

Appendix C: Unfunded Service Needs Assessment

Appendix C captures a number of local transit expansion service needs Marin Transit has identified, through a variety of sources. These sources include:

- Input from riders (Bus Passenger Advisory Committee, comment cards, driver feedback, etc.)
- Input from Stakeholders (Partner agencies, local cities and towns, etc.)
- Current and previous planning studies
- Changes in transportation market conditions
- Changes in demographics

The expansion services described in this appendix illustrate the expansion opportunities the District will pursue if financial resources were available. These services are additive to the existing service levels that are assumed in the District's Service Plan (see Chapter 3). The improvements further the objective outlined in Strategy #1 of the Measure A Expenditure Plan:




Develop a seamless local bus transit system that improves mobility and serves community needs, including special transit for seniors and the disabled

Staff evaluated the expansion projects based on an estimate of their ability to score well in an assessment using the performance criteria in the Measure A Expenditure Plan for transit investment. These criteria include:

- Fills a gap in the bus transit network
- Meets productivity standards (passengers per hour)
- Meets cost effectiveness standards (subsidy per passenger)
- Relieves congestion (total ridership)
- Provides seamless connections (to regional service)
- Eliminates "pass ups" (overcrowding on routes)
- Promotes environmental justice (demographic analysis)
- Attracts outside funding (federal, state, toll, other local)

To estimate performance under these criteria, District staff did a qualitative assessment. Scores were given based on three tiers: **High (+++)** - likely supports goal, **Medium (++)** - potentially supports goal, and **Low (+)** – questionable whether the service will support goal. These ratings are estimates of the project's ability to achieve the goal.

Table C-1: Measure A Bus Transit Investments Evaluation Criteria Ratings Summary

Measure A Goal	High Rating 	Medium Rating 	Low Rating 
Fill gap in the bus transit network	Provides service to an area currently not served by any public transit service	Provides service to an area with limited public transit service	Provides additional service to an area already served well by public transit
Meets productivity standards (passengers per hour)	Productivity expected to greatly exceed standard	Productivity expected to regularly meet standard	Ability to meet productivity standard is questioned
Meets cost effectiveness standards (subsidy per passenger)	Cost effectiveness expected to greatly exceed standard	Cost effectiveness expected to regularly meet standard	Ability to meet cost effectiveness standard is questioned
Relieves congestion (total ridership)	Ridership potential is great and has potential to significantly reduce vehicle trips	Ridership potential is strong and may reduce select vehicle trips	Ridership potential is questionable and may not impact congestion relief
Provides seamless connections (to regional service)	Service is available and timed to meet regional services including bus, rail, and ferry	Service is available but not timed specifically to meet regional services including bus, rail, and ferry	Service is not available nor timed to meet regional services including bus, rail and ferry
Eliminates "pass ups" (overcrowding on routes)	Service is offered on the same route/corridor, during the same times when current overcrowding conditions regularly occurs	Service is offered on similar routes/corridors and during the same times when potential overcrowding conditions can occur	Service does not address any potential overcrowding conditions on services
Promotes environmental justice (demographic analysis)	The service is offered to serve populations that demonstrate the greatest need for the service	The service is offered equitably based on who it serves and its cost	The service is offered to a specific population that does not demonstrate strong need based on their demographics
Attracts outside funding (federal, state, toll, other local)	Service relies on less than 25% of Measure A to implement and operate	Service relies on 25-50% of Measure A to implement and operate	Service requires at least 50% of Measure A to implement and operate

Prioritizing and implementing expansion projects will not occur in a sequential order simply based on qualitative ratings. This assessment shows the trade-offs between projects while highlighting strengths and weaknesses of each. Implementing these services will require consideration of cost and other factors.

Staff identified a total of 22 expansion services in the unfunded needs assessment, and assigned them to seven categories. These include, in no particular order:

- Expand and Enhance Shuttle Services
- Expand and Enhance K-12 School Bus Services
- Enhance Service Frequency in Transit Corridors
- Provide Limited Stop or Express Services
- Expand Rural and Recreational Services
- Provide and Support Flexible First and Last Mile Services
- Expand Services for Those with Special Needs

At the end of this appendix, Table C-10 and Table C-11 summarize each expansion service rating, cost, ability to implement, and relative priority within the unfunded list. Some of these ratings are speculative as many of these expansion projects require additional study and analysis.

The following is a brief narrative of each expansion category that outlines the expansion need, summarizes how the service is expected to perform under the evaluation criteria, estimates costs, and identifies opportunities for funding or partnerships.

Expand and Enhance Shuttle Services

Overview

Marin Transit has continued to expand shuttle services since the passage of Measure A. Shuttles provide a cost-effective fixed-route transit option for the areas of the county with lower ridership demands. The initial three shuttle routes launched in 2006 operated just under 5,000 annual revenue hours. Currently, the District operates over 35,000 annual hours of shuttle service on six routes. Ridership has grown from approximately 25,000 annual passenger trips to nearly 400,000 annual passenger trips.

Mill Valley and Sausalito are communities identified in the Measure A Expenditure Plan for shuttle service that currently do not have shuttle service. The Expenditure Plan envisioned locally designed shuttle services termed the “Millie” and the “Sally” for these communities. Although shuttle services have not developed in these communities, local and regional services in these areas provide some of the county’s highest transit service levels. Implementing shuttle services in these communities will likely be coupled with a decrease in local big bus or regional transit services.

Night service was also a goal of the shuttle program under the Expenditure Plan, and there are opportunities for further expansion. This need continues to arise in the communities of Novato and Tiburon where regular fixed route services end between 8:00 – 9:00 pm.

The outreach conducted during the Novato Transit Needs Assessment Study and the Novato Community Based Transportation Study identified a lack of service to the Bolling Circle area of Novato (Hamilton).

