ABSTRACT

The challenge to meet affordable housing needs is a problem for many units of local government. This paper focuses on an approach to increase affordable housing in a Transit-Oriented Development (TOD) and mixed-use development that will create social equity and economic equality as well as effort to enhance community vitality. This paper intends to clarify the importance of increasing affordable housing through inclusive communities in a high-density suburban community of Loudoun County, Virginia. The paper uses an approach of an in-depth literature review, research studies, Loudoun County Government records, and case studies of TOD relevant to this challenge. The findings and insights of this paper intend to demonstrate that social equity and inclusion are indispensable key elements for sustainable development in a high-density community that will generate social progress, economic equality, and a healthy living environment. Furthermore, this thesis argues the importance to include an inclusive community in TOD and mixed-use development to address the housing needs for extremely low-income individuals searching for fair treatment and opportunity.
KEYWORDS
Sustainability, Urbanism, Social Equity, TOD, Inclusive Communities, Affordable Housing, Metro Ashburn, Loudoun County VA, Silver Line, National Capital Region

RESEARCH QUESTIONS
How are land use densities in suburban locations impacted by public transit investments?

Why is social inclusion an essential strategy for housing development in suburban locations of Loudoun County, Virginia?

How can transit-oriented development be enhanced through an inclusive community approach?

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Introduction

“The first step in adequate planning is to make a fresh canvas of human ideals and human purposes.” -- Lewis Mumford, an American Historian

The constantly growing population in the United States has produced new demands for more accessible living environments. People are seeking places that accommodate all their needs in one location. Therefore, planners must provide an effective way to increase neighborhood vitality and innovative solutions for new housing developments. This thesis focuses on an approach to increase affordable housing\(^1\) in Transit-Oriented Development (TOD)\(^2\) that will create social equity and economic equality. Thus, it presents an innovative solution with the primary purpose to create a mix of housing types with different price ranges for all individuals. The approach is also a viable way to enhance sustainability by increasing affordable housing options, facilitating access to health care services, creating jobs on-site, implementing green buildings, and encouraging transit system utilization that will enhance inclusive communities.\(^3\)

Loudoun County, Virginia is experiencing a positive economic impact due to the new Metro stations in the Dulles and Ashburn communities. Accordingly, I have selected the Ashburn Metro Station\(^4\) development as an excellent area to increase the affordable housing supply through this transit-oriented development, especially for extremely low-income income

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people. The Ashburn Metro Station of Loudoun County is located in Ashburn, Virginia at 44 minutes driving time from Washington, DC (see image #1).

Ashburn’s new Metro station⁵ (see figure #2 & 3) is attracting new developments, including mixed-use, office park, and commercial areas, through a TOD project that will maximize the use of this transit system. Nevertheless, this TOD project will need an additional approach to increase affordable housing and sustainability goals in order to create a sustainable

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TOD that will enhance inclusionary community with the effort to achieve social equity and economic equality for all. By promoting social inclusion in a TOD development, it will enhance equal benefits by providing “access to underserved low- and moderate-income communities and investing in the preservation and/or construction of affordable housing near transit.”\(^6\) This essential solution to increase and preserve affordable housing and sustainability will provide a higher quality of life and provoke thriving economic growth in the area.

In order to promote enhanced community vitality and common good, Ashburn Metro station should improve the area’s real estate values, attract entrepreneurs, promote healthy living, discourage automobile usage, and ensure social equity. It should be a sustainable approach that can be achieved through smart growth principles\(^7\) to ensure inclusion through the new Ashburn, Virginia TOD and mixed-use community. It is essential to implement smart growth principles in the effort of encouraging a wide range of housing choices, green buildings, and social equity with diversity of people. Embracing this approach will encourage community participation together with private, public and non-profit organizations to support social equity and economic equality. The greatest benefit of this solution is to increase the use of sustainability and land use policies that will foster the value of inclusionary community, and promote stakeholder’s partnership. Existing incentive programs, grants, funds, and Leadership in Energy and Environmental Design (LEED) rewards\(^8\) will attract investors’ interest to implement this solution for suitable project development. Furthermore, it will encourage the community, public and private organizations, and investors to take advantage of the mutual profit by bringing revenues

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to this new community and its surrounding areas with the purpose of flourishing the welfare for all. The new way to achieve a prosperous living environment is to satisfy the needs of all income level citizens, especially for low-income people searching to live, work, and socialize toward a sustainable life.

**Research Methodology**

In compiling information, I started by gathering information from literature reviews, case studies, regional-municipality-local analysis, data research, and all information about Dulles Corridor Metro Rail Project. Especially, all data and analysis from Planning and Zoning Department of Loudoun County Government about Silver Line Metro Development, Ashburn Community of Loudoun County, Virginia, Silver Line Metro Extension in Loudoun County, and Ashburn Metro Stations development that captured useful data and facts. The compiled data from the literature review, case studies, and data analysis provided excellent information regarding how to increase affordable housing and social equity in a transit-oriented development (TOD). The review of the Ashburn, Virginia new Metro Station Development Plan helped to clarify the need for an inclusive community and address sustainability concerns to create a healthy living environment. Also, it was valuable to scrutinize the benefits and shortcomings of TOD versus Smart Growth theory to attain information that revealed the advantages and disadvantages of housing supply and community vitality. The pros and cons helped determine the best practices to compare strategies in the effort to achieve the best results. At the same time, it also proved valuable to examine case studies of existing inclusive communities and TOD offerings by comparing their relationship to social equity and affordable housing supply to enhance a healthy living environment for all. While gathering research, I conducted interviews with professional planners to learn the goals of this Metro station development, and their future
view of this community. These interviews provided justification for my essential premise that social inclusion in a TOD development can transform the housing development into a more sustainable, profitable, and equitable community.

**Literature and Professional Best Practice Review**

This literature review demonstrates that there is high demand of housing supply to satisfy the need for housing in United States cities. This study explores an approach to increase affordable housing in suburban areas, especially in new development and existing communities of Planned Mixed-Use and Transit-Oriented Developments (TOD)\(^9\) that will create social equity toward inclusive community\(^10\) enhancement. In some jurisdictions around the nation, new housing developments in the suburbs are not providing enough housing for all income levels, especially for extremely low-income people because there are not enough incentives for developers, and proper policies and programs to enhance it. The demand for housing in dense communities with transit usage pushed developers to increase Planned Mixed-Use and Transit-Oriented Developments (TOD) to provide housing supply to satisfy that new demand. Nevertheless, studies demonstrate that both mixed-use and TOD developments are incapable of meeting the housing needs for very low- and moderate-income housing. Why is TOD development not enough of a planning solution for the demand for housing? Are any other elements or methods available to enhance social equity toward an inclusive community?

