WITH SPECIAL THANKS TO:

The PPACG TAC, CAC and Board of Directors; Planning, Engineering and GIS staff from El Paso County, the City of Colorado Springs, Palmer Lake, Green Mountain Falls, Fountain, Manitou Springs, Woodland Park, and Monument; and Summit Economics.
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SMALL AREA FORECAST Overview

The Pikes Peak Area Council of Governments prepares a socioeconomic forecast for each update of the regional transportation plan (RTP). Development of a demographic forecast (i.e. the Small Area Forecast) is required by federal regulations to ensure that Regional Transportation Plans are based on “the latest available estimates and assumptions for population, land use, travel, employment, congestion, and economic activity” (23 CFR 450.324(e)). This forecast is a primary input to our travel demand model, and is used throughout the development of the RTP.

The Colorado State Demographer develops an annual forecast for population and employment growth for each county in Colorado. The current forecast extends out to 2045, which is also the planning horizon of the Pikes Peak Area Council of Governments’ next Regional Transportation Plan. Per the demographer’s forecasts, the study area (El Paso and Teller Counties) is expected to have 541,984 jobs and 1,055,656 people by 2045.

The population and employment forecasts for El Paso and Teller Counties are combined to develop regional control totals for PPACG’s Small Area Forecast. The land use model, UrbanSim, respects both the population and employment control totals on an annual basis, and ensures that the model’s projections meet but do not exceed expected growth. UrbanSim is an econometric land use model that uses real estate market parameters and location choice models to simulate real world buying and selling decisions by households and businesses.

### Pikes Peak Area Regional projected population by 2045

<table>
<thead>
<tr>
<th>Year</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>700,483</td>
</tr>
<tr>
<td>2020</td>
<td>758,232</td>
</tr>
<tr>
<td>2025</td>
<td>819,138</td>
</tr>
<tr>
<td>2030</td>
<td>880,361</td>
</tr>
<tr>
<td>2035</td>
<td>940,712</td>
</tr>
<tr>
<td>2040</td>
<td>1,001,120</td>
</tr>
<tr>
<td>2045</td>
<td>1,055,656</td>
</tr>
</tbody>
</table>
PPACG developed three land use scenarios for use in the 2045 Long Range Transportation Plan and Small Area Forecast through an extensive public and stakeholder outreach process. Outreach efforts included a stakeholder workshop held on June 8, 2017 and six community events attended by PPACG staff throughout the summer of 2017. The three conceptual scenarios, as envisioned in the public process and approved by the PPACG Board of Directors, are summarized below:

**Infill** - Under the Infill scenario, growth and development occur primarily in already-developed areas (i.e. existing activity centers). Most new housing occurs within already-developed areas in the form of townhomes, condos, apartments, or accessory dwelling units. High-quality transit serves people in the region's existing activity centers, and many destinations are within walking distance.

**New Centers** - Under the New Centers scenario, already-developed areas and existing activity centers remain stable, while the majority of growth and development occurs in new activity centers. New Centers act as complete communities where people can find housing, jobs, shopping, and services within close proximity. Transit service provides accessibility within and between activity centers.

**Dispersed Development** - Under the Dispersed Development scenario, already-developed areas and existing activity centers remain stable, while the majority of new growth and development is more dispersed. This scenario follows a “business as usual” trend of growing outward, beyond the limits of existing cities and activity centers. Most housing is built in new single family subdivisions, while most jobs are located in new office parks along major roadway corridors. People largely depend on private automobile travel for daily trips to work, school, shopping, and recreation, and very few destinations are within walking distance.

After the three conceptual land use scenarios were approved by the PPACG Board of Directors, staff had the task of developing them within the land use model, UrbanSim. We were able to create three distinct scenarios by specifying different development capacities (zoning) for each scenario and applying an incentive/disincentive structure using masks, as described in the following sections.

