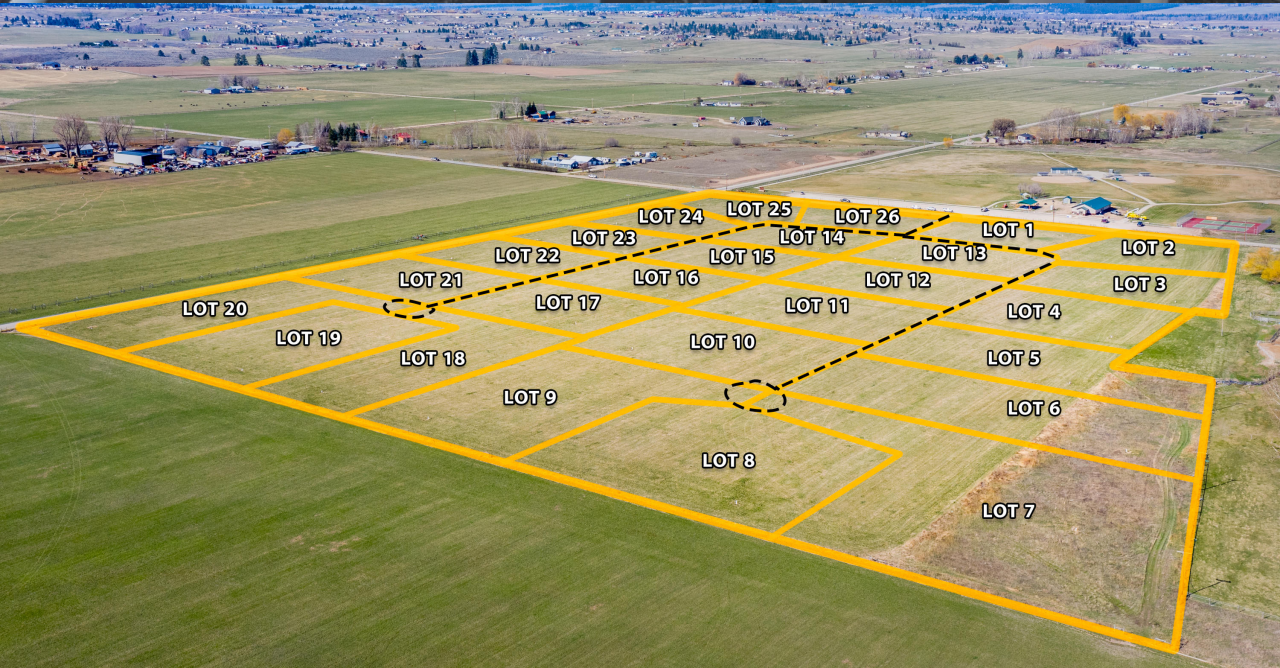


Land use modeling to address Montana's challenges



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Independent Nonpartisan Research



Overview

1

Modeling land development

2

Historic and future development trends

3

Using models to address challenges

1

Modeling land development



Our approach

1. Evaluate trends
2. Model growth statistically
3. Forecast future development



1

Some modeling specifics

Predicting...

Housing units per quarter-section

More on the modeling

Predicting...

Housing units per quarter-section

Using...

Socioeconomic & Housing Data

More on the modeling

Predicting...

Housing units per quarter-section

Using...

Socioeconomic & Housing Data

- Existing housing
 - Homes already present
 - Homes built in past decade
 - Homes present within 1 mile
 - Homes built in past decade within 1 mile
 - Homes built in past decade within 15 miles

More on the modeling

Predicting...

Housing units per quarter-section

Using...

Socioeconomic & Housing Data

- Access & Infrastructure
 - Proximity to large town
 - Distance to major roads
 - Presence of roads
 - Road density within 1 mile
 - Travel time to town
 - Travel time to airports

More on the modeling

Predicting...

Housing units per quarter-section

Using...

Socioeconomic & Housing Data

- Socioeconomics
 - Population density
 - Per capita income

More on the modeling

Predicting...

Housing units per quarter-section

Using...

