Treasure Island Demand Model Analysis Report

For years 2025, 2030, and 2035



July 2019 Update

Final_Travel Demand Report 2019

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KEY TERMS

- AM Peak (AM)– Morning peak hours from 6 am to 9 am.
- Midday (MD) Midday hours from 9 am to 3:30 pm
- PM Peak (PM) Afternoon peak hours from 3:30 pm to 6:30 pm
- Evening (EV) Evening hours from 6:30 pm to 3 am
- Early AM (EA) represents early morning hours from 3 am to 6 am
- Mainland San Francisco + Others: North Bay, South Bay, South West Bay
- East Bay (EB): All destinations east of Treasure Island
- DA = drive alone
- SR2 = shared ride 2 (driver + passenger)
- SR3+ = shared ride 3+ (driver + 2 or more passengers)

EXECUTIVE SUMMARY

The 2019 Treasure Island travel demand model report documents Treasure Island residents, employees and visitors travel pattern for the years 2025, 2030 and 2035. Treasure Island Mobility Management Agency (TIMMA) used the San Francisco Chained Activity Modeling Process (SF-CHAMP) model to estimate travel behavior responses to transportation program policy assumptions. This demand model run includes an updated small boat ferry service plan and vessel size and an updated toll policy.

The model outputs summarized in this report include:

- **Person on/off trips** include the number of trips made by Treasure Island travelers to and from Treasure Island and other destinations, and the mode share between automobile and transit.
- **Driving Person Trips** include the number of driving alone or carpooling trips to/from Treasure Island.
- Vehicle volume and tolled trips include the total number of vehicles and tolled vehicles by time period.
- **Transit ridership** includes the number of riders on Treasure Island transit lines Muni, AC Transit and small boat ferry.

Based on the model outputs, key findings include:

- 1. For all model years, person on/off trips are higher during an average weekend than an average weekday.
- 2. For all model years, weekday auto mode share is higher than 50%. More specifically, in 2035, the auto mode share during AM peak period is the lowest, **52%**.

Treasure Island Mobility Management Agency

- 3. For all the model years, an average weekend auto mode share is higher than an average weekday mode shares (by about 19% to 22%) due to increase in residents driving and the additional special events visitors who choose to drive.
- 4. For all model years, shared rides or carpooling during an average weekend is higher than an average weekday.
- 5. For all model years, Muni ridership is higher than AC Transit and ferry. The ferry ridership is the second highest.

INTRODUCTION

This report summarizes the latest results from the 2019 Treasure Island travel demand model for the years 2025, 2030, and 2035. This demand forecast travel anticipated the captures behavior changes travel based on the redevelopment of Treasure Island at an incremental growth rate. The forecast years are chosen based on the San Francisco Chained Activity Modeling Process (SF-CHAMP) model increment years which is



Figure 1 - Aerial rendering of Treasure Island at full buildout in

every five years. SF-CHAMP is a regional travel demand model that is used to assess the impacts of land use, socioeconomic, and transportation system changes on the performance of the local transportation system. SF-CHAMP was developed to reflect San Francisco's unique transportation system and socioeconomic and land use characteristics. It uses San Francisco residents' observed travel patterns, detailed representations of San Francisco's transportation system, population and employment characteristics, transit line boardings, roadway volumes, and the number of vehicles available to San Francisco households to produce measures relevant to transportation and land use planning. Using future year transportation, land use, and socioeconomic inputs, the model forecasts future travel demand. SF-CHAMP is used in multiple local and regional projects. Those projects include ConnectSF, Better Market Street, San Francisco Parking Supply and Utilization Study, TNC and Congestion, Central Subway, Geary Bus Rapid Transit and MTC Core Capacity Transit Study. For more information, please visit https://www.sfcta.org/sites/default/files/2019-03/executivesummary.pdf.

The model year 2025 represents an early growth scenario where about 25% of the development will be constructed, the model year 2030 represents a later growth year where

about 60% of the development will be constructed, and the model year 2035 represents full buildout. Because of the unique location of Treasure Island—in between the major corridors of San Francisco and East Bay, which are directly connected to the San Francisco-Oakland Bay Bridge (SFOBB)—unique travel patterns and land use policies are expected to materialize on Treasure Island over the next 15-20 years.

PURPOSE

The 2019 travel demand forecasts will be used to make fiscally and operationally feasible decisions in anticipation of the growth on Treasure Island. The forecasts will guide policy decisions regarding new Treasure Island specific transit service plans, affordability programs, parking policy, toll rates, and toll hours of service. The forecasts will also be used to determine the escalation of different transit services, tolling rates, and affordability program policies from opening date to full buildout. This 2019 travel demand forecast includes updated tolling policies and transit service assumptions.

The purpose and use of the three previous model runs and the newest model runs are listed below:

- **Round 1 (2015)** Initial Model Run for full-buildout year, 2030. These projections were used to identify the initial Treasure Island toll policy recommendations adopted by the TIMMA Board in July 2016.
- Round 2 (2016) 2015, 2020, 2025, and 2030. This model run included a weekend
 model run with separate special event demand for TI. The purpose of this model run
 was to test different alternative toll policy options, to propose a future transit service
 plan and to develop options for the affordability program for Treasure Island. These
 projections were also used to identify the initial Treasure Island toll policy
 recommendations adopted by the TIMMA Board in July 2016.
- Round 3 (2017) 2025 and 2030. This model run included updated land use assumptions and transit service assumptions. The purpose of this model run was to incorporate a revised pace of land-use buildout that included updated household projections for years 2025 and 2030. This model run also included revised commercial space and number of employees based on the updated land use schedule for years 2025 and 2030. The full-buildout assumptions are still the same as round 2 but year full-buildout year changed from 2030 to year 2035. This run also reflected the toll policy recommendations adopted in 2016.
- **Round 4 (2019)** 2025, 2030 and 2035. This current model run includes updated tolling policies (directions, hours of operation and rates) and transit service assumptions, based on TIMMA Board direction in November and December 2018. This model run assumes tolls for vehicles in all directions, with a 50% discount for those traveling from

East Bay who already paid a toll at the Bay Bridge Toll Plaza. The changes in the transit service assumptions include increased ferry service frequencies and vessel size (changed to a small ferry boat). This model run also presents the full buildout year 2035.

DEMAND MODEL INPUTS

The following figures, tables, and charts show detailed model input data:

Figure 2: Planned public transportation improvements for Treasure Island redevelopment

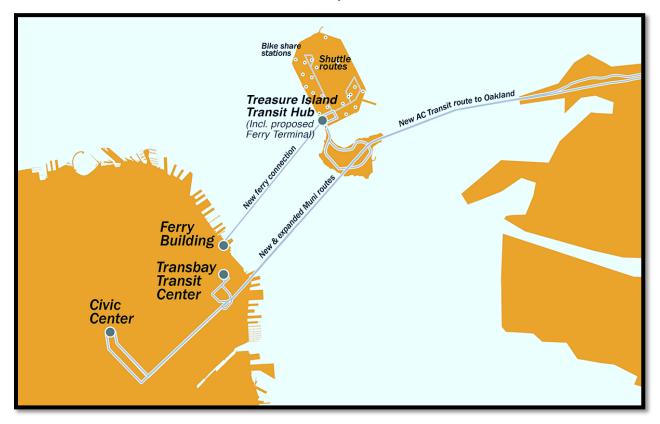
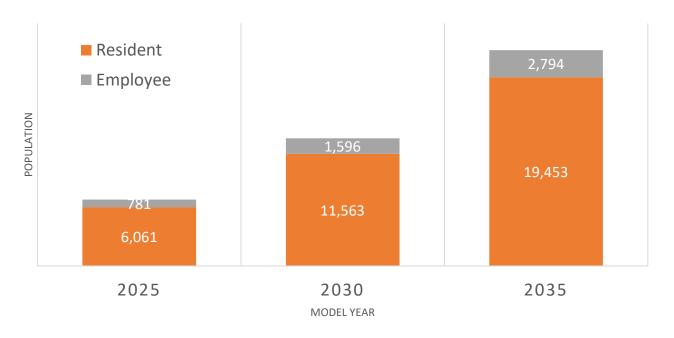


Figure 3: Population inputs for residents and employees along with corresponding household metrics



