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WHAT TRANSPORTATION CAN BE.

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TRANSFER PLAN ADVISORY COMMITTEE TRANSPORTATION BRIEFING

PREPARED FOR:
KING COUNTY SOLID WASTE DIVISION

OCTOBER 31, 2014

PRESENTATION OUTLINE

- Work program overview
- Overview of transportation analysis methodology
- Trip generation summary
- Traffic modeling (site capacity analysis)
- Customer origin/destination survey
- Review of the environmental studies and process

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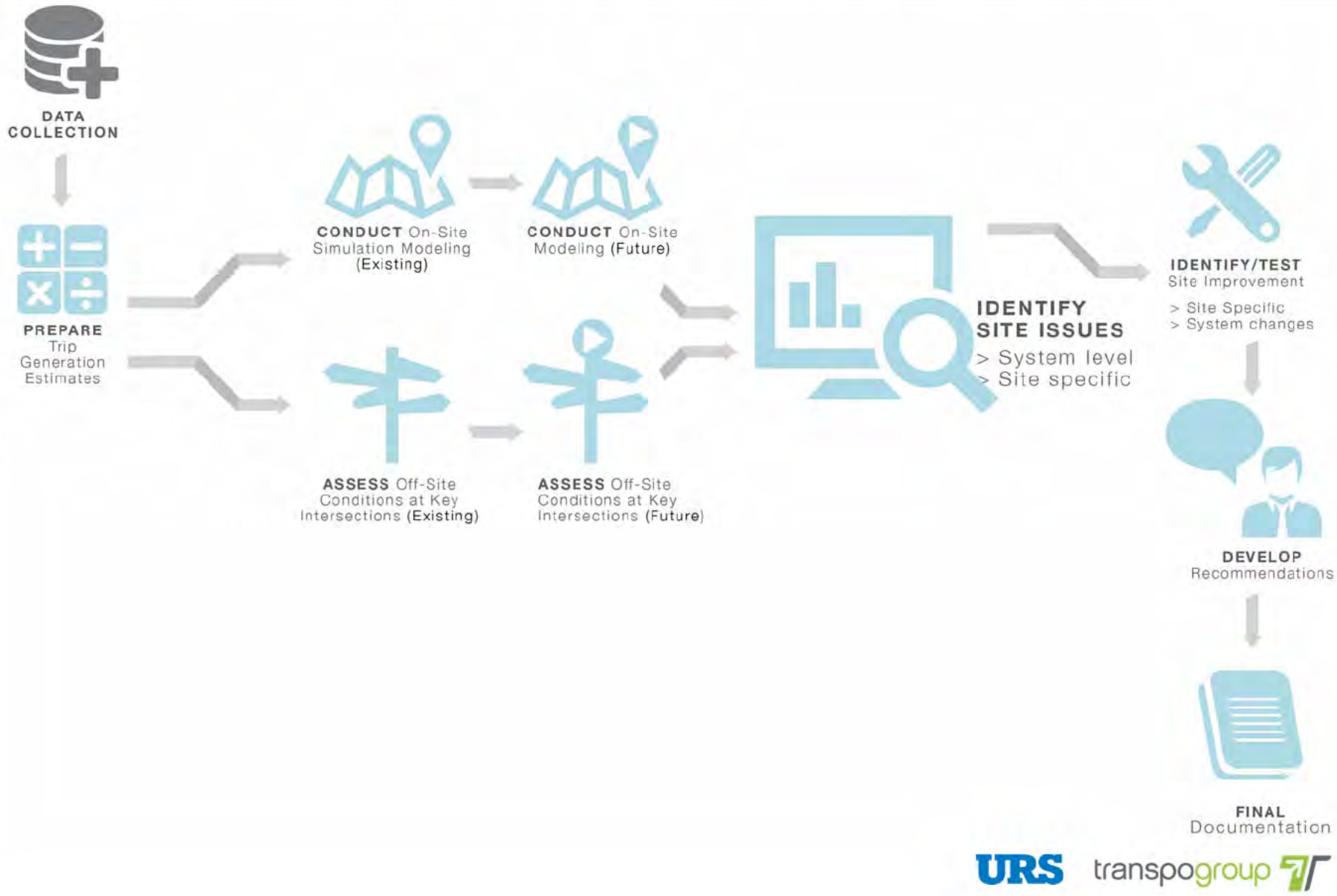
TRANSPORTATION ANALYSIS WORK PROGRAM



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TRANSPORTATION ANALYSIS SCOPE

On-site data collection

- Traffic volumes
- Travel time studies
- Processing rate studies
- Access queuing studies
- Customer origin/destination surveys

Site capacity analysis

- VISSIM analysis
  – Microsimulation Analysis
- Two time periods, weekday and Saturday 3 hour peak period

Evaluated impacts to key off-site intersections

(to be discussed in the environmental section of this presentation)

