

# Jumpstarting the Transit Space Race: 2011

## A Catalog and Analysis of Planned and Proposed Transit Projects in the US

*April 2011*



**Reconnecting America** is a national nonprofit that is helping to transform promising ideas into thriving communities – where transportation choices make it easy to get from place to place, where businesses flourish, and where people from all walks of life can afford to live, work and visit. At Reconnecting America we not only develop research and innovative public policy, we also build the on-the-ground partnerships and convene the players necessary to accelerate decision-making.

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**Reconnecting America,  
Washington DC**

1707 L Street, N.W., Suite 210  
Washington, D.C. 20036

**T** 202-429-6990

**F** 202-315-3508

**Reconnecting America,  
Oakland**

436 14<sup>th</sup> Street, Suite 1005  
Oakland, CA 94612

**T** 510-268-8602

**F** 510-268-8673

**Reconnecting America,  
Denver**

899 Logan Street, Suite 300  
Denver, CO 80203

**T** 303-861-1421

**F** 303-573-1574

[www.reconnectingamerica.org](http://www.reconnectingamerica.org)

# Table of Contents

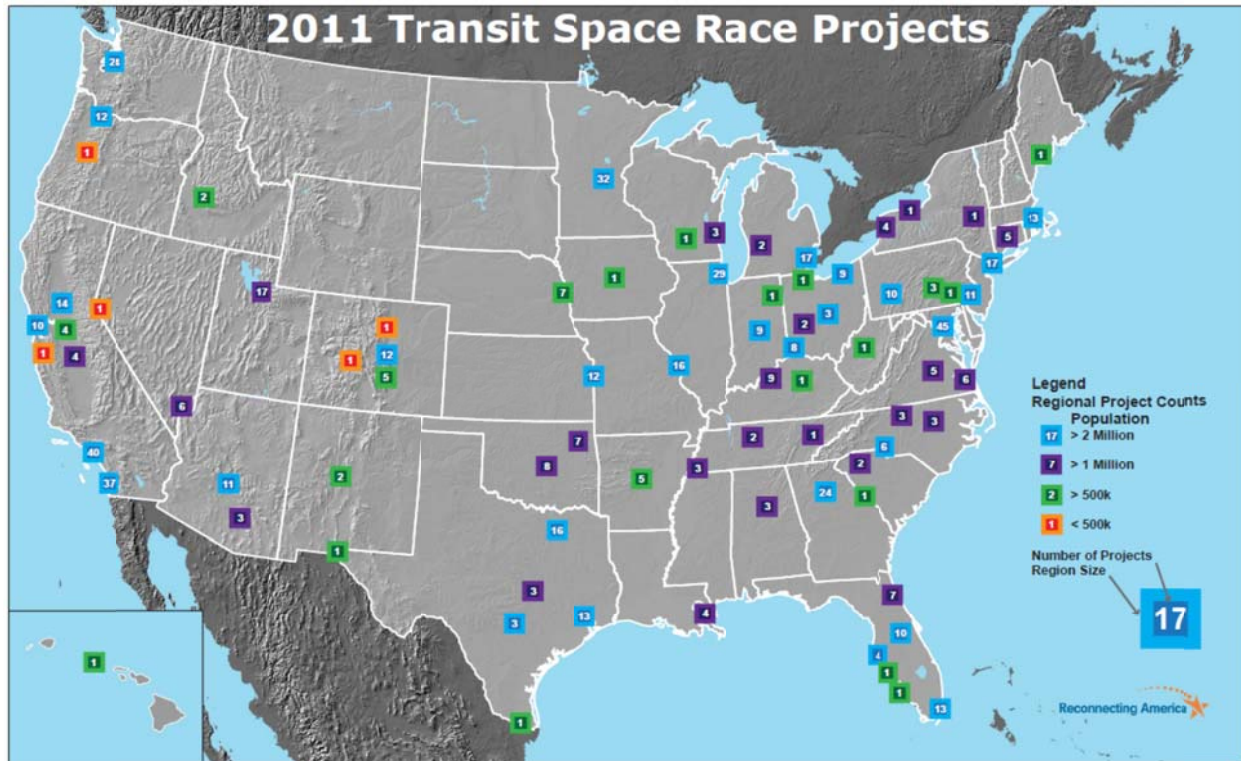
Introduction and Top Line Takeaways .....	4
Connecting Jobs and Low Income Households: A detailed analysis of how proposed transit lines connect to jobs and low-income households.....	10
Understanding the Transit Planning Process.....	15
Regional Themes: Six major themes of transit planning that we saw repeated again and again. ....	21
Regional Stories: A brief overview of the state of transit planning in each region we surveyed.. ....	26
Appendix.....	40
Methodology.....	40
Catalog Key.....	42

## Introduction and Top Line Takeaways

Since 2004, regions including Denver, Portland, Salt Lake City, Houston, Seattle, Los Angeles, Charlotte and the Twin Cities have been planning large transit network expansions that would move forward faster than the one-line-at-a-time production schedule that in the past had been economically and politically feasible. At the same time, smaller regions have been inspired by the benefits that transit can bring to their communities and have proposed their first streetcars, light rail starter lines and Bus Rapid Transit (BRT). However these places have to compete with each other for the approximately \$1.6 billion annually available in the federal New Starts funding program to build out their multibillion-dollar networks. Reconnecting America spent several months in late 2010 gathering the most current transit plans available from the 100 largest regions around the country, as well as some known projects from smaller regions. Through this cataloging effort, Reconnecting America found 643 transit projects in 106 regions. Of these, cost estimates were available for 413 projects, 99 projects had detailed ridership and 121 had mileage information. For 143 projects, there was sufficient information about station locations for Reconnecting America staff to digitize station points and analyze demographic and employment conditions within a half-mile of the stations. Because information on transit projects changes almost daily, this catalog and findings are a snapshot in time and will need to be updated periodically in order to remain current. It is also possible that some projects and plans were not discovered during the cataloging process.

**The demand for new fixed-guideway transit is strong all across the country.** In this research alone, we documented more than 640 fixed-guideway transit projects from around the country in various stages of the transit planning process. This is a huge number, especially when compared to the number of projects currently in the federal New/Small Starts process (45 in 2011.)

Transit Planning Stage	Number of Projects	Projects with Cost Estimates	Cost Estimates (Millions)
Construction	43	39	\$31,331
Engineering	95	86	\$59,987
Alternatives Analysis	108	77	\$44,005
Future Plan	358	179	\$79,748
Stalled	39	32	\$18,158
<b>Total</b>	<b>643</b>	<b>413</b>	<b>\$233,228</b>



The scale of the projects being proposed is immense. More than 30 percent of the individual projects examined were in regions that currently have no fixed-guideway transit. The ultimate outcome of this “race to the top” is still unknown, but if this analysis is any indication, there are many more competitors for limited transit infrastructure dollars than anticipated.

**There is a huge backlog of federal funding through the New Starts program.** For the 413 projects where Reconnecting America has collected cost estimates, the total estimated cost is \$233 billion. If all of these were funded through the New Starts program at the current rate of federal investment in capital funding (\$1.6 billion per year) assuming 50 percent federal share in projects, this would take 73 years to fund. Even the projects in the engineering and construction stage represent a 30-year queue, but will yield 1,464 miles of new transit.



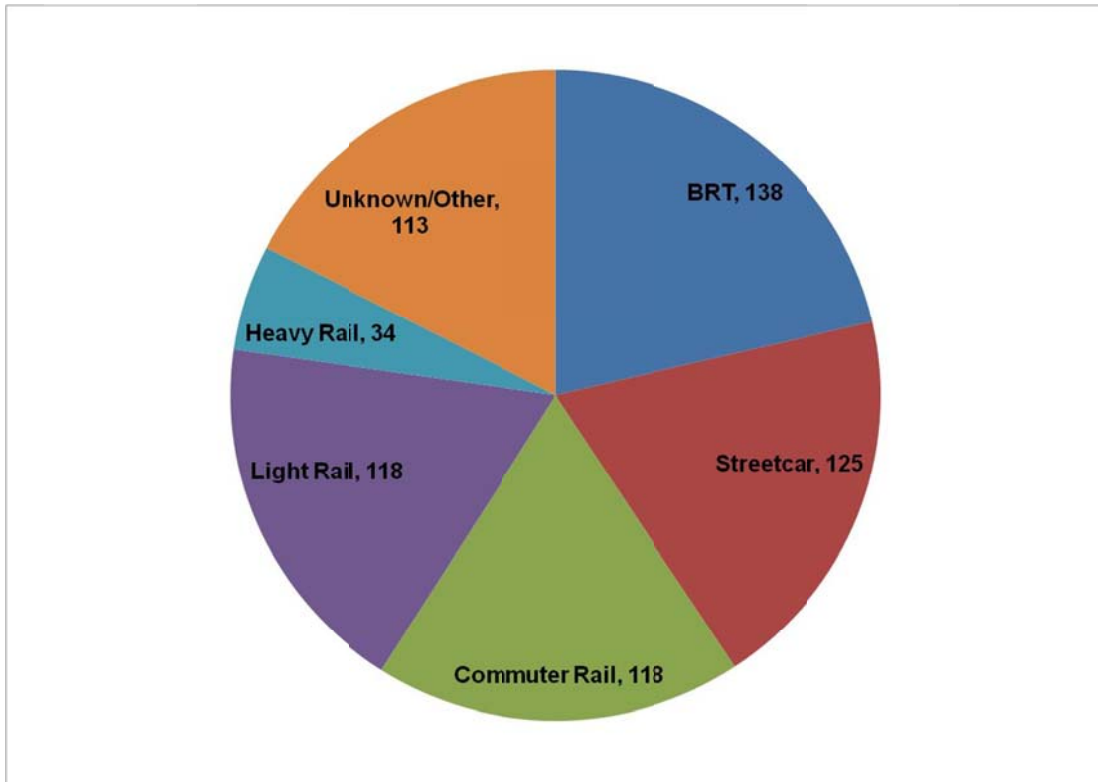
**Table 2. Transit Project Technology for Projects in Engineering and Construction**

Planning Stage	Transit Technology	Total	Costs (Millions)	Miles*	Daily Ridership*
Construction	Heavy Rail	6	\$18,736	26.3	465,800
	Commuter Rail	5	\$2,171	76.8	56,400
	Light Rail (LRT)	14	\$9,184	97.3	337,274
	Streetcar	5	\$440	8.9	18,600
	BRT	8	\$775	80.5	38,573
	Other	1	\$24	-	-
	<b>Total</b>	<b>39</b>	<b>\$31,331</b>	<b>289.8</b>	<b>916,647</b>
Engineering	Heavy Rail	9	\$23,676	71.4	328,720
	Commuter Rail	17	\$6,407	612.7	120,811
	Light Rail (LRT)	24	\$22,056	180.3	691,140
	Streetcar	17	\$5,711	81.9	855,148
	BRT	13	\$1,908	163.1	177,839
	Other	6	\$229	64.8	36,300
	<b>Total</b>	<b>86</b>	<b>\$59,987</b>	<b>1,174.1</b>	<b>2,209,958</b>

\*These are the miles/ridership numbers we were able to collect. 121 projects had mileage estimates and 99 had ridership projections.

In the complete catalog of 646 projects, the **breakout by technology was fairly even**. Projects that had not chosen a specific mode were categorized as Unknown.

