This paper was prepared by a consultant to the Bipartisan Policy Center’s National Transportation Policy Project (NTPP). It was meant to inform the work of NTPP in the production of their report “Performance Driven: A New Vision for U.S. Transportation Policy”, which was released June 9, 2009. The opinions and recommendations in this paper are those of the consultant alone and not of the Bipartisan Policy Center or the members of NTPP.
New Starts: Lessons Learned for Discretionary Federal Transportation Funding Programs

January 25, 2010

Prepared by:
Donald J. Emerson and Jeffrey D. Ensor
Parsons Brinckerhoff | PB Strategic Consulting
## Table of Contents

**Executive Summary** ........................................... 1  
Purpose of Research ........................................... 1  
Findings .......................................................... 1  
Policy Implications .............................................. 1  

**Description of The New Start Program** ................. 5  
Introduction .................................................... 5  
Current Form ..................................................... 5  
  General Overview ............................................ 5  
  Federal Objectives .......................................... 7  
  Project Planning and Evaluation ........................... 8  
Program History and Evolution ............................... 16  
  Formation and Early Years of the Program ............... 16  
  Evolution ...................................................... 17  

**New Starts Program Components** ....................... 23  
New Starts Components:  
  Most Effective ............................................. 24  
New Starts Components:  
  Less Effective ............................................. 27  

**Findings, Lessons Learned, and Recommendations** ...... 31  
Institutions and Program Design ............................. 31  
Incentives, Risks, and Accountability ........................ 31  
Planning and Project Development Process ................. 32  
Evaluation Framework .......................................... 33  
Performance Measures and Standards ....................... 33  
Models and Data ............................................... 34  
Leveraging Federal Funds ...................................... 35  

**Appendix A – List of Acronyms** .......................... 37  
**Appendix B – New Starts Multi-Criteria Rating Framework** ......................... 38  
**Appendix C – New Starts Cost Effectiveness Calculation** ......................... 40  

**Exhibits** .................................................... 41  
**Exhibit 1**: Investment Objectives of the New Starts Program .......................... 8  
**Exhibit 2**: Administrative Objectives (of the New Starts Program) .................. 9  
**Exhibit 3**: New Starts Planning and Project Development Process .................... 10  
**Exhibit 4**: New Starts Multi-Criteria Rating Framework ................................ 14  
**Exhibit 5**: Current Weights Used in the Development of Project Justification Ratings ............................................. 15  
**Exhibit 6**: Number of Projects Seeking New Starts Funds ............................... 18  
**Exhibit 7**: Cost Forecast Accuracy of New Starts Projects ............................. 19  
**Exhibit 8**: Ridership Forecast Accuracy of New Starts Projects ........................ 20  
**Exhibit 9**: Risk-Burden Continuum ............................................. 21  
**Exhibit 10**: New Starts Program Components ............................................ 23  
**Exhibit 11**: Summary of FY2010 New Starts / Small Starts Ratings ............... 39  
**Exhibit 12**: Simplified User Benefits Calculation ........................................... 41  
**Exhibit 13**: FY2010 Cost Effectiveness Thresholds ....................................... 42
New Starts projects are subject to more scrutiny and accountability than other federally funded surface transportation projects.
Executive Summary

Purpose of Research
The Bipartisan Policy Center’s National Transportation Policy Project is one of many groups calling for new competitive programs with broad investment goals and eligibility, plus incentives for states and metropolitan areas to implement programs that support the nation’s transportation objectives. The New Starts program, administered by the Federal Transit Administration (FTA), is essentially the only discretionary transportation program of any size that offers a history of program design and implementation extending over many years. This paper analyzes the FTA’s discretionary New Starts program to identify the lessons learned and components that might be relevant to these new competitive programs, particularly with respect to federal funding decisions.

Findings
- The New Starts program has broad investment objectives but relatively narrow eligibility. It funds fixed guideway transit projects, such as urban rail and bus rapid transit, including both new lines and extensions. A subcategory of the program also funds a limited number of corridor bus projects.
- With $2 billion in funding for FY2010, the New Starts program is the largest federal discretionary transportation program with a multi-year history. The discretionary nature of the program responds to the high cost and “lumpy” nature of New Starts investments—transit agencies enter and exit the program over time as major capital investment projects advance to the point where sizable funding is required.
- Because of its competitive nature, the program features a prescribed planning and project development process combined with a rigorous and comprehensive federal review and rating of proposed projects, through which FTA seeks to minimize risk and evaluate projects in a fair and transparent manner. New Starts projects are subject to more scrutiny and accountability than other federally funded surface transportation projects.
- Decision-making is shared between the Executive and Legislative Branches.
- In the early years of the program, federal evaluators compared competing projects in relative terms, with the intent to group candidate projects into three categories: the best candidates for funding, less meritorious projects, and the least attractive projects. Over time, the evaluation has changed to emphasize an absolute comparison of each project’s costs and benefits, relying heavily on a cost effectiveness index and threshold.
- Federal funding commitments occur only after a project has entered the final design phase. This reduces project cost risk, but necessitates sizable local investment prior to a funding commitment.
- The program is criticized for being overly complicated and time consuming, with delays leading to increased costs.

Policy Implications
- Key considerations for the design of a competitive surface transportation funding program include: the local/state planning and project development process, project evaluation criteria and decision-making, risk management, and accountability. Each of these will create the need for federal staffing for oversight, guidance, and technical assistance.
For a program with broad eligibility, developing and applying standard planning procedures, application/review criteria, and performance measures could be more challenging than they have been for the more narrowly focused New Starts program. A broader program is likely to face analytical and political hurdles as it seeks to create a process and apply criteria that are considered to be fair and unbiased.

Initially at least, a relative comparison of projects with multiple criteria may offer a more suitable evaluation framework than a strict cost-benefit analysis, given the broad investment goals and the diverse set of projects that the new programs would support.

Given that the program is new and unfamiliar to applicants, it would be advantageous to keep the process as understandable and streamlined as possible at its inception.

The burden and delays associated with project reviews at key milestones can lead to increased costs and delayed benefits. The evaluation process should strike an appropriate balance between (federal) risk management and application burden considerations.
More than any other transportation program, the New Starts program shares decision-making between the Executive and Legislative branches of the federal government.
Description of
The New Starts Program

Introduction
The Bipartisan Policy Center’s (BPC) National Transportation Policy Project (NTPP) released a report June 9, 2009 with the goal of encouraging and supporting the development of a new national transportation policy direction that reflects the nation’s values and social and economic vision of the future. This paper served to assist the NTPP with developing their proposals for multi-modal discretionary programs (eventually termed the Improving Federal Connections and Improving Core Transportation programs). The research analyzes the 49 USC Section 5309 (Transit) “New Starts” program administered by the Federal Transit Administration (FTA). This first section of the paper provides an overview of the current program, its history, and its evolution. The second section identifies elements that might be relevant to a new competitive metropolitan program, where New Starts program components have made positive contributions toward the federal objectives, as well as the primary limitations and drawbacks of the program’s components. Finally, the third section presents the paper’s findings, lessons learned, and recommendations.

Current Form

GENERAL OVERVIEW
The 49 USC Section 5309 “New Starts” Program is currently the federal government’s primary method of supporting and encouraging local investment in fixed-guideway transit investments. State and local agencies sponsoring commuter rail, heavy rail transit, light rail transit, bus rapid transit, and streetcar projects are eligible to apply for financial assistance from this capital program. The capital costs of these projects range from tens of millions to several billions of dollars. In FY2010, $2.0 billion was authorized and appropriated for the program.

In addition to New Starts, the FTA administers various other funding programs ($8.7 billion in FY2010) primarily for routine transit investments. Substantial amounts of funds are apportioned to transit agencies through various formula programs such as the Section 5307 urbanized area program and the Section 5309 modernization program. In dollar terms, New Starts constitutes less than 20% of the overall FTA program, but it consumes a much larger proportion of agency staff time.

More than any other transportation program, the New Starts program shares decision-making between the Executive and Legislative branches of the federal government. The authorizing committees of Congress establish the program framework, determine the maximum funding levels, and authorize individual projects. The FTA, which manages the program for the Executive Branch, oversees planning and project development, evaluates and rates projects, recommends annual funding amounts for projects, negotiates Full Funding Grant Agreements (FFGAs, which are multi-year federal grant commitments), and provides federal oversight during construction. FTA administers the program through regulations, policy statements, technical guidance, training and “roundtables,” and project deliverable reviews. The appropriations committees of Congress are informed as projects reach key milestones, receive and consider the President’s budget recommendations (including FTA’s recommended annual funding levels for individual projects), and specify (through earmarks) the final annual funding amounts for individual projects.

1 “Fixed guideway” refers to any transit service that uses exclusive or controlled rights-of-way or rails.

2 The Transportation and Infrastructure Committee and the Banking, Housing, and Urban Affairs Committee are the authorizing committees for the House of Representatives and the Senate, respectively.

3 Before a project can receive a New Starts Full Funding Grant Agreement, Congress must authorize individual projects to proceed with final design and construction, per 49 USC 5309(d)(1)(B)(i).

4 Congress also has 60 days to review an FFGA proposed by FTA, per 49 USC 5309(g)(3).
The New Starts program is one of only a few in transportation that are discretionary in nature. Like other programs, it is not immune from earmarking—61 projects received New Starts / Small Starts funds in the fiscal year 2008 Appropriations bill, while only 20 of these received funding recommendations from FTA.5 However, despite the earmarking of relatively small amounts (often less than $10 million) for these 41 other projects, Congress seeks and generally follows FTA’s funding recommendations for the considerable majority of the New Starts

Demand for New Starts funding significantly exceeds the dollars available.

funds. With a few exceptions, the larger appropriations (more than $20 million) are generally reserved for projects that have received funding recommendations from FTA.5 Congress generally follows FTA’s recommendations once a federal funding commitment is made via an FFGA.

New Starts projects, which can be either new fixed-guideway projects or extensions to existing systems, are considered “lumpy” investments.7 Within any one metropolitan area, these types of projects tend to be undertaken on an infrequent basis, but when they are undertaken, the costs can be a significant portion of the sponsoring agency’s capital budget during the construction period. Although a few metropolitan areas seek to have at least one project in the New Starts “pipeline” at any given time, less than 1% of the more than 6,000 transit providers receive New Starts funds in any given year.8

Because the program is discretionary, a New Starts grant can bring large amounts of “new money” to a metropolitan area—federal money that addresses a transportation challenge that might not otherwise be met. The potential availability of federal funds can help leverage political support to increase local funding for transit. In addition to transit’s mobility benefits, transit investments generate local economic impacts (e.g., short term construction jobs and their multiplier effects). Many project sponsors also anticipate that New Start projects can serve as a catalyst for longer term economic development and land use changes. The opportunities created by the federal grant—as well as the requirement for non-federal matching funds—have given state and local entities incentives to invest their own money in these types of projects.

