Appendix B

Transportation Supporting Data and Calculations

Land Use: 130 Industrial Park

Description

An industrial park contains several individual industrial or related facilities. It is characterized by a mix of manufacturing, service, and warehouse facilities with a wide variation in the proportion of each type of use from one location to another. Many industrial parks contain highly diversified facilities. Some parks in the database have a large number of small businesses and others have one or two dominant industries. General light industrial (Land Use 110) and manufacturing (Land Use 140) are related uses.

Additional Data

The sites were surveyed in the 1980s, the 2000s, 2010s, and the 2020s in California, Georgia, New Jersey, Massachusetts, New York, Ontario (CAN), and Pennsylvania.

Source Numbers

106, 162, 184, 251, 277, 422, 706, 747, 753, 937, 1032, 1070



Industrial Park (130)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday

Setting/Location: General Urban/Suburban

Number of Studies: 27

Avg. 1000 Sq. Ft. GFA: 762

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
3.37	1.41 - 14.98	2.60

Data Plot and Equation





Industrial Park (130)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

Number of Studies: 34

Avg. 1000 Sq. Ft. GFA: 956

Directional Distribution: 81% entering, 19% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.06 - 2.13	0.33

Data Plot and Equation





Industrial Park (130)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

Setting/Location: General Urban/Suburban

Number of Studies: 35

Avg. 1000 Sq. Ft. GFA: 899

Directional Distribution: 22% entering, 78% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.34	0.09 - 2.85	0.36

Data Plot and Equation





SOURCE: ITE TRIP GENERATION MAN	UAL 11th EC	DITION (202	1)	
Industrial Park (LU 130)				
DAILY	147 KSF	197 KSF	435 KSF	AVGs
TRUCK RATES PER KSF	0.35	0.83	0.53	
TOTAL RATES PER KSF	3.67	5.44	3.32	4.14
Percent Trucks	10%	15%	16%	14%
AM Peak hour	147 KSF	197 KSF	435 KSF	
TRUCK RATES PER KSF	0.03	0.06	0.03	
TOTAL RATES PER KSF	0.27	0.54	0.24	0.35
Percent Trucks	11%	11%	13%	12%
PM Peak hour	147 KSF	197 KSF	435 KSF	
TRUCK RATES PER KSF	0.01	0.07	0.04	
TOTAL RATES PER KSF	0.27	0.57	0.43	0.42
Percent Trucks	4%	12%	9%	8%

				Service	Total Orig Vol	Total Dest	Total OD	Total Orig	Total Dest		Total OD VMT per
Base Year Conditions	Housing Units	Resident	Employees	Population	From	Vol To	Vol	VMT From	VMT To	Total OD VMT	Service Population
City of Roseville	55,992	140,629	80,350	220,979	594,476	594,476	1,188,952	3,581,152	3,591,458	7,172,610	32.5

Project VMT Under Base Year

TAZ	
1502	

VMT_FROM VMT_TO 78951 79416.77 Total VMT 158367.77

				Service	Total Orig Vol	Total Dest	Total OD	Total Orig	Total Dest		Total OD VMT per
Cumulative 2035 No Project	Housing Units	Resident	Employees	Population	From	Vol To	Vol	VMT From	VMT To	Total OD VMT	Service Population
City of Roseville	75,686	190,491	123,405	313,896	864,540	864,540	1,729,081	5,513,404	5,517,359	11,030,763	35.1

Project VMT Under Cumulative Year

TAZ	VMT_FROM	VMT_TO
1502	8371.3	8371.3

Total VMT 126922.04

List of Resources Used to Develop Transportation Demand Management (TDM) Strategy Effectiveness

Transportation Research Board (TRB). 2010. Traveler Response to Transportation System Changes Handbook, Third Edition: Chapter 19, Employer and Institutional TDM Strategies. June. Available: http://www.trb.org/Publications/Blurbs/163781.aspx. Accessed: January 2021.

