Honolulu
COMPLETE STREETS

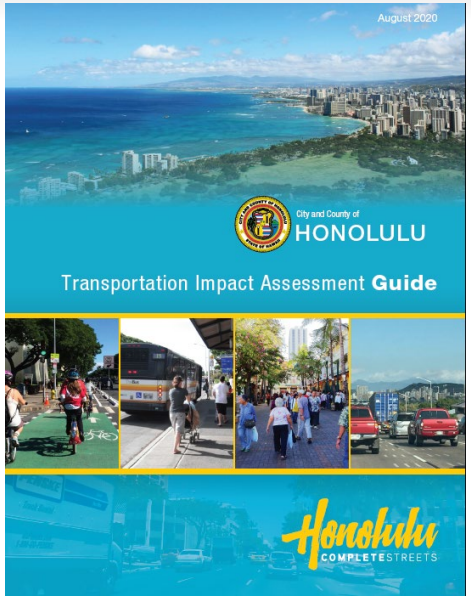
November 2020

Transportation Impact Assessment (TIA) Guide

ITE Hawaii Section

Chapter 1:
Objective of Revised Guide

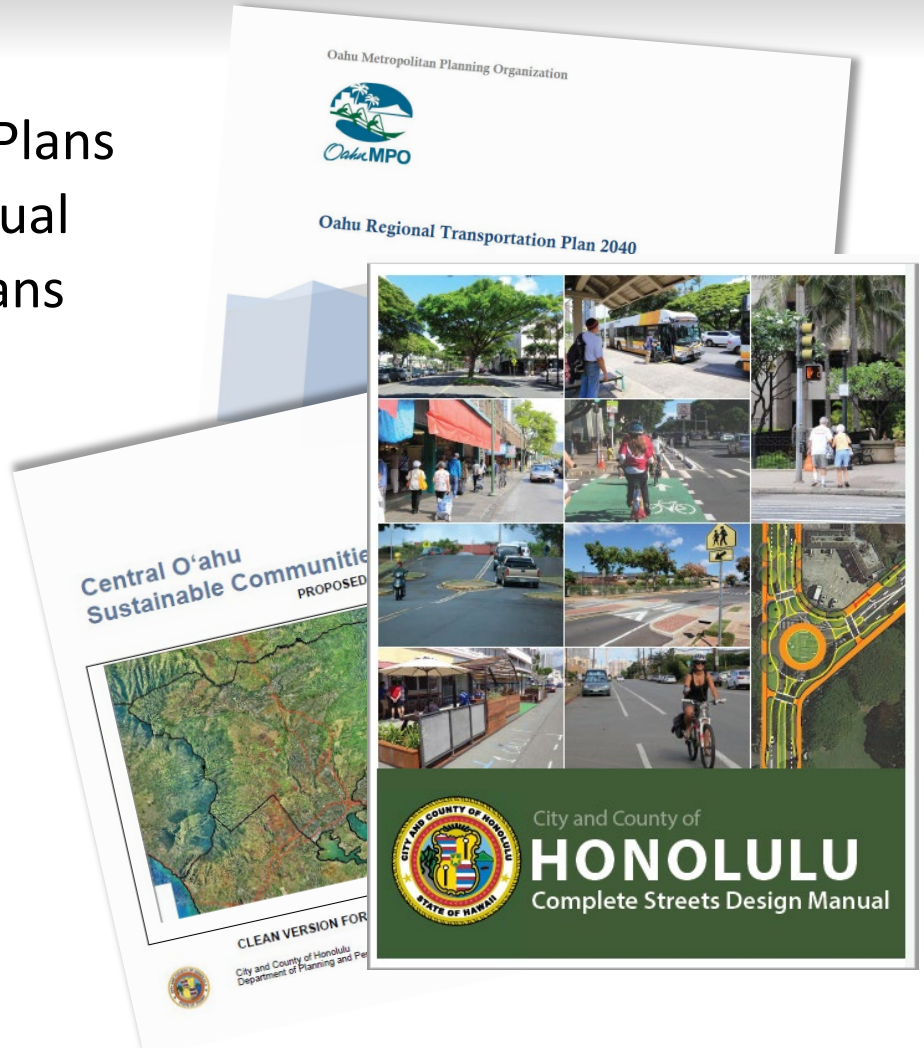
- To provide a **clear and consistent** process for reviewing potential transportation impacts of proposed City projects
- To assist City staff with implementing the Complete Streets Ordinance with a multimodal approach
- Clarifies requirements and expectations of transportation analyses
- Includes recommendations for:
  - ✓ Scope of analysis
  - ✓ Methods
  - ✓ Mitigation



ROH Chapter 14, Article 33 says that the City will provide streets that are safe and convenient for all users of the roadway, including pedestrians, bicyclists, motorists, persons with disabilities, users and operators of public transit, seniors, children, and movers of commercial goods.