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TRAFFIC VOLUME SUMMARY

Data Collection Element	Description	Applicable Sites
Site Access Volumes	24-hour volumes at the site ingress and egress points. Collected via video or tubes – focus on daily counts and peak hour volumes for a 2-week period.	Renton, Factoria, Shoreline, Houghton
Site ingress/Egress Queuing	Record inbound/outbound queuing levels for 2-week period - video.	Renton, Factoria, Shoreline, Houghton
Internal Queuing	Record queuing levels at internal material transfer points – Video or observations	Renton, Factoria, Shoreline, Houghton, Bow Lake
Internal trip patterns	Document the number and percentage of shared trips between multiple material transfers (i.e. garbage only vs. garbage and recycling).	Renton, Factoria, Shoreline, Houghton, Bow Lake
Vehicle Duration/ Travel Time Onsite	Recording of entry and exit times of vehicles onsite via observation	Renton, Factoria, Shoreline, Houghton
Customer Trip Origin	Identify customer origins via intercept surveys – recorded on paper or electronic format at the point of intercept.	Renton, Factoria, Shoreline, Houghton
Data Collection Element	Description	Applicable Sites
Offsite Turning Movement Counts	Peak-hour traffic volumes collected at offsite study intersection locations.	Renton, Factoria, Shoreline, Houghton
Customer Processing Rates	Identify processing rates at key points. Including entry, exit, tipping floor, and HHW or recycling areas.	Renton, Factoria, Shoreline, Houghton, Bow Lake
Haul Weight per Vehicle	Average haul weights per vehicle for the different uses will be observed at noted.	Renton, Factoria, Shoreline, Houghton
Waste Stream Forecasts	Waste stream forecasts to be provided reflecting with and without the Renton facility. This would include information for garbage, recycling, and household hazardous waste.	Renton, Factoria, Shoreline, Houghton

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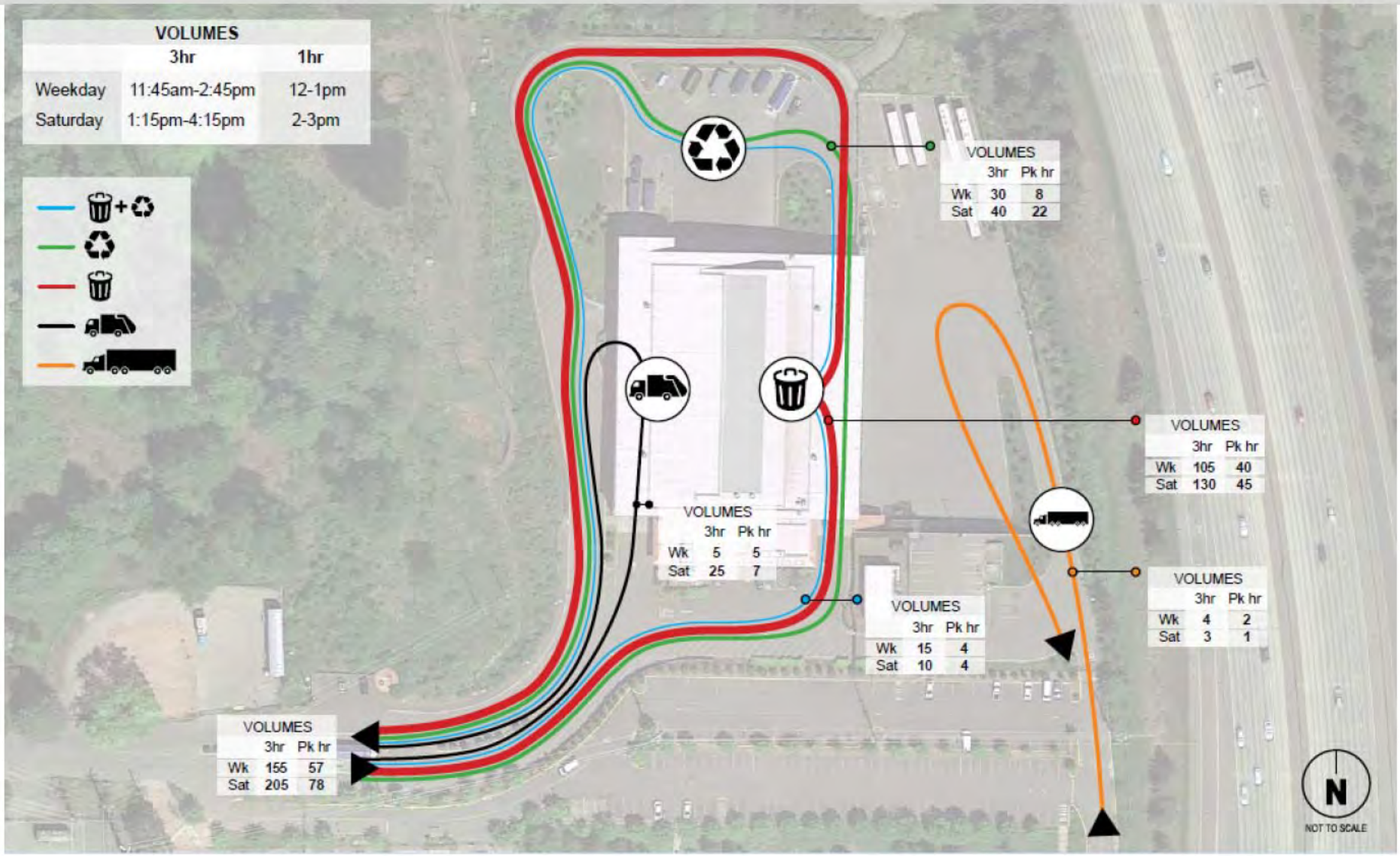
TRAFFIC VOLUME SUMMARY SHORELINE (EXAMPLE)



