# Ground Transportation Fees Benchmarking Study

# **Final Report**

Phoenix Sky Harbor International Airport

Project Sponsor: City of Phoenix Aviation Department
Date: July 30, 2019

# Report Revision Log

| Revision Date | Description | Pages | Reason |
|---|---|---|---|
| 30th July 2019 | AUS, DEN, DFW data removed from chart resulting in revised average trip fee for off-airport parking | 18 | Based on comments from Fair Fees for PHX on 25 July 2019 |
| | Revised average trip fee for off-airport parking | 19, 27 | |
| | Corrected trip fee for off-airport parking at MSP | 37 | |

# Contents


4 Study Overview

6 Benchmark Airports

9 Comparison of Trip Fees

21 Benchmarking Observations

24 Recommendations

30 Appendix A: Benchmark Airport Case Studies

43 Appendix B: Additional Benchmarking Information

49 Appendix C: PHX GT Infrastructure

55 Appendix D: PHX GT Forecast

# Study Overview

# Study Overview

**Introduction**

In 2016, the City of Phoenix (City) Council adopted an amendment to the City Code which addressed the Ground Transportation (GT) Fees at Phoenix Sky Harbor International Airport (PHX) from 2016-2020. As part of the amendment, the City of Phoenix Department of Aviation Department (AVN) was required to conduct a new study, by January 1, 2020, of comparable airports' trip fees. The City Code also outlined that industry participation would be sought in selecting the consulting team and throughout the study itself.

The 2018 PHX - GT Fees Benchmarking Study (Study) commenced as part of the commitment noted above. The Study was organized into three main deliverables: Technical Papers #1, #2 and a Final Report. This document is the Final Report submission of the benchmarking study.

**Study Deliverables**

## TECHNICAL PAPER 1

- → Propose a stakeholder involvement plan;
- → Create a draft list of airports to be benchmarked;
- → Plan for the collection of data and information on the agreed benchmarked airports and PHX;
- → Review of previous GT fee studies to any identify gaps and deficiencies;
- → Review Technical Paper #1 with stakeholders and consider and integrate feedback.

## TECHNICAL PAPER 2

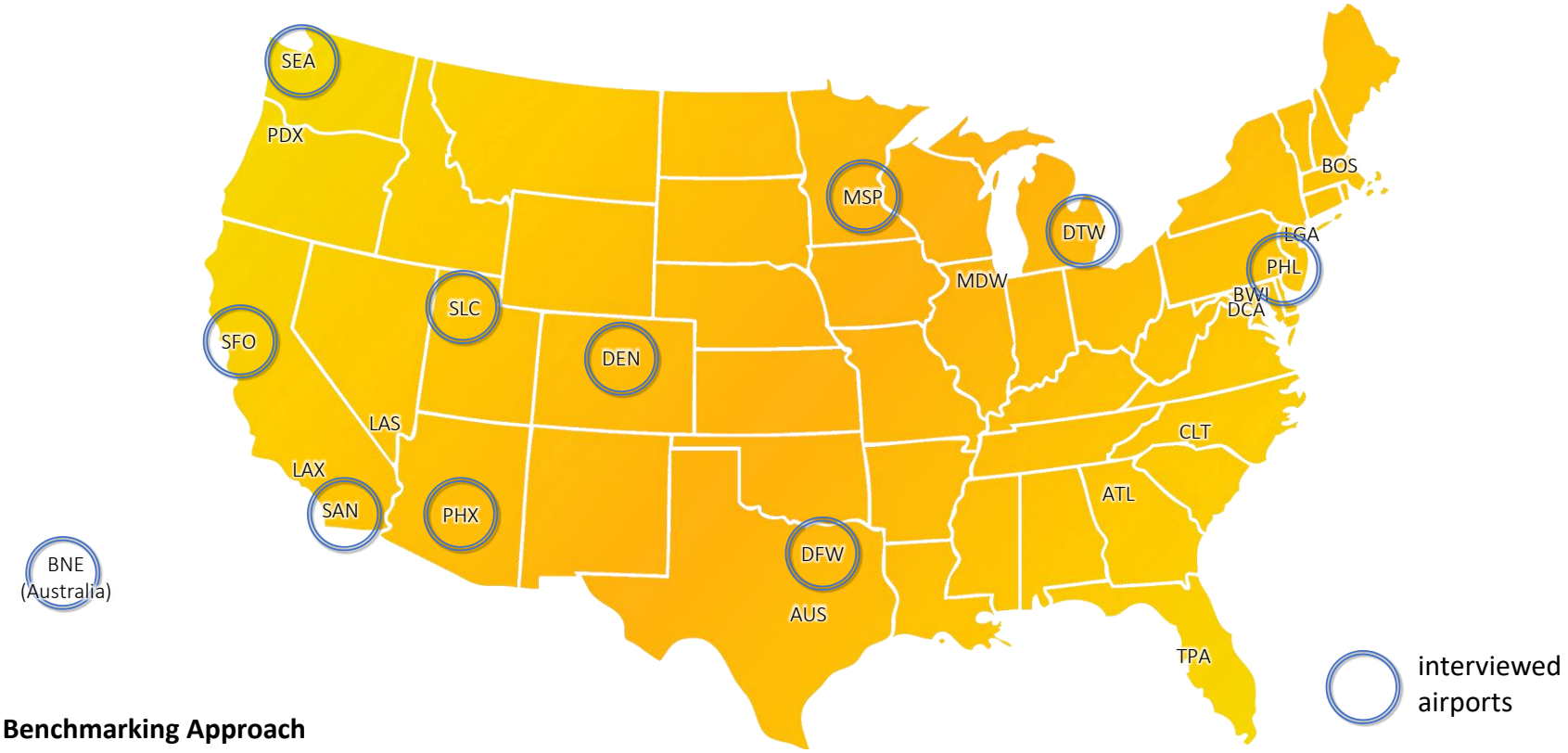
- → Collect required data and information for PHX and the benchmarked airports;
- → Compare airport GT fee structures and fee levels;
- → Develop graphics and charts to support the study findings;
- → Review Technical Paper #2 with stakeholders and consider and integrate feedback.

## FINAL REPORT

- → Provide summary of comparison between PHX and the benchmarked airports;
- → Review draft final report with stakeholders;
- → Produce final report following stakeholder review;
- → Based on benchmarking, provide overall opinion of current City GT fees and suggestions for city code improvement if necessary.

# Benchmark Airports

# Benchmark Airports




**Benchmarking Approach**

Every airport has unique local governance, operations and stakeholders. Nevertheless, the basis for sound benchmarking is to define an "apples to apples" comparison to the greatest extent possible.

Counting PHX itself, 23 airports were included in the study. Desktop research was completed as a first step to gather publicly available information. The project team also reached out directly to all airports to supplement the information gathered through desktop research. The staff of 11 of the airports agreed to participate in telephone interview, including PHX, DEN, DFW, DTW, MSP, PHL, SAN, SEA, SFO, SLC and the one international airport in our study: BNE.

Additional contextual information about the airports included in the study is provided in the Appendix of the report.

# Benchmark Airports

**Selection Criteria 1: Passenger Volumes**

Given this is a GT Fee Study the best passenger volume metric to use is "Originating and Terminating" passengers. In large hub airports over 50% of passengers may be transferring and these passengers do not typically utilize GT services.

→ The top 31 airports in the United States (including PHX) were ranked by Originating Passengers Per Day

**Selection Criteria 2: Market-based Criteria**

The list of top 31 airports was narrowed down by comparing the market-based criteria of Domestic or International Destination and Airline Type. Both of these criteria are potentially relevant to passenger behaviour and their sensitivity to GT costs. As such an airport was required to meet one of the two market based criteria to appear on the benchmarking list:

→ Domestic vs. International Share: the passenger's journey sector (domestic or international) based on their final destination.

- PHX has 91% of its originating traffic going to domestic final destinations;
- Airports that were within +/- 6% of the PHX domestic share were selected, which equates to airports with 85% to 97% domestic share. This narrowed the selection to 18 airports (excluding PHX).

→ LCC vs. Non-LCC Share: the dominant airline in the passenger's itinerary was considered and the consultant team looked at the share of originating passengers on Low Cost Carriers (LCC) versus Non Low Cost Carriers (Non-LCC) for each airport. To be consistent in our definition of an LCC, the list of LCCs matches that of the International Civil Aviation Organization (ICAO)[1].

- PHX has 44% of its originating traffic on LCC carriers based on the dominant airline of the journey;
- Airports that were within +/- 6% of the LCC share of PHX were considered, which equates to airports with 38% to 50% LCC share;
- This resulted in the addition of one more airport for a draft list total of 19 US airports (excluding PHX).

**Privatized Airport Special Case and Stakeholder Input**

In addition to these 19 US airports, one privatized international airport, Brisbane (Australia), was added in order to consider how commercially minded, privatized airports approach GT business.

Finally, in response to stakeholder feedback to include major western US airports, two airports were added – Los Angeles (LAX) and San Francisco (SFO).

[1] ICAO List of Low Cost Carriers based on ICAO Definition, June 2017

# Comparison of Trip Fees

# Comparison of Trip Fees

**Introduction**

Trip fees were gathered from all 22 benchmarked airports and compared against PHX 2019 fees.

Where possible like-for-like comparison has been made within each GT category. To achieve this, assumptions were made on vehicle capacity. This was a way to ensure that airports with a category-based fee and airports with a vehicle-capacity-based fee could be compared.

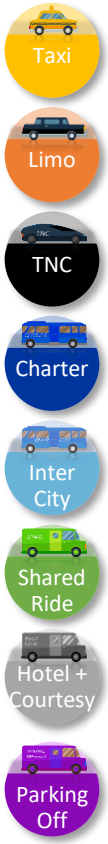
The comparison of trip fees provided in this section:

- Does not consider any additional fees that may be applied to GT operators such as permit fees and privilege fees.
- Was not intended to capture every vehicle size in the fleets of each GT service.

Pick-up and drop-off fees were included in the comparison of trip fees for Taxis, TNCs and Limousines. Other GT services are generally not required to pay drop-off trip fees.

Additional fee information is provided for the 11 interviewed airports in Appendix A of this report, “Benchmark Airport Case Studies”.

**GT Vehicle Capacity Assumptions**




Vehicle capacity assumed to be 4 passenger

Vehicle capacity assumed to be 4 passenger

Vehicle capacity assumed to be 4 passenger

Vehicle capacity assumed to be largest available category

Vehicle capacity assumed to be 15 passengers

Vehicle capacity assumed to be 15 passengers

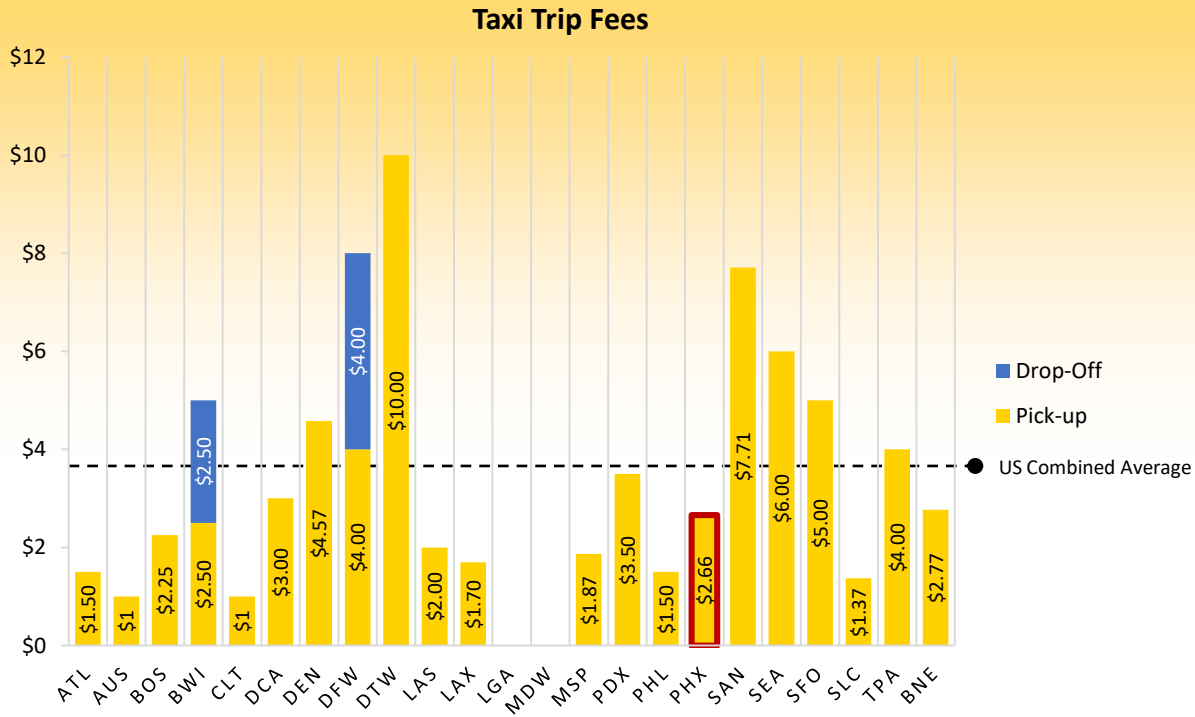
Vehicle capacity assumed to be 15 passengers

Vehicle capacity assumed to be 15 passengers

# Comparison of Trip Fees

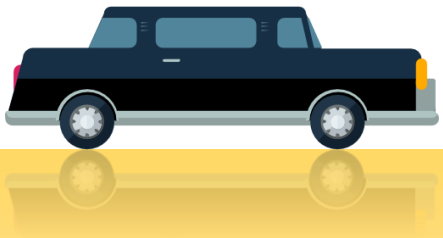
**Observations**

- 2 airports charge for pick-ups and drop-offs
- US average pick-up trip fee of $3.36
- US average drop-off trip fee of $3.25
- US average combined trip fee of $3.68
- Of 20 US airports collecting trip fees, 10 were collecting more than PHX.



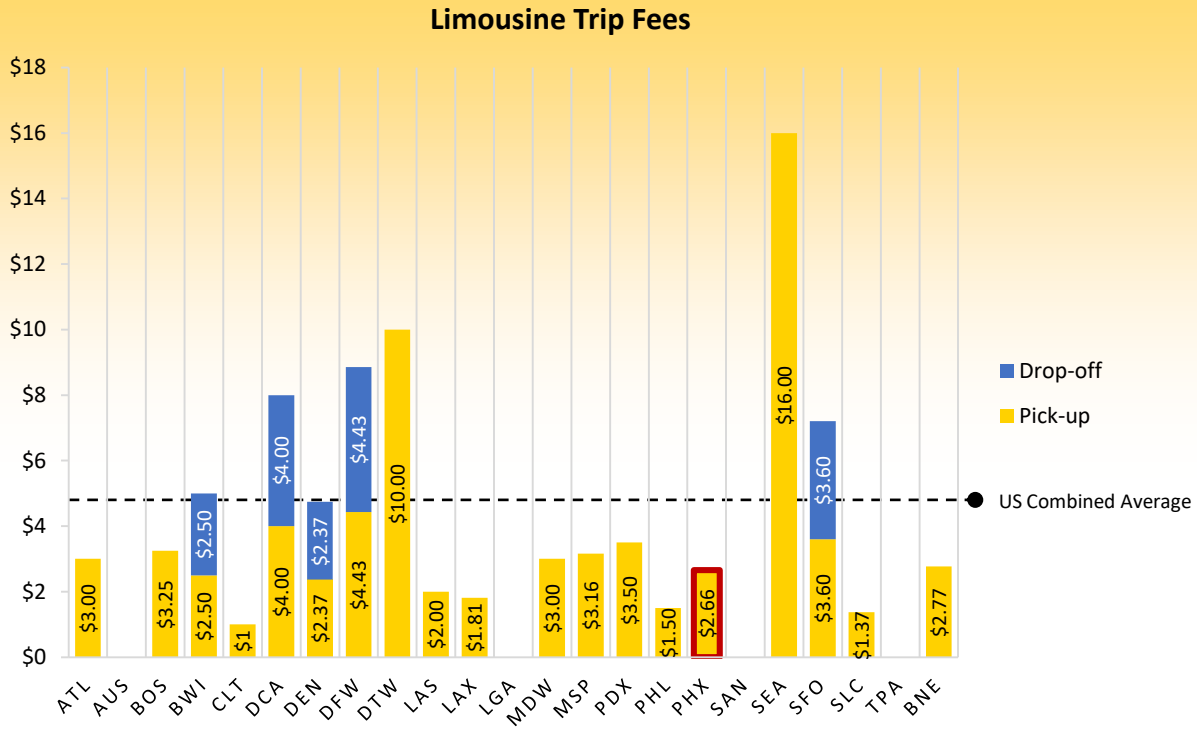

***Note:*** *Trip fees for MDW were not available through desktop research. BWI drop-off fee as per business agreement with taxi company. DFW has a toll roadway that requires payment for pick-up and drop-off trips. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees



**Observations**

- 5 airports charge for pick-ups and drop-offs
- US average pick-up trip fee of $3.84
- US average drop-off trip fee of $3.38
- US average combined trip fee of $4.78
- Of 18 US airports collecting trip fees, 12 were collecting more than PHX.

