



SMART GROWTH AND ECONOMIC SUCCESS: INVESTING IN INFILL DEVELOPMENT

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EPA Project Leads: Melissa Kramer and Lee Sobel

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Executive Summary

Smart growth development projects are compact and walkable, offer a mix of uses, and create a sense of place. Such projects on infill sites have environmental benefits because they can reduce development pressure on outlying areas, helping to safeguard lands that serve important ecological functions; can reduce the amount that people drive, improving air quality and reducing greenhouse gas emissions; and can lead to the cleanup and reuse of formerly economically viable but now abandoned sites, including those contaminated with hazardous substances.

Developers of all sizes—from independent, small-scale firms to large, publicly traded companies—are building infill projects throughout the country, and are doing so profitably. Developers have sought infill projects as an opportunity to participate in flourishing downtown markets. Opportunities for infill development exist in cities and towns throughout the country—infill is now a significant and growing share of residential construction in many metropolitan regions. Nevertheless, infill development can present unique challenges, including:

- Smaller parcels with fragmented ownership.
- Potential for existing environmental contamination.
- Higher capital costs.
- More limited financing options.
- A longer regulatory approval process.

These barriers, real or perceived, can discourage some developers, particularly those without infill experience. However, these barriers are often surmountable and are beginning to diminish as infill development becomes more prevalent.

Several trends point to a sustained increase in demand for infill development and a market opportunity for developers. Consumer preferences for the amenities that infill locations offer are likely to grow as changing demographics affect the housing market. In the next 20 years, the needs and preferences of aging baby boomers, new households, and one-person households will drive real estate market trends—and infill locations are likely to attract many of these people. As more people choose to live in infill neighborhoods, employers are following, and vice versa. Many corporations are moving to infill locations, in part because they recognize the competitive advantages of being closer to the central city.

These trends in the residential and commercial sectors give developers economic incentives to find solutions to the potential barriers to infill, and local governments are helping as well. Lower infrastructure costs and higher rent and sales prices for infill projects will help make infill projects profitable for developers, supporting neighborhoods that are better for the environment and improve quality of life.

I. Introduction

Smart growth development follows patterns that have defined cities and towns for generations—commercial Main Streets within walking distance of homes; central business districts where offices, services, and stores cluster; and close-in residential neighborhoods on traditional street grids. Smart growth development projects are compact and walkable, offer a mix of uses, and create a sense of place (see Exhibit 1). Such projects can occur almost anywhere, but this paper focuses on smart growth development on infill sites (referred to here simply as “infill development”), which:

- Occurs in already built-up areas with existing transportation and utility infrastructure.
- Often repurposes or replaces existing buildings, parking lots, or other impervious areas.
- Adds homes and/or businesses near the center of cities and towns.

Infill development can reduce development pressure on outlying areas, helping to protect lands that serve important ecological functions. When it occurs near existing transit infrastructure, employment centers, and other destinations, it can also help reduce the amount that people drive, improving air quality and reducing greenhouse gas emissions. The redevelopment of formerly economically viable but now under-used or abandoned sites, and those potentially contaminated with hazardous waste, is especially important. Such projects can improve the environment while providing multiple community benefits.

Developers of all sizes—from independent, small-scale firms to large, publicly traded companies—are building infill projects throughout the country that achieve these environmental benefits, and they are doing so profitably. Developers have sought infill projects as an opportunity to participate in flourishing downtown markets.

For example, Denver has seen downtown development grow considerably in recent years. The number of people living in downtown neighborhoods grew by 86 percent from 2000 to 2012, while the number of households in downtown neighborhoods grew by 110 percent. Between 2010 and 2011 alone, the

Exhibit 1: Smart Growth Principles

In 1996, the Smart Growth Network, made up of organizations representing diverse interests including real estate, environmental, development, affordable housing, government, and others, developed 10 smart growth principles based on experiences of communities around the country:

- Mix land uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost effective.
- Encourage community and stakeholder collaboration in development decisions.

Source: Smart Growth Network. “Why Smart Growth?” www.smartgrowth.org/why.php. Accessed September 28, 2012.

number of private-sector employees downtown grew by 4 percent.¹ The growth in demand for new residential and office development in the urban core has pushed developers to better understand how these new urbanites want to live, work, and play.

Zocalo Community Development, a Denver-based infill residential developer, has built multiple apartment buildings in downtown Denver. Early on, Zocalo learned that renters in its downtown apartments want a sense of authenticity and value connections between each other and their surrounding neighborhood. According to David Zucker, principal and director of development, Zocalo staff are “tinkerers, and are getting better and better at being able to identify the factors that allow residents to feel that connection—not connection to apartment 603, but to the community they live in.”² They have done this by facilitating connections both internally in their apartment communities and externally with the neighborhood. They host events at local bars and restaurants to create a link to the community. By offering features and amenities attractive to their target market, Zocalo is able to earn rents 15 percent above the average market rent per square foot in the downtown area.

Denver is just one of many cities where downtown development is thriving. Infill is a significant and growing share of residential construction in many metropolitan regions. Overall, infill comprises an estimated 21 percent of new home construction among the 209 largest U.S. metropolitan areas, and nearly three out of four large metropolitan regions saw an increased share of infill housing development in 2005-2009 compared to 2000-2004.³ However, even in markets where infill development is less common, developers can find opportunities to profit. This paper is intended to help developers who are considering infill development and want to understand more about the risks and rewards.⁴ First, it examines the real and perceived challenges of infill development and how developers are able to overcome them. It then outlines the demographic trends that are driving increasing demand for infill development. Finally, it summarizes research showing how reduced infrastructure costs and higher property values can allow infill developers to earn a good return on their investment while protecting the environment, strengthening the economy, and improving quality of life in the community.

¹ Downtown Denver Partnership. *State of Downtown Denver*. 2012. <http://www.downtowndenver.com/wp-content/uploads/2013/06/State-of-Downtown-Denver-September-2012.pdf>.

² Personal communication with David Zucker, Principal, Director of Development, Zocalo Community Development on December 12, 2012.

³ EPA. *Residential Construction Trends in America's Metropolitan Regions*. 2012. http://www.epa.gov/smartgrowth/construction_trends.htm.

⁴ EPA has publications on the economic advantages of smart growth for large-scale developers and production builders of master-planned communities. See EPA. *Smart Growth: The Business Opportunity for Developers and Production Builders*. 2008-2009. http://www.epa.gov/smartgrowth/sg_business.htm and EPA. *Market Acceptance of Smart Growth*. 2011. http://www.epa.gov/smartgrowth/market_acceptance.htm.

II. Opportunities and Challenges of Infill Development

Opportunities for infill development exist in cities and towns throughout the country. Nevertheless, infill development can present challenges, including:

- Land assembly difficulty due to smaller parcels with fragmented ownership.
- Potential for existing environmental contamination.
- Higher capital costs.
- More limited financing options.
- A longer regulatory approval process.

These barriers, real or perceived, can discourage some developers, particularly those without infill experience. This section discusses the real and perceived obstacles to infill development and how these barriers are often surmountable and are beginning to diminish as infill development becomes more prevalent.

