MEMORANDUM

To: Colin Dentel-Post, SFCTA
From: Millie Tolleson and Steve Crosley
Date: November 28, 2016
Subject: Late Night Transit Study Phase II – Service Improvement Concepts

This memo presents late-night transit improvement concept recommendations for consideration by late night transportation stakeholders, including operators SFMTA, AC Transit, and SamTrans, as well as other members of the Late Night Transportation Working Group (Working Group).

The Late-Night Transportation Study Phase I report, released in February 2015, identified five next steps to help improve late-night and early-morning transportation for workers, residents, and visitors traveling to, from, or within San Francisco:

1. **Begin a process to refresh and consider expansion of all-night local and regional bus service;**
2. Develop a pilot program funded by challenge grants for location-specific improvements;
3. Develop and launch a coordinated information campaign to better communicate existing services;
4. Establish an all-night transportation monitoring practice of metrics such as transit reliability, cleanliness, safety, etc. to be used to make data-driven recommendations; and
5. Continue convening the Late Night Transportation Working Group to review progress on implementing our recommendations.

The service improvement recommendations contained in this memo are the outcome of the first task for Phase II of this study. They are based on 1) a market analysis of late-night travel demand that looked at origin and destination worker flows into, out of, and within San Francisco and 2) a service evaluation of late-night transit in the Bay Area including a performance-based analysis and an assessment of adherence to guidelines/service standards developed at the beginning of this effort. Throughout the study process, the transit operators participating in the late-night transit program (SFMTA, AC Transit, SamTrans, and Golden Gate Transit, plus BART and Caltrain) were regularly consulted. The concepts contained herein resulted from an iterative process, including refinements based on feedback from operators and the Working Group, that

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1 *Late Night Transit Demand Initial Findings – Final, Nelson\Nygaard May 9, 2016*
2 *Late Night Transit Service Evaluation – Final, Nelson\Nygaard July 28, 2016*
3 **Attachment B** contains the set of service design guidelines and evaluation metrics used in this study.
ensured development of recommendations that are data-driven, feasible from an implementation standpoint, and meet key late-night transit needs.

This memo presents a summary of the service recommendations in three prioritized tiers. Following the recommendations summary are individual descriptions of all the service concepts, including route maps showing each recommended improvement. Attachment A of this memo summarizes all of the initial concepts considered as part of this analysis, while Attachment B presents the planning framework that guided the service planning analysis.

**PRIORITIZED SERVICE RECOMMENDATIONS**

This study recommends several late-night transit service improvements for each of three operators, Muni, AC Transit, and SamTrans, presented in Tables 1, 2, and 3, respectively. Recommendations for Muni and AC Transit include both cost-neutral reconfiguration or rerouting of some existing service, as well as concepts that would add additional late-night service. The recommendations for SamTrans service are all expansions to existing service, since there is currently very limited late-night service to the Peninsula. Although we considered service changes or new service for Golden Gate Transit, which does not currently operate any all-night routes, the study does not recommend any changes due to low demand.

Given the resource limitations that constrain the amount of service operators are able to provide, this study prioritizes its recommendations to identify those that would provide the greatest service benefit for the lowest cost and difficulty of implementation. The service concepts were parsed into three priority tiers, as reflected in Tables 1, 2, and 3, based on a qualitative rating process that considered:

- **Cost**: whether a concept is cost-neutral (3 points) or the extent to which additional funding resources would be required (1-2 points). Costs are presented only in terms of service hours, so estimates do not include costs of agency service planning staff time or of marketing and promotion of route changes.

- **Service availability vs. higher frequency**: given that late-night transit operates largely as a lifeline service, and based on input from operators, improvements to service availability (e.g. coverage and span expansion) were given higher ratings (2-3 points) than increasing frequency above minimum standards (1 point).

- **Ease of implementation**: full re-routes with a loss of coverage were deemed the most complex to implement (and received 0 points) while frequency changes or introduction of daytime route were rated highest on ease of implementation (4 points); full-routes with coverage added in new places (1 point) and slight route changes received moderate (2 points) ratings.

This process identified draft Tier 1, Tier 2, and Tier 3 priority concepts. Tier 1 concepts are most viable and should be further investigated for immediate to near-term implementation, Tier 2 concepts would result in greater implementation challenges but provide significant user and/or operational benefit, and Tier 3 concepts should be considered for longer term implementation as resources allow.
<table>
<thead>
<tr>
<th>Tier</th>
<th>Concept</th>
<th>Description</th>
<th>Service Hour Cost (Annual)</th>
<th>Change Type</th>
<th>Ease of Implementation</th>
</tr>
</thead>
</table>
| 1    | Muni 6 (6A) – Route 91 | Route split into 91W (19th Ave to Mission/San Jose) and 91E (Francisco & Richardson to West Portal, ParkMerced, or Balboa Park BART – see variants below)  
   *Muni 6A: Maintain existing route to terminate at West Portal (recommended)*  
   *Muni 6B: Modify route to terminate at Parkmerced via M-Ocean View route*  
   *Muni 6C: Terminate at Balboa Park* | Cost-neutral | Expanded coverage / operational improvement | Low (1 point)  
   *Muni 6C received 0 points due to the loss of coverage.* |
|      | Muni 2 – Route 38 | Increase frequency to 15-minute headway | 4,380 service hours | Frequency Increase | High (3) |
|      | Muni 7 – Route 94-L | Route extension to Fisherman’s Wharf (Jones & Jefferson) | 1,460 service hours | Expanded coverage | High (3) |
| 2    | Muni 4 – Route 91 | Route extension to 14-Mission at San Jose/Mission via Daly City BART | 1,460 service hours | Expanded coverage | Moderate (2) |
| 3    | Muni 1 – Route 14 | Increase frequency to 12-minute headway | 2,290 service hours | Frequency Increase | High (3) |
|      | Muni 5 – Route 91 | Route modification to serve M-Oceanview daytime route along Randolph instead of Ocean Ave to West Portal | Cost-neutral | Expanded coverage | Low (1) |

Note: Either Muni 6 or Muni 4/5 should be selected.
**Figure 2  AC Transit Tiered Concepts**