Figure 1: Catalog Transit Technologies by Type

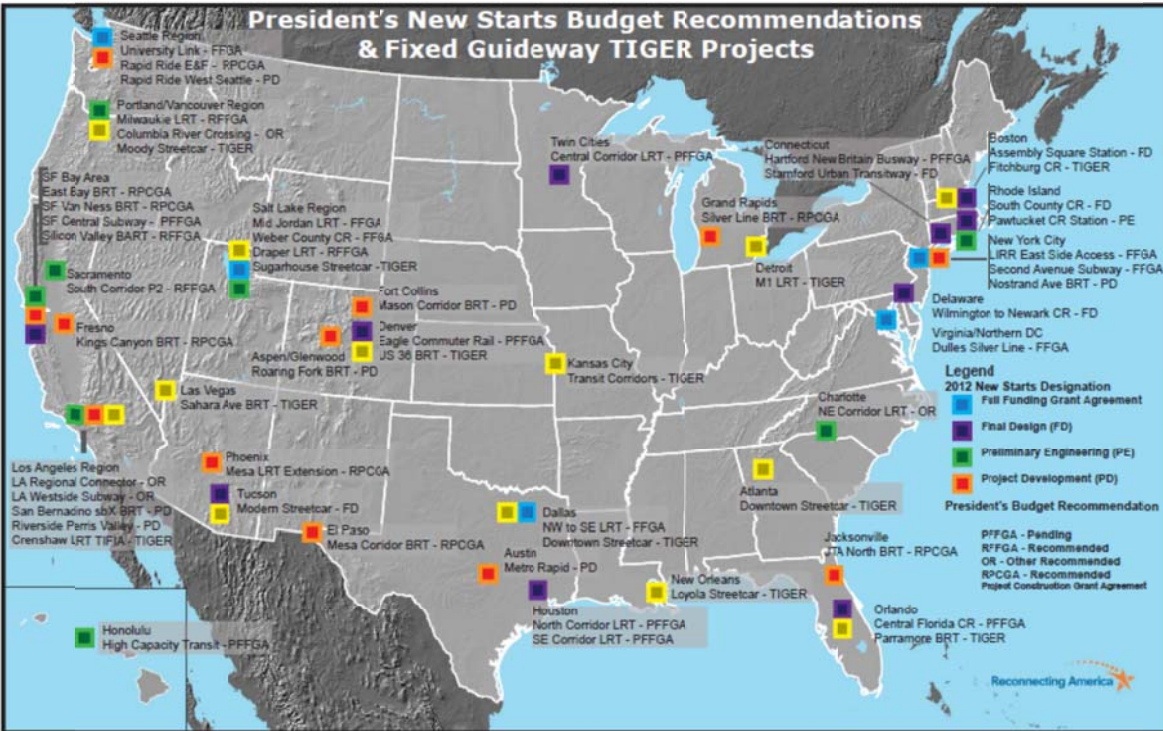
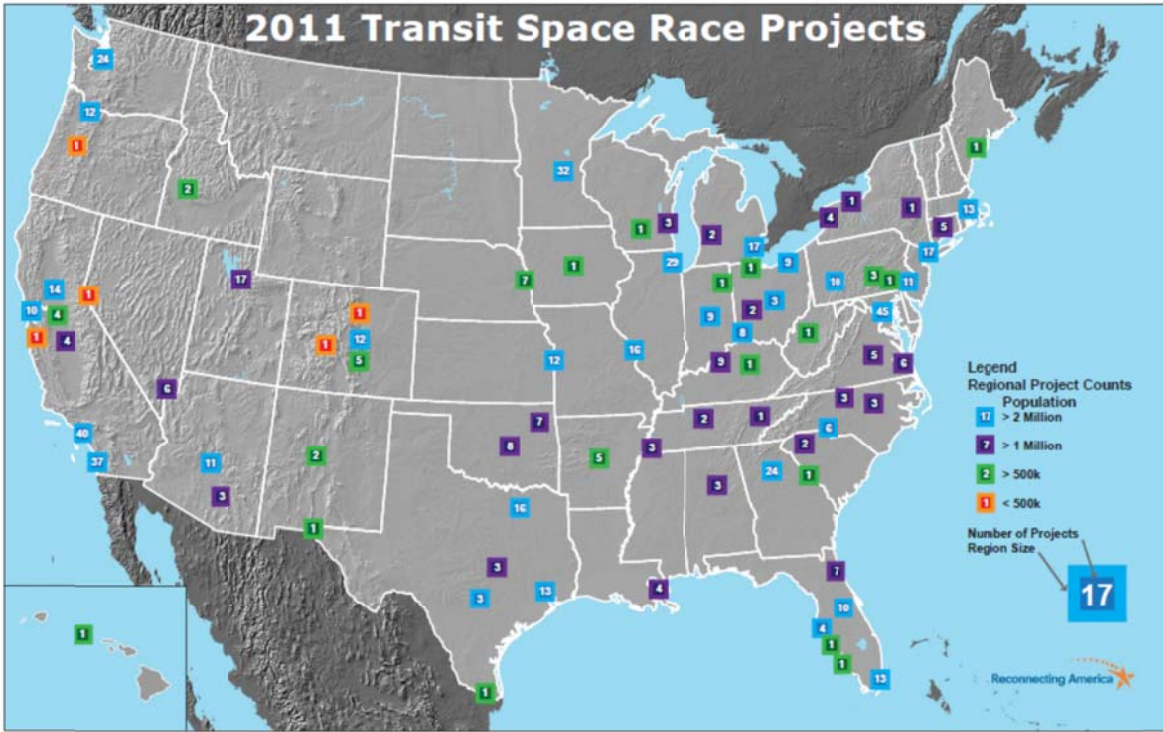


## Introduction and Top Line Takeaways

**This level of transit investment has the potential to transform American regions.** If all projects that have station points (143 projects, about 20 percent of all of the projects in the catalog) were built, transit would connect directly 3.5 million more jobs than the current 14.1 million, about a 25 percent increase. Nearly 4 million households would receive enhanced transit access from these projects, with 46 percent of those being lower income households.

**The New Starts Program isn't sufficient to meet the demand.** In addition to the backlog of projects, there are parts of the country that aren't applying for or getting New Starts grants. Collectively, metropolitan regions in the Midwest have a total population that is similar to the total population of regions in the Northeast, but those Midwestern regions are seeking about one-third of the funding for new transit. The maps below show an additional dissonance between regions that have transit in their long range plans, but are not receiving or actively pursuing New Starts funding.

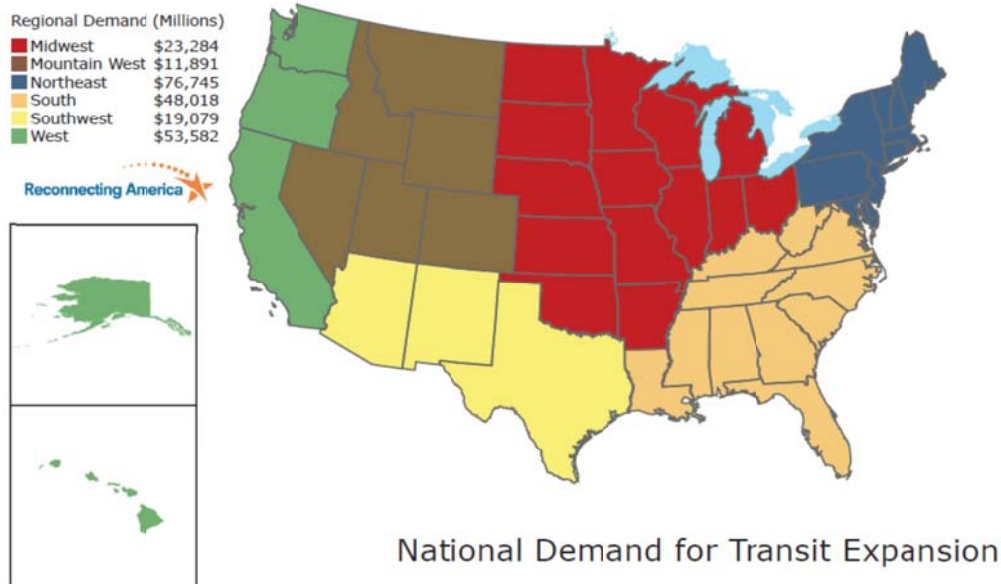
<b>Region</b>	<b>Estimated Costs (Millions)</b>	<b>Total Transit Projects</b>	<b>2009 Population</b>
Midwest	\$23,284	174	51,187,050
Mountain West	\$11,891	45	8,752,930
Northeast	\$76,745	77	50,251,999
South	\$48,018	143	61,138,774
Southwest	\$19,709	57	26,251,374
West	\$53,582	148	43,940,355
<b>Total</b>	<b>\$233,228</b>	<b>643</b>	<b>241,522,482</b>





**The New Starts Program is also not well suited to support the rapid system build out called for in many regions.** There is a healthy competition among regions, and many are planning a large program of projects. The Los Angeles region is planning the most new transit lines, but even an optimistic timeline for construction under the current scenario would be 30 years for completion. The region is committed to trying to complete the projects in 10 years, but this is not feasible under the current federal transit funding framework. The federal government should find a way to partner in building out regional systems, especially where regional capacity to build projects has been “tested” through previous New Starts processes. Table four shows the regions with the largest number of projects currently planned.

Table 4. Regions with the Largest Number of Planned Projects	
Region	Planned and Proposed Transit Lines
Los Angeles	40
Washington, DC	38
San Diego	37
Minneapolis-St Paul	33
Chicago	29
Seattle	24
Atlanta	21
Detroit	17
New York Metro	17
Salt Lake City	17



## Connecting Jobs and Low Income Households

This portion of the analysis focused on transit projects in the Engineering and Construction stages. These are the projects that have made decisions about station locations, which are necessary to determining who will benefit from enhanced transit proximity. Of the 643 projects identified nationally, only 143 lines had station location data, about 20 percent of all of the projects in the catalog.

If these 143 projects were built, 25 percent more jobs would be connected by fixed-guideway transit and nearly 2 million low-income households (making 80 percent AMI or below) would receive enhanced transit access. This section takes a closer look at the specific transit projects that could connect the highest percentages of low-income households and jobs. The analysis is broken down by region size: more than 3 million, between 1 million and 3 million, and under 1 million. Each table shows the “top 10” projects, but more are in the catalog of projects in the Appendix.

### Connecting Low-Income Households

This analysis found that 143 transit projects in 50 regions would grant enhanced transit access to about 1.8 million low-income households, or those making 80 percent or less than the region’s area median income (AMI).

Planned projects in regions of different sizes connect significant numbers of low-income households. While one would think that a single project in New York would make up the bulk of these numbers, smaller regions have similar opportunities to connect many low-income households to transit and regional opportunities. Tables 5 and 6 show 350,000 households in smaller regions that could benefit from enhanced transit access. The planned transit lines in larger regions in Table 4 also could connect about 350,000 households.

**Bus Rapid Transit (BRT) is a common technology that would be used to connect low-income households.** Half of the projects in regions with more than 3 million population are BRT projects; four of the top 10 projects in the 2 million to 3 million category are BRT, and two of the projects in the under 2 million category are BRT. True Bus Rapid Transit (with dedicated lanes for buses, signal prioritization and level boarding platforms) can provide fast and reliable service for users, but this transit technology can be implemented without those characteristics, resulting in a very different kind of system. Ensuring that transit connections in low-income communities provide the same level of service as the transit in higher-income communities is essential to providing equitable transit investments. Therefore, it may be important to continue to monitor these projects to ensure that the quality of transit service remains high and that these do not just become glorified local bus lines without the amenities described above.

**Most of the large regions have pre-existing, extensive fixed-guideway transit networks, where agencies are finding new ways to improve transit connectivity for low-income**

## Connecting Jobs and Low Income Households

**households.** While some of the low-income households along these planned lines may be served by existing transit, planned lines will improve the transit connectivity of low-income neighborhoods in important ways. For example, New York City's Nostrand BRT will run through an underserved portion of Brooklyn, while Oakland's BRT serves a similar population as the nearby BART train, but with more frequent stops and access to more employment and service destinations. Baltimore's proposed Red Line connects a higher proportion of the region's low-income households than the other projects on this list by providing a new East/West route through a city where most lines currently run North/South.