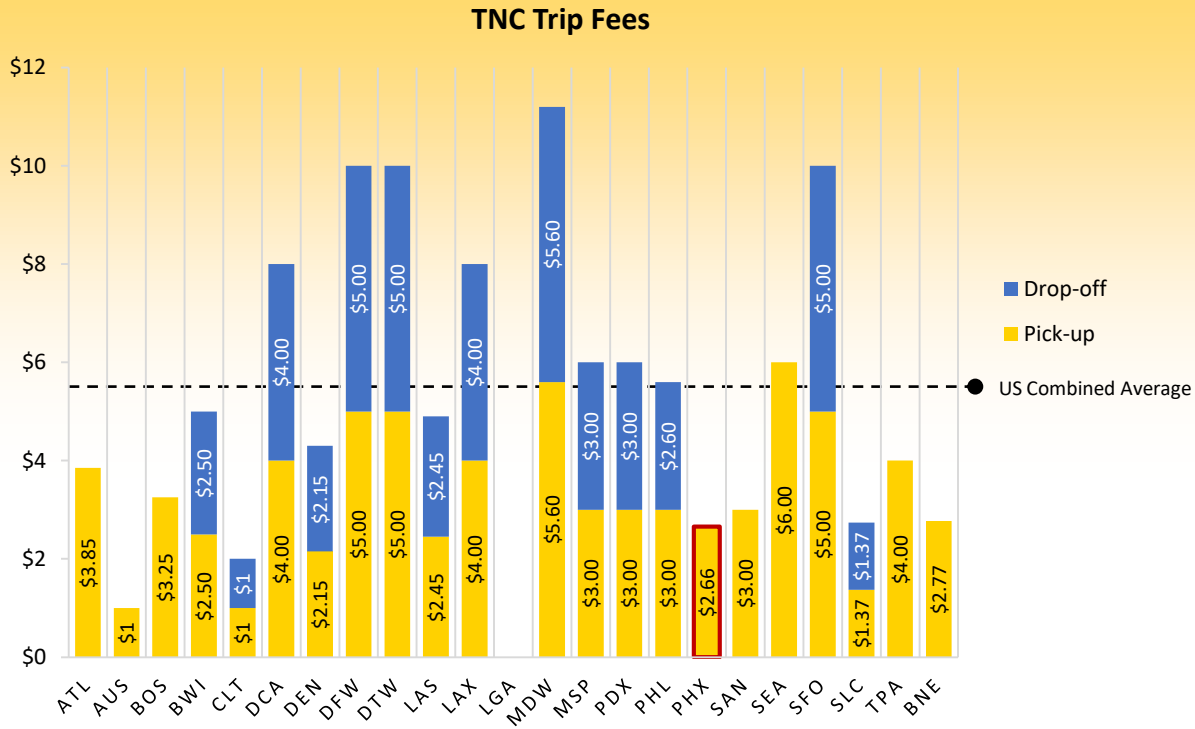



***Note:*** *Trip fees for AUS and TPA were not available through desktop research. BWI drop-off fee as per business agreement with limo company. DFW has a toll roadway that requires payment for pick-up and drop-off trips. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees


**Observations**

- 64% of airports charge for pick-ups and drop-offs
- US average pick-up trip fee of $3.37
- US average drop-off trip fee of $3.33
- US average combined trip fee of $5.60
- Of 21 US airports collecting trip fees, 18 were collecting more than PHX



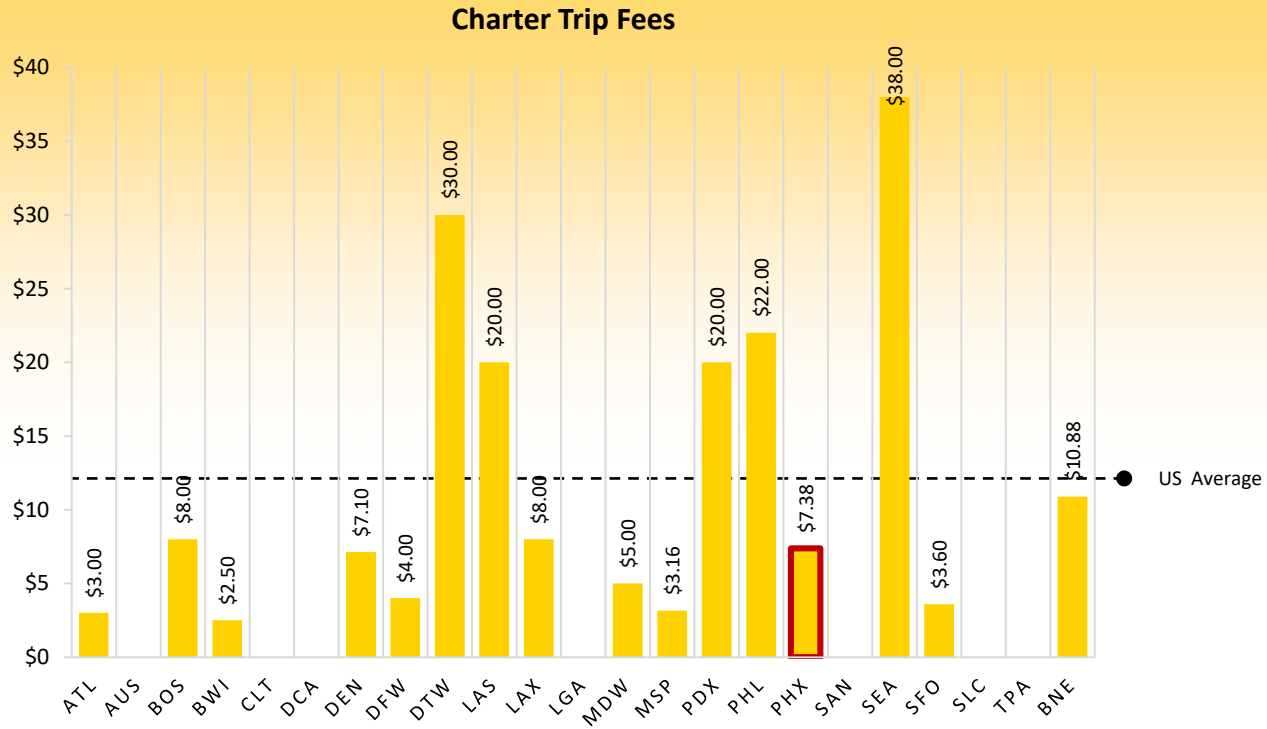

***Note:*** *Trip fees for all airports were found through desktop research or direct conversations. BNE airport fees have been converted to US dollars.*

***Boston:*** *Massport is implementing a TNC fee of $3.25 in <u>both</u> directions effective Oct/2019; note no more curbside hours except early morning so this is a fee for a garage pickup/dropoff location.*

# Comparison of Trip Fees

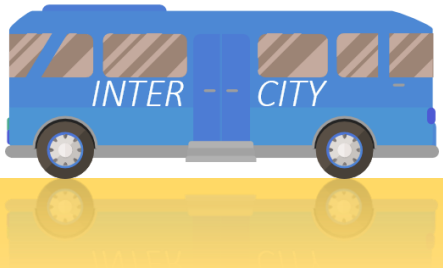

**Observations**

- US average trip fee of $12.12
- Of 15 US airports collecting trip fees, 7 were collecting more than PHX.



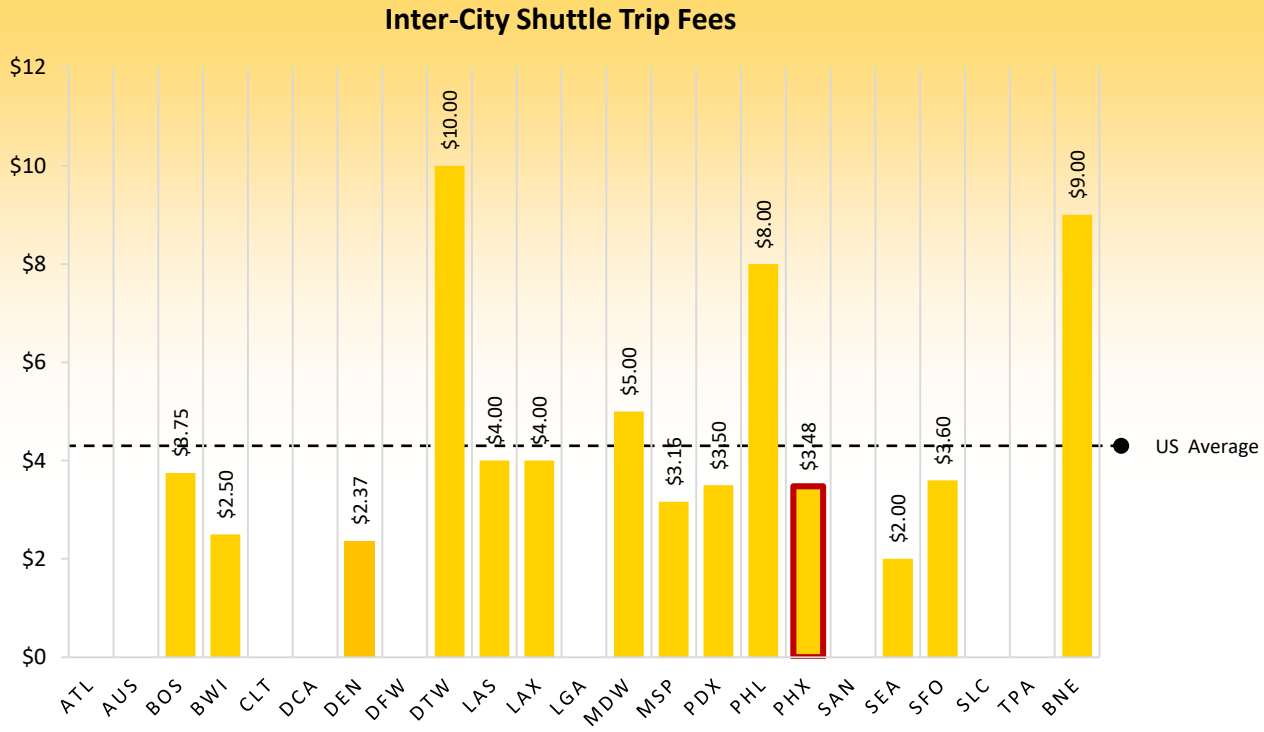

***Note:*** *Charter vehicle capacity is assumed to be the largest available category. Trip fees for AUS, CLT, DCA and TPA were not available through desktop research. Only permit fees apply for SAN and SLC. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees




**Observations**

- US average trip fee of $4.26
- Of 13 US airports collecting trip fees, 8 were collecting more than PHX.

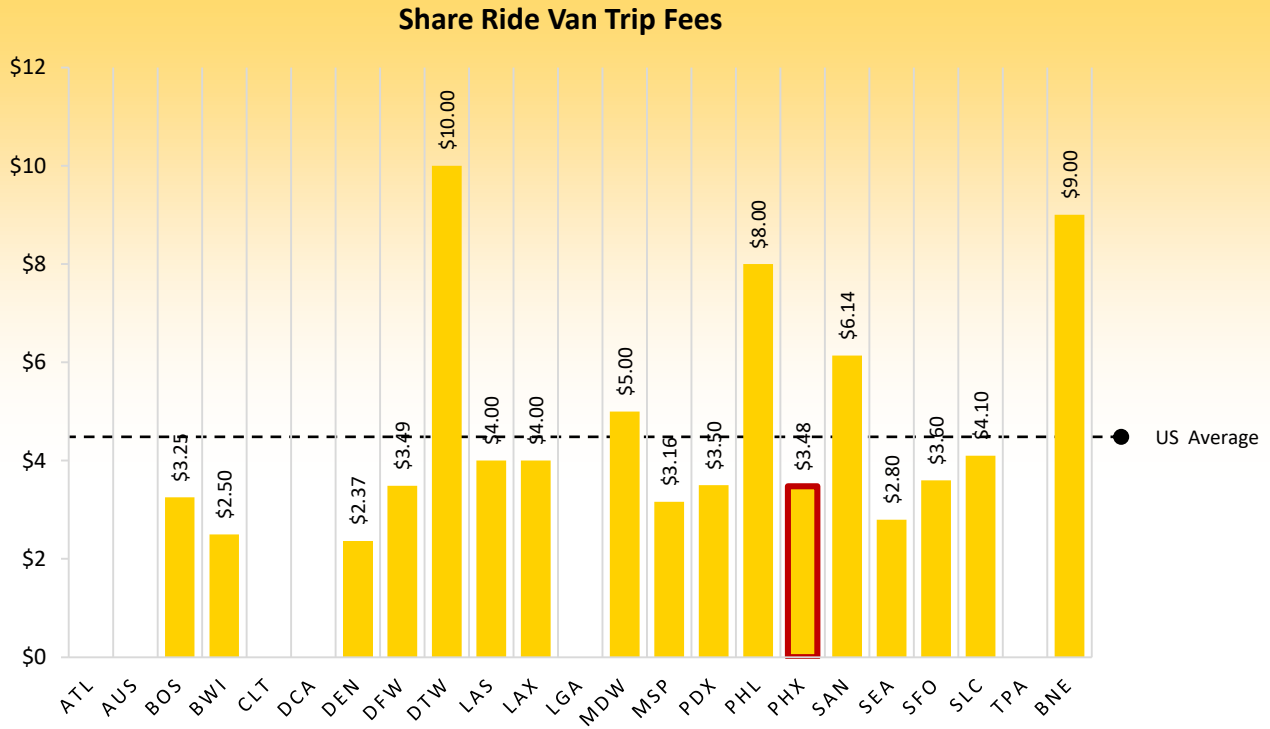



***Note:*** *Vehicle capacity assumed to be 15 seats. Trip fees for ATL, AUS, CLT, DCA, DFW and TPA were not available through desktop research. Only permit fees apply for SAN and SLC. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees


**Observations**

- US average trip fee of $4.34
- Of 16 US airports collecting trip fees, 10 were collecting more than PHX