<table>
<thead>
<tr>
<th>Tier</th>
<th>Concept</th>
<th>Description</th>
<th>Service Hour Cost (Annual)</th>
<th>Change Type</th>
<th>Ease of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AC5 (5A) – Routes 800/802</td>
<td>Truncate the 800 at Berkeley Amtrak, extend 802 to Richmond BART and Hilltop Mall via San Pablo 5A: 30-minute daily frequency on 800, 60-minute daily frequency on 802 5B: 30-minute daily frequency on both 800 and 802 5C: 15-minute frequency on 800 weekends and 30-minute frequency on 800 weekdays; 60-minute frequency on 802 daily 5D: Concept variant 5A plus introduction of West Oakland stop in westbound direction</td>
<td>Cost-neutral (5A)</td>
<td>Expanded coverage / operational improvement</td>
<td>Moderate (2)</td>
</tr>
<tr>
<td></td>
<td>AC6 – Route 801</td>
<td>Reshuffle resources to provide 30-minute frequency on 801 full length of route on weekends</td>
<td>Cost-neutral</td>
<td>Frequency changes</td>
<td>High (3)</td>
</tr>
<tr>
<td>2</td>
<td>AC2 – Route 800</td>
<td>Extend route past Richmond BART to Hilltop Mall via 23rd Street 2A: Weekdays only 2B: Daily</td>
<td>1,430-2,000 service hours</td>
<td>Expanded coverage</td>
<td>Moderate (2)</td>
</tr>
<tr>
<td></td>
<td>AC3 – Route 800</td>
<td>Reallocation resources throughout the week to provide 30-minute frequency on 800 Monday-Saturday, 60-minute frequency on Sundays</td>
<td>1,248 service hours</td>
<td>Frequency changes</td>
<td>High (3)</td>
</tr>
<tr>
<td></td>
<td>AC4 – Route 800</td>
<td>Extend 800 to 24th Street BART in the Mission on weekdays</td>
<td>1,430 service hours</td>
<td>Expanded coverage</td>
<td>Moderate (2)</td>
</tr>
<tr>
<td>3</td>
<td>AC1 – Route 800</td>
<td>Increase frequency to 30 minutes on weekdays</td>
<td>4,290 service hours</td>
<td>Frequency Increase</td>
<td>High (3)</td>
</tr>
</tbody>
</table>

Note: if concept AC5 is implemented, AC1, AC2, and AC3 are null concepts as they are included in AC5. AC2 and AC3 should be considered if AC5 cannot be implemented. AC6 should be implemented together with AC3 or AC5 to maintain timed transfers between the 800 and 801 in Downtown Oakland.
### Figure 3  SamTrans Tiered Concepts

<table>
<thead>
<tr>
<th>Tier</th>
<th>Concept</th>
<th>Description</th>
<th>Service Hour Cost (Annual) (All presented at 60-minute frequency)</th>
<th>Change Type</th>
<th>Ease of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SamT1</td>
<td>Daily pilot of all-night service on the ECR between Daly City BART and Millbrae BART</td>
<td>2,920 service hours</td>
<td>Expanded coverage</td>
<td>High (3)</td>
</tr>
<tr>
<td></td>
<td>SamT3</td>
<td>Daily pilot of all-night service on the 120 route</td>
<td>4,380 service hours</td>
<td>Expanded coverage</td>
<td>High (3)</td>
</tr>
<tr>
<td>2</td>
<td>SamT2</td>
<td>Daily pilot of all-night service on the ECR between Transbay Terminal and Millbrae BART via Daly City BART (express on I-280)</td>
<td>4,380 service hours</td>
<td>Expanded coverage</td>
<td>Moderate (2)</td>
</tr>
</tbody>
</table>

Note: Only one variant of SamTrans concepts 1 or 2 should be selected.
CONCEPT DESCRIPTIONS

MUNI CONCEPT 1: 14-MISSION INCREASED FREQUENCY

The 14-Mission currently runs at 15-minute headways during the Owl period; this improvement concept increases the frequency to 12-minute headways during the Owl period.

Why It’s Needed

The 14-Mission is the most productive Owl period route for Muni. Fall 2015 ridership data shows that roughly 800 passengers ride the 14-Mission during the four-hour Owl period (1-5 AM), translating to 50 passengers per service hour and a cost of about $4/passenger. The 14-Mission also provides an important connection between San Francisco and Daly City/San Mateo County.

Trade-Offs

- Potential disruption of timed transfer with 91-Owl at Mission & Geneva and 24-Divisadero at Mission & 30th
- The 14-Mission already has the most frequent service of any all-nighter route, and resources could be used to advance coverage goals elsewhere

Resource Requirement

This frequency increase is estimated to require two additional vehicles per night, and an additional 2,920 hours of service hours per year. Assuming a service hour cost of $177, this would cost approximately $515,000 per year above current costs.

MUNI CONCEPT 2: 38-GEARY INCREASED FREQUENCY

The 38-Geary currently runs at 30-minute headways during the Owl period despite being one of the most productive late-night routes. This concept increases the 38-Geary’s frequency to every 15 minutes during the 1-5 AM Owl period.

Why It’s Needed

The 38-Geary is Muni’s second most productive route during the Owl period. Fall 2015 ridership data shows that about 420 passengers ride the 14-Mission during the four-hour Owl period (1-5 AM), translating to about 35 passengers per service hour and a cost of about $6/passenger. The 38-Geary is a trunk Muni route which is the agency’s most heavily-used during the daytime period (and one of the highest ridership bus routes in the country).

Trade-Offs

- Additional 38-Geary trips would not provide timed transfers with the 91-Owl at Geary & Park Presidio (but existing timed transfers twice per hour could remain)
- Resources could be used to advance coverage goals elsewhere

4 Source: National Transit Database 2015 Annual Agency Profile
Resource Requirement

This frequency increase is estimated to require three additional vehicles per night, and an additional 4,380 hours of service hours per year. Assuming a service hour cost of $196, this would cost approximately $858,000 per year above current costs.

MUNI CONCEPT 4: 91-OWL ROUTE MODIFICATION

The 91-Owl is one of the few Owl routes that does not mirror a daytime Muni route and provides circuitous transit coverage through a diverse and lengthy list of San Francisco neighborhoods. It currently runs at 30-minute headways and a round-trip cycle time of 200 minutes. The 91 currently terminates at Parkmerced/San Francisco State University in the southwest corner of route’s service area. This concept extends the route 1.2 miles south of this point to provide service outside of Daly City BART (without routing through the station) on John Daly Boulevard and to the 14-Mission terminus at San Jose/Mission Streets.

Why It’s Needed

The 91-Owl serves many neighborhoods in San Francisco and contributes to an important coverage goal of Muni’s Owl service. This route modification would add an estimated 30 minutes to the 91 route’s cycle time but would provide additional connection points between Muni and San Mateo County, including the SamTrans ECR route as recommended in SamTrans Concept 1. This seeks to address the significant worker population identified in the demand analysis both living in San Mateo County and working in San Francisco during the all-night period and vice versa.

