

2015 and 2040 Land Use for the Greater Thurston-Lewis County Transportation Demand Model

Prepared by
Thurston Regional Planning Council
November 2017



Table of Contents

Introduction..... 1
Residential Estimates..... 3
School Enrollment Estimates 7
Employment Estimates 9
Annual Updates..... 14
Sources 17
Appendix A: GTLC Travel Demand Model Land Use Summary..... 19
Appendix B: Databases and Worksheets 21

For more information, contact:

Veena Tabbutt
Research and Data Director
Thurston Regional Planning Council
360.956.7575
tabbutv@trpc.org

This page left blank intentionally

Introduction

Thurston Regional Planning Council's (TRPC's) EMME transportation demand model was updated in 2015 and expanded to include Lewis County in 2017. The new Greater Thurston-Lewis County (GTLC) model was expanded to include detailed population and employment estimates and forecasts for Grays Harbor, Lewis, Mason, Pierce, and Thurston Counties. This report documents the methodology used for land use data development.

Ten land use categories are used in the model:

- Residential Estimates
 1. Households
 2. Population in Dorms or Barracks
- Employment Estimates
 3. Construction; Agriculture, Forestry and Fishing; Mining
 4. Manufacturing; Wholesale Trade; Transportation and Warehousing; Utilities
 5. Retail Trade, Accommodation and Food Services
 6. Finance and Insurance; Services
 7. Government (excluding K-12 education)
 8. K-12 Education
- School Enrollment Estimates
 9. K12 Student Enrollment
 10. Full-time Equivalent (FTE) College Enrollment

Land use estimates were developed for two planning horizons: current year (2014) and baseline forecast (2040). 2014 estimates were later rolled up to 2015 to match the transportation demand model base year (see Annual Updates, page 14).

Land use was developed separately for Joint Base Lewis-McChord (JBLM), the American Lake Veterans Administration Hospital, and Camp Murray by staff at the three institutions.

This page left blank intentionally

Residential Estimates

Grays Harbor and Mason Counties

2014 Baseline

Transportation Analysis Zone (TAZ) level estimates of households in Mason and Grays Harbor Counties were provided by the Office of Financial Management's (OFM) Small Area Estimates Program [1]. There are no dorms or barracks in these counties.

2040 Forecast

The Office of Financial Management's Population Forecast [2] was the starting point for Grays Harbor and Mason's household forecast. The number of households in both counties was calculated by subtracting the population in group quarters from the population forecast, then dividing by the average household size.

$$\text{Households} = \frac{\text{Population} * (1 - \% \text{ of Population in Group Quarters})}{\text{Average Household Size}}$$

2040 group quarters population was estimated by calculating the average change in the percent of the population in group quarters between 2010 and 2040 for Thurston County and Pierce County [3, 4], and adding this number (0.30%) to the 2010 estimates for Lewis, Mason, and Grays Harbor Counties (Table 1).

Table 1: Group Quarters as a Percent of Total Population

	Grays Harbor	Mason	Pierce	Thurston
2010 (Census)	3.75%	3.84%	2.26%	1.67%
2040	4.05%	4.14%	2.61%	1.88%
change, 2010-2040*	0.30%	0.30%	0.35%	0.21%
<i>Source: U.S. Census Bureau: 2010 Decennial Census</i>				
<i>Note: *0.30% is the increase in the percent of Thurston and Pierce Counties' population in a group quarter.</i>				

2040 average household size was estimated by calculating the percent decrease in average household size in Thurston and Pierce Counties between 2010 and 2040 (-3.65%) and using that factor to estimate the change in Mason and Grays Harbor Counties (Table 2).

Table 2: Average Household Size

	Grays Harbor	Mason	Pierce	Thurston
2010 (Census)	2.45	2.45	2.59	2.46
2040	2.36	2.36	2.50	2.38
Percent change, 2010-2040*	-3.65%	-3.65%	-3.54%	-3.54%
<i>Source: U.S. Census Bureau: 2010 Decennial Census</i>				
<i>Note: *-3.65% is the percent change in household size in Thurston and Pierce County between 2010 and 2040.</i>				

Once the countywide household estimates (UGA/rural estimates for Lewis County) were calculated, growth was allocated proportionally to TAZs based on 2015 household distributions from OFM [1].

