15-16)

In the Infill Development Plan developed for the Southern Nevada Regional Planning Coalition, recommendations include creating partnerships with other agencies to develop an education program for the public, including elected officials and community groups, about infill development. The program should include techniques, possibilities and results of successful infill in other areas (SNRPC, 2002, p.45).

Financing Incentives

When private developers are not clamoring to invest in infill and redevelopment areas, developing coordination among various funding agencies could provide an incentive for financing infill, primarily for low income affordable housing projects. Washington’s Community Reinvestment Association (WCRA) and a new funding source called “urban initiative funds” (UIFs) provide private investment for infill using new urbanism design principles (FWG, 2003, p.5).

Infrastructure Incentives

The Regional Comprehensive Plan (RCP) for the San Diego Region includes an element titled “Integrated Regional Infrastructure Strategy (IRIS).” Local jurisdictions, acting together as the San Diego Association of Governments (SANDAG), have endorsed an urban form that channels much of the region’s future growth into existing urban communities where infrastructure and services are already in place.

The RCP was developed using smart growth policies. The RCP states that if the goals and objectives of the RCP are implemented, an increasing proportion of the growth will occur as redevelopment and urban infill. SANDAG established a \$25 million Smart Growth Incentive Program for infrastructure providers, which will act as the initial incentive for communities willing to adopt land use changes that support the RCP goals. Thus, the transportation-land use link will filter down to the jurisdictions’ capital improvement programs, and infill infrastructure funding will take place out of the competitive process (SANDAG, 2004, pp. 308-312).

Developers of infill projects often face deteriorating infrastructure in older areas of cities where upgrade or replacement expenses can be daunting. Water and sewer lines may need to be upgraded, brought up to code or replaced and streets and roads may need to be reconditioned or capacity added. Jurisdictions can develop a number of funding policies, such as the creation of a tax increment financing district (TIF) where the property tax revenue can be directed to fund infrastructure (CPPC, 2004).

Regulatory Incentives

To improve the appearance of cities, zoning incentive systems, which separate land uses, came into use in the 1950s and 1960s. But today, some rigid zoning codes make it difficult to meet such planning goals as mixed land use and to meet social objectives, such as affordable housing

and day care. Zoning began as an experimental technique to improve community design, and has changed and grown into a common tool used to meet a range of planning objectives (Morris, 2000, p.3).

One important regulatory incentive for infill is zoning codes. Some of the features of infill development are neighborhood and pedestrian-friendly design, mixed land uses, and parking reductions. Zoning regulations and guidelines should contain incentives to insure quality development. Revision of related codes used in the development review process, including the subdivision ordinance, street drainage, and landscaping standards, and fire and building codes will help streamline the process (CLC, 2001, pp. 25-26).

A survey of the literature regarding regulations and infill development reveals that streamlining the infill development process is one of the most important incentives. In addition, providing a staff person to guide developers through the regulatory process reduces the time, effort and cost that developers spend on their projects.

Land Assembly and Cost of Land Incentives

The Urban Land Institute (ULI) convened a panel of experts in February 2004, for a one-day forum titled Barriers and Solutions to Land Assembly for Infill Development. “The purpose of the forum was to identify and discuss significant public, regulatory, and market-based barriers to land assembly and infill development, and to suggest strategies for overcoming them.” The resulting report (*Seizing City Assets: Ten Steps to Urban Land Reform*) published by the Brookings Institute, attempts to address some of the challenges faced by cities in relation to their vacant, abandoned and underused land and recommends several incentives for successful infill development, some of which are listed below:

- Know your territory. Inventory the properties, know the market value and the zoning for properties, determine the ownership, and make the data publicly available.
- Make government effective. Create an efficient process for acquisition, disposition, and redevelopment of land.
- Create marketable opportunities. Make sites large enough for redevelopment through clustering.
- Finance redevelopment. Offer incentives such as short-term financing, subsidies, or tax benefits to attract private investment land development.
- Build on natural and historic assets. Market the community as an appealing place to do business (Tarnay, 2004, p. 2).

