Pikes Peak Area Council of Governments
Communities Working Together

MEETING AGENDA
of the
2035 SMALL AREA FORECAST TASK FORCE
Monday, June 28, 2010
2:00 p.m.
PPACG Lower Level Conference Room

Agenda items marked with ✉ indicate that additional materials were included in packets mailed to members. Please park in the large parking lot on the east side of the building and enter the east entrance to the lower level.

1. **Introductions**
2. **Agenda Approval**
3. **Comments on Items Not on the Agenda**
4. **Meeting Report** ✉
5. **Employment Control Totals – Review and Recommend** ✉
6. **Population and Employment Constraints in the TELUM Model - Review and Recommend** ✉
7. **Public Review Process - Discussion**
8. **Adjournment**

15 South 7th Street / Colorado Springs, CO 80905
Voice: 719-471-7080 / Fax: 719-471-1226 / www.ppacg.org / ppacg@ppacg.org

Pikes Peak Area Council of Governments
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Meeting Summary of the SMALL AREA FORECAST TASK FORCE Monday, May 24, 2010 2:00 p.m. Pikes Peak Area Council of Governments Lower Conference Room

Members Present	Representing
Raimere Fitzpatrick	El Paso County
Janet Johnston	Colorado Springs Utilities
Tom Mowle	Community Advisory Committee
Chris Neil	Colorado Springs Utilities
Walter Paul	NEPCO
Veldean Petri	City of Victor
Ken Prather	Pikes Peak Area Council of Governments
Dave Smedsrud	City of Fountain

Guests	Representing
Craig Casper	Pikes Peak Area Council of Governments

The Small Area Forecast (SAF) Task Force discussed the following topics:

Population and Employment Control Totals –Mr. Prather reviewed the county level total population and employment projections by the State Demographer and provided answers to questions on population that were raised the previous month. Mr. Neil made a motion to approve the population, household, and income distribution methodology. The motion was seconded by Mr. Fitzpatrick and passed unanimously. No motion on the employment control totals was made as several task force members had to leave before discussion was held.

Population and Employment Constraints in the TELUM Model – Mr. Prather gave an overview on how the population and employment constraints were developed for the 2035 Small Area Forecast and how they are used in the TELUM model. Mr. Prather showed how local planning knowledge can impose constraints upon the distribution process. This allows the TELUM model to give more reasonable results.

Public Review Process – This item was not discussed due to time constraints.

Topics for Discussion at the Next Meeting:

- Employment Control Totals
- Constraints
- Public Process

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MEMORANDUM

DATE: June 21, 2010

TO: Small Area Forecast Task Force

FROM: Ken Prather, Transportation Planner

SUBJECT: Employment Control Totals

ACTION REQUESTED: Review and Recommend

Employment data is the most detailed type of data required by TELUM. It must be supplied, by category, for the years 2000 and 2005. Because the U.S. Census does not provide business data at the level necessary to run the TELUM model, a commercially available employment database was purchased for both 2005 and 2000 for the 2035 Small Area Forecast. Purchasing the data for both years from the same provider—Claritas—was considered essential because the calibration/trend data must come from parallel survey processes. As added assurance of this parallelism, PPACG discarded the geographic coordinates of the purchased database and performed its own geocoding for both years using the same address locator, E-911. Geocoding, or mapping, the data allowed the number of employees in each employment category in each TAZ to be determined. This data has not changed and no changes are necessary for the 2035 Small Area Forecast Update.

Total civilian employment forecasts in the 2035 Small Area Forecast Update were prepared by the Colorado State Demographer at the county level in October 2009. The State Demographer forecasts total jobs and military jobs and subtracts the two numbers to obtain the forecasted number of civilian jobs. PPACG has a military impact planning group which has the most current forecast for military assigned at Fort Carson. These numbers differ slightly from those used by the Demographer. I subtracted PPACG's military jobs from the Demographer's total jobs to get the total civilian jobs in each county as shown in Tables 1 and 2.