Lewis County

2014 Baseline

Transportation Analysis Zone (TAZ) level estimates of households in Lewis, Mason and Grays Harbor Counties were provided by the Office of Financial Management's (OFM) Small Area Estimates Program [1]. There are no dorms or barracks in Lewis County.

2040 Forecast

Lewis County's 2010 Comprehensive Plan [5] includes population allocations for 2030. These allocations were used to develop the 2040 household forecast. As in Grays Harbor and Mason Counties, changes in group quarters percents, household size and occupancy rate across Pierce and Thurston County were used to convert population to households (Table 3).

Lewis County staff assisted in the allocation of household estimates to TAZs.

Table 3: 2014 and 2040 Residential Estimates for Lewis County Urban Growth Areas (UGAs).

UGA	2014 Population [1]	2014 Group Quarters [1]	2014 Dwelling Units [1]	2014 Households [1]
Centralia	19,999	293	8,829	7,987
Chehalis	9,435	578	4,034	3,670
Morton	1,365	58	649	559
Mossyrock	854	0	345	306
Napavine	1,852	0	695	637
PeEll	641	0	299	265
Toledo	766	0	323	291
Vader	850	4	366	318
Winlock	1,657	12	680	605
Birchfield	87	0	41	36
Unincorporated	38,881	24	18,460	15,425
Lewis County	76,387	75,418	969	34,721

UGA	2030 Population [5]	2040 Population	2040 Group Quarters	2040 Dwelling Units	2040 Households
Centralia	22,535	24,301	429	10,855	10,042
Chehalis	11,230	12,110	778	5,239	4,873
Morton	1,869	2,015	92	968	854
Mossyrock	920	992	0	407	369
Napavine	3,063	3,303	0	1,258	1,179
PeEll	814	878	0	415	377
Toledo	1,131	1,220	0	522	481
Vader	885	954	7	415	369
Winlock	4,550	4,907	50	2,037	1,854
Unallocated*	3,683	n/a	n/a	n/a	n/a
Birchfield**	6,300	n/a	n/a	n/a	n/a
Unincorporated	42,766	49,066	178	23,528	20,145
Lewis County	99,746	99,746	98,212	1,534	45,644

* Distributed to UGAs in 2040 estimates.

** Combined with unincorporated Lewis County in 2040 estimates.

Pierce County

2014 Baseline

TAZ-level estimates of households in Pierce County were provided by the Office of Financial Management's Small Area Estimates Program [1]. Population in dorms and barracks was provided by Puget Sound Regional Council (PSRC) from their Land Use Baseline [4].

2013 household and dorm/barrack population estimates for Joint Base Lewis-McChord (including the Veterans Administration hospital) and Camp Murray were provided by base staff. These estimates were used in place of PSRC estimates in these TAZs.

Linear interpolation was used to calculate 2014 estimates from PSRC's 2010 and 2040 data, and JBLM's 2013 and 2020 data.

2040 Forecast

TAZ-level estimates of households and dorm/barrack population were provided by Puget Sound Regional Council from their Land Use Baseline [4]. 2020 household and dorm/barrack population estimates for Joint Base Lewis-McChord (including the Veterans Administration Hospital) and Camp Murray were provided by base staff. These estimates were used in place of PSRC estimates in these TAZs. It was assumed that there would be no growth in JBLM households or dorm/barrack population between 2020 and 2040.

Thurston County

2014 Baseline

Household estimates for TAZs in Thurston County were derived from Thurston Regional Planning Council's (TRPC) Annual Population Estimates Work Program [6]. Since TRPC estimates dwelling units, TAZ-level vacancy rates provided by OFM [1] were used to estimate households.

2040 Forecast

Household estimates for TAZs in Thurston County were derived from Thurston Regional Planning Council's Population and Employment Forecast [3]. Since TRPC estimates dwelling units, the 2040 countywide vacancy rate (4.8%) from the TRPC Forecast was used to estimate households.

School Enrollment Estimates

K-12 School Enrollment

2012-2013 K-12 school enrollment for schools in the model area was obtained from the Washington State Office of Superintendent of Public Instruction (OSPI). TRPC staff geolocated school sites using addresses provided by OSPI.

School enrollment in 2040 was forecasted using the growth rate in the school-aged population (ages 5-19) between 2013 and 2040 (Table 4). 2013 School-age population came from OFM’s Small Area Demographic Estimates [7]. 2040 school-age population estimates for Grays Harbor, Lewis, Mason, and Pierce Counties came from OFM’s State Population Forecast (Medium Series). For Lewis County, the adopted 2030 population [5] was multiplied by the percent of the population age 5-19 from OFM. Thurston County’s school-age population forecast came from TRPC’s population and employment forecast [3].

