



Report to the Chairman, Subcommittee
on Housing, Transportation, and
Community Development, Committee
on Banking, Housing, and Urban
Affairs, U.S. Senate

November 2014

PUBLIC TRANSPORTATION

Multiple Factors Influence Extent of Transit-Oriented Development

GAO Highlights

Highlights of [GAO-15-70](#), a report to Chairman, Subcommittee on Housing, Transportation, and Community Development, Committee on Banking, Housing, and Urban Affairs, U.S. Senate.

Why GAO Did This Study

From 2004 to 2014, FTA allocated \$18.9 billion to build new or expanded transit systems through the Capital Investment Grant program. One of the key goals for many local governments when planning major capital-transit projects is to encourage transit-oriented development as a way to focus future regional population growth along transit corridors. Transit-oriented development is generally described as a compact and “walkable” neighborhood near transit with a mix of residential and commercial uses.

GAO was asked to examine transit-oriented development. This report addresses (1) the extent to which transit-oriented development has occurred near select transit lines that received federal funds and the factors and local policies that affect transit-oriented development, and (2) the extent to which FTA considers factors related to the potential for transit-oriented development when assessing proposed projects and the extent to which FTA’s assessment of these factors is consistent with the factors that local stakeholders told GAO affect a project’s results. To address these issues, GAO reviewed relevant literature and visited six federally funded case study transit projects in Baltimore, MD; Washington, DC; Charlotte, NC; Santa Clara County, CA; San Francisco, CA; and Houston, TX, selected for diversity in local programs, markets, and geography. During these visits, GAO met with stakeholders, such as local officials and developers. GAO also interviewed FTA officials. In commenting on a draft of this report, DOT noted FTA’s long-standing commitment to encourage transit-oriented development.

View [GAO-15-70](#). For more information, contact David J. Wise at (202) 512-2834 or wised@gao.gov

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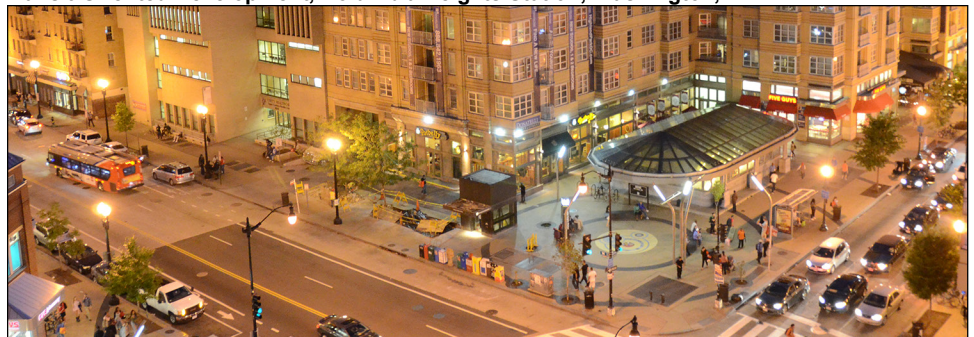
What GAO Found

GAO found a wide range in the extent of new transit-oriented development that has occurred since transit operations began for GAO’s six federally funded case-study transit projects. There are many examples of new transit-oriented development in San Francisco, CA; Washington, DC; and Charlotte, NC, that local officials attribute—at least in part—to transit in the area. However, in other cities GAO visited, local officials said that there has been very little development around transit stations—or that development took as long as 10 years. Stakeholders in these cities attributed transit-oriented development, or lack thereof, near the projects selected to the influence of several factors, including:

- conditions that support transit-oriented development, such as demand for nearby real estate, land available to develop, residents’ support, and a transit system that provides a direct and efficient connection to jobs;
- challenges that hinder transit-oriented development, such as high associated costs, difficulty in obtaining financing, a difficult local-government review and approval process, an unsupportive local population, and a physical configuration around transit stations unattractive for development; and
- local government policies that support transit-oriented development, such as supportive zoning, planning, infrastructure investments, and tax incentives.

The Federal Transit Administration (FTA) assesses projects for potential New Starts funding by evaluating several of the factors and local government policies GAO identified as supporting transit-oriented development on a five-point scale ranging from low to high. FTA evaluates access to jobs, available land, and transit-supportive plans and polices—among other things—in assessing each project for economic development and land use, which are two evaluation criteria FTA uses to determine whether a project will be funded. Among four case study projects GAO visited that were assessed by FTA for New Starts, two scored medium-high or better, while two scored medium-low or lower. GAO found that many of the factors or local government policies that supported or hindered transit-oriented development are generally consistent with FTA’s summary assessment for economic development and land use. Further, GAO found two projects where transit-oriented development resulted in increased ridership, while projects with less transit-oriented development have fewer riders than expected.

Transit-Oriented Development, Columbia Heights Station, Washington, DC



Source: Sarah Mae Krueger. | GAO-15-70

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Abbreviations

DOT	Department of Transportation
EIR	Environmental Impact Review
FTA	Federal Transit Administration
MAP-21	Moving Ahead for Progress in the 21st Century Act
MPO	metropolitan-planning organization

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November 18, 2014

The Honorable Robert Menendez
Chairman
Subcommittee on Housing, Transportation, and Community Development
Committee on Banking, Housing, and Urban Affairs
United States Senate

Dear Chairman Menendez:

From 2004 to 2014, the Federal Transit Administration (FTA) allocated \$18.9 billion to build new or expanded “fixed-guideway”¹ transit systems through the Capital Investment Grant program, which categorizes the largest projects as “New Starts”.² One of the key goals for many local governments when planning major capital transit projects is to encourage transit-oriented development—generally described by research as a compact, mixed-use,³ walkable neighborhood located near transit—as a way to focus future growth along transit corridors. According to FTA, transit-oriented development has a number of potential benefits, including increased transit ridership, associated gains in revenue, and encouragement of economic development.⁴ In addition, transit-oriented

¹“Fixed-guideway” transit operates on a separate right-of-way exclusively for public transportation such as a rail track. Fixed-guideway systems include rail modes (heavy rail, light rail, commuter rail), ferryboats, aerial tramways, trolleybuses, and Bus Rapid Transit.

²FTA’s Capital Investment Grant program is a discretionary grant program under the Moving Ahead for Progress in the 21st Century Act. It provides funding for what are referred to as New Starts, Small Starts, and Core Capacity projects. New Starts projects are new fixed-guideway projects or extensions to fixed-guideway projects. Small Starts projects are fixed-guideway projects that have a total net capital cost of less than \$250 million and a federal share of less than \$75 million. Core capacity projects expand capacity in existing fixed-guideway corridors that are already at or above capacity today or are expected to be within 5 years. Pub. L. No. 112-141 § 20008(b), 126 Stat. 405, 658 (2012), codified at 49 U.S.C. § 5309.

³Mixed-use development mixes residential, commercial, cultural, or institutional uses on the same site—or within close proximity—which can allow for greater housing density; encourage more compact development; and promote pedestrian-friendly environments.

⁴Research has also found that local governments and transit agencies view transit-oriented development as a means to achieve goals such as increasing transit ridership and revitalizing neighborhoods. See Robert Cervero et al, *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects* (Washington, DC: Transportation Research Board, 2004).

development can provide advantages to the entire region through environmental benefits, such as reduced carbon emissions through fewer car trips.

You asked us to examine transit-oriented development around federally funded transit facilities. In this report, we address (1) the extent to which transit-oriented development has occurred near select transit lines that received federal funds and which factors or local government policies support transit-oriented development and which factors hinder transit-oriented development, and (2) the extent to which FTA considers factors related to the potential for transit-oriented development when assessing proposed projects, and the extent to which FTA's assessment of these factors is consistent with the factors that local stakeholders told us affect a project's results.

For both of these objectives, we selected six transit lines that received federal funds to serve as case studies. We selected these lines based on the existence of previously implemented and planned or in-construction federally funded transit lines in the same region, diversity in the existence of state and local programs that are supportive of transit-oriented development; diversity in the current strength of the local real estate market and; geographical breadth. The results of these six case studies are not generalizable to all federally funded transit lines. While we focused on a specific transit line in each city, in order to provide context for our cases, we also discussed with local officials the city or county's broader experience with transit and transit-oriented development. The case studies we selected were:

- Central Corridor Light Rail in Baltimore, MD;⁵
- South Corridor Light Rail in Charlotte, NC;

⁵According to the 2001 FTA Annual Report on New Starts Baltimore Central Corridor Light Rail Double Tracking Project Summary, the original Central Corridor Light Rail was built entirely with local funds. The line began operations in 1992 predominately as single track. The Maryland Transit Administration subsequently examined the feasibility and environmental impacts and benefits of double tracking eight sections. Three federally funded extensions of the Central Corridor Light Rail, to Hunt Valley, Penn Station, and Baltimore-Washington International Airport were completed in 1998. We used FTA's summary project justification from the double-tracking project because FTA included the entire line in this assessment. According to this summary, while only certain sections of the line were improved, the summary project's justification is applicable for the entire line, unless otherwise noted, since double-tracking sections were scattered throughout the system and affected service for the entire system.