San Diego Association of Governments (SANDAG). 2019. Mobility Management VMT Reduction Calculator Tool–Design Document. June. Available:

https://www.icommutesd.com/docs/defaultsource/planning/tool-design-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

Buehler, R. 2012. Determinants of bicycle commuting in the Washington, DC region: The role bicycle parking, cyclist showers, and free car parking at work. Transportation Research Part D, 17, 525–531. Available:

http://www.pedbikeinfo.org/cms/downloads/DeterminantsofBicycleCommuting.pdf. Accessed: January 2021.

Federal Highway Administration (FHWA). 2017a. National Household Travel Survey – 2017 Table Designer. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

Federal Highway Administration (FHWA). 2017b. National Household Travel Survey – 2017 Table Designer. Workers by WRKTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

California Air Resources Board (CARB). 2020. EMFAC2017 v1.0.3. August. Available: https://arb.ca.gov/emfac/emissions-inventory. Accessed: January 2021.

Federal Highway Administration (FHWA). 2017. National Household Travel Survey–2017 Table Designer. Travel Day VT by HH_CBSA by TRPTRANS by TRIPPURP. Available: https://nhts.ornl.gov/. Accessed: January 2021.

(Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K. B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. Available:

https://www.ipcc.ch/report/ar4/wg1/. Accessed: January 2021. (4) San Diego Association of Governments (SANDAG). 2019. Mobility Management VMT Reduction Calculator Tool–Design Document. June. Available: https://www.icommutesd.com/docs/default-

source/planning/tooldesign-document_final_7-17-19.pdf?sfvrsn=ec39eb3b_2. Accessed: January 2021.

Shoup, D. 2005. Parking Cash Out. Planners Advisory Service, American Planning Association. Available: http://shoup.bol.ucla.edu/ParkingCashOut.pdf. Accessed: January 2021. Federal Highway Administration (FHWA). 2019. 2017 National Household Travel Survey Popular Vehicle Trip Statistics. Available: https://nhts.ornl.gov/vehicle-trips. Accessed: January 2021.

Frank, L., M. Greenwald, S. Kavage, and A. Devlin. 2011. An Assessment of Urban Form and Pedestrian and Transit Improvements as an Integrated GHG Reduction Strategy. WSDOT Research Report WA-RD 765.1, Washington State Department of Transportation. April. Available: www.wsdot.wa.gov/research/reports/fullreports/765.1.pdf. Accessed: January 2021.

Handy, S., S. Glan-Claudia, and M. Boarnet. 2014. Impacts of Pedestrian Strategies on Passenger Vehicle Use and Greenhouse Gas Emissions: Policy Brief. September. Available: https://ww2.arb.ca.gov/sites/default/files/2020-

06/Impacts_of_Pedestrian_Strategies_on_Passenger_Vehicle_Use_and_Greenhouse_Gas_Emission s_P olicy_Brief.pdf. Accessed: January 2021.

California Air Resources Board (CARB). 2020. Quantification Methodology for the Strategic Growth Council's Affordable Housing and Sustainable Communities Program. September. Available:

https://ww2.arb.ca.gov/sites/default/files/classic/cc/capandtrade/auctionproceeds/draft_sgc_ahs c_q m_091620.pdf. Accessed: January 2021.

Federal Highway Administration (FHWA). 2017. National Household Travel Survey–2017 Table Designer. Travel Day PT by TRPTRANS by HH_CBSA. Available: https://nhts.ornl.gov/. Accessed: January 2021.

National Oceanic and Atmospheric Administration (NOAA). 2021. Global Historical Climatology Network–Daily (GHCN-Daily), Version 3. 2015-2019 Average of Days Per Year with Precipitation >0.1 Inches. Available: https://www.ncei.noaa.gov/access/search/datasearch/dailysummaries?bbox=38.922,-120.071,38.338,-119.547&place=County:1276&dataTypes=PRCP&startDate=2015-01-01T00:00:00&endDate=2019-01-01T23:59:59. Accessed: May 2021.