NCDOT Congestion Management Rate vs Equation Spreadsheet
Per ITE Trip Generation Manual (10th Edition) - Effective July 1, 2018

Port and Terminal Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	021	Commercial Airport	Employees	Adjacent			X	-	-
2	022	General Aviation Airport	Employees	Generator			X	-	-
3	030	Intermodal Truck Terminal	1000 GFA	Generator			X	-	-
4	090	Park-and-Ride Lot with Bus or Light Rail Service [Data Range: 0-2000]	Parking Spaces	Adjacent		X		-	-

Industrial Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	110	General Light Industrial [Data Range: 0-300]	1000 GFA	Adjacent		X		-	-
2	130	Industrial Park	1000 GFA	Adjacent			X	-	-
3	140	Manufacturing [Data Range: 0-500]	1000 GFA	Generator		X		-	-
4	150	Warehousing [Data Range: 0-2000]	1000 GFA	Adjacent		X		-	-
5	151	Mini-Warehouse	1000 GFA	Adjacent	X*			-	-
6	154	High-Cube Transload and Short-Term Storage Warehouse	1000 GFA	Adjacent	X*			-	-
7	155	High-Cube Fulfillment Center Warehouse	1000 GFA	Adjacent			X	-	-
8	156	High-Cube Parcel Hub Warehouse	1000 GFA	Adjacent			X	-	-
9	157	High-Cube Cold Storage Warehouse [Data Range: 250-1050]	1000 GFA	Adjacent		X~		-	-
10	160	Data Center	1000 GFA	Adjacent	X*			-	-
11	170	Utility	1000 GFA	Adjacent	X*			-	-
12	180	Specialty Trade Contractor	1000 GFA	Adjacent			X	-	-

Residential Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	210	Single-Family Detached Housing [Data Range: 0-1000]	Dwelling Units	Adjacent		X		-	-
2	220	Multifamily Housing (Low-Rise) [Data Range: 0-500]	Dwelling Units	Adjacent		X		-	-
3	221	Multifamily Housing (Mid-Rise) [Data Range: 25-500]	Dwelling Units	Adjacent		X~		-	-
4	222	Multifamily Housing (High-Rise) [Data Range: 50-600]	Dwelling Units	Adjacent		X		-	-
5	225	Off-Campus Student Apartment [Data Range: 100-1000]	Bedrooms	Adjacent		X~		-	-
6	231	Mid-Rise Residential with 1st-Floor Commercial	Dwelling Units	Adjacent			X	-	-
7	232	High-Rise Residential with 1st-Floor Commercial	Occupied DUs	Adjacent			X	-	-
8	240	Mobile Home Park [Data Range: 50-400]	Occupied DUs	Adjacent		X		-	-
9	251	Senior Adult Housing -- Detached [Data Range: 50-1500]	Dwelling Units	Adjacent		X		-	-
10	252	Senior Adult Housing -- Attached [Data Range: 25-250]	Dwelling Units	Adjacent		X		-	-
11	253	Congregate Care Facility [Data Range: 40-150]	Dwelling Units	Adjacent		X		-	-
12	254	Assisted Living	Beds	Generator	X*			-	-
13	255	Continuing Care Retirement Community [Data Range: 2500-2200]	Occupied Units	Adjacent		X		-	-
14	260	Recreational Homes [Data Range:25-1500]	Dwelling Units	Generator		X		-	-
15	265	Timeshare [Data Range: 25-200]	Dwelling Units	Adjacent		X		-	-
16	270	Residential Planned Unit Development [Data Range: 100-2500]	Dwelling Units	Adjacent		X		-	-

Lodging Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	310	Hotel [Data Range: 75-425]	Rooms	Adjacent		X		-	-
2	311	All Suites Hotel [Data Range: 100-250]	Rooms	Adjacent		X~		-	-
3	312	Business Hotel	Rooms	Adjacent	X			-	-
4	320	Motel	Rooms	Adjacent	X			-	-
5	330	Resort Hotel [Data Range: 375-800]	Rooms	Adjacent		X~		-	-

