

APPENDIX F - GROWTH MODELING METHODOLOGY

While it is not possible to predict how and where new development will happen in the future, using existing conditions as a guide reasonable assumptions can be made to approximate new growth. Growth modeling was completed using ArcGIS with the CommunityViz® extension. Model inputs were based on existing parcel obtained from the three Fort Drum Region counties, and environmental data obtained from New York State GIS Clearinghouse and the Cornell University Geospatial Information Repository.

The growth modeling exercise begins with determining the quantity of new growth at the end of 20 years, utilizing two different growth rates: Status Quo growth (lower growth) and Hyper growth (higher growth). The Status Quo growth rate is based on a continuation of recent growth rates (2000 to 2007) for the next 20 years. The Status Quo growth rate translates into approximately 1% annually in the gate communities and 0.5% annually in range communities. The Hyper growth rate is based on growth rates from a second half of the 1980s, immediately following expansion of Fort Drum. The Hyper growth rate translates into approximately 3% annually in gate communities and 2.5% annually in range communities. While it is impossible to predict how the region will grow in the future, these two different alternatives provide realistic scenarios based on current and historical trends.

All four scenarios explored in the growth model used the same basic spatial inputs. Lands with slopes greater than 25%, land within 100-year floodplains, and land within New York State DEC wetlands and their associated 100-foot buffer were excluded from the analyses. Existing parks and preserved land were also excluded. Lastly, parcels that did not meet minimum size requirements, as explained below, were also excluded. Based on parcel data it was determined that in the gate communities the average lot size for the last decade is approximately one acre for areas with public water and sewer and three acres for homes using wells and septic. In the range communities the average lot size for the same period is approximately four acres (only the Village of Gouverneur has public utilities, and therefore smaller average lot size). In the City of Watertown the average lot size was estimated to be $\frac{1}{5}$ of an acre. These average lot sizes provide the basis for the growth analyses.

New growth within each of the four growth scenarios uses the average lot sizes previously discussed. For existing development, it was assumed that subdivision of lots less than twice the average lot size was unlikely, and therefore these lots were excluded from the growth analyses.

The above inputs were filtered through two distinct development patterns: Dispersed and Centered. The Dispersed development pattern directs approximately 60% of new growth to locate near existing homes in the region, regardless of whether such homes are located in villages, subdivisions or on a single lot in relative isolation. Because there is an existing concentration of development in certain communities in the region – namely those communities nearest the Fort gates, even under the Dispersed growth pattern, there will be a significant concentration of new development in existing, higher-growth areas. The remaining 40% of growth under the Dispersed development pattern is scattered randomly throughout the region.

In contrast, the Centered development pattern directs approximately 75% of the new growth in and around village and hamlet centers, as well as the City of Watertown. For the remaining 25% of future growth under the Centered development pattern, the Dispersed development pattern (described above) is followed.

For each new home, the computer assigns a year-built date based on the dispersed or centered growth scenario and based on the status-quo or hyper growth rates. These year-built data are translated into the 5-year, 10-year, and 20-year modeling results depicted later in this report. It should be noted that while the growth model sets parameters and locational preferences for new growth (the Dispersed and Centered development patterns), ultimately the exact location of new homes modeled within all the scenarios is random.

Based on the above methodology, the quantity of growth was modeled for the Fort Drum region under two contrasting growth rates and subsequently applied to the landscape under two contrasting development patterns. Together these variables created the four growth scenarios that are described in Chapter 3 of this plan.