



April 26, 2019

Mr. Adam Miller  
Growth and Infrastructure Team Leader  
City of Phoenix Planning and Development Department  
200 West Washington Street, 3<sup>rd</sup> Floor  
Phoenix, AZ 85003

RE: Purchase Order #107407  
City of Phoenix T2050 Program Management Support Services  
StreetLight Origin-Destination Study  
Final Deliverable

Dear Mr. Miller:

Kimley-Horn is pleased to present this memorandum regarding the methodology and results of the StreetLight Origin-Destination (OD) Study, which serves as the final deliverable for this analysis completed by Kimley-Horn in support of the 2019 update of the City of Phoenix Infrastructure Financing Plan (IFP).

The scope of this study has primarily revolved around determining the percentages of traffic that are generated by two “service” areas – the “Northern” and “Southwest” service areas – within the City of Phoenix anticipated to see a significant amount of new development over the next ten years compared to traffic simply traveling through the service areas. This new development will likely result in the need for capacity-increasing improvements to the arterial streets that serve the new development.

Kimley-Horn has been retained to utilize a subscription to StreetLight Data to determine what percentages of existing traffic within the service areas are:

- Generated and attracted within each individual service area;
- Travel between each service area and the rest of the City of Phoenix;
- Travel between each service area outside of the City of Phoenix;
- Through traffic in each service area traveling between other parts of the City of Phoenix;
- Through traffic in each service area traveling between the City of Phoenix and other locations; and
- Through traffic in each service area that begins and ends outside of the City of Phoenix.

These statistics will help determine and justify the percentages of future roadway improvements that will be funded through developer impact fees versus other local and regional funding sources.

StreetLight Data uses anonymized cell phone location data to determine the origins, destinations, and paths utilized by drivers. This information can be filtered by month-of-year, day-of-week and hour-of-day, if desired. For this analysis, one year of data was used (September 1, 2017 – August 31, 2018, the latest data available at the time of analysis); all days of the week and times of the day were included.

To determine travel patterns within and through the two service areas, a 14-zone structure was established to measure travel volumes within Maricopa County. This zone structure is shown in **Figure 1**. The Northern service area was created from two smaller Northwest and Northeast service areas (see Figure 1) but at the request of the City of Phoenix the StreetLight data is reported only for the aggregated Northern service area. Similarly, when compiling the travel statistics outside of the service areas of interest, zones were aggregated as needed to get the desired statistics; a full detail of travel between all 14 zones is available if needed.

Major roadways within the service areas for which StreetLight data was collected are:

- Northern Service Area:
  - Carefree Highway (I-17 to 27<sup>th</sup> Drive)
  - Cave Creek Road (CAP Canal to Cave Creek Boundary)
  - Deer Valley Road (CAP Canal to 56<sup>th</sup> Street)
  - Dove Valley Road (North Valley Parkway to Sonoran Desert Drive)
  - North Valley Parkway/27<sup>th</sup> Avenue (Dove Valley Road to Cloud Road)
  - Pinnacle Peak Road (Cave Creek Road to Scottsdale Road)
  - Sonoran Desert Drive (I-17 to North Valley Parkway)
  - Sonoran Desert Drive (Dove Valley Road to Cave Creek Road)
  - Tatum Boulevard (CAP Canal to Cave Creek Road)
- Southwest Service Area:
  - 51<sup>st</sup> Avenue (GRIC Boundary to I-10)
  - 67<sup>th</sup> Avenue (Southern Avenue to Broadway Road)
  - 75<sup>th</sup> Avenue (Broadway Road to I-10)
  - 91<sup>st</sup> Avenue (GRIC Boundary to Broadway Road)
  - Baseline Road (GRIC Boundary to 7<sup>th</sup> Avenue)
  - Broadway Road (107<sup>th</sup> Avenue to 51<sup>st</sup> Avenue)
  - Buckeye Road (75<sup>th</sup> Avenue to 43<sup>rd</sup> Avenue)
  - Dobbins Road (GRIC Boundary to 7<sup>th</sup> Avenue)

Locations along these roadways, called “gateways”, were selected to represent travel patterns along the analysis roadways as a whole. These gateway locations and the analysis

roadways are shown for the Northern Service Area in **Figure 2** and the Southwest Service Area in **Figure 3**.