Table 4: K-12 School Enrollment Estimates

	Grays Harbor	Lewis	Mason	Pierce	Thurston
School-age Population					
2013	12,721	14,194	10,221	159,677	49,235
2040	13,993	18,994	14,852	194,131	74,071
K-12 School Enrollment					
2012/13	10,240	11,700	5,632	126,280	39,557
2040	11,264	15,657	8,184	153,528	59,511
% Increase	10.0%	33.8%	45.3%	21.6%	50.4%

College Enrollment

2014 and 2040 full-time equivalent (FTE) college enrollment for Pierce County was obtained from the PSRC Transportation Model Land Use. For the remaining counties, recent FTE enrollment was obtained by surveying colleges in the study area (Table 5):

TRPC staff estimated FTE enrollment for 2040.

Table 5: College and University Enrollment

College	County	2010/14 FTE Enrollment	2040 FTE Enrollment
Centralia College	Lewis	2,289	2,290
The Evergreen State College	Thurston	4,779	5,000
Olympic College (Shelton Campus)	Mason	300	300
Saint Martin's University	Thurston	1,122	1,200
S. Puget Sound Community College:			
Mottman Campus	Thurston	3,713	3,500
Hawk's Prairie Campus	Thurston	184	0
Woodland District Campus	Thurston	0	1,000
Source: TRPC survey of colleges and universities.			

Employment Estimates

Grays Harbor, Lewis, and Mason Counties

2014 Baseline

Countywide employment estimates by industry were obtained from the Bureau of Economic Analysis (BEA) [8]. These estimates include both employees covered under state unemployment insurance laws (“covered employment”) as well as proprietors and self-employed people (“non-covered employment”).

Thurston Regional Planning Council entered into a data sharing agreement with the Washington Employment Securities Department (ESD) for first quarter 2014 covered employment data [9]. The ESD data provided the address and number of employees for covered employment firms during the first three months of 2014.

To get TAZ-level employment estimates, firm-level covered employment data from ESD was geolocated using the coordinates and addresses provided with the data. TRPC staff verified the location of all firms with ten or more employees. Covered employment was converted to total employment using an inflation factor:

$$\text{Inflation Factor} = \frac{\text{Total Employment}}{\text{Covered Employment}}$$

where “Total Employment” is the 2014 estimate from BEA and “Covered Employment” is the total 2014 covered employment ESD for firms whose location could be verified [9]. The government sectors tend to have little or no proprietors and self-employed jobs, and were assigned an inflation factor of 1.

ESD firm-level employment data do not include records for individual schools. Instead, all employment is placed at the school district headquarters. To distribute the employment to individual school sites, it was assumed that ten percent of school district employment was located at the district headquarters and the remaining 90 percent was allocated to school sites based on school enrolment.

Self-employment (i.e. non-covered) was allocated to both homes and worksites using the same percentages used in TRPC’s Thurston County forecast [3] (Table 6).

Table 6: Allocation of self-employment in Grays Harbor, Lewis, and Mason Counties.

Industry		Home-Based Distributed based on Population	Worksite-Based Distributed based on Employment
1	Agriculture, Forestry and Fishing, Mining	0%	100%
2	Utilities	0%	100%
3	Construction	22%	78%
4	Manufacturing	0%	100%
5	Wholesale Trade	0%	100%
6	Retail Trade	0%	100%
7	Transportation and Warehousing	27%	73%
8	Information	15%	85%
9	Finance and Insurance	24%	76%
10	Real Estate, Rental and Leasing	45%	55%
11	Professional Services	12%	88%
12	Education, Health, & Social Services	13%	87%
13	Arts, Entertainment and Recreation	31%	69%
14	Accommodation and Food Services	0%	100%
15	Other Services	29%	71%
16	Federal	0%	n/a
17	State	0%	n/a
18	State Education	0%	n/a
19	Local and Tribal Government	0%	n/a
20	Tribal Enterprise	0%	n/a
21	Local Schools	0%	n/a

2040 Forecast

An employment forecast for Grays Harbor, Lewis, and Mason Counties was generated for the TRPC transportation model. The forecast is considered adequate for the purposes of use – namely to populate external county Traffic Analysis Zones (TAZs) in the transportation model with land use data. The high-level forecasts were developed in an excel spreadsheet using a series of reasonable relationships, as outlined in Table 7.