An average of the three scenarios will be used for data requests requiring a single, official set of numbers based on the Board-approved Small Area Forecast.
URBANSIM Inputs and Data

MODEL INPUTS
Our land use model, UrbanSim, relies on six key data inputs, along with sophisticated household and employment location choice models, to forecast the future location of population and jobs throughout the region. The relationship between these inputs is summarized in the graphic below:

Additional tools, including adjustments, residential vacancy rates, and masks, which are used to simulate development incentives and disincentives, can also be used to influence model output, as described in the following sections.
ZONING

Zoning is one of the primary mechanisms UrbanSim uses to decide how many residential units and jobs can be placed in a given zone. Maximum values for dwelling units per acre (DUA) and floor area ratio (FAR) by zoning classification were developed for each of the three land use scenarios. These DUA and FAR values dictate the capacity of specific zones. These values, shown in Tables 1 and 2, were developed using existing zoning classifications, feedback from member entities, and research about peer cities.

Maximum dwelling unit per acre (DUA) values were developed using an average of current zoning specifications throughout the region. For example, allowable density in the Low Density Residential (LDR) category ranged from less than one dwelling unit per acre in unincorporated El Paso and Teller Counties to five DUA in Manitou Springs and Colorado Springs. The remainder of communities in the region had maximum DUA values between one and five in the LDR zoning category. Initially a range was developed for each zoning classification (e.g. 1-5 DUA), but UrbanSim required discrete data, or integer values. Thus, for LDR, we decided to use the upper end of the range to ensure that the model could place residential units up to the maximum allowable in the region's higher density areas.

Maximum DUA represents only the maximum allowable density – the model uses residential and employment location choice models to determine the relative attractiveness of a given location. Thus, although maximum density is set at five DUA in portions of unincorporated El Paso and Teller Counties zoned Low Density Residential, the model is highly unlikely to actually place that density of homes in those areas. The model would recognize that the market does not support that density of development.

We opted to retain the maximum DUA value of five for the LDR category in the Infill and New Centers scenarios to help encourage growth and development in already-developed areas and PUDs, respectively. The same methodology and assumptions were used for the Medium Density Residential category, which was set at nine DUA. In contrast, maximum DUA for High Density Residential was increased under the Infill and New Centers scenarios to encourage future growth in already-developed areas.

Higher density development was allowed in specific zone districts under the Infill and New Centers scenarios as another mechanism to encourage the model to develop in a desired land use pattern. Under the Infill scenario, higher densities were allowed in the High Density Residential, Downtown/CBD and Mixed Use zones, as well as in the Downtown Colorado Springs and Manitou Springs Gateway Mixed Use zones.
**URBANSIM Inputs and Data**

In the New Centers scenario, higher densities were allowed in the High Density Residential, Mixed Use, and PUD zones. The Downtown Colorado Springs and Manitou Springs Gateway Mixed Use categories were developed based on feedback from those entities, respectively, and account for current or near-term development projects already reaching relatively high residential and employment densities.

**CONSTRAINTS**
Areas that are either undevelopable or relatively difficult to develop due to ownership or natural hazards were also accounted for in the model. Constraints included floodplains, steep slopes, and military influence areas, as well as land owned by the State Land Board, National Park Service, and US Forest Service, among others.

**DEVELOPMENT PROJECTS**
A total of 172 development projects were entered into UrbanSim, including all known information about recent, ongoing, and upcoming residential and commercial development projects throughout the two-county area. Information about number of units, commercial square footage, project duration, etc. was provided by land use planners from our member governments. Including these development projects in the model helps ensure the accuracy of base year data and near term development trends and results in a more reasonable long-term forecast.

**VACANCY RATES**
The default residential vacancy rate for the model is 7.4 percent. After researching vacancy rates among all property types (single- and multi-family, rent and own) in El Paso and Teller Counties, PPACG staff decided to apply a 6 percent residential vacancy rate.