**Table 4. Top 10 Projects by the Number of Connected Low Income Households in Regions Over 3 Million**

Region/Project	2009 Regional Population	Process Level	Workers within a half mile of stations	% of Regional Workforce	80% AMI Households within a half mile of the station	% of Regional 80% AMI Households
New York Nostrand BRT	22,232,494	Engineering	60,420	0.8%	95,712	3.5%
SF Bay Oakland BRT	7,427,757	Engineering	140,502	4.2%	63,692	6.0%
Baltimore Red Line	8,440,617	Engineering	126,978	10.4%	51,053	11.2%
SF Bay Van Ness BRT	7,427,757	Engineering	88,313	1.9%	37,813	3.6%
Atlanta Beltline	5,831,778	Engineering	57,298	2.5%	35,909	5.1%
New York 2nd Ave Subway	22,232,494	Construction	86,984	1.1%	34,499	1.3%
DC/Baltimore Purple	8,440,617	Engineering	146,640	5.6%	34,412	4.0%
Houston University LRT	5,968,586	Engineering	129,758	2.5%	28,448	3.5%
SF Bay SMART	7,427,757	Engineering	28,045	0.8%	28,181	2.7%
Twin Cities I-35W BRT	3,604,460	Construction	154,759	9.2%	25,889	5.7%

**Table 5. Top 10 Projects by the Number of Connected Low Income Households in Regions between 1 and 3 Million**

Region/Project	2009 Pop	Process Level	Workers within a half mile of stations	% of Regional Workforce	80% AMI Households within a half mile of the station	% of Regional 80% AMI Households
Albany NY5 BRT	1,151,653	Construction	78,966	18.7%	25,141	18.9%
Hartford BRT	1,313,516	Engineering	115,720	19.4%	19,325	11.2%
SLC Provo BRT	1,743,364	Engineering	38,160	3.8%	17,006	6.8%
Orlando Sunrail	2,747,614	Engineering	126,250	10.1%	16,472	3.9%
Orlando N/S LRT	2,747,614	Stalled	146,270	11.7%	16,250	3.9%
Charlotte Streetcar	2,389,763	Engineering	92,236	8.8%	16,023	4.7%
Milwaukee Streetcar	1,760,268	Engineering	34,413	3.5%	15,069	4.8%
Charlotte North Corridor	2,389,763	Engineering	27,877	2.6%	14,015	4.2%
Grand Rapids BRT	1,327,366	Stalled	64,965	17.0%	13,526	11.6%

## Connecting Jobs and Low Income Households

Portland Milwaukie LRT	2,241,841	Engineering	38,149	3.7%	13,424	4.1%
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**Smaller regions can still connect many low-income households, and in most cases perform better than moderately sized regions at connecting these households.** Honolulu and Madison connect the largest number of low-income households and the largest proportion of low-income households in regions with less than 1 million people. These lines do a better job of connecting to low-income neighborhoods than most of the transit projects proposed in the moderately sized regions.

**Table 6. Regions with Populations Under 1 Million**

Region/Project*	2009 Pop	Process Level	Workers within a half mile of stations	% of Regional Workforce	80% AMI Households within a half mile of the station	% of Regional 80% AMI Households
Honolulu Rapid Transit	907,574	Engineering	141,549	38.2%	28,682	29.6%
Madison Commuter Rail	628,947	Engineering	68,539	20.3%	23,772	27.9%
Albuquerque Streetcar	857,903	Stalled	43,782	11.6%	12,252	8.7%
Harrisburg Red Rose	667,425	Stalled	33,389	5.5%	18,562	10.2%
Fort Collins BRT	298,382	Engineering	27,948	22.5%	9,382	19.4%
Eugene EMX BRT	351,109	Engineering	11,576	7.8%	7,371	12.8%

\* In regions with less than 1 million residents, we were only able to analyze these six transit projects

### Connecting to Jobs

**If all of the projects at the engineering and construction stages are built, 3.5 million more jobs will be connected to fixed-guideway transit.** The tables below show the top 10 transit projects in regions of large, moderate and small sizes. Currently 14.1 million jobs are connected to fixed-guideway transit around the country. New projects such as those in Honolulu and the Westside Subway would bring significant new connections to employment in their respective regions. New projects would increase the number of jobs connected to transit nationwide by 25 percent.

**Large regions benefit from enhancing transit connections in or near downtowns.** The top four transit projects in regions with a population more than 3 million add additional transit to high-density-downtown or downtown-proximate areas. Though the workers near these proposed lines have some existing fixed-guideway transit available, these projects add value by providing easier access to the fixed-guideway network. In Los Angeles, the Regional Connector adds three completely new stations, but will also link together the Gold, Blue, and Expo lines, making it possible to travel from Claremont to Long Beach and from East Los Angeles to Santa Monica as a "one-seat ride." The connector will also remove an existing transfer for commuters coming

## Connecting Jobs and Low Income Households

from East Los Angeles to downtown Los Angeles. This improvement will have a significant impact on the ease and reliability of commuting by transit in Los Angeles.

**A variety of transit technologies and corridor types are connecting these jobs in large regions.** Streetcars, heavy rail extensions, light rail connectors, subways and BRT are all represented in the list below. In addition, these lines function in different ways—some are downtown connectors, such as Atlanta’s Peachtree Streetcar, while others are set up to serve commuters, such as the Twin Cities I-35 BRT.

**Table 7. Top 10 Projects by Number of Workers Connected in Regions Over 3 Million**

Region/Project	2009 Pop	Process Level	Workers within a half mile of stations	% of Regional Workforce	80% AMI Households within a half mile of the station	% of Regional 80% AMI Households
New York 34th St	22,232,494	Engineering	468,765	5.9%	22,189	0.8%
LA Regional Connector	17,820,893	Engineering	176,839	2.5%	10,723	0.6%
Philadelphia Waterfront	6,533,122	Engineering	174,692	6.0%	14,957	1.5%
SF Bay Central Subway	7,427,757	Engineering	164,983	4.9%	25,560	2.4%
Twin Cities I-35W BRT	3,604,460	Construction	154,759	9.2%	25,889	5.7%
LA Westside Subway	17,820,893	Engineering	153,533	2.1%	21,148	1.1%
Atlanta Peachtree Strtcr	5,831,778	Engineering	153,309	6.6%	6,163	0.9%
DC/Baltimore Purple	8,440,617	Engineering	146,640	5.6%	34,412	4.0%
SF Bay Oakland BRT	7,427,757	Engineering	140,502	4.2%	63,692	6.0%
Houston University Line	5,968,586	Engineering	129,758	5.1%	28,448	3.5%

**Streetcars and BRT connect many jobs in moderately sized regions.** Streetcars and BRT are often used as the first leg of a transit network in regions without fixed-guideway transit, and those starter lines are often in downtown or downtown-adjacent areas, thus connecting many of the region’s jobs.

**Table 8. Top 10 Projects by Number of Workers Connected in Regions Between 1 and 3 Million**

Region/Project	2009 Pop	Process Level	Workers within a half mile of stations	% of Regional Workforce	80% AMI Households within a half mile of the station	% of Regional 80% AMI Households
Orlando N S LRT	2,747,614	Stalled	146,270	11.7%	16,250	3.9%
Orlando Sunrail	2,747,614	Engineering	126,250	10.1%	16,472	3.9%
Hartford Busway	1,313,516	Engineering	115,720	19.4%	19,325	11.2%
Charlotte Streetcar	2,389,763	Engineering	92,236	8.8%	16,023	4.7%
Milwaukee Streetcar	1,760,268	Engineering	87,272	9.0%	8,089	2.6%

## Connecting Jobs and Low Income Households

Cincinnati Streetcar	2,214,954	Engineering	81,329	8.1%	9,106	2.6%
Albany NY5 BRT	1,151,653	Construction	78,966	18.7%	25,141	18.9%
Grand Rapids BRT	1,327,366	Stalled	64,965	17.0%	13,526	11.6%
Pittsburgh North Shore	2,445,117	Construction	52,405	3.1%	3,367	0.9%
Sacramento Streetcar	2,436,109	Stalled	50,595	6.4%	9,355	3.0%

**Honolulu and Madison have the most connected proposed transit corridors among small regions.** Again, only six regions in the “small” category have transit lines with station locations identified, and two of those on this list are “stalled,” meaning they are not moving forward. Of these, Honolulu and Madison’s commuter rail proposal both show large numbers of total workers connected and are reaching a large proportion of the region’s total workforce. These lines are examples of starter transit projects that could both succeed at connecting many workers and many low-income households.

**Table 9. Number of Workers Connected for Regions with Populations Under 1 Million**

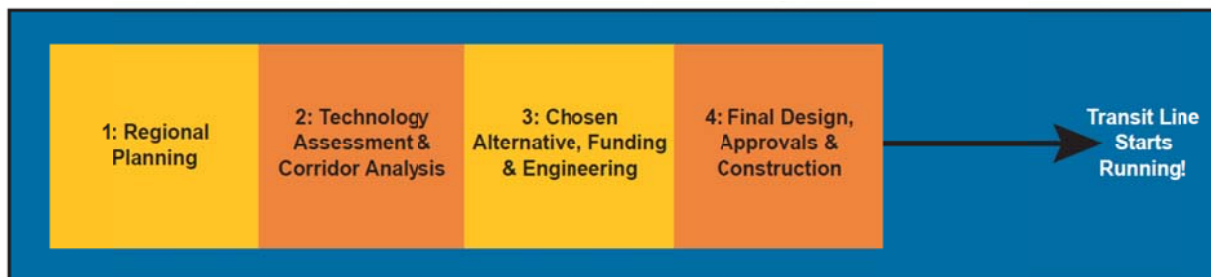
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Harrisburg Red Rose	667,425	Stalled	33,389	5.5%	18,562	10.2%
Fort Collins BRT	298,382	Engineering	27,948	22.5%	9,382	19.4%
Eugene EMX BRT	351,109	Engineering	11,576	7.8%	7,371	12.8%

Other lines of interest can be found in the accompanying Transit Space Race spreadsheet.

Transit Space Race Part 2011 Final.xls

There are four broad stages that transit projects move through from the initial conception of the project to the moment the new line opens. However, we recognize that within this overall framework, each project has a unique process. They have different reasons for being built, ranging from the desire to create a new network, expand an existing system, or expand mobility and access for a single neighborhood. Different kinds of leaders and advocates have their own reasons to push for a project to reach completion. Each project is funded through a unique combination of local, state, or federal sources, and of course the neighborhoods that the lines connect or pass through are all individual places with their own set of needs and visions. Nonetheless, all transit projects go through a similar process to move from concept to reality.

The following section presents more information on these stages. These stages are broad categories, and we note how the more detailed steps for projects applying for federal funding (the New Starts or Small Starts programs) fit into each one. While not all projects apply for or use federal funding, this program is the largest source for new transit capital money, and so New Starts rules and regulations heavily influence how local and regional planners structure their transit plans.



## A: Regional Planning

Regional planning is a key first stage to construct successful transit projects and often happens before specific projects can be drawn as lines on a map. Ideally, this stage should include an analysis of regional development patterns and the needs of the existing transportation system such as connections to employment and low income communities. Successful regional visioning processes can guide transit network expansion for years to come, as Salt Lake City and Portland have proven in their respective Envision Utah and LUTRAQ (Land Use, Transportation and Air Quality Connection) processes. Portland did such a good job following its initial regional plan that it has almost completed building out of the envisioned system and is now focused on new lines needed in the next 30 years. By framing regional goals and setting individual project objectives to meet those goals, these regional plans are also an important opportunity to lay the framework for political and financial support for future transit lines.