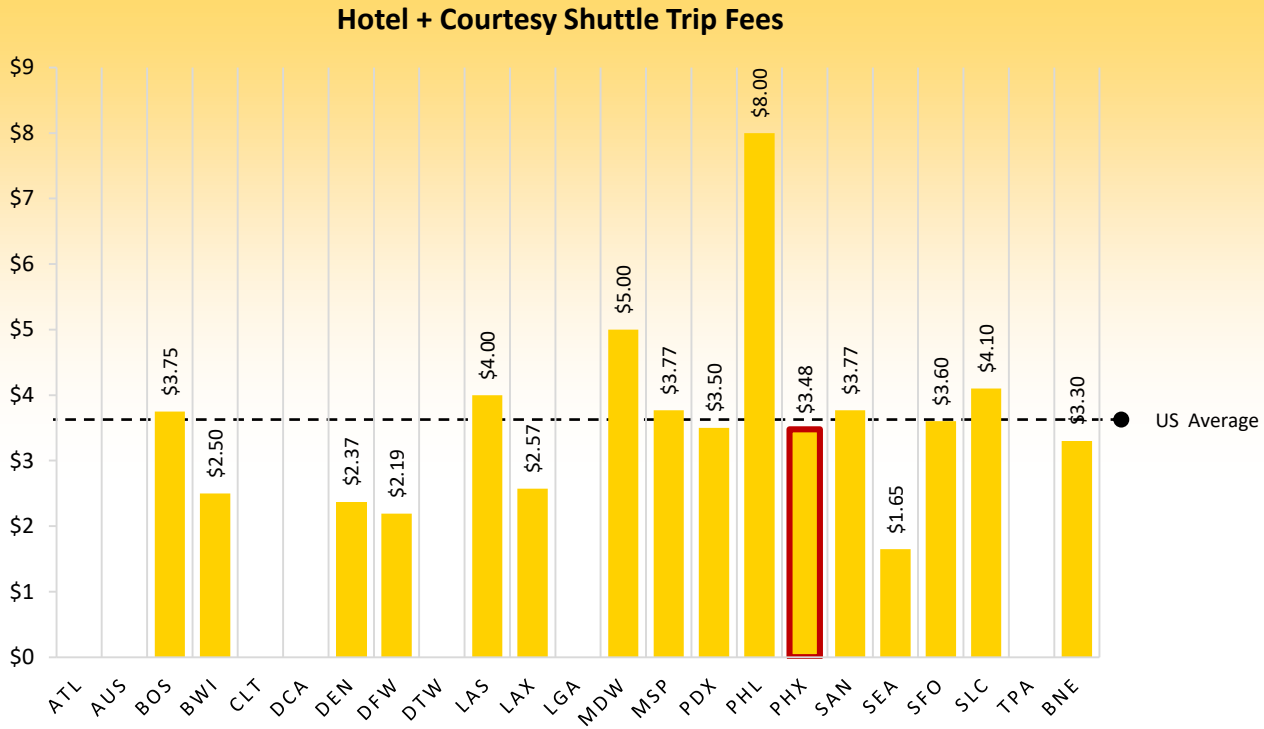



***Note:*** *Vehicle capacity assumed to be 15 seats. Trip fees for ATL, AUS, CLT, DCA, and TPA were not available through desktop research. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees


**Observations**

- US average trip fee of $3.62
- Of 15 US airports collecting trip fees, 9 were collecting more than PHX

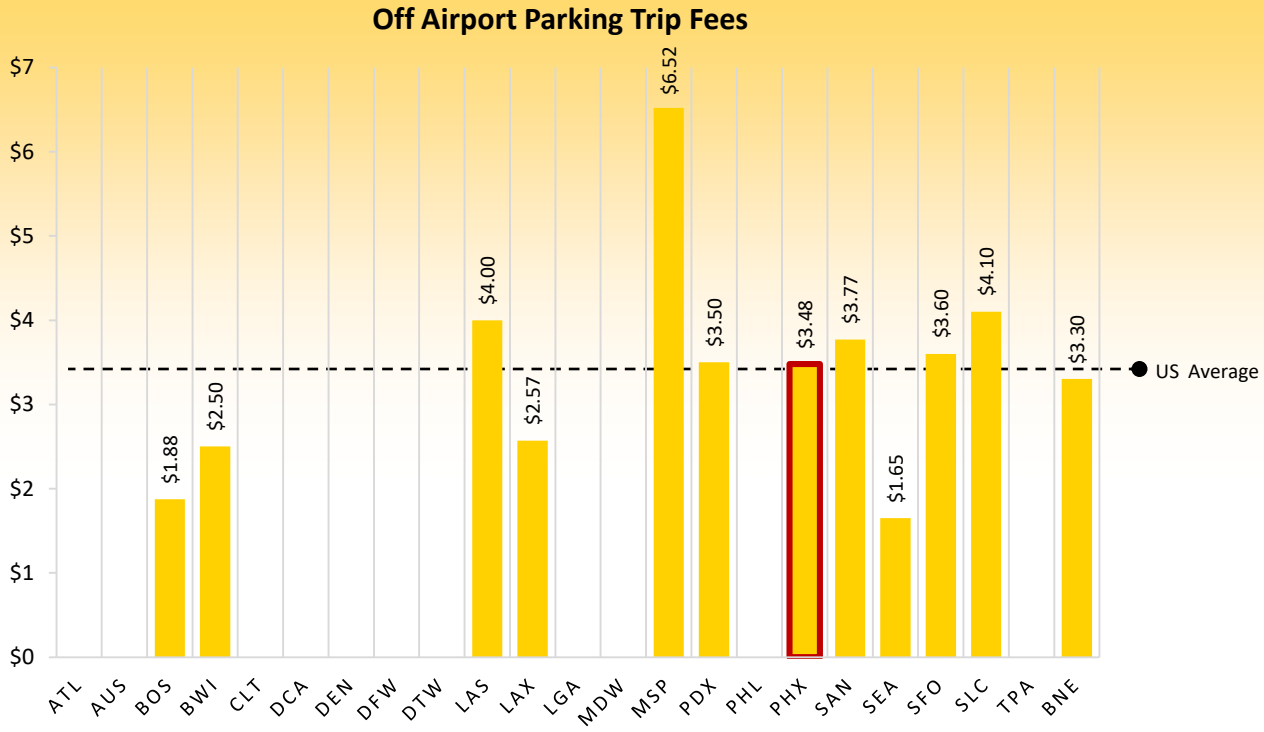



***Note:*** *Vehicle capacity assumed to be 15 seats. Trip fees for AUS, CLT, DCA and TPA were not available through desktop research. Only permit fees or concession agreement apply for ATL and DTW. BNE airport fees have been converted to US dollars.*

# Comparison of Trip Fees


**Observations**

- US average trip fee of $3.42
- Of 11 US airports, 6 were collecting more than PHX




***Note:*** *Vehicle capacity assumed to be 15 seats. Trip fees for CLT, and DCA were not available through desktop research. Only permit fees or concession agreement apply for ATL, DTW and TPA. MSP trip fee data was provided by stakeholders. BNE airport fees have been converted to US dollars.*

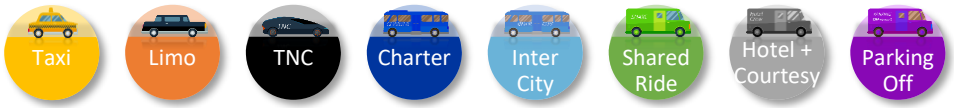
***Note:*** *A concession agreement is applied at AUS, DEN and DFW where a percentage of gross revenue is charged to operators. Stakeholders provided the following equivalent per trip fee for these airports based on their operation and charges incurred: AUS = $5.09, DEN = $6.32, DFW = $8.67. If these equivalent trip fees were added back into the charges in the above chart, the average trip fee would be $4.12.*

# Comparison of Trip Fees

**Summary of Trip Fees**

| CATEGORY | VEHICLE CAPACITY ASSUMPTION | PHX per pickup | U.S. BENCHMARK AVERAGE per pickup | U.S. BENCHMARK AVERAGE combined pickup and drop off (where applicable) |
|---|---|---|---|---|
|  | 4 | $2.66 | $3.36 | $3.68 |
|  | 4 | $2.66 | $3.84 | $4.78 |
|  | 4 | $2.66 | $3.37 | $5.60 |
|  | largest available | $7.38 | $12.12 | |
|  | 15 | $3.48 | $4.26 | |
|  | 15 | $3.48 | $4.34 | |
|  | 15 | $3.48 | $3.62 | |
|  | 15 | $3.48 | $3.42 | |

# Comparison of Trip Fees



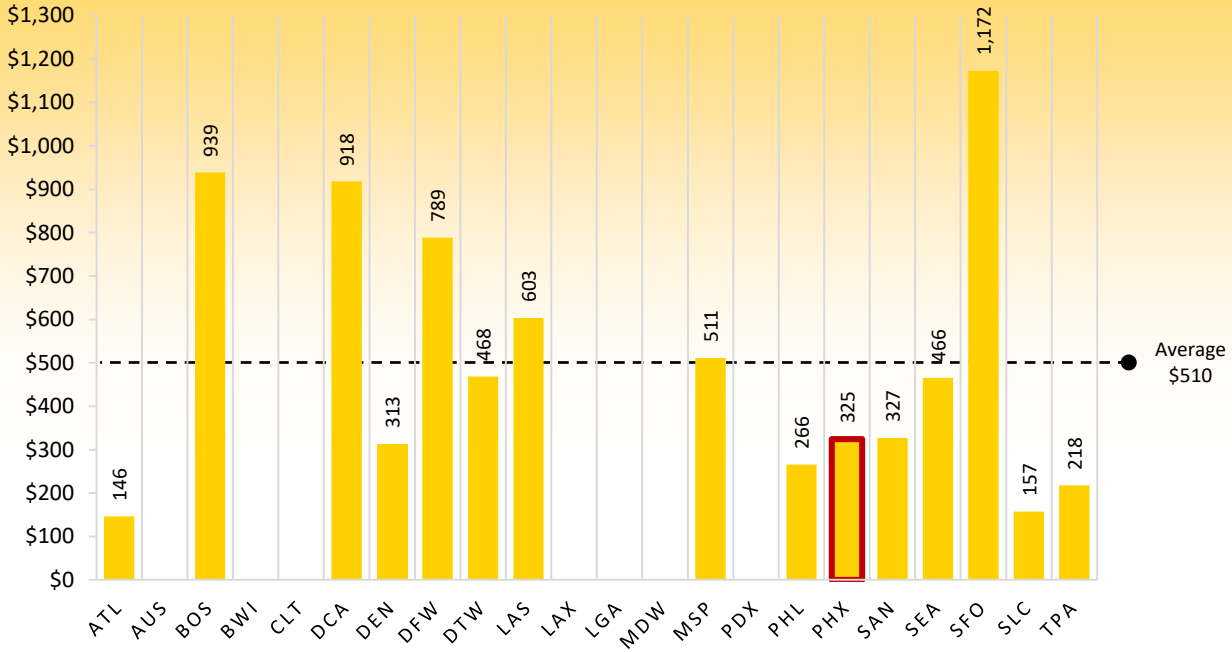

**Other Considerations**

Some benchmark airports charged other fees in addition to trip fees. The research identified that of the 23 airports in the study 17 also had permit fees and/or concession agreements. These fees combined with trip fees contributed to GT related total revenue.

Where available, annual GT revenue totals were collected from each airport directly or were researched via their annual reports.

The following graph compares airport annual GT revenue per 1,000 originating and destinating (O&D) passengers as a relatively neutral basis from which to compare overall fee levels or GT related revenue.

**Annual GT Revenue per 1,000 O&D Passengers**




***Note 1:*** *2018 O&D data sourced from Data-In Intelligence-Out (diio.net). GT revenue sourced from airport annual reports for latest financial year or from direct conversations with airport. Airport with no available information for GT revenue have not been provided and are not included in determining the average.*

***Note 2:*** *Each airport has a unique ratio of O&D passengers using Ground Transport vs. Car Rentals vs. Private Cars.*

# Benchmarking Observations

# Benchmarking Observations

| General Observations | Benchmark Example |
|---|---|
| The GT industry continues to change as the modal shift reaches a new balance | |
| Airports experience challenges with the introduction of TNCs resulting in drastic changes to roadway operation | MSP, SFO, BOS requirepick-up in parking garage to reduce curbside activity |
| All modes of GT can present operational challenges | Car rental shuttles at PHL have very high frequency due to no trip fee |
| Many airports have additional fees on top of trip fees | DFW, DTW, MSP, PHL, SAN, SEA, SFO permit fees |
| Fees have been charged to incentivize use of alternate areas through flexibility in the fee structure | SFO |
| The majority of airports (14 of 22 in this study) charge TNCs both pick-up and drop-off fees, while other GT categories are only charged pick-up fees | Airports with TNC pick-up and drop-off fees: BWI, CLT, DCA, DEN, DFW, DTW, LAS, LAX, MDW, MSP, PDX, PHL, SFO, SLC |
| PHX remains below the average of the US benchmark airports for trip fees (except for off-airport parking). The largest difference observed was in TNCs. | |
| Each GT service category has a different trip fee average | |
| Many airports breakdown trip fees by GT service | Examples include: SFO, SEA, PDX, SAN, DCA, LAX |
| Cut through traffic can be mitigated through the introduction of toll roads | DFW |
| Many airports introduce dwell time fees to mitigate curb dwelling of vehicles | DFW, BNE, DEN, MSP, PHL, SFO, SLC |
| The majority of airports aim to recover all costs relating to GT through GT fees | |
| The level of autonomy to modify fees varies between airports. In many cases, reduced autonomy limits ability to address operational challenges. | PHX 3-year fee structure without TNCs definition |
| Alternate fuel vehicle rates exist as a method to encourage industry environmental standards but vary significantly | PHX 10%, SAN 266%, SFO 300% (delta between standard and “clean” vehicle fee) |

# Benchmarking Observations

**Observations on Financial Goals**

The following table highlights the financial goal detail provided by the interviewed airports:

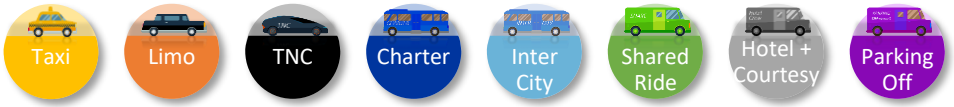
| | Airport |
|---|---|
| Financial goal takes into consideration Consumer Price Index, historical operating expenses, administration costs, penalty, interest and depreciation to airport roadways and facilities. | MSP |
| The approach used looks at GT associated costs and sets fees to recover 100% of costs. | DEN |
| Goal is to recover costs for GT-used facilities including curb in parking garage. | SEA |
| Aim to recover cost like staff, road improvement, signage, technology infrastructure, access points, roadways. In past SAN never recovered more than about 25% of their costs. | SAN |
| At DFW, market-based fees that are used to fund GT operations, maintain and build public infrastructure (non-aeronautical), plus a return on capital, which enables DFW to make future investments. | DFW |
| PHL has several different agreements with GT operators and is currently in the process of reviewing GT fees and their financial goals. | PHL |
| SFO aims to recover costs associated with roadway, staffing, administration (developing/maintaining roadways, police service, investigator, staff manager, etc. | SFO |
| At SLC, aim has been cost recovery of capital expenses, operating expenses, staffing and administration expenses. New GT lot to be developed, which will be included in cost recovery. | SLC |

We also observed:

- Although cost recovery is common, each airport has a unique cost base and inventory of infrastructure associated with GT operations
- Some airports intend to recover all costs but do not achieve this target
- Some airports target making a profit. The financial goal to make a profit is used either to offset landing fees or to invest in infrastructure

# Recommendations

# Recommendations




**Overall Recommendations**

The following recommendations are based on benchmarking of the airports within this study.

*GT Fees*

- Revised trip fees should be enacted in the context of the fees of US airports benchmarked in this study.
- Separate trip fees by GT service (rather than seating capacity) should be established because each service imposes unique operational demands. This change would eliminate the fee issues with service providers that use multiple vehicle types.
- To address the unique features associated with TNC operators, such as the use of tracking technology and high-vehicle volumes impacting curbside operations, and to confirm to prevailing industry standards, TNC drop-off fees should be established.