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- North Corridor Light Rail in Houston, TX;
 - Third Street Light Rail, Phase 1 in San Francisco, CA;
 - Tasman West Light Rail Extension in Santa Clara County, CA; and
 - Green Line Metrorail Extensions in Washington, DC and Prince George's County, MD.⁶

To determine the extent to which transit-oriented development has occurred near these transit projects, we analyzed local land use data; physically observed development, if any, along these transit lines; and interviewed local planning officials, developers, and other local stakeholders. To identify factors that support or hinder transit-oriented development and the policies that local governments can use to support such development, we visited all of the transit projects identified above and some nearby transit-oriented developments. We identified policies that local governments can use to support transit-oriented development; reviewed state and local planning regulations; and analyzed land-use and transit-ridership data from 2005 to 2014. We deemed the data on land use and transit ridership we collected reliable for the purposes of this report. We reviewed relevant literature on transit-oriented development as well as our past reports related to FTA's Capital Investment Grant Program and transit-oriented development. During our site visits, we met with officials from transit agencies and local planning departments, developers, and other stakeholders, such as representatives from various transportation and planning organizations.

To determine the extent to which FTA considers factors related to potential transit-oriented development when assessing proposed projects, we analyzed relevant laws and documents, such as the Moving Ahead for Progress in the 21st Century Act (MAP-21)⁷, FTA's *Annual Report on Funding Recommendations*, and New Starts policy guidance. For projects that were assessed for New Starts funding, to determine the extent to which FTA's assessment is consistent with future land use changes, if any, we reviewed FTA's project assessments and materials used to

⁶This extension includes the Columbia Heights, Georgia Ave/Petworth, and Congress Heights Stations in Washington, DC, and the Southern Avenue, Naylor Road, Suitland, and Branch Avenue Stations in Prince George's County, MD. Funding for this extension came from FTA as part of the Fast Track program as authorized in the National Capital Transportation Amendments of 1990, Pub. L. No.101-551, 104 Stat. 2733 (1990).

⁷Pub. L. No. 112-141.

support project recommendations.⁸ We then compared these assessments with information gathered from our site visits. We also interviewed FTA officials. For further details on our scope and methodology, see app. I.

We conducted this performance audit from February 2014 through November 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

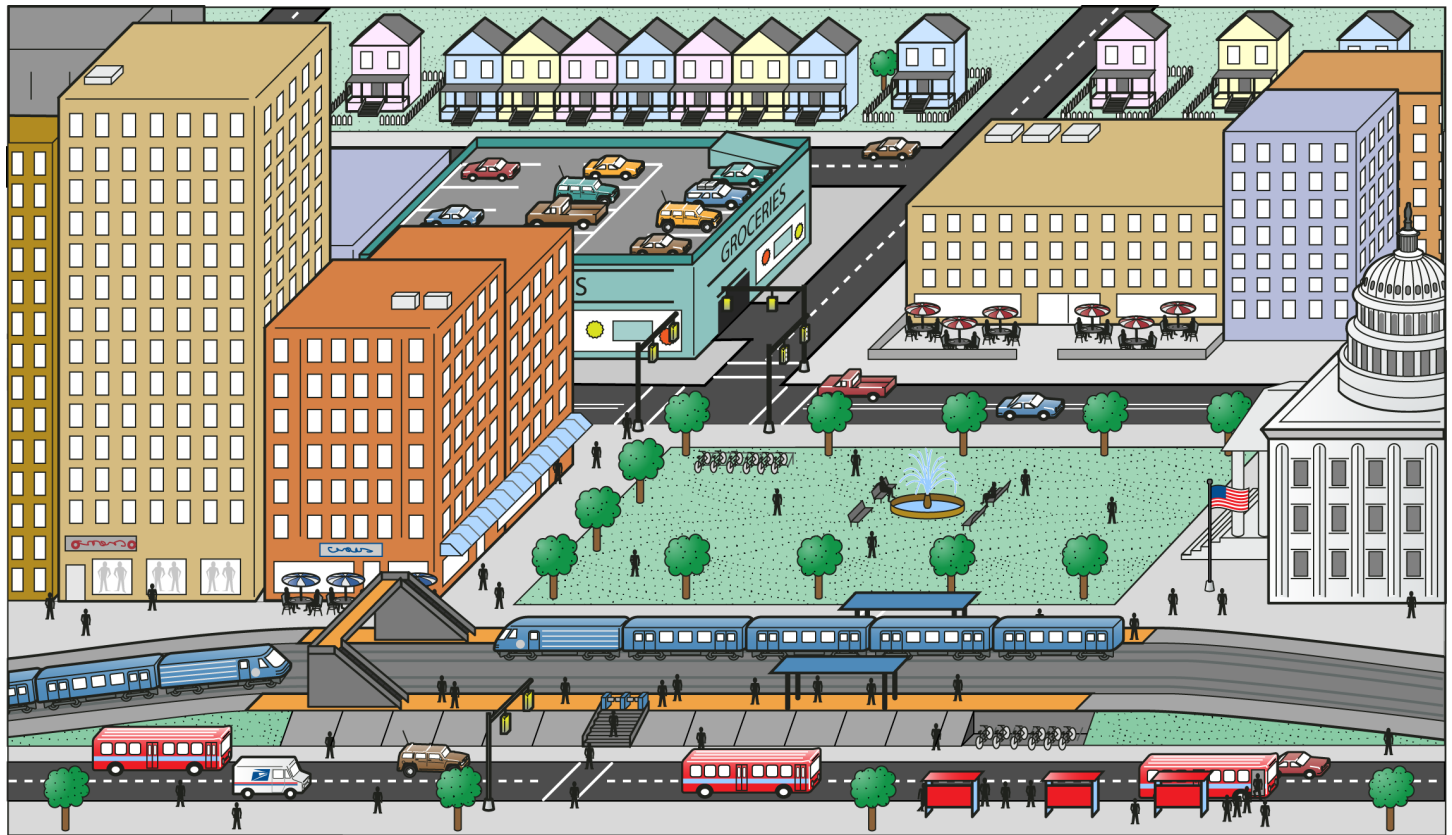
As we have previously found,⁹ there is no single definition of transit-oriented development; however, research generally describes such a development as a compact, mixed-use,¹⁰ and “walkable” neighborhood located near transit. Transit-oriented developments are typically located up to a half-mile from a transit station (usually a fixed guideway rail station), can encompass multiple city blocks, and have pedestrian-friendly environments. Transit-oriented developments can range in both size and scope, with some located in major urban centers while others are located in suburban neighborhoods. Transportation experts believe that transit-oriented development can increase access to employment, educational, cultural, and other opportunities by promoting transportation options to households, resulting in increased transit ridership and reduced road congestion. Figure 1 provides a graphic representation of common features of a notional transit-oriented development.

⁸The light rail projects in Baltimore, Charlotte, Houston, San Francisco, and Santa Clara County were assessed by FTA for New Starts Funding. The San Francisco T-Third project did not receive a New Starts full funding grant agreement, but did receive more than \$70 million in funds from the Fixed Guideway and Surface Transportation Programs. The Washington Metrorail extensions were not assessed for New Starts Funding.

⁹GAO, *Affordable Housing in Transit-Oriented Development*, [GAO-09-871](#) (Washington, DC: September 2009)

¹⁰Mixed-use development mixes residential, commercial, cultural, or institutional uses on the same site—or within close proximity—which can allow for greater housing density, encourage more compact development, and promote pedestrian-friendly environments.

Figure 1: Common Features of Transit-Oriented Development



Features (generally encompass multiple city blocks up to a half mile from a transit station)

<p>Transit station, such as a light rail station, that is part of a transportation network allows residents to access the region's neighborhoods, destinations, and centers, thereby promoting transit use</p>	<p>Open spaces to include transit-plazas, small parks or regional open spaces</p>	<p>High-quality walking environments and streetscape that allow people to take care of some of their daily needs by walking or biking</p>	<p>Includes moderate- to high-density mix of residential, commercial, employment, and civic/cultural developments</p>	<p>Includes residential buildings that can vary from small-lot single family/ duplex/ townhome units to high-rise multifamily units</p>	<p>Offers mixed use and employment developments that can vary from mid- to high-rise residential over commercial to low-to-high-rise office/commercial</p>

Source: GAO. | GAO-15-70

A number of stakeholders play important roles in the planning and implementation of a transit-oriented development. These roles are summarized below.

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- **Local transit agencies:** These agencies, such as transit authorities or transit operators, are generally responsible for building, maintaining, and operating transit systems. These transit systems can include fixed guideway transit systems—such as rail or bus rapid transit—ferry systems, paratransit services, and local bus service.
 - **State and local departments of transportation and metropolitan-planning organizations (MPO):**¹¹ These departments and organizations develop transportation plans and improvement programs; they also build, maintain, and operate transportation infrastructure and services.
 - **Local governments and regional councils:** City and county governments have planning departments with control over land use planning, which includes zoning policies and growth management policies. These entities are also generally responsible for reviewing, engaging local residents on, and granting entitlements for new development projects.¹² Regional councils develop land use plans used by metropolitan-planning organizations for transportation planning.
 - **Private developers:** Private developers decide on and create developments and build and manage housing units and commercial developments.
 - **Lenders:** Banks and other financial institutions finance developers to design and construct transit-oriented development projects.
 - **Business improvement districts:** These districts—and other entities that coordinate local economic interests—have input on community infrastructure upgrades.

Although FTA provides funds for transit projects that may spur transit-oriented development, it does not have a discrete program for transit-

¹¹MPOs are federally mandated regional organizations responsible for comprehensive transportation planning and programming in urbanized areas with a population of 50,000 or more and are required to develop regional transportation plans. 49 U.S.C. § 5303.