Further discussion with this community is required to determine the specific need. Based on anticipated ridership demand, potential deviation of the Routes 251 or 257 shuttle services may be the best option.

Table C-2 provides a summary of the Shuttle Expansion services, how the need was identified, and next steps for implementation.

Table C-2: Shuttle Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
Mill Valley	New circulator shuttle in Mill Valley	Measure A Expenditure Plan, Public/Customer Requests	Planning: Review ridership on current local and regional services. Evaluate feasibility of extending Route 219	Low
Sausalito	New circulator shuttle in Sausalito	Measure A Expenditure Plan	Planning: Review ridership on current local and regional services. Monitor Volunteer Driver Gap Grant project issued to Sausalito	Low
219 (Tiburon)	Expanded evening service for employees and patrons	Tiburon Transit Needs Assessment Study, Job Access Mobility Institute Study	Implement: Identify funding	Medium
251 (Novato)	Expanded evening service for residents	Novato Needs Assessment, Novato CBTP, Public/Customer Requests, Job Access Mobility Institute Study	Implement: Identify funding	Medium
251 or 257 (Novato)	Deviate Route 251 or 257 to serve Bolling Circle areas of Hamilton	Novato Needs Assessment, Novato CBTP, Public/Customer Requests	Outreach: Community feedback on specific transit needs. Planning: Assess trade-offs for added revenue service. Coordinate with City of Novato on bus stop siting and costs	Medium

Performance Criteria Ratings

Shuttle expansion projects tend to rate highest in filling a gap in the transit network that occurs due to low ridership demands. They may also score favorably in meeting productivity and cost effectiveness standards due to lower operating costs. Any future shuttle projects in Mill Valley and Sausalito will overlap or duplicate current local and regional fixed route services. Staff assumes some reduction in service levels on these existing routes will be necessary to achieve productivity and cost effectiveness targets. Based on the current riders of evening trips on local fixed-route services, added service will most benefit low-income riders who rely heavily on the transit service for mobility.

Cost Estimates or Considerations

The District's current shuttle operating cost for revenue service is approximately \$90 per revenue hour including fuel. This equates to approximately \$350,000 per year for a short 30-minute runtime for a route that operates every 60 minutes on weekdays only and \$850,000 for a 60-minute runtime for a route that operates every 60 minutes daily. Although operating costs are lower than most other fixed route services, average farebox recovery on shuttle program routes is only 12%, and average passenger subsidy is \$9.00 per trip. Assuming Measure A accounts for 40% of all operating costs, each shuttle passenger trip is supported by \$3.60 of Measure A sales tax funding.

Opportunities for Funding / Partnerships

Shuttle routes tend to serve a localized population. There are opportunities to partner with local cities/towns, major employers, or Downtown Business Districts to subsidize the costs of shuttle services. Night service in Tiburon will directly support employees and patrons of local business. Shuttles in Sausalito and Mill Valley could perform similar roles. Novato service expansion projects may be eligible for MTC Lifeline or similar funding.

Marin Transit's original 2006 SRTP identified a fixed route shuttle service type titled "Local Initiative Service." The service was envisioned as relying on partnerships between local jurisdictions, agencies, or private employers and Marin Transit, with each providing half the cost of operation. These services would respond to a localized need and unlikely to meet the District's performance targets. Under the program, the District determines subsidy levels based on the actual performance of the service. To date, there are no examples where these services were developed. However, Marin Transit may refer to this model to implement the identified unfunded shuttle needs.

Expand and Enhance K-12 School Services

Overview

As in much of California, the delivery of school transportation in Marin County has evolved significantly since approval of Proposition 13 and as demographic trends lead to changes in bus ridership. There is a substantial financial commitment required to operate and manage a full-service school transportation program. This has led many school districts to seek a broad range of alternatives to provide student access to school. These include expanded use of Marin Transit supplemental school service, shared use of contractual mechanisms such as that used by Marin Pupil Transportation Authority, fee for service offerings, and active promotion of alternatives through programs like Safe Routes to School (SR2S).

Marin Transit operates 28 routes, including 10 supplemental school routes designed to add capacity to the transit network on school days. These supplemental services are generally stand-alone services for older students that are aligned with school bell times, and operate Monday to Friday during the school year. In FY 2015/16, Marin Transit provided over 200,000 individual school-based rides on the supplemental services and averaged approximately 1,200 passengers daily on school days.

Marin Transit also has performed a significant role in supporting yellow school bus service for several school districts. The level of supportive activities varies between contract procurement, contract management, daily operations monitoring, and bus pass sales/distribution. Three school districts in the County contract with Marin Transit to provide daily operations oversight, including Reed Union, Ross Valley, and Mill Valley.

Partnering with the Marin County Office of Education and the Transportation Authority of Marin, Marin Transit released the *Countywide Coordinated School Transportation Study* in December 2015. This effort provided the District direction on its role in supporting home to school transportation services in Marin County. A total of nine recommendations were developed, and assigned to either a near-term or future scenario. Generally, the recommendations suggested that the District continue to support student transportation services and work to expand these services based on the appropriate type of service (yellow bus or supplemental transit).

The report also identified potential demand for buses service that led to a “high” and “medium” ranking to each school. Based on these assignments, staff estimated service levels and associated costs to expand services to meet these demands. Costs were further assigned to a phased timeline based on additional resources, such as equipment and facilities needed to support growth.

Since the conclusion of the study in 2015, the District formed an Ad-Hoc committee of the Board to continue the momentum and work toward implementing the study recommendations. This committee has met five times between May 2016 and April 2017. Based on this additional guidance, staff identified projects for K-12 school bus expansion, and these are included in Table C-3. This table summarize these services, and identifies how the need was identified and next steps for implementation.