Demand for New Starts funding significantly exceeds the dollars available. To be eligible for funding, New Starts projects must be authorized in law. Authorization gives the project sponsor a “hunting license” to pursue an FFGA, but it does not guarantee a grant. Indeed, the program does not have the capacity to fund all of the authorized projects. Approximately 300 projects were authorized in SAFETEA-LU9, yet through 2009 only 12 projects received FFGAs. As of 2007, GAO estimated there were 57 projects in pre-pipeline stages (undergoing Alternatives Analysis or other corridor-based studies) with the intent to seek New Starts funds.10,11

5 “Small Starts” is a program within the Section 5309 New Starts program, generally for those projects with a capital cost less than $250 million.
6 The Dulles Metrorail project, which has strong Congressional support, received a $34 million earmark in FY2008. The large earmark for (along with large amounts in prior years) illustrates the important role of Congress in the New Starts funding decisions—not all funds go to projects with existing FFGAs.
7 These investments can require significant resources over a compressed period of time, e.g., five to eight years.
8 Other public entities, such as State DOTs, may also apply, although transit agencies sponsor most projects seeking New Starts funds.
11 In 2003, more than 80 projects were in the formal New Starts pipeline, meaning they had FTA approval to advance into Preliminary Engineering or subsequent phases as defined later in this paper. The size of the formal pipeline has subsequently declined as some FFGA projects
FTA’s ability to make multi-year funding commitments is constrained, by law, to the amount of the current authorization. FTA is also authorized to make “contingent commitments” on the assumption that the program will be extended in subsequent authorizing legislation. These contingent commitments cannot exceed the amount of funding that was authorized for the last three years of the current authorizing legislation. As these limits are reached, FTA is unable to enter into new FFGAs until additional authority is provided by Congress.12

**FEDERAL OBJECTIVES**

An understanding of the federally specified objectives for New Starts can provide key contextual insight into how and why the program functions as it does. We have classified these objectives into two categories—investment and administrative. Investment objectives explain what the federal government hopes to achieve by investing in these fixed-guideway projects, while administrative objectives explain why the program contains certain components or features.

**Investment Objectives**

The New Starts program has an abundance of investment objectives. Congress specifies program requirements and evaluation criteria in law, and then the Executive Branch interprets them and provides additional details in regulations and guidance. New Starts investment objectives—those that drive the selection of projects to be advanced and ultimately funded—can be classified as in Exhibit 1.

The Exhibit 1 investment objectives are specific to the New Starts program. Their applicability may be less relevant for a broader, multi-modal program, which will inevitably have a different set of criteria, but they help provide context for the choice of criteria and measures used for New Starts.

**Administrative Objectives**

In contrast to the investment objectives, many of the administrative objectives might be key parts of a broader, multi-modal discretionary program. Although they often reflect formal and informal goals of the administering agency, this paper uses the term “administrative objectives” more abstractly, in reference to the drivers behind decisions associated with the design and management of a competitive federal transportation program. The administrative objectives might be the same if some other entity (e.g., a national infrastructure bank) managed the program.

The administrative objectives help explain key motivations behind the design of a competitive grant program, and in particular, why specific program components (outlined in the latter part of section 1) are included. Based on experience with New Starts, Exhibit 2 is a characterization of the administrative objectives for the New Starts program.

Although the priorities can be influenced by directives from Congress, the administrative objectives are executed by the Executive Branch. FTA is the lead agency for the New Starts program, but other groups such as the Office of Management and Budget (OMB) play a key role and interagency approvals are required for program changes. FTA’s relative emphasis on the objectives is also influenced by the Office of the Inspector General and the General Accountability Office, which report on FTA’s management of the program.

---

12 As SAFETEA-LU approached its September 30, 2009 expiration date, FTA reached these limits, and projects that are otherwise ready for implementation may be delayed.
PROJECT PLANNING AND EVALUATION
FTA evaluates New Starts projects in terms of the extent to which they fulfill the federal investment objectives in Exhibit 1. Since these investment objectives are not mutually exclusive, and may conflict, the project evaluation process is inherently complicated. Project sponsors often do not share the FTA’s objectives and may not find the FTA criteria to be particularly relevant to their local decisions. At the local level, there is an understandable temptation to “game the system” to enhance a project’s chance for funding. This tension necessitates federal oversight using certain program components to ensure reliable estimates of costs and benefits and to steer federal investment to those projects that best fulfill the federal objectives. Some of those components are associated with the unique planning project development process established for this program, while others are associated with the project rating process.

Planning and Project Development Process
Regardless of whether a project sponsor pursues New Starts funds, major capital investment projects typically take years to develop from the planning stages to the beginning of construction—some have taken in excess of ten years. The projects are complex, and planning and developing them requires myriad local decisions (mode, mode, mode).

Exhibit 1: Investment Objectives of the New Starts Program

<table>
<thead>
<tr>
<th>Primary (based on requirements and criteria that are emphasized under the current program)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve mobility, with cost effective fixed-guideway investments.</td>
</tr>
<tr>
<td>Encourage transit-supportive land use.</td>
</tr>
<tr>
<td>Promote economic development.</td>
</tr>
<tr>
<td>Encourage non-federal investment in transit.</td>
</tr>
<tr>
<td>Ensure that the sponsoring agency has the technical capacity and project management skills to successfully deliver the project.</td>
</tr>
<tr>
<td>Ensure that the sponsoring agency has sufficient financial resources to build and operate the project while maintaining service and assets elsewhere in its system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Secondary (based on less emphasized criteria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generate environmental benefits, enhance operating efficiencies, and improve mobility for transit dependents.</td>
</tr>
<tr>
<td>Reduce fuel consumption, provide transportation options, improve accessibility, etc.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tertiary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Support objectives of other federal laws &amp; requirements (e.g., NEPA, Clean Air Act, Buy America, Davis-Bacon, ADA, etc.) by subjecting the project sponsor to these requirements when it seeks federal funds.</td>
</tr>
</tbody>
</table>
alignment, station locations, termini, funding, governance, etc.) be made through a systematic and participatory process. Various federal requirements, such as those from the National Environmental Policy Act (NEPA), are overlaid on the local decision-making process. In addition, reflecting the discretionary nature of the New Starts program, Congress and FTA created a unique planning and project development process (shown in Exhibit 3) that is required only for New Starts applicants.

The process concludes with a Full Funding Grant Agreement (FFGA), signed by FTA and the grantee, assuring the federal funding for project implementation (contingent upon future appropriations). The FFGA identifies the scope of the project, caps the amount of New Start funds, lays out the anticipated schedule of those funds (subject to congressional appropriations), and specifies the terms and conditions of federal participation.

In order to receive an FFGA, proposed projects must complete the New Starts planning and project development process. A proposed New Start must be the product of a corridor-level Alternatives Analysis (AA), during which reasonable mode and general alignment alternatives are evaluated in terms of how well they address one or more specified transportation problems. The end product of AA is the selection of a Locally Preferred Alternative (LPA) and adoption of a financial plan for the project. With FTA approval, a project can advance into Preliminary Engineering, where the project scope is refined through analyses of design options and the NEPA process is completed. The applicant then seeks FTA approval to begin

<table>
<thead>
<tr>
<th>Exhibit 2: Administrative Objectives of the New Starts Program</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Selection / Accountability</strong></td>
</tr>
<tr>
<td>Distribute a constrained amount of funds to meritorious projects.</td>
</tr>
<tr>
<td>Demonstrate that the evaluation process is fair (nationally consistent; mode neutral within the fixed-guideway transit modes) and equitable.</td>
</tr>
<tr>
<td>Make the evaluation process transparent and clear (understood by applicants, Congress, etc.).</td>
</tr>
<tr>
<td>Show that each funded project is a wise use of scarce federal tax dollars, and that it is cost effective for achieving the federal investment objectives.</td>
</tr>
<tr>
<td>At the time a decision is made to fund a project, have a high certainty that the project as represented (to stakeholders) will deliver the projected benefits, when promised, and at the estimated cost.</td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
<tr>
<td>Maintain and build support for the program.</td>
</tr>
<tr>
<td>Disseminate information and share knowledge.</td>
</tr>
<tr>
<td>Maintain a limited federal role in project activities and investment decisions.</td>
</tr>
<tr>
<td>Leverage federal funds.</td>
</tr>
</tbody>
</table>
Exhibit 3: New Starts Planning and Project Development Process

- Systems Planning
- Alternatives Analysis
  - Select Locally Preferred Alternative
    - FTA Decision on Entry into New Starts PE
      - New Starts Preliminary Engineering
        - FTA Decision on Entry into Final Design
          - Final Design
            - Full Funding Grant Agreement
              - Construction
its vigilant oversight has contributed to the improved reliability of New Starts cost and ridership estimates.\textsuperscript{14}

**Project Ratings**

FTA evaluates New Starts projects within a multi-criteria analysis framework. The framework provides a structured approach for developing a project rating, based on a set of criteria and a series of weights. FTA assigns qualitative ratings (on a five-point scale) for each criterion, and the weights are used to fold the criteria ratings into a project justification rating, a financial rating, and a summary rating for the project. The framework is illustrated in Exhibit 4, and examples of the multi-criteria rating process are included in Appendix B.

For the New Starts project evaluation, eighteen project justification criteria and eight local financial commitment criteria are specified in SAFETEA-LU.\textsuperscript{15} Projects must receive at least a “medium” rating on both justification and financial commitment in order to move to the next phase and ultimately to be considered for an FFGA.

Some New Starts criteria are assessed qualitatively while others are quantified. For example, a project’s land use rating is based on FTA’s qualitative assessment of the current land use conditions.\textsuperscript{16} Similarly, the financial rating is based on the proposed New Starts share of the project cost and qualitative assessments of a project’s capital and operating financial plans. The quantitative measures involve the use of travel demand forecasting models to estimate the user benefits, which are then combined with cost estimates (both capital and operating and maintenance) to assess cost-effectiveness.

---

\textsuperscript{14} Source: informal comments of FTA Office of Planning staff during 2008.

\textsuperscript{15} 49 USC 5309(d)(3) and 5309(d)(4). Not all are listed at the same level—some are nested or listed under a subsection.

\textsuperscript{16} Prior to FTA policy changes adopted on July 29, 2009, the land use rating also included evaluations of (i) the effectiveness of the localities’ past land use policies and (ii) the future land use plans in the project corridor. The policy changes moved these to two measures under the economic development criterion. These measures will be used until FTA develops better measures of economic development.
Cost Effectiveness Evaluation

The cost-effectiveness rating receives more attention and scrutiny than perhaps any other criterion. Since 2005, it has been FTA policy that projects receiving less than a medium rating on this criterion will not be recommended for funding, no matter how well the project rates on the other justification criteria.

For the purpose of its cost effectiveness evaluation, FTA has created a cost effectiveness index (or CEI) that is calculated by dividing a project’s annualized cost (capital and operating) by a measure called transportation system user benefits (TSUB). The TSUB measure represents an estimate of the equivalent hours of travel time savings that would result from the New Starts investment in a future horizon year some 20 years in the future. Only transit system user benefits are counted—FTA originally intended to include highway user benefits as well, but the first year’s results raised serious questions about the ability of highway models to produce reliable predictions of highway user benefits.17 An example of the cost-effectiveness calculation is included in Appendix C.