¹²According to the Urban Land Institute, entitlements are legal rights conveyed by approvals from governmental entities to develop a property for a certain use, intensity, building type, or building placement.

oriented development. However, the agency has been expanding its role in transit-oriented development in recent years by:

- Funding transit-oriented development research.¹³
- Coordinating with the Department of Housing and Urban Development and the Environmental Protection Agency on the Sustainable Communities Partnership. This partnership was formed in 2009 with the goal of coordinating federal housing, transportation, water, and other infrastructure investments to support communities' development in more environmentally and economically sustainable ways, including transit-oriented development.
- Implementing a transit-oriented development planning pilot program that is to provide grants to state or local governments for advance planning efforts that support transit-oriented development.¹⁴ FTA plans to distribute \$19.98 million in grant funding to state and local agencies in 2015.¹⁵

Since the early 1970s, the federal government has provided a large share of the nation's transit capital investment through the Capital Investment Grant program. Projects eligible for the program include new fixed-guideway transit lines, extensions to fixed-guideways, and projects that improve core capacity on an existing fixed-guideway system. As we recently reported,¹⁶ although FTA provides funding for Capital Investment Grant projects, local transit agencies typically serve as project sponsors,

¹³See Center for Transit-Oriented Development, *Intercity Rail and Transit-Oriented Development: Making Connections, Building Communities* (Washington, D.C.: May 6, 2013); New Jersey Institute of Technology, *Planning for Transit-Supportive Development: A Practitioner's Guide* (Washington, DC: June 2014), and; Center for Transit Oriented Development, *Trends in Transit-Oriented Development 2000–2010* (Washington, DC: May 2014).

¹⁴MAP-21, Pub. L. No. 112-141 §. 20005(b).

¹⁵The \$19.98 million available consists of \$9.98 million from the Consolidated and Further Continuing Appropriations Act, 2013 Pub. L. No. 113-6 Div. F, Title VIII, 127 Stat. 198 (2013), and \$10 million from the Consolidated Appropriations Act, 2014. Pub. L. No. 113-76. Div. L, Title I, 128 Stat. 5 (2014) FTA issued a Notification of Funding Availability on September 4, 2014. *Transit-Oriented Development Planning Pilot Program, Notification of Funding Availability*, 79 Fed. Reg. 52799 (Sept. 4, 2014).

¹⁶GAO, *Length of Development Process, Cost Estimates, and Ridership Forecasts for Capital-Investment Grant Projects*, [GAO-14-472](#) (Washington, DC: May 2014).

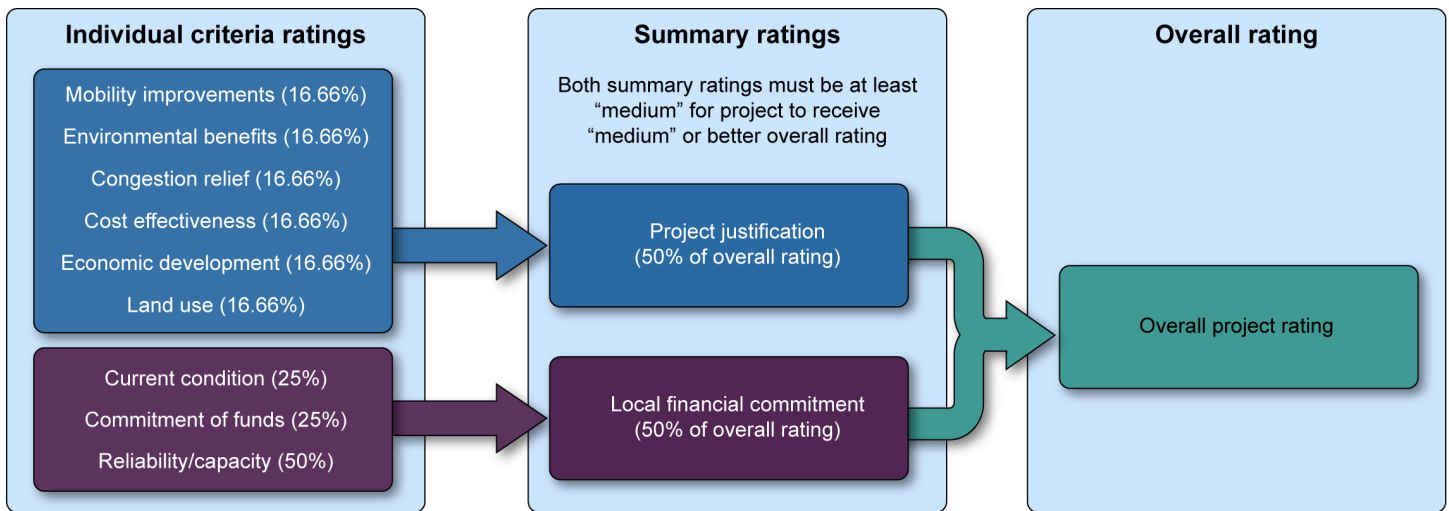
and design and implement these projects. The project sponsors often coordinate with local MPOs in designing and implementing these projects, and FTA awards funding to project sponsors upon completion of the pre-construction development process. This process includes a range of local policy-development and decision-making activities, including identifying the specific transit corridor and project, refining the project design, and obtaining the necessary funding commitments from state and local partners.

Once a project sponsor decides to seek Capital Investment Grant funding, FTA is required by law to rate a project considering a number of evaluation criteria, before it can recommend the project to Congress for funding.¹⁷ While these criteria have changed over time, there are currently six individual criteria: mobility improvements, environmental benefits, congestion relief, cost-effectiveness, economic development, and land use. In addition, FTA considers the availability of federal funds; consideration of project readiness, including sufficient engineering and design to produce a reliable scope, cost figure, and schedule; and sufficient technical capacity of the project sponsor to undertake a major construction project. FTA is also required to evaluate and rate the local financial commitment and the transit agency's ability to operate the project and continue to operate the existing transit system.¹⁸ See fig. 2.

¹⁷49 U.S.C. § 5309(d).

¹⁸49 U.S.C. § 5309(c)(1)(B), 5309(f).

Figure 2: New Starts Project Evaluation and Rating Criteria



Source: GAO analysis of Federal Transit Administration information. | GAO-15-70

FTA is required by MAP-21 to rate each individual criterion on a five point scale, from low, medium-low, medium, medium-high, and high. FTA prepares and combines a summary project justification and a summary local financial commitment rating to arrive at an overall project rating. MAP-21 requires FTA to give “comparable, but not necessarily equal” weight to the six project justification criteria.¹⁹ FTA’s final policy guidance for the New Starts evaluation and rating process specifies that FTA gives equal weight (16.66%) to each of the project justification criteria to arrive at a summary project justification rating. According to FTA final policy guidance, each of these criteria provides important information about project merit and therefore should receive equal weight.²⁰

According to MAP-21, a proposed transit project needs to achieve at least a medium overall rating (which requires at least a medium rating on both the summary project justification and the summary local financial commitment categories) to advance through the steps in the process and

¹⁹49 U.S.C. § 5309(g)(2).

²⁰Department of Transportation, Federal Transit Administration, *New and Small Starts Evaluation and Rating Process Final Policy Guidance*, (Washington, DC: 2013).

be eligible for funding. Projects may score below medium for an individual criterion, as long as the overall project rating is at least a medium.²¹

A Variety of Factors and Local Government Policies Can Influence Transit-Oriented Development

We found a wide range in the amount of new transit-oriented development since transit operations began for our six case study transit lines. Stakeholders in these cities attributed the amount of transit-oriented development to the influence of a variety of factors including conditions that support of transit-oriented development such as a demand for real estate, challenges that hinder transit-oriented development such as high associated construction costs, and local government policies that encourage transit-oriented development, such as transit supportive zoning.

Overview of Case Study Findings

During our case study visits, we found a wide range in the amount of transit-oriented development that occurred since the implementation of a federally funded transit project. For each project, we found at least a minimal amount of transit-oriented development near at least one station; however, for each project we also found examples of stations that have had little or no transit-oriented development. For example, in Baltimore, MD, local officials told us that there has been very little development around light rail stations—except near downtown Baltimore’s Penn Station, which also services commuter rail and Amtrak—despite more than 20 years of operations and a significant upgrade in service in 2006. In contrast, local stakeholders in Charlotte, NC, told us that the South End portion of the light rail line has been largely successful in attracting transit-oriented development—although one of these stakeholders acknowledge that stations further down the transit line in Charlotte are more auto-oriented²² and have generated little transit-oriented development. A more detailed description of examples of our findings from each case study can be found in figures 3 to 8.²³

²¹49 U.S.C. § 5309(g)(2).

²²Auto-oriented generally refers to development that requires an automobile for access, this type of development can make other travel options—such as public transportation, cycling, and walking—less feasible or safe.

²³The descriptions and illustrations in this table are illustrative of our case study findings and not a comprehensive analysis of all development that has taken place near each transit project.

Figure 3: Shuttered Buildings near a Light Rail Station in Downtown Baltimore, MD

Baltimore, MD
Central Corridor Light Rail
(Began operation in 1992, federal double tracking project opened in 2006)

The Central Corridor Light Rail project began operation in 1992 as mostly a single tracked project. Since then, several federally funded extensions and a double tracking project have expanded the system to 30 miles and 33 stations. Transit and planning officials in Baltimore told us that there was very little transit-oriented development along the Central Line and that it has not been as successful as they hoped in attracting transit-oriented development—although planning officials told us that some development has occurred limited to the area along the light rail near Penn Station, which also provides service on Amtrak and commuter rail to Washington, D.C. Planning and transit officials attributed the lack of transit-oriented development in part to a weak real estate market, low transit ridership, and a lack of planning for transit-oriented development when the line was originally built. One station, Gilroy Road, was built but was never been opened due to a lack of riders and development nearby.