Table C-3: K-12 School Bus Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
Kentfield SD, Larkspur-Corte Madera SD	Implement Phase 1 of the Coordinated School Transportation Study	Measure A Expenditure Plan, 2015 Coordinated School Transportation Study	Planning: Finalize schedules and routing for programs without services today Implement: Identify funding	High
Reed Union SD, Mill Valley SD, Ross Valley SD, San Rafael Elementary SD, Dixie SD	Implement Phase 2 of the Coordinated School Transportation Study	Measure A Expenditure Plan, 2015 Coordinated School Transportation Study	Implement: Identify funding	Medium
Novato SD	Implement Phase 3 of the Coordinated School Transportation Study	Measure A Expenditure Plan, 2015 Coordinated School Transportation Study	Planning: Finalize schedules and routing for new services Implement: Identify funding	Medium
Countywide	Expand and improve supplemental school services to older students (high schools) in Marin County	Measure A Expenditure Plan, Tiburon/Novato Needs Assessments, 2015 Coordinated School Transportation Study	Implement: Identify funding	High

Performance Criteria Ratings

K-12 school services score high in several Measure A evaluation criteria categories. These include filling a gap in the bus transit network, meeting productivity standards, meeting cost-effectiveness standards, and relieving congestion. Yellow bus service demonstrates great benefits for communities that have it or have recently implemented the service. Experience from yellow bus services and on the supplemental routes suggest high ridership levels are achievable on a per trip basis and a high farebox recovery (low subsidy) can be achieved. Staff assumes that a heavily discounted or free pass will be issued to students who qualify for the free or reduced lunch program, and this will result in a high rating for promoting environmental justice. All other criteria get a medium rating except providing seamless connections to the regional services, which is rated low.

Cost Estimates or Considerations

Current supplemental school operating costs are approximately \$130 per revenue hour. The relatively high cost is due to the significant amount of non-revenue time associated with running a service that only operates during school peak hours. Pricing for yellow bus is typically done by the day, and the rates account for the significant amount of midday down-time for the drivers.

Each yellow bus will cost between \$450 and \$625 per day to operate. The broad range of operating costs considers the difference between having a local facility for storage and maintenance versus relying on remote servicing and storage facilities. Assuming a 180-day school year, the annual cost per bus is between approximately \$81,000 and \$112,500. Since the operation of a yellow bus is purchased per day, the cost per student is a function of how efficiently the bus is used and how many different students can be served during the day. School district decisions on bell time and staggering of schedules play a significant role in the cost efficiency of these services and the ability to expand them.

Opportunities for Funding / Partnerships

The *Countywide Coordinated School Transportation Study* offers insight into how to leverage partnerships to make transportation services more efficient and plan for expansion. The current supplemental school program is merged with the District's seasonal programs and College of Marin services, which creates operational efficiencies for transit vehicles and drivers. Further expansion of services to College of Marin or Dominican University may offer additional efficiencies through off-peak use of supplemental equipment and drivers.

Yellow bus services are priced and operated differently than the supplemental services. Coordinating with the school districts on bell times and scheduling will greatly impact the cost efficiency. Yellow bus programs offer another tool for local communities to reduce roadway congestion, and partnerships with local cities and towns will offset the costs for expanding these services.

Enhance Service Frequency in Transit Corridors

Overview

The District provides high quality transit service in corridors that demonstrate high transit use and/or high levels of congestion. Chapter 2 identifies the District's performance metrics for service frequency goals. These metrics apply to corridors identified in the Measure A Expenditure Plan. While many corridor services

meet their targets, some are not. These services may benefit from increasing frequencies, and are identified as unfunded projects in Table C-4 below.

Table C-4 summarizes Service Frequency Expansion projects, how the need was identified, and next steps for implementation.

Table C-4: Frequency Enhancement Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
San Rafael – San Anselmo	Expand off-peak and weekend service levels from every 20 minutes to every 15 minutes. Routes available for expansion include Routes 23 or 68.	Measure A Expenditure Plan	Planning: Monitor route level performance and identify opportunity for expansion Implement: Identify funding	
San Rafael – Civic Center – Northgate	Expand off-peak and weekend service levels from every 20 minutes to every 15 minutes. Increasing Route 49 frequency is best opportunity for expansion.	Measure A Expenditure Plan	Planning: Monitor route level performance and identify opportunity for expansion Implement: Identify funding	
Hamilton – Downtown Novato	Expand off-peak and weekend service levels from every 20 minutes to every 15 minutes. Increasing Route 49 frequency is best opportunity for expansion.	Measure A Expenditure Plan	Planning: Monitor route level performance and identify opportunity for expansion Implement: Identify funding	

Performance Criteria Ratings

Service frequency expansion services score well in improving connections and filling in the bus network. They make bus service more robust and convenient for passengers. At the same time, many of these routes are not meeting their productivity and cost effectiveness standards. They will likely continue to struggle to meet these targets if service is added.

Cost Estimates or Considerations

Based on current Marin Transit operations, expanding frequency will cost approximately \$115 per revenue hour of service. Each of these frequency enhancements will be an investment of approximately 2,000 hours or close to \$230,000 annually.

Opportunity for Funding / Partnerships

Expanding service frequencies on the existing transit network has limited opportunities to attract outside funding or partnerships. The best opportunity to fund these expansion services may be to reallocate revenues to concentrate resources in the most traveled and heavily used transit corridors. Replace lower ridership, coverage-based transit services could enable the District to reinvest resources.

Provide Limited Stop or Express Services

Overview

The focus of local transit services is on increasing mobility for Marin County residents. Local transit trips are shorter in length than regional trips or ferry trips. Operating characteristics balance service speed with accessibility, and can result in long travel times for some trips.

Goal C under the SRTP Corridor-Level performance measures calls for providing competitive travel times to promote transit use. Perhaps the most sensitive market to travel times are commuters who rely on the service daily and oftentimes transfer to another local or regional service to complete their trip. This market may increase with the introduction of SMART.