For the CEI calculation, both costs and benefits are computed in relation to a Baseline alternative. Typically low in cost and similar to a transportation system management (TSM) alternative, the Baseline represents “the best” transit system that can be developed for the corridor without the construction of a fixed-guideway project. FTA’s objective is to isolate the benefits of the proposed fixed-guideway investment, and not to credit the project with benefits that could be achieved with much less capital investment. Use of the Baseline also helps to create a level playing field for comparing projects nationwide, to the extent the Baseline can be applied consistently across all projects.18 Because the Baseline introduces opportunities for “gaming” the system, FTA oversight resources are needed to review it in almost as much detail as the project itself.

The CEI for each project is compared with thresholds established by FTA each year, based on the agency’s assessment of the value of time, with an adjustment (essentially a doubling of the value of time) to account for the external benefits that are not directly measured in the CEI calculation (highway user benefits, environmental benefits, land use, and economic development). This adjustment assumes that all projects contribute to these objectives in direct proportion to their user benefits.

17 All costs and benefits are based on the system in a distant forecast year. The horizon forecast year is the primary basis for evaluations used in metropolitan travel forecasting.
18 FTA uses the TSM alternative (instead of the “no build”) as the New Starts Baseline to create a level playing field nationally, one that focuses on isolating the benefits derived from just the fixed-guideway portion of the investment. FTA considered using a no build scenario as the baseline, but it chose to use the TSM alternative because it did not wish to disadvantage metropolitan areas that have made transit service investments.
The strict application of cost effectiveness thresholds has significantly affected the design of some projects, as project sponsors have forgone project elements that would have cost more than their return in user benefits. In one case, an elevated line was built rather than a tunnel, although some argued that a tunnel would have created greater opportunities for supportive urban development. In another case, it has been contended that elements to enhance safety were removed from a project.

In most cases, cost effectiveness calculations depend heavily on the region’s travel demand model. Many of these models were originally developed for the purpose of estimating highway corridor demand. Their use has been adapted over the years to include estimating transit ridership and air pollutant emissions, but the (four-step) modeling structure used by almost every metropolitan area has remained essentially unchanged since it was developed in the 1950s.\(^\text{19, 20, 21}\)

FTA’s project evaluation, to be credible, requires reliable forecasts that in turn depend upon sound data and methods. FTA relies on guidance, training, and oversight reviews to enhance the reliability of model results, and does not allow projects to advance if it has not accepted the forecast. FTA has also developed a software tool called Summit that extracts and aggregates information from the travel demand model. This tool also helps project sponsors identify errors and helps FTA review the results of the project sponsor’s travel demand analysis.\(^\text{22}\) See TRB Special Report 288 form more comments on the shortcomings of current travel demand models and model practices.\(^\text{23}\)

Many believe that the other benefits of transit (e.g., environmental benefits, highway congestion relief, economic development and land use, etc.) should be factored more directly into the cost effectiveness evaluation, as these benefits are cited in statute as goals of the New Starts program and in many cases are motivating factors for local investment in fixed guideway transit.

---

19 The Clean Air Act Amendments of 1990 require regions not in conformity with federal air quality standards to measure the air quality impact of proposed transportation programs to make sure they do not have a detrimental impact on air quality. Travel demand model outputs are fed into an air quality model, which produces estimates of carbon monoxide, particular matter, volatile organic compounds, and nitrogen oxides emissions.

20 A few metropolitan areas have begun to implement activity-based travel demand models, which are considered to be a better representation of actual travel behavior and are generally deemed more appropriate for modeling traffic and policy options than the conventional four-step models. Some smaller metropolitan areas only use three of the four steps in the four-step modeling framework.


22 The four-step model framework theoretically could be adapted to evaluate non-motorized (biking and walking) trips, but the labor and computer burden would be so great that this is not currently practical. Accordingly, many metropolitan planning organizations do not model pedestrian or bike travel.

Exhibit 4: New Starts Multi-Criteria Rating Framework

Summary Rating

Project Justification Rating
- Environmental Benefits
- Operating Efficiencies
- Cost Effectiveness
- Economic Development
- Land Use
- Mobility Improvements

Local Financial Commitment Rating
- Non-Section 5309 Share
- Capital Finances
- Operating Finances

Other Factors
- Capital Cost
- O&M Cost
- User Benefits
- User Benefits
- Low Income Households
- Employment

Minimum Project Development Requirements:
- Metropolitan Planning and Programming Requirements
- Project Management Technical Capability
- NEPA Approvals
- Other Considerations
The financial commitment rating considers the strength of the capital funding plan, the strength of the operating funding plan, and the percentage of the project’s capital costs to be met with non-New Starts funds. FTA and its contractors review cost estimates and revenue forecasts and their underlying assumptions. They assess the cash flow analyses in local financial plans, which show how well costs and revenues match on an annual basis. FTA is particularly interested in ensuring that the project sponsor is able to maintain the rest of its system in a state of good repair even as it invests in new capacity.

Given that the demand for New Starts funds exceeds available funding, FTA has tried for 25 years to stretch available resources by encouraging project sponsors to increase the non-New Starts share. Today, the average non-New Starts share is close to 50%, although the range is broad. Some project sponsors have offered as much as 80% in non-New Starts money, while a small number have received 80% from the New Starts program. Earlier this decade, appropriators required that the non-New Starts share be at least 40%. FTA’s encouragement of a higher non-New Starts share has been criticized by those who think it puts transit at a disadvantage to highways, where the federal share is generally higher, and that it puts poorer communities that need federal assistance the most at a disadvantage to communities that can raise non-Federal funds more easily.

As noted below, weights are assigned to each criterion by the Administration. The weights tend to change and evolve over time to reflect both Executive Branch policy priorities and directives that the Administration receives from Congress.

In recent years, FTA weighted both cost effectiveness and land use as 50% of the project justification rating, while other criteria were essentially ignored. FTA’s rationale was that they did not have meaningful measures for the other statutory criteria, or that the measures they had been trying to use did not provide any meaningful differentiation among projects. Operating efficiency, for example, is measured in terms of system-wide O&M costs per passenger mile, but most New Start projects do not significantly affect operating efficiency at the regional scale. From time to time FTA has considered calculating operating efficiency benefits on a corridor basis, but concluded that corridor boundary issues would make such measures difficult to apply in practice. Environmental benefits are measured in terms of the metropolitan area’s air quality attainment status. Although an area’s air quality attainment status may help to define a problem that transit could play a role in addressing, the measure does not identify the extent to which a project might reduce emissions.

### Exhibit 5: Current Weights Used in the Development of Project Justification Ratings

<table>
<thead>
<tr>
<th>Criterion</th>
<th>New Starts Weight</th>
<th>Small Starts Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility Improvements</td>
<td>20%</td>
<td>N/A</td>
</tr>
<tr>
<td>Cost Effectiveness</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Land Use</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Economic Development</td>
<td>20%</td>
<td>33%</td>
</tr>
<tr>
<td>Operating Efficiencies</td>
<td>10%</td>
<td>N/A</td>
</tr>
<tr>
<td>Environmental Benefits</td>
<td>10%</td>
<td>N/A</td>
</tr>
</tbody>
</table>
In 2009, however, in response to the SAFETEA-LU Technical Corrections Act mandate that FTA to assign comparable weight to all project justification criteria, FTA issued new policy guidance that changed the weights as shown in Exhibit 5.

FTA does not rank order projects or explicitly assign higher priority to projects that have higher ratings.

Despite the implicit grouping of projects into qualitative rating categories, as shown in the tables of Appendix B, FTA does not rank order projects or explicitly assign higher priority to projects that have higher ratings. The program is competitive in the sense that the best candidates for funding are most likely to survive to the end of the project development process. Projects are not in direct competition with each other as was the case with the current Transportation Investment Generating Economic Recovery (TIGER) discretionary grant program or the 2007 Urban Partnership Agreements. Projects with insufficient justification or insufficient local funding may never enter the New Starts program, or may opt out of the program when they realize that their chances for funding are slim. It is rare that a project reaches the Final Design phase and is later denied funding.

Other statutory requirements besides the ratings also come into play in the advancement of projects. For example, project sponsors must demonstrate that they have the legal and technical capacity to build the project, that they have fulfilled the Metropolitan Planning requirements, and that they have completed the NEPA process and other environmental requirements. Projects must be designed to comply with the Americans with Disabilities Act. They must satisfy the Uniform Real Properties Acquisition Act, Buy America, and Davis-Bacon wage requirements. Within the multi-criteria framework, these requirements do not factor into the ratings, but they must be met nonetheless.

Program History and Evolution

FORMATION AND EARLY YEARS OF THE PROGRAM

Rail transit experienced a long, steady decline in usage between from 1946 through the 1960s. Most transit services were provided by private companies during this era, although little investment was made post-World War II and many private operators were fighting bankruptcy in the 1960s. The opening of Bay Area Rapid Transit (BART) in 1972 represented “the first new regional rail transit system to be built in the US in over 50 years.”

In the mid-1960s, Congress recognized a need for federal capital investment in transit. Part of the Great Society initiatives during the Johnson Administration, federal goals were disparate: to preserve basic transit service, to increase transit’s competitiveness with the automobile, to help solve a variety of urban social problems (e.g., urban renewal), and to reduce traffic congestion, air pollution, and urban sprawl. The Urban Mass Transportation Act of 1964 (PL 88-365) created a program for discretionary transit capital grants, administered by the Urban Mass Transportation Administration (or UMTA, predecessor to today’s FTA) within the Department of Housing and Urban Development. UMTA moved to the newly formed Department of Transportation some two years later.

Similar to today, there was a need to justify discretionary investments and funding demand quickly exceeded available funds (actual UMTA outlays were $283.7 million in FY1971, but outstanding capital grant requests were more than $2.6 billion as of April 30, 1971). UMTA sought to add a degree of rigor and analytical process to the grant making decision, and the 1976 UMTA Policy Statement on Major Capital Projects stated that projects must be “cost effective” but provided no specificity on what that meant or how it should be measured. It also required project sponsors to evaluate lower capital cost alternatives and perform an Alternatives Analysis. NEPA and New Starts processes were integrated in 1978.

The amount of rigor applied to the evaluation of proposed projects has varied over the years. In the 1970s, as the Alternatives Analysis process was being developed, UMTA worked hard to develop technical best practices and monitor/guide project planning. Looking back on this era, however, analysts later found that many of the forecasts of costs and ridership were optimistic relative to actual costs and ridership in almost all cases. The cause of the early forecasting inaccuracies has been widely debated, but potential reasons include the use of crude planning techniques, little recent design/construction experience, limited data, optimistic assumptions, perverse (moral hazard) incentives, and little accountability for project sponsors.

**EVOLUTION**

During the 1980s, the Reagan Administration initially established a “no New Starts” policy and recommended no funds in its annual budget requests. Congress disagreed, and started to actively earmark funding for New Starts projects. By the end of Reagan’s first term, the Administration had accepted that the New Starts program would continue. It then took a hands-on approach to the program and established the first system for rating and recommending funding for New Starts projects. UMTA reviews and approvals increased (at one point, UMTA had some 30 approvals during the course of an Alternatives Analysis). Although Congress still technically earmarked all New Starts funds, over time it began to follow FTA’s funding recommendations more closely.