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5 Source: National Transit Database 2015 Annual Agency Profile
Trade-Offs

- Resources could be used to advance coverage goals or improve service elsewhere.

Resource Requirement

This route extension is estimated to require one additional vehicle per night, and an additional 1,490 hours of service hours per year. Assuming a service hour cost of $196, this would cost approximately $286,000 per year beyond current costs.

MUNI CONCEPT 5: 91-OWL ROUTE MODIFICATION

The 91-Owl is one of the few Owl routes that does not mirror a daytime Muni route and provides circuitous transit coverage through a diverse and lengthy list of San Francisco neighborhoods. It currently runs at 30-minute headways and a round-trip cycle time of 200 minutes. One end of the 91 route currently terminates at West Portal Station via Ocean Ave. This concept re-routes the 91 to serve the Oceanview neighborhood via San Jose Ave. and Randolph St.

Why It’s Needed

The 91-Owl serves many neighborhoods in San Francisco and contributes to an important coverage goal for Muni Owl service. This route modification would add an estimated 10 minutes to the route’s cycle time. This modification would remove late night service on Ocean Ave.
through the Ingleside neighborhood and replace it in the Oceanview neighborhood via San Jose Ave. and Randolph St.

Based on the late night worker demand analysis and 91-Owl ridership data, the M-Oceanview alignment serves higher demand areas than the K-Ingleside alignment. Compared to the rest of the 91-route, existing ridership on the 91 between Balboa Park station and West Portal station is minimal. The average load on each trip between West Portal station and Balboa Park station is 4 passengers in inbound direction (to Parkmerced) and 5 passengers in outbound direction (to West Portal). Average total nightly ridership on this segment of the 91 in Fall 2015 was 22 passengers in the inbound direction and 30 passengers in the outbound direction. To mitigate any rerouting impacts, it is suggested that a timed transfer be pursued between the 91 and the L-Taraval at 19th & Taraval streets.

The demand analysis results for the recommended M-Oceanview segment are unexpected, because SFMTA reports that daytime ridership on this segment of the M-Ocean View is lower than for the K-Ingleside segment that would be replaced. Therefore, additional analysis and community outreach is warranted before proceeding with this recommendation.

**Figure 5  Muni Concept 5 Map**

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**Trade-Offs**

- Loss of service along Ocean Ave to West Portal (currently a low ridership portion of the route). Considerable outreach would be required to implement this loss of coverage.
- Loss of timed transfer at West Portal station with 94-L; suggest a timed transfer be made at Taraval & 19th Ave.
Resource Requirement

This route extension is estimated to be a cost-neutral modification, requiring no additional vehicles and no additional serve hours per night or year.

MUNI CONCEPT 6: 91-OWL SPLIT

The 91-Owl is one of the few Owl routes that does not mirror a daytime Muni route and provides circuitous transit coverage through a diverse and lengthy list of San Francisco neighborhoods. It currently runs at 30-minute headways and a round-trip cycle time of 200 minutes. This concept suggests splitting the existing 91-Owl route into two routes – 91W to serve a north-south corridor on the west side of San Francisco and 91E to provide a north-south connection on the east side.

Figure 6 Muni Concept 6 Map

91W: provides service primarily along 19th Ave between a northern terminus at California & 6th Ave and a southern terminus at via Mission/San Jose. This route could also be called the 28-Owl as it mimics much of the 28 route; using the same naming convention as a daytime route would improve the legibility of this all-night service.

91E: retains much of the 91’s existing east side route, terminating in the Marina, continuing through North Beach, downtown/Union Square, SoMa, Dogpatch, India Basin, Bayview/Hunter’s Point, and Balboa Park. Efforts have been made to mimic portions of the 30-Stockton and the KT-Third for legibility purposes. Variants to the southern-most termination point include options to continue via the existing 91 route to West Portal station, continue to ParkMerced via the M-Ocean View route, or to terminate at Balboa Park. These variants are shown in Figure 6.
Why It’s Needed

The 91-Owl serves many neighborhoods in San Francisco and contributes to an important coverage goal of Muni’s Owl service. The 91 requires the most service hours of all Muni routes (28 service hours per Owl period) due to its 200-minute round-trip cycle time. Long route cycle times also make it more challenging to operate service reliably. The 91 serves about 20 passengers per service hour at a cost of about $10/passenger.6

This route modification seeks to reduce the route’s cycle time and improve its productivity while retaining coverage. With a shorter cycle time for each portion of the split route, efforts can be made to better identify and meet timed transfers with other Owl routes together with improved OTP. This modification also addresses important goals described in previous concepts, such as the need to offer additional connections to San Mateo County via Daly City BART and the results of the demand and ridership analysis along Ocean Avenue, which shows minimal ridership and an average load of 4-5 passengers during the Owl period.

Trade-Offs

- Loss of ability to travel via one-seat ride between some neighborhoods on the eastern and western sides of the city that are not directly connected by other routes, such as from North Beach or the Marina to the Richmond or Sunset.
- Potential loss of or required rescheduling to achieve timed transfer with other routes, which will be important without the continuation through the Presidio.
- If variant 6B or 6C is selected, loss of coverage between Balboa Park and West Portal. See Muni concept 5 for discussion of this issue.

Resource Requirement

Currently, the 91 operates with 28 service hours per night and 10,220 service hours annually at $196 hourly service cost. It is estimated that the 91W /28 would require eight service hours per night and 2,920 service hours annually. Depending upon the variant selected for the 91E, the route will require either 5,840 or 7,300 service hours per year. This modification is expected to be either a cost-neutral modification or lower operating costs for the route.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Annual Service Hours</th>
<th>Service Hour Change</th>
<th>Cost Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current 91 Route</td>
<td>10,220</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>91 Split: 91W / 28 + 91E (to West Portal or ParkMerced)</td>
<td>91W: 2,920 91E: 7,300 Total: 10,220</td>
<td>Cost neutral</td>
<td>$0</td>
</tr>
<tr>
<td>91 Split: 91W / 28 + 91E (to Balboa Park)</td>
<td>91W: 2,920 91E: 5,840 Total: 8,740</td>
<td>Cost savings (-1,460 service hours)</td>
<td>-$286,000 (approximately)</td>
</tr>
</tbody>
</table>

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6 Source: SFMTA – Muni Ridership Data Fall 2015
MUNI CONCEPT 7: L-OWL ROUTE MODIFICATION

The L-Owl provides service between the Sunset neighborhood and downtown San Francisco via Market Street and Twin Peaks. This is a modified route based on the L-Taraval daytime route. The L-Owl currently terminates at Steuart and Market at the end of Market Street and runs at 30 minute headways. This route modification extends the L-Owl route along the Embarcadero (F-Market & Wharves route) to serve the Fisherman’s Wharf area and terminate at Jones and Jefferson Streets. This concept adds an additional 20 minutes of travel time to the L-Owl’s current round-trip cycle time.