Brownfield Infill Sites Incentives

Some states are providing incentives for brownfield development, according to the Brownfields State of the States report which surveys the efforts of states “to make certain that their programs reflect local brownfield project needs.” The report also links regulatory incentives to brownfield cleanup in states, including redevelopment needs. Florida provides a “brownfield bonus” in the form of a tax refund to companies that create jobs with benefits to workers and make a capital

investment in the amount of at least \$12 million. Low interest loans and some direct financial assistance for brownfield cleanup are provided in New Hampshire (Bartsch and Deane, 2002).

Another financial incentive program targeted to brownfield situations is in the state of Nevada, which has targeted \$1 million for all projects in-state. The 2002 report states that the new federal brownfields law, enacted in January 2002, appears to be of tremendous benefit for Nevada. The state has modified its brownfield program targets to reflect new federal eligible activities, such as petroleum-contaminated sites (Bartsch and Deane, 2002).

Incentives to Overcome Resistance from Neighbors

The Center for Livable Communities says that trust among neighbors, city officials and developers must be established through the education and involvement of all groups. One incentive is to involve the community in developing a plan for infill. In the process of development of the infill plan, the community must be educated about the public benefits of infill and the tradeoffs between more sprawl and compact development, such as mixed use, transit and importance of density to create a more vibrant urban area (CLC, 2001, pp. 15-16).

If the urban core of a city doesn't have residential units, or has low density residential units without pedestrian and transit activity, it won't have the features to make it a vibrant downtown center. Cities have designed density development as an incentive for infill, with the reduction of crime in mind, by placing adequate lighting and front porches in high density development such as apartments and townhouses. "Scholar and urbanist Jane Jacobs, in *The Life and Death of Great American Cities*, made excellent arguments for density, and for community designs that put more 'eyes on the street'" (CLC, 2001, p. 17).

A public education campaign is needed as an incentive for "overcoming neighborhood resistance, and in cases where the inequities are more perceived than real, to correct faulty assumptions" (Dekle and Mofson, 1997, p. 6).

Political Leadership

"An incentive for the success of infill development will largely depend upon having strong leaders and a solid citizen participation process which develops a constituency of residents, business people and interest groups who will work to monitor implementation of policies over the long term." Cities and communities need to develop a clear vision of what they want their future to hold; they need to create a plan to implement that vision, and have the will to uphold the plan over the long term (CLC, 2001, p. 11).

The implementation of the infill plan is dependent on strong leadership to ensure the success of the plan.

SUMMARY

The Truckee Meadows Regional Plan (TMRPA, 2002) strongly promotes infill development within centers and transit corridors. The Plan states that it promotes infill development to minimize sprawl and to optimize existing infrastructure. This paper was developed in order to

provide a sample of ideas to explore from a survey of the literature on infill and to provide a catalyst for further discussion and research.

Most of the discussion in the research literature on what constitutes infill development is best expressed in this description of infill development by the Municipal Research & Services Center of Washington:

Infill development is the process of developing vacant or under-used parcels within existing urban areas that are already largely developed. Most communities have significant vacant land within city limits, which, for various reasons, has been passed over in the normal course of urbanization. Infill development contributes to a more compact form of development which is less consumptive of land and resources. Many developers are bypassing vacant urban area land for less expensive land beyond our cities' edges. Our current patterns of sprawling, low-density development at the urban fringe are consuming land ... at a much faster rate than population growth (Yukubousky, 1997, p. 2).



The City Center apartments are located on the downtown Reno transit line.



Detached town homes at the Marina in Downtown Sparks, an Infill Project with Single-family, Multi-family, and Commercial Components.

As was suggested by the Northeast Midwest Institute, when communities are planning for successful infill development, they should “build a common vision and create a plan” (Bartsch et al., 2001, pp. 3-4). The Southern Nevada Regional Planning Coalition (SNRPC), with the aid of an EPA grant, created an Infill Development Plan which describes infill as both a regional and a local issue. The plan addresses infill development issues in the Las Vegas Valley, possible solutions to the issues, and recommendations for both regional and jurisdictional infill development.

