

Paramics Calibration Settings

Last Updated: 08-31-2017

Type of Setting	Parameter Grouping	Parameter Name	Default Settings (per Paramics v. 6.9.3)	Recommended Parameter Value	Typical Parameters Adjusted During Calibration	Parameter Description
GLOBAL SETTINGS	Core Settings	Time steps	2	2 to 4, Typically 4 for models with freeway merging	Yes	Higher Time Step allows vehicles to make decisions based on the car following and lane change logic at a higher frequency.
		Queue gap distance (ft)	32.81	Typically not modified	No	Maximum distance between queuing vehicles.
		Queuing speed (mph)	4.47	Typically not modified	No	Maximum speed of queuing vehicles.
		Heavy vehicles weight (ton)	2.95	Typically not modified	No	Minimum weight of a heavy vehicle.
		Mean target headway (s)	1.00	Urban areas: 0.85 to 0.90 Small Cities: 0.90 to 0.95 Rural areas: 0.95 to 1.00	Yes	Raise to increase distance between vehicles and represent more passive drivers. Lower to decrease distance between vehicles and represent more aggressive drivers.
		Mean driver reaction time (s)	1.00	Urban areas: 0.85 to 0.90 Small Cities: 0.90 to 0.95 Rural areas: 0.95 to 1.00	Yes	Value is associated with the lag in time between a change in speed of the preceding vehicle and the following vehicle's reaction to this change. Raise for more passive drivers. Lower for more aggressive drivers.
		Speed memory	3	1.5x the Time steps value	Yes, if time step value is changed.	Speed Memory is used to store previous vehicle speeds at each Time Step. Speed Memory x time step should be > than the global Driver Reaction Time.
		Minimum gap (ft)	6.56	Typically not modified	No	Minimum gap between stationary vehicles in a queue.
		Loop length (ft)	6.56	Typically not modified on global level	No	Default distance between upstream and downstream edges of a loop detector (2 meters). Detector lengths may be modified locally as well.
		Amber time (s)	3	Typically not modified on global level	No	Default yellow time included in traffic signal phases. This setting should be modified locally based on field signal timing and phasing settings.
		Red time (s)	5	Typically not modified on global level	No	Default red time included in traffic signal phases. This setting should be modified locally based on field signal timing and phasing settings.
		Default curve speed factor	1	Typically not modified	No	Allows vehicles to make turns at a safe speed. Typically not modified.
		Speed drift unit	5	Typically not modified	No	Specifies minimum number of units that the link speed can be altered by in the Link Editor. Typically not modified.
		Wrong lane diversion time (s)	300	Typically not modified	No	Additional cost a vehicle would tolerate in order to reach its destination by choosing an alternative route. Only applies to links that have the "re-route stuck vehicles" flag enabled.
GLOBAL SETTINGS	Assignment Settings	Assignment settings-Time Cost Coefficient	1.000	0.667	Yes, change from default in initial network setup.	Coefficient that defines how travel time affects routing for all vehicles in the network.
		Assignment settings-Distance Cost Coefficient	0.000	0.333	Yes, change from default in initial network setup.	Coefficient that defines how distance affects routing for all vehicles in the network.
		Assignment settings-Toll Price Cost Coefficient	0.000	0	Only if tolling applies. Should be based on prevailing wage rate in the study area.	Coefficient that defines how toll pricing affects routing for all vehicles in the network.
		Assignment settings-Dynamic Assignment: Feedback Period	0	Start with 5 minute feedback period	Yes, change in small increments	Sets period at which link times are fed back into the routing calculations. At the beginning of each feedback period route cost tables are calculated for each viable network node to each destination zone.
		Assignment settings-Dynamic Assignment: Feedback Smoothing	0.500	Adjust to reflect field conditions	Yes, change in small increments	Determines the percentage of historical data to be included in the routing table calculations. The lower the value the more emphasis is placed on historic data.
		Assignment settings-Dynamic Assignment: Feedback Decay	0.995	0.3 to 0.5	Yes, change in small increments	Reduces dynamic feedback costs over time if there is no new data to make new calculations with. This avoids having a rapid oscillation in costs.
		Assignment settings-Dynamic Assignment: Feedback Envelope	0	Adjust to reflect field conditions	Yes, change in small increments	Defines how delay at a distance from a vehicle affects routing decisions. The further away a delay value is from the driver's position, the less weight the driver applies to their route choice decision.
		Assignment settings-Matrix Tuning Level	None	Typically not modified	No	Modifies the demand distribution during simulation. For large networks there is a performance penalty with selection this option.
GLOBAL SETTINGS	Other Parameters	Other parameters-Vehicle types (proportion, familiarity, kinematics, dimensions, etc.)	-	Use Wisconsin-tailored vehicles file. Adjust vehicle type proportions to represent field conditions if possible.	Yes	Adjust to reflect vehicle proportions observed in the field.
		Other parameters-Other global parameters (options menu, etc.)	-	1) Check "Heavies Use All Lanes" 2) TWOPAS HGV climbing model 3) Gap reduction for stopped buses	1) Always check "Heavies Use All Lanes" 2) TWOPAS HGV climbing model use is project specific. 3) Gap reduction for stopped buses use is project specific	1) Allows heavy vehicles (i.e. trucks) to drive in all lanes. WI does not require trucks to stay in right lane. 2) TWOPAS HGV climbing model allows for grades coded in model to affect truck kinematics. Additional effort in coding grades accurately and correctly is needed. 3) Gap reduction for stopped buses should only be used in special-case scenarios where pick ups and drop offs are being modeled.