Why It’s Needed

The Embarcadero corridor between Market Street and Fisherman’s Wharf was identified as a coverage gap through this study. The area is outside of a half-mile walk of any existing Owl service. The area was also identified to have significant concentrations of late night jobs both for San Francisco residents and those living in the region.

The L-Taraval currently terminates at the end of Market Street, offering an opportunity to extend and provide additional coverage to an area of significant late night demand for work and leisure trips. Following the existing F-Market & Wharves route provides legibility for users. The L-Owl serves about 30 passengers per hour at a cost of about $7/passenger. The L-Taraval extension is shown in Figure 7 against job density to show the prevalence of jobs along the Embarcadero corridor.

Figure 7 Muni Concept 7 Map
A disadvantage of operating transit service along the Embarcadero is that, since it runs along the waterfront, the route’s ridership catchment is almost entirely limited to one side of the route. The study considered meeting the needs of the Fisherman’s Wharf area through a route modification on the 91-Owl to serve the 8X daytime route north to Fisherman’s Wharf instead of extending the L. However, the team ultimately noted that this 1) would not address both service gaps and job demand along the full Embarcadero corridor, 2) would result in a loss of coverage in the Marina neighborhood on the 91, and 3) would eliminate a connection point to the Golden Gate Transit stop at the intersection of Richardson/Francisco.

**Trade-Offs**

- Resources could be used to advance coverage goals elsewhere.
- Longer route may reduce reliability.

**Resource Requirement**

To maintain 30 minute headways, this route extension is estimated to require one additional vehicle per night, and an additional 1,460 hours of service hours per year. Assuming a service hour cost of $196, this would cost approximately $286,000 per year beyond current costs.
AC TRANSIT CONCEPT 1: 800 INCREASED FREQUENCY - WEEKDAY

AC Transit’s Line 800 provides all-night service between San Francisco and Richmond BART via 14th & Broadway in Oakland. The 800 currently runs 20-minute frequency on weekends and 60-minute frequency on weekdays. This concept proposes a frequency increase to 30-minute headways on weekdays.

Why It’s Needed

The 800 provides the only transit connection between the East Bay and San Francisco after BART closes each night. Currently, the 800 is more productive on weekdays than on weekends, perhaps due to less frequent service and fewer service hours required. However, the ridership that does exist on weekdays suggests use by late night workers. Weekday 800 service serves about 23 passengers per hour at a cost of about $6 per passenger. The weekend 800 serves about 14 passengers per hour at a cost of about $10 per passenger. More frequent weekday service supports the study’s goal of prioritizing access for workers to/from San Francisco.

Trade-Offs

- Additional 800 trips would not provide timed transfers with all other All-Nighter routes, many of which run on 60-minute headways (transfers would remain once per hour)
- Resources could be used to expand coverage or achieve other goals

Resource Requirement

This frequency increase is estimated to require three additional vehicles per night and an additional 4,290 hours of service hours per year. Assuming a cost of $130 per service hour, this would cost approximately $558,000 per year beyond the resources currently required to run hourly 800 weekday service.


AC TRANSIT CONCEPT 2: 800 EXTENSION TO HILLTOP MALL

AC Transit’s 800 route provides all-night service between San Francisco and Richmond BART via 14th & Broadway in Oakland. The 800 currently runs 20-minute frequency on weekends and 60-minute frequency on weekdays. This concept extends the route north of Richmond BART to Hilltop Mall via 23rd St., with options to extend service only on weekdays or on weekends as well.

Why It’s Needed

Line 800 provides the only transit connection between the East Bay and San Francisco after BART closes each night. Late night worker demand analysis conducted as part of this study showed concentrations of late night worker home locations into areas of northern Richmond not currently served by Line 800. This concept extends Line 800 to Hilltop Mall and would utilize bus stops and facilities used by the existing AC Transit daytime route 72 on 23rd Street and San Pablo in Richmond.

Currently, the 800 is more productive on weekdays than on weekends due to 20-minute frequency offered on weekends. However, the ridership increase on weekends does not constitute such a frequency increase as ridership only approximately doubles on weekends on the full route.

Areas north of Berkeley constitute about 24% of the route’s ridership on weekdays and about 11% of ridership on Saturdays. Total ridership on the 800 north of Berkeley on weekdays is also greater than on Saturdays. Weekday 800 service serves about 23 passengers per hour at a cost of about $6 per passenger. Serving additional areas identified as high demand for late night workers supports the goals of late night transit as defined by this study.

Trade-Offs

- Lengthens existing route which already has reliability issues.
- Resources could be used to advance coverage goals elsewhere.
Resource Requirement

This route extension is expected to add about 40 minutes to the existing route’s round-trip cycle time, bringing it to 220 minutes. This concept does not include any frequency changes.

AC Concept 2A: This weekday extension will require an additional 1,430 service hours per year and approximately $186,000 per year above the 800’s current operating costs.

AC Concept 2B: Extend route daily for about 2,000 service hours or $260,000 per year.

AC TRANSIT CONCEPT 3: 800 FREQUENCY CHANGES WITH RESOURCE REALLOCATION

AC Transit’s Line 800 provides all-night service between San Francisco and Richmond BART via 14th & Broadway in Oakland. The 800 currently runs 20-minute frequency on weekends and 60-minute frequency on weekdays. This concept proposes to re-allocate existing resources between weekday and weekend service to provide a more even frequency throughout the week. This proposal includes 30-minute frequency Monday-Saturday and retains 60-minute frequency on Sundays.

Why It’s Needed

Currently, Line 800 is more productive on weekdays than on weekends. Weekday 800 service serves about 23 passengers per hour at a cost of about $6 per passenger. The weekend 800 serves about 14 passengers per hour at a cost of about $10 per passenger, and requires use of three times more service hours than weekday service to provide 20-minute frequency. Reducing frequency on weekends from 20-minute headways to 30-minute headways allows AC Transit to significantly improve frequency on weekdays at a limited cost to the program.