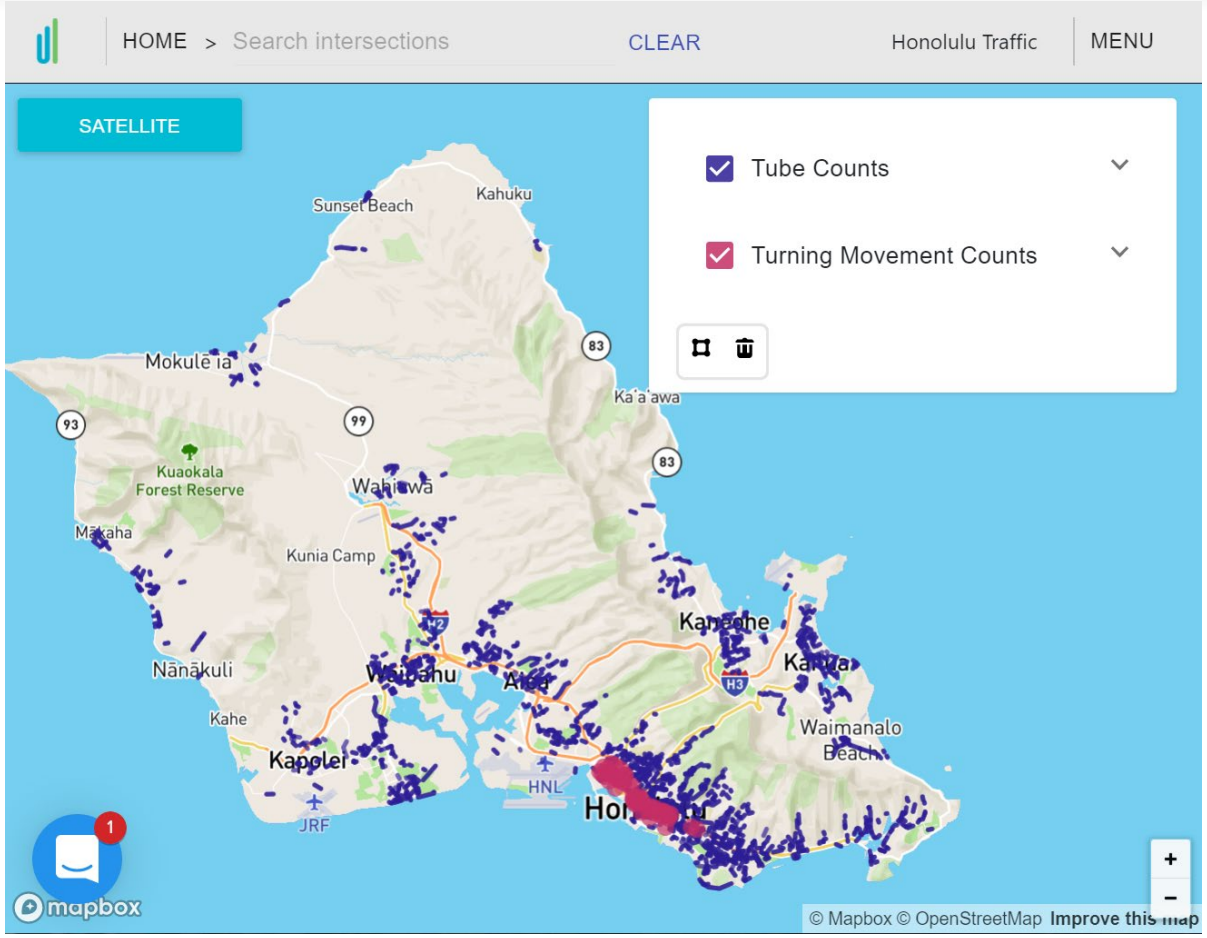
Chapter 2:
Consistency with Plans and Policies

- Oahu General Plan
- Regional Development Plans and Sustainable Communities Plans
- The City of Honolulu Complete Street Checklist/Design Manual
- Honolulu's Neighborhood Transit-Oriented Development plans
- Special District Design guidelines
- Oahu Regional Transportation Plan
- Statewide Pedestrian Master Plan
- 2019 Oahu Bike Plan Update
- Oahu Pedestrian Plan
- Subdivision Rules and Regulations
- Bus-Rail Integration Plans
- Honolulu Urban Core Parking Master Plan