In June 2016, Marin Transit implemented Routes 71x and 23x to test how express services performs in a corridor already served by local routes. Route 71x provided an 18% travel time savings over other services in the Highway 101 corridor by simply removing the bus pad stops in San Rafael, Larkspur, and Corte Madera. The express Route 23x significantly decreases end-to-end travel times in the Fairfax to San Rafael corridor that is also served by Route 23.

One other expansion project to achieve travel time savings has been identified in the Mill Valley to San Rafael corridor. An express service along Route 17 can achieve travel time savings for current riders and attract new riders to this route. In addition, Route 17 could be designed to provide a convenient link to future SMART services for southern Marin County residents traveling north.

The current deviation of Route 17 to Strawberry Village increases travel times for many riders traveling to Mill Valley. The ongoing study of the East Blithedale / Tiburon Blvd interchange is assessing improvements to pedestrian and bicycle circulation, with a focus on how these users connect to transit services. The study results will be evaluated in concert with express bus options for Mill Valley and other areas of southern Marin County.

Table C-5 provides a summary of the Limited Stop or Express Expansion services, how the need was identified, and next steps for implementation.

Table C-5: Limited Stop or Express Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
San Rafael – Mill Valley	New weekday peak only express service connecting Downtown San Rafael to Mill Valley	2012 Onboard Survey, On-Time performance Assessment	Planning: Identify exact alignment and stops. Implement: Identify funding	Medium

Performance Criteria Ratings

Marin Transit anticipates that express services will perform well in productivity and cost effectiveness standards. They are focused on areas of high ridership, and operate with higher speeds with more efficient use of revenue time. Since express services will operate in high ridership corridors where other routes currently operate, they will overlap with existing services. However, they will create a new service type that

may attract a new market by filling in a gap in the network for these users. The highest ratings for express services are in the areas of seamless connections, as they will provide direct service to the San Rafael Transit Center and SMART station.

Cost Estimates or Considerations

Limited or express services will likely need the vehicle capacity utilized in the District's big bus program and thus cost approximately \$135 per revenue hour. Initially, the District will schedule express services in peak travel hours to target commute needs. This will require relatively few revenue hours of service, yet adding service in the peak requires additional fleet beyond the current baseline service. Annual operating cost estimates for an express route during peak hours range from approximately \$250,000 to \$500,000 per year, depending on service frequency and route length.

Opportunities for Funding / Partnerships

Funding for these services will likely directly compete for resources allocated within the fixed route program. The District may seek opportunities to reduce regular fixed route service levels as a result of expanded express services to fund these services.

Expand Rural and Recreational Services

Overview

The District provides fixed route services to rural West Marin on the West Marin Stagecoach and Muir Woods Shuttle. The rural services serve both residential mobility needs and provide access to the recreational areas in West Marin. The Muir Woods Shuttle provides a direct public transit connection to one of the Bay Area's top tourist destinations. Together, these services provide congestion relief for many Marin County roadways and highways during weekend and holiday travel.

The Muir Woods Shuttle is supported by the National Park Service (NPS) and Marin Transit, and provides peak season service on weekends and holidays and summer weekdays to Muir Woods National Monument. Now in its thirteenth season, the Shuttle carries nearly 25% of all Muir Woods visitors on the busiest visitation days and recorded over 120,000 passenger trips in FY 2016/17. The shuttle is a valuable resource to reduce roadway congestion in Sausalito, Tam Junction, and West Marin on peak weekends and holidays.

NPS is transitioning to a full reservation system for access to the park, which increases the unpredictability of future planning for the Shuttle. The reservation system will require visitors to choose how they will access the park in advance, including the option to take the Muir Woods Shuttle. The system will increase operating efficiencies with more certainty regarding ridership levels and lower passenger wait times. The NPS is still working out the details of the reservation service, and the District will continue to partner with park staff to identify inputs needed for future operations. The NPS is also planning for a future reservations system that will require year-round operation of the weekend and weekday Shuttle service to support peak visitation.

One area of near-term growth for rural and recreational services is a new route alignment to attract passengers who do not have access to a car before they enter Marin County. This alignment will serve the south side of the Golden Gate Bridge at the toll plaza, and connect to regional transit services. These include: San Francisco SFMTA Routes 28 and 76X, Golden Gate Transit Routes 30, 70, 101, and the PresidiGO shuttle. Additional planning work and coordination with the operators and property owners will be required

to identify stop and layover opportunities at the Bridge, service levels to the park, and the routing of the service within Marin County.

The District significantly expanded rural Stagecoach service in June 2014. This expansion greatly enhanced service on the North and South Routes 68 and 61 during peak weekends. Recreational travel to the Golden Gate National Recreation Area (GGNRA) causes significant congestion in Marin County. Continued expansion of the South Route will increase alternatives for reaching GGNRA without a car and for those unable to visit Muir Woods due to lack of reservations.

Table C-6 provides a summary of the Rural and Seasonal expansion services, how the need was identified, and next steps for implementation.

Table C-6: Rural and Seasonal Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
Golden Gate Bridge – Muir Woods – West Marin	New route connecting the Golden Gate Bridge and West Marin	Muir Woods Shuttle Annual Evaluation Report, Stakeholder Meetings	Planning: Further study circulation at Toll Plaza parking lot, identify service levels and routing Implement: Identify funding	High
Sausalito-Marín City – Tam Junction – Stinson Beach – Bolinas	Increase service on Route 61 to support weekend and holiday demands	2014 Rural Fixed Route Expansion Plan	Implement: Identify funding and expand fleet	Medium
Marín City – Tam Junction – Stinson Beach – Bolinas	Increase weekday service on Route 61 to support locals and students	Customer Service Feedback	Planning: Outreach to Community to identify new schedules Implement: Identify funding	Medium

Performance Criteria Ratings

Expansion of the Muir Woods Shuttle program scores well in nearly all categories including: fills a gap in the bus transit network, meeting productivity standards, meeting cost effectiveness standards, relieves congestion, and attracts outside funding. These ratings are based on anticipated performance of future services as projected from the current performance of Routes 66 and 66f. All other ratings except for “promotes environmental justice” are scored as medium.