The results of the StreetLight analyses for the Northern Service Area and Southwest Service Area are provided in **Table 1** and **Table 2**, respectively. If there are multiple gateways on an analysis roadway, the average of the gateways is provided to estimate overall through traffic percentages on each roadway. Additionally, all gateways were averaged together to estimate area-wide pass-through traffic percentages.

Within the Northern Service Area, the amount of pass-through traffic on analysis roadways ranged from a low of 17% on Sonoran Desert Drive near I-17 to a high of over 47% on Pinnacle Peak Road west of Scottsdale Road. The average pass-through traffic for the Northern Service Area is estimated to be 28%.

Within the Southwest Service Area, the amount of pass-through traffic on analysis roadways is generally lower than in the Northern Service Area, with a low of approximately 9% on 67<sup>th</sup> Avenue across the Salt River and a high of 33% on 51<sup>st</sup> Avenue. The average pass-through traffic for the Southwest Service Area is estimated to be 22%.

Please contact me at (480) 207-2662 should you have any questions.

Sincerely,



Michael Grandy, P.E.

Figure 1: StreetLight Zone Structure

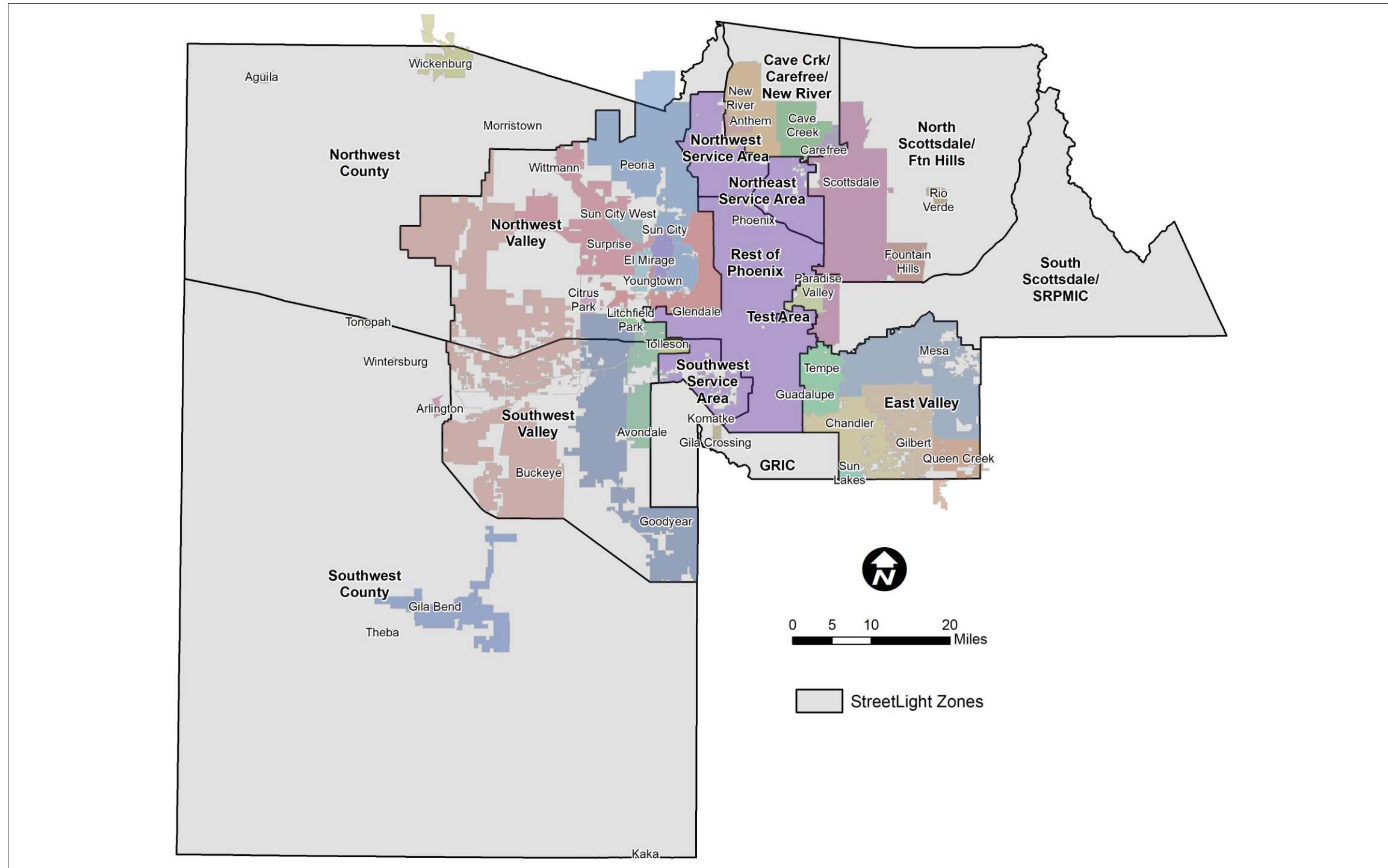


Figure 2: Northern Service Area Analysis Roadways and Gateways

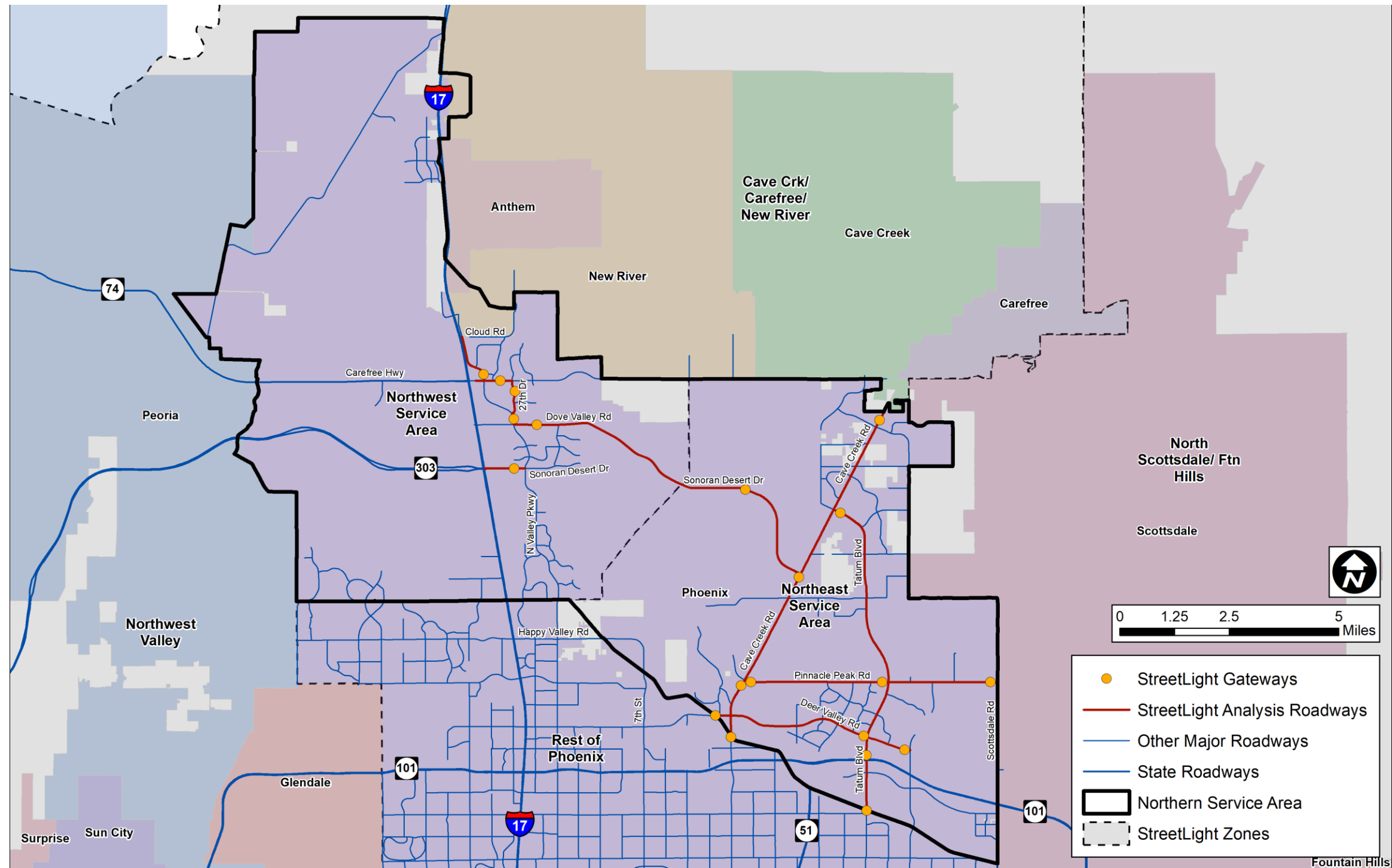


Figure 3: Southwest Service Area Analysis Roadways and Gateways

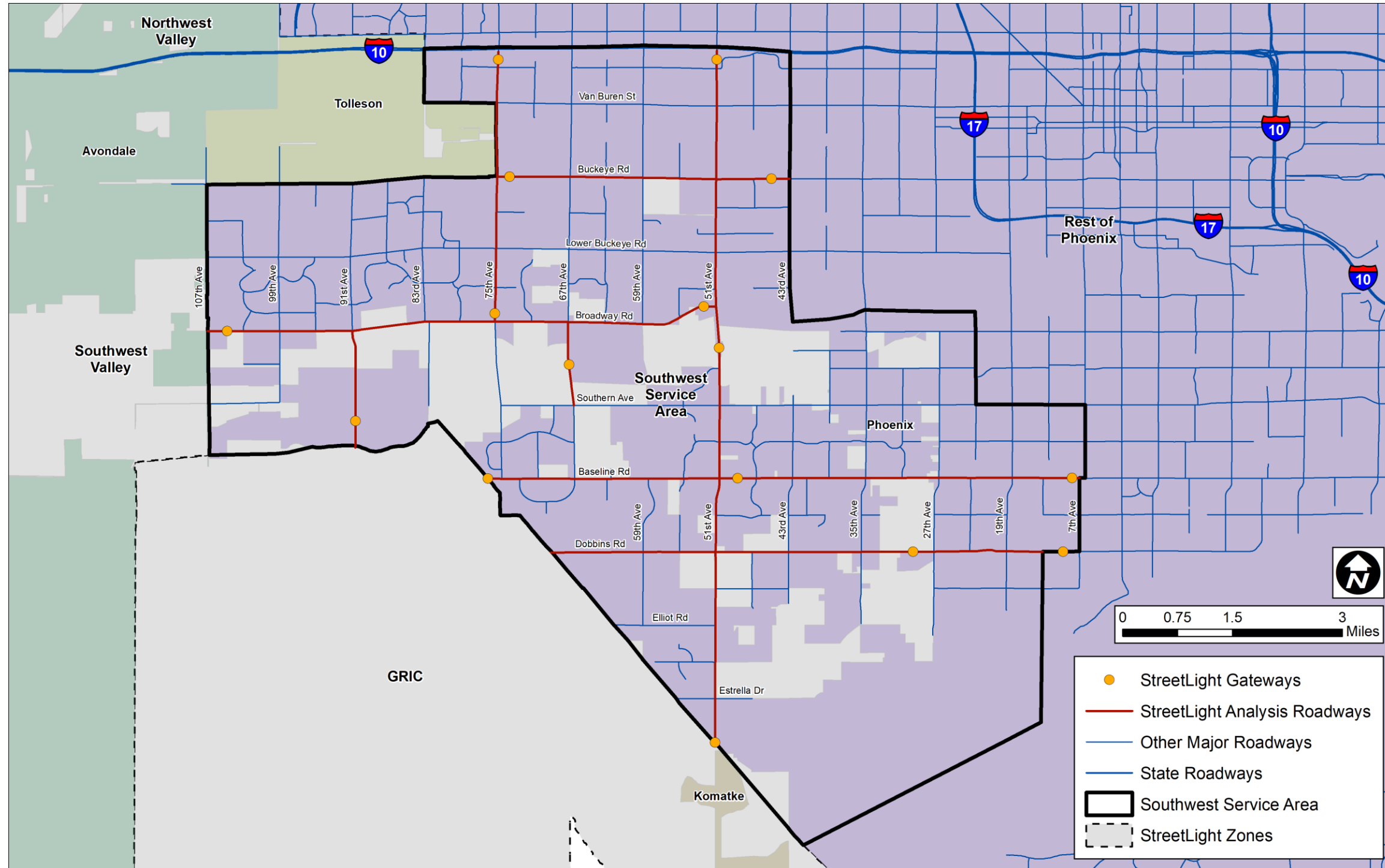


Table 1: Northern Service Area StreetLight Analysis Results

Area	Roadway	Gateway Location	Internal to Northern Area	Northern Area to/ from Rest of Phx	Northern Area to/ from outside Phx	Pass-Through traffic from Phx	Pass-Through traffic from rest of Phx to/from outside Phx	Pass-Through traffic from outside Phx	Total of Pass-Through Traffic	Area Avg. Pass-Through Traffic