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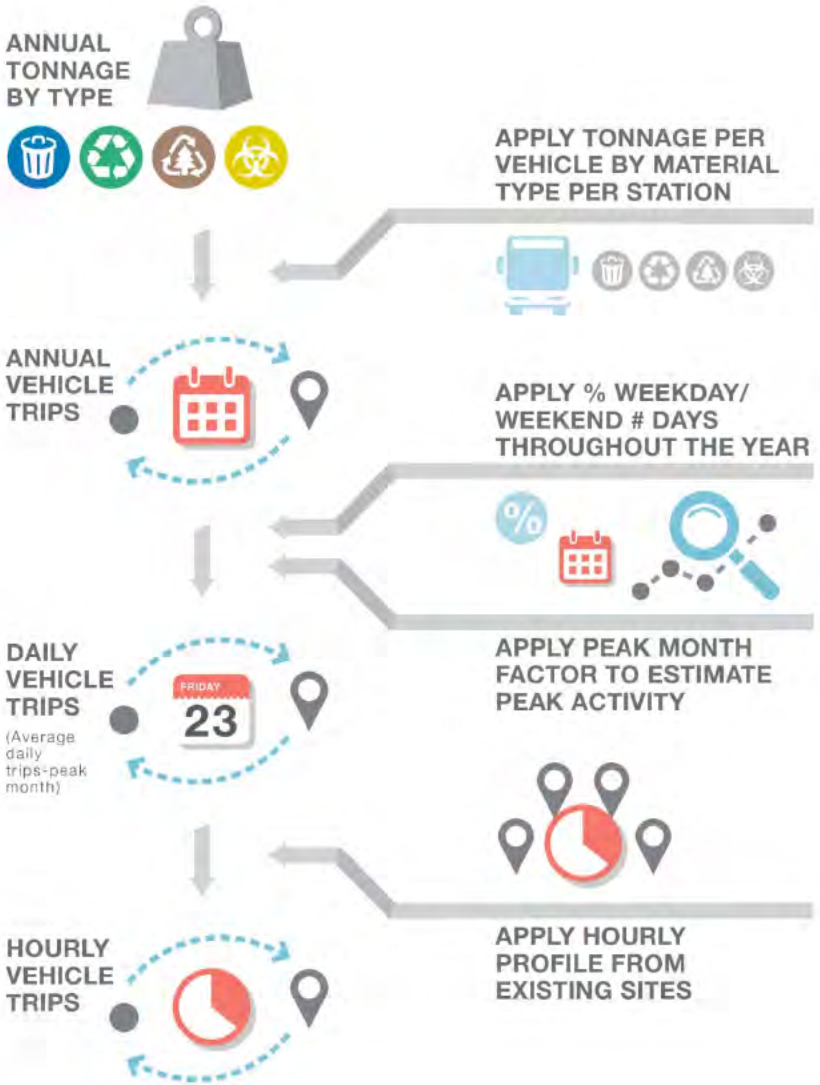
TRIP GENERATION METHODOLOGY



- Tonnage forecasts by material type provided by King County staff
- Trip generation estimates prepared for 2019, 2023, and 2029 horizon years
- Trip generation estimates prepared for two peak periods (weekday and weekend)
- Where possible, unique factors (i.e tonnage per vehicle) were used for each station

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TRIP GENERATION SUMMARY

Trip Generation Estimates Developed for Numerous Scenarios

- Weekday and Weekend time periods
- 2019, 2023, 2029
- Annual trips
- Daily trips
- Peak hour trips
- With and without Renton

Three Key Questions:

- What is the impact of closing Renton and Houghton on the remaining stations?
- What are the impacts of Concepts 1, 2, and 3 on the trip generation for each site?
- What is the trend in trip generation over the forecast period

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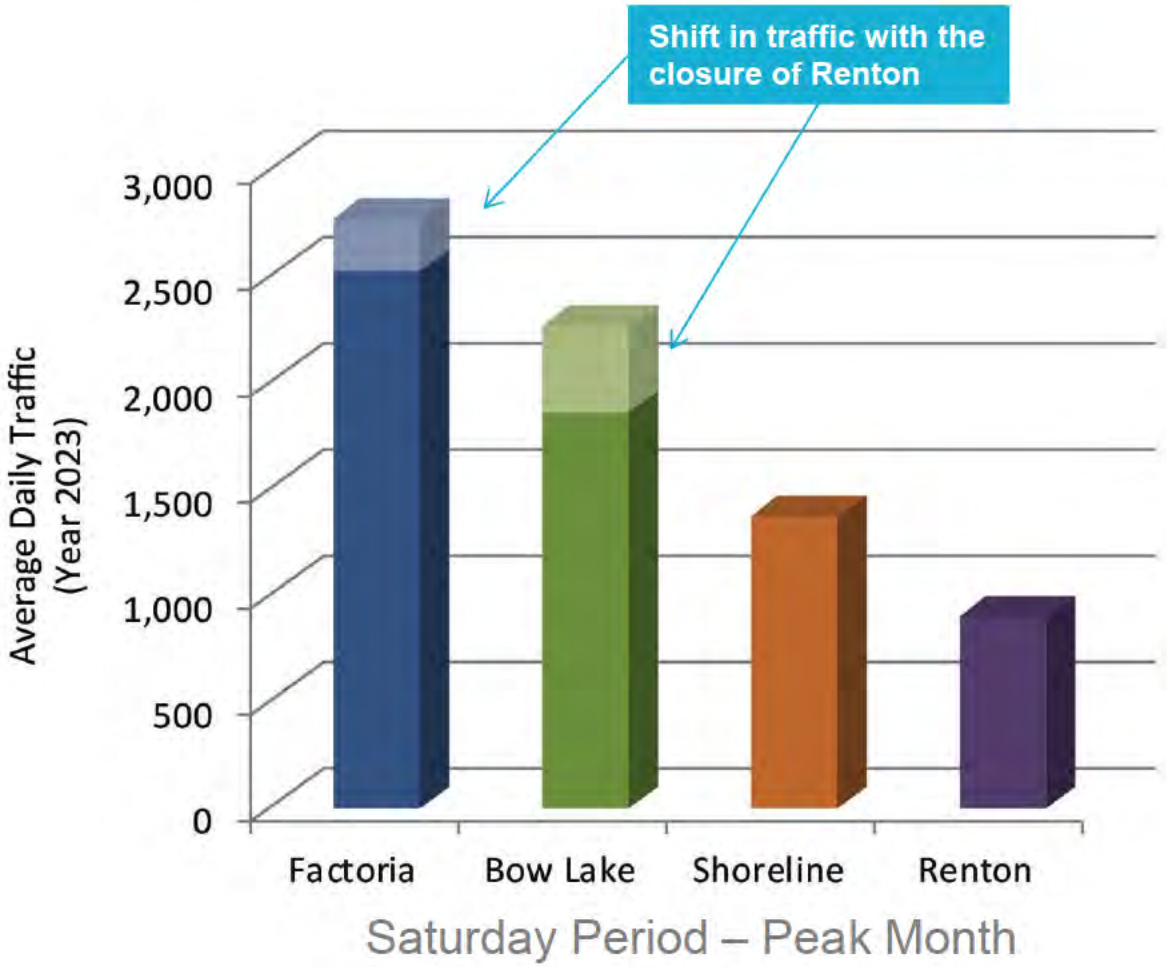
TRIP GENERATION SUMMARY