Socioeconomic & Housing Data

- Physical characteristics
 - Distance to water
 - Mountainous

Model most accurate in rural places

Type of area	Change/No Change Correctly Predicted
Rural, no homes	99.3%
Rural, homes	81.2%
Urban, no homes	78.9%
Urban, homes	60.0%



2

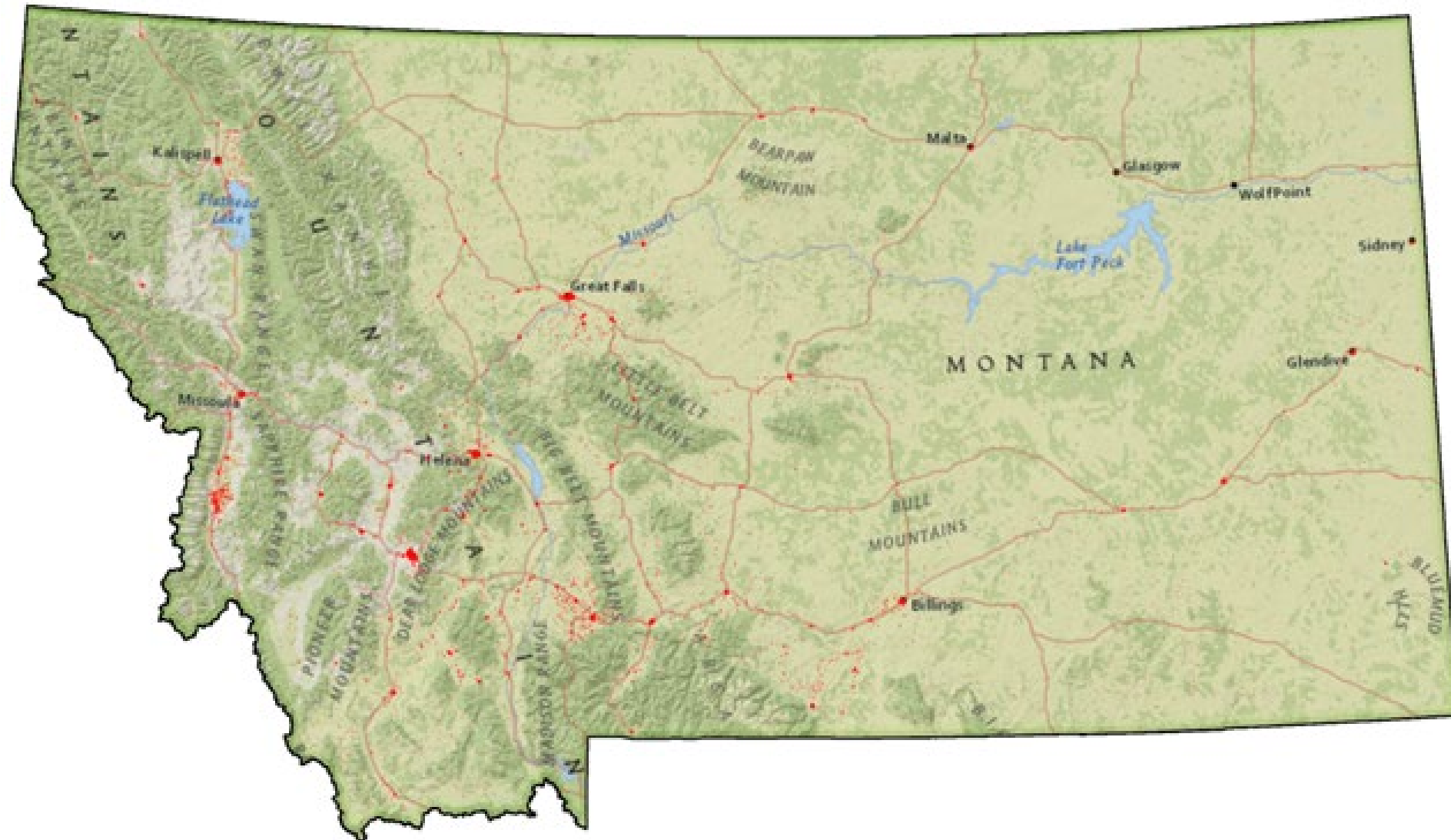
What we've learned