A survey of the literature on infill development points out three barriers that are difficult to overcome: (1) zoning codes that are not revised for infill development, (2) the difficulty in assembling parcels of land large enough for a mixed use project, and (3) the cost of land in the urban core. Other barriers

that are common in many jurisdictions include deteriorating infrastructure, toxic contamination of industrial/commercial uses, difficulty in obtaining financing for unique, mixed use projects and neighborhood opposition to increasing density.

Many jurisdictions have developed infill plans that include incentive opportunities for development in the urban core. One of the most common incentives includes first developing a plan which educates and includes citizens' input. The plan should identify mapped areas where vacant or underutilized parcels are located and where infrastructure may need to be rehabilitated or capacity added. The development process should be streamlined for infill projects and zoning codes should be revised to apply to increased densities and mixed-use development. Help should be given to potential developers to assist with brownfield financing and cleanup and to guide developers through the development review process. Jurisdictions should participate in developing creative and flexible financing plans for infill development. A successful infill program depends on the buy-in of elected officials, stakeholders, business leaders and citizens.

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Appendix:

Case Studies

EDUCATION OF CITIZENS REGARDING INFILL

The literature that was reviewed for this paper indicates that the incentive of getting neighbors involved in developing a vision and plan for infill areas reduces the resistance to factors such as increased density, increased traffic and competition for parking, mixed use development and perceived increases in crime. Citizens can learn how design regulations can lesson the opportunity for crime in dense areas and provide for a more vibrant urban atmosphere for pedestrians.

Envision Utah, a plan for the **Salt Lake City** region, and sponsored by the non-profit Coalition for Utah's Future, analyzed four growth scenarios, from an auto-dependent scenario to an approximately 90 percent growth scenario focused on infill development. In the process, citizens were educated on the different impacts on land use and traffic that growth management would make. For example, the auto-dependent scenario would add 409 square miles of urbanized land in 50 years, contrasted with only 85 square miles of urbanized land including walkable neighborhoods and transit. The Envision Utah planning process also surveyed citizens by mail, resulting in a consensus to pursue the infill strategy scenario. Envision Utah projects the new urbanized land development to be 125 square miles to accommodate the projected growth for the Salt Lake City region, which traditionally favored low density growth. (Source: Bartsch et al, 2001).

FINANCING INFILL

Cities are looking for creative ways to help with the financing of infill projects. **San Jose, California**, has a construction tax of 4.5 percent throughout the city, however, in the city's Central Incentive Zone, the Expanded Enterprise Zone (including downtown) and three redevelopment areas, an exemption from the tax is offered. The tax exemption is offered for infill housing in the Central Incentive Zone program, and for any type of development in the Expanded Enterprise Zone and redevelopment areas. (Source: Wheeler, 2002).

INFRASTRUCTURE

Redevelopment and infill projects often struggle to finance the infrastructure improvements necessary for successful developments. The city of **Porterville, California**, has formed a partnership with the school district to develop a new elementary school and community center, utilizing abandoned railroad property in a low-income neighborhood. To improve streets, bridges and a major arterial adjacent to the school and community center, the City issued \$20 million in Certificates of Participation to finance the infrastructure upgrades.

Curbs, gutters, sidewalks, street lighting and sewer and water line replacement in low income neighborhoods adjacent to the downtown area will be paid for by Community Development Block Grant funds. Porterville also assisted Foster Farms in locating a chicken processing plant on a vacant industrial building in the center of the city, resulting in a \$10 million improvement to the property including 300 jobs. (Source: CLC, 2001).

REGULATORY POLICIES

Developers normally have large amounts of money tied up in their projects. Total project costs increase the longer the developer must hold the property before the project can be marketed. A project will be more profitable (or more feasible) to the extent that the developer can proceed quickly through the permit approval, project design and construction stages.