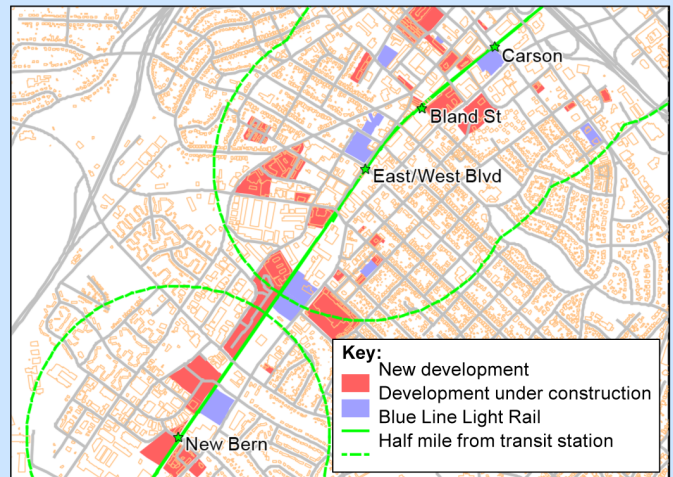


Source: GAO. | GAO-15-70

Figure 4: New and Planned Development within a Half Mile of Light Rail Stations in South End, Charlotte, NC

Charlotte, NC
South Corridor Light Rail (2007)

Since the first segment of Charlotte's light rail transit system opened in 2007, the surrounding neighborhoods have had mixed success in attracting transit-oriented development, according to local stakeholders. Transit and planning officials and a representative from a local business improvement district told us that the South End neighborhood has been largely successful in attracting transit-oriented development. The representative from the local Business Improvement District told us that, although the South End constitutes three percent of the land in Charlotte, about 20 percent of all the developments (about 3,200 units) permitted in Charlotte from 2010 until 2016 are in the South End. However, local transit and planning officials and a developer told us that other stations outside of the South End neighborhood have been less successful in attracting transit-oriented development. These stations are located in a more suburban, auto-oriented part of the city and two developers told us that it may be a long time before this area redevelops.



Sources: GAO and City of Charlotte and Mecklenberg County. | GAO-15-70

Figure 5: A Low Density and Auto-Oriented Business near Light Rail in Houston, TX

**Houston, TX
North Corridor Light Rail (Red Line extension) (2013)**

In 2013, a federally funded, eight station extension was added to Houston’s Red Line Light Rail which opened in 2004. We observed little transit-oriented development along the Red Line extension, which was corroborated by officials we spoke with from local planning and transit agencies and a non-profit community organization. Although Houston has had very strong population and economic growth, many stations along the North Corridor extension are surrounded by fairly low density retail and residential uses, including many auto-oriented businesses. While this extension was only 6 months old at the time of our visit, local officials and other stakeholders told us that development along the extension is unlikely to take place in the near future because of deed restrictions that limit potential changes of land use. According to local officials, the first segment of the Red Line, which was funded locally, has only recently begun to attract development after 10 years in service. They cited high land values resulting from land speculation as a factor hindering development for both the first segment and Red line extension.

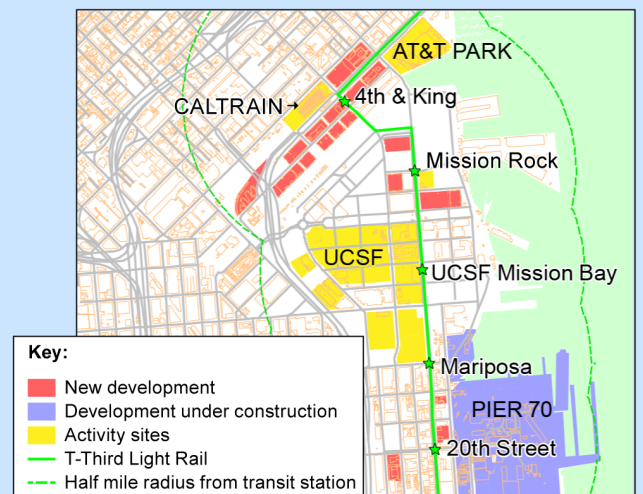


Source: GAO. | GAO-15-70

Figure 6: New and Planned Development within a Half Mile of Light Rail Stations in San Francisco, CA

**San Francisco, CA
Third Street Light Rail, Phase 1 (2007)**

The first segment of the T-Third Light Rail opened in 2007 and is to ultimately extend to the Chinatown neighborhood when the federally funded Central Subway project is complete in 2019. We observed many new buildings opening along the Third Street light rail corridor and stakeholders told us the area has experienced significant transit-oriented development since the opening of the line in 2007. However, while developers and local transit officials acknowledged that the light rail contributed to new development, other key factors also such as proximity to Caltrain Commuter rail, and its connection to the explosive growth of the technology industry also played a role. State officials called one neighborhood along the corridor, Mission Bay, a national model for smart growth and sustainable communities. The Port of San Francisco is currently working with developers to convert Pier 70, approximately 69 acres of vacant industrial land near the light rail, into a new transit-oriented development.



Source: GAO and City of San Francisco and Mission Bay Development Group. | GAO-15-70

Figure 7: New Office Development at Moffett Park, CA

**Santa Clara County, CA
Tasman West Light Rail Extension (1999)**

The Tasman West Light Rail extension runs from North San Jose to Mountain View. According to local transit officials, very little development occurred for approximately the first 10 years of operation due in part to challenges with access to stations and a lack of direct connections to job centers. Some development has taken place along the West Tasman extension in recent years, although most is office or commercial space. Further, local stakeholders told us that local policies on parking and density have not incentivized the physical details needed for transit-oriented development—which includes an organization of buildings, streets, and open spaces that encourage walkability.



Sources: GAO and Santa Clara Valley Transportation Authority. | GAO-15-70

Figure 8: Transit-Oriented Development near the Columbia Heights Station in Washington, DC

**Washington, DC
Green Line Metrorail Extensions
(1999 and 2001)**

Transit agency and local government officials told us that within Washington, DC, the Green Line has attracted many new transit-oriented developments. For example, development around the Columbia Heights station is considered by a local planner to be a national model for transit-oriented development. But local transit and planning officials told us that stations along the Green Line in Prince George’s County, MD, have been less successful in attracting development to date. However, the County recently repackaged its transit-oriented development strategy to spur development near stations in the County and the transit agency are working actively on several joint development projects near stations in Prince George’s County.



Sources: GAO and Sarah Mae Krueger. | GAO-15-70

Conditions that Can Support Transit-Oriented Development near Selected Projects

Stakeholders from across our case studies identified key conditions that can support transit-oriented development, including: demand for real estate, available land for development, supportive local residents, and a transit line that efficiently connects to established job and activity centers. Specifically, we found that the following conditions support transit-oriented development:

-
- **Market demand for real estate:** Market demand for real estate is needed to support transit-oriented development. According to the literature we reviewed and stakeholders we spoke to, demand for real estate is driven in part by the strength of the local economy so cities with strong local economies are more likely to support transit-oriented development. One study has also shown that market demand is the primary factor developers consider when determining whether to build a transit-oriented development.²⁴ For example, a developer that has built mixed-use development projects in both Washington, DC, and Baltimore told us that developers consider anticipated price growth and existing housing supply when determining locations for new development. This developer told us that consideration of these factors has led to a pipeline of about 30,000 units in Washington, while Baltimore only has a few thousand. Further, we observed many new developments along the light rail in San Francisco, which had the fastest real economic growth of the 10 largest metropolitan areas in 2012, according to the Bureau of Economic Analysis.²⁵ While a strong economy and demand for real estate are necessary to support transit-oriented development, they may not always be sufficient to lead to transit-oriented development. For example, Houston had a 23 percent job growth rate from 2003 through 2013, according to the Bureau of Labor Statistics. While the United States had a 5 percent job growth rate during the same period, we observed very little transit-oriented development in Houston due to factors such as land speculation and deed restrictions placed on land around transit.
 - **Large parcels of land available for development:** The availability of large amounts of land such as surface parking lots near transit stations or underutilized industrial land can also support transit-oriented development. We have previously found that many transit agencies view converting surface parking lots at transit stations into a transit-oriented development as an opportunity to accomplish multiple goals, including promoting transit-supportive land use near stations and increasing ridership.²⁶ In addition, as we have previously found,

²⁴Cervero et al, *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*, 86. 2004.

²⁵U.S. Department of Commerce, Bureau of Economic Analysis, *GDP by Metropolitan Area, Advance 2012, and Revised 2001–2011*, accessed, August 5, 2014

²⁶GAO, *Federal Role in Value Capture Strategies for Transit Is Limited, but Additional Guidance Could Help Clarify Policies*, [GAO-10-781](#) (Washington DC, July 2010).

research has shown²⁷ that land and housing values generally tend to increase with proximity to a transit station. Underutilized industrial land also presents an opportunity for transit-oriented development due to the large size of industrial land parcels and the lack of neighbors to oppose new development. For example, we visited sites in both Charlotte and San Francisco where developers took advantage of large parcels of previously industrial land to build transit-oriented development.