More sophisticated regions have done joint regional transit and land-use planning, helping to identify where high-ridership transit lines could be built relative to areas of density and growth.

## Understanding the Transit Planning Process

Regions building new transit systems benefit from choosing lines with high ridership to start, as these projects tend to garner political will and local support for future expansions. Houston's Red Line and Phoenix's Valley Metro are two examples where ridership has exceeded expectations, building political support for expansion. Joint transit and land-use planning at the regional scale also create the opportunity for local groups to become engaged with and supportive of the transit planning process. By laying out a vision for future growth, these regions can also foster a regional movement where political leadership aligns itself with smarter development practices and focuses on non-auto transportation.

Some regions do not have the time, funding, or capacity to engage in these in-depth planning processes. The sheer number of applicants for HUD's Sustainable Regional Communities Grant program demonstrates that there is an extraordinary demand for this kind of broad, comprehensive planning at the regional scale, but that many regions are looking for technical guidance and financial assistance in doing this work. Regions lacking the necessary resources may haphazardly add transit projects to their long-range transportation plans<sup>1</sup> in order to ensure their projects are eligible for federal funds.

Additionally, mayoral support or strong local leadership can be crucial to building a vision that can propel a region forward. For communities just starting with transit or planning for major expansions, the mayor can be a key component to bring the project to fruition. Without that political leadership and momentum, it can be difficult for transit projects to move forward and they may end up sitting on the shelf. In Columbus, OH, momentum for a local streetcar slowed down when the mayor stopped advocating for the project. Alternatively, Denver, Seattle, Los Angeles and Cincinnati have seen major efforts advance on the backs of the coalition-building skills and political capital of their mayors.

Projects in this stage may be considering New Starts funding, but they have not yet entered the official New Starts process. In the catalog, projects labeled as "Future Plan" fall into this stage of the process. Projects in this stage are usually identified in the region's long-range transportation plan or in other regional documents. An idea for a route exists, but only in a regional context—specific streets or access ways have not yet been identified. Cost estimates do not generally exist for projects at this stage. Some projects remain indefinitely at this future plan stage. These are projects that the region may dream about, but with little political will or funding on the horizon to bring them to reality.

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<sup>1</sup> Long Range Transportation Plans (LRTPs) are federally required plans that Metropolitan Planning Organizations must update every five years in order for the region to receive federal funds.



### **B: Technology Assessment & Corridor Feasibility**

The next stage in building a transit line focuses on the corridor itself. Alternatives Analysis is a key component of this stage—comparing similar alignments that all vary slightly from each other but attempt to connect the same set of neighborhoods or destinations. Stakeholders begin to debate specific station locations and assess the benefits and feasibility of different transit technologies. This is also the stage where the jurisdiction leading the planning must start to think seriously about how the construction of the line might be funded. Projects seeking federal funding may officially apply to enter the New Starts process during this stage.

This stage of transit planning is where many critical decisions are made: alignments, station locations, right-of-way choices that impact speed and more. Most of these decisions are made based on how they affect cost and ridership projections. Sometimes, in the hopes of reducing project costs, transit planners make decisions that neglect potential long-term benefits but make the project look cost-effective in the short term. For example, building commuter rail on existing freight right-of-way is popular because using the existing rail line and rights-of-way can be cheaper than digging up streets in existing arterials and installing light rail. These may constitute “unacknowledged gaps” in transit funding—the projects have funding to move forward overall, but lack the funding to be built in such a way that could ensure equitable, successful outcomes.

From 2005 to 2009, to receive federal New Starts funding, projects were required to meet a “medium” threshold on the Cost Effectiveness Index (CEI). This Index is a measure of travel time benefits compared to the overall projects costs, and projects with higher costs were effectively punished for including more stops along a proposed line. In Charlotte, the transit authority decided to shorten station platforms and train cars in order to maintain their alignment and station selection. Since it was constructed, the line has been extremely successful, with such high ridership that expensive platform extensions may be necessary in the near term. Other regions had to forgo buying land around transit stations that could have been used for joint development opportunities in the future.

The rule was changed in 2009, and projects that score below a medium on the CEI can be considered for New Starts funding if they score higher on other parts of the New Starts application. However, initial cost and ridership estimates remain critical components of how transit projects are judged—by FTA and by local constituents, sometimes trumping other benefits the more costly alternative might provide.

This stage also provides an opportunity to more closely link neighborhood scale land-use and transportation plans. The location of stations has a huge impact on both a transit corridor’s functionality and equity potential by how well it connects to employment centers or lower income residential neighborhoods. Choosing the “right” station locations can be crucial to ensuring that

## Understanding the Transit Planning Process

future planning efforts (zoning changes, affordable housing policies and redevelopment plans) are as effective and efficient as possible. While small changes can be made after projects leave this stage, the foundation of the transit project is established during this process.

Regions that have not yet established a local funding source for capital infrastructure may begin discussing referendums and sales tax measures during this stage of transit planning.

Projects in this stage are labeled Alternatives Analysis (AA) in the catalog. Because transit technologies and the specific route and station locations are not set until projects leave this stage, information about costs, ridership and other factors are sometimes limited and subject to change. Not all projects that enter Technology Assessment & Corridor Feasibility make it beyond this stage. Some analysis determines that ridership would not support a new transit investment, or that the type of transit corridor desired by local residents is not feasible without a dedicated funding source.

### **C: Chosen Alternative, Funding, and Engineering**

Projects enter the third stage of transit planning after planners and stakeholders have chosen the initial alignment and agreed upon station locations. In technical terms, this official decision is called the Locally Preferred Alternative, or LPA, and is usually approved by a city council or other political body. In this stage, detailed funding decisions, environmental assessments and preliminary engineering are completed. A cost estimate for the LPA with more details than the alternatives analysis is drawn up and funding options are considered. In many cases, transit project funding is cobbled together from numerous sources. If the project is waiting on federal funding through New Starts or another major capital program, this part of the process can take many years due to lack of overall federal funds for transit. Locally funded projects such as the Cross County extension in St. Louis and the Gold Line from Los Angeles to Pasadena purposefully avoided the federal process in order to move faster.

Reconnecting America's research found that projects tend to either (a) have a locally derived funding source, (b) find the local funds they need to apply for federal funds, or (c) sit on the shelf. Many projects allow for flexibility in the transit plan in order to meet available funding or funding requirements. Sometimes this means breaking projects into phases, and sometimes it means cutting back on different project elements. Sacramento has a planned light rail line to the airport called the DNA line. The transit agency has decided to build the project in segments since it lacks a major funding source and has limited local funding. Construction on the first segment is currently under way. Meanwhile, planning for the whole line continues until funding is available.

However, there can be a downside to breaking projects like this up into segments. An example is the BART to San Jose / BART to Berryessa project. Ultimately the plan is to connect the

## Understanding the Transit Planning Process

existing BART terminus in Fremont to downtown San Jose. However, the project was broken into segments in order to meet the federal cost effectiveness rating. The first segment extends BART from Fremont to Warm Springs; the second from Warm Springs to Berryessa; and the third from Berryessa to San Jose. While the first two segments have been moving forward in the New Starts process, the third segment has yet to be added. That part of the extension will be the most expensive, and because the cost and ridership benefits will not be averaged out over the entire length of the extension from Fremont to San Jose, it may be more difficult to receive federal funding to complete the overall project.

This is the stage when projects develop detailed engineering plans, which lay down the specifics of station entrances and exits, where new tracks will be laid in streets or how freight rights-of-way must be configured to accommodate passenger rail. From a land-use and development perspective, this is the stage when developers begin to eye properties along the line with more interest, and city planners start the process of changing zoning codes and doing station area plans. Planning for improved station area access and new infrastructure (sidewalks, street trees, etc.) may begin during this stage as well.

For projects in the federal New Starts process, an environmental impact statement (EIS) is also completed during this stage in compliance with the National Environmental Protection Act (NEPA). Projects labeled “engineering” in the catalog fall into this stage. Cost estimates and ridership projections for projects at this stage are generally more accurate and other more detailed financial information (such as operating costs and specific funding sources) are often available.

### **D: Final Design and Construction**

After the engineering plans and environmental impact analyses are complete, projects may be ready to move into the final stage of transit planning and construction. Locally funded projects may begin construction while projects relying on state or federal funding must get finalized grant agreements to move forward.

Lines seeking federal funding will first move into final design, when construction preparation (including right-of-way acquisition) begins. Projects that reach final design often go on to receive a Full Funding Grant Agreement from the Federal Transit Administration, which is the last step before projects begin breaking ground. Theoretically, property values around the proposed stations have already started to rise at this stage, and the combination of construction of the transit, zoning code changes and infrastructure and access plans may influence any increases in property values. In reality, the increase in property values is uneven and often driven by speculation of what the future market value of transit access may be. This means that during this stage of the transit process, there is often little development around lines as property

## Understanding the Transit Planning Process

owners and developers wait to see the impact of transit and land values readjust to a new market reality.

Projects labeled “construction” in the catalog fall into this stage. For the most part, these projects are fully funded, though cost overruns or lower-than-expected revenue from sales taxes or other funding sources have the potential to create funding gaps before construction is complete. Depending on the technology, the length of the new transit line, the number of stations to be built and a number of other factors, construction can last from two to five years, if not more.

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## Regional Themes

Though every region has its own story to tell (as seen in the Regional Stories section below), the themes described below capture a few of the themes we observed in many regions regarding their planning for transit expansion and funding. Each region and its theme can be found in the accompanying catalog of transit projects.

**Table 12. Transit Planning Themes in Regions Across the US**

<b>Theme</b>	<b>Examples</b>		
Regional Transit & Land Use Connections	Indianapolis	Louisville	Columbus
Big Plans, No Money	Atlanta	Sacramento	San Diego
Big Plans, Little Money	Charlotte	Phoenix	St. Louis
Continued Momentum	Houston	Salt Lake City	Seattle
Backbone Lines	Oklahoma City	Madison	Grand Rapids
Transit Infill	Miami	San Francisco Bay	Washington DC
Maintenance Needs	Boston	Cleveland	Pittsburgh

### Regional Transit & Land Use Connections

Many regions are eager to begin building new transit systems, but they need help in figuring out where that first new project should go. In some cases, a substantive amount of planning has been done, but because of political pushback or cost issues, proposed projects are skirting around major employment and residential centers instead of connecting them directly. These regions need help in identifying where transit should be invested in order to maintain regional momentum and access all of the benefits of equitable TOD while connecting low-income workers to employment centers. Examples include Indianapolis, Columbus and Louisville.

### Big Plans, No Money

Additionally, many regions have done a substantive (and relatively recent) amount of new planning for extensive transit expansion, but have yet to identify or create a source to fund these projects. They have visionary plans but have no immediate source to pay for them. Atlanta, San Diego and Sacramento are all examples of this theme.

#### FOCUS ON: INDIANAPOLIS, IN

Indianapolis' business community has built a movement around expanding transit in the region called Indy Connect. The plan has already gone through several iterations; currently, the plan calls for several bus rapid transit lines (instead of the originally proposed light rail technology) and a commuter rail line. The commuter rail line, which would use an old freight rail track that skirts the major employment districts in the region, is the farthest along on the planning spectrum.

The funding for these lines has yet to be obtained. Some locals are pushing for a dedicated sales tax measure, but state legislators have said that they would not give the region the

## Regional Themes

authority to hold an election to ask voters for funding. This puts the plan on hold but also gives regional leaders time to build up more political capital and form a plan for getting a sales tax or other funding measure passed.