*Flexibility*

- Flexibility to adjust rates should be introduced into the fee structure to enable AVN to respond in a timely manner to industry changes, for example variable fees and mechanisms to add new GT service categories

*Future-proofing*

- Demand management strategies should be explored to address developing issues of cut-through traffic and limited curb space.
- AVN should explore leveraging the Sky Train development to move pick-up and drop-off passengers out of the terminal core, which will reduce core congestion.

# Recommendations

**Applying GT Fee Recommendations**

Three GT Fees recommendations were outlined to guide a transition towards more industry standard fees. This section applies a baseline for a new fee structure at PHX based on these recommendations.

1. Revised trip fees should be assessed in the context of the fee data of US airports benchmarked in this study.

2. Separate trip fees by GT service should be established because each service imposes unique operational demands.

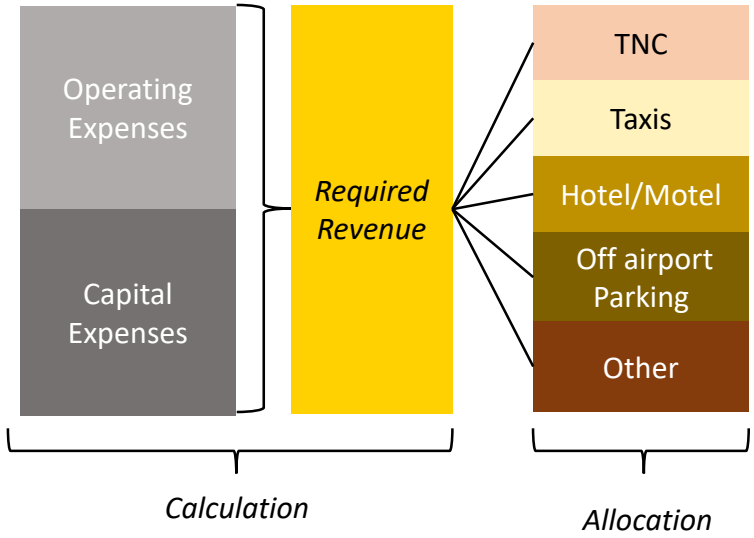
3. TNCs' unique impact should be addressed by aligning TNC category with prevailing industry standards through establishing drop-off fees.

***How Airports Determine Fees***

In determining the current GT fee structure at PHX, AVN applied typical financial goals, including cost recovery. The following graphic highlights the basic method employed when calculating the required revenue for a cost-recovery model. The cost-recovery financial model described here is similar to other airports.

But benchmarking demonstrated that various financial goals are applied differently in the industry (on a spectrum from partial cost recovery to cost plus profit).

Benchmarking also demonstrated that the methods used to collect fees varies in the industry.



# Recommendations

***Financial Goals and Types of Fees***

The following table highlights the financial goals and types of fees charged to GT operators at each of the interviewed airports:

| Airport | Financial Goal | Trip Fees | Permit Fees | Privilege Fees (% of Revenue) |
|---|---|---|---|---|
| PHX | Full Cost Recovery | ☑ | ☒ | ☒ |
| BNE | Profit | ☑ | ☒ | ☒ |
| DEN | Full Cost Recovery | ☑ | ☒ | ☑ |
| DFW | Profit | ☑ | ☑ | ☑ |
| DTW | Profit | ☑ | ☑ | ☒ |
| MSP | Partial Cost Recovery | ☑ | ☑ | ☒ |
| PHL | Under Review | ☑ | ☑ | ☒ |
| SAN | Partial Cost Recovery | ☑ | ☑ | ☒ |
| SEA | Full Cost Recovery | ☑ | ☑ | ☒ |
| SFO | Full Cost Recovery | ☑ | ☑ | ☒ |
| SLC | Full Cost Recovery | ☑ | ☒ | ☒ |

Three important trends are observed from the 11 interviewed airports:

1. Financial Goal: Variable approaches are used across the industry.
2. Fee collection method: The one consistent approach used across the industry is the use of trip fees.
3. Majority of airports collect fees in addition to trip fees; PHX does not collect these other fees.

# Recommendations

***PHX Current GT Fees vs. Average Benchmark Fees***

Trip fees are consistently utilized across the industry even though the benchmark airports have set different financial goals.

The table below compares the current PHX trip fees with the benchmarked average trip fees including TNC drop-off fees. This analysis is consistent with the three recommendations relating to GT Fees.

| **Scenario Comparison** | **Current Fees (2019)** | | | | **Average Benchmark Fees** | | | |
|---|---|---|---|---|---|---|---|---|
| Revenue $m | $9.1 | | | | $18.5 | | | |
| Total Commercial GT Trips (FY2019) | 3,243,200 | | | | 5,393,200 | | | |
| **Average Fee per Trip** | **$2.80** | | | | **$3.43** | | | |
| | **Fee per GT Service** | **FY2019 Forecast Trips** | **Total Fee** | **% of Total Fee** | **Fee per GT Service** | **FY2019 Forecast Trips** | **Total Fee** | **% of Total Fee** |
| Taxi Pick-up | $2.66 | 424,500 | $ 1,129,170 | 12% | $3.36 | 424,500 | $ 1,426,320 | 8% |
| Limo Pick-up | $2.66 | 166,800 | $ 443,688 | 5% | $3.84 | 166,800 | $ 640,512 | 3% |
| TNC Pick-up | $2.66 | 2,150,000 | $ 5,719,000 | 63% | $3.37 | 2,150,000 | $ 7,245,500 | 39% |
| TNC Drop-off | - | - | $ - | 0% | $3.37 | 2,150,000 | $ 7,245,500 | 39% |
| Charter Pick-up | $7.38 | 8,400 | $ 61,992 | 1% | $12.12 | 8,400 | $ 101,808 | 1% |
| Intercity Pick-up | $3.48 | 41,900 | $ 145,812 | 2% | $4.26 | 41,900 | $ 178,494 | 1% |
| Shared Ride Van Pick-up | $3.48 | 64,400 | $ 224,112 | 2% | $4.34 | 64,400 | $ 279,496 | 2% |
| Hotel + Courtesy Pick-up | $3.48 | 152,900 | $ 532,092 | 6% | $3.62 | 152,900 | $ 553,498 | 3% |
| Parking Off Airport Pick-up | $3.48 | 234,300 | $ 815,364 | 9% | $3.42 | 234,300 | $ 801,306 | 4% |

# Recommendations

**Specific Fee Recommendation**

New GT Fees at PHX should be set and adjusted by the US Consumer Price Index (CPI). We view the average benchmark trip fees as a minimum for PHX because:

- Benchmarked trip fees are probably below market since the majority of airports have other fees in addition to these trip fees, and some of these comparative airport trip fees have not been adjusted in 3 to 4 years.
- The GT industry is still adapting to the introduction of TNC operations, and trip fees continue to change in this GT category (e.g. BOS will introduce a TNC drop-off fee later this year).

This proposed new structure will bring PHX closer in line with market rates. This approach results in trip fees for each GT category aligned with industry practice.

**Next Steps**

We recommend adopting a City Code amendment to reflect the new fees and fee structure including:

- Set new trip fees in the context of the CPI-adjusted US benchmarked average
- Change fee structure to establish trip fees by GT category, rather than by vehicle size
- In line with many other airports, introduce a TNC drop-off fee
- Provide flexibility in the City Code for AVN to set future rates to enable PHX to promptly respond to industry changes

# Appendix A:

# Benchmark Airport Case Studies

# Benchmark Airport Case Studies

An overview of each of the 11 interviewed airports is provided in this section. These "Case Studies" provide additional context to the trip fees provided in this report.

**Financial Goal**

An important consideration when comparing fees is the financial goal of airport management. The adjacent table provides a summary of the 11 interviewed airports.

**Financial Goal of GT Department**

| Profit (for shareholders) | Profit (reinvested into the airport) | Full Cost Recovery | Partial Cost Recovery | Financial Goal Under Review |
|---|---|---|---|---|
| BNE | DFW | DEN | MSP | PHL |
| | DTW | **PHX** | | |
| | | SEA | | |
| | | SFO | | |
| | | SLC | | |
| | | SAN | | |

**Level of Autonomy**

Airports have varying levels of autonomy in setting of GT fees. Two categories were found to define the process of setting GT fees, these included:

- At airport management's discretion
- With City Council or Authority Commissioners' approval

**Level of Autonomy in Setting Fees**

| At airport management's discretion | City Council or Authority Commissioners' approval needed |
|---|---|
| BNE | DEN |
| DFW | MSP |
| DTW | PHL |
| SAN | **PHX** |
| SLC | SEA |
| | SFO |

# PHX: Phoenix Sky Harbor International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 43.3 m |
| Annual GT Revenue: | $9.4 m |
| Financial Goal: | Full Cost Recovery |
| Demand Management Fee: | No |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | City Council approval needed |

**Fee Structure**

- Pick-up fee only
- No permit fees
- AFV rate: 10% discount for monthly trip fee invoice for trips conducted by alternative fuel powered vehicles.
- In 2020 fees will be increased annually at lesser of 3% or CPI change for Los Angeles-Riverside-Orange County.
- 10% discount on trip fees for alternative fuel powered vehicles

| | Trip Fees | Permit Fees |
|---|---|---|
| Taxi | $ 2.66 /pickup | |
| Limo | $ 2.66 /pickup | |
| TNC | $ 2.66 /pickup | |
| Charter | $ 7.38 /pickup | |
| Inter City | $3.48 /pickup | |
| Shared Ride | $ 3.48 /pickup | |
| Hotel & Courtesy | $ 3.48 /pickup | |
| Parking Off | $ 3.48 /pickup | |

**Notes on Data**

- 2019 trip fees provided
- Financial goal is representative of existing fee structure
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# BNE: Brisbane International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 23.9 m |
| Annual GT Revenue: | $9.2 m |
| Financial Goal: | Profit |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | Toll Road + GPS |
| Level of Autonomy: | At management's discretion |

**Fee Structure**

- Pick-up fees only
- No permit fees
- No special AFV rate
- Toll road ensures all GT traffic on airport roads are charged for pick-ups
- Dwell time fees vary between GT services

| | Trip Fees | Permit Fees |
|---|---|---|
| Taxi | $ 3.90 /pick-up | |
| Limo | $ 3.90 /pick-up | |
| TNC | $ 3.90 /pick-up | |
| Charter | $ 15.33 /pick-up | |
| Inter City | $ 12.68 /pick-up | |
| Shared Ride | $ 3.90 /pick-up | |
| Hotel & Courtesy | $ 4.65 /pick-up | |
| Parking Off | $ 4.65 /pick-up | |

**Notes on Data**

- 2019 trip fees provided in Australian Dollars. 0.71 Australian dollar to US dollar conversion rate applied for benchmarking.
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.
- GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle

# DEN: Denver International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 58.3 m |
| Annual GT Revenue: | $12.4 m |
| Financial Goal: | Full Cost Recovery |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | City approval needed |

**Fee Structure**

- No permit fees apply
- AFV rate exist
- Only TNCs are charged pick-up and drop-off fee
- Dwell Fees:
  - Maximum 15 passengers, Dwell fee is $2.13 for each 10 minutes after the first 10 minutes.
  - Maximum 31 passengers, Dwell fee is $3.28 for each 10 minutes after the first 10 minutes.
  - Maximum 32 or more passengers, Dwell fee is $4.97 for each 10 minutes after the first 10 minutes.

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 4.57 | /pick-up | | |
| Limo | $ 2.37 | /pick-up | | |
| TNC | $ 2.15<br>$ 2.15 | /pick-up<br>/drop-off | | |
| Charter | $ 7.10 | /pick-up | | |
| Inter City | $2.37 | /pick-up | | |
| Shared Ride | $ 2.37 | /pick-up | | |
| Hotel & Courtesy | $ 2.37 | /pick-up | | |
| Parking Off | | | 8% | Of gross revenue |

**Notes on Data**

- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# DFW: Dallas Fort-Worth International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 65.7 m |
| Annual GT Revenue: | $23.6 m |
| Financial Goal: | Profit |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + Toll Road |
| Level of Autonomy: | At management's discretion |

**Fee Structure**

- To establish market-based fees that are used to fund GT operations, maintain and build public infrastructure (non-aeronautical), plus a return on our Capital which enables DFW to continue to make future investments. Additionally, establishing a level playing field between all GT operators is also considered.
- Toll ensures all traffic on airport roads are charged for use
- Parking fees apply after 30 minutes
- No special AFV rate

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 4.00 | /exit | $600<br>+$60 | /annum/company<br>/vehicle/year |
| Limo | $ 4.43 | /exit | $600 | /annum/company |
| TNC | $ 5.00 | /exit | $600 | /annum/company |
| Charter | $ 4.00 | /exit | | |
| Inter City | N/A | | N/A | |
| Shared Ride | $ 3.49 | /exit | | |
| Hotel & Courtesy | $ 2.19 | /exit | | |
| Parking Off | | | 12% | Of gross revenue |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# DTW: Detroit Metropolitan Wayne County Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 34.4 m |
| Annual GT Revenue: | $9.5 m |
| Financial Goal: | Profit |
| Demand Management Fee: | No |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | At management's discretion |

**Fee Structure**

- Any excess revenues from GT are used to reduce airline fees
- TNCs pay pick-up and drop-off fees while other trips fees only apply to pick-up.
- All courtesy vehicles not operated by the airport pay $780 per month
- No special AFV rate

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 10.00 | /pick-up | | |
| Limo | $ 10.00 | /pick-up | | |
| TNC | $ 5.00<br>$ 5.00 | /pick-up<br>/drop-off | | |
| Charter | $ 30.00 | /pick-up | | |
| Inter City | | | $780 | /month/vehicle |
| Shared Ride | $ 10.00 | /pick-up | | |
| Hotel & Courtesy | | | $780 | /month/vehicle |
| Parking Off | | | $780 | /month/vehicle |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# MSP: Minneapolis-Saint Paul International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 37.4 m |
| Annual GT Revenue: | $12.3 m |
| Financial Goal: | Partial Cost Recovery |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | Commissioners' approval needed |

**Fee Structure**

- Commercial vehicle permit only covers administration costs
- TNC permit includes license fee, driver permit and background check
- No special AFV rate

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 1.87 | /pick-up | $ 3,450 | /annum |
| Limo | $ 3.16 | /pick-up | $60 | /annum/vehicle |
| TNC | $ 3.00<br>$ 3.00 | /pick-up<br>/drop-off | $ 605 | /annum/driver |
| Charter | $ 3.16 | /pick-up | $60 | /annum/vehicle |
| Inter City | $ 3.16 | /pick-up | $60 | /annum/vehicle |
| Shared Ride | $ 3.16 | /pick-up | $60 | /annum/vehicle |
| Hotel & Courtesy | $ 3.77 | /pick-up | $60 | /annum/vehicle |
| Parking Off | $ 6.52 | /pick-up | $60 | /annum/vehicle |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# PHL: Philadelphia International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 30.2 m |
| Annual GT Revenue: | $5.6 m |
| Financial Goal: | Under Review |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | City approval needed |

**Fee Structure**

- The airport has several different agreements with GT operators and is currently in the process of reviewing GT fees and their financial goals
- Dwell time fees vary between GT services
- No special AFV rate

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 1.50 | /pick-up | $ 25 | /annum/vehicle |
| Limo | $ 1.50 | /pick-up | | |
| TNC | $ 3.00<br>$ 2.60 | /pick-up<br>/drop-off | $ 25 | /annum/vehicle |
| Charter | $ 22.00 | /pick-up | $ 25 | /annum/vehicle |
| Inter City | $ 8.00 | /pick-up | $ 25 | /annum/vehicle |
| Shared Ride | $ 8.00 | /pick-up | $ 25 | /annum/vehicle |
| Hotel & Courtesy | $ 8.00 | /pick-up | $ 25 | /annum/vehicle |
| Parking Off | $1.92 | /passenger | | |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# SAN: San Diego International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 20.7 m |
| Annual GT Revenue: | $7.4 m |
| Financial Goal: | Partial Cost Recovery |
| Demand Management Fee: | No |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | At management's discretion |

**Fee Structure**

- Pick-up fees only
- Alternative fuel vehicle pick-up fees apply for Taxis, Shared Ride, Off Airport Parking and Hotel Shuttles.
- AFV rates exist

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 7.71 | /pick-up | | |
| Limo | | | $209 | /annum/vehicle |
| TNC | $ 3.00 | /pick-up | | |
| Charter | | | $209 | /annum/vehicle |
| Inter City | N/A | | N/A | |
| Shared Ride | $ 6.14 | /pick-up | | |
| Hotel & Courtesy | $ 3.77 | /pick-up | | |
| Parking Off | $ 3.77 | /pick-up | | |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# SEA: Seattle-Tacoma International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 45.7 m |
| Annual GT Revenue: | $15.7 m |
| Financial Goal: | Full Cost Recovery |
| Demand Management Fee: | No |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | Port Authority approval needed |

**Fee Structure**

- Pick-up fees only
- TNC pick-up fee was defined to match Taxi pick-up fee which is part of a concession agreement
- Two types of fee structures exist for Taxis and Limousines: on-demand pays pick-up fee, pre-arranged pays annual permit.
- AFV rate: no special AFV rate but environmental standards are built into contract conditions.