Table 7: Forecast Method for Grays Harbor, Lewis, and Mason Counties

Industry	Forecast Method
Agriculture, Forestry and Fishing, Mining	No change from 2014
Construction	Increase over 2014 jobs based on growth in dwelling units
Manufacturing	Increase over 2014 jobs based on Thurston County manufacturing job growth
Wholesale Trade	Increase over 2014 jobs based on Thurston County wholesale trade job growth
Retail Trade, Accommodation and Food Services	Based on ratio of households per jobs in Retail Trade, Accommodation and Food Services in 2014
Transportation and Warehousing, Utilities	Based on ratio of households per jobs in Transportation and Warehousing, Utilities in 2014
Finance and Insurance	Based on ratio of households per jobs in Finance and Insurance in 2014
Services	Based on ratio of households per jobs in Services 2014
Government excluding Schools K-12	Based on ratio of households per jobs in Government in 2014
Schools K-12	Based on ratio of school-aged population per jobs in K-12 Education

Employment growth in the Manufacturing, Wholesale Trade, Transportation and Warehousing, and Utilities categories (combined) was set at 2,000 jobs based on the recommendation of Lewis County staff. This was consistent with the County’s Comprehensive Plan and with plans for the Industrial Park at TransAlta (IPAT) site.

In Grays Harbor and Mason Counties, employment growth was allocated to TAZs using the following criteria:

- Home-based employment was distributed based on population growth.
- Worksite-based employment was distributed based on worksite-based employment patterns in 2014.

Employment growth in Lewis County was allocated to TAZs by hand in consultation with Lewis County staff.

Thurston County

2014 Baseline

Covered employment in Thurston County was converted to total employment using a method like the one used in Lewis, Mason and Grays Harbor Counties. There were a couple differences:

- 2013 total employment from BEA, instead of a five-year average, was used to calculate the covered employment to total employment inflation factor (Table 8).
- Local knowledge about businesses that were misreported was used to improve the ESD data set.
- TRPC relied heavily on Commute Trip Reduction data and information from the state Department of Enterprise Services for the location and number of employees at state worksites.

Table 8: Conversion of Covered to Total Employment – Thurston County

	Category	Covered	Total	Inflation Factor
1	Agriculture, Forestry and Fishing, Mining	1,430	2,903	2.03
2	Utilities	100	189	1.89
3	Construction	3,378	6,004	1.78
4	Manufacturing	3,114	3,239	1.04
5	Wholesale Trade	2,486	3,680	1.48
6	Retail Trade	11,418	15,009	1.31
7	Transportation and Warehousing	2,165	3,158	1.46
8	Information	877	1,269	1.45
9	Finance and Insurance	2,441	4,639	1.90
10	Real Estate, Rental and Leasing	1,194	5,184	4.34
11	Professional Services	8,941	15,209	1.70
12	Education Services	1,837	3,331	1.81
13	Health Care and Social Assistance	13,201	15,611	1.18
14	Arts, Entertainment and Recreation	1,064	2,819	2.65
15	Accommodation and Food Services	7,758	8,788	1.13
16	Other Services	3,249	7,916	2.44
17	Federal	735	735	1.00
18	State	21,399	21,501	1.00
19	State Education	1,400	1,616	1.15
20	Local	9,413	9,413	1.00
21	Tribal Government	415	415	1.00
22	Tribal Enterprise	1,287	1,287	1.00
	Total	99,302	133,915	

Thurston County’s TAZ-level 2014 employment estimates were developed using the methodology outlined in the TRPC Population and Employment Forecast [3].

2040 Forecast

The Thurston County countywide and TAZ-level employment forecast was obtained from TRPC’s Population and Employment Forecast, updated to a 2040 forecast year [3].

Pierce County

2014 Baseline

TRPC entered into a data sharing agreement with Puget Sound Regional Council (PSRC) to obtain their TAZ-level transportation model land use input files. 2014 estimates were derived using a linear interpolation between the 2010 and 2040 data sets. While Grays Harbor, Lewis, Mason, and Thurston County estimates are calibrated to Bureau of Economic Analysis (BEA) total employment estimates, PSRC uses a different methodology to estimate self-employment. The resulting difference is about 16 percent for Pierce County (Table 9).