The Demographer does not subdivide the civilian jobs into the employment categories used by PPACG. A commercial company, Woods and Poole Economics, does make forecasts of jobs by category. To determine control totals by category, total civilian jobs provided by the Colorado State Demographer were multiplied by the percentage of each employment category in the Woods and Poole Economics data for each time period. Military employment is the number of assigned active duty military and is obtained directly from the military bases in the region. The employment control totals by category for the 2035 Small Area Forecast Update are shown in Tables 1 through 3.

Table 1. El Paso County Employment

Year	Civilian Jobs				Military Jobs
	Total	Basic	Retail	Service	
2000	282,888	31,514	58,510	192,864	29,670
2005	286,362	29,998	58,122	198,243	39,999
2010	282,576	27,691	56,924	197,960	45,933
2015	353,220	32,472	70,460	250,288	46,686
2020	403,471	34,923	79,610	288,938	46,686
2025	450,618	36,877	87,912	325,829	46,686
2030	492,899	38,299	95,094	359,506	46,686
2035	526,082	40,878	101,495	383,709	46,686

Table 2. Teller County Employment

Year	Civilian Jobs				Military Jobs
	Total	Basic	Retail	Service	
2000	9,441	892	1,775	6,774	0
2005	9,746	921	1,832	6,993	0
2010	9,852	931	1,852	7,069	0
2015	11,998	1,134	2,255	8,609	0
2020	13,830	1,307	2,600	9,923	0
2025	15,468	1,462	2,908	11,098	0
2030	16,879	1,595	3,173	12,111	0
2035	17,981	1,700	3,380	12,902	0

Table 3. Total Model Area (El Paso and Teller Counties)

Year	Civilian Jobs				Military Jobs
	Total	Basic	Retail	Service	
2000	292,329	32,406	60,285	199,638	29,670
2005	296,108	30,919	59,954	205,235	39,999
2010	292,428	28,623	58,776	205,029	45,933
2015	365,218	33,606	72,715	258,897	46,686
2020	417,301	36,230	82,210	298,861	46,686
2025	466,086	38,339	90,820	336,928	46,686
2030	509,778	39,895	98,266	371,617	46,686
2035	544,063	42,577	104,875	396,611	46,686

ACTION REQUESTED:
Recommend approval of the following data and methodologies:

- Methodology for determining the 2000 and 2005 employment by category by TAZ
- County employment forecasts by category

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MEMORANDUM

DATE: June 21, 2010

TO: Small Area Forecast Task Force

FROM: Ken Prather, Transportation Planner

SUBJECT: Population and Employment Constraints in the TELUM Model

ACTION REQUESTED: Review and Recommend

"Most planning professionals have a good, intuitive sense of how employment and household location patterns develop over time, and how those patterns are affected by changes in transportation systems. Human intuition cannot, however, encompass all the thousands of data items and interactions that describe transportation, location, and land use in a metropolitan region. Computer models such as ***TELUM*** can both process this data in a consistent fashion, and, by making explicit much of the intuitive understanding of these phenomena, effectively describe these important interactions. In addition, both ***TELUM*-EMP** and ***TELUM*-RES** contain provisions for user augmentation of forecasts. This can be done by use of constraints on activity location, which will be described in this manual." (TELUM Users Manual)

While it is true computer models can process complex data in a consistent fashion, no model gives accurate results, only reasonable or unreasonable results. There are many aspects of El Paso and Teller Counties that are not known or taken into consideration by TELUM. These include water availability, unique zoning or ordinances and imminent development or redevelopment. TELUM offers the option of using local planning knowledge to impose constraints upon the distribution process. TELUM applies these constraints during the distribution of jobs and households, eliminating the need for most manual distribution.