Planned Mixed-Use Development is a compacted project development that aims at meeting most of the residents’ needs in one place, and is defined as “a real estate project with

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planned integration of some combination of retail, office, residential, hotel, recreation or other functions. It is pedestrian-oriented and contains elements of a live-work-play environment. It maximizes space usage, has amenities and architectural expression, and tends to mitigate traffic and sprawl."\(^{11}\) It is an excellent planning solution to enhance a dense community with all services within walking distance. These mixed-use communities are becoming an increasingly common form of living for people. The high cost of living in many of these mixed-use communities, however, has been preventing more low-income residents from living there.

Transit-Oriented Development (TOD) is a dense community planning approach based on a transit system usage (see figure #4), “a type of community development that includes a mixture of housing, office, retail and/or other amenities integrated into a walkable neighborhood and located within a half-mile of quality public transportation.”\(^{12}\) The purpose of TODs is accessibility to the transit system in this community, and to have all the services lined up in the main corridors that lead to the transit system access. The accessibility to transit usage and all services provided in this TOD community makes housing prices higher and less affordable. The

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TOD planning solution has the high purpose of enhancing the economy for an area and provides walkable distance to transit, but it does not provide or maintain a great percentage of affordable housing for low-and moderate-income individuals. Both mixed-use and TOD development do not provide a solid basis of affordable housing, especially to enhance social equity and economic equity for all individuals. What can be done to enhance and maintain housing supply for extremely low-income people in a TOD and mixed-use development?

The approach to enhance sustainable communities and housing choices is the implementation of smart growth principles by “retrofitting communities to offer more choices both in terms of housing types and prices but also in terms of transportation options.”¹³ Smart growth principles promote suitable land use for strong mixed-use development in an effort to:

- [make] housing choices available to a range of households, ages, and incomes, all while maintaining the character of the community and the quality of life is important to new and existing residents alike.
- provide increased transportation choices, including mass transit, bicycling, and walking… a reliable, efficient, and user-friendly [transportation that creates] opportunities for access by all segments of the population to housing, employment, education, recreation, and human and community services.
- contribute to successful compact, mixed-use development and also promote privacy, safety, visual appeal, and compatibility among uses and users.¹⁴

Much more, the great benefit of smart growth principles is that “national guidance for sustainable, mixed-use communities designed around mass transit, walking and cycling have

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been shown to reduce lung and heart disease, obesity, diabetes, and other chronic health conditions.”

Clearly, the Ashburn Metro Station will foster job creations and housing demand because “the presence of the Metrorail Stations in Loudoun County is expected to increase the total amount of residential, office, retail, and hotel development in the County at a value of $425 million dollars above baseline development projections.” Loudoun County will have a positive economic impact in real estate, business, and revenues. Therefore, the high-density area of the Ashburn Metro Station should enforce affordable housing for all income level individuals by enhancing smart growth communities toward inclusion. Much more, mixed-use and TOD development should take advantage of the smart growth principle of housing affordability, and

Figure #5. Source: https://www.white-design.com/consultancy/bristol-co-housing/

Inclusive Community
Models Units for Lower-Income Households

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15 Ibid.
increase the affordable housing supply in a dense community. This smart growth element will make “housing choices available to a range of households, ages, and incomes”\textsuperscript{17} with a goal to maintain all income-level individuals and a stable community vitality for all.

Studies indicated that inclusive community is the solution to enhance housing supply and provide a stable living environment for very low-income people (see figure #5). By having mix race and income level of people, studies showed that communities will growth “more prosperous and resilient when we extend opportunity broadly, reduce spatial segregation and make it possible for more types of people to live in neighborhoods with good schools and better access to jobs.”\textsuperscript{18} It is important to provide inclusionary housing in healthy living environment because “poor children whose families received vouchers to help them move from public housing to low-poverty areas before age 13 increased their earnings as adults by 31 percent, the equivalent of $302,000 more in lifetime income.”\textsuperscript{19} This inclusive community can be created by placing a regulation in the land use policies to “link market rate development to the creation of homes that are affordable for lower-income households,”\textsuperscript{20} called inclusionary housing policies. At the same time, these inclusionary housing policies ensured a 10 to 20 percent of housing supply will stayed at the market rate sold by “ensuring that inclusionary properties continue to be sold or rented at affordable prices, and are not lost due to illegal sales, foreclosure, or lax rental management practices.”\textsuperscript{21} Currently, California and New Jersey are in the high position to provide inclusionary housing and Virginia does provide some (see figure #6). Virginia can


\textsuperscript{19} Ibid.

\textsuperscript{20} Ibid.

increase the inclusionary housing by enhancing inclusive communities in the high-density zoning, especially near metro rail access.

Enterprise Community Partners is an organization that helps to create affordable housing for very low-income people by encouraging the formation of inclusive community. They enforce the inclusionary housing policies with the effort to “deliver the capital, develop the programs and advocate for the policies needed to create and preserve well-designed homes that people can afford in inclusive and connected communities”22. Also, Enterprise ensured an equitable transit-oriented development by maintaining affordable housing for very low-income people “who spend between 54 and 59 percent of their gross income on housing and transportation”23.

enhance a healthy environment for all. A community with inclusionary housing can be enhanced by following these essential steps:

- **Provide truly affordable housing** by minimizing transportation costs in relation to household income. Nationally, transportation is the second largest household expenditure after housing.

- **Increase ridership** by providing easy access for those individuals who use transit the most. Low-income households in [suburban areas] are four times as likely as higher-income households to use transit.

- **Broaden access to opportunity** by connecting lower-income households to opportunities both in their own neighborhoods and others in the region that can be easily reached on the transit system.

- **Alleviate gentrification pressures near transit stations** by making conscious decisions to preserve opportunities for affordable housing near transit stops, thereby enabling low-income households to benefit from the transit investment in their neighborhoods.

- **Increase employers’ access to metro workforce** by enabling lower-wage workers—who make up a large percentage of the metro area workforce—to live in areas with good transit access.24

These are the essential elements that will create a social equity and ensure housing supply for extremely low-income people.