Trade-Offs

- There are more total riders on weekends than weekdays. With equal frequency, the weekends are likely to have better productivity than weekdays.
- Provides better service to weekday riders, a potential worker population, with a small disbenefit to weekend riders, who are more likely to be leisure travelers.
- There have been some reports of crowded weekend trips on the 800; however, AC Transit ridership data does not reveal crowding.
- Resources could be used to expand coverage or achieve other goals

Resource Requirement

This concept will require about 1,248 additional service hours, or about $162,000, per year.
AC TRANSIT CONCEPT 4: 800 EXTENSION TO 16TH/24TH MISSION BART - WEEKDAYS

AC Transit’s Line 800 route provides all-night service between San Francisco and Richmond BART via 14th & Broadway in Oakland. On weekends, Line 800 currently serves the Mission neighborhood first on westbound trips by using Highways 101/80 to travel express from the Bay Bridge to 24th & Mission, before making stops along Mission St. and Market St. This concept proposes to add service to the Mission neighborhood of San Francisco on weekdays at the current 60-minute frequency. Weekday service would use the routing employed by Line 800 on weekends.

Why It’s Needed

The Mission neighborhood was identified as a late night job-rich area within San Francisco for those living in the surrounding counties. Currently, the 800 is more productive on weekdays than on weekends. Weekday 800 service serves about 23 passengers per hour at a cost of about $6 per passenger. The weekend 800 serves about 14 passengers per hour at a cost of about $10 per passenger, though it requires use of three times more service hours than weekday service.

Trade-Offs

- Resources could be utilized to expand coverage elsewhere or achieve other goals.
- Westbound riders traveling to the Market Street corridor would detour through the Mission first, lengthening their trips.

Resource Requirement

This route extension on weekdays will bring the route’s cycle time to 200 minutes, consistent with the weekend schedule. This will require 1,430 additional service hours per year and a cost of $186,000 per year for 60-minute frequency.

If frequency was increased to every 30 minutes (AC Transit Concept 3), about 5,720 service hours would be required or $743,000 per year.
AC TRANSIT CONCEPT 5: 800 / 802 REROUTE PACKAGE

AC Transit’s Line 800 provides all-night service between San Francisco and Richmond BART via 14th & Broadway in Oakland. Line 802 provides all-night service from 14th & Broadway along San Pablo Ave to Berkeley Marina. The 800 currently runs at a 20-minute frequency on weekends and 60-minute frequency on weekdays. The 802 runs at 60-minute frequency.

This concept truncates Line 800 at Berkeley Amtrak and extends the 802 route to Hilltop Mall via Richmond BART (by following the 800 route north of University Avenue). Four variants are analyzed here: providing 30-minute frequency daily on the 800 and 60-minute frequency daily on the 802 is cost neutral, while variants improving frequency to 30 minutes on the 802 or providing 15-minute weekend frequency on the 800 require additional resources. Additionally, a variant to introduce a West Oakland stop in the westbound direction of the 800 is included as an added cost concept. See the Resource Requirement table below for more detail.

Why It’s Needed

Based on recent ridership data, the portion of Line 800 between Berkeley and San Francisco constitutes 76% of ridership on weekdays and 86% of ridership on weekends. This route redesign package allows for shorter, more frequent, and more reliable trips between Oakland and Berkeley and Oakland and Richmond. Both routes continue to serve 14th & Broadway in downtown Oakland. This concept also allows for more frequent service on weekends for the Richmond and El Cerrito areas.

The current 800 route has a round-trip cycle time of 180 minutes; with the recommended extension to Hilltop Mall, this increases to 220 minutes. Such a long route presents challenges with respect to timed transfers and the provision of frequent service due to vehicles required. A truncated 800 route would allow for better on time performance and reliability with respect to timed transfers at 14th & Broadway.

Additional Study – Dual Direction Stop in West Oakland

Currently, the 800 only stops in West Oakland in the eastbound direction, while in the westbound direction the service runs express from downtown Oakland to San Francisco via freeways. Thus, passengers cannot travel to West Oakland from elsewhere in the East Bay without going to San...

Figure 10 AC Transit Concept 5 Map

Richmond

Berkeley

Oakland

Truncate 800 at Berkeley Amtrak

Extend 802 north, to Richmond BART and Hilltop Mall

*Late-Night defined as those who leave for work between 4PM and 6AM

Data Sources: 2014 ACS Survey, CTRIP 2010
Francisco and back, while riders traveling from West Oakland to San Francisco must first ride to
downtown Oakland. Adding a westbound stop in West Oakland would provide direct westbound
service to and from the neighborhood while improving service legibility by providing the same
east- and west-bound service pattern.

Adding a westbound 800 stop in West Oakland to the 800/802 reroute proposal may not be
possible while keeping the overall package cost-neutral. A cycle time of 120 minutes is assumed
for the weekday route of the 800 proposed in Concept 5 (between Van Ness and Market Street in
SF and Berkeley Amtrak), based on the scheduled travel time of 107 minutes for this portion of
the current 800 in both directions. Additional time for a West Oakland stop may not allow for
layover time within the 120-minute assumed cycle time for the route, and could therefore require
adding another bus to the route. The estimated service hour cost of adding a West Oakland stop
(adding an estimated 10 minutes to current assumed cycle times) in the westbound direction is
shown as Concept Variant 5D in the Resource Requirement table below. However, given recent
AC Transit changes in required layover time, another bus may be needed to operate the existing
800 route and/or this reroute proposal, possibly resulting in available time that could be used to
add a westbound West Oakland stop. More study will be required by AC Transit service planning
staff to confirm the assumed cycle times are consistent with current and future labor and layover
requirements, etc.

**Trade-Offs**

- Eliminates one-seat ride from San Francisco to areas north of Berkeley (e.g. Richmond).
  Also significantly reduces weekend frequency north of Berkeley.
- Cost-neutral option reduces frequency on 800 to 30 minutes on weekends but increases
to 30 minutes on weekdays.
- Resources for added cost options could be utilized to expand coverage elsewhere or
achieve other goals.