What is the **impact of closing** Houghton & Renton?

(Concept 0)



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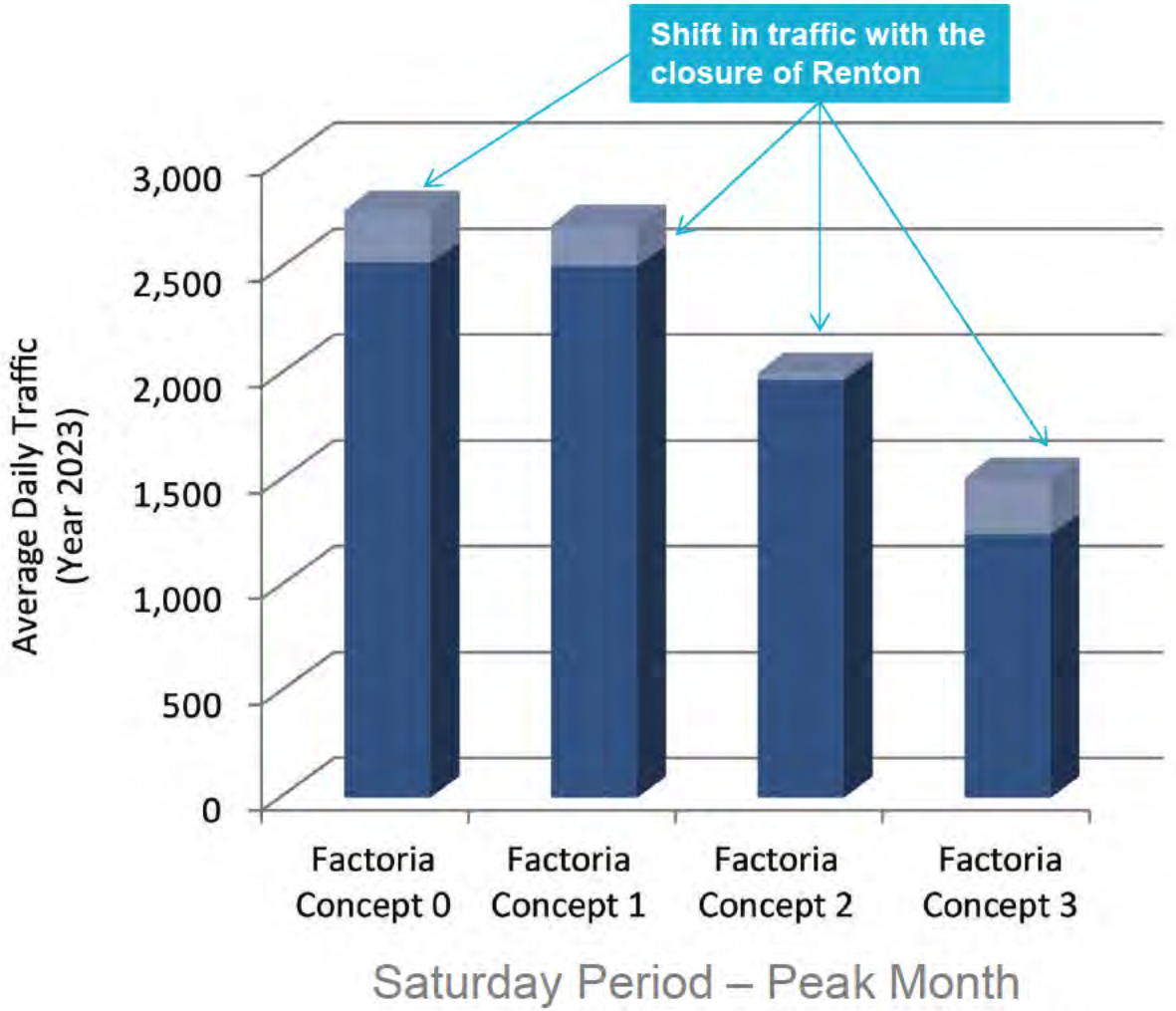
TRIP GENERATION SUMMARY