Home Construction in Montana

1900-2016

1900



Home Construction in Montana

1900-2016

1910



Home Construction in Montana

1900-2016

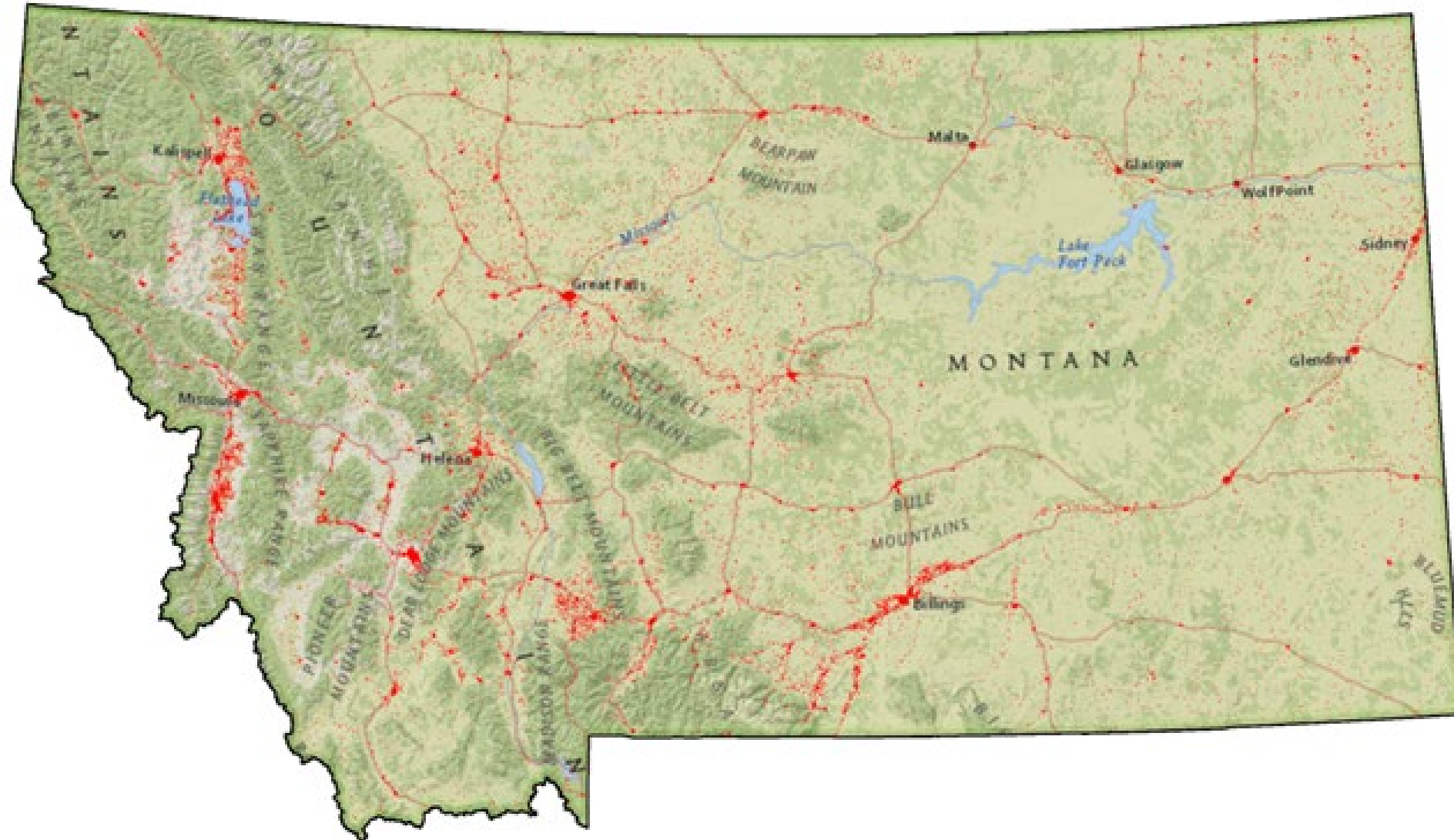
1920



Home Construction in Montana

1900-2016

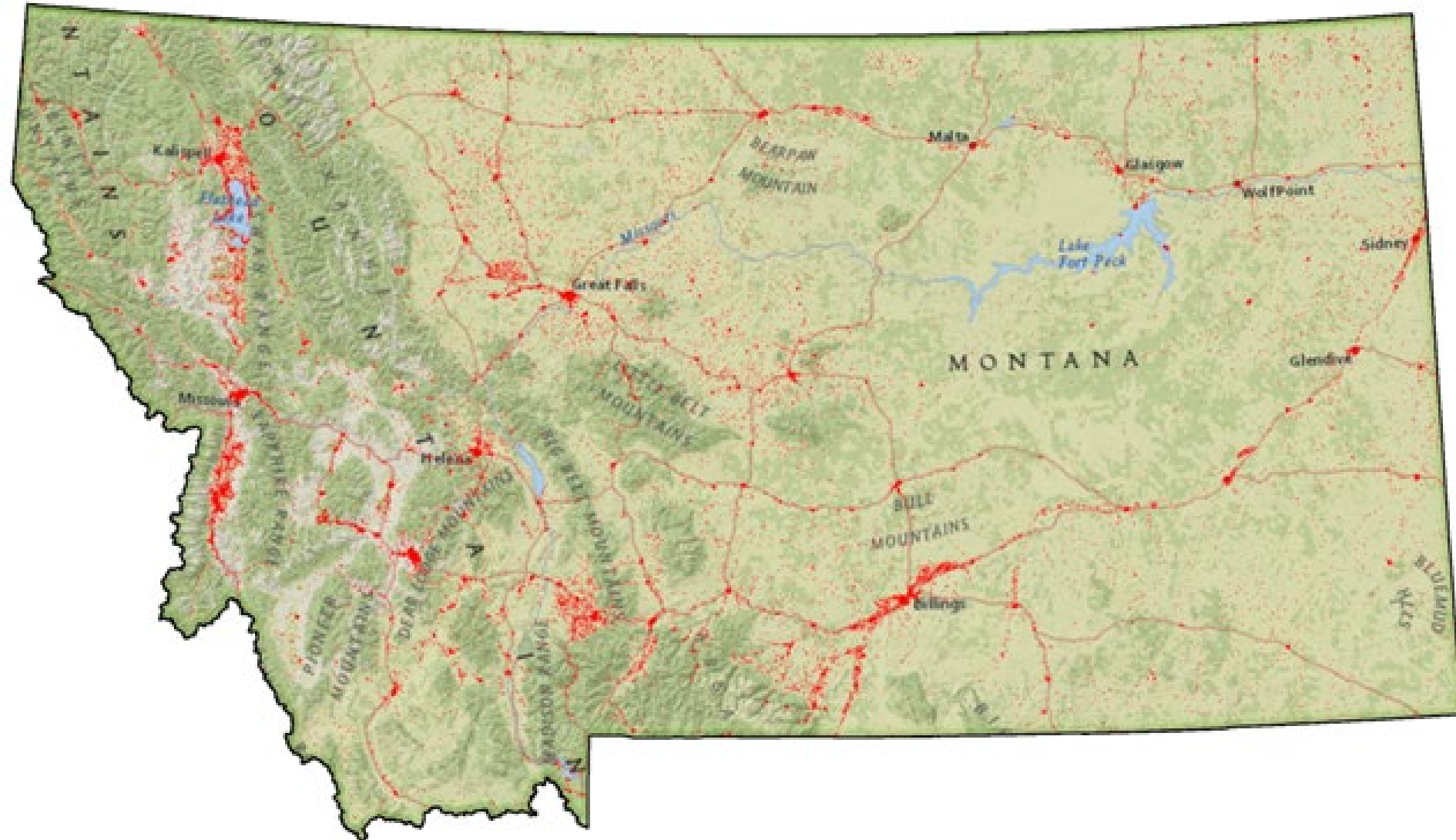
1930



Home Construction in Montana

1900-2016