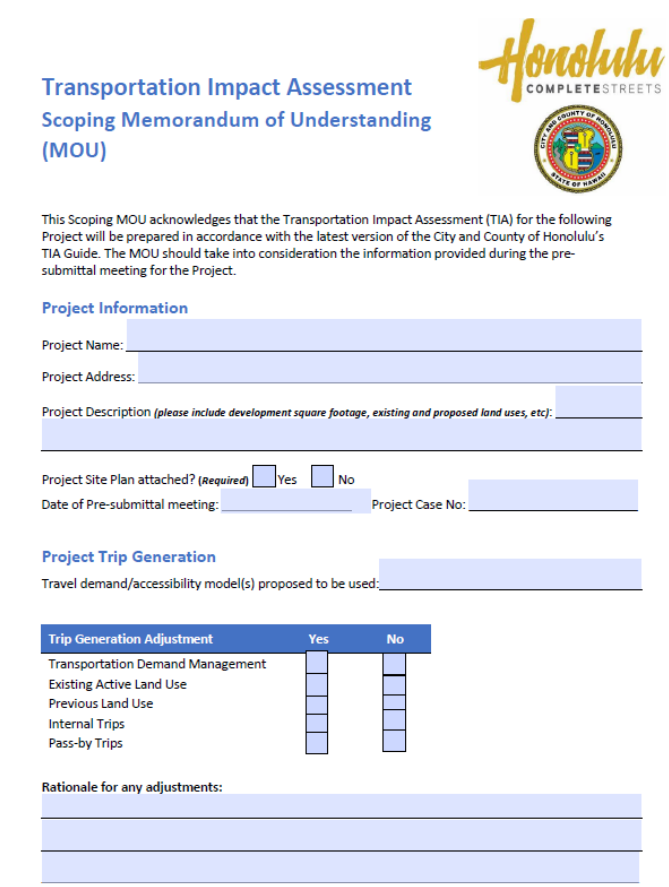
Chapter 2: Data Sources

- OahuMPO
  - ✓ Travel Demand Forecast Model
  - ✓ Sugar Access Model
- HDOT Data
  - ✓ Database of current and future highway projects
  - ✓ Annual average daily traffic counts
  - ✓ Crash data
- HDOH Data
  - ✓ Crash data
- Transit Ridership Data
  - ✓ TheBus ridership data
- City and County of Honolulu
  - ✓ Pedestrian High Injury/Crash locations
- UrbanLogiq



Chapter 2: Scoping the TIA

- Early discussions with City staff is integral
- A primary contact with the project sponsor will be identified and will coordinate the review with:
  - ✓ DTS-TPD
  - ✓ DTS-TED
- Pre-scoping meeting required between City staff and transportation consultant to:
  - ✓ Review project and estimate potential impacts to multimodal transportation network.
  - ✓ Identify measures to address anticipated project impacts.
  - ✓ Discuss how TIA Guide will be applied to proposed project.
- Prepare Scoping Memorandum
  - ✓ Document outcome of pre-scoping meeting.
  - ✓ Identify key project assumptions and required analyses.



Honolulu COMPLETE STREETS

Transportation Impact Assessment
Scoping Memorandum of Understanding (MOU)

This Scoping MOU acknowledges that the Transportation Impact Assessment (TIA) for the following Project will be prepared in accordance with the latest version of the City and County of Honolulu's TIA Guide. The MOU should take into consideration the information provided during the pre-submittal meeting for the Project.

Project Information

Project Name: _____

Project Address: _____

Project Description *(please include development square footage, existing and proposed land uses, etc)*: _____

Project Site Plan attached? *(Required)* ☐ Yes ☐ No

Date of Pre-submittal meeting: _____ Project Case No: _____

Project Trip Generation

Travel demand/accessibility model(s) proposed to be used: _____

Trip Generation Adjustment	Yes	No
Transportation Demand Management	☐	☐
Existing Active Land Use	☐	☐
Previous Land Use	☐	☐
Internal Trips	☐	☐
Pass-by Trips	☐	☐

Rationale for any adjustments:

Chapter 3:
Typical Analyses Required

- Level and Quality of Service by Mode
- Complete Streets Modal Priority Analysis
- Parking Supply and Demand Assessment
- Traffic Safety and Access Management
- Vehicle Miles Traveled (VMT) Analysis
- Induced Traffic Analysis
- Neighborhood Traffic Analysis

Required evaluations determined on a case-by case basis during project scoping.