The program took another turn with passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991, which put an emphasis on multi-modal planning. In an effort to make transit and highway planning requirements more consistent, the agency sought to align the project planning process for transit with that employed in the Federal-aid Highway Program, putting less emphasis on project oversight and evaluation. The number of projects being advanced for New Starts funding grew significantly during the Clinton Administration, as illustrated in Exhibit 6. The 30 approval points previously required during Alternatives Analysis were replaced by technical assistance and guidance, in the hope that a dynamic and multi-modal planning process at the local level would help ensure reliable estimates of project cost and benefits. While FTA still approved each project’s advancement into Preliminary Engineering and Final Design, and ultimately the FFGA, the rigor of agency reviews was much less than it had been in the late 1980s, and much less than it is today.

Meanwhile, transit project sponsors and FTA were being taken to task by project opponents, Congress, and the USDOT Inspector General for the unreliability of New Starts project cost and ridership estimates prepared in Alternatives Analysis. These criticisms

---


began with UMTA’s own review, performed by the USDOT’s Transportation Systems Center and released in 1989, which found that ridership forecasts prepared in Alternatives Analysis (when local decisions on mode and general alignment are made) were consistently high and cost estimates were consistently low. Systems Center researchers questioned whether local officials might have reached different project decisions if they had been offered more accurate planning estimates.

By the late 1990s and early 2000s, it became clear that the recent growth in the number of projects seeking New Starts funds was unsustainable, and the pendulum started to swing back toward greater project oversight by FTA. FTA began to require Before and After studies after a project is opened for revenue service, comparing actual results with forecasts. A primary purpose of these studies was to learn from experience and improve the accuracy of future projections. Between 2003 and 2007, FTA sought to reduce the number of projects in the PE
and Final Design phases, bringing the demand for funds more in line with current and anticipated funding levels. Non-competitive and inactive projects were dropped from the program and FTA made it more difficult for applicants to secure approval to enter PE. Its stated goal was to advance only those projects that it considers to be strong candidates for funding.

There is evidence that the accuracy of project cost and ridership estimates is improving. A 2003 FTA study of the reliability of ridership and cost estimates suggests that the accuracy of forecasts has improved considerably since the 1980s, although there is still room for further improvement, as can be seen in Exhibits 7 and 8 below.\textsuperscript{30, 31}

\textsuperscript{30} The green, yellow, and red diamonds represent more recent New Starts projects while the blue squares represent New Starts projects from the 1970s and 1980s.

Exhibit 8: Ridership Forecast Accuracy of New Starts Projects
Concurrent with efforts to reduce risk, the mix of projects seeking funding from the program has also changed over time. New Starts funding was focused on rail projects in the very early years, but many bus rapid transit projects (e.g., Pittsburgh Busway, Boston Silver Line) have been funded since then and several streetcar projects (e.g., Portland) are now seeking or receiving New Starts funds. This, as well as FTA’s goal of continuously improving the program, has contributed to an evolution of criteria measures over the years.\textsuperscript{32}

Recognizing that the New Starts program had grown increasingly complicated and burdensome, Congress created a new “Small Starts” program in SAFETEA-LU. This program is intended to streamline and simplify the process for smaller and less risky projects. The program also expanded the types of projects that are eligible for funding, to include corridor level bus projects that may not include a fixed guideway. There has also been growing interest in the development of streetcars, with many viewing Small Starts as a potential source of funding. Small Starts has added to the burden on FTA staff as they seek to develop simplified processes and criteria, and to evaluate a new batch of funding applications.\textsuperscript{33}

When drafting SAFETEA-LU, Congress believed that there was insufficient accountability for contractors that develop cost and ridership estimates for New Starts project sponsors. Accordingly, the act included a requirement for FTA to publish the results of contractor performance assessments. It also gave FTA the authority to provide project sponsors with additional New Starts funds if actual ridership and cost figures are within 10% of the estimates produced when a project applies for Preliminary Engineering. It is too early to assess whether these “carrots and sticks” will have any impact on accuracy. This approach, including potential pitfalls, is further discussed in Section 3.

Seeking to demonstrate more accountability, FTA has taken further steps to reduce project risk. It has expanded the use of Project Management Oversight and other contractors with specialized expertise to review demand forecasts, cost estimates, risks, and local project management capabilities. This has led to more requirements, reviews, and checkpoints, consuming more resources at both the federal and local levels, as illustrated in Exhibit 9.

The oversight and risk assessment efforts instituted during the last several years have created a more complicated and lengthy process, where changing requirements and the uncertain duration of the process has the unintended consequence of adding to project risks.

Concurrent with efforts to reduce risk, the mix of projects seeking funding from the program has also changed over time. New Starts funding was focused on rail projects in the very early years, but many bus rapid transit projects (e.g., Pittsburgh Busway, Boston Silver Line) have been funded since then and several streetcar projects (e.g., Portland) are now seeking or receiving New Starts funds. This, as well as FTA’s goal of continuously improving the program, has contributed to an evolution of criteria measures over the years.\textsuperscript{32}

Recognizing that the New Starts program had grown increasingly complicated and burdensome, Congress created a new “Small Starts” program in SAFETEA-LU. This program is intended to streamline and simplify the process for smaller and less risky projects. The program also expanded the types of projects that are eligible for funding, to include corridor level bus projects that may not include a fixed guideway. There has also been growing interest in the development of streetcars, with many viewing Small Starts as a potential source of funding. Small Starts has added to the burden on FTA staff as they seek to develop simplified processes and criteria, and to evaluate a new batch of funding applications.

As an example, cost effectiveness used to be measured in terms of cost per new transit rider but it is now measured in terms of cost per hour of transportation system user benefits. The new measure is deemed to be more appropriate for capturing mobility benefits that accrue to a large number of existing riders, which were not considered under the prior measure.\textsuperscript{32}
Congress has the final word on funding amounts, and exercises regular oversight of FTA recommendations.
New Starts Program Components

The New Starts program can be thought of as a series of components, whereby each component serves at least one of the program’s objectives. Those components that might be relevant to a broader multi-modal discretionary program—either as something worthy of consideration or something to avoid—are identified in Exhibit 10 and discussed later in this section.

Although the investment objectives of a competitive mode-neutral program might differ considerably from the investment objectives of the New Starts program, the administrative objectives may be similar. The strengths and weaknesses of New Starts components that might have an impact on the administrative objectives of a broader multi-modal program are discussed in the following subsections.

Exhibit 10: New Starts Program Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shared decision-making</td>
<td>New Starts program decisions and project funding decisions are split among USDOT and other parts of the Executive Branch, the congressional authorizing committees, and the congressional appropriations committees.</td>
</tr>
<tr>
<td>Earmarking</td>
<td>Congress specifies annual funding amounts for individual projects in appropriations bills.</td>
</tr>
<tr>
<td>Evaluation focused on specific, non-routine (lumpy) projects</td>
<td>New Starts projects are undertaken infrequently in metropolitan areas. Also, the federal evaluation only considers the merits and costs of the proposed projects, i.e. the evaluation isolates the impacts of the project’s physical investments. The federal financial evaluation does seek to ensure that the proposed project would not compromise the sponsor’s ability to operate the rest of its system and maintain a state of good repair. An application is for a single project (as opposed to a program or a group of interrelated projects).</td>
</tr>
<tr>
<td>Broad investment objectives</td>
<td>The federal evaluation of project merit includes many criteria to promote a wide range of federal objectives.</td>
</tr>
<tr>
<td>Detailed guidance and rating methodology</td>
<td>FTA publishes detailed regulations, guidance documents, policy statements, and reporting instructions for the New Starts program requirements.</td>
</tr>
<tr>
<td>Before-and-after studies</td>
<td>These studies are assessments of how well cost and ridership estimates related to actual costs and actual ridership of individual projects, and if there is a substantive difference, a study of why costs or usage deviated from the forecast.</td>
</tr>
<tr>
<td>Training</td>
<td>FTA offers New Starts-related training courses to local entities and consultants several times each year.</td>
</tr>
<tr>
<td>Performance incentives for project sponsors</td>
<td>This program offers an opportunity for financial incentives to project sponsors who produce cost and ridership estimates.</td>
</tr>
<tr>
<td>Full Funding Grant Agreement</td>
<td>This agreement identifies the scope of the project, caps the amount of federal funds, identifies the anticipated schedule of federal funds (subject to congressional appropriations), and specifies the terms and conditions of federal participation.</td>
</tr>
</tbody>
</table>

(continued on next page)
New Starts Components: Lessons Learned for Discretionary Federal Transportation Funding Programs

**Exhibit 10: New Starts Program Components** *(continued from previous page)*

<table>
<thead>
<tr>
<th>Components</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major project activities and decisions at the local level</td>
<td>Local project sponsors perform the underlying planning analysis and project design. Major project decisions such as the choice of the preferred transit mode and alignment are made by local agencies and officials who ultimately own and operate the project.</td>
</tr>
<tr>
<td>Project oversight and monitoring</td>
<td>FTA staff and private contractors review projects and underlying technical reports, identify and analyze project risks, and perform program management oversight and financial management oversight.</td>
</tr>
<tr>
<td>Rigorous federal evaluation</td>
<td>The program includes significant federal scrutiny of the merits of proposed projects, financial commitments, and project management.</td>
</tr>
<tr>
<td>Tiered levels of applications/evaluations</td>
<td>Larger investments are subject to more requirements and receive greater scrutiny than less expensive investments like Small Starts.</td>
</tr>
<tr>
<td>Planning and project development process</td>
<td>To manage the competition for funds, FTA has a structured process for local and federal decision-making. New Starts projects must apply for and pass a series of checkpoints as the project moves from the planning stages toward construction.</td>
</tr>
<tr>
<td>Multi-criteria analysis framework</td>
<td>FTA has a structured evaluation framework for rating individual projects at federal decision points and for making funding recommendations to Congress. Quantitative and qualitative criteria and weights that are used to establish project ratings.</td>
</tr>
<tr>
<td>Absolute evaluation scales &amp; thresholds</td>
<td>The cost effectiveness index for each project is compared to thresholds to establish whether it is worthy of federal investment.</td>
</tr>
<tr>
<td>Baseline alternative for cost-effectiveness evaluation</td>
<td>For the New Starts cost effectiveness calculation, benefits and costs of the proposed project are measured relative to a Baseline alternative that must meet prescriptive federal guidelines.</td>
</tr>
<tr>
<td>New money incentive</td>
<td>A New Starts grant brings additional dollars to a metropolitan area, which promotes the creation of fixed guideway systems.</td>
</tr>
<tr>
<td>Variable federal share</td>
<td>The share of the total project cost funded by the federal government varies among projects.</td>
</tr>
</tbody>
</table>

**New Starts Components: Most Effective**

Several New Starts program components make positive contributions toward the federal administrative objectives of that program. Contributions deemed to be most positive include:

*Shared decision-making:* Congressional authorization committees broadly set program eligibility, criteria, and limitations. Projects must also be authorized by Congress to be eligible for funds. FTA’s Annual Report to Congress provides Congress with recommended federal investment amounts. Because projects are funded through annual appropriations, Congress has the final word on funding amounts, and exercises (with assistance from the GAO) regular oversight of FTA recommendations. It also allows more Members of Congress to be involved in the program, which broadens support for continued funding for the program.
Earmarking: Virtually all New Starts projects are funded through earmarks. Yet the program experiences little “pork-barrel” earmarking, in the sense that most earmarked funds are based on FTA project evaluations. Congress recognizes the rigor of the evaluation process and generally follows FTA’s funding recommendations after an FFGA commitment is made. Earmarks for projects with FFGAs consume the large majority of available funds in any given year. Small earmarked amounts for projects in earlier stages of the project development process are common, essentially providing seed money to support Preliminary Engineering and Final Design. This practice broadens support for the program.