What are the **impacts of concepts 0, 1, 2 & 3?**



Saturday Period – Peak Month

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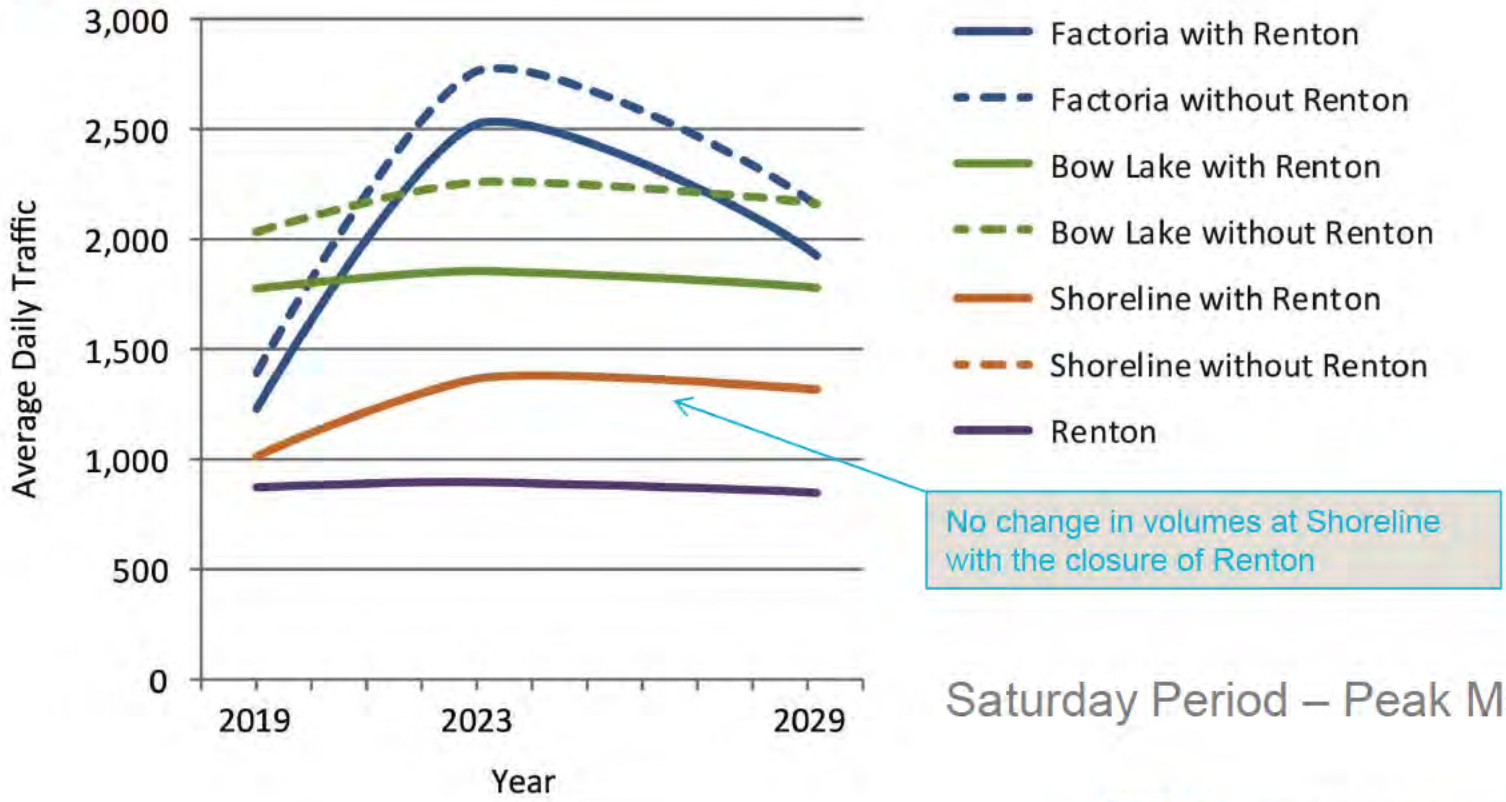
TRIP GENERATION SUMMARY

What is the **trend (ADT)** over this forecast period?



Saturday Period – Peak Month

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ON –SITE CAPACITY ANALYSIS

VISSIM micro-simulation analysis

- Existing conditions model constructed for calibration purposes
- Calibration reflects travel time studies, processing rates, and queuing observations for each site
- Future modeling focusing primarily on 2023 – Concept 0. Additional concepts to be tested based on the outcome of Concept 0 modeling

Operational/Capacity Considerations

- Customer experience (i.e. travel times)
- Internal wait times and operations
- Wait times at scale house and potential off-site impacts

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TRAFFIC MODELING – VISSIM EXAMPLE (SHORELINE)