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 6.00 | /pick-up | $610 | /annum/vehicle |
| Limo | $ 16.00 | /pick-up | $655 | /annum/vehicle |
| TNC | $ 6.00 | /pick-up | | |
| Charter | $ 38.00 | /pick-up | | |
| Inter City | $ 2.00 | /pick-up | | |
| Shared Ride | $ 2.80 | /pick-up | | |
| Hotel & Courtesy | $ 1.65 | /pick-up | | |
| Parking Off | $ 1.65 | /pick-up | | |

**Notes on Data**

- 2019 trip fees provided
- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# SFO: San Francisco international Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 53.1 m |
| Annual GT Revenue: | $51.6 m |
| Financial Goal: | Full Cost Recovery |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | Commissioners' approval needed |

**Fee Structure**

- Fee structure provides a fee range for airport management to use their discretion in order to manage operational challenges
- SFO is currently testing TNC demand management. Pick-up and drop-off fee in the parking garage currently set at $3.60 (below rate applied for terminal curb).
- AFV rates apply in some categories.

| | Trip Fees | | Permit Fees | |
|---|---|---|---|---|
| Taxi | $ 5.00 | /pick-up | $ 55.00 | /annum/vehicle |
| Limo | $ 3.60<br>$ 3.60 | /pick-up<br>/drop-off | $ 55.00 | /annum/vehicle |
| TNC | $ 5.00<br>$ 5.00 | /pick-up<br>/drop-off | | |
| Charter | $ 3.60 | /pick-up | $ 55.00 | /annum/vehicle |
| Inter City | $ 3.60 | /pick-up | $ 55.00 | /annum/vehicle |
| Shared Ride | $ 3.60 | /pick-up | $ 55.00 | /annum/vehicle |
| Hotel & Courtesy | $ 3.60 | /pick-up | $ 55.00 | /annum/vehicle |
| Parking Off | $ 3.60 | /pick-up | $ 55.00 | /annum/vehicle |

**Notes on Data**

- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# SLC: Salt Lake City International Airport

| | |
|---|---|
| 2017 E/D Passengers/Annum: | 23.2 m |
| Annual GT Revenue: | N/A |
| Financial Goal: | Full Cost Recovery |
| Demand Management Fee: | Yes |
| Privilege Fee: | No |
| Technology: | AVI + GPS |
| Level of Autonomy: | At management's discretion |

**Fee Structure**

- GT revenue for all AVI tag users of $2.3 million
- TNCs are currently self-reporting
- Campus and terminal front dwell times apply. System is currently down due to programming issues.
- Non-Registered vehicles (No AVI tag) can pay a permit fee instead; $50/day, or $250/week, or $500/year
- Charter and Inter-City fees under review at the time of writing of this report
- No special AFV rate

| | Trip Fees | Permit Fees |
|---|---|---|
| Taxi | $ 1.37 /pick-up | |
| Limo | $ 1.37 /pick-up | |
| TNC | $ 1.37 /pick-up<br>$ 1.37 /drop-off | |
| Charter | | |
| Inter City | | |
| Shared Ride | $ 4.10 /pick-up | |
| Hotel & Courtesy | $ 4.10 /pick-up | |
| Parking Off | $ 4.10 /pick-up | |

**Notes on Data**

- AVI: Automatic Vehicle Identification; GPS: Global Positioning Satellite; AFV: Alternative Fuel Vehicle
- Taxis, Limo and TNC services are assumed to have 4-seat capacity. Inter-City, Shared Ride, Hotel/Courtesy and Parking Off services are assumed to have 15-seat capacity. Charter service is assumed to have highest seat capacity category.

# Appendix B:

# Additional Benchmarking Information

# Additional Benchmarking Information

Stakeholders requested other information from the airports being benchmarked to help provide insight into the GT fees being charged. The information in this appendix includes:

- Airport Contextual Information
- Other Taxes Imposed on GT Operators

The consultant team did NOT find a correlation between the information provided in this appendix and the relative trip fees charged at each airport.

# Additional Benchmarking Information

**Airport Contextual Information**

Stakeholders requested contextual information from the airports being benchmarked to help provide insight into the GT fees being charged.

| | Airport Information | | | | | | Destination | | Airline Type | |
|---|---|---|---|---|---|---|---|---|---|---|
| USA O&D Rank | O&D PPDEW | Airport | Code | Governance | Number of Terminals | Miles from Downtown | Domestic | International | LCC | Non-LCC |
| 1 | 93,851 | Los Angeles CA | LAX | City | 9 | 17.3 | 67% | 33% | 29% | 71% |
| 4 | 60,325 | San Francisco CA | SFO | City | 5 | 13.6 | 71% | 29% | 21% | 79% |
| 6 | 56,512 | Las Vegas NV | LAS | County | 2 | 6.3 | 87% | 13% | 60% | 39% |
| 7 | 54,412 | Denver CO | DEN | City and County | 1 | 25.5 | 92% | 8% | 51% | 49% |
| 8 | 53,628 | Atlanta GA | ATL | City | 2 | 10.4 | 88% | 12% | 26% | 74% |
| 9 | 51,811 | Boston MA | BOS | Port Authority | 4 | 4.2 | 78% | 22% | 40% | 60% |
| 11 | 46,139 | Seattle WA | SEA | Port Authority | 1 | 13.7 | 87% | 13% | 16% | 84% |
| 12 | 40,989 | Dallas/Fort Worth TX | DFW | Cities | 5 | 19.5 | 85% | 15% | 11% | 89% |
| **13** | **39,643** | **Phoenix AZ** | **PHX** | **City** | **3** | **4.0** | **91%** | **9%** | **44%** | **56%** |
| 14 | 38,883 | New York (LaGuardia) NY | LGA | Port Authority | 5 | 9.2 | 90% | 10% | 21% | 79% |
| 17 | 30,882 | San Diego CA | SAN | Airport Authority | 2 | 3.4 | 92% | 8% | 46% | 54% |
| 18 | 30,746 | Minneapolis, MN | MSP | Airport Commission | 2 | 11.9 | 89% | 11% | 26% | 74% |
| 20 | 28,800 | Philadelphia PA | PHL | City | 7 | 11.0 | 88% | 12% | 24% | 76% |
| 21 | 28,401 | Washington DC | DCA | Airport Authority | 1 | 4.6 | 93% | 7% | 28% | 72% |
| n/a | 27,912 | Brisbane AUSTRALIA | BNE | Private Corporation | 2 | 17.1 | 72% | 28% | 52% | 48% |
| 22 | 27,795 | Detroit MI | DTW | County | 2 | 20.2 | 87% | 13% | 26% | 74% |
| 23 | 27,054 | Baltimore MD | BWI | Airport Authority | 1 | 10.3 | 91% | 9% | 71% | 29% |
| 24 | 25,939 | Tampa FL | TPA | Airport Authority | 1 | 8.5 | 90% | 10% | 51% | 49% |
| 25 | 24,190 | Portland OR | PDX | Port Authority | 1 | 10.1 | 90% | 10% | 26% | 74% |
| 28 | 20,191 | Chicago (Midway) IL | MDW | City | 1 | 10.9 | 95% | 5% | 93% | 7% |
| 29 | 19,923 | Austin TX | AUS | City | 2 | 8.8 | 91% | 9% | 47% | 53% |
| 30 | 19,762 | Salt Lake City UT | SLC | City | 2 | 8.2 | 92% | 8% | 24% | 76% |
| 31 | 19,110 | Charlotte NC | CLT | City | 1 | 7.9 | 89% | 11% | 9% | 91% |

**Sources:**

- Airbiz analysis O&D passenger traffic information from Diio Market Intelligence database (year-ended July 2018)
- ICAO List of Low Cost Carriers based on ICAO Definition, June 2017

**Terms Used**

- O&D = Origin and Destination
- PPDEW = Passengers Per Day Each Way
- E/D = Enplaned/Deplaned (passengers)
- LCC = Low Cost Carrier

# Additional Benchmarking Information

**Other Taxes Imposed on GT Operators**

In addition to the fees charged by airport operators, the customers of commercial GT companies doing business at an airport are required to pay taxes imposed by local city and county governments. While none of the revenues resulting from these taxes are shared with or directly benefit local airports, some customers may not perceive the difference between the taxes charged by local governments and the fees charged by an airport operator, particularly if GT operators combine these taxes and fees into a single "below the line" item on the customer's bill.

**Types of Taxes**

Fees and taxes imposed on the customers of GT operators by local governments are typically calculated in one of two ways:

1. Percentage of the total cost of renting a car, parking a vehicle, or the hotel room rate; or
2. Flat fee per transaction.

Examples of taxes imposed by city and county governments on the customers of GT companies are summarized below. These taxes are in addition to any state or local sales taxes.

**Taxes on Airport Rental Car Customers**

Examples of the taxes charged by local governments on customers renting cars at or near an airport are presented below.

***Percentage of Rental Rate***

Examples of local governments charging rental car customers a tax calculated as a percentage of rental car fees include:

- Chicago, Illinois – the Metropolitan Pier and Exposition Authority charges a 6% tax and the city of Chicago charges an additional 9% tax
- Salt Lake County, Utah – the County charges a 7% tax
- King County (Seattle), Washington – the County charges a 1.8% tax

# Additional Benchmarking Information

*Flat Rate Tax*

Examples of local governments charging rental car customers a tax calculated as a flat amount include:

- Boston, Massachusetts – the City collects a $10 fee per car rental transaction
- Pima County (Tucson), Arizona – the County collects a $3.50 fee per car rental transaction
- Phoenix – Customers renting a car at Sky Harbor International Airport are required to pay a Maricopa County tax calculated as 3.25% of the rental-car company proceeds or $2.50 per car rental transaction, whichever is larger.

**Taxes on Parking Businesses**

Examples of the taxes charged by local governments on customers parking a vehicle at or near an airport are presented below. These fees may be imposed upon all parking businesses in a community, not just those located near an airport.

*Percentage of Parking Fee*

Examples of city and county governments charging parking customers a tax calculated as a percentage of the parking fee include:

- Tinicum Township, Pennsylvania (adjacent to Philadelphia International Airport) – the Township charges a 9.5% tax
- Dade County (Miami), Florida– the County charges a 15% tax
- Oakland, California – the City charges a 18.5% tax

*Flat Rate Tax*

Examples of city and county governments charging parking customers a tax calculated as a flat amount include:

- Salt Lake City, Utah – the City collects a $0.50 fee per parking transaction
- City of SeaTac and Burien (both adjacent to Sea-Tac International Airport)– these cities charge a $3.50 fee per parking transaction
- Phoenix—Customers parking a car on or near Sky Harbor International Airport are required to pay a City of Phoenix tax calculated as 2.1% of the parking fee.

# Additional Benchmarking Information

**Taxes on Hotel/Motel**

Examples of the fees charged hotel guests are presented below. These fees are typically imposed upon the guests of all hotels in a community.

***Percentage of Room Rate***

Examples of city and county governments charging hotel guests a tax calculated as a percentage of their room rate include:

- Houston, Texas imposes a tax of 17%
- San Francisco imposes a tax of 15.5%
- Phoenix imposes a tax of 13.27%

# Appendix C:

# PHX Ground Transportation Infrastructure

# PHX Ground Transportation Infrastructure

This section outlines the infrastructure that support GT at PHX. The most recent GT transaction volumes at PHX have also been provided.

**GT Infrastructure**

***Roadways***

Roadways provide GT with access to PHX facilities.

***Pick-Up and Drop-off Locations***

PHX provides dedicated pick-up locations for GT Operators. Locations are provided across the airport property. Terminals 2, 3 and 4 have pick-up curb locations by GT Operator. The graphic on the following page highlights all dedicated pick-up locations.

Drop-off locations are not allocated or dedicated for GT Operators. GT Operators may only drop-off customers at the inner curb of all terminals, the departure level of Terminal 4, or in parking garages.

***Designated Waiting Areas***

The airport provides two designated waiting areas for authorized GT Operators until such a time as the passenger is ready for pick-up at the appropriate pick-up location. Waiting areas are open 24 hours a day and staffed by the Aviation Department.

***Automated Vehicle Identification (AVI) System***

AVI is a sophisticated and accurate vehicle tracking system. Electronic readers, positioned throughout the airport, detect AVI tags affixed to authorized vehicles. The system allows the Ground Transportation Office to track vehicle activity and provides reporting information utilized to determine trips. AVI tags are issued by the Aviation Department to authorized users.

***Global Positioning Satellite (GPS) Technology***

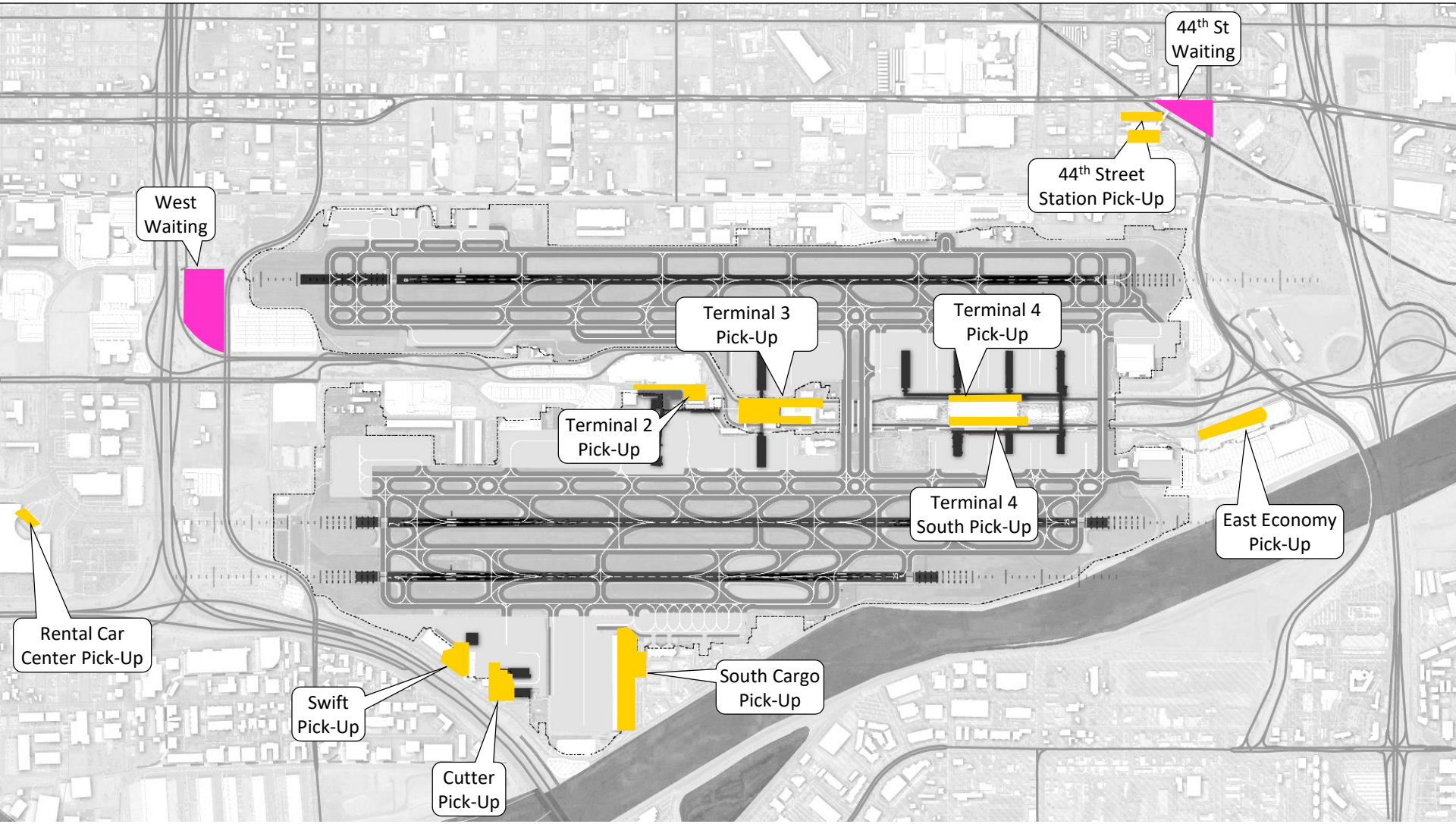
GPS technology is also used for GT Operator vehicle tracking (currently used only by TNC vehicles). Geofence boundaries have been established by the Aviation Department within which all GPS operators must report their activity.