Model Year	2025	2030	2035
Households	2,238	4,569	8,000

Source: TIDA and TICD land-use projections

Table 1: Tolling and Transit Hours of Operation for All Model Years

,								
	Weekday Hours of Operation*							
Demand		Proposed Program Hours of Operation						
Time Period		(CHAMP) Model Hours	Treasure Island Tolling	AC Transit	Muni	Small Boat Ferry	Bay Bridge Tolling	
AM Peak	АМ	6:00AM-9:00AM	5:00AM- 10:00AM	5:00AM- 9:00AM	5:00AM- 9:00AM	6:00AM- 10:00AM	5:00AM- 10:00AM	
Midday	MD	9:00AM-3:30PM	10:00AM- 3:30PM	9:00AM- 3:30PM	9:00AM- 3:30PM	10:00AM- 3:30PM	10:00AM- 3:00PM	
PM Peak	PM	3:30PM-6:30PM	3:00PM- 7:00PM	3:30PM- 6:30PM	3:30PM- 6:30PM	3:30PM- 6:30PM	3:00PM- 7:00PM	
Evening	EV	6:30PM-3:00AM	No Toll	6:30PM- 10:00PM	6:30PM- 3:00AM	No Service	7:00PM- 5:00AM	
Early AM	EA	3:00AM-6:00AM	No Toll	No Service	3:00AM- 5:00AM	No Service		
	Weekend Hours of Operation**							
			110415 01	Operation				
			110013 01			s of Operation		
Time Period		Demand (CHAMP) Model Hours	Treasure Island Tolling			s of Operation Small Boat Ferry*	Bay Bridge Tolling	
Time Period	AM	Demand (CHAMP) Model	Treasure Island	Proposed P	rogram Hour	Small Boat	Bay Bridge	
	AM MD	Demand (CHAMP) Model Hours	Treasure Island Tolling 8:00 AM –	Proposed P AC Transit 5:00AM-	Muni 5:00AM-	Small Boat Ferry*	Bay Bridge Tolling 5:00AM-	
AM Peak		Demand (CHAMP) Model Hours	Treasure Island Tolling 8:00 AM – 9:00 AM 9:00AM-	AC Transit 5:00AM- 9:00AM	Muni 5:00AM- 9:00AM 9:00AM-	Small Boat Ferry* No Service 9:00AM-	Bay Bridge Tolling 5:00AM- 10:00AM 10:00AM-	
AM Peak Midday	MD	Demand (CHAMP) Model Hours 6:00AM-9:00AM 9:00AM-3:30PM	Treasure Island Tolling 8:00 AM – 9:00 AM 9:00AM- 3:30PM	Proposed P AC Transit 5:00AM- 9:00AM 9:00AM- 3:30PM	Frogram Hour Muni 5:00AM- 9:00AM- 9:00AM- 3:30PM	Small Boat Ferry* No Service 9:00AM- 3:30PM-	Bay Bridge Tolling 5:00AM- 10:00AM 10:00AM- 3:00PM	

^{*}No ferry service planned for the 2025 off-peak weekday

Table 1 shows weekday and weekend hours of operation for modes that will provide on/off Treasure Island access in years 2025, 2030, and 2035. This report summarizes the demand output results produced by the SF-Champ 5 modeling tool.

The hours of operation in SF-CHAMP are different than the proposed program's hours of operation because SF-CHAMP 5 is not able to break time periods from the specified five-time periods. A separate financial model converts the SF-CHAMP model's five-time period outputs into the proposed hours of operation for each mode to support further calculations such as

^{**}No ferry service planned for the 2025 weekend

estimating annual program cost. Note that in the rest of the report, SF-CHAMP's hours of operation will be discussed, not the proposed program hours of operation.

Table 2: Transit Service Frequency Assumptions (minutes)

		SF Muni			A.C. T.	i+	C-mall B		
Model Year	Time Period	Muni	Bus 25	Muni Bus 109		5 Muni Bus 109 AC Transit		Small Boat Ferry	
		Weekday	Weekend	Weekday	Weekend	Weekday	Weekend	Weekday	Weekend
	EA	30	20				0	0	
	AM	10	20				30	30	
2025	MD	20	20	NO SE	RVICE	30	30	0	NO SERVICE
	PM	12	20			30	30	30	SERVICE
	EV	20	20			30	30	0	
	EA	20	20			0	0	0	0
	AM	7.5	20		NO SERVICE		20	30	0
2030	MD	15	20	NO SE			20	30	30
	PM	7.5	20				20	30	30
	EV	15	20			20	20	0	30
	EA	20	20	0	20	0	0	0	0
	AM	7.5	20	12	20	10	10	15	0
2035	MD	10	20	15	20	20	20	15	15
	PM	5	20	12	20	10	10	15	15
	EV	10	20	20	20	20	20	0	15

Table 3: Toll Rate Pricing Assumptions

Dimention	2025 Weekday [5:00 AM – 6:30 PM]						
Direction	EA	AM	MD	PM	EV		
SF to TI	0	\$3.50	\$1	\$3.50	0		
TI to SF	0	\$3.50	\$1	\$3.50	0		
EB to TI	0	\$1.75	\$0.5	\$1.75	0		
TI to EB	0	\$3.50	\$1	\$3.50	0		
Diversion		2025 Weekend [8:00 AM – 8:00 PM]					
Direction	EA	AM	MD	PM	EV		
SF to TI	0	\$2	\$2	\$2	0		
TI to SF	0	\$2	\$2	\$2	0		
EB to TI	0	\$1	\$1	\$1	0		
TI to EB	0	\$2	\$2	\$2	0		

Dina ati an	2030 Weekday [5:00 AM – 6:30 PM]				
Direction	EA	AM	MD	PM	EV
SF to TI	0	\$6	\$1.75	\$6	0
TI to SF	0	\$6	\$1.75	\$6	0
EB to TI	0	\$3	\$0.88	\$3	0
TI to EB	0	\$6	\$1.75	\$6	0
Direction		2030 Weeke	nd [8:00 AM – 8:	00 PM]	
Direction	EA	AM	MD	PM	EV
SF to TI	0	\$3.50	\$3.50	\$3.50	0
TI to SF	0	\$3.50	\$3.50	\$3.50	0
EB to TI	0	\$1.75	\$1.75	\$1.75	0
TI to EB	0	\$3.50	\$3.50	\$3.50	0
Direction		2035 Weeko	lay [5:00 AM – 6:	30 PM]	
Direction	EA	AM	MD	PM	EV
SF to TI	0	\$6.25	\$2.00	\$6.25	0
TI to SF	0	\$6.25	\$2.00	\$6.25	0
EB to TI	0	\$3.12	\$1.00	\$3.12	0
TI to EB	0	\$6.25	\$2.00	\$6.25	0
Direction		2035 Weeke	end [8:00 AM – 8:	00 PM]	
Direction	EA	AM	MD	PM	EV
SF to TI	0	\$3.75	\$3.75	\$3.75	0
TI to SF	0	\$3.75	\$3.75	\$3.75	0
EB to TI	0	\$1.88	\$1.88	\$1.88	0
TI to EB	0	\$3.75	\$3.75	\$3.75	0

TIMMA assumes that the weekday and weekend toll rates increase over time based on increase in transit service and the annual inflation rate. For example, AC Transit and ferry transit frequency increased from 2025 to 2030 which also triggered the toll rate to increase to finance the additional transit services. Also, an 3% annual inflation rate is applied.

Table 4: Hourly Parking Rate Assumptions

Model Year	Parking Rate (\$2018)
2025	\$0.50/Hour
2030	\$0.65/Hour
2035	\$0.75/Hour

DEMAND MODEL RESULTS

The Treasure Island travel demand model results are from the San Francisco Chained Activity Modeling Process (SF-CHAMP). The forecasted year includes average weekday and weekend travel patterns. Additional assumptions include:

Scenario 1 [2025 Weekday and 2025 Weekend]:

Scenario 1 forecasts Treasure Island weekday and weekend travel demand for the year 2025. Table 5 compares land-use, population, person trips, vehicle volumes, and transit demand for the 2019 model run.

Table 5: Summary of Scenario 1: Average Weekday and Weekend, 2025

Projected Model Output	Average Weekday 2025	Average Weekend 2025
Population (Resident+ Employees)	6	5,842
Person On/Off Trips	20,200	30,500
Ramp Volumes (vehicles)	10,200	14,800
Daily Transit Ridership	7,000	4,044

Key findings:

- Average weekend person on/off trips are 51% higher than average weekday person on/off trips. The weekend trips higher because:
 - o Residents are traveling more for recreational or "other" purposes.
 - Average weekend ramp volumes are higher due to an increase in residents driving and additional special events' visitors driving on and off Treasure Island.

2025 — Resident and Employee Population

Table 6 below summarizes the growth of household units, population, and employment data for the year 2025 on Treasure Island. Treasure Island's population is expected to reach 6,842 in 2025 from 3,428 in 2015 based on SF-CHAMP 2015 inputs.

Table 6: Summary of Residents Population and Employment Statistics Projected for 2015 and 2025

Residents Population and Employees	2015	2025
Households	656	2,238
Residents	2,328	6,061
Employees	1,100	781
TOTAL (Residents and Employees)	3,428	6,842

Source: Treasure Island Development Authority and Treasure Island Community Development Land Use Projections

2025 — Person On/Off Trips

The Total Person on- and off- trips represent the number of people that travel to and from Treasure Island on an average day. Sections below present person on/off trips by direction, resident status, and mode. The specified directions are "Mainland San Francisco + Others" and "East Bay".

2025 — Person On/Off Trips (weekday and weekend)

Figure 4 shows that in the year 2025, there will be approximately 20,200 trips traveling to/from Treasure Island and to all Bay Area destinations during an average weekday (residents and non-residents). On an average weekend, there will be approximately 30,500 trips traveling to/from Treasure Island and to all Bay Area destinations including residents, and non-residents.