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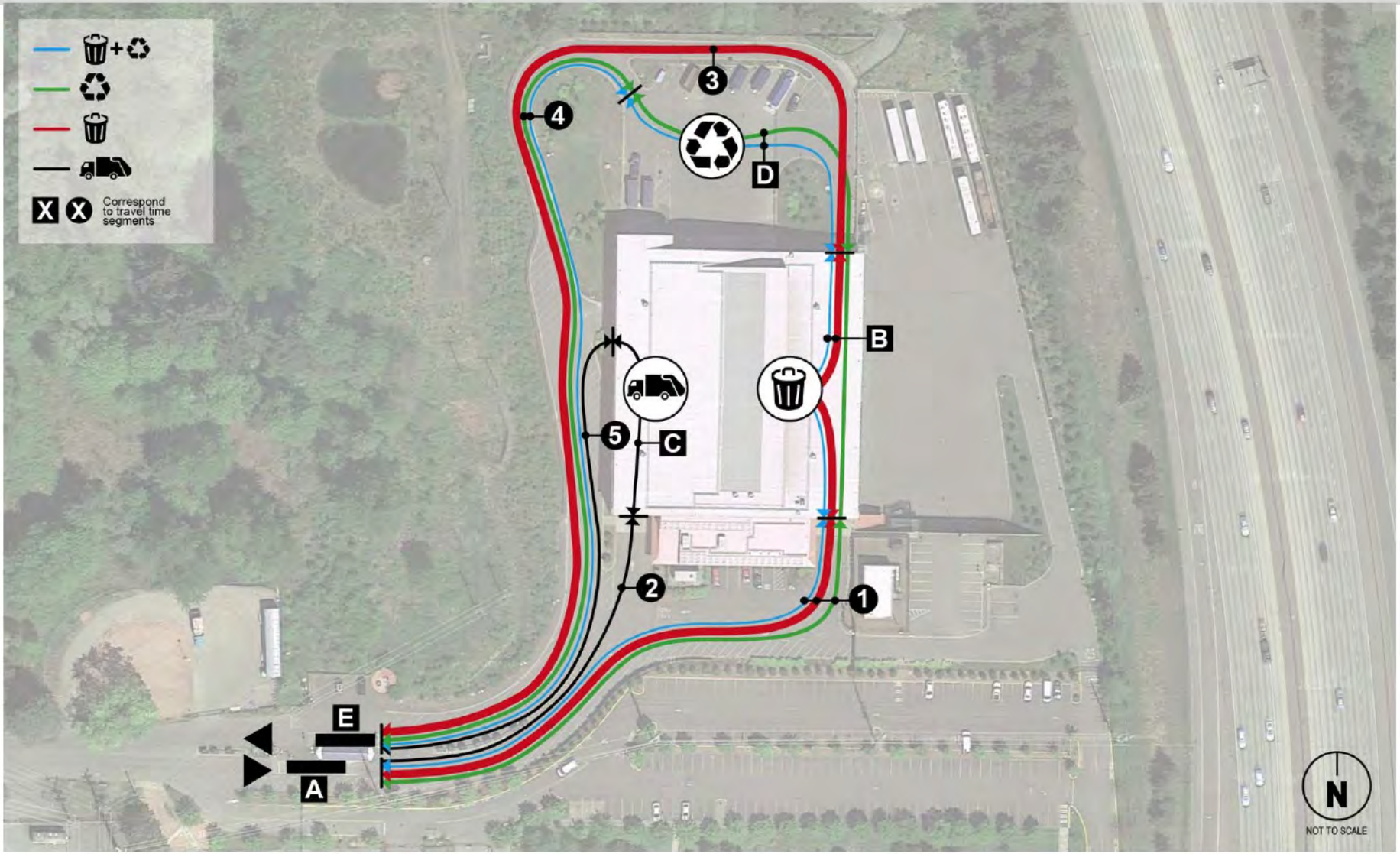
TRAVEL TIME STUDIES SHORELINE (EXAMPLE)



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TRAFFIC MODELING – DATA ANALYSIS

	Running Time (Segments)					Processing and Unloading - Time and Queue					Total Travel Time [Scale to Scale] *(mm:ss)*
	❶	❷	❸	❹	❺	A	B	C	D	E	
Existing											
Time (mm:ss)											*Commercial*
Queues (Ft)											*Self-Haul Garbage*
50th Percentile											*Recycle / YW*
95th Percentile											*Recycle and Tipping Floor*
2023											
Time (mm:ss)											*Commercial*
Queues (Ft)											*Self-Haul Garbage*
50th Percentile											*Recycle / YW*
95th Percentile											*Recycle and Tipping Floor*

❶ - Average travel time for vehicles between exiting the inbound scale and entering the self-haul tipping floor entrance (includes queue into tipping floor).
❷ - Average travel time for vehicles between exiting the inbound scale and entering the commercial tipping floor entrance (includes queue into tipping floor and time to untie loads).
❸ - Average travel time for vehicles between exiting the self-haul tipping floor and pulling onto the outbound scale (includes queue onto outbound scale).
❹ - Average travel time for vehicles between exiting the recycling area and pulling onto the outbound scale
❺ - Average travel time for vehicles between exiting the commerical tipping floor and pulling onto the outbound scale
A - Processing rate on the inbound scale. Queue onto inbound scale.
B - Unloading time in the commercial side of the tipping floor. Queue into tipping floor.
C - Unloading time in the self-haul side of the tipping floor. Queue into tipping floor.
D - Unloading time in the reycling area.
E - Processing rate on the outbound scale. Queue onto outbound scale.

See Travel Time

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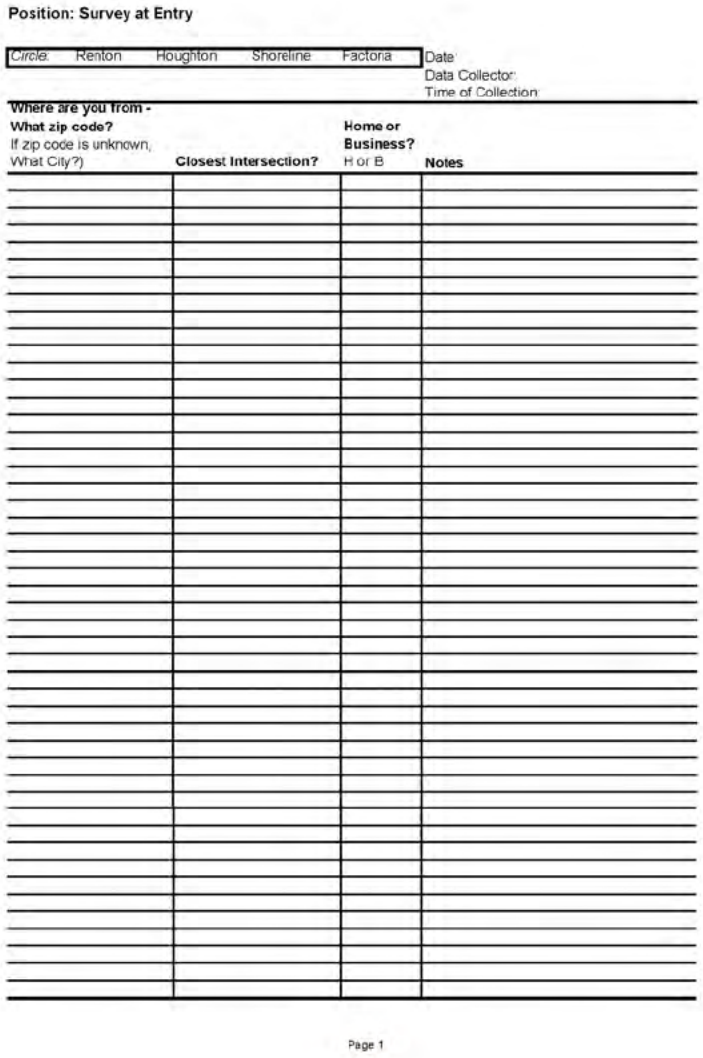
CUSTOMER ORIGIN/DESTINATION SURVEY