***Sky Train***

Stage 2 of the Sky Train development is currently under construction and due for opening in 2023. The expansion will connect the terminals to the Rental Car Center (RCC), eliminating the need for the RCC shuttles on the roadways. This will significantly reduce traffic congestion and opens up curb access for GT operations.

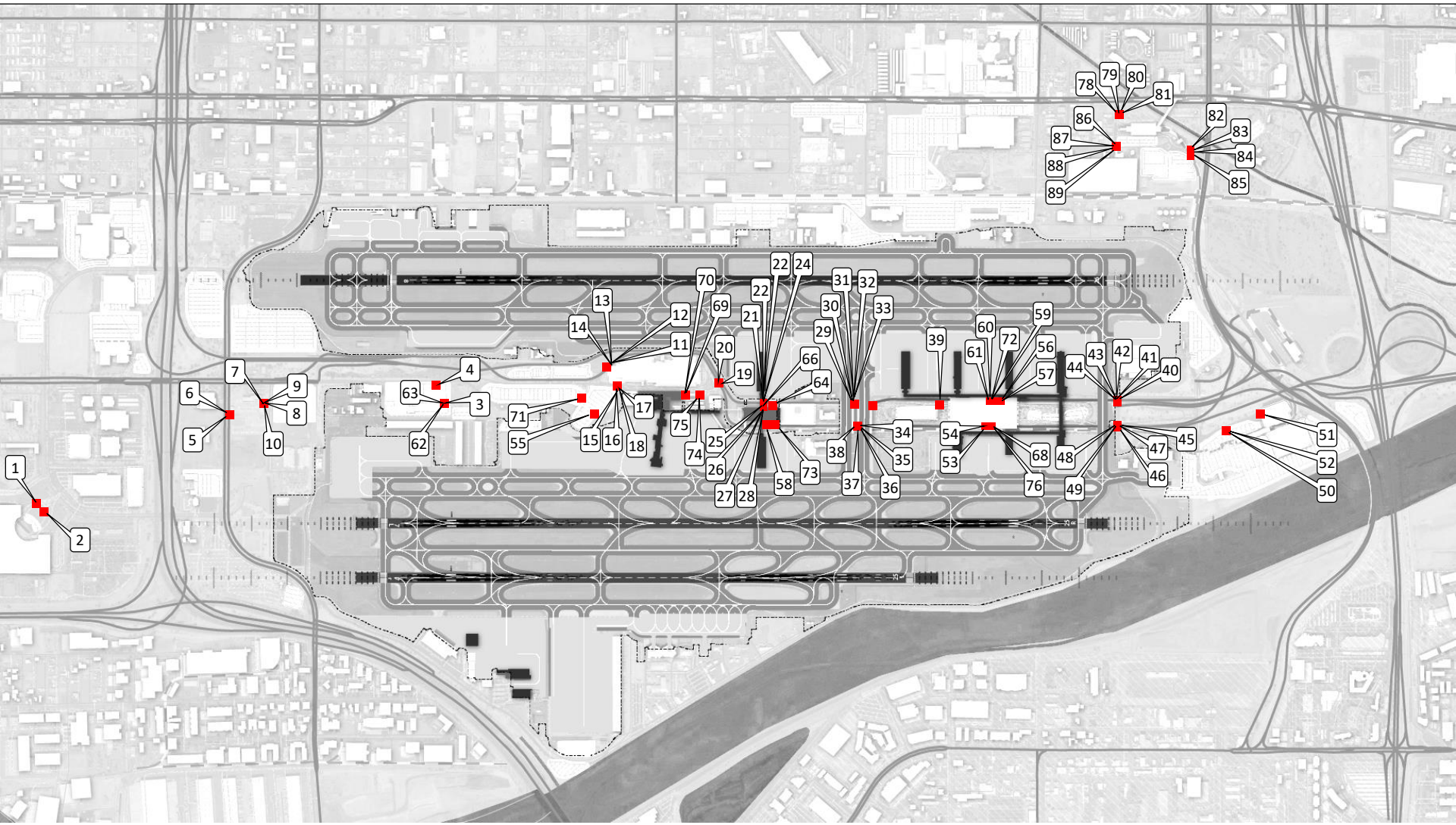
# Ground Transportation Infrastructure

***Pick-Up Locations and Waiting Areas***



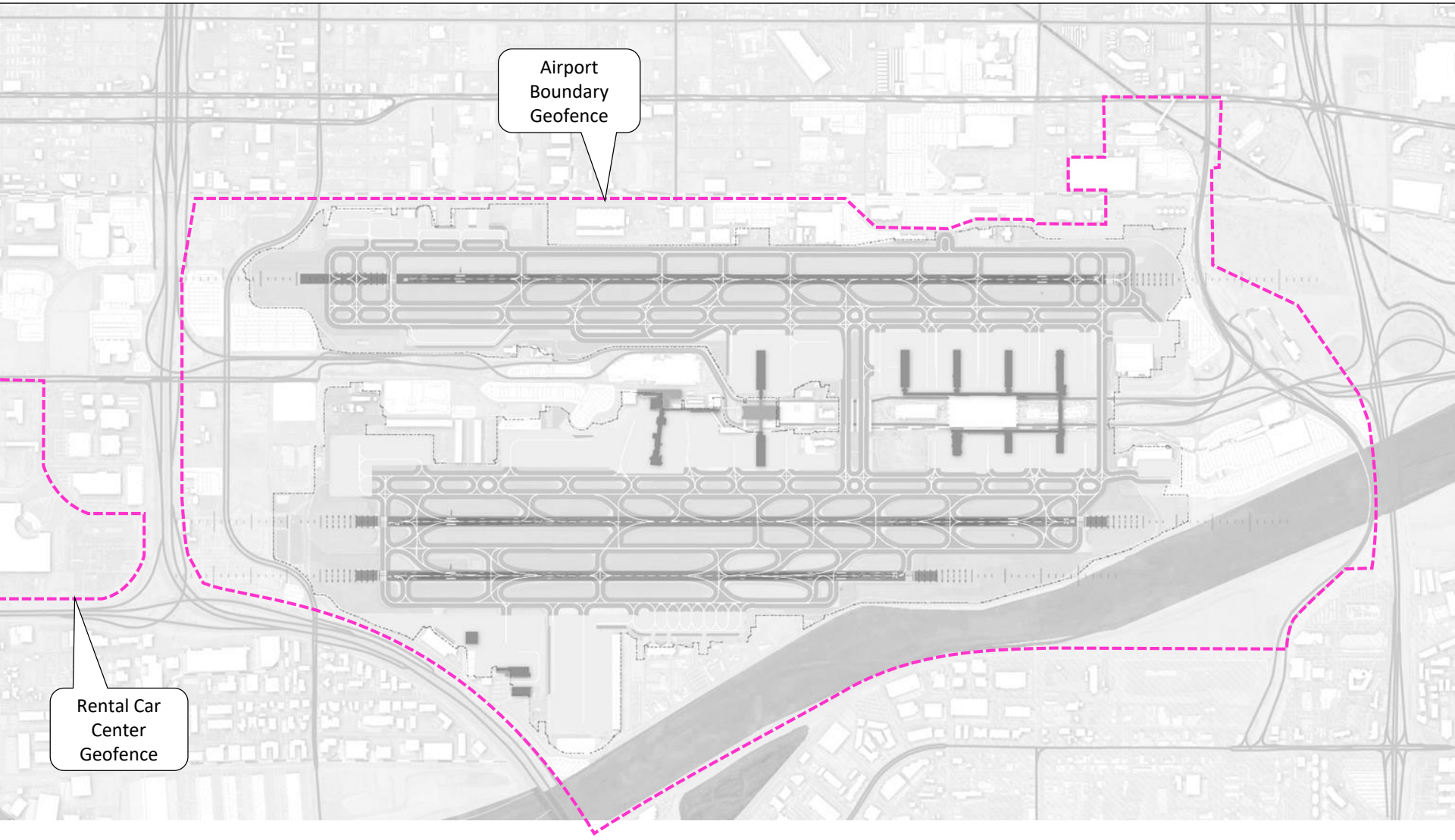
# Ground Transportation Infrastructure

***AVI Reader Locations***



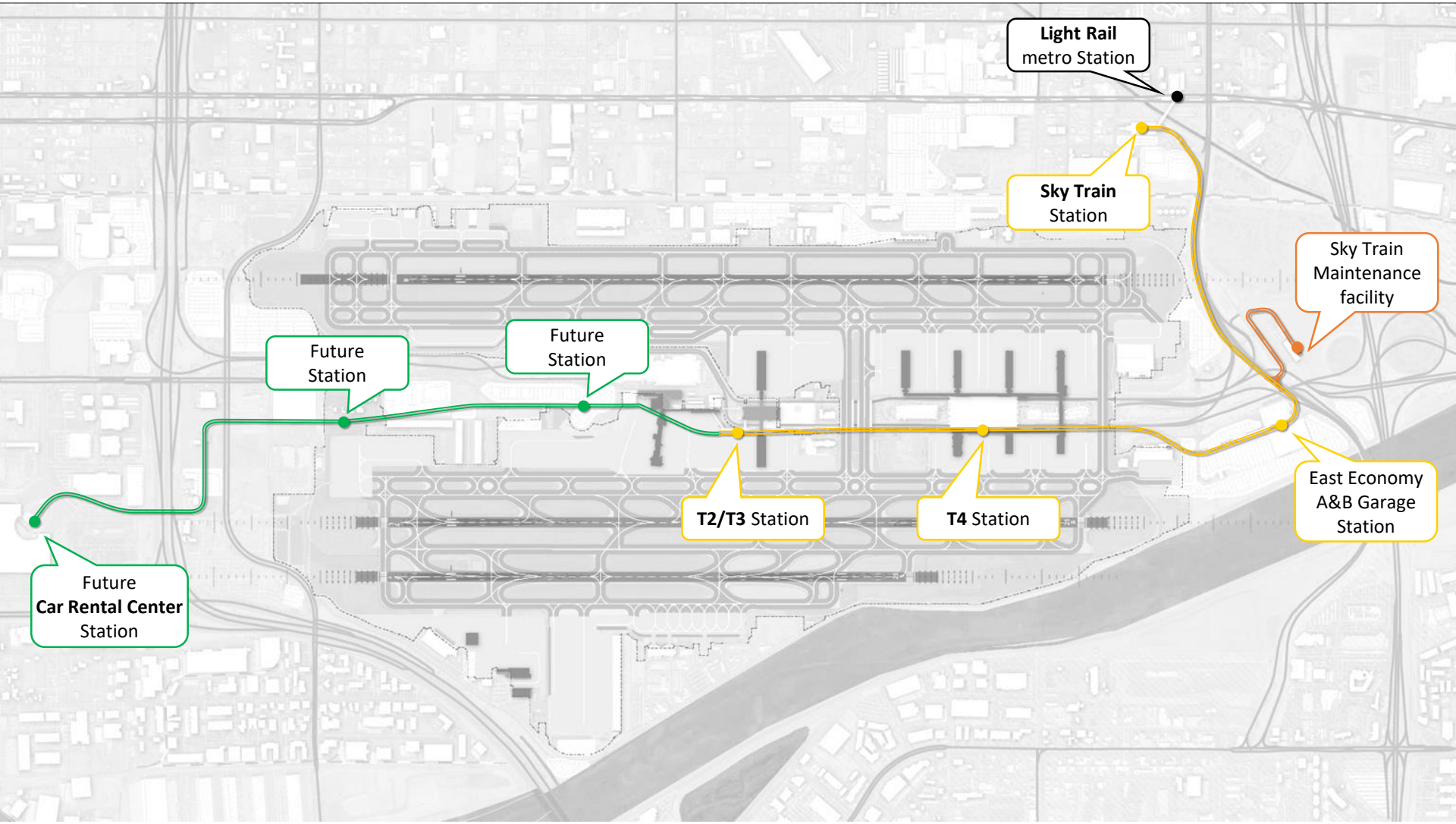
# Ground Transportation Infrastructure

***GPS Geofence***



# Ground Transportation Infrastructure

*Sky Train*



# Appendix D:

# PHX Ground Transportation Forecast

# Ground Transportation Forecast

The PHX GT forecast has been developed to inform stakeholders about the anticipated GT market change over then next 5 years. The approach to the forecast is summarized in the adjacent graphic.

**Sources of Information**

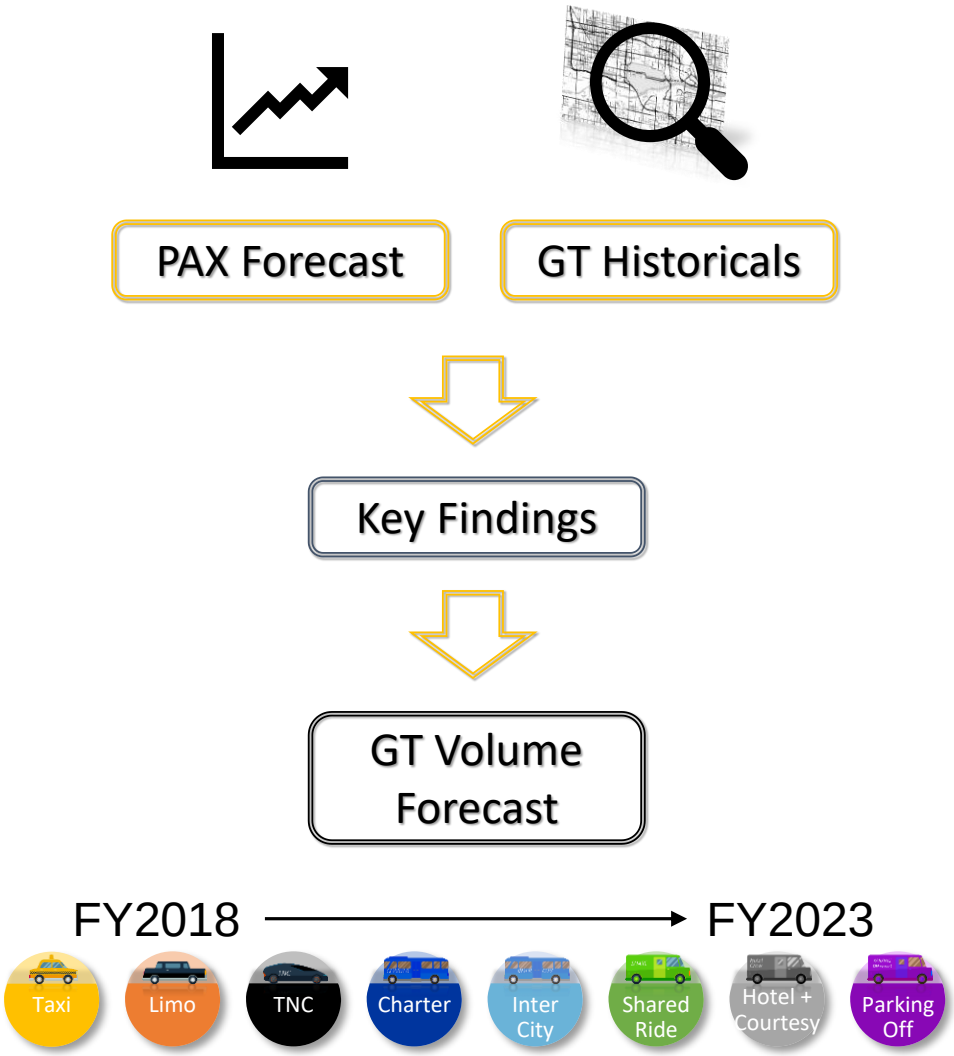
Two primary sources of information were used to develop the Key Findings: PHX Passenger (PAX) forecasts and GT historical transaction data.