Figure 4: Treasure Island Person On/Off Trip - Average Weekday and Weekend, 2025

On an average weekday in 2025, approximately:

- 75% of total trips are made to/from Mainland San Francisco + Others
- 25% of total trips are made to/from the East Bay region
- 2.5 on/off trips per resident

On an average weekend in 2025, approximately:

- 60% of total weekend on/off trips are made to/from Mainland San Francisco + Others
- 40% of total trips are made to/from the East Bay region
- 3.4 on/off trips per resident

2025 — Total Person Trips Mode Share (weekday and weekend)

The Treasure Island Transportation Implementation Plan (TITIP) set a goal of 50-50 auto versus non-auto mode share by the completion of 4000 new residential units (2030) through implementation of expanded transit services and non-motorized infrastructure. As illustrated below, on an average weekday in 2025, the mode share is **65% auto and 35% transit** and on an average weekend day in 2025, the mode share is expected to be **87% auto and 13% transit**.

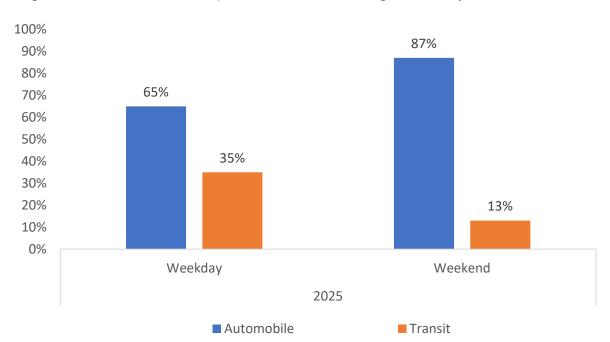


Figure 5: Person ON/OFF Trips Mode Share—Average Weekday & Weekend, 2025

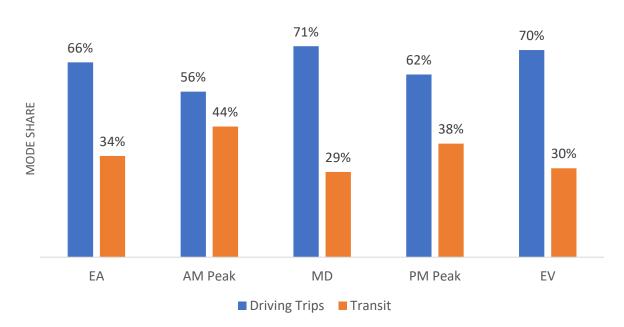


Figure 6: 2025 Weekday—Mode Share by Time of Day

The 2025 weekday mode share figure shows that during the AM peak period transit mode share will be the highest, **44%**. For all the other time periods, transit mode share will range from **29%** to **38%**.

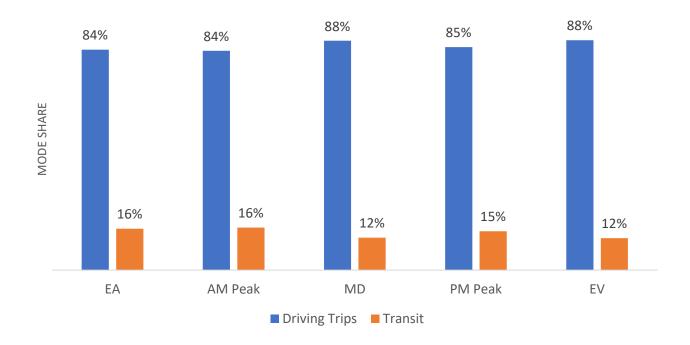


Figure 7: 2025 Weekend—Mode Share by Time of Day

The 2025 weekend mode share figure shows that during the early AM peak period transit mode share will be the highest, **16%**. For all the other time periods, transit mode share will range from **12% to 16%**.

	2025 Weekday			2025 Weekend			
Travelers	Person on/off trips	Transit	Auto	Person on/off trips	Transit Auto		
Resident	15,600	39%	61%	20,700	16%	84%	
Non-Resident	4,600	20%	80%	4,100	10%	90%	
Special Events	-	-	-	5,800	5%	95%	
Total	20,200	35%	65%	30,500	13%	87%	

Table 7: Resident, Non-Resident, and Special Event Mode Share

The difference between the weekday and the weekend transit mode share is 23%. Table 7 above shows that the residents and non-residents are driving more on the weekend (about 23% and 10% respectively), and about 95% of all special events visitors are also driving. The increase in weekend driving mode share is due to increase in residents driving and the additional special events visitors who choose to drive. This increase in driving is partly attributable to the less frequent transit service compared to the weekday such as no ferry during weekend as well as low toll rate during weekends.

2025 — Driving Person Trips

This part of the report analyzes driving person trips. Driving person trips include trips by people who are driving alone or carpooling with others to/from Treasure Island. This <u>does not</u> include intra-island trips or TNCs trips.

2025 — Vehicle Mode Choice (weekday and weekend)

In 2025, a large percentage of trips on/off Treasure Island will be by a motorized vehicle: about 65% on weekdays and 87% on weekends. For this analysis, a total of three vehicle capacities were used: Drive Alone (DA), Shared Rider (SR2): two occupants, and Shared Rider (SR3+): three occupants or more.

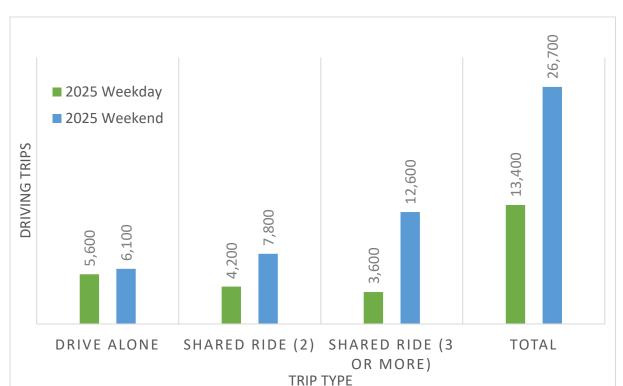


Figure 8: Driving Person Trips Mode Share by Vehicle Occupancy - Average Weekday and Weekend 2025

Table 8: HOV as Percent of All Driving Trips

Vehicle Mode	Weekday 2025	Weekend 2025
Shared Rider SR2+SR3	7,800	20,400
All Driving Person Trips DA+SR2+SR3	13,400	26,700
Shared Ride Share Percentage	58%	77%

- 58% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekday.
- 77% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekend.
- For comparison, about 21% of all trips are carpooled in San Francisco as a whole.¹

¹ SFMTA, Transportation Trend, 2014

2025 — Driving Person Trips by Resident Status (weekday and weekend)

This part of the analysis presents the differences in Driving Person Trips between Residents and Non-Residents on weekdays and weekends in the year 2025.

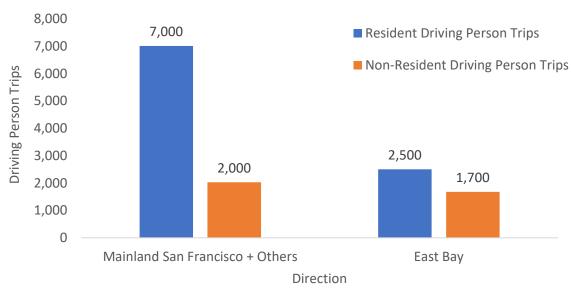


Figure 9: Driving Person Trips by Resident Status, Weekday 2025

- 74% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Others
- 26% of Driving Person Trips made by Treasure Island residents will be to/from the East Bay Region
- 55% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
- 45% of Driving Person Trips made by non-residents will be to/from the East Bay Region

2025 — Driving Person Trips by Resident Status (weekend)

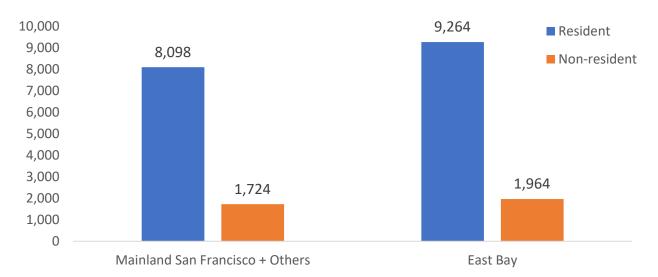


Figure 10: Driving Person Trips by Resident Status, 2025 Weekend

2025:

- 47% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Others
- 53% of Driving Person Trips made by Treasure Island residents will be to/ from the East Bay Region
- 47% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
- 53% of Driving Person Trips made by non-residents and special events visitors will be to/from the East Bay Region

2025 — Vehicle Volume and Tolled Trips

This section discusses the vehicle volumes and tolled trips for an average weekday and weekend in 2025. The tolling in Treasure Island is expected to begin with the start of new development. A 50% discount is applied to westbound travelers entering Treasure Island who have already paid a toll at the Bay Bridge Toll Plaza.