Conducted during the weekday and weekend observation periods (September – 2014)

Customer survey questions

- Where are you coming from (zip code and closest intersection)?
- Are you coming from a home or business?



Position: Survey at Entry

Circle: Renton Houghton Shoreline Factoria

Date
Data Collector:
Time of Collection

Where are you from - What zip code? If zip code is unknown, What City?)	**Closest Intersection?**	**Home or Business?** H or B	**Notes**

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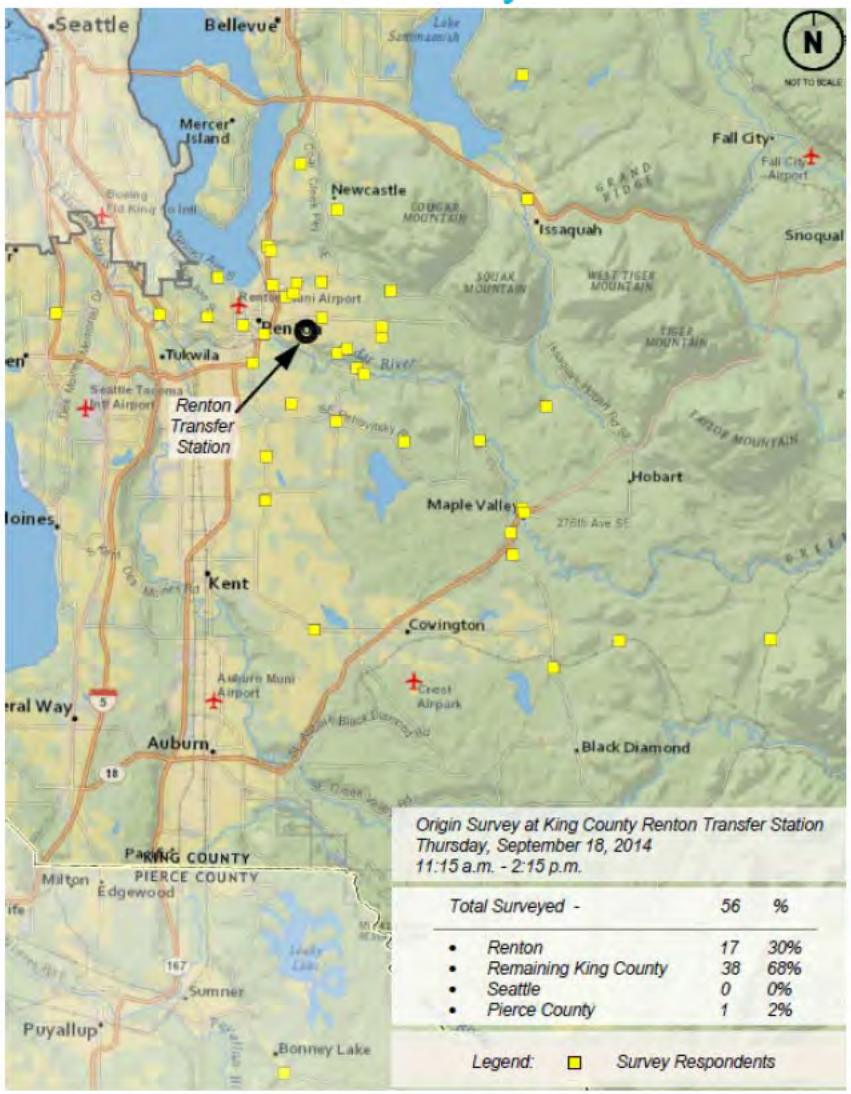
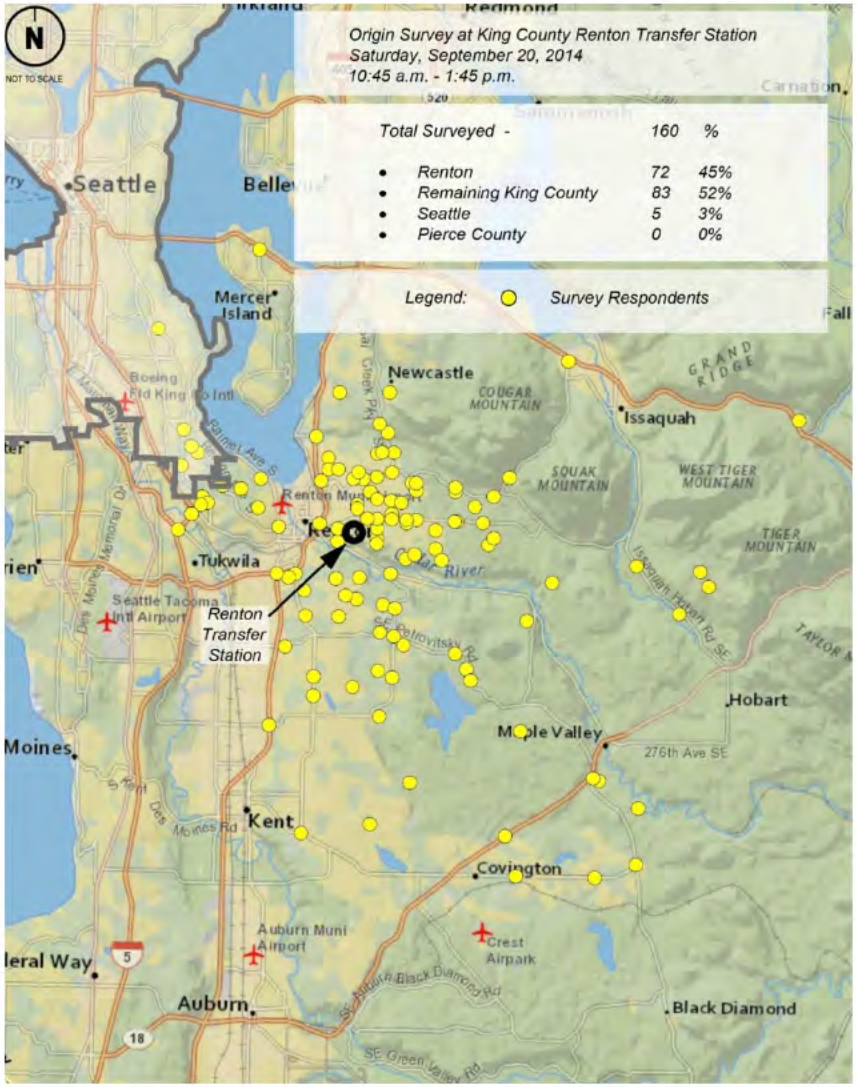
CUSTOMER ORIGIN/DESTINATION SURVEY - RENTON