Chapter 3:
Level and Quality of Service by Mode

- Evaluate potential transportation effects on **all** modes (pedestrians, bicyclists, transit, and autos).
- Level of service (LOS) and quality of service determined using appropriate tool for each mode:
  - ✓ Pedestrian Environmental Quality Index (PEQI)
  - ✓ Bicycle Level of Traffic Stress (LTS) tool
  - ✓ Transit Capacity and Quality of Service Manual (TCQSM)
  - ✓ Highway Capacity Manual (HCM)
- Analysis results in a uniform multimodal score (scaled from 1 to 4).
- Multimodal score is used for Complete Streets Modal Priority analysis.
  - ✓ Honolulu Multimodal Radar Diagram

Chapter 3:
Parking Supply and Demand Assessment

- Required when significant parking removal is proposed (to be discussed at pre-submittal/scoping meeting) or in TOD areas where number of spaces proposed exceeds number of vehicle trips.
- Evaluate availability of corridor-serving parking using parking supply and occupancy data to define parking ratio.
- Goal is to achieve 85% parking occupancy.

Parking Occupancy Score

Score	Parking Occupancy	Summary	What it Means
1	0% to 50%	Parking may be underutilized	More than half of the parking spaces are available. Opportunity to rebalance where availability is constrained nearby.
2	51% to 70%	On or below target	Half to ~30% of parking is available. Good availability.
3	71% to 84%	Middle to high range of target	~30% to 15% available – the equivalent of a few parking spaces per block. On target/acceptable availability; actively manage to maintain.
4	>85%	Above target	Less than 1-2 spaces per block. Constrained availability; actively manage to improve availability.

Chapter 3: Pedestrian Environmental Quality Index (PEQI)

- Evaluates pedestrian environment using 36 indicators across six categories:
  - ✓ Intersection safety
  - ✓ Traffic
  - ✓ Street design
  - ✓ Land use
  - ✓ Perceptions of safety
  - ✓ Perceptions of walkability
- Raw inputs are assigned a weight to generate a total score ranging between 0-100.
- Score categorizes street segments and intersections separately based on quality of the pedestrian environment.
- Segment score should be based on worst score for any block within segment to capture gaps in infrastructure.
- *Industry-equivalent method acceptable when pre-approved by City staff*.

PEQI Output Score Range and Scale

Score	Description	Comfort Scale 1-4
100 to 81	Ideal pedestrian conditions exist	1
61 to 80	Reasonable pedestrian conditions exist	
41 to 60	Basic pedestrian conditions exist	2
21 to 40	Poor pedestrian conditions exist	3
0 to 20	Environment not suitable for pedestrians	4

Chapter 3:
Bicycle Level of Traffic Stress (LTS)

- Used to determine personal level of comfort while bicycling
- Uses metrics such as:
  - ✓ Traffic volumes
  - ✓ Vehicle speeds
  - ✓ Bicycle infrastructure
  - ✓ Roadway design
- Bicyclists experience different levels of stress depending on infrastructure present (e.g. off-street paths provide lower stress environment).
- Segment score should be based on worst score for any block within the segment to capture gaps in infrastructure.

Bicycle LTS and Scale

Description	Bicycle LTS Scale 1-4
Lowest level of traffic stress. All types of cyclists comfortable. Facilities include separated bike lanes.	1
Second lowest level of traffic stress. Families and less experienced cyclists may feel less comfortable. Facilities include buffered bike lanes.	2
Higher level of traffic stress. Fewer cyclists are comfortable. Facilities include narrow bike lanes or a shoulder on a busy street.	3
Highest level of traffic stress. Only most experienced cyclists are willing to use these roadways. Examples include busy four-lane roads with no bike lane.	4

Chapter 3:
Transit Capacity and Quality of Service Manual (TCQSM)

- Evaluates transit operations, transit amenities, and pedestrian environment.
- Measures 19 inputs, some are the same as PEQI.
  - ✓ Transit operations/transit amenity inputs are factored into a total **Transit Wait-Ride score**
  - ✓ Pedestrian environment inputs are factored into a total **Pedestrian Environment score.**
  - ✓ Transit Wait-Ride score and Pedestrian Environment score are weighted and added together to generate final **Transit LOS score**
- Where transit infrastructure/service are different on each side of the street, the block score will be calculated as the average of the two directional scores, to show combination of two transit environments.