A. Land Assembly

One of the first steps—and frequently one of the most challenging aspects—of infill development is land assembly.⁵ Developers in infill areas frequently need or want to assemble multiple parcels to create a larger developable site, but ownership is often more fragmented in cities than in undeveloped areas. Land assembly is often essential in infill locations, and the costs can be high compared to undeveloped sites. Real estate is generally more expensive in infill locations than in outlying areas because land is relatively scarce, sites are closer to services and infrastructure, and zoning and the market often support uses that have higher revenue potential.⁶ However, the assembly process itself involves additional costs because:

- Multiple owners require additional time for negotiations and higher transaction costs.
- The owner of a parcel that is critical to the success of a project has enormous advantage and can often command a premium from buyers.⁷
- Properties can have lengthy chains of title that must be established before ownership can be transferred.⁸

Developers can mitigate the challenges of land assembly for infill sites by building on smaller footprints. Even smaller sites can be redeveloped into profitable uses if assembling neighboring parcels proves infeasible. One architect commenting on the trend toward smaller infill development projects said, “It

⁵ Nelson, Arthur, and Robert Lang. “The Next 100 Million.” *Planning*. 73.1 (2007): 4-6..

⁶ McConnell, Virginia, and Keith Wiley. *Infill Development: Perspectives and Evidence from Economics and Planning*. Resources for the Future. 2010. <http://www.rff.org/News/Features/Pages/Infill-Development-Perspectives-and-Evidence-from-Economics-and-Planning.aspx>.

⁷ Brooks, Leah, and Byron Lutz. *Do We Need Eminent Domain? An Empirical Investigation of Urban Land Assembly*. University of Toronto working paper. 2011.

⁸ Urban Land Institute. *Urban Infill Housing: Myth and Fact*. 2001.

almost seems like any infill site is a good site if it's in a good area, no matter how small or oddly shaped."⁹

In addition, many large sites are available for developers willing to address possible environmental contamination (see Section B) or to redevelop commercial or institutional buildings.¹⁰ Many older suburban areas with good transit access are also good candidates for infill development because as the region has grown around them, they are now in a relatively central location that could support more housing and greater economic activity.

Many cities realize the challenges of land assembly in infill areas and are developing innovative programs to address the issue while meeting other community needs like neighborhood revitalization and affordable housing. Some cities have programs to help developers interested in creating affordable housing find infill properties already assembled for development. For example, the Fulton County/City of Atlanta Land Bank Authority helps to acquire, assemble, and prepare properties for development of affordable housing as part of a comprehensive plan for neighborhood revitalization.¹¹ In the Cleveland area, the Cuyahoga Land Bank uses revenue from penalties and interest charged to delinquent property taxpayers to acquire contiguous properties and maintain them until redevelopment on the site can occur.¹²

B. Environmental Contamination

Brownfields, sites with real or perceived environmental contamination, can present another barrier to infill development. Many types of uses, including gas stations, dry cleaners, and industrial facilities, can leave behind environmental contaminants after operations end. Environmental contamination might require mitigation before it would be safe for new occupants. Even the perception or possibility of contamination can discourage some developers from acquiring these properties because of unknown costs and additional time that could be required for cleanup.



Exhibit 2. Small-lot Infill in Washington, D.C. In the 14th Street Historic District a developer purchased a one-story building that was not designated as historic. He replaced it with a three-story, mixed-use building, now housing an art gallery on the first floor. Sandwiched between historic structures, the project had limited space for construction staging and had to fit on a small footprint. Photo source: EPA

⁹ Bady, Susan. "5 Trends in Infill Housing." *Professional Builder*. February 20, 2011. <http://www.housingzone.com/design/5-trends-infill-housing>.

¹⁰ Urban Land Institute 2001, op. cit.

¹¹ Fulton County/City of Atlanta Land Bank Authority. "Land Banks." <http://www.fccalandbank.org/banking.htm>. Accessed July 30, 2013.

¹² Cuyahoga Land Bank. "Strategic Land Assembly." <http://cuyahogalandbank.org/assembly.php>. Accessed July 30, 2013.

However, the risks of contamination are often factored into sale prices, so developers willing to work on brownfields can find opportunities to acquire bargain properties. Studies have shown that potential contamination and associated liability for cleanup lowers property values.¹³ However, the property value discount can be much greater than the costs of remediation. A study in Cedar Falls, Iowa, found that the cumulative discount for all homes potentially affected by a leaking underground storage tank from a former gas station is 24 to 48 times the cost of remediation (depending on whether the tank is classified as having a low or high risk of leaking).¹⁴ Even factoring in cleanup costs, brownfield sites offer developers the chance to earn a profit. According to a survey of developers who had redeveloped contaminated property, 56 percent said that their rate of return for brownfield projects was higher than their average rate of return, while 25 percent indicated that their brownfield projects were exceptionally profitable.¹⁵

The risks involved with brownfields cleanup might cause some potential developers to hesitate. However, insurance products are available to protect developers from liability and limit cleanup costs. Pollution liability insurance covers claims from third parties of property damage or personal injury, property value declines due to the discovery of pollution, business interruption, and legal expenses involved in defending the insured against claims. Cost-cap insurance limits the amount that developers would have to pay for cleanup by covering costs that exceed those in a remediation plan.¹⁶ These types of insurance can provide developers greater certainty about the costs associated with potential contamination when making investment decisions.¹⁷ In addition, federal, state, and local governments provide tools and assistance for brownfields assessment, cleanup, and redevelopment, including technical assistance, low-interest loans, liability protection, tax incentives, and streamlined government oversight of cleanup.¹⁸ Many developers have used such assistance to transform former brownfields into projects that make a profit and transform neighborhood liabilities into assets, benefiting the community and the environment as well.

In Baltimore, developers remediated and redeveloped a 4.6-acre brownfield site that formerly housed a coal yard and more recently was used as a parking lot (Exhibit 3). In its place, they constructed a LEED®-certified mixed-use development with 275 apartments and 14,000 square feet of retail. The project was a success for both the developer and the neighborhood. The apartments were fully leased within 11 months of construction, and two years after the project's 2010 opening, \$182 million in new

¹³ Howland, Marie. "Is Contamination the Barrier to Inner-City Industrial Revitalization?" In *Recycling the City: The Use and Reuse of Urban Land*, by Rosalind Greenstein and Yesim Sungu-Eryilmaz. Lincoln Institute of Land Policy, pp. 89-109. 2004.

¹⁴ Isakson, Hans, and Mark Ecker. "The Effect of Leaking Underground Storage Tanks on the Values of Nearby Homes." University of Northern Iowa. 2010. <http://faculty.cns.uni.edu/~ecker/research.html>.

¹⁵ Wernstedt, Kris, Peter B. Meyer, and Kristen R. Yount. "Insuring Redevelopment at Contaminated Urban Properties." *Public Works Management & Policy* 8.2 (2003): 85-98.

¹⁶ Ibid.