1940



Home Construction in Montana

1900-2016

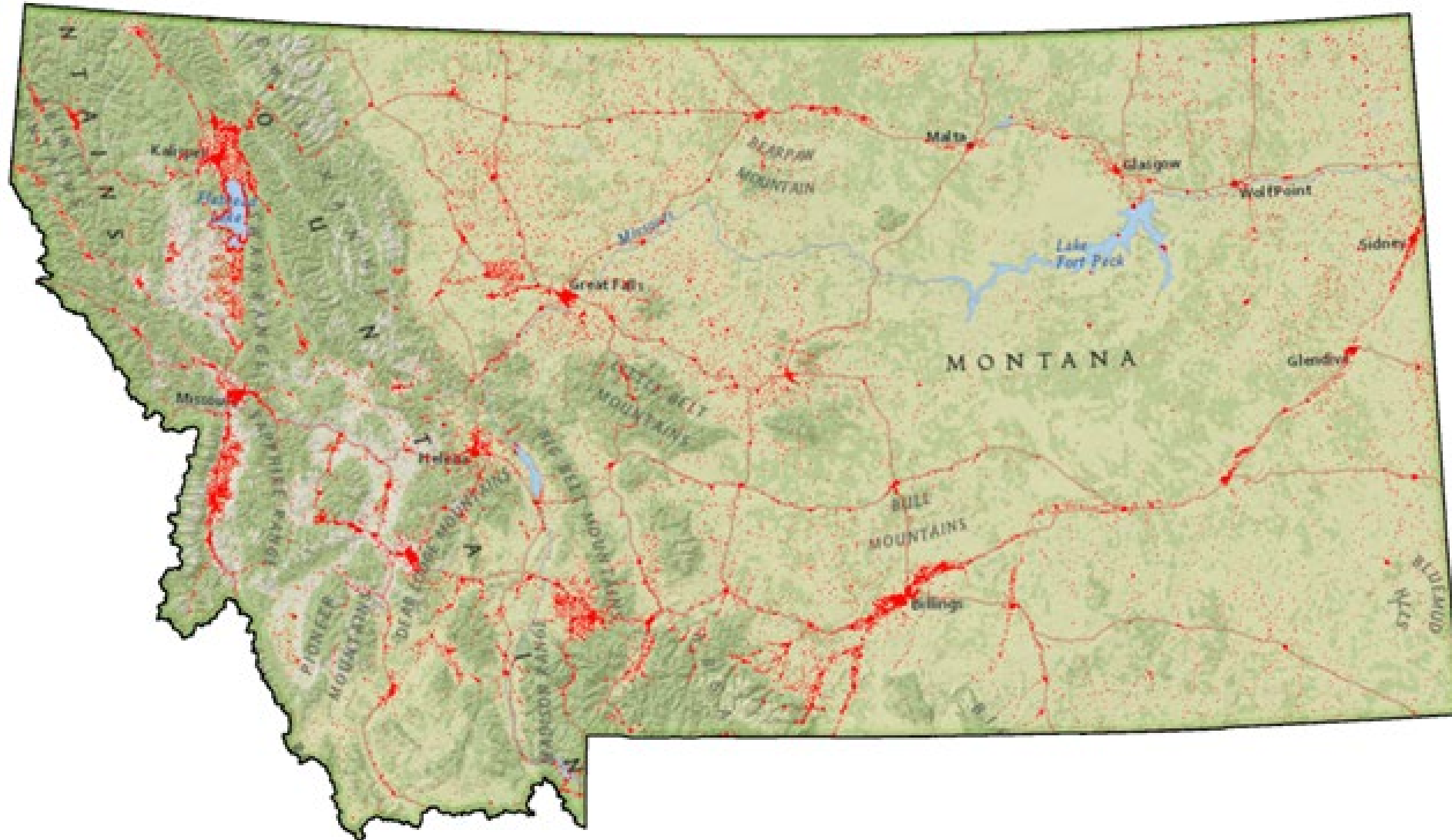
1950



Home Construction in Montana

1900-2016