### Big Plans, Little Money

Unlike the “No Money” regions, one or two of the transit lines envisioned in these regions have a source of funding, but financing for the entire build out of the transit network will be very slow. Charlotte, Phoenix and St. Louis are examples. Charlotte has had to push back construction of its multi-line network due to the stumbling economy that has eaten into sales tax revenues, and Phoenix is in the same boat. St. Louis has recently raised their sales tax, but there will not be enough to build all of the lines that have been in planning for the last decade.

### Continued Momentum

Regions that fall into this category have strong momentum towards expanding their transit networks, along with a plan and decent funding, but may need continued support in order to ensure they remain on track. Houston, Salt Lake City, Seattle and Portland are examples.

#### FOCUS ON: SALT LAKE CITY, UT

With 17 planned transit projects, four under construction and three more in various stages of engineering, rail expansion in Salt Lake City is going strong. The region has a midsized population (about 1.7 million) and geographically the planned network would stretch from Provo (and Brigham Young University) in the south through central Salt Lake City and up into Ogden in the north. Of the lines that have identified station locations, they all do a fairly good job of connecting to low-income workers and households. The Provo Orem BRT connects to the largest number of low-income workers (13,800) and low-income households (27,000), but the Mid Jordan Trax also connects a large number of lower-income households (about 24,500). For the most part, these lines are extensions to a network that connects the downtown core to some of the major job and activity centers in the region.

The scale and momentum of the planned transit seem reminiscent of Portland, but the political climate and regional governance in the Salt Lake region are very different. This offers a strong example of a politically conservative region that has held a strong commitment to transit. In 2008, Utah Transit Authority, the agency for the state, was able to hike fares by a quarter to avoid making massive service cuts as fuel costs rose. The surcharge shrinks and grows with the cost of energy creating an innovative funding source for when gas prices change.

The region also serves as an example of the value of long-term planning. UTA General Manager John English made a deal to purchase 175 miles of freight right of ways for \$185 million in 2002 before specific alignments for new rail lines were even on the table, likely saving the

## Regional Themes

region millions of dollars. Other regions such as Denver have had to bargain with freight railroads that know the region needs the lines to finish plans.

Funding for “Front Lines” (a plan to build 70 miles of new rail transit in seven years) comes from a quarter-cent sales tax that was passed in 2006. Outside of that initiative, the Utah Transit Authority is also supporting or planning several smaller downtown connectors and circulator routes such as the Sugarhouse Trolley, Provo Orem BRT and Ogden Weber State Streetcar.

### Backbone Lines

These regions have no existing fixed-guideway transit, but are thinking seriously about building a new line that could act as a backbone for a future transit system. In most cases, the projects being considered by these regions are fairly small, and an infusion of funding has the potential to leverage significant new transit investment. Examples include Oklahoma City, Tampa, and Grand Rapids.

#### FOCUS ON: MADISON, WI

The 2020 Commuter Rail line in Madison, WI, serves as an example of small town planning for new transit. There is no existing fixed-guideway transit in the metro area, which is fairly small (about 600,000 people.) However, Madison serves as the state capital and is home to the University of Wisconsin, Madison, with about 42,000 students. The region also has a fairly dense center, which means that the line would connect a significant proportion of households and workers, especially those in the lower-income ranges. The proposed stations would connect about 14,400 low-income workers (16.4 percent of all low-income workers) and 15,000 low-income households (34.9 percent of all low-income households). These are some of the highest percentages among all of the transit lines analyzed for this report, making this an impressive line for a little city.

The mayor of Madison was the first to seriously push for fixed-guideway transit in the region. His original vision was of a downtown streetcar, but tensions between the county executive’s plans for a regional rail line and the streetcar plan clashed and this project was the compromise. The line is currently in the engineering stage, and projected costs for this project are \$255 million, for 16 miles of track, 18 stations and 11,000 projected daily riders (by 2030). Funding for the project has yet to be secured; discussions right now center on a sales tax measure (yet to be officially proposed) and New Starts funding from FTA.





## Regional Themes

DC has a set of ambitious plans for transit expansion, including the Silver Line connection to Tyson's Corner (a major job center being choked by congestion) and Dulles Airport and a citywide streetcar network. While the first phases or segments to some of these plans are under construction, funding for continued expansion is uncertain. In the DC suburbs, there are plans for new light rail connections in both Maryland (Purple Line) and Northern Virginia (streetcar, light rail).

Maintenance issues are abundant in the WMATA system like others that were built decades ago. San Francisco and Metro in DC are facing large maintenance needs and seeking to replace older rolling stock.

### Overview of Transit Planning in Each Region (Organized by Region Size)

Each region that has documented projects in the spreadsheet has a general background story. We have attempted below to discuss each region in order to give some background for some basic politics and major projects.

New York Region – Metropolitan New York includes New Jersey and parts of Connecticut. Most of the MTA planned and under construction projects are mega projects, dwarfing whole system expansion plans in other cities. The Second Avenue Subway, East Side Access and Seven Line extension are all subway projects undertaken by the MTA while other lower profile projects taken on by the city include a number of bus rapid transit projects that will improve times on highly traveled routes. Expansion projects will also be costly and be a major undertaking. New Jersey transit projects aren't as huge after the Access to the Regions Core (ARC) project was sacked by Governor Christie. There have been rumblings recently about a 7 Line extension to New Jersey to replace the ARC project as well as the Amtrak Gateway project. Those two are multibillion-dollar projects that have not done engineering or other studies and as such are not mentioned in the spreadsheet. However, they are projects to follow. Many of the other regional are short extensions of the existing Hudson Bergen light rail line or commuter routes from the suburbs. New York City itself is helping the MTA expand BRT lines within some of the city's busiest corridors without subway service.

Los Angeles – In 2008, Los Angeles County passed a half-cent sales tax that would raise up to \$40 billion in revenue for transportation projects. A number of transit projects were on the list including light rail, bus rapid transit and subway expansions. The mayor's centerpiece was the "Subway to the Sea" and in order to get all of these projects done faster, the region is asking the federal government to give them loans so construction can begin sooner and project inflation could be minimized. This program is named 30/10. The congressional delegation is continuing to pursue this option and some projects are starting earlier than anticipated due to early loans from the federal government. Outside of Los Angeles County, bus rapid transit expansions are planned around the metropolitan region including Orange and San Bernadino counties. While it is unknown whether these will eventually be just rapid bus lines without dedicated lanes, these networks will expand on an already existing rapid bus network that has served Los Angeles quite well.

Chicago – Chicago's major expansion plans revolve around existing heavy rail (subway) extensions but regional commuter rail links and BRT pilot projects are also on the books as planned lines. As with other cities with older legacy systems around the country, they have a large maintenance backlog and need to fix what they have. However, there are also ambitious expansion plans and ideas including a circle line that would connect the radial subway lines further west of the city's core. Metra, the agency that manages the suburban commuter rail network, also has several expansions in early engineering stages.

## Regional Stories

Washington DC / Baltimore – The Washington, DC, combined statistical area includes the two major cities of Washington and Baltimore. In the confines of the DC region, the first phase of the Silver Line is under construction but the second phase to Dulles Airport remains uncertain. Plans exist for extensions to existing Metro lines and a regional bus rapid transit network as well. The Washington is also planning a citywide streetcar network that will be built in segments. Two segments are currently under construction but funding for the rest of the network is likely to be a major challenge. In the DC suburbs, there are plans for new light rail connections in both Maryland (Purple Line) and Northern Virginia (streetcar, light rail). With the re-election of Governor O'Malley in Maryland, projects that were in doubt are likely to continue forward. In Baltimore, the Red Line continues planning and the region continues to try and fill out its 2002 Regional Rail Plan. It is also considering building a downtown streetcar.

Boston / Providence – Boston has ambitious plans to expand its transit network, including a ring line similar to Chicago's and expansions of existing light rail and commuter rail lines. Boston's major issue, however, is finding funding because the state and transit agency face massive funding shortfalls on an annual basis. The MBTA has about \$8 billion in debt due to the Big Dig, which has led to parking and fare increases that have been criticized because they outpace inflation. The Boston region also includes Providence, which is looking to build a city streetcar network to connect major destinations.

San Francisco Bay Area – The San Francisco Bay Area also has a number of major projects including an extension of BART to San Jose and a subway under San Francisco. However, there are many other smaller regional projects including BRT lines and commuter rail that are seeking funding as well. The major problem is getting environmental clearances. Some BRT projects have been on the books a long time and must go through extensive public review processes that seem to make Bay Area transit planning slower than anywhere else in the country. Service cuts are likely a bigger issue than capital expansion. With three different major regional centers and more than two dozen transit agencies much of the planning is Balkanized and minimally coordinated.

Dallas / Fort Worth Region – The DFW region has been embarking on transit expansion since 1996 and has one of the most extensive new light rail networks in the country. With the recent opening of the Green Line in Dallas, the future looks promising. Last fall, though, they had to make some serious choices about long-term expansion and future lines because of capital funding issues. Certain lines that were expected to be in the 30-year plan, such as a downtown subway connection, were pushed back and, unless new sources of revenue are found, are likely to be slow in coming. Additionally, Fort Worth just rejected a \$25 million grant from the FTA for a downtown streetcar that was to spur a network of lines connecting major hot spots in the city. The T transit agency in Fort Worth is moving forward with commuter rail, and Dallas area state legislators have been looking for ways to increase the sales tax cap for cities that might want to

## Regional Stories

spend more money on transportation improvements. However, the Legislature has not been receptive. Long-term plans also exist for a regional commuter rail network in which some of the lines have already begun the planning process.

Philadelphia – The Pennsylvania and New Jersey region with its center on the city of Philadelphia has big plans for expansion but state funding woes have limited these plans. Plans by former Governor Rendell to toll Interstate 80 and give some of the funds to transit were rejected by the federal government. On the books and planned are major subway expansions and commuter rail extensions and expansion in the suburbs of both states. Many of the lines that have undergone engineering and planning are sitting in the queue waiting for capital funding. Like many other regions and transit agencies, SEPTA has been hit with service cuts.

Houston - The Houston area has one of the most ambitious transit expansion plans for core city mobility in the country. After the construction of the wildly successful Main Street Light Rail Line, the local transit agency backed by an existing 1-cent sales tax has planned a network including five more lines and a number of commuter rail lines to connect with the suburbs. The agency however has come under fire recently for contracts with foreign rail car manufacturers and a poor relationship with the FTA. But a new mayor has started cleaning house and new management has given the agency a better face. Three new lines are under construction now, while two more are waiting for FTA funding issues to be resolved. The Greater Houston-Galveston region has an ambitious plan for a commuter rail network, but the first line in the plan has been recently stalled due to a “depressed economy and a budget-cutting political climate.”

Atlanta – One of the more exciting transit and development proposals around the country has been the Beltline Project, a loop linking together the neighborhoods surrounding downtown. The idea was dreamt up by a graduate student at Georgia Tech and has since morphed into a regional project that has inspired other streetcar projects and even a massive undertaking by regional leaders called Concept 3, which is a plan that would cost more than \$26 billion. However, the state has been a major roadblock in terms of funding, and MARTA has had operating cost issues with the downturn. Atlanta did, however, win a major TIGER II grant to start construction on its downtown streetcar network, although this comes at the expense of the Beltline and other transit projects.