Most of the municipalities in the nation provides affordable housing program and policies. Loudoun County, Virginia has an affordable housing program, called affordable

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dwelling unit, to provide housing ownership or rental for low-income people but the individual must maintain an income to afford it. Plus, the program is for first-time homebuyers with a moderate income or capable to rent an unit as their policy stated that

“The Affordable Dwelling Unit (ADU) purchase program enables eligible first time homebuyers with moderate income the opportunity to purchase a newly constructed or resale ADU townhouse or condominium. First-time homebuyers desiring to purchase a home must have a total household income more than 30% and less than 70% (65% for condominium purchases) of the area median income based on the Primary Washington Metropolitan Statistical Area. Prices typically range from approximately $120,000 to $180,000... Average rental rates range from approximately $630 to $1,300 depending on the type and size of the unit, not including the cost of utilities.”

This affordable housing program is designed for people with an income more than 30% of the area median income, which is unreachable for extremely low-income people. Loudoun County Zoning Ordinance, under the Affordable Dwelling Unit Developments, indicated that any proposed land development with “the overall density of the project results in fifty (50) or more units at a density of greater than one (1) unit per acre” must provide affordable housing. When a “twenty percent (20%) increase in the density on a subject parcel, provided that at least twelve and one half percent (12.5%) of the total number of units approved are affordable dwelling units” is required in a multi-family units’ development. Therefore, the cost burdened to provide a required number of affordable housing is on the developer because Loudoun County doesn’t

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27 Ibid., 935.
provide suitable incentives besides the density bonus. Loudoun County should increase their incentives and maximize affordable housing programs through strong partnership approach.

The financial approach and advocacy sources can be reachable from the following incentive programs, grants, and funding to promote inclusive communities in an effort to implement affordable housing for lower-income people:

- Environmental Protection Agency Smart Growth Grants, a sustainable grant that can be used to “support activities that improve the quality of development and protect human health and the environment.”

- Low Income Investment Fund (LIIF) for Transit-Oriented Development – this unique “program invests in projects that place affordable housing and vital community services close to accessible transportation.”

Figure #7. Source: http://www.enterprisecommunity.org/where-we-work/denver.

Our Denver market works closely with local nonprofits and affordable housing organizations to promote equitable community development in the seven-county metro Denver region.

- Enterprise Community Loan Fund, is a U.S. Treasury Department-certified Community Development Financial Institute gest donations and funding from any investors that will

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help Enterprise to “work around the country in partnership with local nonprofits and
mission-aligned developers to provide affordable housing, health care facilities and
schools in the communities that need them the most.”

Current case studies are demonstrating the importance of keeping affordable housing in
transit-oriented developments. They show that people are likely to live near transit access
because “it provides a convenient, affordable and active lifestyle for people of all ages, including
those who don’t drive,” and enhances social equity and community vitality. An example of
transit-oriented development achievement is the Rosslyn-Ballston Corridor in Arlington,
Virginia, which has high results of “33 percent of county revenues – allowing Arlington to have
the lowest property tax in Northern Virginia, 50 percent of residents take transit to work, and 73
percent walk to stations.” Another successful example is near the BART station in Oakland,
California, where developers and the community worked together to enhance the mixed-income
community “with a pedestrian corridor and plazas lined with shops, offices, apartments and
community services,” together with the transit station to maintain the community character and
vitality.

Best practices to enhance a successful mixed-use and transit-oriented development
include embracing the benefits that will bring these developments, such as “walkability between
housing, workplaces and other amenities, improvements in home affordability, and vitality to

30 Enterprise Community Partners, “Community Loan Fund,” Community Development Financial Institution,
fund.
studies.pdf.
32 Ibid., 2.
33 Ibid., 6.
communities,” for the benefit of all involved. The social equity and community building policy from the smart growth guide encourages economically and socially diverse mixed-income neighborhoods as the foundation for healthy regions, including encouragement for the provision of workforce housing in all new-growth areas and areas to be redeveloped. Best practices are suitable elements to optimize land use and site investment.

By placing all these best practices together, professional planners and planning commissions should encourage the form-based code in the effort to create “multi-family housing types-including the loft and live-work space and condo in lively mixed-use neighborhoods that are walkable” for a vibrant and human-scale community. Much more, developers should provide all types of housing because “the appeal of proximity to Metrorail will result in increased value for those developments, leading to higher-density construction, and higher assessed value and real estate tax revenue for the County.” Therefore, developers and local governments should work together to enhance best practices for suitable TOD and mixed-use development. Local government can achieve this goal by incentivizing developers through tax credits, federal grants, and density bonuses, and working with local banks to provide lower-cost mezzanine loans, a type of debt used for commercial and multifamily construction that is


typically very expensive\textsuperscript{38}. Also, local government “can help assemble land, rezone it, and fund environmental remediation”\textsuperscript{39} to enhance an efficiency plan.

Developers can help local government to match any financial gap that is preventing the achievement of these sustainable transit-oriented and mixed-use developments. Also, developers can be “useful for leveraging private investment in transit-oriented development, they are more flexible than joint development arrangements, and they don’t require publicly owned land” to achieve a project. A good example of a successful public-private partnership is the transit redevelopment project in Portland, Oregon at Portland’s Pearl District, which connects north and south downtown through a new streetcar. This large-scale redevelopment achieved “public goals including affordable housing, very high-quality streetscapes and parks and plazas, and which generated a high volume of business activity for downtown”\textsuperscript{40} providing prosperity for all.

All the aforementioned literature, research studies, and best practices come together to demonstrate that the current project development of the new Ashburn Metro Station in Loudoun County, Virginia is the proper area to provide inclusionary housing. The Ashburn Metro Station will create an urban core with new jobs, types of housing, increase tax revenues, and enforce sustainability with the opportunity to enhance social equity for strong community and economy vitality for all. Ashburn Metro Station community will become the role model in the Northern Virginia metro corridor to implement an inclusive community to maximize healthy environment for all.

\textsuperscript{38} Ibid., 13.  
\textsuperscript{39} Ibid., 13.  
\textsuperscript{40} Ibid., 14.
Regional Analysis and Findings

“Disastrous urban sprawl can be effectively preempted by investing in the fundamental systems that protect and nourish a healthy urban environment.” – Dylan Todd Simonds Foundation.