Route 61 expansion scores well in relieving the congestion and eliminating pass-ups experienced during peak late afternoon return trips from Stinson Beach.

Cost Estimates or Considerations

The NPS pays for 50% of the total operating costs for the Muir Woods Shuttle, and the service has a farebox recovery ratio of nearly 50%. These aspects of the service make it very cost-effective for the District to operate, and consequently, it requires very low levels of local Measure A contributions.

Rural services currently cost the District approximately \$88 per revenue hour to operate. This rate is comparable to the community shuttle as the lowest cost to operate of fixed route service. Rural expansion service will be targeted at peak weekends only, and represent a relatively small number of annual hours.

Opportunities for Funding / Partnerships

Partnership with the NPS is key to the success of the Muir Woods Shuttle, and the partners will continue to identify new opportunities to expand and enhance the shuttle. Staff assumes that the NPS will pay for any Muir Woods Shuttle expansion beyond 2017 season levels.

Future parking charges at Stinson Beach and other parking areas in West Marin may be a funding source for service expansion. The District will continue to work with the California State Parks to provide their visitors with transit access to their parks, trailheads, and beaches.

Provide and Support Flexible First/Last Mile Services

Overview

Marin Transit's fixed route services offer scheduled public transit along the County's most heavily traveled corridors. Most of these services focus on efficiently moving as many people as possible to reduce congestion and improve mobility. The Local Connector fixed route services offer a more personalized shuttle service to areas of the county that demonstrate regular demand for transit service and can support ridership to meet the District's productivity targets. The District's paratransit and mobility management services provide another personalized layer of services for senior and special needs riders. While these offerings serve a significant number of Marin County residents, there are still gaps that makes transit use less attractive or infeasible for many residents.

First/last mile services fill those gap in the transportation network, and can overcome barriers typically associated with getting to or from fixed route transit stops. These barriers may be a function of the topography or geography, characteristics of the transportation network (narrow streets, lack of sidewalks, limited bike facilities, and unsafe crossings), or a user's physical limitation that restricts their ability to access bus stops.

Marin Transit continues to work with the community and its partners to identify other cost-effective solutions to this transportation barrier. A key question is the level of ownership and subsidy the District should provide versus relying on the private market or users to fund and provide these services. Table C-7 summarizes the key rider markets that will benefit from improved first/last mile services and some potential delivery models for these markets. Additional study will be the next step toward identifying the most appropriate service model.

SMART rail service in Marin has presented a new option for regional travel for Marin County residents and employees. While some stations are well served by transit due to their location, stations in Novato are in isolated areas that are challenging for traditional transit service to serve. Regular fixed route services in Marin are also timed to the "pulse" in Downtown San Rafael, which limits the ability to create timed connections at other locations along the rail corridor.

First/last mile services are potential service models that could fill the gaps between the regional rail and bus networks in Marin. These services in Novato could be focused specifically on the rail connections or serve a larger group of riders by operating in the service area of a general public dial-a-ride.

First/last mile services could also help fill a transit gap within the underserved East San Rafael/Peacock Gap neighborhood. Recent outreach efforts with this San Rafael neighborhood have identified the need for ferry feeder and bus connections to the Downtown bus and train depot. Historically, a GGT ferry feeder route served this neighborhood that was discontinued due to low ridership. Recent neighborhood surveys identified the Larkspur Ferry and the San Rafael Transit Center as the top two commute destinations. Over one-third of the 450 responses from the initial survey indicated ferry use, and over 85% of respondents that use the ferry currently drive to the ferry terminal. The potential synergies between connecting residents to the train, bus, and ferry indicate that they will benefit more from a first/last mile solution than a traditional ferry feeder service.

Table C-7: Rider Markets Identified for First / Last Mile Services

Rider Market	Peak Service Needs (Time/Day)	Service Area	Potential Service Delivery Model	Alternative Delivery Models (supported and coordinated - not directly operated)
Seniors	Midday, weekdays and all-day weekends	Countywide	Point to point services (on-demand), subscription shopper shuttles	Subscription taxi, TNC, or similar service
All	All	Locations with especially hilly terrain where fixed route and paratransit services cannot operate	Flex route service timed to bus operations at town center but circulates in residential areas in between	Subscription taxi, TNC, or similar service; car share
All	Night and off-peak hours	Commercial and residential areas with lower ridership demands	Flex route service timed to bus operations at town center but circulates in residential areas in between	Subscription taxi, TNC, or similar service; vanpools; car share; bike share
Ferry / Rail Passenger	AM / PM Peaks, weekdays	Residential areas with lower ridership demands or smaller employment sites	Point to point shuttles (subscription service), timed to trains or ferries	Subscription taxi, TNC, or similar service; vanpools; car share; bike share

Directly Operated Services

Direct operation of first/last mile services will give the District greater control and oversight in safety and training of drivers and vehicle type, capabilities, and cleanliness. Typically, direct operation has a higher cost. However, Marin Transit foresees opportunities for increasing the efficiency and effectiveness of its current services with the provision of this new service type.

Consistent with Marin Access program goals, the first step in offering more personalized first/last mile services is to better coordinate and integrate current and new program offerings. Riders will be able to see all transportation options when they book their trip. Schedulers will view availability across all programs. Currently, these consist of paratransit, Catch-A-Ride, Novato Dial-A-Ride, and volunteer driver programs.

For example, schedulers may be able to assign a same-day Catch-A-Ride trip to paratransit to increase service efficiency.