¹⁷ Rice, Emily. *Reuse: Creating Community-Based Brownfields Redevelopment Strategies*. American Planning Association. 2010. <http://www.planning.org/research/brownfields>.

¹⁸ For information about funding sources for brownfields assessment, cleanup, revolving loans, and environmental job training, see: EPA. "Brownfields and Land Revitalization Grants & Funding." http://www.epa.gov/brownfields/grant_info/index.htm.



Exhibit 3. The Fitzgerald in Baltimore. This \$77 million infill project in midtown Baltimore was constructed under a public-private partnership that benefits the developer as well as the University of Baltimore and the city itself. The project was financially successful, catalyzed development in an area that had suffered from disinvestment, and provided much-needed building space for the university.
Photo source: The Bozzuto Group

development had begun in the vicinity in an area that had seen little new construction for decades prior.¹⁹

C. Capital Costs

Infill development can require a higher upfront capital investment that can be a barrier for developers. Potentially higher costs are associated with:

- *Demolition.* Many infill projects require demolition of existing structures before new construction can occur.
- *Design.* Infill development is built to be seen from the sidewalk, at a closer range and slower pace, so buyers and tenants often expect more expensive design, façades, and finishes than are used in projects set back from the road in areas with little pedestrian activity.²⁰
- *Construction.* Infill development, frequently consisting of multistory buildings on smaller lots, is more expensive to construct than the one- or two-story wood-frame construction more typical of development in outlying areas. Buildings over four stories tall require steel or reinforced concrete construction systems, which are significantly more expensive than wood framing.²¹

¹⁹ Bady, Susan. "The Upside of Infill Development." *The Wall*. B&A Architecture. November 11, 2012. <http://baarchitecture.com/wall/?p=23>.

²⁰ Leinberger, Christopher, and Sarah Kavage. *Barriers to Developing Walkable Urbanism and Possible Solutions*. The Brookings Institution. 2007. http://chrisleinberger.com/docs/By_CL/Brookings_Barriers_05302007.pdf.

²¹ Leinberger and Kavage 2007, op. cit.

These higher upfront costs mean that infill projects often have lower internal rates of return²² than other types of development in the first years after construction. However, infill housing that is integrated into the existing urban fabric can command a price premium over development that involves creating a large number of units on contiguous parcels with newly designed roads, parking, and open space.²³ In addition, infill projects typically achieve higher returns over longer investment periods compared to projects in previously undeveloped areas because of higher rent and sale prices.²⁴ Developers can thus recoup their higher upfront investment by holding on to properties for a longer time before selling. In infill neighborhoods, additional development—which is often spurred by even a single successful project—contributes to the vitality of the neighborhood and adds amenities that make the area more appealing to live and work. Given the right conditions, a single catalytic project can lead to a neighborhood revitalization that raises the value of all properties in the area.

Many municipalities are helping infill developers pay for infrastructure costs, recognizing that doing so can help catalyze redevelopment. Costs for necessary infrastructure upgrades, such as an expanded water main to support new residential development, might otherwise fall entirely on the first redevelopment project in an area, creating a disincentive for any developer to act first. For example, in California, with the consent of two-thirds of the district's voters, a municipality can establish a community facilities district in which a special tax on all properties in the district can be used to finance infrastructure improvements. Developers can then keep the cost of infrastructure improvements off their balance sheet so it does not interfere with their ability to finance construction or acquire long-term debt for the project. In 1991, 1992, and 2008, Contra Costa County, California, established three separate community facilities districts to finance infrastructure around the Pleasant Hills Bay Area Rapid Transit Station, helping to launch the area's transformation into the walkable community it is today.²⁵

D. Financing

Financing challenges are tied to the level of risk associated with infill projects. Investors can perceive mixed-use projects to be inherently risky primarily because of their complexity. This complexity means each project is unique, developers must be more skilled, and predicting demand is more challenging.²⁶ In addition, phasing and financing need to match market cycles, but the markets for residential, commercial, and retail do not necessarily move together. Investors frequently finance one use at a time, and mixed-use projects therefore often require multiple financing sources.²⁷

²² The internal rate of return is the interest rate at which the net present value of costs equals the net present value of revenues. Investors require a higher rate of return for projects that carry higher levels of risk.

²³ Ryan, Brent D., and Rachel Weber. "Valuing New Development in Distressed Urban Neighborhoods: Does Design Matter?" *Journal of the American Planning Association* 73.1 (2007): 100-111.

²⁴ Leinberger, Christopher. *Back to the Future: The Need for Patient Equity in Real Estate Development Finance*. The Brookings Institution. 2007. <http://www.brookings.edu/research/reports/2007/01/01cities-leinberger>.

²⁵ Schildt, Chris. *Strategies for Fiscally Sustainable Infill Housing*. University of California, Berkeley, Center for Community Innovation. 2011. <http://communityinnovation.berkeley.edu/reports/Fiscally-Sustainable-Infill.pdf>.

²⁶ Gyourko, Joseph and Witold Rybczynski. "Financing New Urbanism Projects: Obstacles and Solutions." *Housing Policy Debate*. 11.3 (2000): 733-750.

²⁷ Gyourko and Rybczynski 2000, op. cit.

Another challenge of financing infill development is that financial models used by banks can act as a barrier to securing capital investment. Most models assume that higher-income communities can better support new development. Infill development in cities and older suburbs that have experienced neglect and disinvestment can thus be more difficult to finance.²⁸ Such areas are often more likely to have brownfield sites, which can face additional financing challenges. For brownfield sites, lenders can have higher underwriting costs associated with evaluating site conditions,²⁹ require higher rates of return,³⁰ require developers to contribute more equity,³¹ and be reluctant to accept the underlying real estate as collateral.³² However, brownfield sites are also eligible for a host of local, state, and federal assistance programs, which can close the financing gap and make redevelopment a financially viable proposition.

Despite these challenges, many developers have successfully financed infill projects on brownfields and other sites. Although investors might perceive the risk of infill development to be high, many developers with experience working on infill projects believe that no real risk premium exists relative to comparable mixed-use projects in undeveloped areas.³³ As more developers and lenders become involved with infill projects, perceptions are likely to better match reality. To that end, several specialized firms have opened to serve developers that need help with financing for mixed-use developments.³⁴

For new infill developers in particular, smaller projects valued at less than \$10 million can present opportunities to enter the infill market because there is much less competition from developers funded by institutional investors.³⁵ However, even institutional investors are entering the infill market and making it easier for developers to finance projects. For example, in late 2012, one financial services firm created a new division to provide acquisition, development, and construction loans for infill projects valued between \$3 million and \$35 million that are located near employment centers.³⁶ Many real estate investment funds and trusts are also focusing on infill markets for investment of their large pools of capital.³⁷

E. Regulatory Approval Process

Infill development can be challenging in cities with regulations that separate land uses and have requirements for parking and street width that were developed for spread-out suburban areas rather

²⁸ Burchell, Robert and David Listokin. *Linking Vision with Capital: Challenges and Opportunities in Financing Smart Growth*. Research Institute for Housing America. 2001.