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LOCAL SETTINGS	Link Parameters	Link Speed	Varies, set by link category	Use field data to code links speeds. If field data is not available, code link speed as posted speed	Yes, changes that stray from posted speed limit should be based on field data.	Drivers typically drive 10% over the posted speed limit in uncongested conditions. Link speed may need to be adjusted to reflect observed travel speeds.
		Link Signpost and Signrange	Varies, set by link category	Base on field conditions. Allow signpost to enter zone on freeways.	Yes	Controls how and when vehicles move to the correct lane upstream of a hazard. Propagation of signposting can be used for widening hazards.
		Link Force Merge	unchecked	Lower priority use	Yes, use sparingly	For links with priority other than major, drivers that have exceeded their patience threshold will force their way into the flow of traffic as long as a conflicting vehicle is not in the driver's path.
		Link Force Across	unchecked	Lower priority use	Yes, use sparingly	For links with priority other than major, drivers that have exceeded their patience threshold will force their way across traffic to join any desired traffic stream as long as a conflicting vehicle is not in the driver's path.
		Link Force Vehicle Aware	unchecked	Could be adjusted if applicable	Yes, if applicable	Used in shared-space pedestrian applications. Can be used to improve the quality of vehicle/pedestrian interaction logic by forcing all vehicles to be aware of pedestrians.
		Link Reaction factor	1.00	Lower priority use, small adjustments only	Yes, use sparingly	Value is associated with the lag in time between a change in speed of the preceding vehicle and the following vehicle's reaction to this change. Raise for more passive drivers. Lower for more aggressive drivers.
		Link Headway factor	1.00	Lower priority use, small adjustments only	Yes, use sparingly	Raise to increase distance between vehicles and represent more passive drivers. Lower to decrease distance between vehicles and represent more aggressive drivers.
		Link Approach Visibility	Normal Link = 0 Roundabout approach = 32.8	Important for roundabouts. Can be used with other unsignalized control.	Yes, typically adjusted with roundabouts.	Aids in vehicles identifying gaps at an unsignalized intersection approach. Important for roundabout calibration.
		Link Stimulus Time	5	Typically not modified based on survey results	No	Lower value results in faster decision time for lane change
		Link Transition Time	5	Typically not modified based on survey results	No	Lower value results in faster lane changing maneuver
		Category Cost Factors	0.8 to 1.0	Typically not modified from defaults	No	Aids in routing control for unfamiliar drivers
		Link Cost Factor	1.00	Adjust as needed to correct local routing issues.	Yes	Aids in routing control for all drivers
	Node Parameters	Node parameters-Allow sneaking	Unchecked	Could be used at congested intersections	Yes	Applies only when multiple vehicles are waiting to transfer to the same outbound link. Allows blocked vehicles to perform their movement before other vehicles of a higher priority. Could be used to reduce queue lengths and simulate more aggressive driving behavior.
		Node parameters-Anticipate gaps	Unchecked	Could be used at congested intersections	Yes	By default vehicles wait for crossing vehicles to complete clear a node before completing their turning movement. This option allows vehicles to complete turning movement once the driver's path across the node is cleared. Could be used to reduce queue lengths and simulate more aggressive driving behavior.
		Turning Penalties	1.00	No range specified	No	Aids in routing control for all drivers
	Entrance Ramp Parameters	Entrance ramp settings-Minimum Ramp Time (s)	2	0 to 2 Typically 1	Yes	Specifies amount of time vehicles must spend on the ramp prior to considering merging maneuver. Use 0 seconds as last resort after modifying headway, ramp aware, or other parameters to calibrate entrance ramp. Use of 0 seconds may be necessary with high volume merges and/or freeway segments.
		Entrance ramp settings-Headway Factor	1.00	0.80 to 1.00	Yes	Target headway for all vehicles on the entrance ramp. Raise to increase distance between vehicles and represent more passive drivers. Lower to decrease distance between vehicles and represent more aggressive drivers.
		Entrance ramp settings-Ramp Aware Distance (ft)	656.2	Modify on case-by-case basis depending on field conditions (topography, visibility of onramp, signing, etc.) and driver behavior or courtesy in study area	Yes	Defines point at which vehicles on the mainline become aware of the entrance ramp. Mainline drivers will only change lanes to allow for merging gaps and will not decelerate or accelerate to create gaps.
	Other Parameters	Other parameters-Gap Acceptance Rules	-	Lower priority use	Yes	Estimation of the minimum time required to clear the theoretical collision point with oncoming vehicles. If time is less than estimation, the driver will complete their movement. Typically used to calibrate queues at unsignalized intersections.
		Other parameters-Variable Speed Limit Rules	-	Typically not modified	No	Controls the speed limit on a route over a set timeframe. Transition times can be specified to avoid abrupt changes.
		Other parameters-Dynamic Tolling Rules	-	Typically not modified	No	May be used in HOT analysis.
		Other parameters-Spatial Test Transfer Rules (Merge or Crossing)	-	Could be used	Yes, typically with roundabouts or short links	Aids in gap acceptance. Generally used with roundabouts or areas with short links.
		Other parameters-Spatial Test Movement Rules	-	Could be used	Yes, typically with roundabouts or short links	Aids in gap acceptance. Generally used with roundabouts or areas with short links.