Weekday



Saturday



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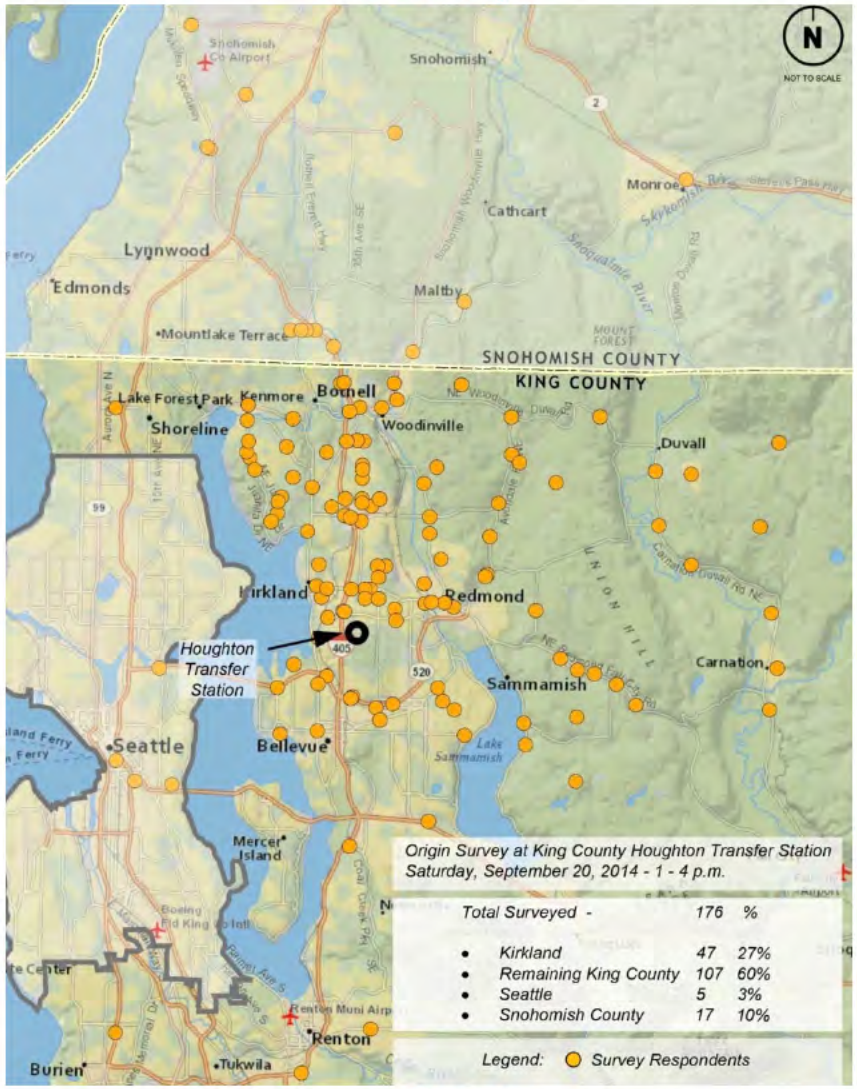
CUSTOMER ORIGIN/DESTINATION SURVEY - HOUGHTON

Weekday

Saturday



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OUTLINE OF ENVIRONMENTAL REVIEW PROCESS

Primary elements of the environment to be evaluated:

- Noise
- Greenhouse gas
- Off-site traffic

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OFF-SITE TRAFFIC ANALYSIS – SHORELINE

Traffic Analysis Methodology (Off-site)

- Review of key performance measures (i.e. intersection delay)
- Review of existing conditions
- Forecast future condition including background growth on adjacent streets and known development project **(baseline conditions)**
- As traffic associated with anticipated growth in station traffic (concepts 0, 1, 2, 3)
- Evaluate intersection operations (baseline vs. concepts 0, 1, 2, and 3) and compare to agency standards

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OFF-SITE TRAFFIC ANALYSIS – RENTON

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OFF-SITE TRAFFIC ANALYSIS – BOW LAKE

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OFF-SITE TRAFFIC ANALYSIS – FACTORIA

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