<http://www.housingamerica.org/Publications/LinkingVisionWithCapital:ChallengesandOpportunitiesinFinancingSmartGrowth.htm>.

²⁹ Bartsch, Charles. "Financing Brownfield Cleanup and Redevelopment." *Government Finance Review* 18.1 (2002): 26-31.

³⁰ Ibid.

³¹ Simons, Robert A. and Donald T. Iannone. "Brownfields Supply and Demand." *Urban Land*. 56.6 (1997): 36-38.

³² Ibid.

³³ Gyourko and Rybczynski 2000, op. cit.

³⁴ Minadeo, Dominic F. *Price Premiums and Mixed-Use Development*. NAIOP Research Foundation. 2009.

<http://www.naiop.org/en/Research/Our-Research/Reports/Mixed-Use-Price-Premiums.aspx>.

³⁵ Kessler, Kristina. "Small & Smart." *Urban Land*. February 2011. <http://urbanland.uli.org/Articles/2011/Jan/KesslerSmall>.

³⁶ Caulfield, John. "A New Capital Source for Infill Projects Breaks onto the West Coast Scene." *Builder Magazine*. September 20, 2012. <http://www.builderonline.com/lenders/a-new-capital-source-for-infill-projects-breaks-onto-the-west-coast-scene.aspx>.

³⁷ Stoler, Michael. "REITs Pouring Investment Into Dense Urban Corners." *The New York Sun*. May 31, 2007.

<http://www.nysun.com/real-estate/reits-pouring-investment-into-dense-urban-corners/55560/>.

than city and town neighborhoods. Developers must get approval to deviate from zoning codes, a process that can be lengthy and add uncertainty and cost to the development process.

However, while regulatory constraints once were a major impediment, many cities are changing their policies to better attract and accommodate infill development. For example, many cities have designated particular areas for higher-density, mixed-use development,³⁸ and some have adopted form-based codes,³⁹ which allow mixed-use development, in place of conventional zoning, which mandates the separation of land uses. In some cities, transportation policy encourages “complete streets,” street design that accommodates all users, helping to create walkable, bikeable communities where infill development can be most successful.⁴⁰ Even developers working in areas that have not adapted their zoning and approval processes to support mixed-use and walkable infill development can usually find examples of successful projects in these places that can help generate community support that will ultimately ease the regulatory process.

Denver is one city that has gradually modified its regulatory environment to encourage infill. Many of the challenges facing smart growth development across the country do not exist anymore in Denver—the city rewrote its zoning codes to enable mixed-use neighborhoods, local developers have the technical and managerial skills to execute complex projects, local banks have a better understanding of the product mix and potential returns, and retailers have adapted their formats to better fit the form-based code requirements.⁴¹ Exhibit 4 describes one of the first projects spurred by these kinds of changes.

Other cities have undergone similar transformations. In some cases, one new mixed-use project can set precedents that permanently alter transportation agency

Exhibit 4. Regulatory Structure Case Study

Lowry, one of Denver’s first completed mixed-use, walkable planned communities, opened in 1998. The 1,866-acre site was decommissioned as an Air Force base in 1994 and was redeveloped to include over 4,500 homes, 1.8 million square feet of office space, 130,000 square feet of retail space, and over 800 acres of parks and open space. Throughout the 1990s, as the project was being planned and developed, the Lowry Redevelopment Authority encountered multiple regulatory challenges: “The underlying zoning for the base property was open space, so most of the property had to be rezoned and replatted. This resulted in complicated discussions with Denver’s public works, fire, and other departments over street and alley widths and other infrastructure requirements.” Hundreds of public meetings were held. Considerable public outreach was needed because the lack of regulatory clarity for the developers created uncertainty among residents about how the site could and would be developed. Lowry paved the way for future mixed-use projects in Denver. At least 10 large, mixed-use communities have been built in the Denver area since Lowry, all of which benefitted from the regulatory reforms spurred by the projects that proceeded.

Source: Stern, Julie. “Lowry.” *ULI Development Case Studies*. Urban Land Institute. 2006.

³⁸ Minadeo 2009, op. cit.

³⁹ Form-based codes use “physical form (rather than separation of uses) as the organizing principle for the code.” They “address the relationship between building façades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks.” Source: Form-Based Codes Institute. “What Are Form-Based Codes?” <http://www.formbasedcodes.org/what-are-form-based-codes>. Accessed October 2, 2012.

⁴⁰ National Complete Streets Coalition. “Policy Atlas.” <http://www.smartgrowthamerica.org/complete-streets/changing-policy/complete-streets-atlas>. Accessed August 1, 2013.

⁴¹ Stern, Julie. “Lowry.” *ULI Development Case Studies*. Urban Land Institute. 2006.

requirements, zoning policy, or other regulatory barriers that had stood in the way of infill development. In Los Angeles, the city enacted a Small Lot Subdivision Ordinance, which allows the construction of multiple single-family homes on just one lot zoned for multifamily use. Local developers have used the ordinance to build innovative and distinctive new communities that meet the needs and the budgets of first-time homebuyers. Financing is generally easier for both developers and buyers because each unit comes with a plot of land.⁴² The Maltman Bungalows, originally built in the 1920s, are one of the best examples of detached bungalow courts from that era remaining in Los Angeles (Exhibit 5). If not for the ordinance, the buildings probably would have been torn down. The developer instead transformed the 17 rental units into single-family homes for purchase, creating the city's first small-lot subdivision project to come to market.⁴³ Small-lot projects in Los Angeles have been selling well, and developers expect to break ground on 250 additional units by the end of 2014.⁴⁴



Exhibit 5. The Maltman Bungalows in Los Angeles. The redevelopers of the 1920s-era buildings recognized their historic value and the opportunity to fill a need for small-scale, detached, single-family homes in the city. Photo source: Civic Enterprise Development

In 2010, San Antonio, Texas, adopted an Inner-City Reinvestment/Infill Policy that promotes growth and development in targeted infill areas. Among the incentives provided to developers is the establishment of a single point of contact in the city government for each new development project who can help facilitate the permitting process, property tax abatements, and city fee waivers.⁴⁵ As of 2013, the city had provided almost \$35 million in incentives, and almost 2,500 housing units had been created through the program.

Communities are working to remove barriers to infill development and making it easier for more developers to enter the market. Communities are driven to make these changes by many factors, including environmental sustainability, fiscal prudence, and changing demographics and market preferences. These trends are also driving developers to pursue more infill opportunities to better meet demand, as discussed in Section III.

⁴² Khouri, Andrew. "In Urban L.A., Developers are Building Trendy Homes on Tiny Lots." *Los Angeles Times*. July 13, 2013. <http://www.latimes.com/business/realestate/la-fi-small-lot-homes-20130714,0,563473.story>.

⁴³ Hawthorne, Christopher. "Fledgling L.A. Ordinance Revives an Old Idea: The Small House in the City." *Los Angeles Times*. June 5, 2008. <http://www.latimes.com/news/local/la-hm-small5-2008jun05,0,5403750.story>.