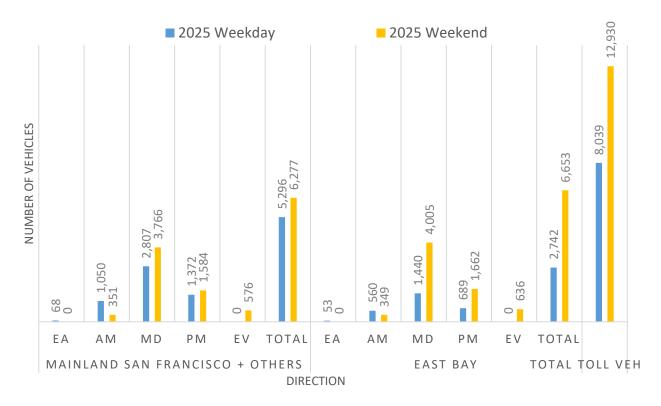


Figure 11: Toll Transactions— Average Weekday and Weekend, 2025

Weekday: The highest number of tolling transactions will happen during the midday period, 9:00 am-3:30 pm. The peak direction of travel is to/from Mainland San Francisco + Others.

Weekend: The highest number of vehicle tolling transactions will happen in the mid-day period, 9:00 am-3:30 pm. The operating hours are from 8:00 am to 8:00 pm. The peak direction of travel is to/from Mainland San Francisco + Others.

2025 — Transit Ridership

In the year 2025, there will be a total of three transit services: Muni Route 25 bus service to San Francisco's Transbay Terminal; East Bay bus service to downtown Oakland BART stations; and ferry service to the San Francisco Ferry Terminal.

Figure 12 below summarizes projected transit ridership in 2025. The Muni 25 line will continue its service plan with articulated buses during the mid-day and PM peak periods. Ferry service would start only during weekday peak periods, creating a new ferry service line between Mainland San Francisco and Treasure Island. East Bay transit will run between Treasure Island and Downtown Oakland. For the model year 2025 there was no ferry service assumed on the weekends. Weekend ferry service is planned to begin in the model year 2030.

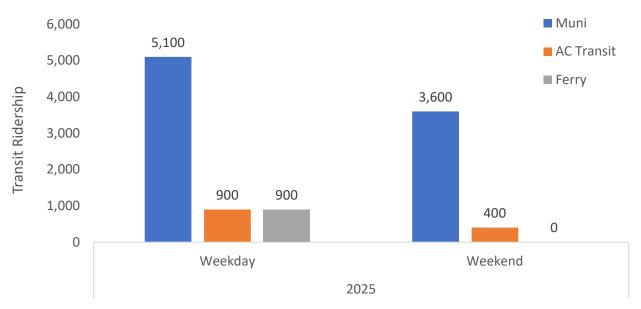


Figure 12: Average Daily Transit Ridership—Weekday and Weekend, 2025

This expected growth in transit ridership on both weekdays and weekends is attributed to the new residential developments, start of new bus and ferry transit services, the tolling rate on and off the island, and on-island parking policies.

2025 — Muni 25 Transit Ridership by Direction

The Muni 25 line connects Treasure Island to Mainland San Francisco. The charts below outline the average weekday ridership by direction, time-period, and available capacity.

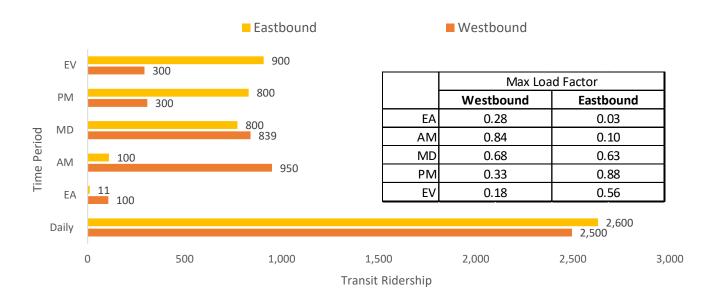


Figure 13: Muni Ridership and Capacity—Weekday, 2025

Weekday Muni 25 ridership peaks at 950 riders during the AM peak period traveling westbound (to Mainland San Francisco + Others) and in the evening period at 907 riders traveling eastbound (to Treasure Island). The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The highest **maximum load factor is expected to be 0.88** during the PM eastbound direction.



Figure 14: Muni Ridership - Average Weekend, 2025

Weekend Muni 25 ridership peaks during the mid-day period (9:00 AM-3:30 PM) traveling westbound (to Mainland San Francisco + Others). The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. **The maximum load factor is 0.84** which occurs during the PM Peak period eastbound.

2025 — AC Transit Ridership by Direction

The second transit operator will be AC Transit which will provide service connecting the East Bay to Treasure Island.

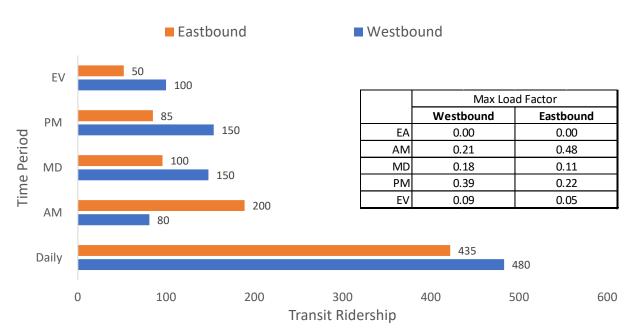


Figure 15: AC Transit Ridership - Average Weekday, 2025

Weekday AC Transit Ridership: The westbound direction represents trips from the East Bay to Treasure Island and the eastbound direction represents trips from Treasure Island to the East Bay. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. Ridership peaks during the AM peak period traveling eastbound with a **maximum load factor of 0.48**.

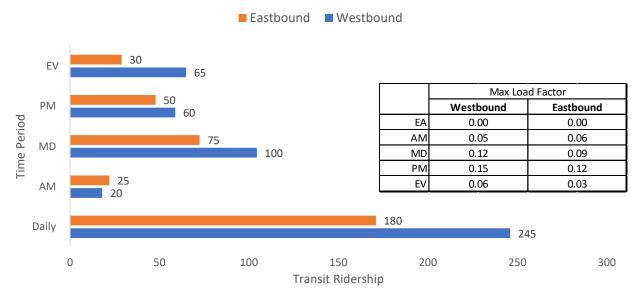


Figure 16: AC Transit Ridership —Average Weekday, 2025

Weekend AC Transit Ridership: The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor, 0.15** occurs in PM peak period traveling westbound.

2025 — Ferry Ridership by Direction

According to the Treasure Island Transportation Improvement Plan (TITIP), a new ferry service will be provided between San Francisco's Ferry Terminal (Ferry Building) and Treasure Island. For this model run a small boat ferry is proposed with no service on weekends. In 2025, the Island will be served by one small boat ferry vessel, operating at a frequency of 30-minute headways at the AM and PM peak periods only. The proposed small boat vessel capacity will be 70 passengers. Figure 17 shows the Treasure Island 2025 weekday ferry ridership prediction results from the SF-CHAMP model:

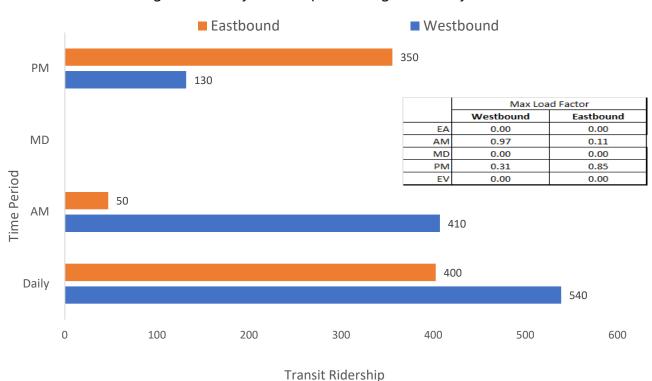


Figure 17: Ferry Ridership —Average Weekday, 2025

Weekday Ferry Ridership: Based on projected trends, average weekday ridership is expected to reach about 530 passengers traveling in peak direction. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The maximum load factor would reach **0.97**

during the AM peak period traveling westbound.

The 2019 demand model run assumes no midday ferry service in 2025 weekday and no ferry service in 2025 weekend.

Scenario 2 [2030 Weekday and 2030 Weekend]:

Scenario 2 forecasts Treasure Island weekday and weekend travel demand for the year 2030. Table 9 compares land-use, population, person trips, vehicle volumes, and transit demand for the year 2030.

Table 9: Summary of Scenario 1: Average Weekday and Weekend, 2030

Projected Model Output	Average Weekday 2030	Average Weekend 2030	
Population (Resident+ Employee)	13,160		
Person On/Off Trips	36,200	49,900	
Ramp Volumes (vehicles)	14,700	20,600	
Daily Transit Ridership	13,600	8,200	

Key findings:

- Average weekday and weekend ramp volumes are growing due to an increase in the overall population of the Island.
- Average weekend person on/off trips are 38% higher than average weekday person on/off trips.
 - Residents are traveling more during the weekend for special events or "other" purposes.
 - Average weekend ramp volumes are higher due to an increase of residents driving and additional special events' visitors driving on and off Treasure Island on the weekends.

2030 — Resident and Employee Population

Table 10 below summarizes the growth of household units, population, and employment data for the year 2030 on Treasure Island the growth of household units, population, and employment.

