

STATEMENT CONCERNING THE AUDIT OF THE INFILL PROJECTION MODEL BY STRATEGIC ECONOMICS

From July through December 2008, and April / May 2009, Strategic Economics conducted an audit of the Infill Model described in this document. Greenbelt Alliance and Strategic Economics staff met twice to assess methodology, suggest modifications to the model, and discuss potential limitations of the data and of the study. In April / May 2009, Strategic Economics provided a review of the employment calculations. Strategic Economics provided assistance in the implementation of certain changes and, later, reviewed the mechanics of the model itself to identify technical issues and ensure the computer model was calculating correctly. The following memo summarizes Strategic Economics' findings of Greenbelt Alliance's methodology.

Review of Greenbelt Alliance's Methodology

1) Identification of Parcels that Will Redevelop

Issues Identified

In order to identify which parcels are most likely to redevelop, Greenbelt Alliance made use of data provided by the California Infill Parcel Locator (CIPL). Strategic Economics affirms the validity of using data from this source, as the Improvement-to-Land Value Ratio (IL Ratio) provided is a significant indicator of whether a parcel is likely to support an increase in housing or employment density. However, in the course of the initial meetings, Strategic Economics made note of several important limitations and considerations. First, CIPL does not make any adjustments for local land-use policies or planning priorities. These considerations may play a critical role in the likelihood of a parcel to be redeveloped. As Greenbelt Alliance's goal is to identify infill potential, given supportive city policies, the use of this database seems appropriate.

Second, the CIPL does not include any publicly owned land. While in many cases (such as parks and active military facilities), this is good, this adjustment discounts the potential for joint development of public institutions, including schools, and transit stations. It also ignores the large military bases in the region for which redevelopment is already planned. This will result in a more conservative estimate of the number of parcels that will be redeveloped than may be true.

Third, while the CIPL's IL ratio does have some bearing on the economic likelihood of redevelopment, it did not include a filter for parcel size. Some parcels are too small to support higher density building types without land assembly, although this economic context will likely shift over this model's thirty-year timeframe.

Finally, and perhaps most importantly, the CIPL utilizes assessor's data, which, in California, is only updated at the time of new construction on a parcel, a change of property ownership, or a decrease in property value. As such, it is likely that there are cases where a parcel's land value may have increased since assessment (such as when new public investments are made in the area). In these cases, the actual IL Ratio will be much lower than that shown in the assessor's data and may be missed by the CIPL. Other cases of disproportionate changes to one of the two components of IL Ratio (significant decreases in the value of land or improvements or significant increases in the value of improvements) will trigger a reassessment. On balance, use of this data will result in a more conservative estimate of redevelopable

land. One important exception to this, however, is the case of single-family homes. There is generally greater political opposition to the redevelopment of these parcels than is the case for others, and they are less likely to redevelop solely due to their real estate value and redevelopment potential.

Strategic Economics Recommendations

- Using a combination of site visits and online resources, Greenbelt Alliance should “ground-truth” a selection of parcels identified by the California Infill Parcel Locator, focusing especially on multifamily housing.
- Greenbelt Alliance should contact the creators of the CIPL to learn the results of any “ground-truthing” efforts that have already been conducted.
- Greenbelt Alliance should interview county assessors in the Bay Area to ensure that they employ a consistent and reasonable methodology.
- Greenbelt Alliance should examine the size of parcels and the densities planned for smaller parcels.
- Greenbelt Alliance should either omit single family homes from its analysis or limit the scale of new development projected to occur on these parcels.

Greenbelt Alliance Response

In response to these suggestions, Greenbelt Alliance did the following:

- In each of two cities (San Rafael and Walnut Creek), Greenbelt Alliance spot-checked three parcels at 0.1 intervals along the IL ratio, including 18 multifamily properties, and provided a data table confirming that there was a reasonably systematic relationship between the condition of the improvements and the calculated IL Ratio.
- Greenbelt Alliance contacted the original creators of the CIPL but found that no ground-truthing peer review studies had been done.
- In addition, Greenbelt Alliance contacted the county assessors for 6 of the 9 counties in the Bay Area and gathered information from the websites of the other three counties. They found that there is a high degree of variability between the methodologies employed by assessors as they allocate value to land and to improvements. For instance, while Solano County uses a land residual method, Alameda County employs a fixed 70/30 ratio for residential land and improvements and Santa Clara draws on the personal experience of each assessor. These differences have the potential to bias results in different areas of the region.
- Greenbelt Alliance analyzed the prevalence of small parcels and the building types assigned to those smaller parcels. They found that, of the growth the model projects to take place outside of Priority Development Areas, over 66% of new units and 70% of new jobs would be on plots larger than one acre. While the many parcels identified in the model were small, the majority of these were projected to have low-density uses.
- Finally, Greenbelt Alliance changed the model such that single family residential parcels are eliminated from the list of parcels that may redevelop. While this may significant understate the infill development potential, the physical and political barriers posed by the redevelopment of these parcels make this adjustment to the model advisable.

2) Estimating Current Densities

Issues Identified

To know the potential increase in the number of units and employees, Greenbelt Alliance needed to know the number of housing units and employees currently found on redeveloping properties.

Just as with the previous step, Greenbelt Alliance made use of data from the California Infill Parcel Locator to estimate current densities and the number of dwelling units currently on the site. Unlike the

valuations themselves, the number of units is likely to be quite reliable. This is because a change the number of units would require new construction and, as such, would prompt a reassessment.