Miami – The Miami region has massive transit plans on the books and even passed a sales tax to build new corridors for their metro rail line but recently have had to slow or stop all transit development because of dwindling revenues. The FTA recently took the North Corridor out of consideration for federal funding because of this issue specifically. While there are major plans in Miami, the transit agency currently has issues with credibility in filling them out. Some in the region are pinning their hopes on the South Florida East Coast Corridor (FEC), a rail line that will connect Miami-Dade, Broward and Palm Beach counties with a cross between a commuter

## Regional Stories

and an urban rail corridor. It is envisioned as one of the most competitive projects on the table in the Miami region currently. In the meantime, the Ft. Lauderdale downtown streetcar project, the “Wave,” is moving along through the Small Starts process. Though the plan was not originally in the Strategic Plan for transit in the region, the Ft. Lauderdale Downtown Development Authority and related businesses and organizations have created a sense of momentum backing the project, and the Ft. Lauderdale Downtown Development Authority has also put most of the necessary funding in place.

Detroit – While the city is slowly ramping up efforts to build a rapid transit line on Woodward with the help of local foundations, this is just one part of a regional radial rapid transit plan with lines emanating from the central city. Detroit has been the focus of intense study due to its 20<sup>th</sup> century shrinking and funding issues abound. However, focus on the Woodward corridor and transit lines to Ann Arbor and beyond could prove a spark to make Detroit into a redevelopment success. Ann Arbor itself, part of the Detroit region, is also looking into a downtown transit line that could be light rail or streetcar.

Phoenix – With the ridership success of their starter line, Phoenix has continued to plan its rapid transit network. However, without increased funding the expansion will be slow and the lines that are planned to radiate from the central city will be brought online in full around 2030. In 2009, planning for several lines was delayed due to funding issues because of the regions want to avoid a costly long federal process. Additionally, commuter rail lines are planned between Phoenix and Tucson.

Seattle – The Seattle region has been thinking about building rapid transit lines for years but had been through a number of fits and starts before they opened their first streetcar line in 2007 and first light rail line in 2009. In 2008, voters approved a tax increase for funding network extensions, and a new mayor has hinted at even more possible voter initiatives in the near future. A downtown streetcar network is also being proposed, which would connect all of the major destinations close to downtown. Additionally, major improvements to bus lines are in store and a major waterfront project could change the face to the city. However, King County is struggling with funding operations, and Sound Transit has had to cut some service, but it does not seem as severe as other places around the country.

Twin Cities – The Twin Cities has embraced fixed-guideway transit expansion and is now working on their third new line, the Central Corridor, between Minneapolis and St. Paul. A few years ago the Legislature overrode a veto by the governor that allowed counties to raise money for fixed-guideway projects and many have increased their funding. The Met Council also recently updated its long-range transportation plan with an extensive network of transitways emanating to almost all reaches of the region. Other commuter, light rail, and bus rapid transit lines are in the works and supported regionally due to the success of the Hiawatha Light Rail Line.

## Regional Stories

However, with Rep. Oberstar out of office there might be some issues with federal funding. Still, regional planners are likely to continue moving forward with the processes to get lines built, especially on the Bottineau Boulevard and the Southwest Corridors. Additionally, a center city streetcar network just got funding for planning from the federal government, signaling that streetcars might not be far off in downtown Minneapolis.

Denver – Denver was one of the first regions in the Western United States to look at fixed-guideway expansion holistically and raise money to construct it. In 2004, voters passed a sales tax measure to speed up construction of 122 miles worth of rail and 18 miles of bus rapid transit around the region. Since that time, however, budget cuts and rising construction costs have led to calls for another election to approve another sales tax increase to cover the shortfall. The timeline for the projects has been delayed, but political will has not of yet dampened completely, and the business community remains strongly for a full buildout of the original plan. The regional transit agency (RTD) expects all lines to be completed as planned eventually. Other projects are moving forward as well, with streetcar planning getting under way on the Colfax Avenue corridor in downtown Denver.

San Diego – San Diego constructed its first light rail line in 1981 and has been expanding slowly ever since. Currently, the region is looking at ways to expand its system and include bus rapid transit along some of its major inner-city corridors. A new long-range plan coming in the next few years will give an even greater horizon and a lot of new projects to consider from now to 2050. The Mid-Coast Corridor is the only light rail project currently in an advanced stage of planning in the region, with two possible BRT corridors to follow. The 2050 plan that was recently released also hinted at a possible Los Angeles 30/10 style funding mechanism, but for 50/10. This would mean an upfront loan to complete the 50 years of projects in 10 years and pay that back over time with an additional sales tax.

St. Louis – St. Louis has a strong advocacy community and the region has benefitted by building more fixed-guideway transit than many other similar regions in the Midwest. Facing budget cuts in 2009, a majority of voters in the region approved an increase in sales tax to pay for operations and to fund some of the planned expansion that had been part of a long-range system plan, Moving Transit Forward, which was updated in 2010. However, it is believed that this funding will not be enough to fund major capital projects expanding light rail over a short period of time. It's likely that this region will go line by line as the money becomes available but service will continue on the transit network and will be hit less than other regions which haven't raised more money since the downturn.

Cleveland – Facing a shrinking region Cleveland has made a lot of progress recently, completing a dedicated lane bus rapid transit line on Euclid Avenue. One extension of the existing heavy rail system is in Alternatives Analysis, but the others in the long range plan have stalled and

## Regional Stories

may not be picked back up for many years. There is a movement to extend the BRT “Health Line” into the Euclid community and East Cleveland, but that project is still in the preliminary planning stages. There are plans on the books for a regional commuter rail network and extensions to existing light rail lines that would connect major employment centers, however funding is short and the region must decide what its priorities are for investment. If the Euclid corridor is any indication, it is still possible to make smart investments in shrinking cities, however budget issues must be taken into account.

Orlando – The Orlando Region as of now does not have any fixed-guideway transit but it does have the most powerful member on the Transportation and Infrastructure Committee on its side pushing for the first segment of the Sunrail commuter line to be constructed. Currently, light rail and bus rapid transit corridors are under study and with the construction of the Sun Rail commuter line it is expected that these will jump up in the planning queue as soon as it is under way.

Tampa – The Tampa region rejected a sales tax measure for transit expansion in the 2010 general election. However, one of the opponents and major players in the region has begun discussions on how to build a line to the airport with existing funding sources without raising taxes. It has been proposed that this be a demonstration line, which might be of interest to outside funders. Two lines are in the planning books here, with many other corridors under consideration in the Tampa Bay Area Regional Transportation Authority (TBARTA) master plan adopted in May of 2009. Additionally, regional transportation agencies such as TBARTA cover a larger area than transit agencies and control planning and coordination for all investments.

Pittsburgh – Pittsburgh has put together an impressive network of dedicated lane bus rapid transit networks and light rail. Currently the region is building a connection that is missing from the North Side of the river to the central business district. Additionally, there are plans in the works to connect Oakland and Pittsburgh downtowns, two of the largest employment centers in the region only a short distance apart but unconnected by fixed-guideway transit. Connections between the two would greatly benefit the region. Pittsburgh received a Tiger II planning grant to look at one portion of a proposed commuter rail corridor that would connect downtown Pittsburgh to Arnold and New Kensington along the Allegheny River as well.

Sacramento – The funding for Sacramento Regional Transit has traditionally been a rollercoaster waiting for the state government to fund the system each year. However, with budget issues each year this arrangement has been costly for service and expansion. The FTA is waiting for this to clear up before it funds the South Corridor extension. This hasn’t deterred the transit agency from planning or even deciding to construct extensions to the current system. The downtown to Natomas line is now going to be built in segments, with the first segment through the Sacramento Railyards redevelopment project opening soon. Additional extensions will be

## Regional Stories

paid for as they go and a sales tax vote has been long discussed and looms on the horizon to serve as a better funding source than state appropriations.

Charlotte – The Charlotte region has been very ambitious in the last decade and has a massive planned system to be completed by 2030 however funding has dwindled with the economic downturn. Discussions now revolve around how to build corridors incrementally so that they can keep up the progress of building lines. Commuter rail and light rail corridors on the North Side are likely to be cut down to more manageable sizes while a small segment of streetcar is being constructed as the first part of a major crosstown connection. The political will for the city which also operates as the county will continue as long as the lines they open are successful. The South Corridor success in ridership and redevelopment has given them hope that further expansion will continue shaping their city in a different way than other southern cities and will attract talent. Already commentators in Tampa and Atlanta are decrying how far behind Charlotte they have become in infrastructure investment of this type.

Portland –Expansion continues relatively unabated and the system that was planned in the 1970s as LUTRAQ is almost built out. A new high capacity transit plan has been completed for the next 30 years and planning begins on the new pieces of the system soon. In addition to the regional light rail network, the streetcar network planned and envisioned by the city is a brand new way of thinking about redevelopment and transportation synergy in cities. Portland is not perfect as everyone might think. Funding issues still continue and neighborhoods still protect their views and way of life from large projects. Portland has also been the most successful at getting federal funding to complete their goals. With a new congress and a new transportation bill it is still yet to be seen how transit and regional transportation funding will be handled. The region is also figuring out how to build a new river crossing between Portland and Vancouver. This crossing would include light rail and a new auto bridge however the debate over whether the bridge should be built is ongoing.

Cincinnati – The City of Cincinnati and the greater Ohio-Kentucky region are becoming very focused on urbanism and transit issues. Grants and funding have been assembled for the first segment of a downtown streetcar that is expected to bring redevelopment and vibrancy to the downtown area. While opponents are still trying to knock the project off, it looks pretty close to a done deal with funding assembled and the city council on board. Future plans for bus rapid transit regionally to compliment the downtown streetcar are in the works. However, after a light rail election loss in 2002 the voters still seem a bit skeptical. Even with the loss, the long range plans call for maintaining rights of way for future rail lines around the city as well.

Kansas City –In 2008, the region completed SmartMoves, a strategic plan for building the transit network in Kansas City which identified a mix of urban and commuter corridors that could make up the transit network for the region in the future. The Troost MAX BRT line began operating in



## Regional Stories

early January 2011, and though operating dollars for future expansions are scarce, the region is moving ahead with planning. Five of the lines identified in the SmartMoves plan are currently in the Engineering or Alternatives Analysis stages, including a downtown Kansas City Streetcar that would link up with the planned commuter rail lines.

San Antonio – A major light rail election was lost here in 2000 by a large margin and the conversation has not come up much since. But recently the local transit agency hired Keith Parker from Charlotte and begun looking at ways to expand their rapid transit network. A downtown streetcar line is in planning and high density corridors in the city are being studied for bus rapid transit. Unlike other cities in the state, the transit agency only has access to a half cent sales tax instead of a cent. While an election isn't imminent, it's possible that the agency and region could ask for the other half from voters while trying to build a rapid transit network.

Indianapolis – Indianapolis' business community has recently come up with a plan called Indy Connect, to expand transit and build commuter rail and bus rapid transit lines within the city. However funding will be needed to build such a plan and while some locals want a sales tax election, state legislators have said that they would not give them the authority to hold such an election to ask voters for funding. This puts the plan on hold but also gives regional leaders time to build up more political capital and form a plan for getting a sales tax or other funding measure passed. A downtown streetcar has also been proposed by a nonprofit organization.

Columbus – The Columbus region was moving towards building a light rail or bus rapid transit line on their major north south corridor. However, the cost effectiveness ratings was too low to receive New Starts funding, so planning for transit expansion had to start over. Since that time, streetcar plans connecting downtown and Ohio State University were developed but have since stalled, and officials have mentioned that plans are now off the table. Innovating financing techniques such as event ticket taxes were heralded as possible ways to pay for the system but as of now it is on hold. In late 2010, the transit agency (COTA) announced it was now considering a bus rapid transit network modeled after Cleveland. Recently, FTA awarded the region a grant to perform an Alternatives Analysis on one corridor.