The increase of the population in the United States has been awakening a demand for housing near transit systems and services within walking distance. The new era of the transportation system, population growth, and real estate development has been pushing professional planners and developers to create communities with high density near transit systems. Moreover, the high cost of living near the cities has been forcing low-income people to live in the suburbs and creating a high demand for affordable housing, especially near transit systems.

Developers are trying to satisfy the demand of housing supply through the implementation of planned mixed-use and transit-oriented developments that will maintain a mixture of housing units for people of any income level, but which is still not affordable for the low-and moderate-income resident. The housing supply is increasing but “many of the poor cannot enter into housing markets due to a lack of a stable income at a level that permits entry into the market without adopting a high financial burden.”

Therefore, professional planners and developers must implement a new solution for planned mixed-use and transit-oriented developments to increase housing affordability, especially for low-income individuals. Planners and developers need to move forward with a way of creating a new living arrangement through social equity and economic equality that will

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embrace inclusion for strong community vitality for all, especially in a transit-oriented development. Particularly, affordable housing is needed for the young generation, aging baby boomers, new immigrants, disabled individuals, and low-income workers because it will enhance social equity and avoid desegregation from these desirable living communities. It is highly important to increase and maintain affordable housing for low-income people because they are in the best position to take advantage of sustainable transit-oriented community benefits. People living closer to metro access secure their income and lower living expenses because “when employees can find affordable living options near their jobs, businesses perform better, reporting less turnover, less absenteeism and greater productivity.”

Exurbs are growing faster than urban core again

After the recession, growth in the most urban counties of metro areas surpassed that of exurbs. Now, a Brookings analysis of Census population data shows the trend is reversing.

Counts in metro areas with 500,000 people or more are categorized.

Sources: The Brookings Institution, U.S. Census Bureau. THE WASHINGTON POST

Figure #8. Source: www.washingtonpost.com/news/wonk.

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Municipalities can take advantage of a suitable transit-oriented development to maintain affordable housing supply for a social equity community that will avoid gentrification, increase stability for transit usage, and reduce the gap conflict in living environment similitude between high-income and low-income households in the suburban areas. It will enhance housing availability in response to the demand from low-income individuals, who are part of the growing population in the suburban areas, presenting the challenge to have a stable housing and healthy living environment.

The high cost of living in the city has pushed low-and-moderate income people to live out of the urban core and to search for lower cost living in the suburbs. New demographic trend data provides information on people’s preferences to live in the suburbs but not too far from the city contributing the increase population in the suburbs (see figure #8). This migration is impacting the real estate market, especially for low-income people searching for affordable living space. The search for a decent and stable living space near Metro access has been a
problematic situation for low-and-moderate income people moving into the suburbs because “these areas are becoming increasingly scarce, as such suburbs are either gentrifying into higher-end communities or deteriorating into economically challenged areas.”

Perhaps, people are moving away from the city and searching for communities with affordable housing and walkable distances to services and transit systems. The high demand to live in communities near a Metro station is rapidly increasing because of the convenience of transit usage to commute without automobile traffic congestion. The demand for housing options near transit systems are driving local municipalities to invest in suitable dense communities in an effort to move toward a transit-oriented development to satisfy the new demand for a sustainable living environment (see figure #9). Metropolitan areas around the nation have been extending their rail transit system to suburban areas to diminish the carbon dioxide emissions produce by automobile usage, and to encourage transit-oriented communities to promote metro transit use for a better living environment for all people.

An example of expanding transit systems into the suburbs is that the Washington Metropolitan Area Transit Authority is extending the Silver Line all the way to Loudoun County, Virginia. There will be two new metro stations in Loudoun County: one on Route 606 named ‘Loudoun Gateway Metro Station,’ and another on Route 772 named ‘Ashburn Metro Station’ (see figure #10). Both stations will promote a positive economic development for the metropolitan region, especially for Loudoun county communities and other nearby counties.

The area around the Ashburn Metro Station will be a new and diverse community cultivated through a transit-oriented development, and in turn, it will bring a high demand for housing triggered by this desirable transit commute and services within a walkable distance in this suitable community. Accordingly, I have selected the Ashburn Metro Station development as a prime area to increase affordable housing supply through this transit-oriented development. It will be the best place to “promote social equity by expanding public transportation access to underserved low- and moderate-income communities and investing in the preservation and/or construction of affordable housing near transit,”*44 around these existing high cost living communities.

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The need to increase affordable housing in the U.S. suburbs has been leading to organizations to study the driving force behind it. Studies show that Loudoun County, Virginia has a shortage of affordable housing due to a population increase. Since 2000, the county added 204,100 people and approximately 67,000 housing units. The average population grew by 5.1 percent but housing units grew at only 4.7 percent annually. People are moving to suburbs searching for stable living and jobs because “Loudoun had an employment growth rate of 3.8 percent from 2000 to 2014, which including the addition of 60,600 jobs” provoking a housing demand to live near the workplace site. A good percentage of housing supply can be achieved through the TOD for the new Metro stations in Loudoun County, Virginia.

It is crucial to address the importance of maintaining affordable housing in any community, especially near transit system access. Transit-oriented development can be the new way to increase affordable housing through social equity enhancement that will bring inclusion in this community. The new Metro stations of Loudoun County, Virginia will be great examples to enhance a live-work-play community, enforce healthy environment, and maintain a high percentage of affordable housing. They will be an excellent way to enhance sustainability and address the housing shortage that Loudoun County, Virginia is facing now. So, how much affordable housing is need for low-income people in Loudoun County, Virginia?

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46 Ibid.
Municipality Analysis and Findings

“The physical plan can seldom if ever, create a ‘neighborhood’ except in the most abstract use of the world. It can, however, very materially assist other forces in fostering a true neighborhood feeling.” – Henry S. Churchill, architect and city planner.

The growing population in Loudoun County, VA has created a demand for affordable housing and a creation of new communities to satisfy the housing need (see figure #11). Despite the wealthy communities in Loudoun County, the low-income households are still growing in this county and required an affordable living environment with a transit system in an effort to decrease the commute by car and increase money for basic needs. Loudoun County has a good percentage of high-income population but “has seen a large increase in its poverty rate and the number of people in poverty over the past decade,”⁴⁷(see figure #12) leaving the County with a shortage of affordable housing. It is important to increase affordable housing in this County because “higher incomes have been essential to afford to move to the newly developed communities within Loudoun, while households with lower household incomes typically reside in the older established communities,"⁴⁸ and far from transit access and basic needs.