Evaluation focused on specific, non-routine (lumpy) projects: Because New Starts investments are non-routine (i.e., they are generally extraordinary, one-time investments), the number of projects subject to the federal evaluation and reviews is somewhat controlled.

Broad investment objectives: New Starts projects are perceived as a tool for addressing numerous federal investment objectives. The broad objectives practically translate into broader support for the program.

Before and after studies: Although only limited analysis has been performed, before-and-after studies have helped FTA and the transit industry understand why some of these large multi-year projects have been a success and why others were challenged to be completed on time, to finish within budget, or to deliver the promised benefits. FTA’s recent study of the cost and ridership estimate performance suggests that these forecasts have improved considerably for New Starts projects since the 1989 Transportation Systems Center report, which was based on 1970s and 1980s era projects. These studies play a role in building support for the program and demonstrating accountability.

Training: FTA offers training courses that have helped metropolitan areas improve their planning methods as well as their understanding of federal program requirements.

The New Starts program experiences little “pork-barrel” earmarking in the sense that most earmarked funds are based on FTA project evaluations.

Performance incentives for project sponsors: In SAFETEA-LU, Congress gave FTA the authority to provide project sponsors additional New Starts funds if actual ridership and cost figures are within 10% of the original preliminary engineering estimates. SAFETEA-LU also requires FTA to report on the ridership and cost estimate performance of project sponsors’ contractors, which should provide incentives for contractors. It is too early to assess the impact of these practices.

Full funding grant agreements: If the actual construction cost is more than stated in the FFGA, the project sponsor is responsible for the entire cost overrun amount. Further, the project sponsor is bound by the FFGA to construct the project, to ensure that other federal standards (e.g., quality and safety) are met, and to maintain service levels for a minimum number of years as agreed to in the FFGA. FFGAs have also improved planning for these large multi-year capital projects by providing reasonable assurances that future federal funds will be available when needed.

33 Congress earmarks all New Starts projects, but the majority of the dollars reflect FTA’s funding recommendations. In this context, earmarks equal to the amount of funding FTA recommends for a project are not considered earmarks.

Major project activities and decisions at the local level: The choice of the locally preferred alternative and project design are local decisions, allowing the metropolitan area to tailor a project to its individual needs and circumstances, while FTA decides whether or not to provide funding support. The local sponsor oversees construction and owns and operates the system once built.

The rigor of the evaluation process and federal reviews has increased accountability and reduced the federal risks.

Project oversight and monitoring: Instead of hiring considerable FTA staff to perform oversight of projects under construction or advancing within the New Starts pipeline, FTA uses contractors to monitor the progress of projects and evaluate their capacity to complete the project successfully. This practice has allowed FTA to perform additional oversight and bring in specialized skill sets to bear without increasing FTA staff levels, and it also has allowed FTA to use the contractors only when and where they are needed. Many project sponsors have come to respect the “free advice” they receive from FTA’s PMO contractors.

Rigorous federal evaluation: The rigor of the evaluation process and federal reviews has increased accountability and reduced the federal risks.

Tiered levels of applications and evaluations: In SAFETEA-LU, Congress created a Small Starts program for projects with a federal investment request of less than $75 million and a total capital cost less than $250 million. The primary intent was to create a simplified and streamlined process for projects with lower costs and less risk. Although some requirements have been reduced or eliminated (e.g., the Preliminary Engineering and Final Design processes were combined into one checkpoint phase), many within the transit industry had hoped that the Small Starts process would be even simpler and more streamlined than it currently is. FTA established a Very Small Starts tier of projects within Small Starts that is significantly simpler and more streamlined than Small Starts.

Planning and project development process: The structured process guides local decision-making through a logical series of steps, starting with “big picture” decisions (mode and general alignment) and moving to finer grained decisions (design options, project delivery method). Risks are identified and uncertainty is reduced as a project is refined through the local decision-making process. The process of rating projects before they are fully designed provides sponsors of large multi-year projects with a sense of how competitive their project is likely to be. Projects with little merit are weeded out in earlier stages (before an applicant spends considerable resources on design or land acquisition). The process also improves the identification of future funding demand.

Multi-criteria analysis framework: Each project receives a qualitative rating (on a five-level scale) for each of the New Starts criteria. Those ratings are then combined (using weights) into a project justification rating and a financial rating, which in turn are combined into one of five possible summary ratings (low, medium-low, medium, medium-high, and high) for the project. The framework provides a consistent process for evaluating projects against the federal objectives and it is particu-

35 Several projects have entered the Small Starts process and multiple Small Starts grants have been made since the program guidelines were issued.
36 Some of the streamlining is achieved through project eligibility requirements (e.g., only investments deemed inherently cost-effective are eligible, the project corridor must have at least 3000 existing riders per day, etc.).
larly useful when the evaluation criteria have disparate measures or qualitative evaluations.

**Absolute evaluation scales and criteria thresholds:** FTA’s rating methodology has moved toward the use of absolute thresholds (as opposed to evaluating projects relative to each other). This increases the predictability of ratings, and gives project sponsors more control over their rating than they would have if projects were rated on a relative scale. The absolute scale gives sponsors greater confidence that their project will receive funding (which is important for projects that take several years and considerable local resources to plan and design). Transit skeptics have also been less critical of the program since absolute thresholds tied to the value of project benefits have been implemented.

**Baseline alternative for the cost-effectiveness evaluation:** A proposed project’s benefits and costs are compared to a Transportation System Management (TSM) Baseline alternative for the cost-effectiveness evaluation. A project does not get credit for benefits that could be achieved with a much smaller investment. Use of the TSM Baseline tends to favor those cities that have already invested in providing quality transit and have optimized the use of their existing infrastructure (i.e., have already implemented lower cost alternatives to a fixed guideway).

**New money incentives:** As a discretionary program, New Starts brings new money to a metropolitan area, creating an incentive for localities to invest in transit and to pursue additional local, state, or private resources that might not have been tapped otherwise. Many metropolitan areas have overmatched New Start dollars for federally funded project.

**Variable federal share:** By encouraging project sponsors to accept lower federal shares, FTA has more dollars to spread among more projects and metropolitan areas, broadening support and the number of projects that receive needed assistance. This also helps FTA align the available resources with the needs.

**New Starts Components: Less Effective**

Although each component supports at least one administrative objective, few are perfect. This section identifies some of the primary limitations or drawbacks associated with the components as currently used in the New Starts program.

**Shared decision-making:** Because Congress makes the actual New Starts funding decisions, the flow of funds is sometimes delayed when congressional appropriations do not match the FFGA amounts. This can increase project financing costs. Congressional direction is derived from two sets of committees (Authorizers and Appropriators), which sometimes provide different and conflicting directions to the program.

**Earmarking:** Although Congress has generally followed FTA’s funding recommendations, Members of Congress continue to earmark a portion of the New Starts funds for projects in their districts every year (generally for pre-construction activities). In some cases, the project sponsors are unable to use the appropriated funds in a timely manner, and funding has been known to lapse.

**Baseline alternative for the cost-effectiveness evaluation:** A proposed project’s benefits and costs are compared to a Transportation System Management (TSM) Baseline alternative for the cost-effectiveness evaluation. A project does not get credit for benefits that could be achieved with a much smaller investment. Use of the TSM Baseline tends to favor those cities that have already invested in providing quality transit and have optimized the use of their existing infrastructure (i.e., have already implemented lower cost alternatives to a fixed guideway).

**New money incentives:** As a discretionary program, New Starts brings new money to a metropolitan area, creating an incentive for localities to invest in transit and to pursue additional local, state, or private resources that might not have been tapped otherwise. Many metropolitan areas have overmatched New Start dollars for federally funded project.

**Variable federal share:** By encouraging project sponsors to accept lower federal shares, FTA has more dollars to spread among more projects and metropolitan areas, broadening support and the number of projects that receive needed assistance. This also helps FTA align the available resources with the needs.

**New Starts Components: Less Effective**

Although each component supports at least one administrative objective, few are perfect. This section identifies some of the primary limitations or drawbacks associated with the components as currently used in the New Starts program.

**Shared decision-making:** Because Congress makes the actual New Starts funding decisions, the flow of funds is sometimes delayed when congressional appropriations do not match the FFGA amounts. This can increase project financing costs. Congressional direction is derived from two sets of committees (Authorizers and Appropriators), which sometimes provide different and conflicting directions to the program.

**Earmarking:** Although Congress has generally followed FTA’s funding recommendations, Members of Congress continue to earmark a portion of the New Starts funds for projects in their districts every year (generally for pre-construction activities). In some cases, the project sponsors are unable to use the appropriated funds in a timely manner, and funding has been known to lapse.

**Baseline alternative for the cost-effectiveness evaluation:** A proposed project’s benefits and costs are compared to a Transportation System Management (TSM) Baseline alternative for the cost-effectiveness evaluation. A project does not get credit for benefits that could be achieved with a much smaller investment. Use of the TSM Baseline tends to favor those cities that have already invested in providing quality transit and have optimized the use of their existing infrastructure (i.e., have already implemented lower cost alternatives to a fixed guideway).

**New money incentives:** As a discretionary program, New Starts brings new money to a metropolitan area, creating an incentive for localities to invest in transit and to pursue additional local, state, or private resources that might not have been tapped otherwise. Many metropolitan areas have overmatched New Start dollars for federally funded project.

**Variable federal share:** By encouraging project sponsors to accept lower federal shares, FTA has more dollars to spread among more projects and metropolitan areas, broadening support and the number of projects that receive needed assistance. This also helps FTA align the available resources with the needs.
**Detailed guidance and ratings methodology:**
Guidance for project sponsors is scattered across myriad lengthy sources, a few of which are not available electronically. Also, guidance is not always consistently communicated to project sponsors. Considerable effort and expertise is required to understand the requirements due to their breadth, depth, and frequent changes. A single prescriptive evaluation procedure can lack sufficient flexibility to recognize all merits of every project.

**Project review outsourcing and monitoring:**
Ensuring consistent reviews is challenging when they are spread over several parties. Also, some have questioned whether FTA’s contractors have proper incentives. For example, because contractors are hired to identify and help mitigate project risks, there are incentives to identify more risks, exaggerate their significance, and conduct additional and more detailed reviews, potentially adding to local costs and delaying implementation.

**Before and after studies:** While providing a useful database for future projects, before and after studies require an investment of local resources and staff time that do not make the completed project any more successful.

**Performance incentives for project sponsors:** As currently designed, the incentive payment occurs late—after project construction—and thus may not have a meaningful effect on planning that occurs many years before. Setting aside funds for incentives also takes away funds that could be used for other projects.

**Full funding grant agreements:** FFGAs commit FTA to seek New Start funds through the President’s budget over the term of the agreement, but there is no guarantee that the funds will be appropriated by Congress in accordance with the FFGA schedule. Sometimes the appropriation of funds has been delayed.