Table 9: Comparison of PSRC and BEA 2010 Total Employment

	2010 (PSRC)	2010 (BEA)	Difference
King	1,186,376	1,452,715	-18%
Kitsap	96,303	120,429	-20%
Pierce	317,220	377,606	-16%
Snohomish	265,515	318,160	-17%

Employment estimates for Joint Base Lewis-McChord (including the Veterans Administration Hospital) and Camp Murray were provided by base staff for 2014.

2040 Forecast

The Puget Sound Regional Council Land Use Baseline Forecast [4] was used to for the 2040 Pierce County estimates, with the exception of Joint Base Lewis-McChord. Employment estimates for Joint Base Lewis-McChord (including the Veterans Administration Hospital) and Camp Murray were provided by base staff for 2020. These estimates were used for the 2040 model year (Table 10).

Table 10: Joint Base Lewis-McChord, Camp Murray and VA Hospital Employment

	2010	2014	2020
JBLM	55,651	60,939	50,652
VA Hospital	706	706	706
Camp Murray	1,300	1,300	1,300

This page left blank intentionally

Annual Updates

Since the GTLC Travel Demand Model uses a 2015 baseline, the annual update process described below was used to estimate growth since the 2014 land use model baseline without completing a full update. Data sources for annual updates are described in Table 11.

Table 11: Data Sources for Annual Updates

	Households	Dorm and Barrack Population	School and College Enrollment	Employment
Grays Harbor	OFM	n/a	Interpolated	BEA
Lewis	OFM	n/a	Interpolated	BEA
Mason	OFM	n/a	Interpolated	BEA
Pierce	OFM	Interpolated	Interpolated	Interpolated
JBLM, Camp Murray	Interpolated	Interpolated	Interpolated	Interpolated
Thurston	TRPC, OFM	TRPC	Interpolated	BEA, Permits

OFM: Yearly update available from OFM Small Area Estimates Program [1].
TRPC: Yearly update available from TRPC Annual Population Estimates program [6]. OFM occupancy rate used in Thurston County to convert dwelling units to households.
Interpolated: Linear interpolation used to estimate data between two years. See previous sections for data sources.
BEA, Permits: See text.

Grays Harbor, Lewis, and Mason County Employment

Annual employment estimates from the Bureau of Economic Analysis [8] are used to estimate employment growth in Grays Harbor, Lewis, and Mason Counties. 2014-2015 growth was allocated to TAZs based on where growth was forecasted between the 2014 base and 2040 forecast.

Thurston County Employment

A combination of employment growth rates and building permit data are used to estimate yearly employment growth in Thurston County. First, the percent change in employment [8] was used to estimate total employment growth between 2014 and 2015. Next, building permits were used to estimate where employment growth occurred. A ratio of employment per square foot (Table 12) unique to the type of building and industry was used to estimate the amount of new employment associated with each permit. Any remaining employment was allocated across the county based on where growth was forecasted between the 2014 base and 2040 forecast.

Table 12: Employee per Square Foot Ratios used in 2015

Employment Industry	Building Type	Employees per Square Foot
Manufacturing/Wholesale	Storage/Industrial	1.0
Retail	Shopping Center	2.0
Retail	Store	4.0
Services/Fire	Church	0.2
Services/Fire	Hotel	1.0
Services/Fire	Office	4.0
Demolition	Demolition	-2.0
Note: In future years, ratios may be modified or new ratios added based on new permits.		