Northern	Carefree Hwy	Skunk Creek	25.3%	11.9%	28.0%	0.5%	18.2%	16.2%	34.9%	28%
	Cave Creek Rd	CAP Canal	2.2%	46.9%	15.2%	9.4%	20.5%	5.7%	35.6%	
		S of Pinnacle Pk	5.9%	42.2%	13.9%	1.8%	29.1%	7.1%	38.0%	
		S of Sonoran Desert	11.4%	33.5%	14.6%	1.2%	31.2%	8.1%	40.5%	
		N of Rancho Paloma	10.5%	4.1%	46.5%	0.6%	24.7%	13.6%	38.9%	
		<b>Average</b>	<b>7.5%</b>	<b>31.7%</b>	<b>22.6%</b>	<b>3.3%</b>	<b>26.4%</b>	<b>8.6%</b>	<b>38.3%</b>	
	Deer Valley Rd	CAP Canal	4.2%	41.6%	10.1%	17.5%	22.2%	4.4%	44.1%	
		W of 56th	19.7%	22.2%	41.5%	2.4%	9.1%	5.1%	16.6%	
		W of Tatum	34.9%	24.5%	26.4%	2.5%	7.7%	4.0%	14.2%	
		<b>Average</b>	<b>19.6%</b>	<b>29.4%</b>	<b>26.0%</b>	<b>7.5%</b>	<b>13.0%</b>	<b>4.5%</b>	<b>25.0%</b>	
	Dove Valley Rd	W of Paloma Pkwy	38.9%	14.7%	27.2%	0.7%	7.2%	11.3%	19.2%	
	North Valley Pkwy	N of Dove Valley	35.0%	26.3%	20.9%	0.7%	12.8%	4.2%	17.7%	
		S of Carefree (27th Dr)	42.7%	15.2%	23.9%	0.5%	13.3%	4.5%	18.3%	