Table 10: Summary of Residents Population and Employment Statistics from 2030

Residents Population and Employees	2030		
Households	4,569		
Residents	11,564		
Employees	1,596		
TOTAL (Residents and Employees)	13,160		

Source: 2018 Treasure Island Development Authority and Treasure Island Community Development Land Use Projections

2030 — Person On/Off Trips

The Total Person on- and off- trips represent the number of people that travel to and from Treasure Island. Sections below present person on/off trips by direction, resident, non-resident, and mode share. The specified directions are "Mainland San Francisco + Others" and "East Bay".

2030 — Person On/Off Trips (weekday and weekend)

Figure 18 shows that in the year 2030, during an average weekday, Treasure Island residents and employees are expected to make about 36,000 trips traveling to/from Treasure Island to all Bay Area destinations. On an average weekend, Treasure residents and non-residents will take about 50,000 trips traveling to/from Treasure Island to all Bay Area destinations.

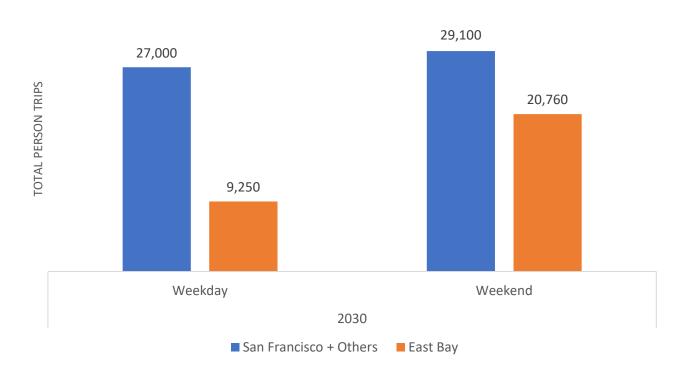


Figure 18: Treasure Island Person On/Off Trip - Average Weekday and Weekend, 2030

On an average weekday in 2030, approximately:

- 74% of total trips are made to/from Mainland San Francisco + Others
- 26% of total trips are made to/from the East Bay region
- 2.4 trips per resident

On an average weekend in 2030, approximately:

- 58% of total trips are made to/from Mainland San Francisco + Others
- 42% of total trips are made to/from the East Bay region
- 3.2 trips per resident

Person on/off trips during the weekdays are about 38% are lower than on the weekend.

2030 — Total Person Trips Mode Share (weekday and weekend)

The redevelopment of Treasure Island proposes a 50-50 mode share by the full-build out year (2035) with transit facilities and non-motorized infrastructure. As illustrated below, on an average weekday, the mode share is **62% auto and 38% transit** and on an average weekend day in 2030, the mode share is expected to be **84% auto and 16% transit**.

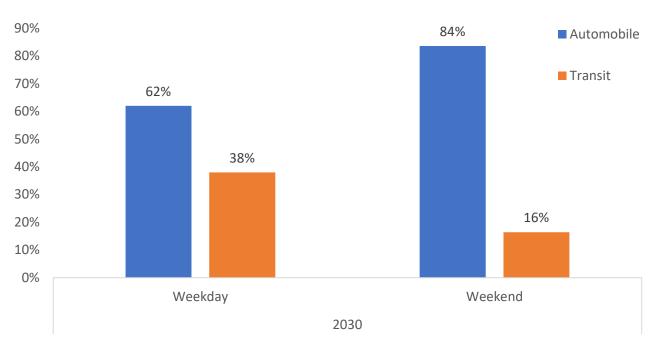


Figure 19: Person On/Off Trips Mode Share—Average Weekday & Weekend, 2030

Table 11: Resident, Non-resident and Special Event Trips

Travelers	2030 Weekday			2030 Weekend		
	Person on/off trips	Transit	Auto	Person on/off trips	Transit	Auto
Resident	27,700	42%	58%	36,400	19%	81%
Non-Resident	8,500	25%	75%	7,800	14%	86%
Special Events	-	-	-	5,500	6%	94%
Total	36,200	38%	62%	44,200	16%	84%

The difference between the weekday and the weekend transit mode share is 22%. For the 2030 model, residents and non-residents are driving more on the weekend (about 23% and 11% respectively), and about 94% of all special events visitors are also driving. The weekend model also shows that about 86% of the residents are traveling for "other" or recreational purposes and 80% of them are preferring to drive than to take transit. The increase in weekend driving mode share is likely due to an increase in residents driving and the additional weekend special events visitors.

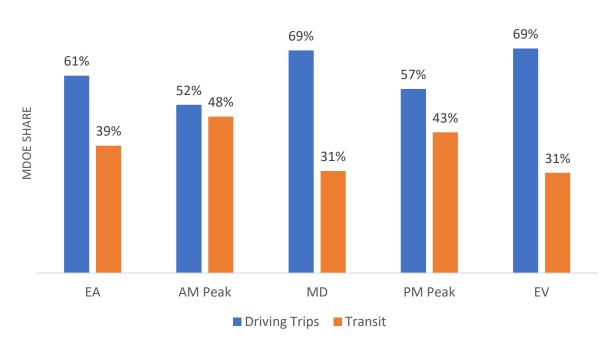


Figure 20: 2030 Weekday—Mode Share by Time of Day

The 2030 weekday mode share figure shows that during AM peak period transit mode share will be the highest, **48%**. For all the other time periods, transit mode share will range from **31%** to **43%**.

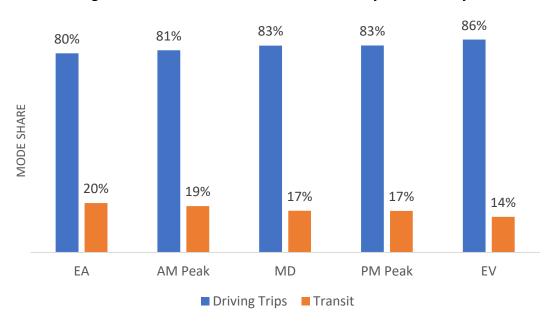


Figure 21: 2030 Weekend—Mode Share by Time of Day

The 2030 weekend mode share figure shows that during early AM peak period transit mode share will be the highest, **20%**. For all the other time periods, transit mode share will range from **14%** to **19%**.

2030 — Driving Person Trips

This part of the report analyzes Driving Person Trips. Driving Person Trips include trips by people who are driving alone or carpooling with others to/from Treasure Island. This <u>does not</u> include intra-island trips.

2030 — Vehicle Mode Choice (weekday and weekend)

In 2030, a large percentage of trips on/off Treasure Island will be by a motorized vehicle. For this analysis, a total of three vehicle capacities were used: Drive Alone (DA), Shared Rider (SR2): two occupants, and Shared Rider (SR3+): three occupants or more.

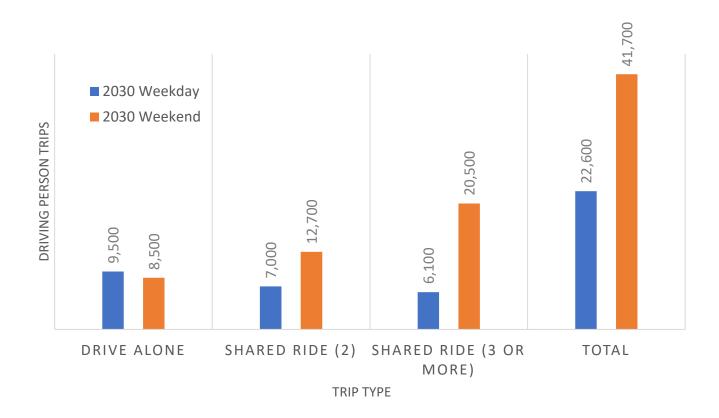


Figure 22: Driving On/Off Person Trips—2030 weekday & Weekend

- 58% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekday.
- 80% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekend.
- About 21% of all trips are carpooled in San Francisco as a whole.²

² SFMTA, Transportation Trend, 2014

2030 — Driving Person Trips by Resident Status (weekday and weekend)

This part of the analysis presents the differences in Driving Person Trips between residents and non-residents on weekdays and weekends in the year 2030.



Figure 23: Driving Person Trips by Resident Status, Weekday 2030

- 73% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Other
- 27% of Driving Person Trips made by Treasure Island residents will be to/from the East Bay Region
- 55% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
- 45% of Driving Person Trips made by non-residents will be to/from the East Bay Region

2030 — Driving Person Trips by Resident Status (weekend)



Figure 24: Driving Person Trips by Resident Status, 2030 Weekend

2030:

- 48% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Others
- 52% of Driving Person Trips made by Treasure Island residents will be to/ from the East Bay Region
- 47% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
- 53% of Driving Person Trips made by non-residents and special events visitors will be to/from the East Bay Region

2030 — Vehicle Volume and Tolling Policy

This section discusses the vehicle volumes and tolling policy for an average weekday and weekend in 2030. The tolling in Treasure Island is expected to begin with the start of new development in 2021. The proposed tolling hours and prices are listed below:

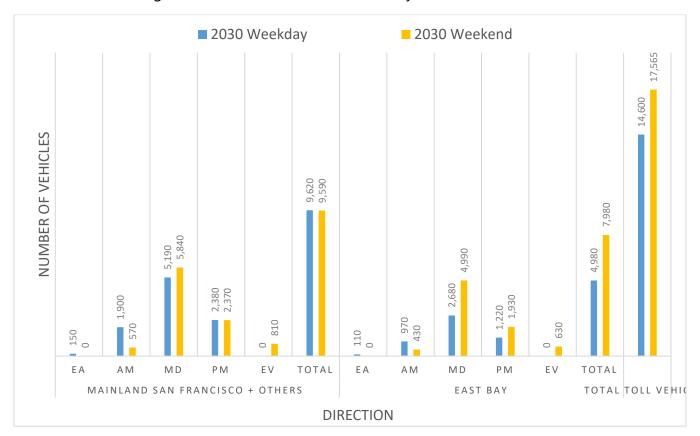


Figure 25: Toll Transactions—Weekday and Weekend, 2030

Weekday: The highest number of tolling transactions will happen during the midday period, 9:00 am-3:30 pm since it's the longest time period.