**Major project activities and decisions at the local level:** The federal government must rely on applicants to provide the information that supports the federal investment decision. Because of the moral hazard associated with the federal subsidy, the federal government must spend considerable time reviewing information and data submitted by project sponsors to ensure that it is accurate, unbiased, and consistent with the evaluation methods required for a New Starts application.

**Rigorous reviews:** As the Executive and Legislative Branches have sought to minimize risk, there has been a tendency to regulate to the lowest common denominator in the New Starts program. As a result, requirements have grown, particularly so in recent years. In an Advanced Notice of Proposed Rulemaking on Capital Project Management, issued September 10, 2009, FTA asserts that it “must ensure that project sponsors manage their projects effectively and deliver projects on time and within budget, while at the same time achieving project benefits and meeting quality standards.”

Although there is significant variation in project development times, and the time required reflects the specific nature of each project, two recent studies concluded that New Starts projects take longer to develop from planning through construction than non-New Starts.  

**Before and after studies:** While providing a useful database for future projects, before and after studies require an investment of local resources and staff time that do not make the completed project any more successful.

**Performance incentives for project sponsors:** As currently designed, the incentive payment occurs late—after project construction—and thus may not have a meaningful effect on planning that occurs many years before. Setting aside funds for incentives also takes away funds that could be used for other projects.

**Full funding grant agreements:** FFGAs commit FTA to seek New Start funds through the President’s budget over the term of the agreement, but there is no guarantee that the funds will be appropriated by Congress in accordance with the FFGA schedule. Sometimes the appropriation of funds has been delayed.

**Major project activities and decisions at the local level:** The federal government must rely on applicants to provide the information that supports the federal investment decision. Because of the moral hazard associated with the federal subsidy, the federal government must spend considerable time reviewing information and data submitted by project sponsors to ensure that it is accurate, unbiased, and consistent with the evaluation methods required for a New Starts application.

---

37 74 FR 46519.
ultimately be secured may skew local decision-making away from these types of investment and toward projects that are funded by formula programs.

**Multi-criteria analysis framework:** Although the multi-criteria analysis framework can be a useful tool for making relative comparisons among competing projects (i.e., Project X is a better investment than Project Y), performing absolute evaluations (i.e., determining whether the merits of Project X exceed its costs) is more of a challenge. Changes in Executive Branch policy objectives lead to changes in measures and weights. Even if there are no changes to a project or its key characteristics, the rating can change as measures and weights are adjusted over time.

**Absolute evaluation scales and thresholds:** Many of the New Starts criteria are assessed qualitatively, but the criterion that receives the most attention, cost effectiveness, uses a quantitative assessment and thresholds to assess whether a proposed investment is cost effective. FTA maintains that the cost-effectiveness threshold is linked to the value of time and that the threshold determines whether an investment is economically justifiable. But only a portion of the benefits are included in the effectiveness measure, and adjustments to factor other benefits into the threshold assume that indirect benefits are directly proportional to user benefits. The use of thresholds can create a false sense of accuracy, implying a level of precision not achievable with current tools and data, and masking key investment decision trade-offs.

Also, when seeking to keep a project’s cost effectiveness index below the allowable cost-effectiveness threshold, project sponsors have been known to eliminate project elements that might be considered integral to a project’s long-term functionality or that might enhance safety and non-user benefits.

**Baseline alternative for cost-effectiveness evaluation:** Many involved with the New Starts program struggle to respond to FTA’s TSM Baseline requirements and guidance. Considerable judgment is required, and the definition of an adequate Baseline is imprecise and ultimately requires negotiation between FTA and the sponsor. While intended to create a level playing field for all project sponsors, achieving consistency across all projects is difficult if not impossible to achieve. Also, project sponsors are motivated to resist creating a robust baseline that would adversely impact the rating of their proposed project. These two factors require FTA to devote considerable resources to reviews of the Baseline.

**New money incentive:** Local project sponsors and elected officials tend to evaluate projects in terms of what’s in it for them—i.e., what benefits they will receive locally, and what costs they will incur locally—almost as if the federal New Starts money were “free.” Their objective is to attract available federal funds and the benefits they can bring to the local area, rather than to see these funds spent in some other part of the country. The new money incentive can encourage project sponsors to pursue transit projects and design elements that may not be most efficient in terms of total costs and benefits.

**Variable Federal Share:** Because FTA’s negotiation of the New Starts share tends to be driven largely by funding availability, the amount of federal investment is not directly linked to project merit or the federal government’s return on investment. Some in the transit industry argue that providing a federal share less than the statutory 80% makes transit investments less attractive than highway investments for local dollars.

Project sponsors are motivated to resist creating a robust baseline that would adversely impact the rating of their proposed project.
A balance between rigor and simplicity is essential.
Findings, Lessons Learned, and Recommendations

Institutions and Program Design

The New Starts program is essentially the only discretionary transportation program of any size that offers a history of program design and implementation extending over many years. It offers numerous lessons that may be useful to consider in the design and implementation of a new discretionary program.

In general, shared decision-making between the Administrative and Executive branches, coupled with a prescribed local planning and project development process and a rigorous federal review and rating process, have served the New Starts program reasonably well over several decades. A broader program can learn from the New Starts program elements that have been the most effective and it should try to avoid the issues associated with the least effective elements.

The broader the program, both in terms of investment objectives and project eligibility, the more challenging it will be to evaluate the merit of proposed projects in a consistent, even-handed, and analytical manner. The investment objectives of the New Starts program have not significantly changed since the program was established over 30 years ago, yet there is still considerable debate about the process, federal and local roles in decision-making, and the evaluation framework, performance measures, and analytical tools. The evaluation challenge has grown as the New Starts program has expanded eligibility from traditional rail and busway projects to corridor bus projects and streetcars (GAO’s recent report on New Starts projects’ benefits is an example of this attention). If a new program is created with broader eligibility and broader investment objectives, it is likely to experience similar challenges, perhaps on a greater scale.

A balance between rigor and simplicity is essential, but difficult to strike. Rigor reduces risk and enhances accountability, but adds to the cost and duration of planning and project development, generally increasing costs and delaying benefits. As FTA (with congressional backing) has sought to eliminate risk, there has been a tendency to regulate to the lowest common denominator, with the effect of more burdens imposed on all applicants. Nevertheless, the demand for New Starts funds still exceeds the available supply.

Incentives, Risks, and Accountability

Incentives, risks, and accountability are key considerations for the design and administration of a new competitive federal grant program. With insufficient accountability for results, project sponsors are motivated to portray their project in the best possible light. Checks and balances help ensure that the information used in a federal grant-making decision is sufficiently complete, reasonable, and unbiased.

The FFGA has been a valuable tool for FTA to manage some of the federal government’s cost risks and hold the grantee accountable. It also provides the project sponsor with assurance that the project will receive future federal appropriations once it receives an FFGA. As currently utilized, however, the FFGA does not hold the sponsor accountable for project benefits.

In an effort to offer a further incentive, Congress added a provision in SAFETEA-LU whereby project sponsors can be eligible for additional funds if project cost and ridership estimates are within 10% of the actual. Theoretically, such an incentive might improve the accuracy of cost and ridership estimates, but many within the industry question whether this will have any real impact, particularly when the size of the award is small and its timing

A tiered evaluation framework may be helpful for a new competitive program, with projects requesting larger amounts of federal investment being subject to more requirements and more rigorous reviews.

Planning and Project Development Process

In general, the planning and project development process portrayed in Exhibit 3 has performed reasonably well, providing a framework for local decisions (from regional plans and policies, to project concept, to design and implementation) overlaid on a framework for federal funding decisions. One issue that has been raised about the process centers on whether FTA should always require an Alternatives Analysis step, separate from the regional planning process and the NEPA process. Alternatives Analysis provides a focused look at a corridor’s transportation problems and opportunities, allowing for a finer grained analysis and understanding of mode and alignment choices than is possible at the regional planning scale. The NEPA process tends to require even greater detail on a project’s localized impacts and mitigation. There is a logical rationale and purpose for each level of planning—regional, corridor, and project. However, some question the need for Alternatives Analysis where local decisions are reached by other means, thus making the Alternatives Analysis redundant. It has been suggested that FTA should focus its attention on the project proposed for funding rather than on the process and planning analyses that help the local area reach its decision.

A second issue is the need for FTA approvals at both the start of Preliminary Engineering and at the start of Final Design. Some have proposed a single approval into the New Starts program, once local decisions on the project concept have been reached and incorporated into regional plans, and once FTA has confirmed that the project meets the New Starts criteria.

It has also been suggested that the terms and conditions of remaining within the pipeline need to be clear as a project is approved into the program. A memorandum of understanding or a project development agreement between the federal entity and the project sponsor could identify these terms, signed upon entry into the program. Significant changes in project scope, cost, or benefits could be grounds for reconsideration. In return, entry into the pipeline would signal a condi-
An absolute scale based on cost-benefit analysis may respond best to the need for accountability, as it provides a clearer demonstration of project merit and the overall level of needs. Drawbacks of an absolute scale are evident when the pass/fail system cannot account for all of a project’s benefits and costs. Further, the pass/fail approach appears less likely to encourage innovative solutions to transportation problems than a head-to-head competition (such as the 2007 Urban Partnership Agreements and the recent Transportation Investment Generating Economic Recovery programs) would.

One drawback to multi-criteria analysis is that the overall rating of a project may be somewhat nebulous due to the combination of measurement units, making it challenging to demonstrate conclusively that the recommended projects are truly worthy of federal investment. In some ways, the investment recommendations then become a policy decision rather than solely an economic decision. To avoid challenges of undue political influence, a relative evaluation should be based on transparent and strictly applied standards, and with sufficient competition. Oversight by an unbiased third party of observers may be worth considering.

**Evaluation Framework**

Many national transportation policies overlap, and in some cases, they conflict with each other. It is challenging to create an evaluation framework that reconciles these differences and explicitly and quantitatively evaluates all the benefits without double-counting them from an economic perspective.

A multi-criteria analysis framework is a useful tool for comparing the investment worthiness of projects when there are many investment criteria or when the criteria have disparate measures, qualitative evaluations, and/or the potential for double-counting. Where the full range of project benefits cannot reasonably be valued in dollar terms, a multi-criteria framework can be a more effective tool than cost-benefit analysis for evaluating the “triple bottom line” of projects. In other words, it is particularly suited to evaluate options based on a combination of economic, social, and environmental factors—when assigning an economic value to impacts may not be an appropriate measure of effectiveness. It works best for grouping projects into categories representing their relative investment worthiness.

A relative evaluation should be based on transparent and strictly applied standards, and with sufficient competition.

One drawback to multi-criteria analysis is that the overall rating of a project may be somewhat nebulous due to the combination of measurement units, making it challenging to demonstrate conclusively that the recommended projects are truly worthy of federal investment. In some ways, the investment recommendations then become a policy decision rather than solely an economic decision. To avoid challenges of undue political influence, a relative evaluation should be based on transparent and strictly applied standards, and with sufficient competition. Oversight by an unbiased third party of observers may be worth considering.