⁴⁴ Khouri 2013, op. cit.

⁴⁵ City of San Antonio. *Inner-City Reinvestment/Infill Policy*. 2010. <http://www.sanantonio.gov/planning/commReinvestment/ICRIP.aspx>.

III. Increasing Demand for Infill Development

Demographic, social, and economic trends shape the way people live and, by extension, their demand for real estate. Several trends suggest a sustained increase in demand for infill development and an opportunity for developers in many markets. This section reviews these long-term shifts and their potential impacts on residential and office development.

A. Residential Development

Household preferences are changing. In 2004, 13 percent of respondents to a national survey indicated that they would like to live in a city.⁴⁶ When the same survey was repeated in 2011, that figure had increased to 19 percent.⁴⁷ A different 2011 survey of people who recently shopped for or bought a new home found that almost half wanted to live closer to work and a downtown area and would accept a smaller yard in exchange for parks and other public amenities, while two-thirds wanted a community with sidewalks that led to public spaces like parks and cafes.⁴⁸ Consumer preferences for the amenities that infill locations offer are likely to grow as changing demographics affect the housing market. In the next 20 years, the needs and preferences of aging baby boomers, new households, and one-person households will drive real estate market trends—and infill locations are likely to attract many of these people.⁴⁹

Baby Boomers' Needs Are Changing

The first wave of baby boomers reached age 65 in 2011.⁵⁰ This generation makes up more than one-quarter of the U.S. population and will continue to shape both society and real estate demand in the coming decades. Baby boomers are the first suburban generation, and many desire to age in place in the suburban communities where they currently live.⁵¹ However, many of these communities were built for young families and no longer meet the needs of older people whose children are grown and who cannot or choose not to drive or maintain a large home with a yard.

Market demand is expected to grow for both rental and for-purchase homes that better match the needs of empty-nesters and retirees. The president of the American Seniors Housing Association said of people between the ages of 55 and 75, “They want to stay connected to the community. They want to volunteer, and they definitely find urban settings to be appealing.”⁵² An analysis of 50 large cities

⁴⁶ Belden Russonello & Stewart. “2004 National Community Preference Survey.” Smart Growth America and National Association of Realtors. October 2004. <http://www.smartgrowthamerica.org/documents/NAR-SGASurvey.pdf>.

⁴⁶ Belden Russonello & Stewart. “The 2011 Community Preference Survey: What Americans are Looking for When Deciding Where to Live.” National Association of Realtors. March 2011. <http://www.realtor.org/reports/2011-community-preference-survey>.

⁴⁸ Warrick, Brooke. “Builder Home Buyer Study 2011.” *Builder Magazine*. 2011.

http://www.builderonline.com/Images/Builder2011HomeBuyerStudy_tcm10-882121.pdf.

⁴⁹ Doherty, Patrick C. and Christopher B. Leinberger. “The Next Real Estate Boom.” *Washington Monthly*. November/December 2010. <http://www.washingtonmonthly.com/features/2010/1011.doherty-leinberger.html>.

⁵⁰ The U.S. Census Bureau classifies the 76 million people born in the United States between 1946 and 1964 as the baby boom generation.

⁵¹ Berube, Alan et al. *State of Metropolitan America: On the Front Lines of Demographic Transformation*. The Brookings Institution Metropolitan Policy Program. 2010. <http://www.brookings.edu/research/reports/2010/05/09-metro-america>.

⁵² Leiserowitz, Nila R. and Michael Hanley. “The City is the New Senior Center.” *Fast Company*. July 10, 2013. <http://www.fastcoexist.com/1682539/the-city-is-the-new-senior-center>.

showed that between 2000 and 2010, the baby boomer population in areas 40 to 80 miles from these cities declined by more than 1 million, while it increased by a similar number in areas within 5 miles of a city center.^{53,54} New infill projects for seniors are being built across the country for all segments of the market—from Los Angeles apartments for low-income seniors seeking to remain in their neighborhood as rents rise to luxury high-rises in Chicago for seniors who want to be close to the city’s cultural assets.⁵⁵

Millennials Are Forming New Households

With the turn of the century, the first millennials entered their twenties (Exhibit 6), and many sought their own home for the first time. As of 2012, this generation comprises the largest segment of the rental housing market.⁵⁶ With over 80 million people born between 1978 and 1995, this age group is larger than the baby boom generation. It will continue to grow with new immigrants because most arrive as young adults, and it will eventually become the largest buying and renting cohort.⁵⁷

Consumer research indicates that nearly two-thirds of millennials want to live in a walkable

community.⁵⁸ Data confirm that younger people are biking, walking, and taking public transit more often than in past years, even those who are relatively well off financially.⁵⁹ At the same time, younger people are driving less. The average annual number of vehicle miles traveled has declined across all age groups from 2001 to 2009, and the most pronounced



⁵³ Keates, Nancy. “Hip, Urban, Middle-Aged.” August 13, 2013. *The Wall Street Journal*.

<http://online.wsj.com/article/SB10001424127887324136204578644080452044960.html#printMode>.

⁵⁴ Bahrapour, Tara. “With the Kids Gone, Aging Baby Boomers Opt for City Life.” August 5, 2013.

http://www.washingtonpost.com/local/the-kids-gone-aging-baby-boomers-opt-for-city-life/2013/08/05/1a21c1b2-fba7-11e2-a369-d1954abc7e3_story.html.

⁵⁵ Leiserowitz 2013, op. cit.

⁵⁶ According to American Community Survey 2012 data, 36% of renters in the United States are between the ages of 15 to 34 years old, which closely correlates to the Millennial generation. No other market segment represents as large of a share of the rental market. Renters ages 35 to 44 represent 21% of total renters, renters ages 45 to 64 represent 30% of total renters, and renters ages 65 to 84 represent 10% of total renters; the remainder of the renters are over 85 years old.

⁵⁷ Lachman, Leanne and Deborah L. Brett. *Generation Y: America’s New Housing Wave*. Urban Land Institute. 2011.

http://www.prea.org/research/20110510-GenY-Report_Final.pdf.

⁵⁸ Lachman and Brett 2011, op. cit.

⁵⁹ Davis, Benjamin, Tony Dutzik, and Phineas Baxandall. *Transportation and the New Generation: Why Young People are Driving Less and What it Means for Transportation Policy*. Frontier Group and U.S. PIRG Education Fund. 2012.

<http://www.uspirg.org/reports/usp/transportation-and-new-generation>.

decline (23 percent) was among 16- to 34-year-olds.⁶⁰ These millennial preferences and habits will help drive demand in the coming decades for infill development, especially if it is transit oriented.

The Number of Single-Person Households Grows

Single-person households are the nation's second most common household type, accounting for 27 percent of all households in 2010, up from 8 percent in 1940,⁶¹ and they account for about 35 percent of consumer spending in the United States.⁶² In cities such as Washington, D.C., and Atlanta, the percentage of single-person households is as high as 44 percent.⁶³ People aged 65 and older are the largest share of single-person households (almost 45 percent), but more than 15 percent of all age groups live alone.⁶⁴

Single people tend to prefer new homes with modern kitchens and baths when they buy (61 percent versus 51 percent of couples), and are more likely to consider a townhome (29 percent versus 12 percent of couples with children).⁶⁵ Many people living alone are attracted to places with a sense of community among neighbors, that are close to city centers, and that allow walking to work, restaurants, and other destinations.⁶⁶ New infill construction can offer single people the location and amenities they seek.