Sources

- [1] Office of Financial Management, "Small Area Estimates Program," [Online]. Available: <http://www.ofm.wa.gov/pop/smallarea/>. [Accessed 10 3 2017].
- [2] Office of Financial Management, "State Population Forecast," [Online]. Available: <http://www.ofm.wa.gov/pop/stfc/>. [Accessed 10 3 2017].
- [3] Thurston Regional Planning Council, "Population and Employment Forecasting," [Online]. Available: <http://www.trpc.org/236/Population-Employment-Forecasting>. [Accessed 10 3 2017].
- [4] Puget Sound Regional Council, "Land Use Baseline," [Online]. Available: <http://www.psrc.org/data/forecasts/GrowProject/LandUseBaseline/>. [Accessed 10 3 2017].
- [5] Lewis County, "Comprehensive Plan: Appendix A: Economic Profile," 2010. [Online]. Available: <http://lewiscountywa.gov/communitydevelopment/comprehensive-plan>. [Accessed 10 3 2017].
- [6] Thurston Regional Planning Council, "Annual Population Estimates," [Online]. Available: <http://www.trpc.org/221/Population-Housing-Estimates>. [Accessed 10 3 2014].
- [7] Office of Financial Management, "Small Area Demographic Estimates," [Online]. Available: <http://www.ofm.wa.gov/pop/asr/default.asp>. [Accessed 10 3 2017].
- [8] Bureau of Economic Analysis, "Regional Economic Accounts: Table CA25N: Total full-time and part-time employment by industry," [Online]. Available: <https://bea.gov/regional/>. [Accessed 10 3 2017].
- [9] Employment Securities Department, "Quarterly Census of Employment and Wages," [Online]. Available: <https://fortress.wa.gov/esd/employmentdata/reports-publications/industry-reports/quarterly-census-of-employment-and-wages>. [Accessed 10 3 2017].

This page left blank intentionally

Appendix A: GTLC Land Use Summary

2015 LAND USE					
	Grays Harbor	Lewis	Mason	Pierce	Thurston
Residential					
Households	28,724	30,147	24,235	311,347	106,131
Dorm and Barrack Population	0	0	0	13,049	1,219
School Enrollment					
K-12	10,279	11,852	5,730	127,328	40,324
College & University (FTE)	0	2,289	300	32,228	9,833
Employment					
Construction, Natural Resources	2,912	4,994	2,160	21,046	9,458
Manufacturing, Wholesale Trade	4,446	5,558	2,669	39,909	10,747
Retail and Food Services	6,023	7,021	3,553	57,783	25,650
Other Services (FIRES)	10,466	11,612	6,937	119,339	60,184
Government & Higher Education	4,030	2,812	3,405	89,094	28,460
K-12 Government Employment	1,987	2,184	1,432	21,787	6,276

2040 LAND USE					
	Grays Harbor	Lewis	Mason	Pierce	Thurston
Residential					
Households	31,305	40,543	34,497	425,424	162,209
Dorm and Barrack Population	3,123	1,534	3,518	14,003	1,469
School Enrollment					
K-12 (Total)	11,264	15,657	8,184	153,528	59,511
College & University (FTE)	0	2,290	300	39,441	10,700
Employment					
Construction, Natural Resources	2,984	5,453	2,522	25,313	15,574
Manufacturing, Wholesale Trade	4,920	7,496	3,083	49,091	12,398
Retail and Food Services	6,494	9,298	5,167	76,115	34,319
Other Services (FIRES)	11,201	15,377	9,085	198,414	90,897
Government & Higher Education	4,859	4,062	6,107	92,604	36,972
K-12 Government Employment	2,184	2,884	1,977	26,225	9,555

This page left blank intentionally blank

Appendix B:

Databases and Worksheets

Q:\Concurrency\Concurrency2016_GTLC.accdb

Database used to estimate land use change since 2014 baseline. Requires EmpAnnualUpdate.accdb and GTLC_Landuse.accdb for be update and run first. Update OFM estimates before running.

Q:\Employment\AnnualUpdate\EmpAnnualUpdate.accdb

Database used to estimate employment growth since 2014 baseline. Update BEA estimates and Thurston County permit data before running.

Q:\Transportation\GTLC_Model\Landuse\GTLC_Landuse.accdb

Database used to estimate 2014 baseline and 2040 forecast land use for Greater Thurston-Lewis County Travel Demand Model.

Q:\Transportation\GTLC_Model\Landuse\Worksheets\GTLC 2014 Employment.xlsx

Worksheet with 2014 Bureau of Economic Analysis employment estimates for Grays Harbor, Lewis, and Mason Counties.

Q:\Transportation\GTLC_Model\Landuse\Worksheets\GTLC 2040 Employment.xlsx

Worksheet used to calculate countywide residential and employment estimates for Grays Harbor and Mason Counties, and UGA estimates for Lewis County.

Q:\Transportation\GTLC_Model\Landuse\Worksheets\GTLC HH X-Classes.xlsx

Worksheet used to estimate number of household in each household type (household size, number of workers, number of vehicles categories) using U.S. Census Bureau's American Community Survey data.

Q:\Transportation\GTLC_Model\Landuse\Worksheets\GTLC School Employment.xlsx

Worksheet used to allocate school-district level employment estimates to school sites.