- **Resident support for transit and transit-oriented development:** Among our case study cities, San Francisco and Washington, DC, have the highest transit ridership—among the top five in the nation according to the 2009 American Community Survey—and both cities also have historically dense development patterns. As noted above, we observed many new developments near transit in both cities. In addition, according to stakeholders, cities with a high concentration of people 18 to 34 years old tend to be more supportive of transit-oriented development than other age cohorts. For example, stakeholders from Houston; Washington, DC; San Francisco; and Charlotte told us younger residents’ desire for neighborhoods close to amenities and their support for transit are signs that this age cohort is supportive of transit-oriented development. These comments conform to a national survey by the Urban Land Institute that found that the majority of this age cohort prefers a shorter commute over a larger home; is attracted to living in neighborhoods close to public transit, with a mix of shops, restaurants, and offices; and shows a preference for living in a neighborhood with a mix of housing types and a mix of incomes.²⁸
- **Efficient access to jobs and centers of activity:** Transit that efficiently connects people to established job and activity centers provides potential for transit-oriented development. According to planning and transit officials in Santa Clara County, to attract people to transit, transit routes need to move from residential areas to job centers as directly as possible. Specifically, the extent to which transit

²⁷[GAO-09-871](#)

²⁸Urban Land Institute, *America in 2013: Key Findings on Housing, Community, Transportation, and the Generations* (Washington, DC: Urban Land Institute, 2014)

connects people to anchor institutions,²⁹ central business districts, and existing mixed-use neighborhoods supports transit-oriented development. Stakeholders cited Washington, DC's Metrorail system as an efficient system that has been successful in supporting transit-oriented development because riders can reach a number of job and activity centers (such as downtown Washington, DC; Rosslyn, VA; and the Courthouse district in Arlington, VA). In San Francisco, the first segment of the T-Third Light Rail is close to Caltrain Commuter rail, which provides access to nearby areas with a high concentration of technology-industry jobs.

Challenges That Can Hinder Transit-Oriented Development near Selected Projects

Stakeholders from our case studies identified several factors that can hinder transit-oriented development including: (1) the higher construction cost of transit-oriented developments; (2) lenders' reluctance to finance transit-oriented developments in some cities; (3) lengthy or discretionary local-development approval processes; (4) an unsupportive local population; and (5) land around transit stations that is unattractive for development. Specifically, we found that the following challenges can hinder transit-oriented development:

- **Construction costs can be higher:** Construction of transit-oriented developments can be more costly than for traditional, single-use developments because of the cost of mixed-use buildings and parking garages. According to literature we reviewed and stakeholders we spoke with, aspects of transit-oriented developments such as multiple stories or a mix of uses can make transit-oriented developments more costly to build than traditional developments. For example, one study found that "different functions, appearance, access, and security levels of entrances and exits for different uses can become costly features in mixed-use projects."³⁰ A national stakeholder group also told us that the higher construction costs associated with mixed-use buildings can inhibit small construction firms from pursuing mixed-use projects. Some developers, transit, and planning officials noted that transit-oriented joint development on surface parking lots at transit

²⁹Anchor institutions are large organizations that tend to have fixed locations, may also have social, historical or cultural ties to the community, and are a major employer such as a university or a hospital.

³⁰Marie Venner and Liisa Ecola, "Financing Transit-Oriented Development: Understanding and Overcoming Obstacles." *Transportation Research Record: Journal of the Transportation Research Board*, no. 1996, (2007): 17–24

stations could be hindered by the high cost of constructing replacement parking garages.³¹ Typically, when transit agencies enter into agreements with developers to use existing surface parking lots for transit-oriented joint development projects, they ask developers to pay for all or for part of a parking garage to replace the surface parking spaces used for the development. In some cases, the cost of constructing a replacement parking garage may hinder the implementation of projects. For example, according to a 2012 study of parking-garage costs in the San Francisco Bay Area, a replacement parking garage may cost about \$28,000 per space, or more than \$14 million for a 500-space garage.³² In addition, a developer told us that transit agencies could have design specifications for parking garages that double the cost per parking spot compared to what he would normally construct, cost that exacerbates the challenge of providing replacement parking.

- **Lenders may be reluctant to finance transit-oriented development:** According to the transit-oriented development literature we reviewed and developers and others we spoke with, some lenders are reluctant to finance transit-oriented developments because of a perception that transit-oriented developments are riskier than more traditional developments due to higher market risk associated with mixed-use buildings. This reluctance may be heightened in areas with few or no successful transit-oriented development projects. Mixed-use developments can face market challenges because each use must have sufficient market demand to make the project as a whole profitable. For example, a national interest group told us that mixing retail use with residential use adds risk to a project because the market for retail real estate tends to be

³¹Replacing surface parking lots at transit stations is typically done through joint development. Joint development is generally defined as a real estate development project that involves a cooperative arrangement between public and private sector partners, often as part of a transit-oriented development. In most cases, joint development takes place on or above property owned by a transit agency or other public entity. Joint development arrangements can take a number of forms, including a lease of land, air rights, or space to a developer; sale of land for specific types of development; joint construction of a transit facility and private development; and others. Public and private partners can share costs, revenues, or financial risk depending on the particular arrangement. Any joint development using federal funds to make capital improvements must follow FTA's joint development guidance and meet the statutory definition of an eligible capital project.

³²See Metropolitan Transportation Commission, *Parking Structure Technical Report: Challenges, Opportunities, and Best Practices* (Oakland, CA: 2012).

more volatile than the market for residential use. In areas with no successful examples of transit-oriented development, lenders may view these projects as additionally risky, because lenders do not know if there is local consumer demand for transit-oriented development.

- **Local approval processes may add requirements or delays:** Another challenge that can hinder transit-oriented development is a lengthy or discretionary local approval process. For example, two national stakeholders said that developers face higher risk and more uncertainty in developing projects when transit-oriented developments are not in line with the zoning code for the area. In these cases, a zoning variance is typically required from local officials, a requirement that can make the entitlement process lengthier and more discretionary. These stakeholders also said that when entitlement processes are dependent on the discretion of the local officials, developers might be unable to predict when projects will get approved or what requirements local officials will attach to projects as conditions of approval. Three developers in San Francisco and Charlotte told us that if they are uncertain of the length or outcome of the entitlement process, they might choose not to pursue projects.
- **Local residents may not support transit or dense development:** Stakeholders in every city we visited told us that transit-oriented development could face challenges when the local population is not in favor of transit or dense residential development. Transit officials in Baltimore and Houston reported that negative perceptions of transit affect transit ridership and consumer demand for transit-oriented development. Stakeholders in Baltimore told us that a social stigma associated with public transit results in low ridership on the light rail system. The Houston transit agency and a local developer told us that Houston's "car culture"—wherein residents generally prefer to independently travel in their own car rather than on transit—is a factor that can inhibit the appeal of transit and demand for dense living near transit stations. Stakeholders in the San Francisco Bay Area reported that local residents may oppose new development out of concern about issues such as the height of buildings for dense development or perceived decreases in quality of life due to increases in population, traffic, and demand for parking.
- **Physical features surrounding a transit station may be undesirable for development:** Stakeholders in all of our case study areas reported that physical features such as highways, vast areas of vacant land, blank walls, driveway entrances, or a lack of pedestrian crossings at streets could hinder transit-oriented development. For

example, local officials in Houston told us that many stations along the light rail system have challenges with the last 100 feet. Specifically, there are many areas where sidewalk and ramp improvements are needed to help better access the station. These improvements could increase walkability and make transit-oriented development more attractive.

- **Unsupportive land uses:** Land uses around transit stations that are not supportive of high-density, mixed-use development can also hinder transit-oriented development. For example, as discussed previously, vacant industrial parcels of land can support transit-oriented development. However, developers, planning officials, and other stakeholders told us that aspects of this type of land can hinder transit-oriented development if:
 - there is still operating “legacy” industry nearby that would be noxious to residential use;
 - the land requires environmental clean-up;
 - the land requires significant physical-infrastructure investment such as adding sidewalks or upgrading sewer capacity; or
 - the area lacks community infrastructure such as schools and parks.

Local Government Policies Support for Transit-Oriented Development

Local governments can use a variety of policies to encourage transit-oriented development including zoning regulations, station area planning, targeted infrastructure investments, and tax incentives. Stakeholders told us that these tools most successfully support transit-oriented development when they align with the local residents’ preferences and market demand for development. The following are examples of local government actions to support transit-oriented development near the projects we selected:

- **Creating zoning and regulations supportive of elements of transit-oriented development:** Local governments can support transit-oriented development by designing zoning or other regulations to facilitate more certainty for developers proposing projects near transit stations. According to two stakeholder organizations we spoke with, local governments can help improve developer certainty by developing zoning codes that specifically allow aspects of new developments that are consistent with transit-oriented development. According to a report we reviewed, transit-oriented development zoning districts that allow buildings of greater unit density or fewer parking spaces can facilitate developer certainty because the entitlement process will likely be shorter and projects will not be

subject to a discretionary entitlement process. A developer in Charlotte told us that the transit-oriented development district zone made him confident that he would get his project entitled and that absent the zone, he would not have proceeded with the project. In some cases, policies supportive of transit-oriented development can make projects more economically feasible. For example, cities can allow greater height or density and require fewer parking spaces to allow developers to increase revenue or to help offset the property value premium that transit can generate. The City of Houston does not have zoning, which results in a unique regulatory environment in which the City cannot regulate land use or other building features like most cities can. The City allows a reduction in required parking and has implemented an optional transit-corridor ordinance that reduces the legal setback from the street, but few developers have used either option to date.