**Resource Requirement**

Potential frequency and resource packages include:

<table>
<thead>
<tr>
<th>Concept</th>
<th>Variant</th>
<th>Cost Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC 5A</td>
<td>800: 30-min frequency daily&lt;br&gt;802: 60-min frequency daily</td>
<td>Cost-neutral (~52 service hours per year)</td>
</tr>
<tr>
<td>AC 5B</td>
<td>Weekday and weekend: 30-minute frequency on 800 and 802</td>
<td>+4,264 service hours annually (about $554,000)</td>
</tr>
<tr>
<td>AC 5C</td>
<td>Weekday: 30-minute frequency on 800, 60-minute frequency on 802&lt;br&gt;Weekend: 15-min frequency on 800; 60-minute frequency on 802</td>
<td>+2,860 service hours annually (about $372,000)</td>
</tr>
<tr>
<td>AC 5D</td>
<td>Concept Variant 5A plus introduction of a westbound West Oakland stop</td>
<td>+2,106 service hours annually (about $274,000)</td>
</tr>
</tbody>
</table>
AC TRANSIT CONCEPT 6: 801 RESOURCE REALLOCATION

AC Transit’s Line 801 provides all-night service between 14th & Broadway in Oakland and Fremont BART station. The 801 currently provides 60-minute frequency on weekdays; on weekends, 20-minute headways serve the route until Bay Fair BART and only one trip per hour runs south of Bay Fair to Fremont BART. This concept reallocates existing resources to provide 30-minute service the entire length of the 801 Route on weekends. If AC Transit Concepts 3 or 5 are implemented, timed transfers would remain possible as consistent 30-minute frequencies would be provided.

Why It’s Needed

Analysis of ridership on Line 801 shows that significant ridership occurs south of Bay Fair BART Station throughout the all-night period. On weekends, the runs with the highest ridership consistently are those that continue south to Fremont BART. The load at Bay Fair BART is between 14–26 passengers on northbound trips and 12–22 passengers on southbound trips. Fremont BART has second highest ridership activity on weekdays and is the third highest ridership stop on weekends.

Despite additional service hours used to provide 20-minute frequency on weekends, productivity on the 801 on weekdays and weekends is fairly consistent with 19 passengers per hour on weekdays and 17 passengers per hour on weekends. Costs per passenger are $7 per passenger on weekdays and $8 per passenger on weekends.

Trade-Offs

- Reduces frequency slightly in order to provide better service south of Bay Fair BART.
- If frequency changes were not made on the 800, timed transfer and connection opportunities between the 800 and 802 on weekends would be disrupted.

Resource Requirement

This is essentially a cost-neutral concept that is estimated to require about 200 additional service hours per year.
**SAMTRANS CONCEPT 1: ECR PILOT**

SamTrans’ ECR route currently stops running around 1 AM each day of the week. SamTrans concept 1 introduces a daily pilot of all-night ECR service between Daly City BART and Millbrae BART stations. Costs are provided also for a weekend-only pilot and pilots at both 30- and 60-minute frequency, though a pilot for 60-minute frequency is the preferred alternative with limited resources.

**Why It’s Needed**

San Mateo County, particularly the Daly City area, was identified to have high potential demand for late night transit due to the presence of late night workers with jobs in San Francisco; approximately 2,500 Daly City residents have late night jobs in San Francisco according to this study’s demand analysis. In addition, approximately 45% of all late night work trips to San Francisco have one trip end in San Mateo County. Currently, SamTrans’ only all-night route is the 397, which provides service along US 101 and to the western part of San Mateo County. There is no all-night service to Daly City or along the El Camino Corridor north of Millbrae BART. The ECR provides a connection to the Muni 14-Mission, and could also connect with an extended Muni 91 (Muni concept 4 or 6) meeting the need for intercounty trips.

Analysis of ridership on the ECR’s first and last runs of the day shows significant ridership on weekend shoulder runs, particularly the first trips of the day on both weekdays and Saturdays before BART and Caltrain begin running. The ECR’s first trips have an average of 64 passengers on Saturdays and 35 passengers on weekdays. Using a service hour cost of $99/service hour brings the cost per passenger of the first trips on Saturdays to about $3 and $2, respectively.

**Trade-Offs**

- Resources could be utilized to expand coverage elsewhere or achieve other network goals.
Resource Requirement

Operating the ECR between Daly City BART and Millbrae BART is estimated to require a 90-minute cycle time (round-trip travel time plus layover/recovery). For daily ECR all night service at 60-minute frequency, 2,920 annual service hours are required, or about $289,000 per year. For 30-minute frequency, the cost comes to about $433,000 per year.

Weekend pilot alternative: To operate Route ECR at 60-minute headway between 1-5 AM on Friday and Saturday nights requires an estimated 8 service hours per night or 832 service hours per year. At SamTrans’ contracted rate of $99/hour, this would cost approximately $82,368. Increasing to 30-minute frequency would cost $124,000 per year.

SAMTRANS CONCEPT 2: ECR PILOT TO DOWNTOWN SF

SamTrans’ ECR route currently stops running around 1 AM each day of the week. The current Route ECR route’s northern terminus is Daly City BART station. This concept introduces a daily pilot of ECR service between Millbrae BART and downtown San Francisco (Temporary Transbay), via Daly City BART. The route would use El Camino Real and I-280 to access downtown SF. Costs are also presented for a weekend-only pilot and for both 30- and 60-minute frequency, though a pilot for 60-minute frequency is the preferred alternative with limited resources.

Why It’s Needed

San Mateo County, particularly the Daly City area, was identified to have high potential demand for late night transit due to the presence of late night workers with jobs in San Francisco. Currently, SamTrans’ only all-night route is Route 397, which provides service along 101 and the western part of San Mateo County. There is no all-night service to, from, or within Daly City or western San Mateo County.

Analysis of ridership on the ECR’s first and last runs of the day shows significant ridership on weekend shoulder runs, particularly the first trips of the day on Saturdays. Extending the ECR into downtown SF recognizes the worker population residing in San Mateo County but working in Union Square, SoMa, Fisherman’s Wharf, and other job-rich SF areas during the late night period. Providing a
one-seat ride would improve both convenience and security.

**Trade-Offs**

- Resources could be utilized to expand coverage elsewhere or achieve other network goals.

**Resource Requirement**

Operating the ECR between downtown SF and Millbrae BART is estimated to require a 140-minute cycle time (round-trip travel time plus layover/recovery). To operate Route ECR at 60-minute headway between 1-5 AM daily requires an estimated 12 service hours per night or 4,380 service hours per year. At SamTrans’ contracted rate of $99/hour, this would cost approximately $434,000 per year. The cost for 30-minute frequency is about $723,000 per year.

*Weekend pilot alternative:* A weekend-only pilot of the same route at 60-minute frequency would require 1,248 service hours or about $124,000 per year. The cost for 30-minute frequency on weekends is about $206,000 per year.