		N of Carefree	25.0%	23.3%	32.1%	0.5%	10.4%	8.7%	19.6%	
		<b>Average</b>	<b>34.2%</b>	<b>21.6%</b>	<b>25.6%</b>	<b>0.6%</b>	<b>12.2%</b>	<b>5.8%</b>	<b>18.5%</b>	
	Pinnacle Peak Rd	E of Cave Creek	21.2%	28.5%	21.2%	1.8%	21.5%	5.7%	29.0%	
		W of Tatum	20.3%	11.1%	34.8%	1.4%	24.8%	7.6%	33.8%	
		W of Scottsdale	1.8%	2.3%	48.7%	1.2%	36.2%	9.9%	47.3%	
		<b>Average</b>	<b>14.4%</b>	<b>14.0%</b>	<b>34.9%</b>	<b>1.5%</b>	<b>27.5%</b>	<b>7.7%</b>	<b>36.7%</b>	
	Sonoran Desert Dr	W of N Valley Pkwy	6.7%	43.4%	32.9%	1.4%	9.5%	6.1%	17.0%	
	Sonoran Desert Dr	Cave Creek Wash	26.1%	17.5%	32.3%	0.6%	8.9%	14.6%	24.1%	
Tatum Blvd	CAP Canal	1.4%	59.7%	5.3%	7.2%	24.4%	2.0%	33.6%		
	N of Loop 101	7.0%	50.1%	24.8%	2.5%	11.6%	3.9%	18.0%		
	S of Cave Creek	33.0%	14.2%	37.5%	0.5%	8.8%	5.9%	15.2%		
	<b>Average</b>	<b>13.8%</b>	<b>41.3%</b>	<b>22.5%</b>	<b>3.4%</b>	<b>14.9%</b>	<b>3.9%</b>	<b>22.3%</b>		

