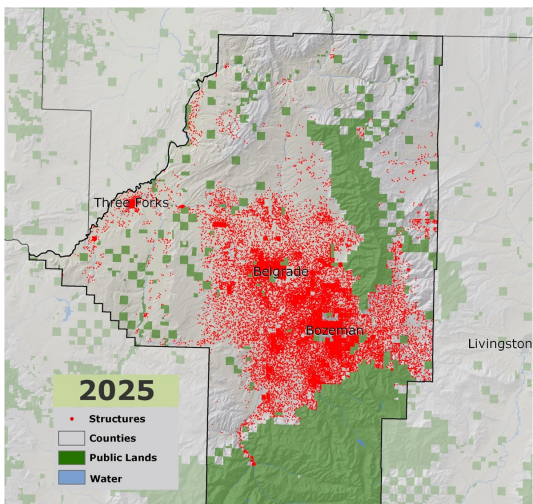
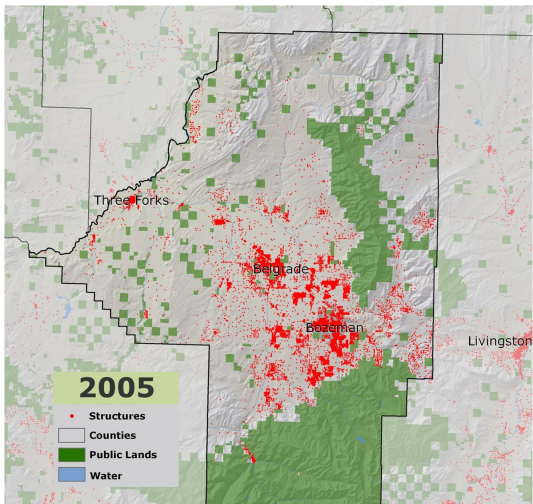
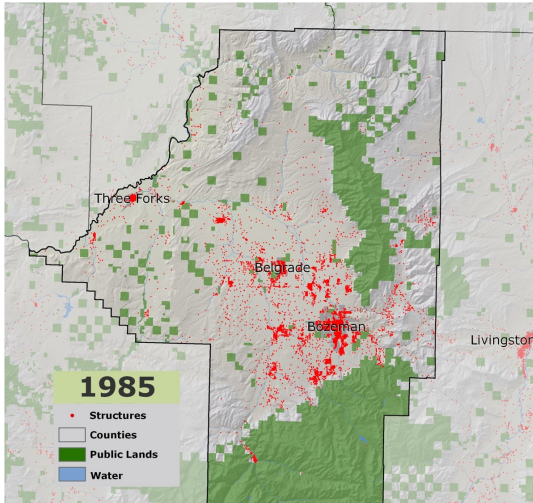




# Growth Model

## Purpose

The scale and pattern of growth have numerous impacts on the landscape and local economies. Where and how growth occurs influences local resources needed to service growth and the impact on wildlife habitat and other important natural resources.



To help communities and land managers understand the impacts of growth, the Sonoran Institute has developed a growth model that predicts the number and distribution of residences on a landscape based on past and current growth trends. It also allows for scenario building to explore how policies can influence growth patterns in order to maximize economic efficiency and minimize ecological damage.

## Approach

The growth model is a tool to help community residents, decision makers and land managers explore and visualize the impacts of growth. The model itself is composed of four components:

1. *Geographic Information System models* process spatial information regarding landscape and growth characteristics. This places on a map the important land characteristics such as mountains and rivers and the built environment of structures that already exist on the landscape.
2. *A statistical predictive model* uses information trends from previous years to predict where and how many structures will be placed on the landscape in the future. We can get resolution down to the quartersection.
3. *An allocation model* distributes the location and number of structures based on constraints imposed by zoning and other policies to create alternative scenarios.
4. *A visualization component*, CommunityViz, enables us to see on a map what those scenarios would look like.

That is just the tool. The important aspect of our approach is getting the right people together to input information into the model, create innovative scenarios, and discuss what it means. We find that the visual aspect of the tool, along with credible information, produces valuable discussion and results in better policy decisions.

Uses & Results →

## Uses & Results

The growth model can be applied to inform a variety of issues. An early version of the growth model was used to forecast growth patterns in the greater Yellowstone region. The Sonoran Institute produced a report, *Yellowstone 2020*, capturing the results from the growth model in order to create awareness of the impacts of growth in this region.

More recently, we have applied the growth model in Doña Ana County, New Mexico, to inform local discussions about federal land disposition and the results it could have on community growth.

We also have used this tool to predict the fiscal impacts to counties of various patterns of growth. It has proven to be a good vehicle for discussing the economic benefits of concentrating new development near existing infrastructure and services and developing the land use policies that promote this more compact pattern of development rather than sprawl.

And we are reengaging in the greater Yellowstone region with further application of the growth model to inform discussions about the impacts of land use change on the fiscal and environmental well-being of the region and the strategies that can be used to address this pattern of growth.

The potential for the growth model expands beyond the above-mentioned applications. We envision its use:

- ◆ As a tool for training in land use planning decisions and policies in the wild-land-urban interface;
- ◆ To quantify the impacts of growth on sensitive species habitat;
- ◆ To provide a foundation of support for the protection of river corridors, wild-land urban interface, flood plains; and
- ◆ To help estimate the cost of growth for counties.

## Visualizing Change



Growth modeling helps communities visualize potential change, such as this simulation of a valley transforming from the way it is now (above) to what it might look like in the future (below).

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