**ADJUSTMENTS**
Rather than asking the model to predict future population and employment numbers in our military installations, we relied on information provided by military planners about projected growth. These population and employment values were hard-coded into the model for the seven TAZs encompassed by the region’s five military installations - Fort Carson, Cheyenne Mountain, USAFA, Schriever, and Peterson.
# TABLE 1: Maximum Dwelling Units Per Acre

<table>
<thead>
<tr>
<th>Category</th>
<th>DISPERSED DEVELOPMENT</th>
<th>NEW CENTERS</th>
<th>INFILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Density Residential</td>
<td>5</td>
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<td>5</td>
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<tr>
<td>Medium Density Residential</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>High Density Residential</td>
<td>15</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Mobile Home or RV Park</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Downtown or CBD</td>
<td>15</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Commercial</td>
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<tr>
<td>Office or Business</td>
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<td>0</td>
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</tr>
<tr>
<td>Mixed Use</td>
<td>15</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Light Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Heavy Industrial</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Forestry</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parks and Open Space</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Public Facilities</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PUD</td>
<td>15</td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>Calhan</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Ramah</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Downtown CoS</td>
<td>60</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Manitou Gateway Mixed Use</td>
<td>20</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>DISPERSED DEVELOPMENT</td>
<td>NEW CENTERS</td>
<td>INFILL</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>Low Density Residential</td>
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</tr>
<tr>
<td>Medium Density Residential</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>High Density Residential</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mobile Home or RV Park</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Downtown or CBD</td>
<td>1.5</td>
<td>1.5</td>
<td>6</td>
</tr>
<tr>
<td>Commercial</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Office or Business</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Mixed Use</td>
<td>1.5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Light Industrial</td>
<td>0.5</td>
<td>0.75</td>
<td>0.75</td>
</tr>
<tr>
<td>Heavy Industrial</td>
<td>0.25</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Agriculture</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Forestry</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Parks and Open Space</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Public Facilities</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>PUD</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Calhan</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ramah</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Downtown CoS</td>
<td>4</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Manitou Gateway Mixed Use</td>
<td>2</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>
URBANSIM Inputs and Data

MASKS
Two masks were created – one for the Infill scenario (pg. 13), and one for the New Centers scenario (pg. 14) – to help encourage the model to develop in a pattern resembling what was envisioned through the public process (as described on page 5) and approved by the PPACG Board of Directors. Because there is currently no mechanism within the cloud-based version of UrbanSim to prioritize or subsidize development in specific areas (i.e. a ProForma model), the masks work in reverse to disincentivize development in areas underneath the mask.

The cutout areas or mask holes can receive development up to the amount specified in the underlying zoning, which varies by land use scenario as specified in Tables 1 and 2. Areas under the mask (shown as a cross hatch on the KMZs and PDFs) are only eligible to receive a portion of allowable zoning.

For example, if up to 10 dwelling units per acre are allowed by the underlying zoning classification, an area under the 50% mask could only receive up to 5 dwelling units per acre. Zones in a cutout area or hole could receive up to the full 10 dwelling units per acre. The exact number of residential units and/or jobs placed in a zone is determined by the relative attractiveness of the zone, as dictated by the real estate market. The zoning and masks only dictate the capacity.

Initially, a range of masks (0, 25, 50, 75 and 100%) was developed to represent varying levels of incentives or disincentives for development. Ultimately an 80% mask was implemented because it resulted in a reasonable level of differentiation between the three Board-approved land use scenarios. The masks can be related to real-world policy decisions a city, town, or county might take to incentivize development in a specific area, such as grants, tax credits or exemptions, economic opportunity zones, etc.

“THE EXACT NUMBER OF RESIDENTIAL UNITS AND/OR JOBS PLACED IN A ZONE IS DETERMINED BY THE RELATIVE ATTRACTIVENESS OF THE ZONE, AS DICTATED BY THE REAL ESTATE MARKET. THE ZONING AND MASKS ONLY DICTATE THE CAPACITY.”
URBANSIM Inputs and Data

Infill Mask – the purpose of the Infill mask is to encourage the model to prioritize development in already-developed areas (i.e. existing activity centers). Initially, the Infill mask was developed with cutouts or holes only for existing cities and towns (e.g. Woodland Park, Monument, Manitou Springs, Colorado Springs, etc.) Based on committee feedback, mask holes were expanded to include a few Census Designated places and zones that were clearly “already-developed” based on a visual inspection of aerial photography and feedback from member entity staff. Ultimately, the Infill mask was re-created to be consistent with the 2015 Population and Employment Boundary developed as part of the Infill Objective, Target and Scoring Criterion for the 2045 Long Range Transportation Plan. This boundary represents a density of 1,000 people and/or jobs per square mile.