**Performance Measures and Standards**

For more than thirty years, the New Starts program has struggled to compare dissimilar projects using a single set of criteria and measures. This issue has been most apparent in the cost effectiveness debate. Although the
standardized design year helps ensure a level playing field among applicants. Prior to ISTEA, FTA (then UMTA) used a 15-year horizon to favor those projects with nearer term (and more certain) benefits, but with ISTEA’s emphasis on multi-modal planning, the horizon year was extended out to correspond more closely with the 20+ year horizon for metropolitan planning.

In a competitive discretionary program, careful thought will also need to be given to establishing a baseline against which a project’s benefits and costs are measured. The choice of a baseline, whether it’s the No Build, TSM, or some other alternative, can have policy implications in terms of which projects or cities are most competitive and the incentives and disincentives that result. Whatever the baseline, it introduces opportunities for project sponsors to game the system to make their projects look as good as possible in the national competition.

Models and Data

Project evaluations are only as good as the information they use. Data and models for transit ridership forecasting and methods for cost estimating have improved, as more projects have come on line and as FTA has promoted data collection and the development of more reliable techniques. However, as noted in the prior text box on cost effectiveness evaluation, FTA has questioned the ability of the current models to provide reliable forecasts of highway user benefits. In a multi-modal program, the measures used to compare project performance must be in tune with the capability of models to provide reliable information. There also should be sufficient incentive for applicants to use quality data and techniques.

USDOT has two primary programs for improving travel demand modeling practices, the Travel Models Improvement Program (TMIP) and the Transportation
Analysis Simulation System (TRANSIMS), funded at roughly $500,000 per year and $2 million per year, respectively. A recent TRB study recommended $20 million per year in federal funding for regional travel demand model improvements, an amount comparable with the levels spent 30 years ago. These amounts are but a small fraction of the roughly $40 billion per year in federal highway and transit investment. Considerably higher amounts than what is spent today would be justified if the federal program comes to rely on performance-based metrics utilizing forecasts.

Today, given limited planning funds and typical pressures to expedite project planning and development, project sponsors tend to make the best use of existing tools instead of developing new tools, which can take several years and involve considerable expense. Originally developed to predict highway vehicle volumes, one of the primary uses of regional travel demand models today is to demonstrate air quality conformity under the Clean Air Act. Anecdotal evidence suggests that some regions would be reluctant to modify their travel demand models for fear that the changes would negatively affect the region’s clean air conformity status, and thus risk federal funding. Even if this resistance were overcome, many regional travel demand models have considerable analytical limitations regarding how well they can estimate some types of benefit, and the limitations are even greater for some operating analyses or policy evaluations.

While regional travel demand models generally use common frameworks and underlying mathematical and economic principles, no two travel demand models are exactly alike. For a variety of technical reasons, each is tailored to the specific conditions of the metropolitan area it represents. Although it may be possible to develop national performance standards for the validity of regional travel demand models, the state-of-the-art would not support the use of a universal model that could be applied to each metropolitan area.

**Leveraging Federal Funds**

Since its early years of the 1970s, the New Starts program has leveraged countless federal dollars. Without the program, many believe that localities would have invested considerably less in transit capital expansion projects.

Project evaluations are only as good as the information they use.

Part of this leverage has resulted from a variable New Starts share. To make limited funds go further, FTA has successfully promoted local “overmatch” of New Starts dollars, either with local dollars or non-New Starts federal dollars such as 5307 formula funds and flexible highway funds. A discretionary program that offers new money to a region offers a considerable opportunity for such leverage. Arguably, as the discretionary program share and thus the federal risk diminishes, the need for federal oversight lessens as well.

---

Appendix A – List of Acronyms

ADA: Americans with Disabilities Act
BART: Bay Area Rapid Transit
FFGA: Full Funding Grant Agreement
FHWA: Federal Highway Administration
FMOC: Financial Management Oversight Contractor (for FTA)
FTA: Federal Transit Administration
FY: Fiscal Year
GAO: Government Accountability Office
ISTEA: Intermodal Surface Transportation Efficiency Act of 1991
LPA: Locally Preferred Alternative
MPO: Metropolitan Planning Organization
NEPA: National Environmental Policy Act of 1969
NTPP: National Transportation Policy Project (of the Bipartisan Policy Center)
O&M: Operating and Maintenance
OMB: Office of Management and Budget
PE: Preliminary Engineering
PMOC: Project Management Oversight Contractor (for FTA)
SAFETEA-LU: The Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users
TMIP: Travel Models Improvement Program
TRANSIMS: TRansportation ANalysis SIMulation System
TRB: Transportation Research Board
TSM: Transportation System Management (Alternative)
TSUB: Transportation System User Benefits
UMTA: Urban Mass Transit Administration
USDOT: United States Department of Transportation
Appendix B – New Starts Multi-Criteria Rating Framework

New Starts projects are rated throughout the project development process. Projects are initially rated when they apply for entry into Preliminary Engineering and the ratings are updated with changes to the project costs, benefits, impacts, and other developments such as formal funding commitments. FTA’s method of rating New Starts projects within the multi-criteria rating framework is also updated frequently, so weights or criteria measures can change from year to year.

FTA rates each project on a five-level scale for each criterion and the three “roll-up” ratings. The roll-up ratings are the Overall Project rating, the Local Financial Commitment rating, and the Project Justification rating. The five-level scale includes Low, Medium-Low, Medium, Medium-High and High, with the latter being the best. At least medium ratings on both project justification and financial ratings are needed to receive an overall rating of medium and receive approval to advance. Summaries of the FY2010 ratings along with estimated project costs and the New Starts (federal) share amounts are presented below.

Although FTA has rated a project according to five criteria (mobility improvements, environmental benefits, operating efficiencies, cost effectiveness, and land use) for the last several years, FTA only used the ratings for two of them in the determination of the Project Justification rating. Cost effectiveness receives 50% of the weight and land use receives the other 50%. This practice changed in July 2009 when FTA adopted new policy guidelines in response to provisions in the SAFETEA-LU Technical Corrections Act (Public Law 110-244) that directed FTA to give comparable (but not necessarily equal) weight to all project justification criteria. FTA now assigns 20% weights to the mobility improvements, cost effectiveness, land use, and economic development criteria, and 10% weights to the environmental benefits and operating efficiencies criteria. FTA also reserves the right to consider “other factors” in adjusting the project ratings, and it has recently proposed to consider the reliability of cost and ridership estimates to adjust the ratings upward or downward.

For the Financial rating, FTA uses the rating of the proposed Section 5309 (federal New Starts) share amount (20% weight), the capital plan rating (50% weight) and the operating plan rating (30% weight).

43 FTA only used a three-level scale for the Overall Project Rating in FY08 but it is transitioning to a five-level scale.

### Exhibit 11: Summary of FY2010 New Starts / Small Starts Ratings

<table>
<thead>
<tr>
<th>Place</th>
<th>State, City, Project</th>
<th>Capital Cost (millions)</th>
<th>Financing Costs (millions)</th>
<th>Total Capital Cost (millions)</th>
<th>New or Small Starts Funding Requested (millions)</th>
<th>Overall Project Rating</th>
<th>Local Financial Commitment Rating</th>
<th>Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Design</td>
<td>CT Hartford, New Britain — Hartford Busway</td>
<td>$553.8</td>
<td>$15.5</td>
<td>$569.3</td>
<td>$273.3</td>
<td>48%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CT Stamford, Urban Transitway Phase II*</td>
<td>$48.3</td>
<td>$0.0</td>
<td>$48.3</td>
<td>$24.7</td>
<td>51%</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td></td>
<td>DE Wilmington, Wilmington to Newark Commuter Rail Improvements*</td>
<td>$78.4</td>
<td>$0.0</td>
<td>$78.4</td>
<td>$25.0</td>
<td>32%</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td></td>
<td>FL Orlando, Central Florida Commuter Rail Transit – Initial Operating Segment</td>
<td>$356.3</td>
<td>$0.9</td>
<td>$357.2</td>
<td>$118.6</td>
<td>50%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>RI Northern New Jersey, Access to the Region’s Core</td>
<td>$8,700.0</td>
<td>$0.0</td>
<td>$8,700.0</td>
<td>$3,000.0</td>
<td>34%</td>
<td>Medium-High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>RI Providence, South County Commuter Rail*</td>
<td>$49.2</td>
<td>$0.0</td>
<td>$49.2</td>
<td>$24.9</td>
<td>53%</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td>Preliminary Engineering</td>
<td>AZ Tucson, Modern Streetcar*</td>
<td>$150.1</td>
<td>$0.0</td>
<td>$150.1</td>
<td>$23.0</td>
<td>17%</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td></td>
<td>CA Sacramento, South Corridor Phase 2</td>
<td>$270.0</td>
<td>$0.0</td>
<td>$270.0</td>
<td>$135.0</td>
<td>50%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA San Francisco, Central Subway LRT</td>
<td>$1,298.0</td>
<td>$0.0</td>
<td>$1,298.0</td>
<td>$762.2</td>
<td>59%</td>
<td>Medium-High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CO Denver, East Corridor</td>
<td>$2,007.1</td>
<td>$36.6</td>
<td>$2,043.8</td>
<td>$788.7</td>
<td>39%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CO Denver, Gold Line</td>
<td>$840.3</td>
<td>$19.2</td>
<td>$859.5</td>
<td>$241.8</td>
<td>28%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>FL Miami, Orange Line Phase 2: North Corridor Metrorail Extension</td>
<td>$1,340.9</td>
<td>$163.8</td>
<td>$1,504.7</td>
<td>$700.0</td>
<td>47%</td>
<td>Medium-Low</td>
<td>Medium-Low</td>
</tr>
<tr>
<td></td>
<td>MA Boston, Assembly Square Station*</td>
<td>$47.7</td>
<td>$0.0</td>
<td>$47.7</td>
<td>$25.0</td>
<td>52%</td>
<td>Exempt</td>
<td>Exempt</td>
</tr>
<tr>
<td></td>
<td>MA Boston, Silver Line Phase III</td>
<td>$1,696.1</td>
<td>$410.5</td>
<td>$2,106.5</td>
<td>$1,261.8</td>
<td>60%</td>
<td>Medium-Low</td>
<td>Medium-Low</td>
</tr>
<tr>
<td></td>
<td>MN St. Paul-Minneapolis, Central Corridor LRT</td>
<td>$908.9</td>
<td>$6.0</td>
<td>$915.9</td>
<td>$452.9</td>
<td>50%</td>
<td>Medium-High</td>
<td>Medium-High</td>
</tr>
<tr>
<td></td>
<td>NC Charlotte, Northeast Corridor Light Rail Project</td>
<td>$749.0</td>
<td>$0.0</td>
<td>$749.0</td>
<td>$374.5</td>
<td>50%</td>
<td>Medium-High</td>
<td>Medium-High</td>
</tr>
<tr>
<td></td>
<td>OR Portland, Milwaukie LRT</td>
<td>$1,214.6</td>
<td>$257.1</td>
<td>$1,471.7</td>
<td>$735.9</td>
<td>50%</td>
<td>Medium-High</td>
<td>Medium-High</td>
</tr>
<tr>
<td></td>
<td>TX Houston, North Corridor LRT</td>
<td>$677.0</td>
<td>$0.0</td>
<td>$677.0</td>
<td>$331.7</td>
<td>49%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>TX Houston, Southeast Corridor LRT</td>
<td>$680.6</td>
<td>$0.0</td>
<td>$680.6</td>
<td>$333.5</td>
<td>49%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Small Starts Project Development</td>
<td>AZ Flagstaff, Mountain Links BRT</td>
<td>$9.9</td>
<td>$0.5</td>
<td>$10.4</td>
<td>$6.2</td>
<td>60%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA Livermore, Livermore-Amador Route 10 BRT</td>
<td>$217.1</td>
<td>$0.0</td>
<td>$217.1</td>
<td>$109.0</td>
<td>50%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA Los Angeles, Metro Rapid Bus System Gap Closure</td>
<td>$13.35</td>
<td>$0.0</td>
<td>$13.35</td>
<td>$7.0</td>
<td>50%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA Los Angeles, Wilshire Boulevard Bus-Only Lane</td>
<td>$31.5</td>
<td>$0.0</td>
<td>$31.5</td>
<td>$23.3</td>
<td>74%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA Monterey, Monterey Bay Rapid Transit</td>
<td>$3.5</td>
<td>$0.0</td>
<td>$3.5</td>
<td>$2.8</td>
<td>80%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA Oakland, East Bay BRT</td>
<td>$234.6</td>
<td>$0.0</td>
<td>$234.6</td>
<td>$75.0</td>
<td>32%</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>CA Riverside, Perris Valley Line</td>
<td>$168.9</td>
<td>$0.0</td>
<td>$168.9</td>
<td>$75.0</td>
<td>44%</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>CA San Bernardino, E Street Corridor sbX BRT</td>
<td>$163.4</td>
<td>$0.0</td>
<td>$163.4</td>
<td>$75.0</td>
<td>46%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA San Diego, Mid-City Rapid</td>
<td>$43.3</td>
<td>$0.0</td>
<td>$43.3</td>
<td>$21.7</td>
<td>50%</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>CA San Francisco, Van Ness Avenue BRT</td>
<td>109.2</td>
<td>$9.0</td>
<td>$118.2</td>
<td>$73.0</td>
<td>63%</td>
<td>Medium-High</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CA San Joaquin, Metro Express – Airport Way Corridor BRT Project</td>
<td>$9.7</td>
<td>$0.0</td>
<td>$9.7</td>
<td>$2.8</td>
<td>29%</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>CO Fort Collins, Mason Corridor BRT</td>
<td>$82.0</td>
<td>$0.0</td>
<td>$82.0</td>
<td>$65.6</td>
<td>80%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>CO Roaring Fork Valley, BRT Project</td>
<td>$46.4</td>
<td>$0.0</td>
<td>$46.4</td>
<td>$26.0</td>
<td>56%</td>
<td>Medium-High</td>
<td>Medium-High</td>
</tr>
<tr>
<td></td>
<td>MA Fitchburg, Commuter Rail Improvements</td>
<td>$150.0</td>
<td>$0.0</td>
<td>$150.0</td>
<td>$75.0</td>
<td>50%</td>
<td>Medium-High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>MI Grand Rapids, Division Avenue BRT</td>
<td>$35.6</td>
<td>$1.1</td>
<td>$36.7</td>
<td>$29.3</td>
<td>80%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>MO Kansas City, Troost Corridor BRT</td>
<td>$30.7</td>
<td>$0.0</td>
<td>$30.7</td>
<td>$24.6</td>
<td>80%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>NY New York City, Nostrand Ave. BRT</td>
<td>$84.2</td>
<td>$4.1</td>
<td>$88.3</td>
<td>$18.4</td>
<td>21%</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>OR Portland, Streetcar Loop</td>
<td>$121.9</td>
<td>$5.0</td>
<td>$126.9</td>
<td>$75.0</td>
<td>59%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>TX Austin, Metro Rapid BRT</td>
<td>$47.0</td>
<td>$0.0</td>
<td>$47.0</td>
<td>$37.6</td>
<td>80%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>WA King County, Bellevue-Redmond BRT</td>
<td>$27.0</td>
<td>$0.0</td>
<td>$27.0</td>
<td>$20.2</td>
<td>75%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>WA King County, Pacific Highway South BRT</td>
<td>$25.1</td>
<td>$0.0</td>
<td>$25.1</td>
<td>$14.1</td>
<td>56%</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>