When TELUM was run without constraints for the 2035 Small Area Forecast, it assigned too much population and employment in eastern El Paso County, taking them away from Teller County, and in several cases replaced households (neighborhoods) with employment (businesses). Although this is possible in our region, it is not reasonable. Consequently, an initial constraint system was developed to provide reasonable, not accurate, results. The results obtained from TELUM with the constraints in place were reviewed by local entity staff and the public and many constraints were changed. The objective, again, was to obtain model results that were more reasonable, but not accurate.

This memo describes how the initial population and employment constraints were developed for the 2035 Small Area Forecast and proposes adopting them for use in the 2035 Small Area Forecast Update.

TELUM Household Constraints Used in the 2035 Small Area Forecast

The initial maximum number of households allowed in a TAZ was developed by taking the maximum allowed density and then applying this density to both the amount of residential land in 2005 and vacant developable land in 2005. For example, a TAZ containing only single family homes would have its maximum residential density based on single family homes. In this case, each home is assumed to contain one household. A TAZ containing both single family homes and apartments would have a maximum residential density based on the apartments. Each apartment building contains many households. The maximum residential densities were taken from the 2005 land use data provided by each PPACG member entity. The maximum cap formula is illustrated below:

> Maximum household per TAZ = (maximum residential density per acre)*(residential acres + vacant developable acres)

For the minimum number of households allowed in a TAZ, the number of households that existed in 2005 was used as a starting point. For future years, the number of households that was already forecasted for that TAZ became the minimum. In other words, a TAZ might not grow in households but no TAZ would lose any households.

The exception to this approach for maximums and minimums was the number of households on military bases. These were fixed, or set, at the number of on post family quarters reported by the military for 2005, 2010 and 2015. All future years remained the same as 2015.

After results of the TELUM model were reviewed, many of these initial minimum and maximum constraints were raised or lowered based on staff and public input. TELUM was then run again with the revised constraints and the results reviewed again. This process was repeated several times.

TELUM Employment Constraints Used in the 2035 Small Area Forecast

The initial maximum number of employees allowed in a TAZ had to be developed in a more generalized fashion than for households because employment densities were not specified in PPACG member entity master plans or zoning regulations. The procedure that was developed involved determining basic employment in 2005 and total commercial (retail and all service categories) employment in 2005 by TAZ, and then dividing these respectively by the total amount of basic or commercial land in 2005. These densities were also applied to existing nonresidential developed land and vacant developable land in 2005 within each TAZ. The standard deviation of all basic employment densities and all commercial employment densities was then determined and multiplied by two. This result was then added to the basic and commercial employment totals within each TAZ to derive a maximum employment cap for each of these categories by TAZ. The cap formula is illustrated below:

> 2005 basic employment density = basic employment / basic acres
>
> Basic employment cap = (2005 basic employment density)*(2005 basic employment acres + 2005 vacant developable acres) + 2*standard deviation of 2005 TAZ employment densities
>
> 2005 commercial employment density = commercial employment / commercial acres
>
> Commercial employment cap = (2005 commercial employment density)*(2005 commercial acres + 2005 vacant developable acres) + 2*standard deviation of 2005 TAZ employment densities

For the minimum number of employees allowed in a TAZ, the number of employees that existed in 2005 was used as a starting point. For future years, the number of employees could decrease no more than 5% each 5-year period from what was already forecasted for that TAZ.

The exception to this approach for maximums and minimums was the employment on military bases. These were fixed, or set, at the numbers reported by the military for 2005, 2010 and 2015. All future years remained the same as 2015.

After results of the TELUM model were reviewed, many of these initial minimum and maximum constraints were raised or lowered based on staff and public input. TELUM was then run again with the revised constraints and the results reviewed again. This process was repeated several times.

TELUM Constraints Proposed for Use in the 2035 Small Area Forecast Update

It is proposed that the final household and employment constraints used in the 2035 Small Area Forecast be used as the initial constraints for the 2035 Small Area Forecast Update.

ACTION REQUESTED:
Recommend the final household and employment constraints used in the 2035 Small Area Forecast be used as the initial constraints for the 2035 Small Area Forecast Update.