- **Developing area plans that provide guidance and resolve contentious issues:** Local governments can also support transit-oriented development through neighborhood-scale land-use planning activities. Among our case studies, most local governments use some form of these plans to provide detailed direction on land use, transportation, housing, parks and economic growth for the development of city blocks, corridors, or neighborhoods around transit stations. These plans typically identify gaps in city services and resources deployed at the neighborhood level and shape capital investment priorities, among other things. In San Francisco, planning officials told us they not only use neighborhood plans to guide neighborhood growth but also to create a blanket Environmental Impact Review (EIR)³³ that is applicable for the entire neighborhood. According to these officials, this can reduce the cost of EIRs for each development and also manages public participation in the EIR process, which traditionally accounted for much of the entitlement process delay. They noted that the Area Plan also resolves a number of topics that can be contentious (such as density, height, parking,

³³According to the San Francisco Planning Department, EIRs are public information documents for use by governmental agencies and the public to identify and evaluate potential environmental impacts of a project, to identify mitigation measures to lessen or eliminate significant adverse impacts, and to examine feasible alternatives to the project. Local environmental review requirements may vary, but, for example, under the California Environmental Quality Act, most large proposed developments are obligated to go through an environmental review prior to entitlement approval.

and traffic congestion issues), before developers come in with specific project plans. Developers told us that, as a result, development has concentrated in neighborhoods with Area Plans and entitlement processes for projects in these areas are shorter.

According to planning and transit officials in Baltimore, Washington, DC and Charlotte, policies designed to encourage transit-oriented development are most successful when they are tailored to local circumstances such as local residents' preferences and market demand. The following are examples of such policies in our case studies:

- **Responsiveness to local residents' preferences:** Planning and transit officials in Baltimore, Washington, DC, and Charlotte told us that aligning local policies such as transit-oriented development districts and Area Plans with the scale of the existing community may ensure a higher level of local residents' support for transit-oriented development. In addition, incorporating input from local residents on issues like land use, parking, density and building height may also help ensure their support. For example, a Baltimore planning official told us that the City of Baltimore held numerous public meetings while drafting their new zoning code. Due to public input, the City changed its plans to have two transit-oriented development districts of different densities and similar uses and instead developed four different transit-oriented development districts with varying density and use.
- **Responsiveness to market demand:** Planning and transit officials in Charlotte also told us that it was important for transit-oriented development districts and local government policies to conform to market demand. For example, some local governments would like to cap parking in transit-oriented zones in order to encourage transit-ridership, but city-mandated parking requirements do not always align with consumer demand for parking and therefore the requirements can hinder transit-oriented development. Some local governments would like to encourage mixed-use developments near transit by requiring retail, but two developers told us that setting aside a minimum amount of retail space in residential buildings may not align with demand for retail in that area because encouraging new retail areas is very difficult. For example, a developer in San Francisco built a mixed-use residential and retail development and the retail space remained empty for fifteen years, until it was converted into a live/work loft space.

Beyond planning and zoning, local governments can also play a role in improving connections to transit and helping mitigate environmental

challenges to transit-oriented development. Actions in these areas may include the following, among others:

- **Targeted investments in infrastructure:** Local governments' efforts to support transit-oriented development through zoning and planning are enhanced when local governments make targeted investments in infrastructure around transit stations. To increase the attractiveness of transit and transit-oriented development, local governments can support the integration of multi-modal transportation choices to take riders to and from the transit stations. Stakeholders in San Francisco reported that shuttle service, car-sharing, bicycle-sharing programs, bicycle lanes, and pedestrian amenities can help move people in and around the transit station area, thus supporting ridership and making transit more attractive (see fig. 9).

Figure 9: Bicycle Lanes and Bicycle-Sharing Program, San Francisco, CA



Source: GAO. | GAO-15-70

- **Tax credits for developers:** In order to mitigate some of the challenges associated with transit-oriented development on vacant industrial land, some state governments have created programs that provide tax credits to help developers ameliorate clean-up costs and reduce legal liability. Stakeholders in both Baltimore and Charlotte reported that programs in which developers receive tax credits and reduced legal liability in exchange for providing a certain amount of

environmental clean-up on their parcels has made development on vacant industrial land more feasible.³⁴

FTA's New Starts Assessment of Certain Factors Is Generally Consistent with Future Transit-Oriented Development

FTA Assesses Factors That Support Transit-Oriented Development

FTA assesses several factors that can support transit-oriented development when reviewing transit projects for potential New Starts funding; however, these factors make up only a small percentage of all the factors considered. As mentioned earlier, proposed New Starts projects are evaluated and rated according to criteria set forth in law. In addition to rating the local government's financial commitment, FTA evaluates and rates a proposed project according to six statutory project justification criteria including mobility improvements, environmental benefits, congestion relief, economic development effects, land use, and cost-effectiveness.³⁵ Two of the six project-justification criteria—economic development effects and land use—require documentation from project sponsors related to whether current and future land use is supportive of transit. To assign ratings for these criteria, FTA evaluates many of the same factors that we found help support transit-oriented development.

³⁴The City of Baltimore participates in the State of Maryland's Brownfields Incentive Program. The program allows the City to reduce the Brownfield site's increased property tax liability if the developers commit to site cleanup. In addition, the developers are not to be held liable for existing contamination on the site. In Charlotte, owners of Brownfield sites that have received Brownfield Agreements with the North Carolina Department of Environment and Natural Resources are entitled to the partial City and County property tax exclusions for the first 5 taxable years beginning after completion of qualifying improvements.

³⁵Department of Transportation, Federal Transit Administration, *New and Small Starts Evaluation and Rating Process Final Policy Guidance*, (Washington, DC: August, 2013).

The land use criterion includes evaluation of factors such as the development, character (including amenities such as short building setbacks and active facades), pedestrian facilities, parking supply, and the percentage of affordable housing in the existing corridor and station areas compared to the percentage in the surrounding counties. Many of the elements that support high ratings for this criterion are similar to the elements that stakeholders we spoke with identified as supportive of transit-oriented development. Specifically, to receive a higher rating, project sponsors need to show, among other things, that the existing project corridor serves a significant number of employees and densely populated areas; has development with infrastructure such as sidewalks, trees, crosswalks, and other pedestrian amenities; a mix of residential, retail and professional uses; and minimal parking and thereby costly parking (more expensive parking tends to support ridership).

The economic development criterion includes evaluation of several factors relating to local government policies. FTA evaluates three sub-factors within the criterion: transit-supportive plans and policies, performance and impacts of policies, and tools to maintain or increase the share of affordable housing in the project corridor. To assign ratings, FTA considers many of the same plans and policies that stakeholders told us can help support transit-oriented development. For example, FTA considers plans and policies to enhance the transit-friendly character of station areas, plans to improve pedestrian facilities, parking policies, zoning ordinances that increase development density and allow for reduced parking, and outreach and efforts to engage the development community in station area planning. FTA also considers whether proposed station areas have land available for development and demonstrated cases of development affected by transit-supportive policies and plans, policies, or incentives the local governments have in place to maintain or increase the share of affordable housing.

These two criteria account for one-third of the summary-project justification rating and one-sixth of the project's overall rating. The remaining two-thirds of the summary project-justification rating are based on four other criteria. While these four criteria could be affected by future transit-oriented development, they do not directly relate to the potential for a project to support transit-oriented development:

-
- **Mobility Improvements**—The total number of “linked trips” using the proposed project, with a weight of two given to trips that transit-dependent persons would make with the project.³⁶
 - **Environmental Benefits**—Based upon the dollar value of the anticipated direct and indirect benefits to human health, safety, energy, and the air-quality environment scaled by the annualized capital and operating cost of the project. FTA computes these benefits based on the change in vehicle miles travelled that would result from implementation of the proposed project.
 - **Cost-Effectiveness**—For New Starts projects cost-effectiveness is measured by the annual capital and operating and maintenance cost per trip on the project. The number of trips on the project is not an incremental measure but simply total estimated trips on the project.
 - **Congestion Relief**—A new criterion introduced in MAP-21. Until FTA undertakes a rulemaking process, FTA plans to assign a medium rating to this criterion for all projects seeking New Starts funds.

FTA uses either estimated ridership or the change in vehicle miles traveled resulting from a transit project as part of the calculation for mobility improvements, environmental benefits, and cost-effectiveness. As discussed above, the calculation for the congestion relief criterion is not yet defined. Transit ridership can be generated in a number of ways. Riders can approach a transit station by car and park at the station, a feeder bus system, or by walking from transit-oriented development or other location near transit. These ridership forecasts may take into account growth in population and employment in the region.³⁷ While transit-oriented development may be part of the reason for this growth, growth could also come from broader development in the region. Benefits

³⁶“Linked trips” using the proposed project include all trips made on the project whether or not the rider boards or alights on the project or elsewhere in the transit system.

³⁷Under the current Capital Investment Grant process, FTA requires all project sponsors to report “current year” forecasts of ridership using existing population and employment as inputs to the forecasts. FTA also allows “future year” forecasts of ridership that allow sponsors to input anticipated growth in population and employment. In the past, (and for the case studies we examined) FTA required project sponsors to submit “future horizon year forecasts”—generally 20 years in the future. These forecasts would assume population and employment growth.

and high ratings for these criteria could be driven by transit-oriented development, but could also be driven by more auto-oriented uses.