New Centers Mask – the purpose of the New Centers mask is to encourage the model to prioritize development in new and, to a lesser extent, existing activity centers. Like the Infill mask, the New Centers mask has cutouts or holes to allow continued growth in existing “already-developed areas.” However, cutout areas or holes in this mask were expanded to include additional areas where new growth may be likely to occur, including Census Designated Places, PUDs outside of existing incorporated areas, and planned/pipeline development projects outside of existing incorporated areas.
MODEL OUTPUT and Maps

Two types of maps were created to summarize model output – change maps and density maps. The change maps show whether a given transportation analysis zone (TAZ) is predicted to gain or lose jobs and/or residential units during the forecast period (2015 to 2045). Areas experiencing growth in jobs or residential units are shown in green; those experiencing losses are shown in blue; and those experiencing no change (plus or minus five jobs or units) are shown in gray.

The density maps show the number of jobs or residential units per acre in 2015, 2030, and 2045. Scrolling through this map series has a “flip book” effect, and clearly illustrates changes in density throughout the Pikes Peak Region during the forecast period.

Major trends in population and employment growth will be summarized for each series of maps. Differences between the three land use scenarios will be highlighted as appropriate.

CHANGE MAPS

Jobs (2015-2045) – The majority of TAZs within the City of Colorado Springs and other incorporated areas see job growth under all three land use scenarios, with a few key differences:

- Job growth in the core downtown Colorado Springs area is much more pronounced under the Infill scenario than under the Dispersed Development or New Centers scenarios.
- The TAZs in eastern Colorado Springs, just east, northeast, and southeast of the Colorado Springs Airport, see no change in jobs between 2015 and 2045 under the Infill scenario. This area does experience job growth under the Dispersed Development and New Centers scenarios.

Under the Dispersed and New Centers scenarios, job growth is also seen in the northwest and southwest corners of El Paso County, as well as eastern Teller County in the TAZs surrounding Woodland Park. Under Dispersed Development, some job growth is also seen in eastern El Paso County.
2015 - 2045 Infill Jobs Change

Legend
- Loss (2015 - 2045)
- No Change (2015 - 2045)
- Gain (2015 - 2045)
MODEL OUTPUT and Maps

CHANGE MAPS

Residential Units (2015-2045) – The majority of TAZs throughout the region see growth in residential units under all three land use scenarios. Under the Dispersed Development scenario, additional growth in residential units is seen in outlying areas including eastern and southeastern El Paso County, northern Teller County, and southern Teller County.

Significantly more growth in residential units is seen in many portions of Colorado Springs under the Infill and, to a lesser extent, New Centers scenarios than under Dispersed Development. However, there is very little difference in residential unit growth in the core area of downtown Colorado Springs under the three scenarios.

The table below highlights the six zones in our planning area that are expected to experience the highest growth in residential units between 2015 and 2045. These high-growth areas were consistent between the three land use scenarios.

<table>
<thead>
<tr>
<th>HIGHEST-GROWTH AREAS</th>
<th>Residential Units (2015 - 2045)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 TAZ 396 - Banning Lewis Ranch (Colorado Springs)</td>
<td></td>
</tr>
<tr>
<td>2 TAZ 650 - Wolf Ranch (El Paso County)</td>
<td></td>
</tr>
<tr>
<td>3 TAZ 328 - Kane Ranch (Fountain)</td>
<td></td>
</tr>
<tr>
<td>4 TAZ 131 - Meridian Ranch (El Paso County)</td>
<td></td>
</tr>
<tr>
<td>5 TAZ 842 - Sterling Ranch (Falcon)</td>
<td></td>
</tr>
<tr>
<td>6 TAZ 341 - Crescent Heights (Fountain)</td>
<td></td>
</tr>
</tbody>
</table>
2015 - 2045 Dispersed RUs Change

Legend
- Loss (2015 - 2045)
- No Change (2015 - 2045)
- Gain (2015 - 2045)
2015 - 2045 New Centers RUs Change

Legend
- Loss (2015 - 2045)
- No Change (2015 - 2045)
- Gain (2015 - 2045)
2015 - 2045 New Centers RUs Change - Colorado Springs

Legend
- **Loss (2015 - 2045)**
- **No Change (2015 - 2045)**
- **Gain (2015 - 2045)**

Downtown Colorado Springs Inset
MODEL OUTPUT and Maps

DENSITY MAPS

**Infill Jobs** – A significant increase in job density is seen in the core area of downtown Colorado Springs under the Infill scenario, with densities exceeding 100 jobs per acre in many zones. Some increases in density are also seen in northern Colorado Springs, east of I-25 and north of Woodmen Road.