B. Office Development

As more people choose to live in infill neighborhoods, employers are following, and vice versa. Demand for infill locations among employers seeking office space is expected to increase as cities provide more transportation options and continue adding amenities to downtown while improving schools and housing options.⁶⁷

The move of Class A⁶⁸ tenants from suburban office parks to central neighborhoods is playing out across the country in all industries and is driving up the values of downtown office markets nationally. A 2012 study of Class A office markets in central business districts of 26 cities found that demand in the central business district is growing at a faster rate than the overall Class A market.⁶⁹ In Chicago, office vacancy

⁶⁰ Ibid.

⁶¹ Lofquist, Daphne, Terry Lugaila, Martin O'Connell, and Sarah Feliz. "Households and Families: 2010." *2010 Census Briefs*. U.S. Census Bureau. 2012. <http://www.census.gov/prod/cen2010/briefs/c2010br-14.pdf>.

⁶² Allyn, Bobby. "More Singles Living Alone and Loving it, Despite the Economy." *USA Today*. May 2, 2012.

<http://usatoday30.usatoday.com/news/nation/story/2012-05-02/living-alone/54585114/1>.

⁶³ Wile, Rob. "This Southern City has the Most Single-Person Households in America." *Business Insider*. April 26, 2012.

http://articles.businessinsider.com/2012-04-26/markets/31407686_1_new-era-cities-households.

⁶⁴ U.S. Census Bureau. "Percentage Single-Person Households by Age of Householder: 2010." *Current Population Survey, Annual Social and Economic Supplements*. 2010. http://www.census.gov/newsroom/pdf/cah_slides_p7.pdf.

⁶⁵ Thompson, Boyce. "Survey Illuminates Preference of Single Buyers of New Homes." *Builder Magazine*. November 22, 2010.

<http://www.builderonline.com/demographics/survey-illuminates-single-buyer-preferences.aspx>.

⁶⁶ Ibid.

⁶⁷ Livingston, George and Christie Alexander. "Trends Affecting Business Parks Today." *Site Selection*. November 2010.

<http://www.siteselection.com/issues/2010/nov/SAS-Top-Locations.cfm>.

⁶⁸ The Building Owners and Managers Association (BOMA) International defines Class A office space as the "most prestigious buildings competing for premier office users with rents above average for the area. Buildings have high quality standard finishes, state of the art systems, exceptional accessibility and a definite market presence." Source: Boma International. "Building Class Definitions." <http://www.boma.org/research/Pages/building-class-definitions.aspx>. Accessed August 21, 2013.

⁶⁹ Jones Lang LaSalle. *North America Skyline Review*. 2012. <http://www.joneslanglasalle.eu/EMEA/EN-GB/Pages/ResearchDetails.aspx?ItemID=7960>.

rates in July 2012 were 15 percent downtown compared to 24 percent in the suburbs.⁷⁰ Tenant demand for infill locations drove investors and developers to core infill markets as the economy started improving after the low point of 2007-2008, and infill remains a top choice for investors, even as markets outside of downtown areas start to improve as well.⁷¹

Many corporations are moving to infill locations in part because they recognize the competitive advantages of being closer to the central city where people and businesses are most concentrated.⁷² Examples of companies choosing to move from suburban office parks to more walkable downtown sites are numerous. Sears Holding Corporation moved its headquarters 20 years ago from the downtown Chicago tower bearing its name to a suburb 30 miles northwest of the city. In 2008, the company moved its e-commerce division back to downtown and now has over 500 employees inside Chicago's Loop.⁷³ Accenture PLC moved its headquarters from Reston Town Center in Virginia to a transit-accessible office in Arlington, Virginia, much closer to downtown Washington, D.C.⁷⁴ Technology companies of all sizes are moving into cities. San Francisco has become a hub for small, young internet companies, including Trulia, Twitter, Yelp, Zynga, Craigslist, Airbnb, Dropbox, and more.⁷⁵ When Google opened its New York office in 2006, it did so in Manhattan's Chelsea neighborhood. Amazon.com, Inc., purchased its 11-building South Lake Union headquarters complex in downtown Seattle in 2012.⁷⁶

Office space developed on infill sites is typically smaller than suburban office space due to site constraints and smaller land parcels. These smaller office spaces can be better suited to contemporary office needs, as companies expand hoteling⁷⁷ and telecommuting and switch to an open office layout, allowing companies to lease fewer square feet per employee. Companies that are leading the trend of reduced space per employee include LivingSocial, which has minimized overhead costs by limiting space per employee to as little as 80 to 100 square feet.⁷⁸ Panasonic's U.S. headquarters is reducing its facility size by 50 percent without losing any employees, and the U.S. General Services Administration is reducing the square footage per employee for federal buildings.⁷⁹

⁷⁰ Ori, Ryan. "Vacancy Dips in Suburban Offices." *ChicagoRealEstateDaily.com* July 9, 2012.

<http://www.chicagorealestatedaily.com/article/20120709/CRED02/120709877/vacancy-dips-in-suburban-offices>.

⁷¹ Wolff Sorter, Amy. "Is Infill Tapped Out?" *Real Estate Forum*. May 2013. <http://www.reforum-digital.com/reforum/201305#pg70>.

⁷² For a discussion of the economic advantages for business of choosing to locate in central business districts, see EPA. *Smart Growth and Economic Success: The Business Case*. 2013. http://www.epa.gov/dced/economic_success.htm.

⁷³ Ori, Ryan. "Sears Boosts Office Space on State Street." *Chicago Real Estate Daily*. Crain's Chicago Business. June 27, 2012. <http://www.chicagorealestatedaily.com/article/20120627/CRED03/120629823/sears-boosts-office-space-on-state-street>.

⁷⁴ "Accenture Signs Ballston Lease with JBG." *Washington Business Journal*. September 13, 2011. <http://www.bizjournals.com/washington/news/2011/09/13/accenture-signs-ballston-lease-with-jbg.html>.

⁷⁵ "Something in the Air: Why Birds of a Tech Feather Flock Together." *The Economist*. October 27, 2012. <http://www.economist.com/news/special-report/21565001-why-birds-tech-feather-flock-together-something-air?src=rss|spr>.

⁷⁶ Pryne, Eric and Amy Martinez. "Amazon Gobbles up Campus for \$1 Billion." *The Seattle Times*. October 5, 2012. http://seattletimes.com/html/business/technology/2019355557_amazonvulcan06.html.

⁷⁷ Hoteling refers to employers providing temporary office space to employees as needed rather than having a dedicated spot for each individual.