**SAMTRANS CONCEPT 3: ROUTE 120 PILOT**

SamTrans’ Route 120 currently stops running between approximately 12:00 – 6:00 AM each day of the week. Route 120 serves both Colma and Daly City BART stations, providing connections to Route ECR and serving extensive parts of Daly City. This concept introduces a daily pilot of all-night 120 service. Additionally, costs are provided for a weekend-only pilot and for both 30- and 60-minute frequency, though a pilot for 60-minute frequency is the preferred alternative with limited resources.
Why It’s Needed
San Mateo County, particularly the Daly City area, was identified to have high potential demand for late night transit due to the presence of late night workers with jobs in San Francisco. Currently, SamTrans’ only all-night route is Route 397, which provides service along 101 and the western part of San Mateo County. There is no all-night service to, from, or within Daly City or western San Mateo County.

SamTrans Route 120 is one of the most productive routes during daytime hours. This suggests a transit dependent or transit friendly population; furthermore, demand analysis conducted as part of this study found significant populations of late night workers within Daly City. This study’s technical analysis considered late night workers with jobs in San Francisco; workers with jobs within San Mateo County may be an additional source or ridership.

Trade-Offs
- Resources could be utilized to expand coverage elsewhere or achieve other network goals.

Resource Requirement
Operating the 120 Route at 60-minute headways during the 12-6 AM period daily would require two vehicles and 12 service hours per night and 4,380 service hours per year. At SamTrans’ contracted rate of $99/hour, this would cost approximately $434,000 per year. Daily service at 30-minute frequency would cost about $650,000 annually.

Weekend pilot alternative: Introducing a weekend-only pilot of the 120 route would require about 1,248 annual service hours for 60-minute frequency or $124,000 per year. Increased frequency to 30-minute intervals would cost about $186,000 per year.
ATTACHMENT A: INITIAL IMPROVEMENT CONCEPT LIST

The following table presents the initial improvement concepts as developed following the demand and current service analyses, including whether they were advanced for refinement.

<table>
<thead>
<tr>
<th>Route / Service Gap</th>
<th>Cost Neutral Concepts</th>
<th>Added Cost Concepts</th>
<th>Rationale</th>
<th>Advanced for Refinement?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muni 14 Owl</td>
<td>Increase frequency</td>
<td>Most productive Muni owl route.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Muni 38 Owl</td>
<td>Increase frequency</td>
<td>Second most productive Muni Owl route with same frequency (30 min) as less productive and lifeline routes.</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Muni 91 Owl</td>
<td>Route modification: detour on California (eliminating Presidio)</td>
<td>Potential to serve additional market in Inner Richmond and at Sutter CPMC California campus</td>
<td>Yes; eliminated due to operator feedback, future closure of CPMC California campus</td>
<td></td>
</tr>
</tbody>
</table>
|                     | Route modification: extend south to 14-Mission terminus (Mission/San Jose) via Daly City BART | • Currently no connections south of Parkmerced toward San Mateo County  
• Potential to serve additional markets and connect to SamTrans ECR and BART | Yes       |
<p>|                     | Route modification: maintain non-continuous circular route structure but modify West Portal to Balboa Park BART leg to take M route along Broad/Randolph and terminate at Parkmerced | The average load between West Portal station and Balboa Park station is 4 passengers in inbound direction and 5 passengers in outbound direction. To mitigate any rerouting impacts, it is suggested that a timed transfer be pursued between the 91 and 14. | Yes       |</p>
<table>
<thead>
<tr>
<th>Split into two routes:</th>
<th>Current route:</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 91W - from Presidio/California to Parkmerced or Daly City</td>
<td>• Long, expensive</td>
<td></td>
</tr>
<tr>
<td>• 91E - from Marina to Parkmerced, West Portal, or Balboa Park</td>
<td>• Unreliable due to length; impacts ability to make timed transfers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Serves coverage goal</td>
<td></td>
</tr>
<tr>
<td>Muni L Owl</td>
<td>Extend along F-Markets &amp; Wharves route (Embarcadero to Fisherman’s Wharf)</td>
<td></td>
</tr>
<tr>
<td>Muni - Overall</td>
<td>Late night job cluster without half-mile coverage from existing Muni owl route</td>
<td></td>
</tr>
<tr>
<td>AC Transit 800</td>
<td>Increase frequency between SF and Oakland/Berkeley, decrease frequency north to Richmond on weekends (e.g. 20/60 vs. 20/20 today)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Reallocate service hours/resources between weekday and weekend (e.g. 20/60 weekdays; 30/60 weekdays)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>60 min freq weekday, 20 min freq weekends leads to drastically reduced productivity on weekends</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase weekday frequency to 30 min weekday</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Currently route is more productive on weekdays</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Extend to Hilltop Mall north of Richmond</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Demand pockets in North Richmond areas, consistent ridership to Richmond and EI</td>
<td></td>
</tr>
<tr>
<td><strong>AC Transit 800/802 Concept Package</strong></td>
<td><strong>AC Transit 801</strong></td>
<td><strong>AC Transit 840</strong></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Truncate 800 in Berkeley and terminate at Berkeley Amtrak (current 802 terminus); Extend 802 to Richmond BART or beyond along San Pablo Ave (current 800 route). Provides daily 30-minute service on 800 through Oakland and Berkeley, and reallocates the less productive portion of 800 to the 802 with 60 min frequency 7 days/week</td>
<td>Reallocate weekend service hours/ resources between segments of the route (e.g. 30 min frequency entire route length vs. 20/60 today)</td>
<td>Extend to reach transit demand pocket south of Eastmont Transit Center</td>
</tr>
<tr>
<td>Introduce West Oakland stop in westbound direction of Route 800.</td>
<td>Increase frequency south of Bay Fair BART station</td>
<td>Current pocket of low income late night workers (total of 55 workers but 66% low income in tract)</td>
</tr>
<tr>
<td>Serves lower productivity corridor with 60 minute service 7 days/week and higher productivity corridor with 30 min service daily</td>
<td>Fremont BART (south of Bay Fair BART) has second highest ridership activity on weekdays, third highest on weekends</td>
<td>No; deprioritized based on lack of driver facilities at layover site</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>No; deprioritized due to service planning concerns from AC Transit</td>
</tr>
<tr>
<td>AC Transit 851</td>
<td>Truncate north portion of route in downtown Oakland, MacArthur BART, or Rockridge BART and reallocate resources to other routes for increased frequency or OTP</td>
<td>Three All Nighter routes making Oakland-Berkeley connection; 851 is least productive and has very little activity along Broadway/College</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>AC Transit All-Nighter overall</td>
<td>Regularly evaluate OTP and adjust schedules/add buses (added cost) to ensure OTP; consider schedule and route consistency with daytime routes to ensure legibility for riders. E.g. 802 has 30% OTP – explore reason for this? Dependent upon transfers? Consider updating running times to account for riders?</td>
<td>Yes (general recommendations)</td>
</tr>
<tr>
<td>SamTrans ECR</td>
<td>Pilot weekend all night service between Daly City BART/14-Mission terminus and Millbrae BART.</td>
<td>Provide service through Daly City and other home origin clusters in western part of county Potential to meet dual direction demand Strong ridership on shoulder runs on weekends; stop-level ridership would be needed to identify where demand exists on route.</td>
</tr>
<tr>
<td></td>
<td>Pilot all-night service every day of the week on ECR between Millbrae and Daly City BART.</td>
<td>Provide service through Daly City and other home origin clusters in western part of county Potential to meet dual direction demand</td>
</tr>
<tr>
<td></td>
<td>Pilot weekend all night service on ECR between Millbrae BART and downtown San Francisco running express on Highway</td>
<td>Provide service through Daly City and other home origin</td>
</tr>
<tr>
<td>Route</td>
<td>Description</td>
<td>Improvement Details</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>SamTrans 120</td>
<td>280 from Daly City BART, serving Powell BART station and Transbay Terminal in downtown SF.</td>
<td>clusters in western part of county. Potential to meet dual direction demand. Strong ridership on shoulder runs on weekends. Provide one-seat ride from downtown SF to Daly City.</td>
</tr>
<tr>
<td>SamTrans overall</td>
<td>Extend service span or introduce all night service as a pilot with ECR</td>
<td>Meet local demand in Daly City and provide connections to ECR, Muni at Daly City BART from residential neighborhoods</td>
</tr>
<tr>
<td>Golden Gate 101 OR 70 OR 30</td>
<td>Add additional hourly service to close time gap and provide all-night service; consider short run to/from San Rafael Transit Center Consider utilizing resources to run intra-Marin/Sonoma late night service and meet intra-Marin/Sonoma demand instead.</td>
<td>Provides lifeline service</td>
</tr>
</tbody>
</table>
ATTACHMENT B: SERVICE EVALUATION AND PLANNING FRAMEWORK