There may be limited opportunities for greater efficiency and economies of scale in integrating these programs. The District should evaluate a new service model that will operate as a flex route service that can be adapted to community needs and the areas served. Marin Transit's diverse offerings of fixed route services provide riders with transit services based on a timetable for regular service. Flex routes offer solutions to address additional mobility needs. The District should evaluate a smaller vehicle type based on capacity needs of the service to decrease costs.

Supported and Coordinated Services

The taxi industry is a potential partner for supporting and coordinating first and last mile services. Recent advances in technology and smart phone access have spurred a new market for transportation.

Transportation Network Companies (TNCs) such as Uber and Lyft offer new opportunities for first and last mile transportation in addition to other shared-ride (Chariot, Sidecar, Lyft Line, Uberpool, etc.) or car-share companies (ZipCar, Getaround, etc.). These services are widely available in urbanized areas and much less so in suburban areas such as Marin County.

The District's recent Catch-A-Ride partnership with the taxi industry is one model for brokering trips for seniors and ADA riders. In Marin County, the ability to expand these programs through the taxi providers is limited. Marin Transit should explore additional opportunities to support and coordinate with private or non-profit providers that require a lower per passenger subsidy levels than the Catch-A-Ride program. One option is to offer free transfers to fixed route services from taxis, transportation network company (TNC) services, or other approved providers. This will reduce the need for the District to provide these services directly, and offer riders an incentive to use fixed route transit. Since first/last mile connections are relatively short distance, the out-of-pocket costs will be minimal. The total cost of the trip will be more attractive, as the transit portion provided as free. Encouraging this behavior will also create incentives for these outside providers and strengthen the market and availability of services for Marin residents.

Marin Transit will also continue to partner with the Transportation Authority of Marin (TAM) on their countywide transportation demand management (TDM) strategies. The District will monitor TAM's current discount ride program for first and last mile services to and from the SMART stations in partnership with Lyft. Future co-location of car share and bike share stations at key transit facilities will offer alternative travel options in areas where fixed route services are not financially or physically feasible. Partnering to support vanpooling is another option to increase access to and from transit stops.

The District could pursue a hybrid arrangement where Marin Transit provides the vehicle, vehicle maintenance, and driver training. The service could be provided through the Volunteer Driver program, an organization that benefits from the service, or individuals who pool together for a shared ride. There may be additional opportunities to use the same vehicle outside service hours, for example, in a car share program to support other countywide mobility goals.

Driverless Technology

Marin Transit also needs to consider a future with driverless cars and respond to how they will impact the public transit. Many automakers already offer autopilot functionality. There are still many technology and regulatory hurdles to overcome.

While autonomous vehicles offer many opportunities for mobility, their impact on congestion is unclear. There are few opportunities in Marin for additional infrastructure enhancements that will increase roadway capacity. In a future with autonomous vehicles, public transit's role may be to focus on moving travelers on capacity-constrained corridors. With high quality transit service on congestion corridors, autonomous vehicles could fill the need for first and last mile connections.

Table C-8 provides a summary of the First and Last Mile expansion services, how the need was identified, and next steps for implementation.

Table C-8: First and Last Mile Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
Novato Local Connectors	SMART connector services to the two Novato stations	2015 MTC SMART Integration Study	Planning: Identify potential transfer demand and best way to support these needs	Medium
East San Rafael Connector Bus	Peak hour feeder bus to connect East San Rafael to Larkspur Ferry via San Rafael Transit Center / SMART station	2016/2017 Community Survey and Outreach	Planning: Map routing and cost estimates Implement: Secure funding	Medium
Countywide	New directly operated flex route services for general public	Measure A Expenditure Plan, Tiburon/Novato/West Marin Needs Assessments	Planning: Further study to identify potential markets and subsidy levels	High
Countywide	Partner with outside providers to develop complementary services in areas with transit gaps	2016 SRTP	Planning: Further study to identify potential markets and subsidy levels	High
Countywide	Support outside providers - free transfer agreements	Measure A Expenditure Plan, Tiburon/Novato Needs Assessments	Planning: Further study to identify opportunities. Talk with outside providers and explore how the process will function	Medium

Performance Criteria Ratings

First and last mile services score highest in filling gaps in the bus transit network and providing seamless connections. Cost-effective opportunities to achieve these goals are the focus of these services, and will be explored as part of the District's upcoming planning process.

Since the program is still not well-defined, it is challenging to score the other performance criteria. The ability to achieve high productivity or subsidy goals is questionable. These programs will not target large populations, yet they rely on heavy passenger loads. The metrics may also be challenging to quantify if the

service increases the efficiency of other local services or significantly reduces the District's reliance on outside providers, such as TNCs, over whom the District does not have oversight.

Cost Estimates or Considerations

Due to the personalized nature of these services, the cost per passenger is likely going to be high. The decision to directly contract to operate service versus relying on outside providers will determine the level of investment District must provide and the subsidy levels. Even if the District contracts directly for the operation, there may be opportunities to leverage available resources by integrating and better coordinating Marin Transit's current programs. This type of implementation may not have a net increase in costs to the District while increasing the number of passengers served and reducing per passenger subsidies. Relying on and creating incentives for outside service providers such as taxis to support the District's goals could also be a cost-effective way to implement this type of service without directly operating it.

Opportunities for Funding / Partnerships

The District should focus on partnership opportunities to develop first and last mile services, and consider the ever-changing environment of mobility options. The District's partnership with Whistlestop for Volunteer Driver programs offers an opportunity to leverage low-cost resources to help fill gaps in the transportation network. The District's partnerships with the taxi industry can lead to future win-win opportunities that enable the District to expand mobility for seniors while strengthening the network of taxi services. Other potential partnership opportunities with TNCs could offers similar win-win arrangements.

The District will continue to work with TAM to ensure TDM programs are well-integrated with public transit and residents who choose a car-free lifestyle have a wide range of mobility options. This includes providing a "safety net" for transportation when one option fails or is not feasible for a specific trip. TDM programs support service to public transit, and can address the first and last mile challenges identified across the County.