For residential land uses that contain one to four units, the number of current units is provided by the database. However, for the remainder of multifamily residential land uses, there is no indication of the number of units. In order to predict current densities, Greenbelt Alliance initially employed a regression equation that related the density of dwelling units in a sample of buildings in San Jose to the density of dwelling units in the associated census block. The correlation between these two factors was not strong, however, and its predictive power was somewhat suspect.

To estimate the current dwelling units, Greenbelt Alliance made use of the CIPL's data on current building uses. Each use was assigned a commercial floor-area ratio (FAR) and an employment density (employees per square foot). As these densities were intended to reflect ratios and densities of underutilized sites whose site improvements have received low valuations, Strategic Economics judged a number of the initial FARs and employment densities to be too high.

Strategic Economics Recommendations

For the estimation of existing residential units, Strategic Economics proposed an alternative method that used table H30 from the 2000 census to determine the most likely number of units per multifamily structure in each block group. This data would then be linked to each parcel that contained an underutilized multifamily structure and be used to estimate current densities.

For the estimation of existing employment, Strategic Economics suggested reducing the FARs and employment densities for several of the place-types.

Greenbelt Alliance Response

Greenbelt Alliance accepted and implemented these changes to the method for estimating current densities. These changes increased the number of current residential dwelling units and decreased the number of current jobs estimated.

3) Projecting the Character of New Development

Issues Identified

To project the character of new development on vacant and underutilized parcels, Greenbelt Alliance made use of distribution and definition of Bay Area place-types outlined in the Association of Bay Area Governments' Regional Livability Footprint. Strategic Economics noted several limitations with ABAG's methodology, including its bias toward residential infill. It also questioned the likelihood that infill parcels would be redeveloped at the lower density residential and mixed-used place-types. Finally, Strategic Economics suggested that the geographies of the place-types might be problematic, with commercial corridors frequently assigned the same classification as the single-family residential neighborhoods adjacent to them.

Strategic Economics Recommendations

Despite these limitations, Strategic Economics supported the use of ABAG's place-types as a means of projecting future development. As a document that benefitted from considerable community input and political consensus, it is likely that development can occur at the densities suggested, as long as the market will support it at some point over the next twenty years.

In order to strengthen its projection, Strategic Economics suggested that Greenbelt Alliance make the following changes:

- Reduce the assignment of commercial and higher-density uses in neighborhoods adjacent to corridors by employing an algorithm that shifts place-type assignments to limit the scale of redevelopment on single family residential parcels by assigning them a lower place-type than ABAG's and by assigning only residential place-types.
- In each area currently designated "+5%," assign a place-type for redevelopment to address the infill parcels, then apply a 5% increase in density for the neighborhood as a whole, to incorporate the construction of so-called "in-law" or "granny flat" units.

Greenbelt Alliance Response

In response to these suggestions, Greenbelt Alliance took the following actions:

- Greenbelt Alliance initially adopted an algorithm that shifted the place-type assignments for single family parcels to lower-intensity development of a solely residential character. After dropping out single-family parcels altogether, the new algorithm was no longer needed and was dropped.
- Greenbelt Alliance assigned place-types to 5% parcels and incorporated the +5% factor for in-law parcels. This boosted potential infill development by approximately 20,000-40,000 dwelling units.

4) Projecting the Density of Place-types

Issues Identified

In consultation with Calthorpe Associates, Greenbelt Alliance estimated typical building square footages per parcel-acre in each place-type, using the descriptions of height, bulk, and form provided by the Smart Growth Strategy/Regional Livability Footprint Project place-type descriptions. These floor areas were then allocated to commercial and/or residential uses, based on the distribution of uses in each place-type. For residential uses, these data were used to estimate density by subtracting the amount of common area that would be typical for buildings in a given place-type, then dividing the remaining space by average unit sizes for that building type. For employment densities, Greenbelt made use of rule-of-thumb averages for the amount of space needed per employee for uses that are most common in each place-type. Strategic Economics supported this methodology for projecting residential and employment densities. However, Strategic Economics suggested that assumptions about unit sizes, Floor-Area Ratios (FAR), and floor area per employee assumptions may be too aggressive for some place-types.

Strategic Economics Recommendations

Strategic Economics recommended adjusting certain assumptions downward, in keeping with data on employment densities provided by the Building Owners and Managers Association, and based on the experience of Strategic Economics staff.

Greenbelt Alliance Response

Greenbelt Alliance made these recommended adjustments.

5) Implementation of Model

Issues Identified

In the initial meetings, Greenbelt Alliance requested that Strategic Economics review the functioning of the ArcView model used to calculate the total infill units to confirm that the computer model was using the appropriate equations and fields, and that the equations were calculating correctly.

Strategic Economics Recommendations

Strategic Economics reviewed the calculations for a random selection of parcel entries, including at least two from every equation choice-path. Minor errors were identified.

Greenbelt Alliance Response

Greenbelt Alliance corrected the minor errors found.

OVERALL ASSESSMENT

While somewhat limited by the quality of data available, Greenbelt Alliance's Infill Projection Model is a valuable tool for demonstrating numerically and spatially that, given supportive local land-use policies, the Bay Area can support a tremendous amount of infill development. Strategic Economics has reviewed the model, offered suggestions for improvements, and is confident that it is both methodologically and technically valid.