Clark County, Washington, has instituted a regulatory reform program which can reduce the delay and associated costs with the permit review process while keeping quality control over development. The reform program consists of a pre-application conference with developers to discuss issues and clarify requirements prior to the official application stage. The pre-application meeting reduces costly delays in development due to misunderstandings. Staff uses a checklist to indicate any deficiencies at the permit counter on the same day of application. A planner is assigned as the contact and coordinator for all departments required to comment on the project. Several reviews, such as land use and environmental are combined with checklists and forms for development, providing a more streamlined approach to the development process. (Source: Yukubousky, 1997).

LAND ASSEMBLY AND COST OF LAND

Generally, infill sites contain small sites which are scattered and hard to find. Geographic information systems (GIS) can identify small parcels, streamline the information exchange process for transferring city-owned parcels and streamline the entitlement and permitting processes.

Information data bases and GIS mapping software are being linked in the **City of Barstow**, California, along with scanned photos and plans. The city is also taking inventory of all vacant city-owned properties, along with their zoning and other information for their Economic Development Department. When the new system is up and running, it will automatically update the parcels when conditions change. This will allow easier marketing, streamline the system and reduce the time for parcels search. (Source: CLC, 2001).

BROWNFIELD INFILL SITES

Few buyers and lenders are unwilling to take risk of development on a brownfield site. Contaminated urban sites are a serious barrier to infill development due to the liability a property

owner faces for cleanup of the site, even though the property owner had nothing to do with the contamination. This had led to the abandonment of old industrial zones in cities. States have passed legislation to aid in the cleanup and redevelopment of polluted sites through financial assistance and clarity in environmental laws.

The **State of Minnesota** certified the cleanup of a brownfield site in St. Anthony Falls, enabling the Brighton Development to successfully secure financing for the development of the site.

In Maryland, Priority Funding Areas decide the funding amounts that existing communities receive where infrastructure is already in place, and one factor of the program encourages the use of abandoned industrial sites over the use of open space. The program holds developers harmless from liability of contaminated sites and in some cases the states will aid in the cleanup. **Maryland's Brownfield Cleanup/Smart Growth Program** encourages brownfield cleanup and the protection of greenfields. State funding is related to development decisions. (Source: CLC, 2001).

WORKING WITH NEIGHBORS

Existing residents have frequently succeeded in blocking or delaying infill development, with the potential for costly delays. Developers will be hesitant to bring an infill project forward facing the challenges of neighborhood resistance. Many communities are developing design guidelines for infill projects with citizen input, which alleviates the fears of existing residents. Design guidelines should be clearly and specifically written so that developers and residents have the same expectations for an infill project.

For example, the City of **Gig Harbor** Design Manual (1996) in the state of **Washington**, "contains a comprehensive set of specific, well-illustrated design guidelines" addressing many zoning districts, including commercial, residential and historic districts. The purpose of each guideline is set forth and additional text outlines what must be done to bring a project into conformance with the standard. The manual also contains definitions of requirements such as "stately" appearance, and "significant" vegetation. The manual addresses architectural and site design compatibility. The design manual outlines development design that will create a cohesive community image. (Source: Yukubousky, 1997).

POLITICAL LEADERSHIP

Strong political leadership is a necessary component of successful infill development. From the initial media statement about a city's intention to develop an infill plan for their urban core, through the successful development of the infill area, elected official support reduces neighborhood opposition and developer anxiety.

As an example of strong political leadership and public-private cooperation, **Boston's Prudential Center Plan** was completed in 1986, despite a protest over the regional center development. The stakeholder participation in the plan included over 22 neighborhood, civic and business groups. Boston's mayor was the driving force for keeping the collaboration

moving forward. Some of the components of the plan include: a 36-story, 850,000 square foot office tower, a 130,000 square foot residential building; an 11-story, 200,000 square foot office building; a 70,000 square foot neighborhood market; a 400,000 square foot, mixed-use building with a large residential component; and 90,000 square feet of retail space. The city also contributed by constructing a 1.2 acre park and offered tax breaks to developers. The city's Redevelopment Authority guided the developers through the approval process. (Source: SNRPC, 2002).