Weekends: The highest number of vehicle tolling transactions will happen in the mid-day period, 9:00 am-3:30 pm. The peak direction of travel is to/from Mainland San Francisco + Others.

2030 — Transit Ridership

In the year 2030, there will be a total of three transit operators: SFMTA (which will provide Muni 25 service), AC Transit (AC Transit), and Ferry service provider (which will provide small boat ferry transit service with a capacity of 149 passengers) to/from Treasure Island, to/from Mainland San Francisco +Others, and to/from the East Bay.

Figure 26 below illustrates an overview of projected transit ridership in 2030. The Muni 25 line will continue its service plan with articulated buses during all time periods. AC Transit would run the service between Treasure Island and Downtown Oakland.

Figure 26: Average Daily Transit Ridership—Weekday and Weekend, 2030

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This expected growth in transit ridership on both weekdays and weekends is attributed to the new residential developments, start of new transit services by AC Transit and Ferry boat, tolling on and off from the island, and strict on-island parking policies.

2030 — Muni 25 Transit Ridership by Direction

The Muni 25 line connects Treasure Island to Mainland San Francisco. In the year 2030, Muni 25 would be operating at a headway specified represented by the charts below outline the average weekday ridership by direction, time-period, and available capacity.

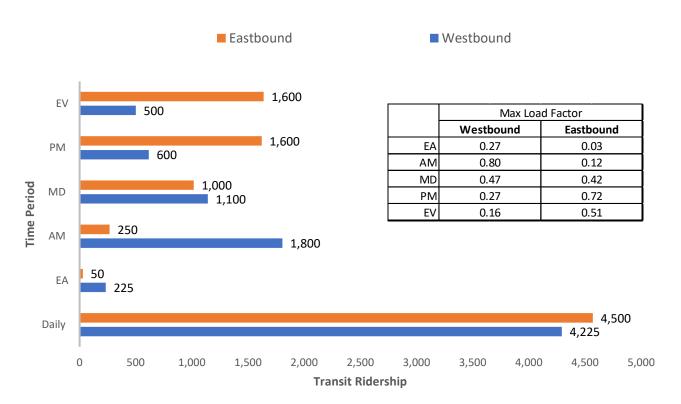


Figure 27: Muni Ridership — Average Weekday, 2030

Weekday Muni 25 ridership peaks during the AM peak period traveling westbound (to Mainland San Francisco + Others) and in the PM peak period traveling eastbound (to Treasure Island). The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor for Muni is expected to be 0.80** during the AM westbound direction.

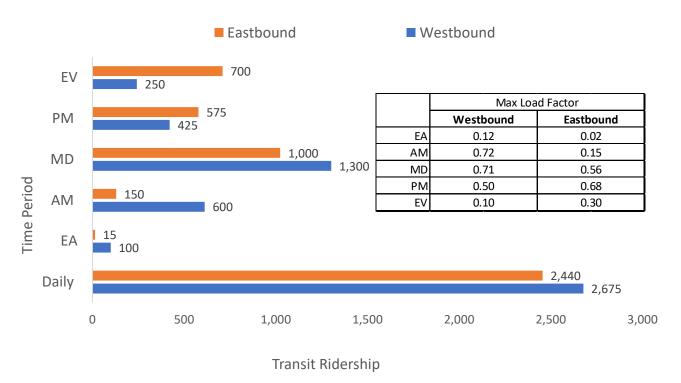


Figure 28: Muni Ridership — Average Weekend, 2030

Weekend Muni 25 ridership peaks during the AM and mid-day (9:00 AM-3:30 PM) traveling westbound (to Mainland San Francisco + Others). The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. **The maximum load factor is 0.72** which occurs during the AM Peak period westbound. The other time periods are below capacity.

2030 — AC Transit Ridership by Direction

The AC Transit ridership profile is shown in Figure 29 by direction, time-period, and vehicle capacity below:

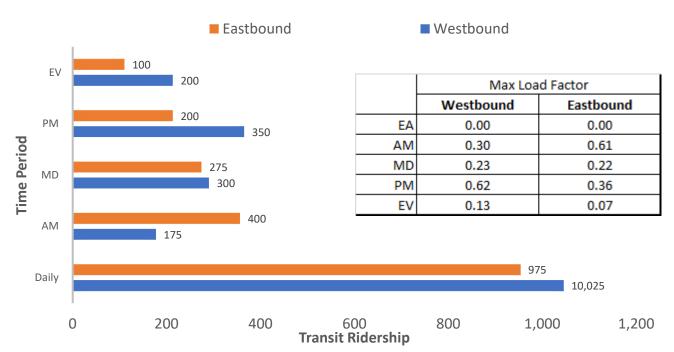


Figure 29: AC Transit Ridership —Average Weekday, 2030

Weekday AC Transit Ridership: The westbound direction represents trips from the East Bay to Treasure Island and the eastbound direction represents trips from Treasure Island to the East Bay. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. Ridership peaks during the PM peak period traveling westbound with a **maximum load factor of 0.62**.

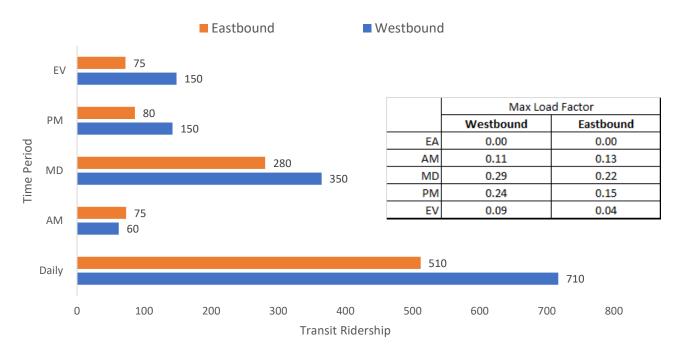


Figure 30: AC Transit Ridership —Average Weekend, 2030

Weekend AC Transit Ridership: Figure 26 shows that AC transit ridership would operate below capacity. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor**, **0.29** occurs in MD period traveling westbound.

2030 — Ferry Ridership by Direction

In 2030, the Island will be served by one ferry vessel, operating at a frequency of 30 minutes throughout the day. The service will operate between 6:30 am and 7:30 pm on weekdays, and from 9:00 am and 10:00 pm on weekends. The proposed vessel capacity will be 149 passengers.

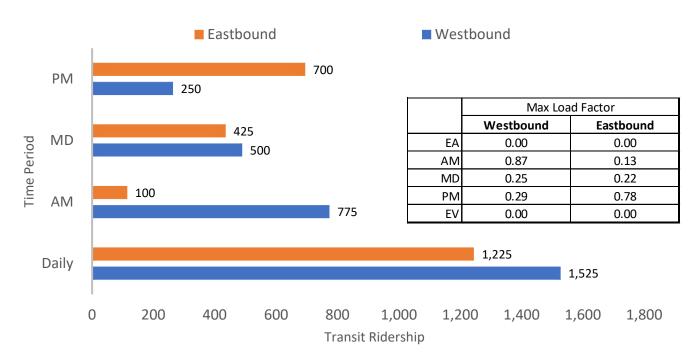


Figure 31: Ferry Ridership—Average Weekday, 2030

Weekday Ferry Ridership: Based on projected trends, average weekday ridership is expected to reach about 1,500 passengers traveling in the westbound direction. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The maximum load factor would reach **0.87**.



Figure 32: Ferry Ridership—Average Weekend, 2030

Weekend Ferry Ridership: Based on projected trends, average weekend ridership is expected to reach about 1,000 passengers traveling in the peak direction. The maximum load factor that represents the bus crowdedness, for example, maximum load factor of 1 will represent that there is more passenger demand than the bus capacity. The maximum load factor would reach **0.29 during midday in westbound direction**.

Scenario 3 [2035 Weekday and 2035 Weekend]:

Scenario 3 forecasts Treasure Island weekday and weekend travel demand for the year 2035. Table 12 compares land-use, population, person trips, vehicle volumes, and transit demand for the year 2035.

Table 12: Summary of Scenario 1: Average Weekday and Weekend, 2035

Projected Model Output	Average Weekday 2035	Average Weekend 2035	
Population (Resident+ Employee)	22,250		
Person On/Off Trips	58,800	76,000	
Ramp Volumes (vehicles)	24,600	30,800	
Daily Transit Ridership	21,600	12,800	

Key findings:

 Average weekend person on/off trips are nearly 30% higher than average weekday person on/off trips.