Recreational Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	411	Public Park	Acres	Generator			X	-	-
2	416	Campground/Recreational Vehicle Park	Occupied Campsites	Adjacent	X			-	-
3	420	Marina	Berths	Generator			X	-	-
4	430	Golf Course	Holes	Adjacent	X*			-	-
5	431	Miniature Golf Course	Holes	Adjacent			X	-	-
6	432	Golf Driving Range	Tees	Generator			X	-	-
7	433	Batting Cages	Cages	Adjacent			X	-	-
8	434	Rock Climbing Gym	1000 GFA	Generator			X	-	-
9	435	Multipurpose Recreation Facility	1000 GFA	Adjacent			X	-	-
10	436	Trampoline Park	1000 GFA	Adjacent			X	-	-
11	437	Bowling Alley	Bowling Lanes	Adjacent			X	-	-
12	440	Adult Cabaret	1000 GFA	Generator			X	-	-
13	444	Movie Theater	Screens	Generator			X	-	-
14	445	Multiplex Movie Theater [Data Range: 25-125]	1000 GFA	Generator		X~		-	-
15	452	Horse Racetrack	Attendees	Generator			X	-	-
16	453	Automobile Racetrack	Attendees	Generator			X	-	-
17	454	Dog Racetrack	Attendees	Generator			X	-	-
18	460	Arena	1000 GFA	Generator			X	-	-
19	462	Professional Baseball Stadium	Attendees	Generator			X	-	-
20	465	Ice Skating Rink	1000 GFA	Generator			X	-	-
21	466	Snow Ski Area	Slopes	Generator			X	-	-
22	470	Bingo Hall	Attendees	Generator			X	-	-
23	473	Casino/Video Lottery Establishment	1000 GFA	Generator			X	-	-
24	480	Amusement Park	Acres	Generator			X	-	-
25	482	Water Slide Park	Acres	Generator			X	-	-
26	488	Soccer Complex	Fields	Generator			X	-	-
27	490	Tennis Courts	Tennis Courts	Adjacent			X	-	-
28	491	Racquet/Tennis Club	1000 GFA	Generator			X	-	-
29	492	Health/Fitness Club	1000 GFA	Adjacent			X	-	-
30	493	Athletic Club	1000 GFA	Adjacent			X	-	-
31	495	Recreational Community Center	1000 GFA	Adjacent	X			-	-

Institutional Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	SUGGESTED METHOD			% PASS-BY	
					RATE	EQN	LOCAL DATA	AM	PM
1	501	Military Base	Employees	Generator	X			-	-
2	520	Elementary School	Students	Generator	@	@	@	-	-
3	522	Middle School/Junior High School	Students	Generator	@	@	@	-	-
4	530	High School	Students	Generator	@	@	@	-	-
5	534	Private School (K-8)	Students	Generator	@	@	@	-	-
6	536	Private School (K-12)	Students	Generator	@	@	@	-	-
7	537	Charter Elementary School	Students	Generator	@	@	@	-	-
8	538	School District Office	Employees	Generator	X			-	-
9	540	Junior/Community College [Data Range: 1000-27500]	Students	Adjacent		X		-	-
10	550	University/College [Data Range: 1000-51000]	Students	Adjacent		X		-	-
11	560	Church	1000 GFA	Generator			X	-	-
12	561	Synagogue	1000 GFA	Generator			X	-	-
13	562	Mosque	1000 GFA	Generator			X	-	-
14	565	Day Care Center	1000 GFA	Adjacent	X			-	-
15	566	Cemetery	Acres	Generator	X			-	-
16	571	Prison	1000 GFA	Adjacent			X	-	-
17	575	Fire and Rescue Station	1000 GFA	Adjacent			X	-	-
18	580	Museum	1000 GFA	Adjacent			X	-	-
19	590	Library [Data Range: 4-23]	1000 GFA	Generator		X		-	-

@   Use the **MSTA School Calculator** for LUC 520-537 found at: **https://www.ncdot.gov/~MSTA**

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X~   Use **Equation** as a starting point for your estimations. Local data will also be considered if available. Any further changes to the trip generation data should be backed-up with reasonable justifications, and will be handled on a case by case basis. Please contact NCDOT for further clarifications or instructions.