⁴⁸ Ibid., 12
In fact, studies demonstrated that the population grew “at an average of 5.1 percent annually while the number of housing units grew by 4.7 percent annually,”

causing a concern in the housing market to satisfy the need, especially for low-income people. The greatest increase and change in population was due to racial diversity because “the Hispanic and Asian populations have been a major driver of population growth in the County over the past decades”

and provoking a major demand in affordable housing. In addition, a large number of the Baby Boomer and Millennial generations added to the housing demand for low-cost units (see figure #13). The differential of housing demand is based on the household income; Hispanic households tend to have lower incomes and are more likely to be renters compared to the white population. Asian households are more likely than Hispanic households to have higher incomes and be home owners. The need to satisfy the demand of different types of housing for all individuals has caused a great impact in Loudoun County’s housing market, most notably a shortage of affordable housing for low-
income people. The result is that the low wage population is bearing the brunt of the housing cost burden by expending more than 30%\textsuperscript{52} of their income, which can be especially seen in the young generation and in the Hispanic demographic (see figure #14 & 15).

If the shortage of affordable housing cannot be addressed, “several groups will continue to face serious housing affordability challenges in Loudoun County,”\textsuperscript{53} especially among low-and no-income individuals.

George Mason University’s study is demonstrating that the low-income population in Loudoun County are renting instead of owning a home because the housing market presents “potential obstacles to home ownership among young, working households,”\textsuperscript{54} minorities, and senior citizens searching for housing affordability and a healthy living environment. Prioritizing the housing demand for low-income people in Loudoun County will be the best approach to maintain a vibrant and growing community. Loudoun County, Virginia has the land availability to increase the supply of housing, since based on “the land use plan-based (constrained) forecast,

\begin{figure}[h]
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\caption{Loudoun County, VA - Cost Burdened Households by Age and Race}
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\caption{Source: http://loudoun.granicus.com/MetaViewer}
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\textsuperscript{52} Ibid., 49.
\textsuperscript{53} Ibid., 82.
\textsuperscript{54} Ibid., 36.
the County has the capacity to add 48,910 housing units between 2015 and 2040,” which can be enhanced through the two new Metro stations proposed. What are the areas impacted by these two new Metro Stations? What are the land use designations and recommendations for this new metro rail system in Loudoun County?

An extended study was provided by the Urban Land Institute to the Loudoun County Board of Supervisors for the proposed Metro stations in Loudoun County, on July 16, 2014. The purpose of this study was to decide the location of the two Metro stations in the County and to show the importance of having a metro rail system in the County. “Loudoun County is ambitiously analyzing its planning efforts to ensure that the opportunities associated with the arrival of Metrorail are maximized to the fullest extent,” so that it will produce high economic value for the county and the region, in general. With this extended study, the two new Metro stations have been placed strategically in two different places with two different purposes in this County. They have been located in the Dulles and Ashburn communities; one has been located bordering Dulles Airport on Route 606, and the second on Route 772 in the community of Ashburn, Virginia (see image #16). Throughout the years of 2014 and 2017, the comprehensive plan has been revised to maximize suitable land use and regulations for the development of

these two Metro stations, especially for the areas impacted by these Metro stations. During the meeting of November 2016, the Board of Supervisors established four objectives to maximize the vision, as follows: “1) prompt realization of tax revenues to support future Metrorail operations, 2) maximizing future employment generation, 3) achieving the desired land use pattern, and 4) minimizing demands on the County’s transportation infrastructure.”58 All these objectives strives to ensure land use efficiency in an effort “to create a vibrant urban community with diverse housing, ample employment opportunities, unique shopping and entertainment

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facilities, that would serve as a major focal point for our community”⁵⁹ and for the Metro stations that will maximize tax revenues for the County and increase Dulles corridor economic vitality.

In March 2017, the Loudoun County Department of Planning and Zoning presented a new Comprehensive Plan Amendment (CPAM) to the Board of Supervisors with an opportunity to discuss new options on land use for better outcomes and sustainability. The Loudoun County Planning Department recommended changing the urban residential land use policies of the Silver Line CPAM designated for a double land use regulation. These new mix land use policies can be both in the same area as “Urban Residential and Mixed Use communities to manage housing development types and mixes, as well as better manage residual community facilities needs and impacts,”⁶⁰ for future housing demand (see figure #17).


⁶⁰ Ibid.
This Comprehensive Plan Amendment shows the location of both new Metro stations, the Silver Line Small Area Plan boundary, the Airport Impact Overlay Zone, and all land use zoning within the boundary. Dulles Metro Station had been designated Non-Residential land zoning because of the Dulles Airport Zone, and Ashburn Metro Station had been designated Urban Mixed-Use land zoning with tall buildings to increase density. This land zoning distribution for the Metro stations areas indicates that Ashburn Metro Station is the perfect site to increase the supply of affordable housing. Also, these studies indicated that Loudoun County has a large single-family housing supply because “in 2013 there were 118,800 housing units in Loudoun County [and] over half of the units in the County are single-family detached” (see figure #18). The shortage of multi-family units demonstrates the need for more of these kinds of units, especially affordable units for low-income people that cannot afford the high cost of a single-family home.

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in Loudoun County. In addition, the employment rate is high in Loudoun County, especially in low wage jobs. Since the years of 2009 to 2013, employment has been increasing in several job sectors in the Washington Metropolitan area but “the growth has been concentrated in lower skill and lower wage sectors with limited long-term mobility and growth potential,”62 and the demand of low cost housing has been increasing, also. In fact, the employment forecast from studies of different sources showed that Loudoun County will be encountering a high increase in jobs by 2040 (see figure #19), provoking a high demand expectation “for 10,178 new multi-family housing units, which reflects an increase of 56.3 percent over the forecast period.”63 This future job increase in Loudoun County is a call for developers to increase multi-family housing because of the increase of low income households based on this employment-driven forecast, especially for affordable housing and inclusionary housing (see figure #20). The designated land use zoning and regulations for double use of Urban Residential and Mixed Use communities, the increased employment for low wage jobs, and the employment-driven housing demand forecast provides evidence that should encourage sustainable living and affordable housing in the new Metro stations’ communities proposed in

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Loudoun County. These two new Metro stations in Loudoun County, Virginia will bring great economic development, an increase in the housing supply, and boost the communities’ vitality.