⁷⁸ Yoder, Steve. "Office Space: The Incredible Shrinking Workplace." *The Fiscal Times*. April 11, 2012. <http://www.thefiscaltimes.com/Articles/2012/04/11/Office-Space-The-Incredible-Shrinking-Workplace.aspx#page1>.

⁷⁹ Medici, Andy. "Individual Work Spaces Shrink 20% or More." *Federal Times*. October 2, 2011. <http://www.federaltimes.com/article/20111002/FACILITIES02/110020307/Individual-work-spaces-shrink-20-more>.

IV. Economic Incentives Driving Infill Development

The trends described in Section III, including demographic shifts and growing preference for walkable locations, give developers economic incentives to find solutions to the potential barriers to infill mentioned in Section II. This section discusses how the benefits of reduced infrastructure costs and better economic returns associated with infill development are motivating developers to overcome the barriers that have stymied infill projects in the past.

A. Reduced Infrastructure Costs

Development often requires access to public sewerage and water systems, as well as other utilities, streets and other transportation facilities, schools, and parks. Developers often must pay for the infrastructure that will serve their development projects, either directly or in the form of impact fees to the local government that will provide services.⁸⁰ Since infill locations already have much of the needed infrastructure, unless extraordinary capital improvements are required, infrastructure costs can be substantially lower for infill development relative to a similar project in an undeveloped area. One analysis of potential cost savings from smart growth development estimated that developers and new building occupants could save close to \$200 billion over 25 years (2000-2025) due to the need for less infrastructure if the projected 25 million new housing units built during this time followed smart growth principles.⁸¹

Many cities reflect these cost differences in the impact fees they charge new development. The city of Sacramento, California, analyzed impact fees for identical development projects in infill and undeveloped areas. Impact fees for residential development on undeveloped sites were twice as high as for infill, and for commercial development, impact fees on undeveloped sites were 10 times those for infill.⁸² Since 2002, the Sacramento Regional County Sanitation District in California has charged lower conveyance fees for projects in areas that are at least 70 percent built-out.⁸³ Atlanta has reduced road impact fees by 50 percent for projects located within half a mile of a transit station, while Loveland, Colorado, reduced these fees by 25 percent for projects meeting mixed-use criteria.⁸⁴

Another source of potential cost savings for infill developments located near transit is the reduced need for parking because residents and employees can get around without a car. One study found that the number of car trips taken by residents of transit-oriented development projects was almost half that predicted by the Institute of Traffic Engineers manual, leading to creation of unneeded parking spaces in

⁸⁰ As of January 21, 2012, the following 28 states have adopted legislation that allows local governments to assess impact fees: Arizona, Arkansas, California, Colorado, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Maine, Maryland, Montana, Nevada, New Hampshire, New Jersey, New Mexico, Oregon, Pennsylvania, Rhode Island, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

⁸¹ Burchell and Listokin 2001, op. cit.

⁸² Parrington, Desmond. "Impact Fees and Smart Growth in Sacramento." 2007 Presentation at National Impact Fee Roundtable. October 11, 2007.

http://growthandinfrastructure.org/proceedings/2007_proceedings/parrington_smartgrowth.pdf.

⁸³ Mullen, Clancy. "Impact Fees and Growth Management." Presented at the National Conference of the American Planning Association in Chicago, IL, April 14, 2002. http://www.impactfees.com/publications%20pdf/growth_management.pdf.

⁸⁴ Ibid.



Exhibit 7. La Valentina in Sacramento, California. This infill development along a light-rail line transformed a contaminated lot that had sat vacant for 20 years into a mixed-use, affordable housing project. The developer's long entitlement process for this project prompted the city to initiate an update of its zoning code in 2013. Photo source: Bruce Damonte

these projects. In a case study of a mid-rise project, a 50 percent reduction in parking would reduce capital costs for parking by 25 percent and allow 20 percent more residential units on the site.⁸⁵

Many developers can thus recoup some of the additional capital costs required for infill development due to lower infrastructure costs. Also contributing to developers' ability to earn a profit from infill development in spite of potentially higher capital costs is the ability to charge higher rent or sale prices and to retain value better during economic downturns, as discussed in the next section.

B. Better Economic Returns

In the economic downturn that began in 2007, infill development retained its value better than development in outlying areas in many regions. An analysis of home price values for over 30,000 zip codes across 269 metropolitan regions found that for communities within 75 miles of a central business district, the greater the distance from that central business district, the greater the decline in home values during the housing market collapse and the less home values had recovered as of summer 2011.⁸⁶ An analysis of home prices in the Washington, D.C., region showed similar results.⁸⁷ Likewise, in California, those zip codes where home prices declined the least between 2007 and 2010 were on average 74 percent closer to a major city than those that fared the worst.⁸⁸

An analysis of home price changes between May 2012 and May 2013 found that urban neighborhoods outperformed suburban neighborhoods in 16 out of 20 metropolitan areas. Overall, the price per square foot in neighborhoods dominated by townhouses and multi-unit buildings increased 11.3 percent versus 10.2 percent in neighborhoods dominated by single-family detached houses. The largest differences

⁸⁵ Arrington, G. B., and Robert Cervero. "TCRP Report 128: Effects of TOD on Housing, Parking, and Travel." *Transportation Research Board of the National Academies*. 2008. <http://trid.trb.org/view.aspx?id=870956>.

⁸⁶ Sexton, Steven E., JunJie Wu, and David Zilberman. "How High Gas Prices Triggered the Housing Crisis: Theory and Empirical Evidence." *The Selected Works of Steven E. Sexton*. 2012. <http://works.bepress.com/sexton/29>.

⁸⁷ Benfield, Kaid. "New DC Data Confirm Real Estate Recovery Strongest in Central & Transit-Served Locations." *Switchboard: National Resources Defense Council Staff Blog*. March 26, 2013. http://switchboard.nrdc.org/blogs/kbenfield/new_dc_data_confirm_real_estat.html.

⁸⁸ Sexton, Wu, and Zilberman 2012, op. cit.

were found in Detroit (28.8 percent versus 22 percent), Phoenix (27.2 percent versus 22.1 percent), and Miami (18.1 percent versus 13.1 percent).⁸⁹

Office values are showing the same trends. As recovery from the 2007 economic downturn continues, vacancy rates are starting to fall in cities while staying flat in suburbs. Office values in central business districts have risen about 65 percent from their 2009 low, whereas suburban office values have stayed relatively flat after falling more than 42 percent from their peak.^{90,91} Office space in mixed-use, infill developments can command rent premiums in a variety of markets. For example, in Nashville, Tennessee, office space in mixed-use developments earns 5 to 10 percent more per square foot than in single-use developments.⁹²

Infill sites are usually more walkable than other areas because many older parts of cities were built when most people moved around by foot, and many destinations are within easy reach. Research has shown that higher levels of walkability are correlated with better real estate performance for both commercial and residential properties. One scientifically validated measure of a location's walkability is Walk Score®, which measures the number of amenities within walking distance of an address, with scores ranging from 0 (car dependent) to 100 (most walkable).^{93,94} An analysis of more than 4,200 properties across the United States found that for office, retail, and apartment properties, higher Walk Scores are associated with higher property values.⁹⁵ An office or retail property with a Walk Score of 80 has a market value 54 percent more per square foot than a comparable property with a Walk Score of 20, while an apartment property is worth 6 percent more. A coarse analysis covering 259 cities that considered city-level Walk Scores and regional information on median household income, unemployment, and cost of living found that a 10-point increase in Walk Score is associated with a 5 percent increase in housing prices.⁹⁶