**Dispersed Development Jobs** – The greatest increases in job density are seen in northern Colorado Springs, east of I-25 and north of Woodmen Road. Increases in job density are also seen along North Academy Boulevard and Powers Boulevard.

**New Centers Jobs** – As in the Dispersed Development scenario, the greatest increases in job density are seen in northern Colorado Springs, east of I-25 and north of Woodmen Road. Increases in job density are also seen along North Academy Boulevard and Powers Boulevard.

“THE GREATEST INCREASES IN JOB DENSITY ARE SEEN IN NORTHERN COLORADO SPRINGS, EAST OF I-25 AND NORTH OF WOODMEN ROAD.”
2030 New Centers Jobs Per Acre

Legend
- TAZ Boundaries
- Less Than 2 Jobs Per Acre
- 2 - 5 Jobs Per Acre
- 5 - 10 Jobs Per Acre
- 10 - 15 Jobs Per Acre
- 15 - 50 Jobs Per Acre
- 50 - 100 Jobs Per Acre
- More Than 100 Jobs Per Acre
Legend

- TAZ Boundaries
- Less Than 2 Jobs Per Acre
- 2 - 5 Jobs Per Acre
- 5 - 10 Jobs Per Acre
- 10 - 15 Jobs Per Acre
- 15 - 50 Jobs Per Acre
- 50 - 100 Jobs Per Acre
- More Than 100 Jobs Per Acre
MODEL OUTPUT and Maps

DENSITY MAPS

Infill Residential Units – The most notable increases in residential density are seen in the northern portion of Banning Lewis Ranch, as well as the area just north and east of the Powers Boulevard and Woodmen Road intersection. Increased residential density is also seen in many areas of Fountain and some sections of Falcon.

Dispersed Development Residential Units – The most notable increases in residential density are seen in the northern portion of Banning Lewis Ranch, as well as the area just north and east of the Powers Boulevard and Woodmen Road intersection. Increases in residential density are also seen in many areas of Fountain.

New Centers Residential Units – The most notable increases in residential density are seen in the northern portion of Banning Lewis Ranch, as well as the area just north and east of the Powers Boulevard and Woodmen Road intersection. Increased residential density is also seen in many areas of Fountain and some sections of Falcon.

“THE MOST NOTABLE INCREASES IN RESIDENTIAL DENSITY ARE SEEN IN THE NORTHERN PORTION OF BANNING LEWIS RANCH.”
2015 Dispersed RUs Per Acre

Legend

- TAZ Boundaries
- Less Than 1 RU Per Acre
- 1 - 2 RUs Per Acre
- 2 - 5 RUs Per Acre
- 5 - 10 RUs Per Acre
- 10 - 15 RUs Per Acre
- More Than 15 RUs Per Acre
2030 Dispersed RUs Per Acre

Legend:
- TAZ Boundaries
- Less Than 1 RU Per Acre
- 1 - 2 RUs Per Acre
- 2 - 5 RUs Per Acre
- 5 - 10 RUs Per Acre
- 10 - 15 RUs Per Acre
- More Than 15 RUs Per Acre
2015 New Centers RUs Per Acre

Legend
- TAZ Boundaries
- Less Than 1 RU Per Acre
- 1 - 2 RUs Per Acre
- 2 - 5 RUs Per Acre
- 5 - 10 RUs Per Acre
- 10 - 15 RUs Per Acre
- More Than 15 RUs Per Acre
2030 New Centers RUs Per Acre

Legend
- TAZ Boundaries
- Less Than 1 RU Per Acre
- 1 - 2 RUs Per Acre
- 2 - 5 RUs Per Acre
- 5 - 10 RUs Per Acre
- 10 - 15 RUs Per Acre
- More Than 15 RUs Per Acre