



WSDOT TRAFFIC ANALYSIS GUIDE
FEBRUARY 2019



Purpose

This guidebook provides a list of approved software (along with the version currently adopted by WSDOT, contact region/HQ Traffic for approval to use alternative versions) and helps to clarify the recommended use of each. There is also a section with a list of all documents developed by WSDOT or recommended for use by WSDOT.

Analysis Software

- HCS:** Highway capacity software, distributed by McTrans (through the University of Florida). This software is an analytical/deterministic model that implements the procedures defined in the Highway Capacity Manual. As of February 2019, the approved version for this software is HCS 6th edition.
- Synchro:** This software is part of the Synchro Studio package distributed by Trafficware. This is an analytical/deterministic model that is capable of network optimization. Synchro is not recommended for freeway or over saturated conditions. As of February 2019, the approved version for this software is Synchro 10.
- SimTraffic:** This software is a very basic microsimulation model, which is part of the Synchro Studio package distributed by Trafficware. No results of SimTraffic are acceptable unless calibration has been demonstrated. As of February 2019, the approved version for this software is Synchro 10 with SimTraffic.
- Sidra:** This software is distributed by Sidra Solutions. This is a deterministic software with network capabilities. As of February 2019, the approved version for this software is Sidra 8.
- Vissim:** This software is distributed by PTV America. Vissim is an advanced microsimulation software application. As of February 2019, the approved version for this software is Vissim 11.

	Type of Analyses					
	Unsignalized Analysis	Isolated Signalized Analysis	Roundabout Analysis	Signals in Coordination ^A	Multiple Intersections ^B	Simulation
HCS	YES	YES	NO	NO	NO	NO
Synchro	YES	YES	NO	YES	YES	NO
SimTraffic ^D	YES	YES	NO	YES	YES	YES
Sidra	NO	With concurrence ^C	YES	NO	With concurrence ^C	NO
Vissim	NO	YES	YES ^E	YES	YES ^E	YES

For analyses with multiple approved software, consult with Region/HQ Traffic for preferred software, based on size and complexity of the project.

^A This refers to projects with multiple signalized intersections to be coordinated and optimized.

^B “Multiple Intersections” or “Network” refers to intersections that interact or impact one another. This could include a combination of intersection control types.

^C Justification must be provided to Region/HQ Traffic and concurrence received.

^D It is recommended that SimTraffic only be used as an error check/validation tool for a Synchro Model or for Simple Networks: a network where routing is not needed beyond two intersections.

^E Only when Sidra cannot be used with locations involving roundabouts

	Type of Analyses (continued)		
	Merge/ Diverge	Weave	Basic Roadway Segment
HCS	YES	YES	YES
Synchro	NO	NO	NO
SimTraffic	NO	NO	NO
Sidra	NO	NO	NO
Vissim	YES	YES	YES
For analyses with multiple approved software, consult with Region/HQ Traffic for preferred software, based on size and complexity of the project.			

WSDOT Developed Documents / WSDOT endorsed Documents

These documents have been developed to help clarify parameters/protocols/and processes required by WSDOT. They are intended to promote consistency.

Most of the documents listed below (or a link to them) can be found at the WSDOT Traffic Analysis website (<http://www.wsdot.wa.gov/Design/Traffic/Analysis/>). All those not found on the website will have a link provided below.

- Sidra Brochure
- Synchro Protocol
- Vissim protocol
- WSDOT Design Manual Chapter 320 – Traffic Analysis (<http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>)
- Highway Capacity Manual 6th Ed. (NOTE: only WSDOT can access this website, (<https://trrjournalonline.trb.org/doi/book/10.5555/9780309441483>))
- Traffic Analysis Tools Primer (NOTE: this is part of the Traffic Analysis Toolbox, Volume 1. It is intended to be used for topics not covered in any above document. (https://ops.fhwa.dot.gov/trafficanalysistools/tat_vol1/vol1_primer.pdf))

Reports

Examples of reports that are used in traffic analysis for WSDOT are listed below along with any appropriate links to templates or clarifying information:

- Access Revision Report
 - WSDOT Design Manual Div. 5
<http://www.wsdot.wa.gov/publications/manuals/fulltext/M22-01/510.pdf>
- Traffic Impact Analysis (TIA)
 - WSDOT Design Manual 320
<http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>
 - Developer Services Manual
<http://www.wsdot.wa.gov/publications/manuals/fulltext/M3007/DSM.pdf>
- Intersection Control Analysis (ICA)
 - WSDOT Design Manual Chapter 1300 – Intersection Control Analysis
(<http://www.wsdot.wa.gov/Publications/Manuals/M22-01.htm>)
- Environmental Report
 - Transportation Discipline Report

Information/Feedback

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For specific analysis questions not involving interstate or federal routes, contact the region traffic office.

Traffic Analysis Acronyms

Below are acronyms that can be found in the above-mentioned WSDOT Documents. WSDOT also provides a Transportation Acronym Guide on their website for a more complete Transportation list:

<http://www.wsdot.wa.gov/Reference/Acronym.htm>

AASHTO – American Association of State Highway and Transportation Officials
AADT – Annual Average Daily Traffic
ADT – Average Daily Traffic (typically based on 365 days a year)
ATCS – Adaptive Signal Control System
CBD – Central Business District
DHV – Design Hour Volume
DDHV – Directional Design Hour Volume
DM – Design Manual (referring to WSDOT Design Manual)
EPA – Environmental Protection Agency
FDW – Flashing Don't Walk
FFS – Free Flow Speed
FPS – Feet Per Second
HCM – Highway Capacity Manual (note: there are several editions of this manual)
HGV – Heavy Gross Vehicle
HOT – High Occupancy Toll
HOV – High Occupancy Vehicle
HSM – Highway Safety Manual
HQ – Head Quarters
ITS – Intelligent Transportation System
M/A – Methods and Assumptions Document
MOE's – Measures of Effectiveness
MOVES – Motor Vehicle Emissions Simulator
MPH – Miles per Hour
MPO – Metropolitan Planning Organization
O/D – Origin Destination
PHF – Peak Hour Factor (not used with future year volumes beyond 10 years)
RAB – roundabout
RBC – Ring Barrier Controller
RTP – Region Transportation Plan
RTOR – Right Turn on Red
SIG – Signal
SWAG – (see Microsimulation)
WSDOT – Washington State Department of Transportation
STIP – Statewide Transportation Improvement Program
TDGMO – Transportation Data, GIS & Modeling Office
TDM – Travel Demand Model
TSP – Transportation System Plan
v/c – Volume over capacity ratio
VPH – Vehicles per Hour