Medical Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	RATE	EQN	LOCAL DATA	AM	PM
1	610	Hospital [Data Range: 100-1800]	1000 GFA	Adjacent		X		-	-
2	620	Nursing Home [Data Range: 50-300]	Beds	Generator		X		-	-
3	630	Clinic	1000 GFA	Generator			X	-	-
4	640	Animal Hospital/Veterinary Clinic [Data Range: 2-15]	1000 GFA	Adjacent		X		-	-
5	650	Free-Standing Emergency Room	1000 GFA	Adjacent			X	-	-

Office Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	RATE	EQN	LOCAL DATA	AM	PM
1	710	General Office Building [Data Range: 10-1200]	1000 GFA	Generator		X		-	-
2	712	Small Office Building	Employees	Generator		X~		-	-
3	714	Corporate Headquarters Building	1000 GFA	Generator	X			-	-
4	715	Single Tenant Office Building [Data Range: 20-350]	1000 GFA	Generator		X		-	-
5	720	Medical-Dental Office Building	1000 GFA	Adjacent	X			-	-
6	730	Government Office Building	1000 GFA	Adjacent			X	-	-
7	731	State Motor Vehicles Department	1000 GFA	Generator			X	-	-
8	732	United States Post Office	1000 GFA	Adjacent			X	-	-
9	733	Government Office Complex	1000 GFA	Generator			X	-	-
10	750	Office Park [Data Range: 10-1800]	1000 GFA	Generator		X		-	-
11	760	Research and Development Center [Data Range: 10-400]	1000 GFA	Generator		X		-	-
12	770	Business Park [Data Range: 30-750]	1000 GFA	Generator		X		-	-

Retail Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	RATE	EQN	LOCAL DATA	AM	PM
1	810	Tractor Supply Store	1000 GFA	Adjacent			X	N/A	N/A
2	811	Construction Equipment Rental Store	1000 GFA	Adjacent			X	N/A	N/A
3	812	Building Materials and Lumber Store	1000 GFA	Adjacent			X	N/A	N/A
4	813	Free-Standing Discount Superstore	1000 GFA	Adjacent	X			N/A	29
5	814	Variety Store	1000 GFA	Generator	X*			N/A	34
6	815	Free-Standing Discount Store	1000 GFA	Adjacent	X*			N/A	17
7	816	Hardware/Paint Store	1000 GFA	Generator	X			N/A	26
8	817	Nursery (Garden Center)	1000 GFA	Adjacent			X	N/A	N/A
9	818	Nursery (Wholesale)	1000 GFA	Adjacent			X	N/A	N/A
10	820	Shopping Center [Data Range: 0-1500]	1000 GLA	Adjacent		X		N/A	34
11	823	Factory Outlet Center	1000 GFA	Adjacent			X	N/A	N/A
12	840	Automobile Sales (New) [Data Range: 10-80]	1000 GFA	Generator		X		N/A	N/A
13	841	Automobile Sales (Used)	1000 GFA	Generator			X	N/A	N/A
14	842	Recreational Vehicle Sales	1000 GFA	Adjacent			X	N/A	N/A
15	843	Automobile Parts Sales	1000 GFA	Generator	X*			N/A	43
16	848	Tire Store	1000 GFA	Adjacent	X*			N/A	28
17	849	Tire Superstore	1000 GFA	Generator	X			N/A	N/A
18	850	Supermarket	1000 GFA	Adjacent	X			N/A	36
19	851	Convenience Market	1000 GFA	Adjacent	X*			N/A	51
20	853	Convenience Market with Gasoline Pumps	1000 GFA	Adjacent	X			63	66
21	854	Discount Supermarket	1000 GFA	Adjacent	X			N/A	21
22	857	Discount Club	1000 GFA	Generator	X*			N/A	37
23	858	Farmers Market	Acres	Generator			X	N/A	N/A
24	860	Wholesale Market	1000 GFA	Adjacent			X	N/A	N/A
25	861	Sporting Goods Superstore	1000 GFA	Adjacent			X	N/A	N/A
26	862	Home Improvement Superstore	1000 GFA	Adjacent	X*			N/A	42
27	863	Electronics Superstore [Data Range: 28-45]	1000 GFA	Generator		X~		N/A	40
28	864	Toy/Children's Superstore	1000 GFA	Adjacent			X	N/A	N/A
29	865	Baby Superstore	1000 GFA	Adjacent			X	N/A	N/A
30	866	Pet Supply Superstore	1000 GFA	Adjacent			X	N/A	N/A
31	867	Office Supply Superstore	1000 GFA	Adjacent			X	N/A	N/A
32	868	Book Superstore	1000 GFA	Adjacent			X	N/A	N/A
33	869	Discount Home Furnishing Superstore	1000 GFA	Adjacent			X	N/A	N/A
34	872	Bed and Linen Superstore	1000 GFA	Adjacent			X	N/A	N/A
35	875	Department Store	1000 GFA	Adjacent			X	N/A	N/A
36	876	Apparel Store	1000 GFA	Adjacent			X	N/A	N/A
37	879	Arts and Crafts Store	1000 GFA	Adjacent			X	N/A	N/A
38	880	Pharmacy/Drugstore without Drive-Through Window	1000 GFA	Adjacent	X*			N/A	53
39	881	Pharmacy/Drugstore with Drive-Through Window	1000 GFA	Adjacent	X			N/A	49
40	882	Marijuana Dispensary	1000 GFA	Adjacent			X	N/A	N/A
41	890	Furniture Store [Data Range: 10-100]	1000 GFA	Generator		X		N/A	53
42	895	Beverage Container Recycling Depot	1000 GFA	Generator			X	N/A	N/A
43	897	Medical Equipment Store	1000 GFA	Generator			X	N/A	N/A
44	899	Liquor Store	1000 GFA	Adjacent			X	N/A	N/A