The following matrix illustrates the measures, guidelines, and data sources to be considered for each goal and service attribute.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Service Attribute</th>
<th>Type</th>
<th>Measure</th>
<th>Guideline/Standard</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coverage</td>
<td>System Level</td>
<td>Meet minimum standards; serve key destinations and origin areas of high demand, with focus on disadvantaged communities</td>
<td>Local - All neighborhoods within 1/2 mile of transit stop&lt;br&gt;Regional - Serve areas with highest travel demand density to/from San Francisco (O/D analysis)</td>
<td>Service Plans, GIS&lt;br&gt;CTPP, Census demographic data</td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>System Level</td>
<td>Meet minimum standards; increase based on demand</td>
<td>Local - All routes meet Muni minimum frequency standards based on typology (20 min Rapid &amp; Local lines, 30 min for Grid service)&lt;br&gt;Regional - 60 min or better</td>
<td>Service Plans&lt;br&gt;Service Plans</td>
<td></td>
</tr>
<tr>
<td>Span</td>
<td>System Level</td>
<td>Ensure 24-hour transit service on Owl network (span varies by type of day - Su-Th, Fr-Sa)</td>
<td>Local - All night operation for all Owl routes (existing/planned)&lt;br&gt;Regional - All night operation for all Owl routes (existing/planned). Add early/late trips on routes where all-night not feasible.</td>
<td>Service Plans&lt;br&gt;Service Plans</td>
<td></td>
</tr>
<tr>
<td>Stop Spacing</td>
<td>System Level</td>
<td>Meets existing standards</td>
<td>Local - Follows Muni local stop spacing standards&lt;br&gt;Regional - Follows local stop spacing standards of daytime overlay when operating locally, with exceptions on express segments</td>
<td>Service Plans&lt;br&gt;Service Plans</td>
<td></td>
</tr>
</tbody>
</table>

Available - Provide frequent, accessible, and affordable transportation to/from and within San Francisco, especially for low-income and disadvantaged communities.
<table>
<thead>
<tr>
<th>Measure</th>
<th>Service Attribute</th>
<th>Type</th>
<th>Measure</th>
<th>Guideline/Standard</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Productive – Optimize existing services and ensure that with added</td>
<td>Identify bottom 25% and top 25%. Consider lowest-performing for route changes,</td>
<td>Performance data from operators</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>service coverage is commensurate with demand</td>
<td>highest for service increases.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Route Level</td>
<td>Route level/segment level/stop level ridership</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Productive – Optimize existing services and ensure that with added service coverage is commensurate with demand</td>
<td>Productivity</td>
<td>Route Level</td>
<td>Route level/segment level/stop level ridership Passenger per revenue vehicle hour/trip Cost per passenger</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Route Level</td>
<td>On time performance</td>
<td>85% (-1.4 standard or based on operator-specific standard if different)</td>
<td>Performance data from operators</td>
</tr>
<tr>
<td>On Time Performance</td>
<td>Route Level</td>
<td>Route Level</td>
<td>On time performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Route Level</td>
<td>Missed trips</td>
<td>Local - 98.5% of scheduled trips delivered</td>
<td>Performance data from operators</td>
</tr>
<tr>
<td>Trip Delivery</td>
<td>Route Level</td>
<td>Route Level</td>
<td>Missed trips</td>
<td>Regional - 100% of scheduled trips delivered</td>
<td>Performance data from operators</td>
</tr>
<tr>
<td></td>
<td>System Level</td>
<td>System Level</td>
<td>Maximize opportunities for timed transfers and minimize transfer wait</td>
<td>Maximize opportunities for timed transfers, and consider connection opportunities with other routes and minimizing transfer wait times when recommending headways.</td>
<td>Service Plans</td>
</tr>
<tr>
<td>Transfers</td>
<td></td>
<td></td>
<td>Maximize opportunities for timed transfers and minimize transfer wait</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Route Level</td>
<td>Route Level</td>
<td>Service design</td>
<td>Direct routing that follows major daytime transit corridors where possible</td>
<td>Service Plans</td>
</tr>
<tr>
<td>Route Directness Route Alignment</td>
<td>Route Level</td>
<td>Route Level</td>
<td>Service design</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>System Level</td>
<td>System Level</td>
<td>Network has clear and logical timed transfers</td>
<td>Clear and logical timed transfer points</td>
<td>Service Plans</td>
</tr>
<tr>
<td>Transfers</td>
<td></td>
<td></td>
<td>Network has clear and logical timed transfers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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