Transit LOS Scoring and Scale

Transit LOS	Transit LOS Score	Transit Comfort Scale 1-4
A	<2	1
B	2 to 2.75	2
C	2.76 to 3.5	3
D	3.6 to 4.25	
E	4.26 to 5	4
F	>5	

Chapter 3:
Highway Capacity Manual (HCM)

Intersections

- HCM used to evaluate vehicle LOS.
- Typically considers peak 15 minute volumes. If required by City, TIA should use volumes from the 2nd highest peak hour traffic counts and assume volumes are evenly distributed over the analysis hour. This allows for some levels of congestion to occur.
- Typical A to F rating converted to scale of 1 through 4.

Vehicle LOS Score Summary and Scale (Intersections)

LOS	Volume to Capacity (V/C) Ratio	Intersection Control Delay (seconds/vehicle)		Operations Scale 1-4
		Signal Control	Unsignalized Control	
A	0.00 to 0.60	< 10	< 10	1
B	>0.60 to 0.70	> 10 to 20	> 10 to 15	
C	>0.70 to 0.80	> 20 to 35	> 15 to 25	
D	>0.80 to 0.90	> 35 to 55	> 25 to 35	2
E	>0.90 to 1.00	> 55 to 80	> 35 to 50	3
F	>1.00	> 80	> 50	4

Chapter 3:
Highway Capacity Manual (HCM) continued

Road Segments

- Segments are evaluated based on daily, not peak period, vehicle volumes.
- Segment LOS calculated using HCM 2010 Generalized Daily Service Volumes for Urban Street Facilities.
- Assumes LOS C as best possible score.

Vehicle LOS Score Summary and Scale (Roadway Segments)

LOS	Average Daily Vehicle Volume			Operations Scale 1-4
	2-Lane Road	4-Lane Road	6-Lane Road	
C	0 to 5,900	0 to 11,300	0 to 16,300	1
D	5,901 to 15,400	11,301 to 31,400	16,300 to 46,400	2
E	15,401 to 19,900	31,401 to 37,900	46,401 to 54,300	3
F	>19,900	>37,900	>54,300	4

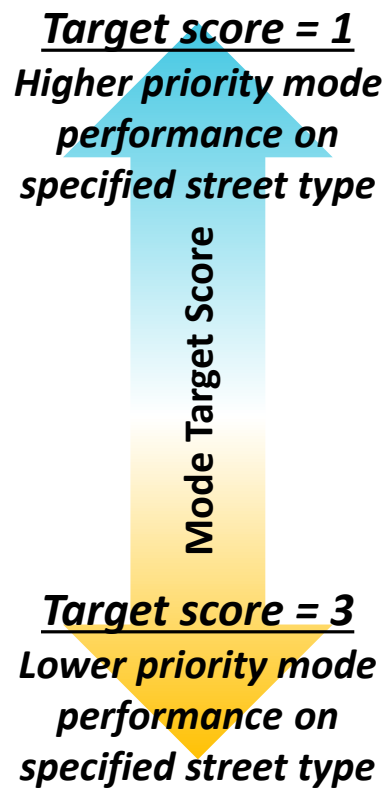
The overall auto mode score is based on the **worst roadway segment score** for any given block within the analysis segment to capture gaps in infrastructure.

Chapter 3:
Complete Streets Modal Priority Analysis

The Complete Streets Design Manual establishes performance targets by mode and by street type. Construction, expansion, or alteration for one mode should not degrade the LOS of a higher priority mode.