PAX forecasts define the growth expectation for an airport. AVN is in the process of completing its **Comprehensive Asset Management Plan** (CAMP). A primary task of CAMP was to produce aviation activity forecasts.

GT historical transactions that were reviewed included:

- Roadway traffic counts (all vehicles)
- Commercial GT service transactions
- Car rental transactions
- Parking (on-airport) transactions

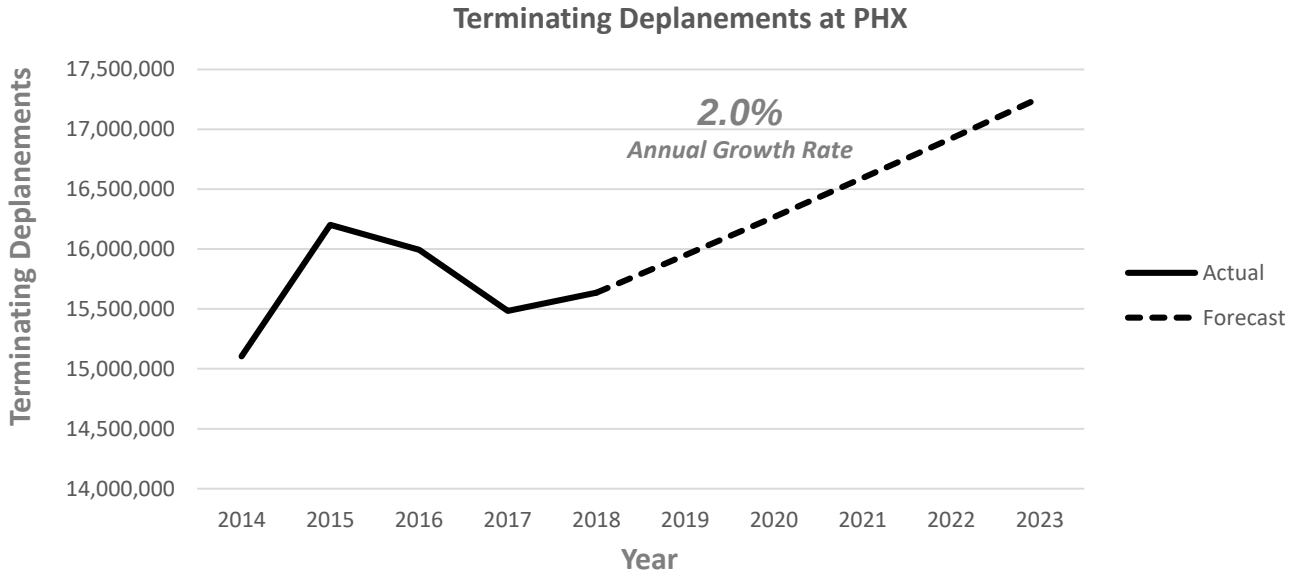
**Approach to PHX GT Forecast**



# Ground Transportation Forecast

**PAX Forecast**

For this study, the growth rate for originating enplanements (2% growth based on projections made in the CAMP) is assumed to equal the growth rate for terminating deplanements. Terminating deplanements was used as the benchmark passenger statistic for driving baseline growth in commercial GT transactions. This metric was selected because terminating passengers, not connecting passengers, utilize commercial GT modes.



# Ground Transportation Forecast

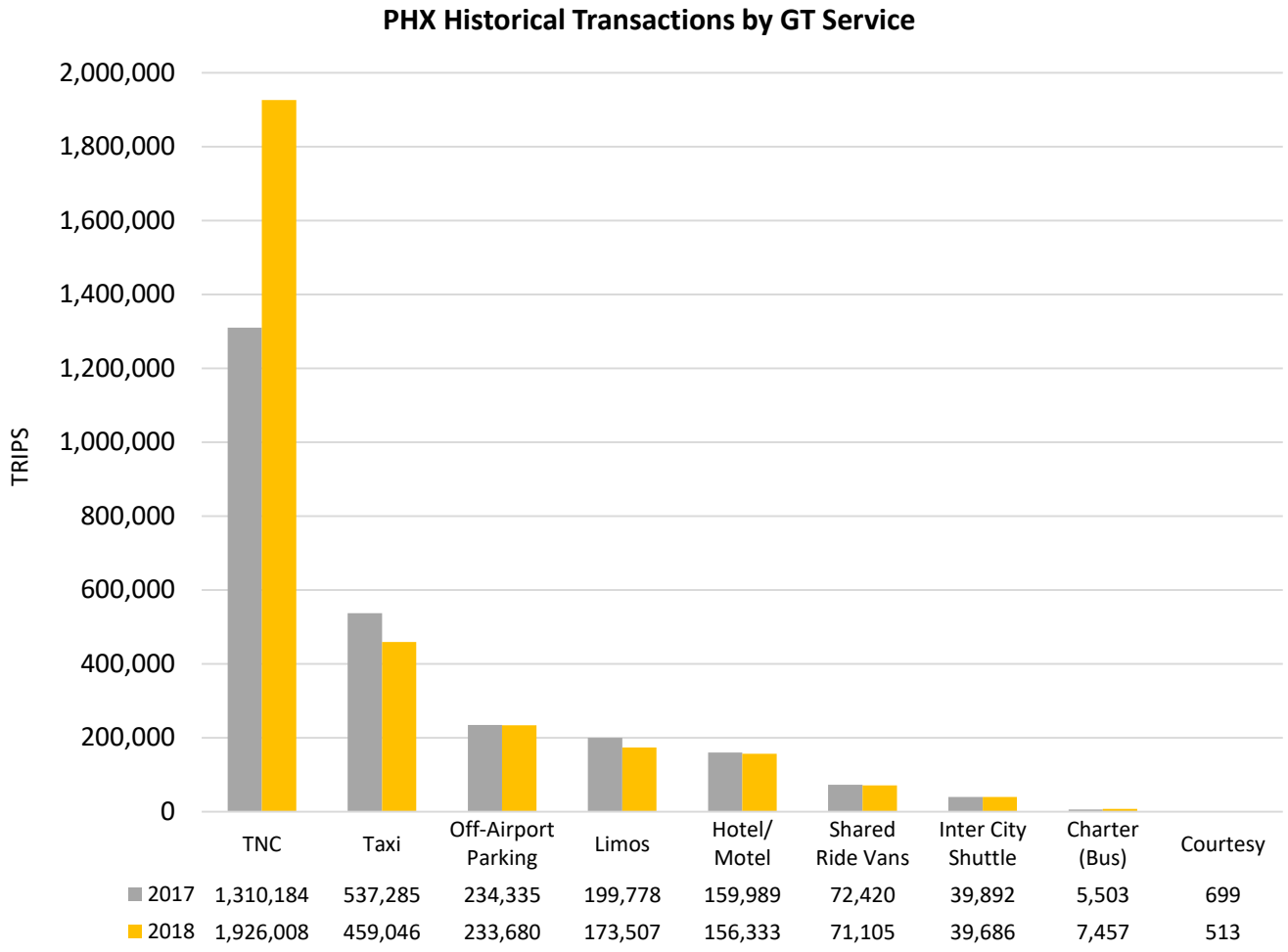
**GT Historicals**

The adjacent graph presents GT transactions by service category. Only pick-ups are recorded as transactions at PHX.

TNCs were introduced at PHX in mid-2016. By 2017 they represented the largest GT service and continued to grow another 47% in 2018.

Other services have seen a decline in trips, most notably, taxicabs, pre-arranged and van service.

This is a typical observation at many airports in the US and presents a challenge to airport operations.



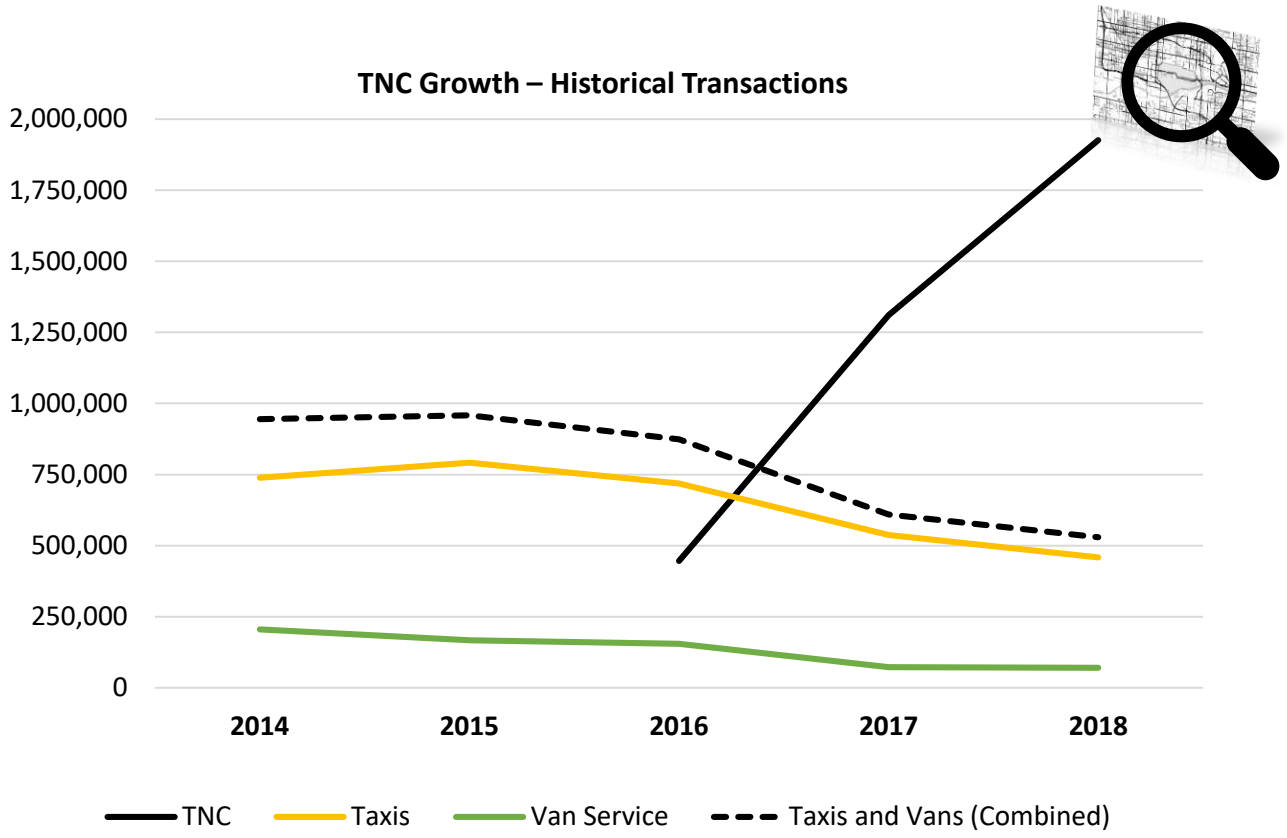

***Source:*** *PHX Department of Aviation – GT Transaction only record pick-ups*

# Ground Transportation Forecast

***TNC Growth***

The following graph highlights the decline of taxicab and shared-ride van transactions since the introduction of TNCs at PHX.

Important to note: TNC growth has exceeded the decline of other GT services, indicating that TNCs have drastically changed passenger habits for accessing the airport and created a new market in the process.




| Annual Percent Change in Transactions | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|
| TNCs | | | base year | 193% | 47% |
| Taxis | base year | 7% | -9% | -25% | -15% |
| Vans | base year | -19% | -7% | -53% | -2% |
| Taxi and Vans (Combined) | base year | 2% | -9% | -30% | -13% |

***Source:*** *PHX Department of Aviation – GT Transaction only record pick-ups*

# Ground Transportation Forecast

***PHX Roadway Traffic Volumes***

In support of the ongoing CAMP study, seven-day traffic counts were collected in October 2017. Traffic counts were collected at multiple locations along Sky Harbor Boulevard to identify the sources of traffic entering PHX. The counts collected were averaged to obtain an average daily volume of traffic activity, including commercial GT modes. This amounted to a daily traffic volume of 63,637.

From a review of 2017 passenger statistics for PHX, October approximated an average month of activity. Therefore, this daily average was multiplied by 365 to determine annual roadway traffic.

| | **CY 2017** |
|---|---|
| Commercial GT Transactions | 2,560,085 |
| Non-commercial Traffic | 20,669,915 |
| ***Total Roadway Traffic*** | *23,230,000* |
| ***Commercial GT Split of Traffic*** | *11%* |

***Parking and Car Rental***

The analysis of data demonstrates that even with the substantial growth in TNC operations at PHX, parking transactions and car rental transactions have exceeded the growth of terminating deplanements.

| | **CY 2017** | **CY 2018** |
|---|---|---|
| Terminating Deplanements | 15,483,009 | 15,635,583 |
| Terminating Deplanement Annual Growth | | 1.0% |
| Parking Transactions | 4,256,485 | 4,328,031 |
| Parking Annual Growth | | 1.7% |
| Car Rental Transactions | 1,864,636 | 1,937,333 |
| Car Rental Growth | | 3.9% |

# Ground Transportation Forecast

**Key Findings**

The following observations were used in making more informed activity projections.

### *Commercial GT Services*


- Growth in overall GT transactions is largely driven by growth in TNC transactions.
- TNC transactions continue to grow.
- Taxi transactions have declined over the last 3 calendar years.
- Shared-ride Van, intercity shuttle, hotel + courtesy, and off-airport parking transactions slightly declined over the last two calendar years.
- Charter buses represent a small sample of the overall commercial GT transactions, but the number of transactions have grown each of the last 4 calendar years.