- Residents are traveling more during the weekend for recreational or "other" purposes.
 Also, numerous special events will take place on an average weekend on Treasure Island, which increases the number of visitors on/off weekend trips.
- Average weekend ramp volumes are higher due to an increase in residents driving and additional special events' visitors driving on and off Treasure Island.
- The weekend trips are higher compared to the weekdays because more recreational trips are made during the weekend and the travelers need more flexibility for their trips.

2035 — Resident and Employee Population

Table 13 below summarizes the growth of household units, population, and employment data for the year 2035 on Treasure Island. Treasure Island's population is expected to reach 22,247 in 2035 from its current population 3,129 (ACS 2017).

Table 13: Summary of Residents Population and Employment Statistics from 2035

Residents Population and Employees	2035		
Households	8,000		
Residents	19,453		
Employees	2,794		
TOTAL (Residents and Employees)	22,250		

Source: 2018 Treasure Island Development Authority and Treasure Island Community Development Land Use Projections

2035 — Person On/Off Trips

The Total Person on- and off- trips represent the number of people that travel to and from Treasure Island. Sections below present person on/off trips by direction, resident, non-resident, and mode share. The specified directions are "Mainland San Francisco + Others" and "East Bay".

2035 — Person On/Off Trips (weekday and weekend)

Figure 33 shows that in the year 2035, there will be approximately 58,700 trips traveling to/from Treasure Island and to all Bay Area destinations during an average weekday (residents and non-residents). On an average weekend, there will be approximately 76,500 trips traveling to/from Treasure Island and to all Bay Area destinations about including residents, and non-residents.

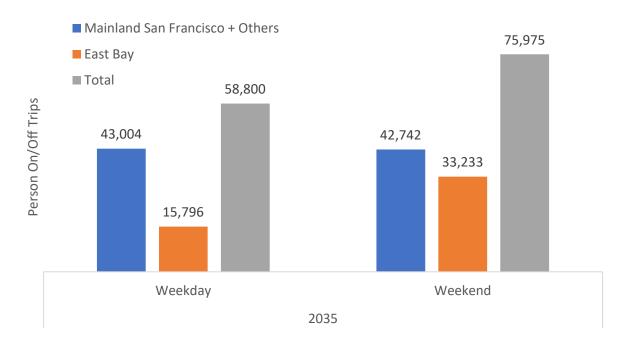


Figure 33: Person On/Off Trips by Direction—Average 2035 Weekday & Weekend

On an average weekday in 2035, approximately:

- 73% of total trips are made to/from Mainland San Francisco + Others
- 27% of total trips are made to/from the East Bay region
- 2.3 trips per resident

On an average weekend in 2035, approximately:

- 56% of total trips are made to/from Mainland San Francisco + Others
- 44% of total trips are made to/from the East Bay region
- 2.9 trips per resident

Table 14: Resident, Non-resident and Special Events Trips

Travelers	2035 Weekday		2035 Weekend			
	Person on/off trips	Transit	Auto	Person on/off trips	Transit	Auto
Resident	44,314	41%	59%	57,117	19%	81%
Non-Resident	14,486	25%	75%	13,569	14%	86%
Special Events	•	ı	ı	5,289	6%	94%
Total	58,800	37%	63%	75,975	17%	83%

The difference between the weekday and the weekend transit mode share is 20%. For the 2035 model, residents and non-residents are driving more on the weekend (about 22% and 11% respectively), and about 94% of all special events visitors are also driving. The weekend model

also shows that about 84% of the residents are traveling for "other" or recreational purposes and 78% of them are preferring to drive than to take transit. The increase in weekend driving mode share is likely due to an increase in residents driving and the additional weekend special events visitors.

2035 — Total Person Trips Mode Share (weekday and weekend)

The redevelopment of Treasure Island proposes a 50-50 mode share by the full-build out year (2035) with extensive transit facilities and non-motorized infrastructure. As illustrated below, on an average weekday, the mode share is **63% auto and 37% transit** and on an average weekend day in 2035, the mode share is expected to be **83% auto and 17% transit**.

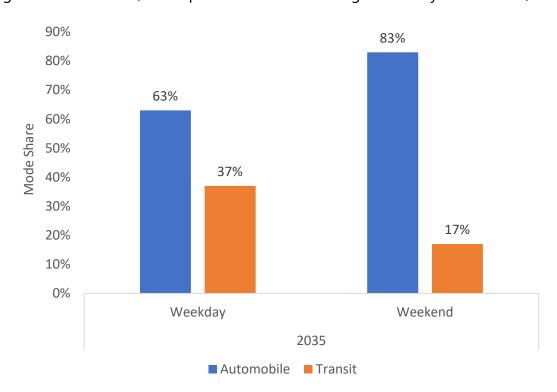


Figure 34: Person On/Off Trips Mode Share—Average Weekday & Weekend, 2035

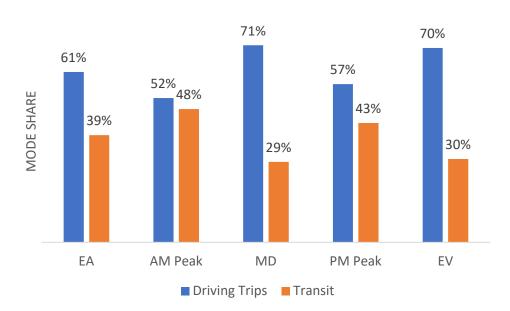


Figure 35: 2035 Weekday—Mode Share by Time of Day

The 2035 weekday mode share figure shows that during AM peak period transit mode share will be the highest, **48%**. For all the other time periods, transit mode share will range from **29%** to **43%**.

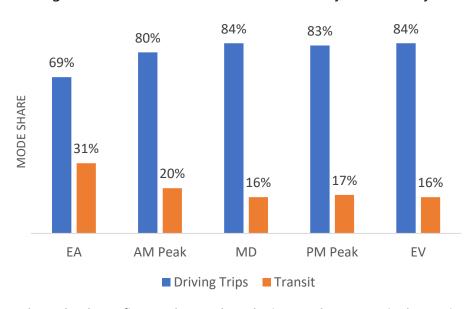


Figure 36: 2035 Weekend—Mode Share by Time of Day

The 2035 weekend mode share figure shows that during early AM period transit mode share will be the highest, **31%**. For all the other time periods, transit mode share will range from **16%** to **20%**.

2035 — Driving Person Trips

This part of the report analyzes Driving Person Trips for the model year 2035. Driving Person Trips include trips by people who are driving alone or carpooling with others to/from Treasure Island. This does not include intra-island trips.

2035 — Vehicle Mode Choice (weekday and weekend)

As for the prior model years, with this analysis, a total of three vehicle capacities were used: Drive Alone (DA), Shared Rider (SR2): two occupants, and Shared Rider (SR3+): three occupants or more.

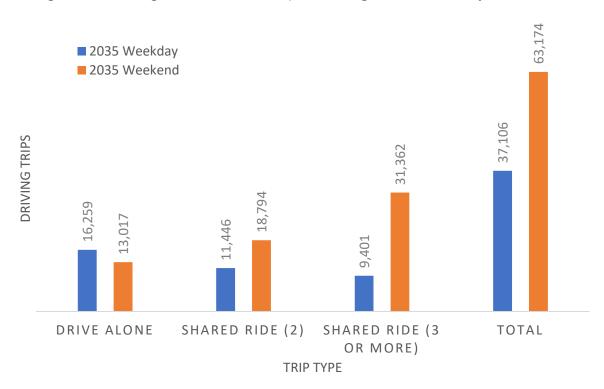


Figure 37: Driving On/Off Person Trips—Average 2035 Weekday & Weekend

- 56% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekday.
- 79% of all driving trips would be in a shared mode of transportation of 2 or 3 passengers during an average weekend.
- About 21% of all trips are carpooled in San Francisco as a whole.³

³ SFMTA, Transportation Trend, 2014

2035 — Driving Person Trips by Resident Status (weekday and weekend)

This part of the analysis presents the differences in Driving Person Trips between Residents and Non-Residents on weekdays and weekends in the year 2035.