Services Category

#	LUC	DESCRIPTION	IND VARIABLE	PK HR TYPE	RATE	EQN	LOCAL DATA	AM	PM
1	911	Walk-In Bank	1000 GFA	Generator	X*			N/A	N/A
2	912	Drive-In Bank	1000 GFA	Adjacent	X*			29	35
3	918	Hair Salon	1000 GFA	Adjacent			X	N/A	N/A
4	920	Copy, Print, and Express Ship Store	1000 GFA	Adjacent			X	N/A	N/A
5	925	Drinking Place	1000 GFA	Adjacent			X	N/A	N/A
6	926	Food Cart Pod	Food Carts	Adjacent			X	N/A	N/A
7	930	Fast Casual Restaurant	1000 GFA	Adjacent			X	N/A	N/A
8	931	Quality Restaurant	1000 GFA	Adjacent			X	N/A	44
9	932	High-Turnover (Sit-Down) Restaurant	1000 GFA	Generator	X*			N/A	43
10	933	Fast-Food Restaurant without Drive-Through Window	1000 GFA	Generator	X			N/A	N/A
11	934	Fast-Food Restaurant with Drive-Through Window	1000 GFA	Adjacent	X*			49	50
12	935	Fast-Food Restaurant with Drive-Through Window and No Indoor Seating	1000 GFA	Adjacent			X	N/A	N/A
13	936	Coffee/Donut Shop without Drive-Through Window	1000 GFA	Adjacent	X*			N/A	N/A
14	937	Coffee/Donut Shop with Drive-Through Window	1000 GFA	Adjacent	X			N/A	N/A
15	938	Coffee/Donut Shop with Drive-Through Window and No Indoor Seating	1000 GFA	Adjacent			X	N/A	N/A
16	939	Bread/Donut/Bagel Shop without Drive-Through Window	1000 GFA	Adjacent			X	N/A	N/A
17	940	Bread/Donut/Bagel Shop with Drive-Through Window	1000 GFA	Adjacent	X*			N/A	N/A
18	941	Quick Lubrication Vehicle Shop	1000 GFA	Adjacent			X	N/A	N/A
19	942	Automobile Care Center	1000 GFA	Adjacent			X	N/A	N/A
20	943	Automobile Parts and Service Center	1000 GFA	Adjacent			X	N/A	N/A
21	944	Gasoline/Service Station	1000 GFA	Adjacent			X	58	42
22	945	Gasoline/Service Station with Convenience Market	Veh. Fueling Pos.	Adjacent	X*			62	56
23	947	Self-Service Car Wash	Wash Stalls	Adjacent			X	N/A	N/A
24	948	Automated Car Wash	1000 GFA	Adjacent			X	N/A	N/A
25	949	Car Wash and Detail Center	Wash Stalls	Adjacent			X	N/A	N/A
26	950	Truck Stop	1000 GFA	Adjacent			X	N/A	N/A
27	960	Super Convenience Market/Gas Station	1000 GFA	Adjacent	X			N/A	N/A
28	970	Winery	1000 GFA	Adjacent			X	N/A	N/A

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