Las Vegas – The Las Vegas region has made a concerted effort to push less expensive transit options or have private operators develop transit alternatives. For example, the Las Vegas Monorail is a completely private operation. The operator declared bankruptcy in 2010, however, which put a planned expansion to the airport on hold. The transit agency (RTC) is planning several true bus rapid transit corridors and received a TIGER award from the DOT in February 2010 to begin construction of the Sahara Express BRT line. Two other BRT lines are moving forward to construction as well.

## Regional Stories

Milwaukee – The Milwaukee region got a huge boost when Mayor Tom Barrett devised a plan to appropriate funding the FTA had given the region in the 1990s. Today, the 91.5 million is being divided between building a city streetcar and expanding commuter bus options in the region. However even with that win, transit has a tough road ahead. The current Governor turned down over \$800 million in funding for passenger rail upgrades between Milwaukee and Madison and the State has also been reluctant to approve funding for a commuter line that would connect Milwaukee with Chicago via Kenosha. Given the governor's focus on road construction, an unsupportive county and hostile politics towards transit in the state, the region needs a few wins to move forward.

Austin – Austin recently opened its first commuter rail line and its working on rapid bus corridors in the region. A rail line for the central city is also planned but an election required to build it has been pushed back a year. Further expansion to the existing lines is planned but funding has not been programmed and development could be slow. Engineering on the center city rail line is moving forward and is likely to gain more momentum going into the bond election.

Salt Lake City – The Front Range has probably been the most successful transit expansion project outside of the Dallas region. The plan to build 70 miles in 7 years is under way and future plans for expansion are already starting to bubble through. Funding is in place for most of the expansion with a half cent sales tax passed in 2006 and fluctuating fuel surcharges for operating costs have kept the agency afloat while other agencies suffer from the economic downturn.

Raleigh / Durham – The Triangle region was turned down by the FTA to fund a commuter line to connect the two regions. Given the polycentricity of the region, it's probably harder to serve with fixed-guideway transit than others around the country but a plan has been circulating on how to build out such a system. An election is expected soon to give the Triangle a similar taxing authority to Charlotte and develop a regional transit network. However Wake County is wavering and indicates it might not participate.

Norfolk – The Norfolk region was flying high until recently when a book keeping scandal necessitated a pause in the extension an under construction light rail line from Norfolk to Virginia Beach. The right of way had been purchased but misrepresentation to FTA about costs might set the region back on its ambitious rapid transit plans. A new long range plan with a number of corridors and costs is expected in the coming months and will open up a discussion about funding.

Nashville – Nashville opened up its first commuter rail line to little fanfare and limited ridership. While it was done inexpensively, the line has come under fire for underperforming and operating on a limited schedule. However, the region is doing planning for a number of corridors radiating

## Regional Stories

out from the central city and is doing multi-modal studies on them to see if transit is feasible. In December 2010, the FTA awarded Nashville a grant to perform an Alternatives Analysis on one corridor. Additionally, given the findings of a study by CEOs for Cities, Nashville is at the head of a conversation about how and why people spend more time in traffic and on the road than they should due to regional development patterns.

Greensboro – The Greensboro region in North Carolina consists of both Greensboro and Winston Salem. Both downtowns are looking at central city circulators and commuter rail that would connect them to the Triangle region. While many of the other regions around the country have a more defined center, this area consists of many smaller centers which makes transit more difficult to pursue.

Louisville – Recently the Louisville MPO took all of their transit lines out of the long range plan because there was limited funding to move forward. The local transit authority has maintained the transit lines in their long range plans, but with very limited funding, the region is focusing on a new bridge connection to downtown Louisville and increasing frequency on the most popular bus lines to 15 minute headways in the hopes that one day down the line these corridors might be upgraded to BRT.

Jacksonville – The Jacksonville region to date has experienced fixed-guideway transit in the downtown. The people mover circulates workers in the central city from the edges where parking lots mostly dominate. However recent discussions have shifted to promoting bus rapid transit networks and commuter rail. Seeing this as a lower cost approach, the region expects to start planning for a network.

Grand Rapids – This Western Michigan region is looking into building a downtown streetcar and bus rapid transit line to connect the central business district with the University. The projects have been put on hold due to the loss of a sales tax election in 2009 but another is planned for 2011. Until then, the plans will likely wait for further funding.

Hartford – The Central Connecticut region has been struggling with building the Hartford New Britain Busway for a while. The project has undergone serious cost increases and has been sitting on the Final Design level at the federal transit administration for a while. There are several other BRT corridors in preliminary planning stages, but the ridership estimates were not encouraging and planners are waiting to see if the performance of the Hartford New Britain line will make the case for future transit investments in the region.

Memphis – Memphis has a downtown streetcar circulation system but in the last decade has been looking to expand. Their first expansion went to a major medical center that moved right after the line was completed and another line to the airport has been in planning for a while but was just dropped because of funding issues. The funding issues revolve around the main fact

## Regional Stories

that the city doesn't have a dedicated revenue source for transit operations. And while they have a fairly smart program called centers and corridors, it is fairly safe to say that it will be a while before Memphis is ready for more expansion.

Oklahoma City – This region is the surprise region of 2010. Their plans for downtown and reconnecting with the waterfront are fascinating. A sales tax measure that was first passed in 1993 was renewed by voters in 2009 to include \$120 million for a downtown streetcar. The City believes they can build the first phase of the line without federal funding if necessary, but do plan to seek assistance to extend the line up to 15 miles as they acquire more funding. The state legislature approved the creation of transportation authorities that have the ability to tax and find other revenue sources for the system. Recent musings by council members to redirect the money have opened up the debate again so it will be interesting to see what happens.

Greenville – This region in South Carolina has corridors in planning but does not have a concrete regional transit plan.

Richmond – Richmond is the birthplace of the electric streetcar and is currently looking into a number of different corridors including Broad Street. This line is most likely to be a bus rapid transit line but other corridors around the region could be light rail or commuter rail.

New Orleans – After Katrina, New Orleans has been rebuilding and thinking about transit expansion. Current plans call for expanding the streetcar network along three major corridors, connecting downtown to some of the closer neighborhoods. The Loyola/UPT line received a federal TIGER grant that will pay for the construction of the line, while the other two hope to obtain federal funding.

Birmingham – The Birmingham region is looking at bus rapid transit lines in major radial corridors and a circulator with a dedicated lane downtown. Previous plans to build a streetcar have stopped and the bus corridors are being planned in concert with freeway upgrades. It's possible that these could be express buses instead of dedicated transitways but planning will continue. There have been rumblings recently by the mayor about asking the state to help fund light rail and bus projects.

Buffalo – While Buffalo has a number of plans on the books, local sources say that none of them are close to moving into the next stage of planning. Each of the corridors would be helpful in increasing the range of Buffalo's existing light rail line, however extensions are dependent on funding which the region, like many others, is in search of for projects.

Albany – Albany is planning a small bus rapid transit line but has not indicated further development of a rapid transit program.

## Regional Stories

Rochester – The city of Rochester is looking into developing a center city circulator but it is in the early stages of development. Regional plans suggest that further expansion is not on the books.

Dayton – The Dayton region is home to one of the few trolleybus systems in the country. Electric buses that run on wires traverse this area that prides itself on its unique clean transportation options. Plans exist to use existing infrastructure of the overhead wires combined with streetcar tracks to build a streetcar network that would connect major destinations downtown. Operational funding is keeping this from moving forward.

Fresno - The Fresno region in the central valley of California is known for its agriculture and over the last few decades has grown exponentially. As the region has grown farmland has been reduced by housing and other construction. Additionally air quality is often poor. Fresno is looking at building a downtown streetcar and several bus rapid transit lines. The City of Fresno is currently conducting a Public Transportation Infrastructure Study to examine the feasibility of these projects and identify possible funding sources.

Knoxville – The region completed a Regional Transportation Alternatives Plan in the early 2000s that identified a new BRT line in Sevier County as a transit investment priority for the region. The plan also identified a desire for several intercity lines that would connect Knoxville to Nashville, Atlanta and Bristol. However, these plans have not been taken off the shelf since the initial report was published.

Tucson – A vote in 2006 approved funding for transportation plans around the region including a downtown streetcar circulator that would connect a major redevelopment project to downtown and the University of Arizona. Once completed, the network based on this initial line will act as expansions. While there are many that question the necessity for a streetcar, there is much support as well. The greatest support came from the federal government who gave Tucson a number of grants to complete the work. However it's possible that the amount of support received for the first corridor will be hard to come by in the future. Plans for future expansions are robust, but they require more spending.

Tulsa – The city recently adopted a Downtown Master Plan that calls for a new streetcar line and a commuter rail spur that will eventually out into the suburbs. This plan does not identify costs or funding sources, however. The transit agency (Tulsa Transit) and MPO (INCOG) have also looked at several major corridors for either bus rapid transit or commuter rail but nothing has moved beyond the preliminary feasibility study stage.

Honolulu –Honolulu is moving forward with its first rapid transit project after a local tax was put in place to fund it. As one of the densest cities in the country, Honolulu is well suited for the improvements though until the final construction is done, opposition in the state will try to stop

## Regional Stories

the train. The rapid transit project is the first core segment for a future system that will connect redevelopment areas with downtown Honolulu.

Omaha – The region lays out a new transit network in their 2035 long range transportation plan, including a downtown streetcar, a commuter rail line and several BRT corridors. Though all of these projects are in the early planning stages, FTA recently awarded Omaha a \$700,000 planning grant to begin the alternatives analysis for the streetcar, which would align with the “Omaha by Design” initiative to make the city a more sustainable place.

Little Rock – The Little Rock area has been an interesting story of success since they started operating their heritage streetcar in 2004. To get that line built, three local officials who were in office during the whole process helped shepherd the line to completion. Now discussion has moved towards expanding that initial line to the airport and building rapid transit lines on key corridors. As with most regional transit networks, this plan would largely depend on federal help for development.

Albuquerque – The region in the last few years just opened a commuter rail line that runs from Albuquerque to Santa Fe and began focusing on a downtown streetcar circulator to connect major destinations. However opposition to the project stalled funding and it has been on hold ever since. It seems unlikely that the project will pick up again soon though bus rapid transit appears to be moving forward in one corridor, with plans for other BRT lines being studied by the local transit agency, NM Rail Runner and the MPO (MRCOG)

Sarasota – South of Tampa, this region is linked into the greater Tampa region as well. Planning for bus rapid transit lines has been taking place and the North South Corridor is in engineering and seeking small starts funding.

Harrisburg – Harrisburg has been planning the CorridorONE project for many years and recently has had it renamed to the Red Rose Corridor. The line would reach all the way to Philadelphia and be a main transportation corridor into western parts of Pennsylvania. While the Red Rose Corridor has funding in place for construction, concerns arise over operations. Five corridors are planned for the region but no money has been found for their construction at this time.

Madison – After a number of years promoting streetcars the region is going to move more towards regional light or commuter rail. This decision was made after pushback from the community over Mayor Dave’s streetcar plan and tensions between the county executive’s plans for a regional rail line and the streetcar plan clashed. Funding for the project is hoped to come from a new Regional Transit Agency and federal funding. The process is far along and prospects for a successful election are good, however anti-transit sentiment in the state is currently strong. A passenger line between Milwaukee and Madison was just cancelled.

## Regional Stories

Colorado Springs – Plans for a streetcar network are in the works and could cross the majority of the city. Funding is still needed as is planning for the network in this city. Understandably the region will have to figure out a way to fund the network before they move forward.

Boise – Boise's plans for streetcar have been moving forward but recently have stalled due to the lack of ability to raise money through a sales tax vote. The state government has not passed a bill for it and lawmakers are standing firm on that. Until a stable funding source is found, the streetcar is likely to wait for approvals.