While FTA evaluates many of the factors or local policies that we identified that support or hinder transit-oriented development, there are inherent limitations in the extent to which some factors can be fully evaluated. For example, local officials and a developer told us that the strength of the real estate market is critical for transit-oriented development. FTA evaluates real estate market conditions as part of the economic development criterion; however, real estate markets for residential, retail, and office space are cyclical and the life cycle of a transit project planning spans many years into the future. Market conditions could change significantly between FTA's assessment and the beginning of transit operations. According to a transit official, FTA evaluations are based on a snapshot of a specific moment in time that may not necessarily be predictive of future economic or political cycles. Similarly, development patterns and acceptance for dense, urban living may be influenced by cultural factors that influence local resident support for transit-oriented development. Factors such as Houston's "car culture" and housing preferences of millennials can be challenging to quantify and evaluate.

FTA's Assessment of Factors Related to Land Use and Economic Development Is Consistent with Future Transit-Oriented Development

Among our case studies that were assessed for New Starts funding, we found that the amount of transit-oriented development realized—and the factors that local stakeholders told us supported or hindered transit-oriented development—are generally consistent with FTA's pre-construction evaluation and rating of factors related to transit-oriented development.³⁸ For example, we included two light-rail projects as case studies that FTA assessed as high or medium-high for land use and economic development. Both the Charlotte South Corridor light rail and the Third Street light rail in San Francisco were rated highly for transit-

³⁸Throughout this section, we refer to the FTA assessment of each project using the terminology that FTA used for each criterion at the time of the assessment. For the projects in Baltimore and San Francisco, we are using the assessment for Transit-Supportive Existing Land Use and Future Patterns. For the projects in Houston and Charlotte, we are using the assessment for Transit-Supportive Land Use. We were not able to obtain records from FTA on the final rating for the Tasman West extension in Santa Clara County. The Washington DC and Prince George's County Green Line extensions were not assessed for New Starts Funding.

supportive land use.³⁹ As mentioned earlier, segments of both of these projects are now surrounded by several new transit-oriented developments (see figs. 4 and 6). For the Charlotte South Corridor light rail project, in support of the medium-high rating, FTA cited local policies such as the regional centers and corridors' growth strategy, the transit overlay district, and the 2025 Integrated Land Use/Transit plan. In addition, FTA noted that changes to policies and zoning in the South End neighborhood had led to new buildings' being built. We observed other transit-oriented development activity, such as new residential and retail establishments oriented towards the light rail (see fig. 10).

Figure 10: Transit-Oriented Retail Development in Charlotte, NC



Source: GAO. | GAO-15-70

For the Third Street light rail project, in support of the high rating, FTA noted the urban character of the corridor as well as the efforts by the transit agency and the City of San Francisco to encourage high-density development that was transit-oriented, pedestrian-friendly, and parking-limited and, as previously reported, many new transit-oriented developments have opened in neighborhoods near the light rail.

³⁹The Third Street Light Rail Project Phase 1 was rated high in the Transit-Supportive Existing Land Use and Future Patterns Criterion. The South Corridor Light Rail was rated medium-high in the overall transit-supportive land use criterion.

Among projects we visited that FTA rated as medium-low or low for land use and economic development, we found very little transit-oriented development has taken place, for example:

- In the assessment of the Baltimore light rail double-tracking project, FTA rated the transit-supportive existing land-use and future patterns criterion as low-medium. This assessment noted that significant sections of the light rail development were suburban, at low to moderate densities and had limited pedestrian access. In addition, FTA found that economic forces indicated a general outward migration from the center city and noted that existing policies to encourage transit-oriented development were generally weak.
- In 2008, FTA rated the Houston's North Corridor light rail project as medium-low for land use. In its assessment, FTA cited factors such as low-density, auto-oriented existing land uses, poor pedestrian access, limited regional planning and growth management efforts, and a lack of zoning or other transit-oriented development implementation mechanisms.

As reported in Figures 3 and 5, we found little transit-oriented development had occurred along the light rail in either Baltimore or Houston.

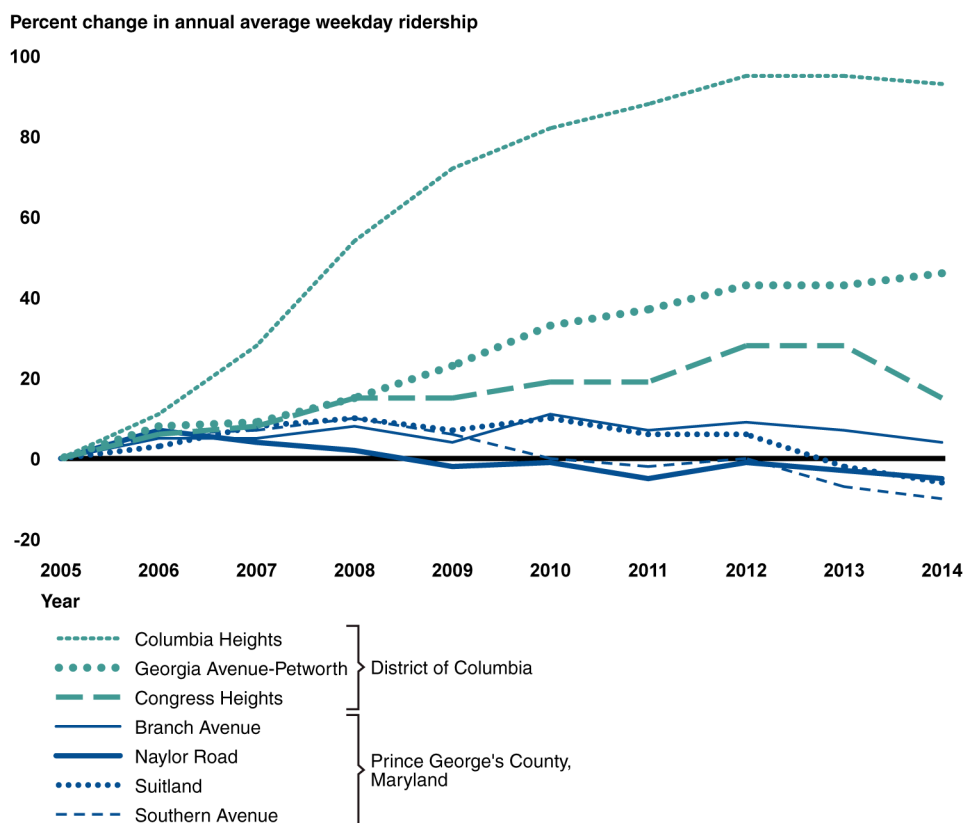
While FTA rated these projects as medium-low or low for land use and economic development, FTA approved the projects based on their merit in other criteria. For instance, while the project in Houston scored medium-low for transit-supportive land use, it scored medium-high for cost effectiveness and mobility improvements, and high for environmental benefits. All of these benefits taken together lead to an overall project justification rating of medium. Similarly, the FTA overall project justification rating in 1999 of Baltimore's double-tracking project was medium based on ratings of high for environmental benefits, medium for operating efficiencies, medium-high for cost effectiveness, and medium for mobility benefits.

Performance of Transit-Oriented Development and Ridership along Selected Transit Lines

Among projects we visited, the actual ridership performance of the transit lines when compared to ridership expectations or historical ridership varies. Our case studies provide several examples where ridership has grown over time. For example, when the Columbia Heights Metrorail station in Washington, DC, opened in 1999, several vacant or underutilized lots surrounded it. Ridership at the station in 2000—the first

full year it was open—averaged about 4,000 riders per day. Since 2000, many new developments were constructed on the vacant or underutilized lots near the Columbia Heights station. Over the past 10 years, ridership has grown about 93% to more than 12,000 riders per day. The percentage gain in ridership for Columbia Heights has exceeded percentage gains for the other five Green Line stations that also opened in 1999 or 2001. Of the four stations in this group located in Prince George’s county—where local officials told us there has been little or no development—three have lost ridership in the past 10 years (see fig. 11).

Figure 11: Percentage Change in Average Weekday Riders for Select Washington, DC, Metrorail Stations: 2005-2014



Source: Washington Metropolitan Area Transit Authority. | GAO-15-70

Similarly, in Charlotte, the projected opening-year average ridership for the Charlotte Light Rail system was about 9,100 riders per day. In 2008, the first full year of operations for the system, ridership averaged 11,678 per weekday, exceeding the opening-year ridership target by about 2,500

riders (28%). As development has occurred along the line, ridership has grown 30% to more than 15,000 riders per average weekday.