Mode Performance Targets by Street Type

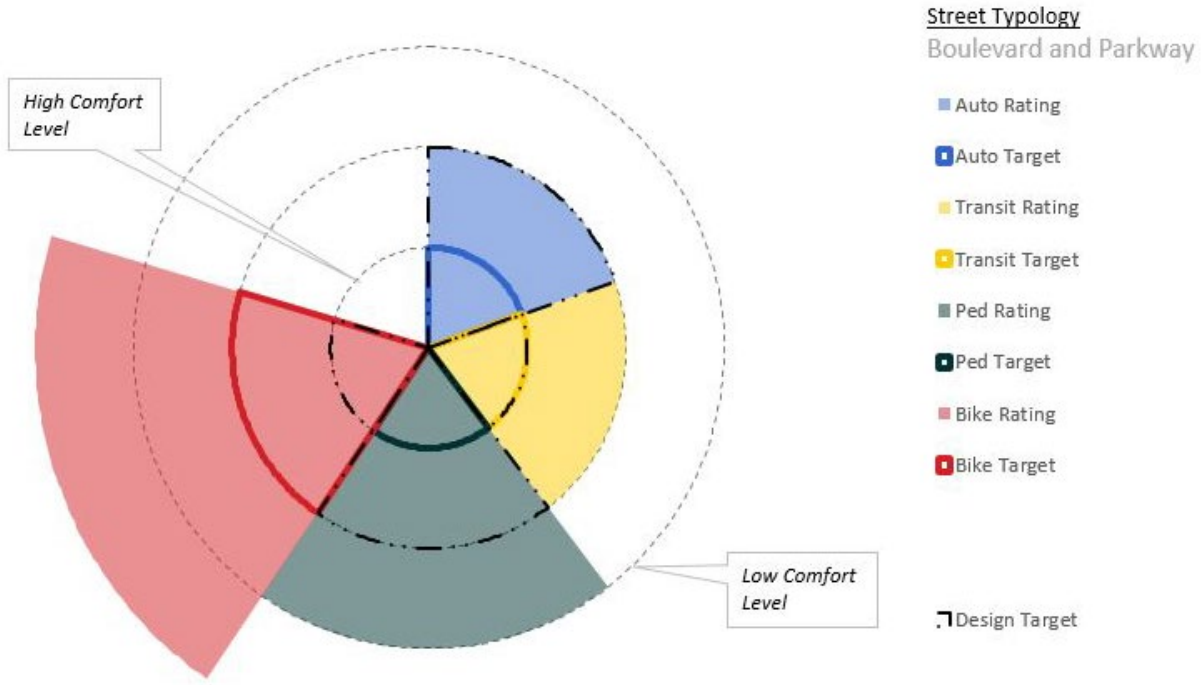
Street Type	Auto	Transit	Pedestrian	Bike	Parking	Loading	Design Speed (mph)
Expressway	1	1					55
Boulevard and Parkway	1	1	1	2	3		35
Avenue	2	3	2	1	3	3	25 to 35
Main Street	2	1	1	3	3	1	20
Street	2	3	1	3	3	3	15
Mall (Transit)		1	1	2			20
Rural Road	2	3	3	3			25
Lane/Alley	3		1	2	3	2	5 to 10
Mews (Ped. Mall)			1	2		2	0



Chapter 3:
Complete Streets Modal Priority Analysis (continued)

- The Honolulu Multimodal Radar is used to conduct the Complete Street Modal Priority analysis.
- Each street segment will receive a score (1 through 4) for each mode, for existing conditions and proposed design concept.
- **Scores are input into the City's multimodal radar tool in Excel table.**
- Visual diagram comparing the target performance to the existing and proposed design performance score is **automatically generated.**

Honolulu Multimodal Radar Tool Diagram automatically generates when the table is filled out.



Chapter 3:
Complete Streets Modal Priority Analysis (continued)

- Street priority targets are defined by the selected street typology (expressway, avenue, rural road, etc.)
  - Modes evaluated are dependent on street typology selected.
  - Target score of 1 indicates higher priority mode, better performance for street type
  - Target score of 3 indicates lower priority mode, lower performance accepted
- Existing conditions and design concept scores are based on modal analysis.