Community engagement has been extensive during the entire process of the Comprehensive Plan and the entire project’s progress. Giving people the opportunity to be involved in the project’s decision is important because “achieving community consensus may be difficult, but it is also essential”\(^\text{64}\) for a suitable project development (see figure #21). Public hearings have been placed monthly at “the Loudoun County Government Center, 1 Harrison Street, S.E. in Leesburg. The monthly public hearing is broadcast on Comcast Government Channel 23, Verizon FiOS Channel 40, and Open Band Channel 18\(^\text{65}\) for citizen’s awareness.

The project team worked with several stakeholder groups during the scenario planning process to understand challenges and opportunities facing the study area, create reliable scenario planning tools, and brainstorm viable alternative growth scenarios for consideration.\(^\text{66}\) This project is still in revision because of public concerns and planning commission suggestions in an effort to maximize suitable project development and the welfare for all.

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\(^{66}\) Ibid.
Site Analysis and Findings

“To build intelligently today is to lay the foundations for a new civilization.” – Lewis Mumford.

The site for Ashburn Metro Station development is located in the center of Ashburn community of Loudoun County, Virginia. The site is divided by the Dulles Greenway-Route 267 in two development areas and both sites will be high density developments (see image #22).

Ashburn Metro Station and its surrounding project developments will increase land values, increase economic vitality, and tax revenues for the county because “this area is anticipated to grow because of market trends toward transit-oriented, mixed-use development near Metrorail stations as has been experienced throughout the Greater Washington Metropolitan Region.”67

The Ashburn Metro area has been designated for high density TOD “by concentrating the highest densities in mixed-use communities near the Metrorail stations, preserving parks and open space,

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allowing for innovative land use patterns, creating abundant opportunities for amenities and entertainment, and providing numerous efficient transportation options. While development

![Image of urban design and land use examples](https://www.loudoun.gov/DocumentCenter/View/116174)

around the Ashburn Station will eventually reflect the TOD plan, with higher density at the core within a half-mile of the station and decreasing density radiating outwards, the current development pattern at the Ashburn Station Area reflects a blend of low- to medium-density residential, limited commercial development, and large swaths of vacant land. Therefore, the typology will be mixed between urban design and land use to achieve a desirable living environment for all (see figure #23). A different character “to describe different place types

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68 Ibid., 2-5.
include: land use mix, residential density, typical home size, non-residential intensity, prevailing building height, typical block length, preferred street pattern, common open space elements, parking provisions, and preferred building orientation/ placement on a site. “70

Strategies to resolve environmental impact has been placed by maintaining green areas, providing open space and parks, and preventing pollutants into existing water streams. A watershed pilot project was complete in 2014 to prevent pollutants into water streams and riparian plantings. This Watershed management involves both regulating water quality, and quantity of surface water and groundwater in the Upper Broad Run area71 (see figure #24).

The Board of Directors added into the Metrorail land use regulations that these new developments must follow all environmental regulations and policies “to help mitigate data

![Upper Broad Run Watershed Management Pilot Project](https://www.loudoun.gov/DocumentCenter/View/116174)

Figure # 24. Source: https://www.loudoun.gov/DocumentCenter/View/116174

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70 Ibid., 3-8, 3-9.
center visual and environmental impacts and to ensure proper placement to mitigate impacts to other land uses.” The Metrorail Service District Study showed some notable environmental constraints. For instance, the areas of floodplain associated with the Dulles Metro Station development by the Broad Run-606 Route (see figure 25). These environmental constraints are “areas of wetlands and potential wetlands but these constraints do not significantly limit development potential,” and it can be mitigated.

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72 Ibid., 5.
74 Ibid., 11.
Also, the Fiber Lines of the Metropolitan Area Exchange-East (see figure #26) is a preservation area because it is “a significant crossroads of fiber optic cable that provides large amounts of broadband capacity…for businesses, government, defense electronics, and others to transmit large amount of data safely and securely.” This fiber infrastructure has an important part our internet network because it provides connectivity nationally and worldwide.

Another constraints is the Airport Impact Overlay that intended to limit the development of noise sensitive of the Washington Dulles International Airport, an airport zone and regulation. This overlay has been addressed in the land use and zoning regulations plan for the Loudoun County Metro stations.

In effort to decrease environmental impact, a street network plan was created to reduce congestion and facilitate metro access. The Silver Line Policy Area provides policies to support the creation of a comprehensively multimodal transportation system that accommodates all

Figure # 27. Source: https://www.loudoun.gov/DocumentCenter/View/116174

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75 Ibid., 12
76 Ibid., 11
transportation modes with travel options along every route to incorporate the needs of different
users. To that end, this plan incorporates roads, sidewalks, bike lanes, trails, and transit-intensive
routes to ensure that multimodal connectivity can be realized\(^7\) (see figure #27).

Currently, the Ashburn Metro Station is in progress and located on Dulles Greenway-
Route 267 North. The metro station is a priority construction before any other urban
development occurs, as per the Silver Line Comprehensive Plan (see figure #28).

The Ashburn Metro Station building is undergoing construction together with its 1/4 -Mile
Buffer areas. The Metro station 1/4 and 1/2 – Mile Buffer is “a high priority area for
programming future year infrastructure projects that support walkable, urban development
principles. This area is expected to have some of the highest densities and concentrations of

\(^7\) Ibid., 4-11.
development in all of Loudoun County.” The main priority is to start promoting metro rail commute, and discourage auto traffic congestion that will lead to decreased greenhouse gas emission.

The Metro station is in progress and some part of the mixed-use development has been built on the northwest of the metro station (see figure #29).

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Figure #29. Source: http://loudoun.granicus.com/MetaViewer.php?view_id=68&clip_id=4572&meta_id=103519

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78 Ibid., 3-5.
Some new mixed-use communities have been developed to promote people to move closer to the Metro Station. The following images are showing the current conditions of the Ashburn Metro Station and ¼ Mile Buffer areas:

Figure #30. Source: Author
Figure #31. Source: Author
Figure #32. Source: https://www.loudoun.gov/DocumentCenter/View/117873
Figure #33. Source: Author
A. Ashburn Metro Station

B. Future Complex – The Gramercy District (see figure #X)

C. Loudoun Station Community

D. Data Center Complex

E. Future High Density Communities

The Ashburn Metro Station area will have several mixed-use and commercial developments, and the Dulles Metro Station will be more corporate/business-oriented development. What are the project’s proposals for the Ashburn and Dulles Metro stations? Are both projects transit-oriented development?