Other regions – Smaller regions are also looking to build quality rapid transit networks as well. Lancaster, Reno and Eugene all have plans on the books to build streetcars or bus rapid transit into their existing transportation networks. While Eugene has been the most successful, recently completing its second bus rapid transit line, others are soon to follow. There are many cities in this range of residents not planning any rapid transit, however it seems prudent given the size of these communities that they focus on other pressing issues and possibly rural transportation issues residents might face.

### Research Parameters

The basic unit of analysis was Census combined statistical areas (the Census's definition of a "region".) We limited our analysis to the 100 regions in the United States larger than 500,000 people, in part because of the sheer number of smaller regions, and because, for the most part, these places are not considering new fixed-guideway transit. In some cases, we know of projects in those regions that fit our criteria, and so we included those regions in the analysis.

From this list we combed local planning documents and other resources and conducted phone interviews to get information on the fixed-guideway transit projects that were being contemplated in each region, to get a snapshot in time. Information on any individual project can change daily, so this analysis presents the best available information as of February 15, 2011 but there is a need to update and maintain this information on an annual basis to provide an ongoing assessment of the demand for transit investment.

The level of information available for each region was not always consistent. In some cases project leaders were not available or did not call us back. In other cases, major cost estimates for regional projects are not available to the public yet and have to be vetted through local committees and working groups before they are accessible. Only two thirds of the projects documented in this research have cost estimates at this time, making it more than likely the capital cost totals are much higher than reported here. In our 2008 Transit Space Race report, \$248 billion worth of projects were documented in almost 400 projects; in 2010 for the 413 projects that we were able to document, there are \$243 billion in investments proposed and planned, and an additional 230 projects without cost information.

Detailed information for all of the transit corridors surveyed is provided as an appendix to this report, including estimated capital costs, projected ridership, funding sources for operating and capital costs, and more. However, there are key stories and themes that we observed which can shed light on future transit investment needs, priorities, and challenges.

### Methodology

#### Selection of Corridors

Source: Various Local Agencies Documented in Spreadsheet, Geocoded in-house

Corridors for income analysis were chosen based on their level of completion. Lines that were far enough along in the Alternatives Analysis process and beginning more in depth engineering had station areas that could be geocoded in ArcGIS. 856 new stations were plotted in addition to our existing database and 142 out of 651 lines were analyzed for income characteristics. It should also be noted that analysis was only done on the stations that were created. If the line was an extension of an existing line, the existing stations were not used in the Analysis. This



pushed the analysis to give greater weight to new alignments in both heavy transit regions and regions without transit.

### **Households: Total and Low Income**

Source: American Community Survey, 2005-2009 rolling data. The smallest geography available for this data is the block group level.

To calculate the total number of households and the number of low-income households near transit lines, we selected all of the block groups that intercepted a half mile circle around each transit station along the line. In some cases, this meant that households living outside of the traditional half mile circle were counted as being “near” transit, but as people are generally willing to walk farther distances from their homes to reach transit, we felt this was an acceptable estimation.

Households considered “low income” in this analysis are those making less than \$25,000. The US median household income in 2009 was \$50,221. While we recognize that the purchasing power of incomes vary across regions, choosing one number as a breakpoint makes it easier to compare transit lines to one another.

### **Workers: Total and Low Income**

Sources: Census Longitudinal Household-Employer Dynamics (LEHD) from Cornell University’s Virtual VirtualRDC OnTheMap data, 2008. The smallest geography available for this data is the block level.

To calculate the total number of workers and low income workers near transit lines, we selected all of the blocks that had their centroid (the geographic center of the block) within a half mile of one of the stations along the proposed line. This generally resulted in a smaller geographic net than the methodology used to calculate households near transit. Given the research that has found that people are less likely to walk long distances from transit to work, this decision made sense to us.

Workers considered “low income” are those making less than \$1,500 a month, or \$18,000 a year. The income breakdown available in the LEHD data is limited (there are three categories, less than \$1,500, \$1,500-3,000, and over \$3,000).

For two of the regions analyzed here, DC (District of Columbia) and Boston, MA, this data was not available. In these cases, we used Census Transportation Planning Program (CTPP) 2000 data, available at the census tract level. For these two regions, we selected tracts that intersected with the half mile circle around each station (similar to the household area selection).

### Catalog Definitions

The corresponding spreadsheet gives information related to the following data described below. Red marks in the corners of spreadsheet cells hold extra information. To read, move your mouse over that area to show information available. The information contained in the catalog is subject to change with changing estimates and information.

#### TAB: Regional Combined

- Region – The region is based on the census combined statistical area geography. This is the largest regional geography in the census and at times combines a number of cities within a region. The Washington DC CSA for example includes Baltimore and the Boston CSA includes Providence RI. This designation allows for more cohesive definition of a region's boundaries.
- Population – The population of the region according to the 2009 census.
- Project Name – The project name is either the name of the corridor being studied or the specific designation given to the project by local authorities
- Income Analysis – This is an internal code to show which lines we digitized for economic and housing analysis. Because many of the lines are conceptual and without specific station points, we are not able to determine their impacts.
- Count – This number helps determine the total number of projects at the bottom of the spreadsheet.
- State – This is the state that the project is located within. Some regions cross state boundaries, especially in the Northeast.
- Process Level/PL Code – This designation defines the approximate progress of a project and discusses five major process levels;
  - Future Plan – The project is in the long range transportation or other regional document however a specific route has not been determined and costs usually have been estimated generally if at all.
  - Stalled – Stalled projects are those which might have gone through other process levels however due to a lack of political will they are set aside for future consideration
  - AA – This means Alternatives Analysis and projects at this stage have determined a corridor but not a specific route. There is usually more information about these corridors available than those in the Future Plan stage however it is sometimes limited and costs and other factors are highly dependent on the findings from this type of study and are thus data points are subject to change
  - Engineering – These are projects which have determined station locations and are gearing up for construction. Their cost estimates are generally more accurate and financial information such as operating costs are available for tabulation.

- Construction – Projects in this phase are being built. A number of projects on this list could be completed in the next year and have already found funding.
- Agency – The agency is the local governmental organization responsible for the process of that project. Agencies can range from cities to MPOs to states.
- Transit Technology – This column in the spreadsheet gives the planned transit technology. This spreadsheet only covers transit technologies which have significant amounts of fixed guideway, whether it be rails or dedicated lanes for buses. When projects are in the AA process or earlier, different technologies might be possible for that alignment thus giving a number of different ridership and cost predictions;
  - Bus Rapid Transit (BRT) – Projects labeled BRT are buses running in dedicated lanes for most of their route.
  - Streetcar – Streetcars are a subset of light rail that act as central city circulators or line haul operations that operate in traffic. The definition between streetcars and light rail generally has to do with the vehicle itself however there is some overlap.
  - Light Rail (LRT) – Light rail transit is a mode that consists of trains that can operate in a number of different operating environments including dedicated right of way or in street inside of downtowns.
  - Commuter Rail – Commuter rail is often defined by locomotives running under self generated power pulling train cars behind them.
  - Heavy Rail Metro – Heavy rail are lines which are completely separated from other traffic and include subways. There are exceptions with some legacy systems though most run on a third rail.
  - Rapid Bus – Rapid bus lines are buses that have specific branding and some special features such as signal prioritization. In this report there are a few rapid bus projects but there was a conscious effort to stick to mostly fixed guideway and dedicated lane projects.
- Estimated Capital Cost – This is the estimated cost of a project at the time of collection. Project costs can change daily and changes in design and contracting often result in changing costs. This is a snapshot of what these costs are and is generally a good estimate however information can change rather fast. Additionally, the project costs sometimes come as year of expenditure costs or current costs without inflation. In most cases costs are current costs without inflation. For costs that were ranges for different alternatives, we chose the lower of the costs as noted by the red flags on these cells.
- Distance – The number of miles the project is likely to traverse
- Projected Ridership – Projected ridership is the number of riders that the project expects to carry in the future. In general these are ridership estimates 20 years in advance are more. Opening day ridership projections are likely to be different.

## Appendix

- Information Source Link – This is the website or document where the most information can be found on a certain project. In some cases information was gathered from a number of good sources; however this page is the main source of information. The contacts at the end of the row are another way to get information about a project.
- Project Notes – Extra links or notes about the project that are important. Red comment tags are also scattered throughout the document indicated notes on specific columns.
- Station Map Location – Where available, maps of the corridor or lines are collected for the mapping part of the project in deliverable two. The page numbers indicate the place in a linked report where the map is located.
- Contact Information – Each project or set of projects has a contact in each region. Sometimes only a phone number or email was available.
- Regional Plan Connected To – This column represents the plan that is in progress. Generally the projects come from the long range transportation plan but many times they are part of a specially branded package such as LA's 30/10 program or Denver's Fastracks.
- New Starts/Small Starts Funding – A simple yes/no question to determine whether New or Small Starts funds are being considered as a funding source. Many reports name them as a possible source however some projects do not end up seeking this specific pot of funding due to competition. Additionally, many projects do not name their funding sources or projected funding sources making this a difficult one to find.
- Projected Opening – The year the project is projected to open for revenue service.
- Capital/Operating Funding Mechanism – The links and information here discuss what types of funding mechanisms are used to fund projects. Some projects have too many sources to capture.
- Operating Costs – This column represents the operating costs of the project once it is completed and operational. These costs can be harder to finance than capital cost as those are a one time purchase.
- Column AD: Line: Workers Earning Below \$1,500/month within a half mile of stations along the line
- Column AE: Line: All workers within a half mile of stations along the line
- Column AF: Region: Total Workers Making Below \$1,500/month in the region
- Column AG: Region: All Workers in the region
- Column AH: Line: Households Making Less than 25,000 within a half mile of stations along the line
- Column AI: Line: Low Income Households (80 percent AMI and below) living within a half mile of the stations along the line
- Column AJ: Line: All households within a half mile of stations along the line
- Column AK: Region: Households Making Less than 25,000 in the region

## Appendix

- Column AL: Region: Low Income Households (80 percent AMI and below) in the region
- Column AM: Region: All households in the region
- Column AO: Percent Workers Earning Below \$1,500/month within a half mile of stations (out of all workers near stations) along the line
- Column AP: Percent Workers Earning Below \$1,500/month within a half mile of stations (out of all workers near stations)
- Column AQ: Percent Workers in Region Connected by Transit
- Column AR: Percent Households Making Less than 25,000 within a half mile of stations (out of all households near stations)
- Column AS: Percent Low Income Households (80 percent AMI and below) living within a half mile of the station (out of all households living near stations)
- Column AT: Percent Households Making Less than 25,000 within a half mile of stations (out of all households making less than 25,000 in region)
- Column AU: Percent Low Income Households (80 percent AMI and below) living within a half mile of the station (out of all low-income households in region)
- Column AV: The line as a percentage of the total Households in Region

### **TAB: Region**

- Region: The name of the region being studied
- State(s): The name of the states that that region is located in. Most places are located in one state but large regions can cover multiple state jurisdictions
- Region Type: Most regions are combined statistical areas made up of a number of Metropolitan Statistical Areas and Micropolitan Areas. However some places do not have a larger CSA.
- Region Size: The size of a region grouped into categories
- 2009 Pop: The population of that region in 2009 according to census records
- 2000 Pop: The population of that region in 2000 according to census records
- Pop Change: The change in population between 2000 and 2009
- Current System Size: The current size of the regional fixed-guideway transit system delineated by number of stations
- Future System Size: The future estimated system size of the system if all expansions were funded.

## Appendix

- Existing Employment: The number of jobs within a half mile of existing fixed-guideway transit
- Future Total Estimated Employment: The number of jobs that would be near transit if all the lines that we analyzed in the report for employment and housing were completed.
- Total difference: The difference between existing and future employment near transit
- % Difference: The percent difference between the future and existing employment near transit
- Regional Recommendations: The assigned regional planning theme