Expand Services for Those with Special Needs

Overview

While Marin County's population experiences slow-to-little growth, the number of older adults is rapidly increasing. The number of senior residents – those over the age of 65 – in Marin has almost doubled since the year 2000, and is projected to increase an additional 41 percent in the next ten years. An aging population has a significant impact on transportation and transportation needs. As residents may need or want to shift their travel behavior to rely on non-driving modes, cost-effective and convenient options will keep this population active, healthy, and engaged within our community.

Marin Access programs serve a subset of seniors and people with disabilities who already depend on public transportation to maintain their independence and a high quality of life. Marin Transit will always need to provide a high-touch, high-subsidy program to meet the needs of these riders. Any new offerings should be developed in coordination with agencies and organizations that also support this population. Coordinated planning will reduce costs, prevent service duplication, and provide riders and caregivers with the best possible service.

Table C-9 provides a summary of the Special Needs expansion services, how the need was identified, and next steps for implementation.

Table C-9: Special Needs Expansion Services

Route / Service Area	Description	Need Identified	Next Steps	Priority Level
Countywide	Develop new same day, curb-to-curb services for seniors as available to make current program offerings more efficient	Measure A Expenditure Plan, Tiburon/Novato Needs Assessments, Senior Mobility Action & Implementation Plan, 2016 Marin Access Strategic Analysis & Recommendations	Planning: Study current trip request and denials and understand software need to consolidate scheduling	High
Countywide	Develop a reservation agreement program for senior shopper shuttles and group outings utilizing paratransit equipment	Marin Mobility Consortium; Marin Access Innovation Incubator; 2016 Marin Access Strategic Analysis & Recommendations	Planning: Assess available capacity; Determine eligibility criteria; Identify key origins and destinations	High
Countywide	Provide specialized counseling or travel training to riders with specific needs (e.g. people with developmental disabilities or the blind)	Measure B Expenditure Plan, 2016 Marin Access Strategic Analysis & Recommendations; Outreach to Adult Day Programs responsible for frequent paratransit ridership	Outreach: Partner with local agencies and organizations to develop curriculum and identify participants	Medium
Countywide	Provide innovative rider-focused transportation solutions that improve access to healthcare and promote wellbeing	2016 Marin Access Strategic Analysis & Recommendations; 2016 Marin Access Rider Survey; Marin Mobility Consortium	Planning: Identify transportation challenges that limit or prevent access to healthcare and/or limit wellbeing, particularly in rural West Marin; Continued partnership and collaboration with transportation and health care providers, focused on	Medium

Performance Criteria Ratings

Services that target those with special needs get the highest marks in promoting environmental justice. Based on recent outreach and stakeholder feedback, expanding same-day curb-to-curb options for seniors and improving access to healthcare score well in filling a gap within the transportation network. Curb-to-curb services also provide seamless connections for those who need it most.

Due to the relative high cost and low ridership of these services, they score low on many criteria score compared to traditional mass transit services. However, some of these service models are either untested or underdeveloped. There may be opportunities to improve these scores once new service models are tested or further refined.

Cost Estimates or Considerations

Although services for those with special needs tend to have high subsidy levels, the total amount of expected service is lower than other expansion projects. Cost estimates assume the continuation of other Marin Access supportive service and that expansion services will enhance these offerings.

Opportunities for Funding / Partnerships

The District is exploring creative options to fund these services. These include:

- Partnering with private transportation companies seeking to test new models;
- Group shopping/recreational shuttles through paratransit contract;
- Travel training partnerships; and
- National Center for Mobility Management/Rides to Wellness funding.

Marin Transit recognizes that demand for these services is not typically focused on peak hour travel times. There may be opportunities to reuse program resources during the off-peak hours to provide operational and financial efficiencies.

Expansion Scoring and Priorities

Table C-10 summarizes all unfunded service improvements, and organizes them by priority level. Priorities are assigned based on the evaluation ratings and ease of implementation. Overall service ratings are calculated based on an equal weighting of all Measure A criteria. Funding was not a factor in assigning priority. Many of these projects could be achieved with outside funding, partnerships, or discretionary grant funds.

The priority assignments are based on the District's needs, and assume current services levels and programs are sustained. Staff will revisit this list and the priority assignments annually, and update them to reflect future needs for local transit service.

Table C-11 provides a summary of the project rating in each of the evaluation criteria, an estimate of annual operating costs and Measure A contribution, and an assessment of the ease of implementation. The cost is an estimate of the annual operating costs to Marin Transit. Each dollar sign (\$) represents approximately \$50,000 per year of added operating cost. The darker portions of the "\$" indicate the portion of the financial support that will likely come from local Measure A funds or its replacement.

Table C-10: Expansion Services by Priority

High Priority, Not Ready Project (Ratings = High, Not Ready to Implement)
Yellow Bus Expansion: Kentfield & Larkspur-Corte Madera School Districts
Yellow Bus Expansion: Reed Union, Mill Valley, Ross Valley, San Rafael Elementary, & Dixie School Districts
Expand Supplemental Transit: Tamalpais Union, San Rafael, Novato School Districts
Provide new service between Golden Gate Bridge and West Marin
Medium Priority Projects, Ready Projects (Rating = Medium, Ready to Implement)
Expand Shuttle: Tiburon Evenings (219)
Expand Shuttle: Novato Evenings (251)
Expand Shuttle: Novato Hamilton (251 or 257)
Expand Fixed Frequency in San Rafael – San Anselmo Corridor
Expand Fixed Route Frequency in San Rafael – Civic Center Corridor
Expand Fixed Route Frequency in Hamilton –Downtown Novato Corridor
Mill Valley Express (Route 17x)
Medium Priority Projects, Not Ready Projects (Rating = Medium, Not Ready to Implement)
Yellow Bus Expansion: Novato School District
Increase service on Route 61 to support weekend and holiday demands
Novato connector services
East San Rafael Connector Bus
Provide flex route services for general public
Partner to provide new flexible first/last mile options
Support outside providers to strengthen first/last mile connections
Expand same day curb-to-curb options for seniors
Provide innovative rider-focused transportation solutions that improve access to healthcare and promote wellbeing
Low Priority Projects, Not Ready Projects (Rating = Low, Ready to Implement)
Develop a reservation agreement for senior shopper shuttles and group outings
Provide specialized counseling or travel training to riders with specific needs
Low Priority Projects, Not Ready Projects (Rating = Low, Not Ready to Implement)
New Shuttle: Mill Valley
New Shuttle: Sausalito
Increase weekday service on Route 61 to support locals and students