There are several project proposals for the Ashburn and Dulles Metro stations; both project developments have the intent to help the County’s economy flourish. The Loudoun County Planning and Zoning Department, with the Board of Supervisors’ approval, decided to establish both Metro stations as land use for transit development but “Loudoun Gateway [Dulles

Figure #34. Source: https://www.loudoun.gov/DocumentCenter/View/127174
Station] is planned to be a Transit-Related Employment Center (TREC) and the Ashburn Station will incorporate Transit-Oriented Development (TOD).”

Therefore, the new Plan Land Use (see figure #34) indicated that the Ashburn Metro Station will be a dense community through Transit-Oriented Development that will provide a mixture of housing with different price ranges for any income, especially for low-income people. Several project developments for Ashburn Metro Station area have been proposed to achieve a suitable and dense community for all. Some of the projects for Ashburn Metro Station are as follows:

- The Gramercy District at Ashburn Station\(^80\) (see figure #35) will be a mixed-use community that will offer “590 multi-family dwelling units and 735,000 square feet of mixed-use office and retail space, [and] 147,000 square feet will be dedicated to parks, civic and open space,”\(^81\) all walking distance to the Metro Station.


\(^81\) Ibid.
• Kincora\textsuperscript{82} (see figure #36) “will be located at the intersection of Routes 7 and 28. At full build-out, Kincora will feature more than 4 million square feet of class-A office space, with 500,000 square feet of restaurants and retail, a performing arts center, a hotel and 1,400 multi-family units.”\textsuperscript{83} A mixed-use community with walking distance to the Ashburn Metro Station.

• Loudoun Station\textsuperscript{84} (see figure #37) located at walking distance from the Ashburn Metro Station will offer “a 357-unit apartment complex. Loudoun Station will also feature

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\textsuperscript{82} Ibid.
\textsuperscript{83} Ibid.
\textsuperscript{84} Ibid.
1 million square feet of class-A office space and 300,000 square feet planned for restaurants, retail and a hotel. "85

Most of all these project developments will offer affordable housing through the Loudoun County Affordable Dwelling Unit Program but no housing unit availability for lower-income households because there is no inclusionary housing program to enforce it.

**Inclusionary Housing as Best Practices**

To recap the literature review, data analysis, and findings, TOD is a great solution to enhance high density communities that will promote transit usage, proper land use, and less environmental impact; however, it does not by itself provide affordable housing for extremely low-income people. While the Loudoun County local government is following all their zoning and planning regulations to achieve the percentage of affordable housing required in all project development for the Ashburn Metro Station area, they are leaving behind the option of the inclusive community approach, even though inclusionary housing policy can be adjusted or included in the ADU zoning regulations and policies to provide housing units for lower-income people.

Certainly, the percentage of affordable housing included in the current Ashburn Metro Station development plan provides for affordable housing for those with low-and-moderate incomes, but it does not provide housing supply for extremely low-income people. However, Loudoun County Planning Department statistics and studies indicate that there is a large

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85 Ibid.
percentage of people at the poverty level in Loudoun County, and there is a need for housing units those with extremely low incomes.

Social equity will increase the quality of life in Ashburn Metro Station areas by ensuring that all income level individuals can get equal benefits of this Transit-Oriented Mixed-Use development. At the same time, it will ensure a good percentage of housing because “transit communities can serve the economic needs of low and moderate-income people and families by providing affordable housing and better access to jobs.”86 Also, social equity is a great strategy to create equitable TOD by meeting “the goal of transit communities being diverse places where people of all races, ethnicities, incomes, ages, and abilities live, [and] encourage the development of mixed-income transit communities are needed.”87 Ashburn Metro Station through the high-density development will create inclusive neighborhoods that will enhance social equity, community vitality and the welfare for all.

Therefore, the Ashburn Metro Station development is a great sustainable project through the transit-oriented development to enhance smart growth community with social inclusion by “reducing income segregation, improving access to healthy food choices, and providing lower-income residents with employment opportunities.”88

87 Ibid., 29.
88 Ibid., 29.
Moreover, it will create a live-work-play community, encourage Metrorail use, and moving toward a healthy environment for all individuals (see figure #38).

Much more, Loudoun County should join the growing number of localities in the nation that are using smart growth and transit-oriented development to produce sustainable living for all individuals, a smart way to provide housing units for lower-income people and fairness for all. Examples of these project that incorporate smart growth principles and housing inclusion include:

- The Mariposa-Lincoln Park Public Housing Redevelopment (see figure #39), a National Award winner for Smart Growth community in the city of Denver. The Mariposa’s citizens worked together with the city of Denver to transform the entire community “into a mixed-use, transit-oriented development with affordable housing in a community with

Figure #39. Source http://mithun.com/project/mariposa-south-lincoln-redevelopment-master-plan/.
environmental justice concerns.”

Without the community involvement, the project wouldn’t have achieved its goals because “one of the keys to success was extensive stakeholder involvement from all levels of the community” through the entire planning process. Much more, developers emphasize that this project provides “an energized transit-oriented community where people enjoy green, healthy living; arts and culture; and close proximity to downtown… Mariposa demonstrates the power of design to bridge socio-economic and health gaps, and rebuild a vibrant community.”

- Rosslyn-Ballston Metro Corridor, Arlington County, Virginia, an excellent smart growth community (see figure #40). The Rosslyn-Ballston Metro Corridor has been a great achievement in mixed-use and transit-oriented development by creating “places that

Figure #40. Source https://www.epa.gov/smartgrowth/2002-national-award-smart-growth-achievement-booklet.

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90 Ibid.
respect community culture and the environment, foster economic development, and enhance quality of life”\(^9\) for the welfare for all. At the same time, the corridor is infusing better living by “focusing on creating affordable housing and preserving a distinct sense of place, [and providing] 116 apartments, 70 of which will be reserved for lower-income residents”\(^9\) to foster social equity and inclusion for community vitality. This is an accomplishment achieved through embracing smart growth principles with citizens and the city of Arlington’s involvement in an on-going project. Chris Zimmerman – Arlington County Board Member emphasized that EPA’s Smart Growth helped us “to explore ways of maintaining housing affordability in our transit corridors,”\(^9\) in other words, a way to foster social equity and economic equality for all.