Research within particular regions has replicated these results. For example, a study of six communities in the Rocky Mountain West that represent the diversity of communities in the region found that before the economic downturn that began in 2007, home buyers paid 18.5 percent more per square foot to live in a compact, walkable community. Between 2007 and 2011, as the housing market declined and then began to recover, compact, walkable communities retained a price premium of 12.5 percent even as

⁸⁹ Kolko, Jed. "Home Prices Rising Faster in Cities than in the Suburbs – Most of All in Gayborhoods." *trulia trends*. June 25, 2013. <http://trends.truliablog.com/2013/06/home-prices-rising-faster-in-cities/>. The 20 metropolitan areas studied are those for which there is an S&P/Case-Schiller Home Price Index that tracks changes in the value of residential real estate.

⁹⁰ Brown, Eliot. "Pain Prolonged in Suburban Office Market." *Wall Street Journal*. July 13, 2011.

⁹¹ Philipp, Tad, Kevin Fagan, and Nick Levidy. *Boston, New York Top Major Metros Over Last 12 Months*. Moody's Investors Service. 2012.

⁹² Minadeo 2009, op. cit.

⁹³ Duncan, Dustin T., Jared Aldstadt, John Whalen, Steven J. Melly, and Steven L. Gortmaker. "Validation of Walk Score® for Estimating Neighborhood Walkability: An analysis of Four U.S. Metropolitan areas." *International Journal of Environmental Research and Public Health* 8.11 (2011): 4160-4179.

⁹⁴ Carr, Lucas J., Shira I. Dunsiger, and Bess H. Marcus. "Validation of Walk Score for Estimating Access to Walkable Amenities." *British Journal of Sports Medicine* 45.14 (2011): 1144-1148.

⁹⁵ Pivo, Gary and Jeffrey D. Fischer. "The Walkability Premium in Commercial Real Estate Investments." *Real Estate Economics*. 99.2 (2010): 195-219.

⁹⁶ Washington, Emily. "Role of Walkability in Driving Home Values." *Leadership and Management in Engineering* 13.3 (2013): 123-130.

housing prices declined overall.⁹⁷ A study of 94,000 home sales across the United States found that in 13 of the 15 markets examined, increased walkability was associated with higher home values. On average, every one-point increase in Walk Score was associated with a \$700 to \$3,000 higher sales price.⁹⁸ Similarly, a study of residential land values in Jefferson County, Alabama, found that land values and sales prices increase with walkability and declining car dependence, and the price premium holds over time.⁹⁹

Many infill sites also have good access to transit, which also often increases land values. A study of land values in Santa Clara County, California, found that retail and office properties within a quarter-mile of a light-rail station were about 23 percent higher than comparable properties farther away. For retail and office properties in commercial business districts, the price premium for being within a quarter-mile of a station was even greater—more than 120 percent.¹⁰⁰ Residential properties showed similar results.¹⁰¹ For land zoned for multi-unit buildings, the value of properties within a quarter-mile of a light-rail station was 45 percent higher than the mean property value in the county and 28 percent higher than the value of all properties within 4 miles of a station. Proximity to a commuter rail station created price premiums of around 20 percent for all types of residential properties. Properties with a balance of jobs and employed residents and a mix of uses also showed price premiums over properties in single-use neighborhoods.

A similar study in the San Diego region found that overall, both residential and commercial properties had higher values near rail transit stations.¹⁰² For example, the greatest price premiums of 91 percent were found for commercial properties near downtown stations. However, for certain property types in certain locations, properties near transit were discounted as much as 10 percent. Condominiums showed price premiums when near transit in all locations, while single-family housing varied, and commercial property showed premiums in major retail areas but discounts outside of these locations. The development context and development type is thus important to consider, but available research suggests that the hallmark features of many infill sites—walkable, mixed-use neighborhoods close to transit stations—are ripe for developments that can benefit from and will ultimately enhance these attributes.

⁹⁷ Sonoran Institute. *Reset: Assessing Future Housing Markets in the Rocky Mountain West*. 2013. http://www.sonoraninstitute.org/component/docman/doc_details/1451-reset-assessing-future-housing-markets-in-the-rocky-mountain-west-3132013.html?Itemid=3.

⁹⁸ Cortright, Joe. *Walking the Walk: How Walkability Raises Home Values in U.S. Cities*. CEOs for Cities. 2009. <http://www.ceosforcities.org/research/walking-the-walk/>.

⁹⁹ Rauterkus, Stephanie Yates, and Norman G. Miller. "Residential land values and walkability." *The Journal of Sustainable Real Estate* 3.1 (2011): 23-43.

¹⁰⁰ Cervero, Robert, and Michael Duncan. "Transit's Value-Added Effects: Light and Commuter Rail Services and Commercial Land Values." *Transportation Research Record*. 1805.1 (2002): 8-15.

¹⁰¹ Cervero, Robert, and Michael Duncan. "Benefits of Proximity to Rail on Housing Markets: Experiences in Santa Clara County." *Journal of Public Transportation* 5.1 (2002): 1-18.

¹⁰² Cervero, Robert, and Michael Duncan. *Land Value Impacts of Rail Transit Services in San Diego County*. Report prepared for National Association of Realtors Urban Land Institute. 2002. <http://www.reconnectingamerica.org/assets/Uploads/bestpractice039.pdf>.

V. Conclusion

The real and perceived challenges of infill development are diminishing. Although land assembly can involve additional costs relative to development on undeveloped land, developers are building on smaller lots or acquiring large brownfield properties that they can profitably clean up and redevelop, and cities are developing innovative programs to address the issue. The risks involved in brownfields redevelopment are often factored into sales prices and can be mitigated with insurance products, allowing developers to reliably predict their costs. Higher upfront capital costs can be offset by higher sales and rental prices, and developers willing to hold properties for longer periods can take advantage of rising property values spurred by successful redevelopment projects. As infill becomes more prevalent, more lenders are developing products and services to help overcome financing challenges associated with mixed-use projects. Finally, cities eager to reap the environmental, economic, and social benefits of infill development are changing regulations and policies to encourage and facilitate it. Overall, developers are learning how to create profitable projects that meet a growing demand for housing and offices in walkable neighborhoods near transit, cultural attractions, restaurants, and other amenities.

Demographic changes on the horizon—more seniors looking for homes that better meet their needs, more millennials setting up new households, and more singles in all age categories—are likely to drive demand for infill development. The coming years and decades will create opportunities for developers able to meet this demand. Lower infrastructure costs and higher rent and sales prices for infill projects will help make infill projects profitable for developers, supporting neighborhoods that are better for the environment and improve quality of life.