Table C-11: Expansion Project Ratings

Proj. #	Expansion Services	Fill gap in the bus transit network	Meets productivity standards	Meets cost effectiveness standards	Relieves congestion	Provides seamless connections	Eliminates "pass ups"	Promotes environmental justice	Attracts outside funding	Overall Rating (equal weighting of criteria)	Estimated Operating Cost ⁽¹⁾	Ease of Implementation
1.0	Expand and Enhance Shuttle Services											
1.1	New Shuttle: Mill Valley	+	++	++	++	+	+	+	+	+	\$\$\$\$\$ \$\$\$\$\$	+
1.2	New Shuttle: Sausalito	+	++	++	+	+	+	+	+	+	\$\$\$\$\$ \$\$\$\$\$	+
1.3	Expand Shuttle: Tiburon Evenings (219)	+++	+	+	+	++	+	+++	+	++	\$\$\$	+++
1.4	Expand Shuttle: Novato Evenings (251)	+++	+	+	+	+	+	+++	+	++	\$\$\$	+++
1.5	Expand Shuttle: Novato Hamilton (251 or 257)	+++	+	+	+	+	+	+++	+	++	\$	+++
2.0	Expand and Enhance K-12 School Bus Services											
2.1	Yellow Bus Expansion: Kentfield & Larkspur-Corte Madera School Districts	+++	+++	++	+++	+	+++	++	+++	+++	\$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$	+
2.2	Yellow Bus Expansion: Reed Union, Mill Valley, Ross Valley, San Rafael Elementary, & Dixie School Districts	+++	+++	++	+++	+	+++	++	+++	+++	\$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$	+
2.3	Yellow Bus Expansion: Novato School District	+++	++	++	++	+	+++	++	+++	++	\$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$	+
2.4	Expand Supplemental Transit: Tamalpais Union, San Rafael, Novato School Districts	+++	+++	+++	+++	+	+++	+++	+	+++	\$\$\$\$\$\$\$\$\$ \$\$\$\$\$\$\$\$\$	++
3.0	Enhance Service Frequency in Transit Corridors											
3.1	Expand Fixed Frequency in San Rafael – San Anselmo Corridor	++	+	+	++	+++	++	++	+	++	\$\$\$\$\$	+++
3.2	Expand Fixed Route Frequency in San Rafael – Civic Center Corridor	++	+	+	++	+++	++	++	+	++	\$\$\$\$\$	+++
3.3	Expand Fixed Route Frequency in Hamilton – Downtown Novato Corridor	++	+	+	++	+++	++	++	+	++	\$\$\$\$\$	+++

Proj. #	Expansion Services	Fill gap in the bus transit network	Meets productivity standards	Meets cost effectiveness standards	Relieves congestion	Provides seamless connections	Eliminates "pass ups"	Promotes environmental justice	Attracts outside funding	Overall Rating (equal weighting of criteria)	Estimated Operating Cost ⁽¹⁾	Ease of Implementation
4.0	Provide Limited Stop or Express Services											
4.1	Mill Valley Express (Route 17x)	++	++	++	++	+++	+	++	+	++	\$\$\$\$\$ \$\$\$\$\$	+++
5.0	Expand Rural and Recreational Services											
5.1	Provide new service between Golden Gate Bridge and West Marin	+++	+++	+++	+++	+++	+	+	+++	+++	\$\$\$	+
5.2	Increase service on Route 61 to support weekend and holiday demands	+	++	++	+++	++	+++	+	+++	++	\$	++
5.3	Increase weekday service on Route 61 to support locals and students	++	+	+	+	++	+	+	+	+	\$	++
6.0	Provide and Support Flexible First/Last Mile Services											
6.1	Novato connector services	++	+	+	+	+++	+	+	+++	++	\$\$\$\$\$	++
6.2	East San Rafael Connector Bus	+++	+	+	+	+++	+	+	+	++	\$\$\$	++
6.3	Provide flex route services for general public	+++	+	+	+	+++	+	++	+	++	\$\$\$\$\$	+
6.4	Partner to provide new flexible first/last mile options	+++	+	+	+	+++	+	++	++	++	\$\$	+
6.5	Support outside providers to strengthen first/last mile connections	+++	+	+	+	+++	+	+	++	++	\$	++
7.0	Expand Services for Those with Special Needs											
7.1	Expand same day curb-to-curb options for seniors	+++	+	++	+	+++	+	++	+	++	\$	+
7.2	Develop a reservation agreement for senior shopper shuttles and group outings	+	+	+	+	+	+	+++	+	+	\$\$	+++
7.3	Provide specialized counseling or travel training to riders with specific needs	+	+	+	+	+	+	+++	+	+	\$	+++
7.4	Provide innovative rider-focused transportation solutions that improve access to healthcare and promote wellbeing	+++	+	+	+	+	+	+++	+++	++	\$\$\$	++

Notes:
(1) "\$" represents approximately \$50,000 in annual operating costs. **Black "\$"** indicates estimates for portion of costs covered by Measure A