Both developments are following best practices and embracing smart growth principles by providing “walkability between housing, workplaces and other amenities, improvements in home affordability, and vitality to communities”\(^9\) toward inclusion for a transit-oriented community.

Developers can take advantage of incentives, funding, and awards from different sources to implement inclusive community as part of the affordable housing required to maximize community values that will earn their organization in outstanding recognition and achievements. Most of these incentives, funding, and awards come from EPA Smart Growth Grants, LIIF, Enterprise Community Loan Fund, and LEED. Also, density bonuses are great incentives to achieve inclusive community, such as:


\(^9\) Ibid.

\(^9\) Ibid.

- flexible zoning standards that allow developers to build multifamily dwellings in single-family zones or reduce parking requirements;
- fee waivers and tax abatements;
- expedited permitting and review processes, which can lower developers’ soft costs; and
- permission to make the affordable units slightly smaller or less well-appointed than neighboring market rate units.\textsuperscript{96}

Loudoun County government can encourage developers to seek these incentives because “these funds strategically generate projects that exceed the minimum affordability requirement, lower the cost to the developer and help the jurisdiction get its money into housing more quickly.”\textsuperscript{97}

All these incentives, grants, and funding will attract investors’ interest to implement this solution, as best professional practices, which can be achieved through smart growth principles to ensure the inclusion for a suitable TOD and mixed-use community. Furthermore, it will encourage the community, public and private organizations, and investors to take advantage of the mutual profit by bringing revenues to this new community and its surrounding areas. The incentives will encourage more dense developments, provide for low-income units be built separately from market-rate units, and enhance the inclusive community for the public interest and prosperity for all.

Ashburn Metro Station can be an excellent Planned Mixed-Use Community to increase affordable housing supply through transit-oriented development. It has the potential to be the best place to “promote social equity by expanding public transportation access to underserved


\textsuperscript{97} Ibid.
low- and moderate-income communities and investing in the preservation and/or construction of affordable housing near transit;”

around these existing high-cost communities. It can become a smart growth community to foster social equity environment by enhancing suitable benefits that will “provide truly affordable housing, increase ridership thru transit system, broaden access to opportunity to other services in the region, alleviate gentrification pressures near transit stations, and increase employers’ access to metro workforce.”

A good solution to persuade TOD values because TOD communities with social equity will “encourage economically and socially diverse mixed-income neighborhoods as the foundation for healthy regions, including encouragement for the provision of workforce housing in all new-growth areas and areas to be redeveloped.”

Planning Recommendations

“In the home-building and community development industries – profit motivated and highly competitive as they are – it is indeed fortuitous that the most successful entrepreneurs have learned that well-conceived and well-built projects are not only more efficient, they are more environmentally sound, they are more people-friendly, more salable or rentable – more profitable.” – John Ormsbee Simonds, Landscape Architect.

The best way to achieve the community’s interest is to resolve all individuals’ needs, health, and living situations for the common good. The following recommendations can be

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achieved to enforce a suitable and sustainable TOD in the suburban of Loudoun County, Virginia, especially in the Ashburn Metro Stations developments:

- Inclusive community has values, not disadvantages; it will foster stronger community vitality by integrating all income level people and diversify race for a sustainable and healthy living environment. Inclusion should be enhanced in TOD developments.
- Implement TOD with social equity; all individuals will take advantage of TOD benefits, especially lower-income people that will live-work-play and use the Metro.
- Formulate an amendment to integrate inclusionary housing policy into the ADU zoning and planning regulations & policies.
- Create a zoning regulation and program that required 10 to 15 percent of housing units be for extremely low-income people under the poverty level.
- Mixed-use and high density rezoning must include the smart growth approach to enhance inclusive community.
- Any future redevelopment and revitalization must enforce social equity toward inclusive community. Future housing development or redevelopment must provide inclusion.
- Implement social equity to maximize economy development and community vitality.
- Enforce incentives, waivers, tax abatements, and funding in any high density and TOD developments to achieve inclusive community for suitable housing supply.
- Increase high density developments to decrease environmental impact and enhance green areas. Increase stormwater management in high density development to minimize runoff.
- Enforce community involvement in research and studies results to maximize planning solutions and community’s need.
• Foster partner relations with Enterprise Community Partners and National Housing Conference to get support for inclusive community solutions.

These recommendations can be applied through a rezoning approach and for future policy amendments for high-density development and TOD to enforce inclusive community enhancement.

Conclusion

All research and studies indicated that implementing transit-oriented communities through inclusionary housing policies is a proven strategy to provide a good percentage of affordable housing for lower-income people and to ensure that these inclusive communities develop in an equitable manner and for the purpose to ensure the welfare for all. Successfully, inclusionary housing has been enhanced in TOD communities around the nation by implementing inclusionary housing policy.

Much more, incorporating social inclusion into TODs presents opportunities to address Loudoun County’s growing affordability crisis by dealing with housing and transportation costs for low-income people – while increasing access to jobs, educational opportunities and a healthy environment for all. Also, the benefits of TOD and social equity is not just for low-income people, are for all individuals because they will create and integrate a diverse community that will strengthen the living environment and outcomes for all residents.

For its future approach, Loudoun County should amplify its affordable dwelling unit program by providing a good percentage of these ADUs to lower-income people and maintain the price rate of these units under the poverty level income without increasing for any reason.
Also, all recommendations should be considered to enhance sustainable project development for a healthy and equitable living environment for all individuals.

Future financial support, Loudoun County can help to implement an inclusive community by working with local banks to provide developers a lower-cost mezzanine loan\textsuperscript{101}. In addition, developers can help the local government to match any financial gap that is preventing the achievement of these sustainable transit-oriented/ mixed-use developments. Plus, they can be “useful for leveraging private investment in transit-oriented development, they are more flexible than joint development arrangements, and they don’t require publicly owned land”\textsuperscript{102} to complete a project. Doing so will increase housing affordability throughout the county that will benefit lower-income individuals and maximize the objectives of its Comprehensive Plan. The greatest benefit of this inclusionary zoning approach is to increase the use of sustainability and land use policies that will foster the value of inclusive community and for the common good.

\textbf{Bibliography}


\textsuperscript{101} Ibid., 13.
\textsuperscript{102} Ibid., 14.