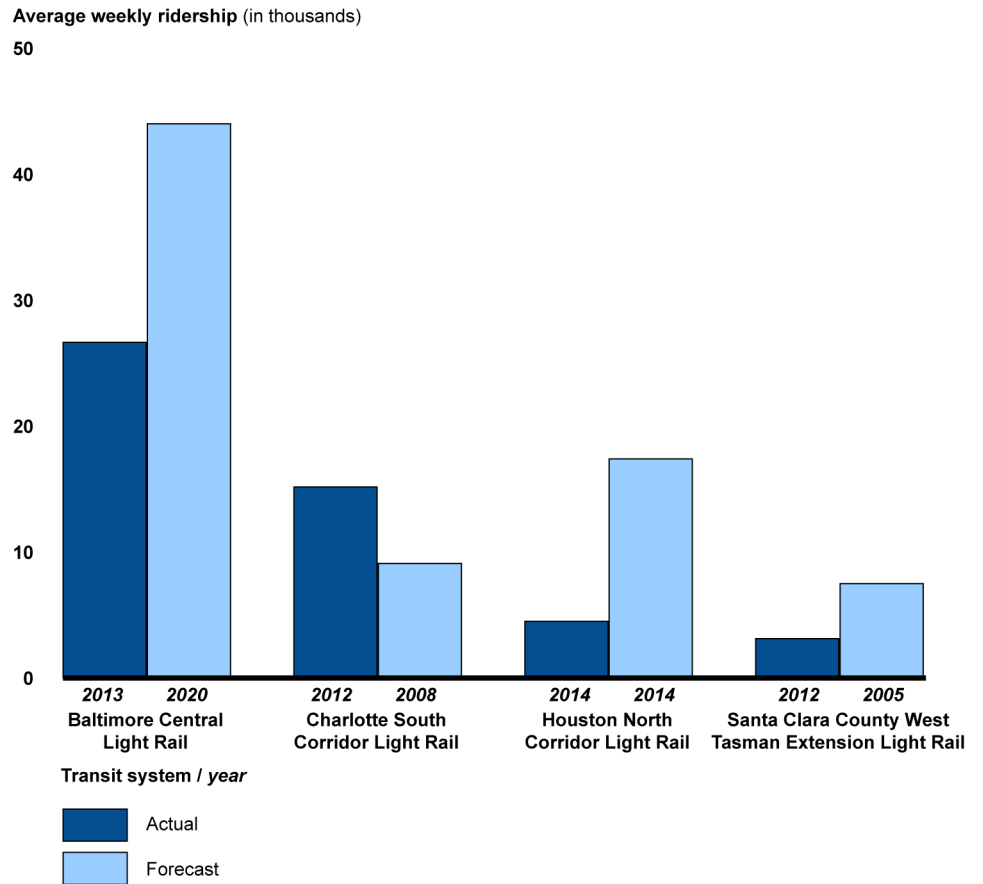
Other projects, particularly those projects that have not been surrounded by new development, are generally not on track to meet the ridership forecasts specified in the New Stats project's documentation, specifically:

- Ridership on the Houston North Corridor light rail averaged about 4,500 passengers per weekday from February to July 2014,⁴⁰ less than one-third of the expected opening year ridership of 17,400. (see fig. 12).
- The Baltimore Central Corridor light-rail system attracted an average of 26,647 riders per weekday in 2013. The ridership forecast for 2020 is 44,000 riders per average weekday (see fig. 12).
- Average weekday ridership at stations built as part of the West Tasman Light Rail Extension in Santa Clara County was 3,125 from July 2012 through January 2013.⁴¹ The ridership forecast for this segment was estimated to be 7,500 by 2005. (see fig. 12).

⁴⁰Houston Metro, *July 2014 (FY 2014), Monthly Ridership Report, METROBus and METRORail*.

⁴¹Santa Clara Valley Transportation Authority, *VTA Transit Service Plan, FY 2014 – FY 2015* (May 2013).

Figure 12: Actual and Forecast Average-Weekday Ridership of Selected New Starts-Funded Light Rail Projects



Sources: The National Transit Database, Maryland Transit Administration, Houston Metro, Santa Clara Valley Transportation Authority, and the Federal Transit Administration. | GAO-15-70

Note: The projects presented all received a New Starts Full Funding Grant Agreement from FTA. The actual ridership is the most recent available from each transit agency. The forecast ridership is the figure presented in the relevant FTA Annual Report on Funding Recommendations.

In San Francisco, ridership on the T-Third Light Rail is also below expectations despite the new development project that has been built in Mission Bay. For operating purposes, the T-Third is actually part of the K Ingleside/T-Third Route that runs through downtown San Francisco and into another part of the city. San Francisco Municipal Transportation Agency does not break out ridership on the T-Third, but estimated that in fiscal year 2013 the entire route had about 34,000 riders per average weekday. This is short of the more than 80,000 daily boardings estimated for 2015 during the preliminary engineering phase of the project.

However, the average weekday ridership at the nearby San Francisco Caltrain rail station has increased by 58 percent from February 2007 to February 2014.

Agency Comments

We provided DOT with a draft of this report for review and comment. In its comments DOT stated that the report highlights the multiple challenges faced by local governments in guiding development around transit. DOT reiterated FTA's long-standing commitment to encourage local land use actions near major transit capital investment. DOT also stated that authorizing statutes have increased the prominence of land use and economic development for the FTA's Capital Investment Grant evaluation process and that FTA has long believed transit supportive land use plans and policies indicate good regional planning.

We are sending copies of this report to interested congressional committees and the Secretary of the Department of Transportation. In addition, this report will be available at no charge on GAO's website at <http://www.gao.gov>.

If you or your staff have any questions or would like to discuss this work, please contact me at (202) 512-2834 or wised@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. Individuals making key contributions to this report are listed in appendix II.

Sincerely yours,



David J. Wise
Director, Physical Infrastructure Issues

Appendix I: Objectives, Scope, and Methodology

In this we report we identify: (1) the extent to which transit-oriented development has occurred near select transit lines that received federal funds and which factors or local government policies support transit-oriented development and which factors hinder transit-oriented development, and (2) the extent to which FTA considers factors related to the potential for transit-oriented development when assessing proposed projects, and the extent to which FTA's assessment of these factors is consistent with the factors that local stakeholders told us affect project's results.

To respond to both of our objectives, we selected six transit lines that received federal funds to serve as illustrative case studies. We selected these cases based on the existence of previously implemented and planned or in-construction federally funded transit lines in the same city or county; diversity in the existence of state and local programs and grants supportive of transit-oriented development; diversity in the current strength of the local real estate market; and geographical breadth. The results of these six case studies are not generalizable to all federally funded transit lines. While we focused on a specific transit line in each city, we discussed the greater city's experience with transit and transit-oriented development with local officials to provide context for our cases. The case studies we selected were:

- Central Corridor Light Rail in Baltimore, MD;¹
- South Corridor Light Rail in Charlotte, NC;
- North Corridor Light Rail in Houston, TX;
- Third Street Light Rail, Phase 1 in San Francisco, CA;

¹According to the 2001 FTA Annual Report on New Starts Baltimore Central Corridor Light Rail Double Tracking Project Summary, the original Central Corridor Light Rail was built entirely with local funds. The line began operations in 1992 predominately as single track. The Maryland Transit Administration subsequently examined the feasibility and environmental impacts and benefits of double-tracking eight sections. Three federally funded extensions of the Central Corridor Light Rail, to Hunt Valley, Penn Station, and Baltimore-Washington International Airport, were completed in 1998. We used FTA's summary project justification from the Double Tracking project because FTA included the entire line in this assessment. According to this summary, while only certain sections of the line were improved, the summary project justification is applicable for the entire line since double-tracking sections were scattered throughout the system and affected service for the entire system.

- Tasman West Light Rail Extension in Santa Clara County, CA; and
- Green Line Metrorail Extensions in Washington, DC, and Prince George's County, MD.²

To determine the extent to which transit-oriented development has occurred near these transit projects, we analyzed local land-use data, physically observed development, if any, along these transit lines, and interviewed local planning officials, developers, and other local stakeholders. To identify factors that support or hinder transit-oriented development, we conducted site visits to all of the transit lines and some nearby transit-oriented developments and interviewed a variety of stakeholders. In total, we interviewed with 66 different stakeholders including:

- twenty-six planning officials from eight local and regional planning entities,
- sixteen transit officials from eight local and regional transit agencies,
- fifteen representatives from both national and local-interest non-profit and research organizations with knowledge of transit-oriented development, and
- nine developers from seven different firms.

To identify policies that local governments can use to support transit-oriented development, we reviewed state and local planning regulations, and analyzed relevant land use and transit ridership data from 2005 to 2014. Finally, we reviewed literature on transit-oriented development published within the past 5 years as well as our past reports related to FTA's Capital Investment Grant Program and transit-oriented development. We assessed the reliability of the land use and by reviewing relevant documentation and either discussing reliability with agency officials or comparing data to corroborating information. We assessed the reliability of transit ridership data by reviewing documentation on the methods used to collect and maintain the data. We deemed the data on land use and transit ridership we collected reliable for the purposes of this report.

²This extension includes the Columbia Heights, Georgia Ave/Petworth, and Congress Heights Stations in Washington, DC, and the Southern Avenue, Naylor Road, Suitland, and Branch Avenue Stations in Prince George's County, MD. Funding for these extensions came from FTA as part of the Fast Track program as authorized in the National Capital Transportation Amendments of 1990, Pub. L. No.101-551, 104 Stat. 2733 (1990).

To determine the extent to which FTA considers factors related to potential transit-oriented development when assessing proposed projects, we reviewed and analyzed relevant laws including Moving Ahead for Progress in the 21st Century Act (MAP-21) and the preceding funding authorization laws. We also reviewed FTA's *Annual Report on Funding Recommendations* and New Starts policy guidance. For projects that were assessed for New Starts funding, to determine the extent to which FTA's assessment is consistent with future land use changes, if any, we reviewed FTA's project assessments and materials used to support project recommendations. We then compared these assessments with information gathered from our site visits. To determine the extent to which these projects have met ridership projections included in the information provided for New Starts funding assessment, we gathered ridership data from transit agencies and compared this data to the original ridership forecasts. We also interviewed FTA officials.

We conducted this performance audit from February 2014 through November 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: GAO Contact and Acknowledgments

GAO Contact

David J. Wise, (202) 512-2834 or wised@gao.gov

Staff Acknowledgments

In addition to the contact named above, John W. Shumann (Assistant Director); Melissa J. Bodeau; Mark Braza; Leia Dickerson; Kathleen Donovan; Terence Lam; Matthew LaTour; Hannah Laufe; Cheryl Peterson; and Kelly Rubin contributed to this report.

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