Honolulu Multimodal Radar Tool Diagram
example of Excel table input values

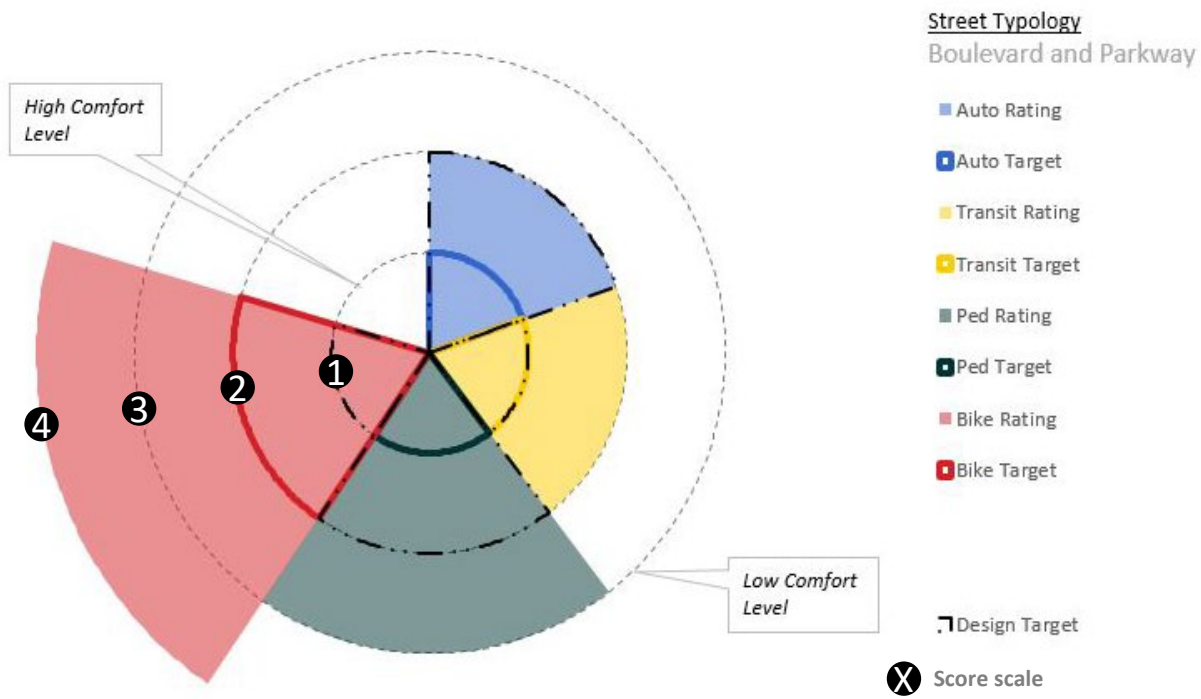
Street Design Priority and Rating/Score	Modal Elements			
	Auto	Transit	Pedestrian	Bike
Street Priority Target	1	1	1	2
Existing Condition Rating	2	2	3	4
Design Concept Rating	2	1	2	1

**Parking and Loading are not applicable to this example.*

Chapter 3:
Complete Streets Modal Priority Analysis (continued)

- Multimodal radar tool diagram visually compares targets and performance scores
  - Auto – existing and design do not meet target, ***propose improvements***
  - Transit – existing does not meet target, design meets target
  - Pedestrian – existing does not meet target, design improves mode, but does not meet target, ***propose improvements***
  - Bike – existing does not meet target, design concept is better than target
- Improvement strategies (Chapter 4) shall be proposed to enhance any deficient mode scores.

Honolulu Multimodal Radar Tool Diagram
automatically generated with table inputs

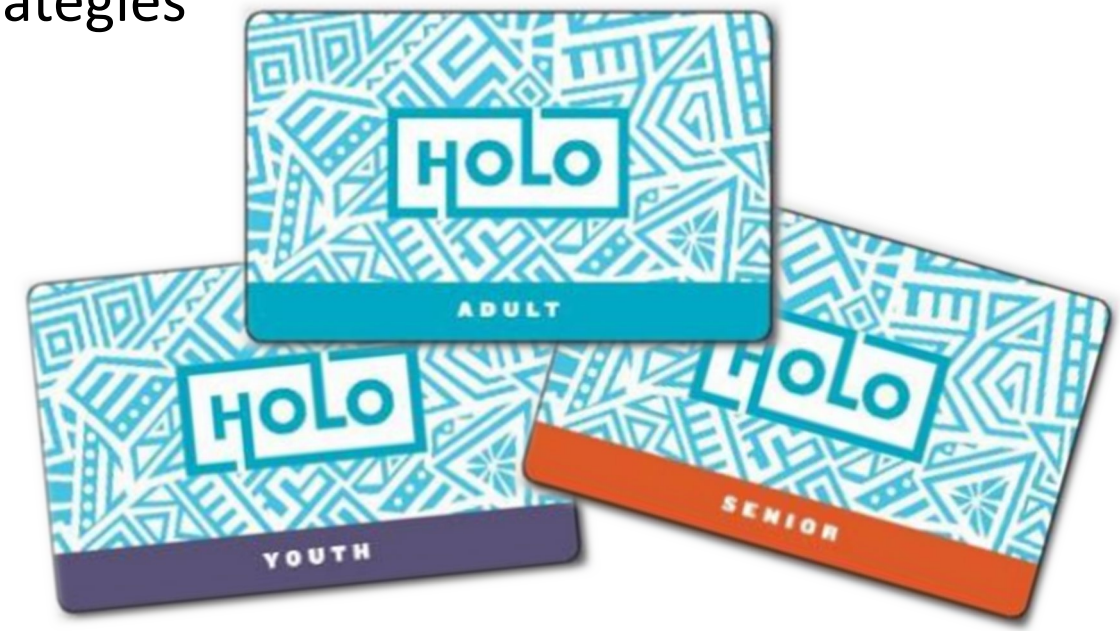


Chapter 3: Other Analyses

- Traffic Safety and Access Management
  - ✓ Look at the most recent three to five years of collision data within the study area, identify trends
- Vehicle Miles Traveled (VMT) Analysis
  - ✓ Projects within the TOD or TRD zone include an analysis of project VMT vs. forecasted regional VMT
- Induced Traffic Analysis
  - ✓ Careful review to ensure project-induced demand does not negatively affect operations
- Neighborhood Traffic Analysis
  - ✓ Evaluation of the impact to neighborhood traffic conditions