Table 2: Southwest Service Area StreetLight Analysis Results

Area	Roadway	Gateway Location	Internal to Southwest Area	Southwest Area to/from Rest of Phx	Southwest Area to/from outside Phx	Pass-Through traffic from Phx	Pass-Through traffic from rest of Phx to/from outside Phx	Pass-Through traffic from outside Phx	Total of Pass-Through Traffic	Area Avg. Pass-Through Traffic
Southwest	51st Ave	GRIC Boundary	1.1%	1.8%	40.9%	0.8%	31.6%	23.7%	56.1%	22%
		Salt River	27.0%	35.8%	20.8%	3.8%	8.5%	4.2%	16.5%	
		S of I-10	2.2%	44.8%	26.1%	11.0%	11.9%	3.9%	26.8%	
		<b>Average</b>	<b>10.1%</b>	<b>27.5%</b>	<b>29.3%</b>	<b>5.2%</b>	<b>17.3%</b>	<b>10.6%</b>	<b>33.1%</b>	
	67th Ave	Salt River	34.0%	28.4%	28.4%	2.4%	4.4%	2.4%	9.2%	
	75th Ave	N of Broadway	42.5%	24.0%	24.5%	2.3%	4.6%	2.2%	9.1%	
		S of I-10	2.7%	42.4%	32.3%	5.5%	11.6%	5.6%	22.7%	
		<b>Average</b>	<b>22.6%</b>	<b>33.2%</b>	<b>28.4%</b>	<b>3.9%</b>	<b>8.1%</b>	<b>3.9%</b>	<b>15.9%</b>	
	91st Ave	Salt River	13.1%	13.1%	47.4%	3.0%	10.5%	12.8%	26.3%	
	Baseline Rd	GRIC Boundary	14.6%	12.5%	50.9%	3.1%	10.2%	8.7%	22.0%	
		E of 51st	45.4%	26.9%	18.9%	2.5%	4.3%	1.9%	8.7%	
		W of 7th	3.0%	51.8%	28.7%	8.1%	6.2%	2.1%	16.4%	
		<b>Average</b>	<b>21.0%</b>	<b>30.4%</b>	<b>32.8%</b>	<b>4.6%</b>	<b>6.9%</b>	<b>4.2%</b>	<b>15.7%</b>	
	Broadway Rd	E of 107th	4.9%	5.3%	68.2%	0.4%	10.9%	10.3%	21.6%	
		W of 51st	36.0%	32.8%	18.9%	2.7%	7.1%	2.4%	12.2%	
		<b>Average</b>	<b>20.5%</b>	<b>19.1%</b>	<b>43.6%</b>	<b>1.6%</b>	<b>9.0%</b>	<b>6.4%</b>	<b>16.9%</b>	
	Buckeye Rd	E of 75th	17.1%	22.4%	33.9%	3.2%	18.5%	4.8%	26.5%	
		W of 43rd	4.3%	48.2%	12.0%	10.6%	21.3%	3.5%	35.4%	
		<b>Average</b>	<b>10.7%</b>	<b>35.3%</b>	<b>23.0%</b>	<b>6.9%</b>	<b>19.9%</b>	<b>4.2%</b>	<b>31.0%</b>	
	Dobbins Rd	W of 27th	22.0%	45.9%	19.4%	4.6%	6.9%	1.3%	12.8%	
W of 7th		1.9%	45.6%	15.8%	25.5%	10.1%	1.1%	36.7%		
<b>Average</b>		<b>12.0%</b>	<b>45.8%</b>	<b>17.6%</b>	<b>15.1%</b>	<b>8.5%</b>	<b>1.2%</b>	<b>24.8%</b>		