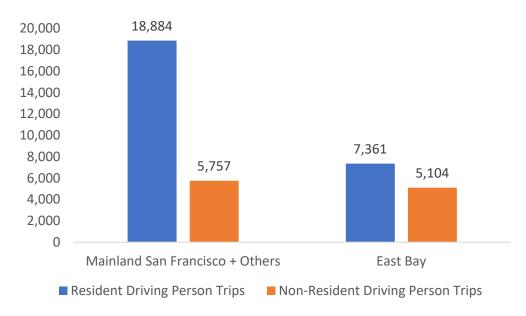


Figure 38: Driving Person Trips by Resident Status, Weekday 2035

- 72% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Others
- 28% of Driving Person Trips made by Treasure Island residents will be to/from the East Bay Region
- 53% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
- 47% of Driving Person Trips made by non-residents will be to/from the East Bay Region

2035 — Driving Person Trips by Resident Status (weekend)

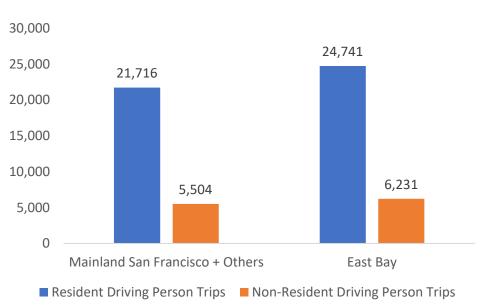


Figure 39: Driving Person Trips by Resident Status, 2035 Weekend

2035:

- 47% of Driving Person Trips made by Treasure Island residents will be to/from Mainland San Francisco + Others
- 53% of Driving Person Trips made by Treasure Island residents will be to/ from the East Bay Region
- 47% of Driving Person Trips made by non-residents will be to/from Mainland San Francisco + Others
 53% of Driving Person Trips made by non-residents and special events visitors will be

2035 — Vehicle Volume and Tolling Policy

to/from the East Bay Region.

This section discusses the vehicle volumes and tolling policy for an average weekday and weekend in 2035. The proposed tolling hours and prices are listed below:

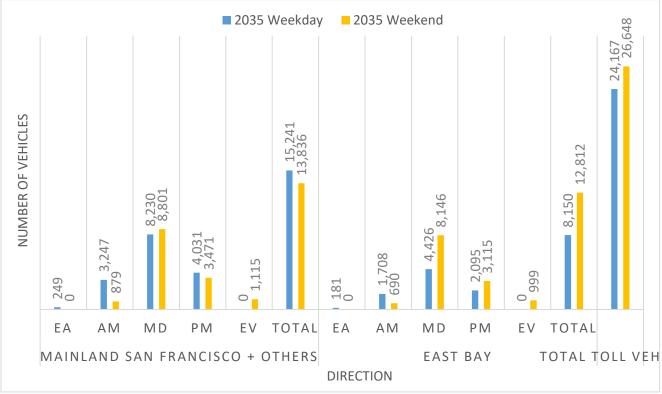


Figure 40: Toll Vehicles - Average 2035 Weekday and weekend

Weekday: The highest number of tolling transactions will happen during the midday period, 9:00 am-3:30 pm since it is the longest model period. The peak direction of travel is to/from Mainland San Francisco + Others.

Weekends: The highest number of vehicle tolling transactions will happen in the mid-day period, 9:00 am-3:30 pm. The peak direction of travel is to/from Mainland San Francisco + Others.

2035 — Transit Ridership

In the year 2035, there will be a total of three transit operators: SFMTA (which will provide Muni 25 service, and a new additional Muni 109 service to Civic Center starting on this model year), Alameda County Transit (AC Transit), and Ferry service (which will provide small boat ferry transit service) to/from Treasure Island, to/from Mainland San Francisco + Others, and to/from the East Bay.

Figure 41 below illustrates an overview of projected transit ridership in 2035. The Muni 25 line would continue its service plan with articulated buses with the added 109 bus service to Civic Center in San Francisco. AC transit is still running the service between Treasure Island and Downtown Oakland just as previous model years in this report.

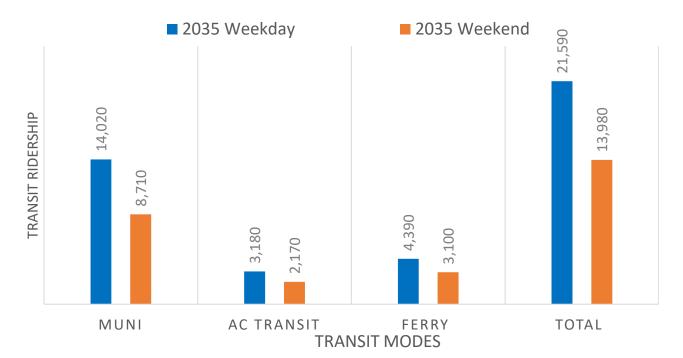


Figure 41: Average Daily Transit Ridership—Weekday and Weekend, 2035

2035 — Muni 25 Transit Ridership by Direction

The Muni 25 line connects Treasure Island to Mainland San Francisco. The charts below outline the average weekday ridership by direction, time-period, and available capacity.



Figure 42: Muni Ridership —Weekday, 2035

Weekday Muni 25 ridership peaks during the AM peak period traveling westbound (to Mainland San Francisco + Others) and in the PM peak period traveling eastbound (to Treasure Island). Note that the figure combines both Muni routes' ridership and capacity together. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor for Muni is expected to be 0.97** during the AM peak westbound direction.

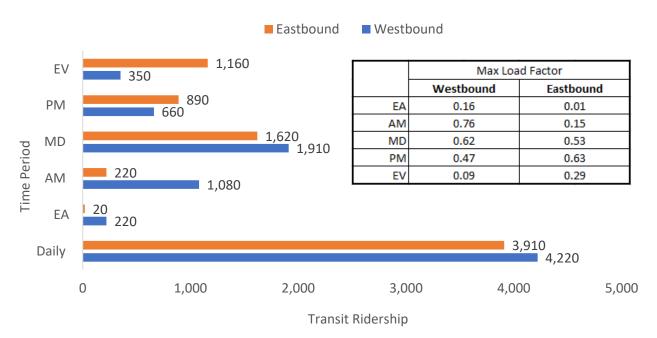


Figure 43: Muni Ridership - Average Weekend, 2035

Weekend Muni 25 ridership peaks during the AM peak traveling westbound traveling from Treasure Island to Mainland San Francisco + Other. Note that the figure combines both Muni 25 and 109 route ridership and vehicle capacities. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. **The maximum load factor is 0.76** which occurs during the AM peak period westbound direction. The other time periods are below capacity.

2035 — AC Transit Ridership by Direction

AC Transit will provide service connecting the East Bay to Treasure Island. The AC Transit ridership profile is shown in Figure 44 by direction, time-period, and vehicle capacity:



Figure 44: AC Transit Ridership - Average Weekday, 2035

Weekday AC Transit Ridership: The westbound direction represents trips from the East Bay to Treasure Island and the eastbound direction represents trips from Treasure Island to the East Bay. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. Ridership peaks during the AM peak period traveling eastbound with a **maximum load factor of 0.56**. Capacity in 2035 is expected to meet the projected ridership during all time periods.

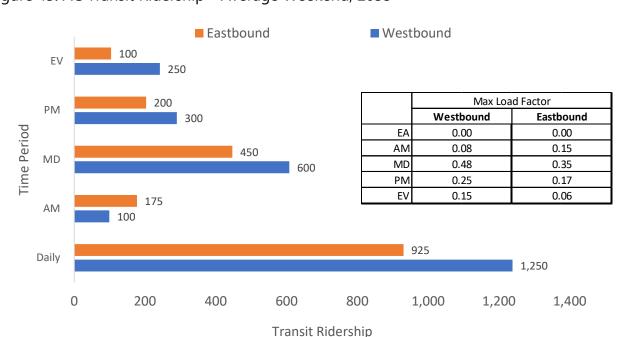


Figure 45: AC Transit Ridership—Average Weekend, 2035

Weekend AC Transit Ridership: Figure 45 shows that AC transit ridership would operate below capacity. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load point, 0.48** occurs in MD period traveling westbound.

2035 — Ferry Ridership by Direction

In 2035, the Island will be served by two ferry vessels, operating at a frequency of 15 minutes during the AM and PM peak periods. The proposed vessel capacity is 219 (70-pax boat and 149-pax boat) passengers. Figure 46 shows the Treasure Island 2035 weekday ferry ridership prediction results from the SF-CHAMP model:

Figure 46: Ferry Ridership—Average Weekday, 2035



Weekday Ferry Ridership: Based on projected trends, average weekday ridership is expected to reach about 2,500 passengers traveling in the peak directions. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor** would reach 0.51 during AM peak period in westbound direction.

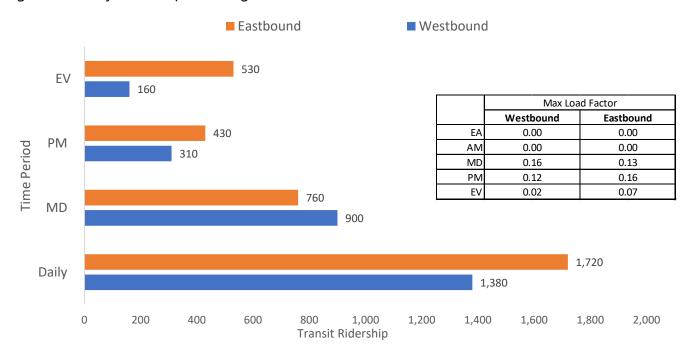


Figure 47: Ferry Ridership—Average Weekend, 2035

Weekend Ferry Ridership: Based on projected trends, average weekday ridership is expected to reach about 1700 passengers traveling in the peak direction. The maximum load factor represents the level of bus crowding; for example, a maximum load factor of more than 1 means that there is more passenger demand than the bus capacity. The **maximum load factor** would reach 0.16 during MD in westbound and PM peak period in eastbound direction.