### *Other Observations*

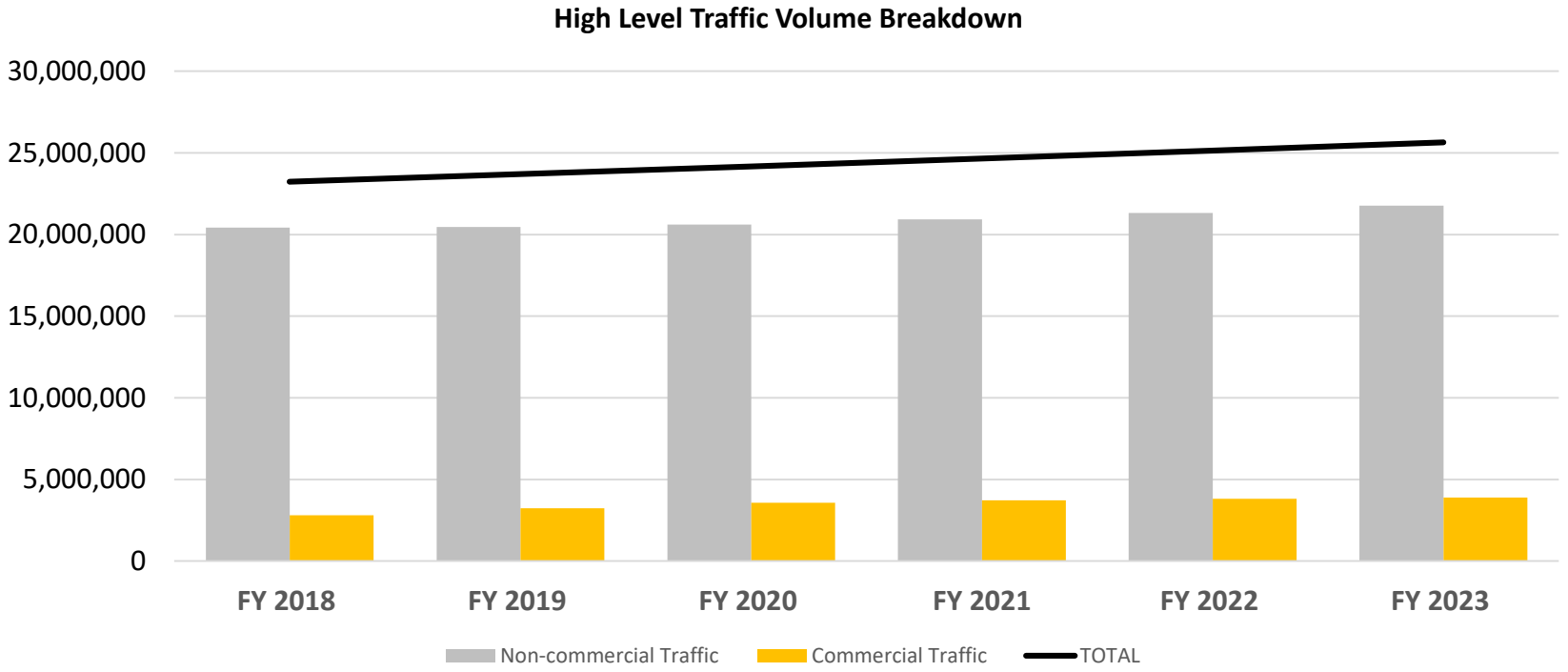
- Parking and rental car transactions have grown over the past 2 calendar years despite significant growth in TNC transactions. Therefore, it is anticipated that little to no growth in commercial GT transactions will come from parking and rental car transactions.
- Passengers who have historically been dropped off or picked up by friends or family at the private vehicle curb may be choosing to use a commercial GT mode or parking. Based on the data, it is likely that many are switching to the TNC mode. Passengers may also be choosing TNCs rather than shared-ride van or hotel + courtesy shuttles, which would generate more commercial GT transactions (rides/transactions are no longer being shared among multiple travel parties but are rather distributed to multiple vehicles).

# Ground Transportation Forecast

**Traffic Volume Projections**

- Total traffic volumes are expected to grow with expected growth in terminating deplanement passengers
- Commercial traffic is expected to continue to gain share over non-commercial traffic in the initial years of the forecast before reaching a steady state by FY2021, when TNCs are projected to mature and reach their peak.

Note: traffic volumes are provided for Financial Years (July 1st to June 30th) for the purpose of financial modeling. Total traffic volumes for CY2018 and FY2018 are assumed to be identical.

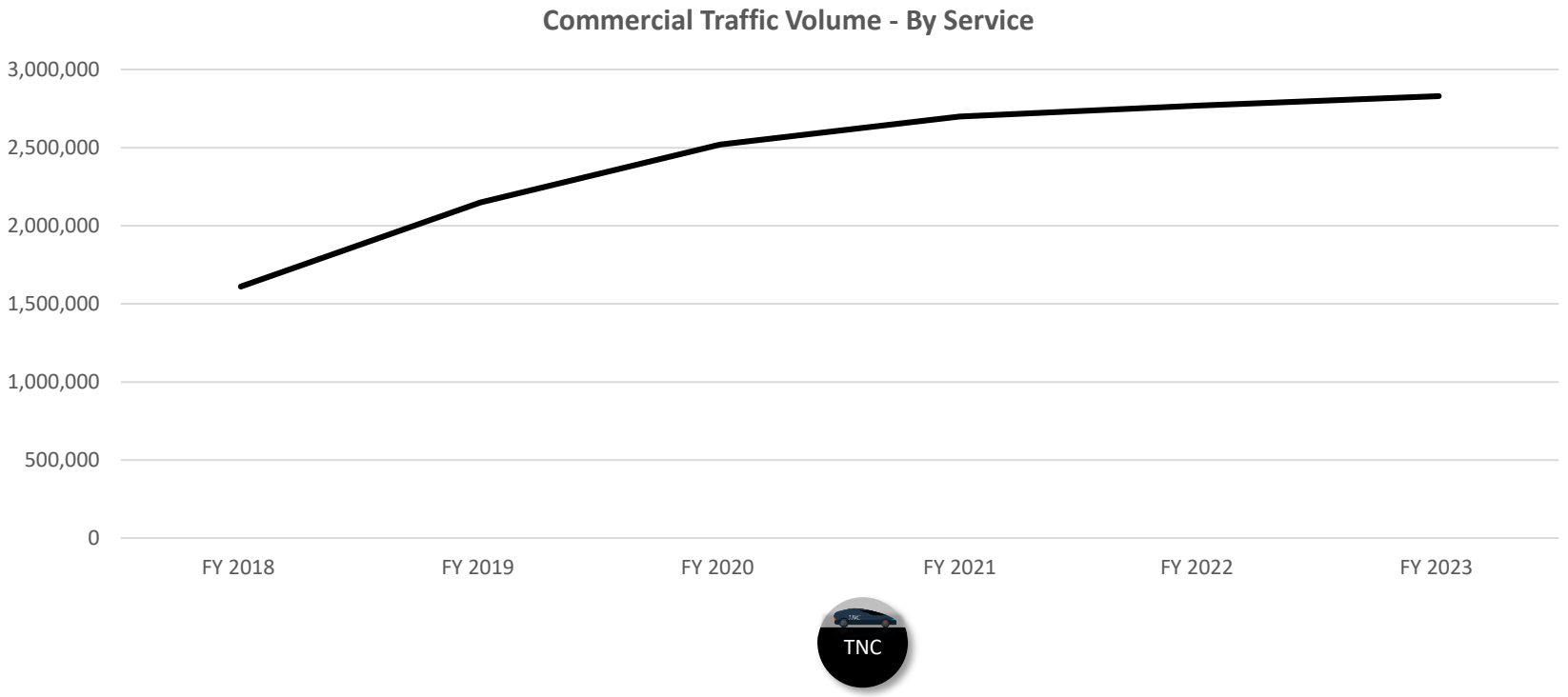


# Ground Transportation Forecast

***TNC Activity***

In two years, TNC activity has grown substantially. Based on historical performance the growth rate is projected to decrease until becoming stable in FY2021. Thereafter, growth is expected to be consistent with growth in terminating passenger deplanements.

Note: volumes shown represent pick-up transactions only.

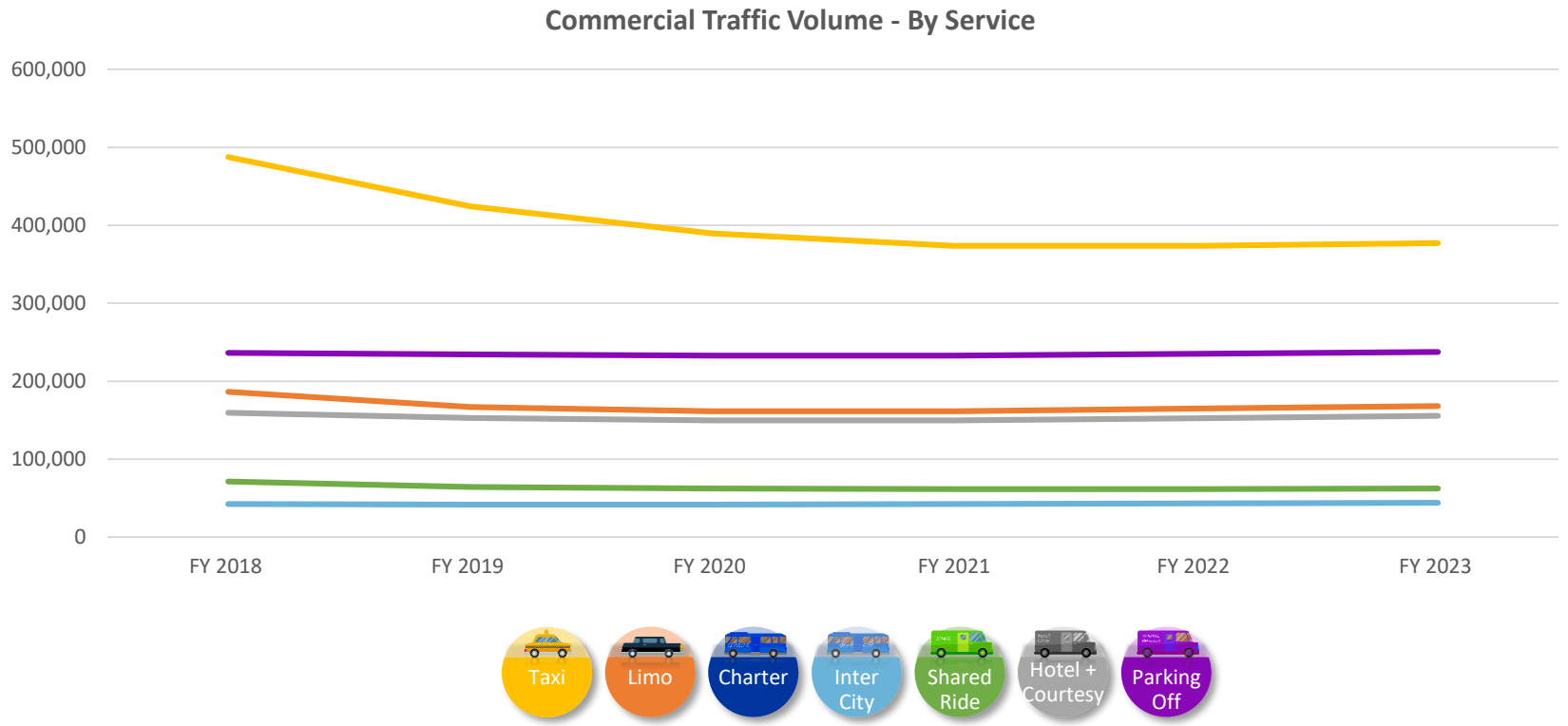


# Ground Transportation Forecast

***Other Commercial GT Activity***

All other commercial GT services are expected to follow their current historical growth trends till FY2021, when TNC growth is projected to stabilize. Thereafter, growth is expected to be consistent with growth in terminating passenger deplanements.

Note: volumes shown represent pick-up transactions only



# Traffic Volume Detail – Actual and Forecast

**GT Traffic Volume Share Detail – Actual + Forecast**

GT Traffic volume shares including TNC drop-offs were forecasted by Kimley-Horn as follows:

| Traffic Share | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | FY 2023 |
|---|---|---|---|---|---|---|
| **HIGH LEVEL BREAKDOWN** | | | | | | |
| Non-commercial Traffic | 18,820,300 | 18,306,800 | 18,082,300 | 18,218,100 | 18,558,787 | 18,934,900 |
| Commercial Traffic | 4,409,700 | 5,393,200 | 6,087,700 | 6,431,900 | 6,581,213 | 6,715,100 |
| **TOTAL** | **23,230,000** | **23,700,000** | **24,170,000** | **24,650,000** | **25,140,000** | **25,650,000** |
| **Traffic Share** | **FY 2018** | **FY 2019** | **FY 2020** | **FY 2021** | **FY 2022** | **FY 2023** |
| **DETAIL LEVEL BREAKDOWN** | | | | | | |
| Non-Commercial Vehicles | 18,820,300 | 18,306,800 | 18,082,300 | 18,218,100 | 18,558,787 | 18,934,900 |
| Taxi | 487,500 | 424,500 | 389,700 | 373,700 | 373,500 | 377,000 |
| Limo | 186,300 | 166,800 | 161,600 | 161,600 | 164,800 | 168,100 |
| TNC Pick-ups | 1,610,000 | 2,150,000 | 2,520,000 | 2,700,000 | 2,770,000 | 2,830,000 |
| TNC Drop-offs | 1,610,000 | 2,150,000 | 2,520,000 | 2,700,000 | 2,770,000 | 2,830,000 |
| Charter | 6,200 | 8,400 | 9,400 | 10,100 | 10,300 | 10,500 |
| Intercity | 42,500 | 41,900 | 41,900 | 42,300 | 43,100 | 44,000 |
| Shared Ride Van | 71,500 | 64,400 | 62,400 | 61,700 | 61,700 | 62,300 |
| Hotel + Courtesy | 159,500 | 152,900 | 149,700 | 149,600 | 152,600 | 155,700 |
| Parking Off Airport | 236,200 | 234,300 | 233,000 | 232,900 | 235,213 | 237,500 |
| **TOTAL** | **23,230,000** | **23,700,000** | **24,170,000** | **24,650,000** | **25,140,000** | **25,650,000** |

# Traffic Volume Share Detail – Actual and Forecast

**GT Traffic Volume Share Detail – Percentages**

GT Traffic volume shares including TNC drop-offs were forecasted by Kimley-Horn as follows :

| Traffic Share | FY 2018 % Share | FY 2019 % Share | FY 2020 % Share | FY 2021 % Share | FY 2022 % Share | FY 2023 % Share |
|---|---|---|---|---|---|---|
| **HIGH LEVEL BREAKDOWN** | | | | | | |
| Non-commercial Traffic | 81.02% | 77.24% | 74.81% | 73.91% | 73.82% | 73.82% |
| Commercial Traffic | 18.98% | 22.76% | 25.19% | 26.09% | 26.18% | 26.18% |
| **TOTAL** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

| Traffic Share | FY 2018 % Share | FY 2019 % Share | FY 2020 % Share | FY 2021 % Share | FY 2022 % Share | FY 2023 % Share |
|---|---|---|---|---|---|---|
| **DETAIL LEVEL BREAKDOWN** | | | | | | |
| Non-Commercial Vehicles | 81.02% | 77.24% | 74.81% | 73.91% | 73.82% | 73.82% |
| Taxi | 2.10% | 1.79% | 1.61% | 1.52% | 1.49% | 1.47% |
| Limo | 0.80% | 0.70% | 0.67% | 0.66% | 0.66% | 0.66% |
| TNC Pick-ups | 6.93% | 9.07% | 10.43% | 10.95% | 11.02% | 11.03% |
| TNC Drop-offs | 6.93% | 9.07% | 10.43% | 10.95% | 11.02% | 11.03% |
| Charter | 0.03% | 0.04% | 0.04% | 0.04% | 0.04% | 0.04% |
| Intercity | 0.18% | 0.18% | 0.17% | 0.17% | 0.17% | 0.17% |
| Shared Ride Van | 0.31% | 0.27% | 0.26% | 0.25% | 0.25% | 0.24% |
| Hotel + Courtesy | 0.69% | 0.65% | 0.62% | 0.61% | 0.61% | 0.61% |
| Parking Off Airport | 1.02% | 0.99% | 0.96% | 0.94% | 0.94% | 0.93% |
| **TOTAL** | 100% | 100% | 100% | 100% | 100% | 100% |

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