(1) This project was not rated by FTA. Until FTA completes the Small Starts Rulemaking process, projects requiring less than $25 million in Section 5309 New Starts funding are exempt from the project evaluation and rating process.
Appendix C – New Starts Cost Effectiveness Calculation

For the New Starts cost effectiveness evaluation and rating, a proposed New Starts project is compared with a New Starts Baseline alternative to calculate the project’s cost effectiveness index value. The Baseline is designed to help isolate the added costs and benefits of the proposed New Starts fixed-guideway, compared to the costs and benefits of a lower cost non-guideway investment. The Baseline is usually similar to a Transportation Systems Management (TSM) alternative developed and considered during Alternatives Analysis, composed primarily of service enhancements and relatively low-cost capital investments. To isolate the benefits of the guideway investment, FTA requires the use of consistent (land use, parking, fare, etc.) policies and assumptions in the New Starts project and the New Starts Baseline evaluation scenarios.

The cost effectiveness calculation adds the change in the annualized capital cost to the change in annual O&M cost, and then divides the sum by the change in transportation system user benefits (TSUB), where both the benefits and costs of the New Starts project are measured relative to the Baseline. The equation form, is below.

\[
\text{Cost Effectiveness} = \frac{\Delta \text{Annualized Capital Cost} + \Delta \text{O&M Cost}}{\Delta \text{TSUB}}
\]

The region’s travel demand model is used for the TSUB calculation. As noted earlier, the TSUB measure estimates the incremental benefits of the proposed project using a consumer surplus approach, measured in hours of transit user travel time savings. FTA does not directly include benefits to highway users in this calculation. Because the consumer surplus approach is based on perceived benefits, and existing riders value the impacts differently than new riders, existing riders receive full credit for the benefits but new riders only receive half credit. Similarly, because studies have shown that travelers perceive wait time and walk time as roughly twice as onerous as in-vehicle travel time, a minute reduction in wait time or walk time is roughly worth an equivalent two minute reduction in in-vehicle travel time. A simplified TSUB calculation is presented in Exhibit 12.

The user benefits calculation also gives credit for out-of-pocket cost savings. For example, out-of-pocket cost savings can be generated when an individual chooses to drive in the New Starts Baseline alternative but switches to transit as the result of a New Starts project. The difference between the transit fares paid in the “choose transit” scenario and the parking and fuel costs incurred in the “choose driving” scenario represent out-of-pocket cost savings.
Exhibit 12: Simplified User Benefits Calculation

Baseline alternative

Build alternative

Original trips

New trips

User benefits = \[
\begin{align*}
\text{number of original travelers} & \times (2 \times \text{wait time savings} + 10 \times \text{run time savings} ) \\
\text{new travelers} & \times (2 \times \text{wait time savings} + 10 \times \text{run time savings} ) \\
\end{align*}
\]

\[
\frac{2,420 \text{ minutes}}{2} = 1,210 \text{ minutes}
\]

TSUB value

Information on number of travelers
Information on wait time
Information on run time

New Starts: Lessons Learned for Discretionary Federal Transportation Funding Programs

Once the cost effectiveness value of the project is calculated, the value is then compared to a series of breakpoint thresholds to determine the cost effectiveness rating. The FY2010 thresholds are shown in Exhibit 13.

FTA generally requires New Starts projects to have at least a Medium cost effectiveness rating to receive a funding recommendation or an FFGA. For FY2010, this requirement means that New Starts projects needed a cost effectiveness value of $24.49 (or less) per hour of user benefits. A project is usually not allowed to move to the next stage of project development if its cost effectiveness is rated low. The breakpoints are adjusted annually based on median household income and the agency’s assessment of the value of time.

### Exhibit 13: FY2010 Cost Effectiveness Thresholds

<table>
<thead>
<tr>
<th>Cost Effectiveness Rating</th>
<th>Cost Effectiveness Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>less than or equal to $11.99</td>
</tr>
<tr>
<td>Medium-High</td>
<td>between $12.00 and $15.99</td>
</tr>
<tr>
<td>Medium</td>
<td>between $16.00 and $24.49</td>
</tr>
<tr>
<td>Medium-Low</td>
<td>between $24.50 and $30.49</td>
</tr>
<tr>
<td>Low</td>
<td>greater than or equal to $30.50</td>
</tr>
</tbody>
</table>

FTA’s reporting instructions for FY2011 indicate there will be small adjustments in some thresholds. The medium cost effectiveness threshold will increase to $24.99 per hour.
National Transportation Policy Project Members

PROJECT CO-CHAIRS

Dennis Archer—Former Mayor of Detroit
Sherwood Boehlert—Former United States Congressman from New York
Slade Gorton—Former United States Senator from Washington
Martin Sabo—Former United States Congressman from Minnesota

Alan Altshuler—Harvard Professor (Kennedy School of Government and Graduate School of Design); former Massachusetts Secretary of Transportation
Jack Basso—American Association of State Highway and Transportation Officials (AASHTO); former Assistant Secretary for Budget and Programs, United States Department of Transportation
Lilian Borrone—Board Chair of the Eno Transportation Foundation; former senior executive of Port Authority of New York and New Jersey
Josephine S. Cooper—Group Vice President, Public Policy & Government/Industry Affairs, Toyota
Tom Downs—Chairman, Veolia Transportation NA; former CEO of Amtrak; former Commissioner of New Jersey Department of Transportation; former President of the Eno Transportation Foundation
Mike Erlandson—Vice President Government Affairs, SUPERVALU
Douglas Foy—President, Serrafi x Corporation; former President of the Conservation Law Foundation, former Secretary of Commonwealth Development, Commonwealth of Massachusetts
Jane Garvey—Former Administrator of the Federal Aviation Administration; former Deputy Administrator of the Federal Highway Administration
David Goode—Former CEO of Norfolk Southern Corporation

Douglas Holtz-Eakin—President, DHE Consulting LLC; former Director of Congressional Budget Office
Nancy Kete—Senior Fellow and Director of EMBARQ-The World Resources Institute’s Center for Sustainable Transport
Ann Klee—Vice President, Corporate Environmental Programs, General Electric
Mark Laaswell—President, Transportation Business Group, CH2M Hill Companies
William Lhota—President and CEO of the Central Ohio Transit Authority (COTA); former senior executive at American Electric Power
Bob Lowe—President and CEO of Lowe Enterprises, Inc.
Sean McGarvey—Secretary-Treasurer, Building and Construction Trades Department, AFL-CIO
Bryan Mistele—President and CEO of INRIX
James Runde—Managing Director and Special Advisor of Morgan Stanley
Chris Vincze—Chairman and CEO of TRC Companies
Martin Wachs—Director of RAND Corporation’s Transportation, Space, and Technology Program; Professor Emeritus at the University of California Berkeley
Dr. John Wall—Vice President and Chief Technical Officer at Cummins Inc.
Lynda Ziegler—Southern California Edison, Senior Vice-President, Customer Service