Chapter 4:
Minimizing Project Impacts

- Transportation Improvement Strategies
  - ✓ Required when projects generate > 50 net new peak period vehicle trips. Must submit TDM strategies as part of the TIA.
  - ✓ Projects that generate > 100 peak period vehicle trips and contain ongoing operational strategies, must submit annual compliance report for first 5 years following completion of the project.
- Transportation Demand Management (TDM) Strategies
  - ✓ Same requirements as above
- Strategies and improvements fall into three categories:
  - ✓ Required
  - ✓ Better
  - ✓ Best



Chapter 4:
Transportation Improvement and TDM Strategies

Transportation Improvement Strategies	Suggested When
EXAMPLES	
Transit	
Concrete bus pad	• A bus stop is located along the project frontage and a concrete bus pad does not already exist.
Bike	
Bikeshare station area and/or Designated Drop Zones	• A bikeway facility is in a local or county adopted plan within 0.10 mile of the project location/
Pedestrian	
Pedestrian crossing improvements, pedestrian-supportive signal changes, raised crosswalks and intersections	• Identified as an improvement within site analysis. • Identified as an improvement within operations analysis.
Vehicle	
Signal upgrades	• Project size exceeds 100 residential units, 80,000 sf of retail, or 100,000 sf of commercial; and • Project frontage abuts an intersection with signal infrastructure older than 15 years.

Chapter 5:
TIA Content and Organization

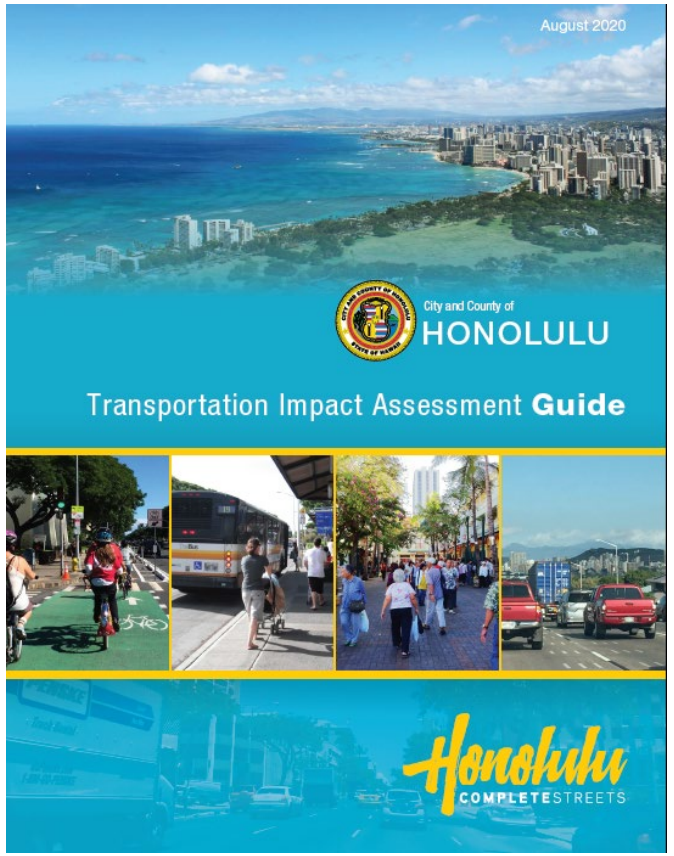
- Project Background, Description, and Study Area
- Multimodal Transportation Impact Analysis
- Project Mitigation
- Conclusions and Recommendations
- Appendices

For more information

- Transportation Impact Assessment Guide
  Link: http://www4.honolulu.gov/docushare/dsweb/View/Collection-7723

- Resources and Analysis Tools
  Link: http://www4.honolulu.gov/docushare/dsweb/View/Collection-7723

- For more information, contact:
  Scott H. Brady
  Regional Planning / Transportation Planning
  Department of Transportation Services
  City and County of Honolulu
  Phone: (808) 768-6693
  E-mail: scott.brady@honolulu.gov



Questions or Comments?