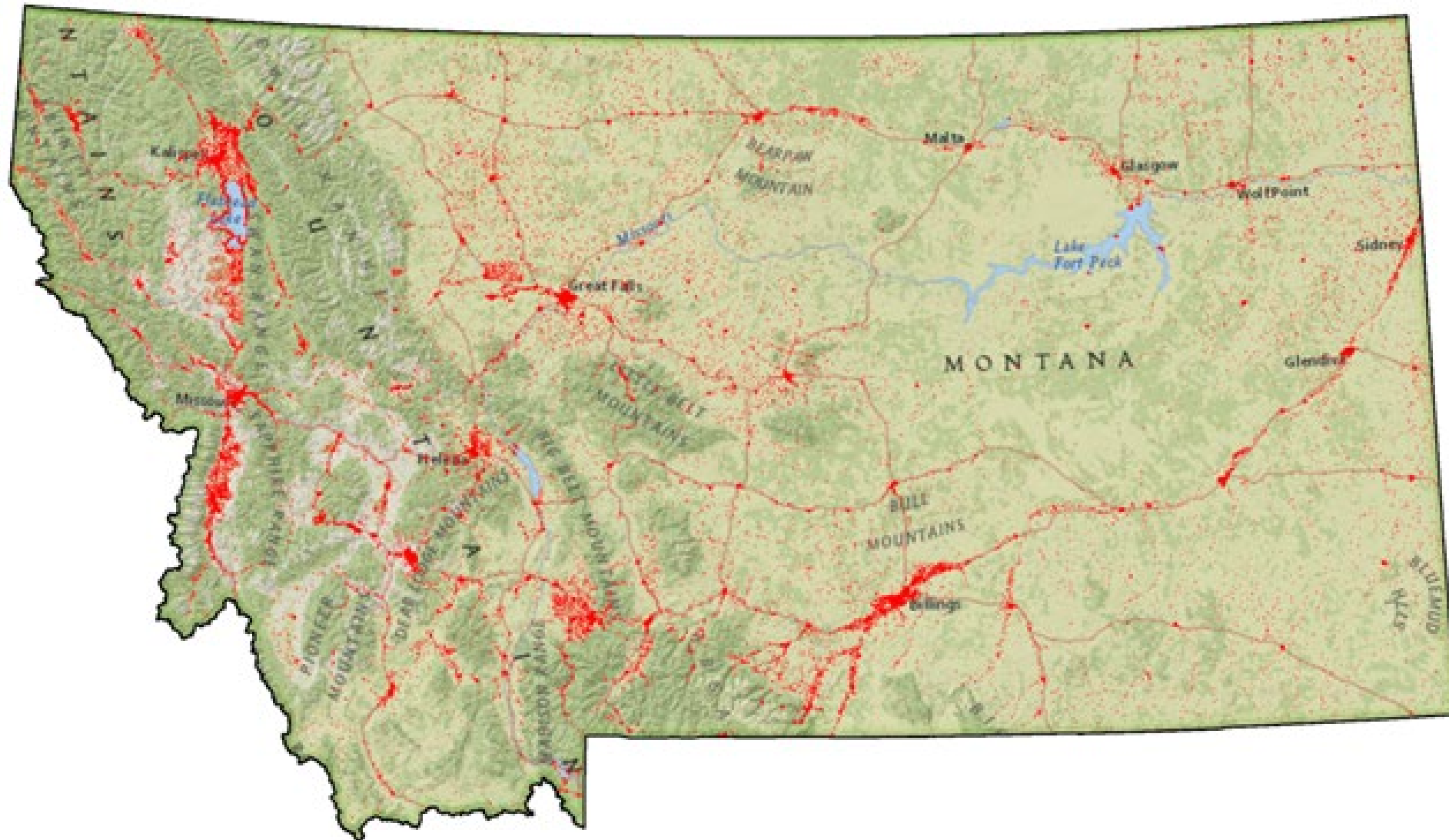
1960



Home Construction in Montana

1900-2016

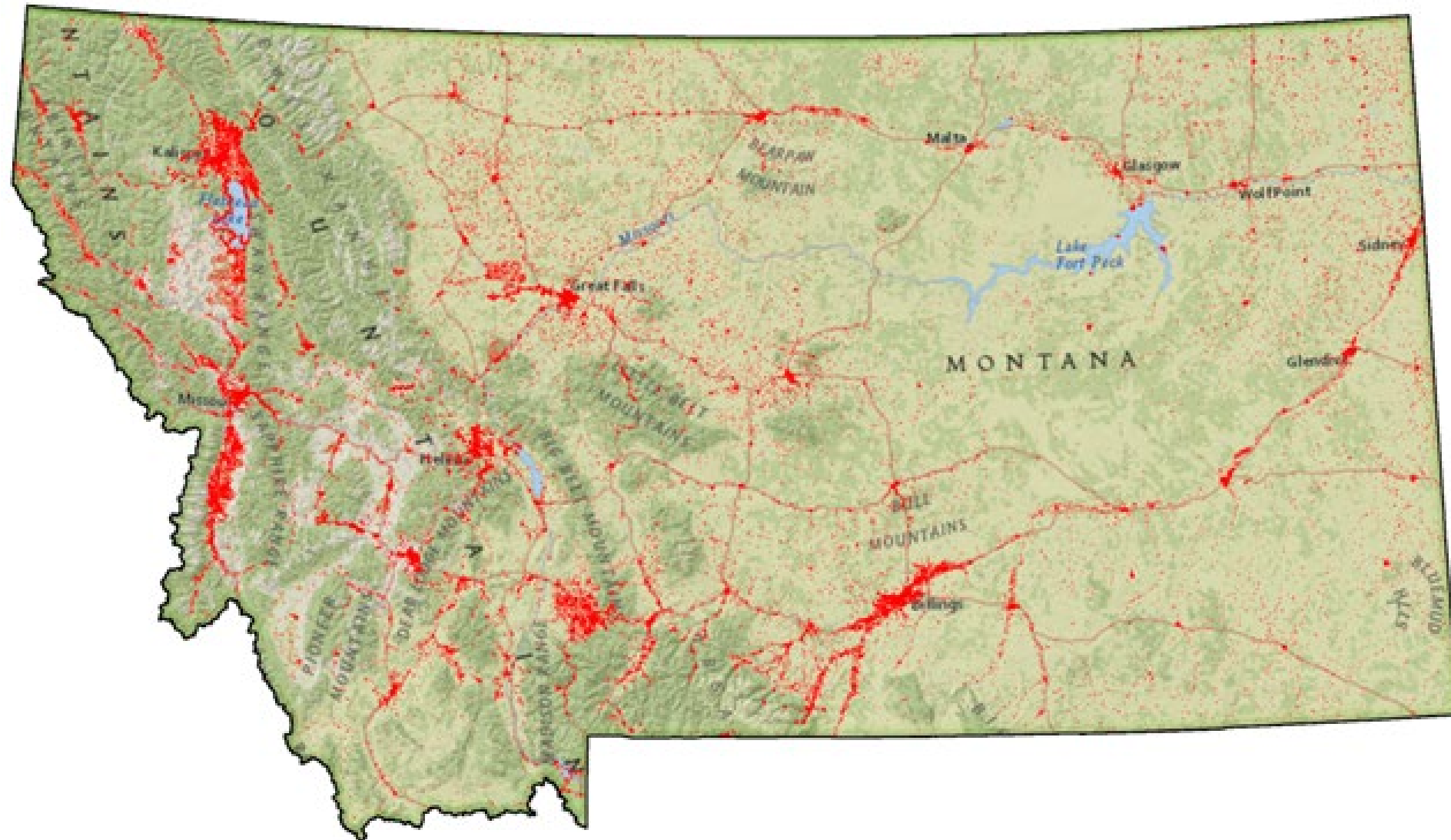
1970



Home Construction in Montana

1900-2016

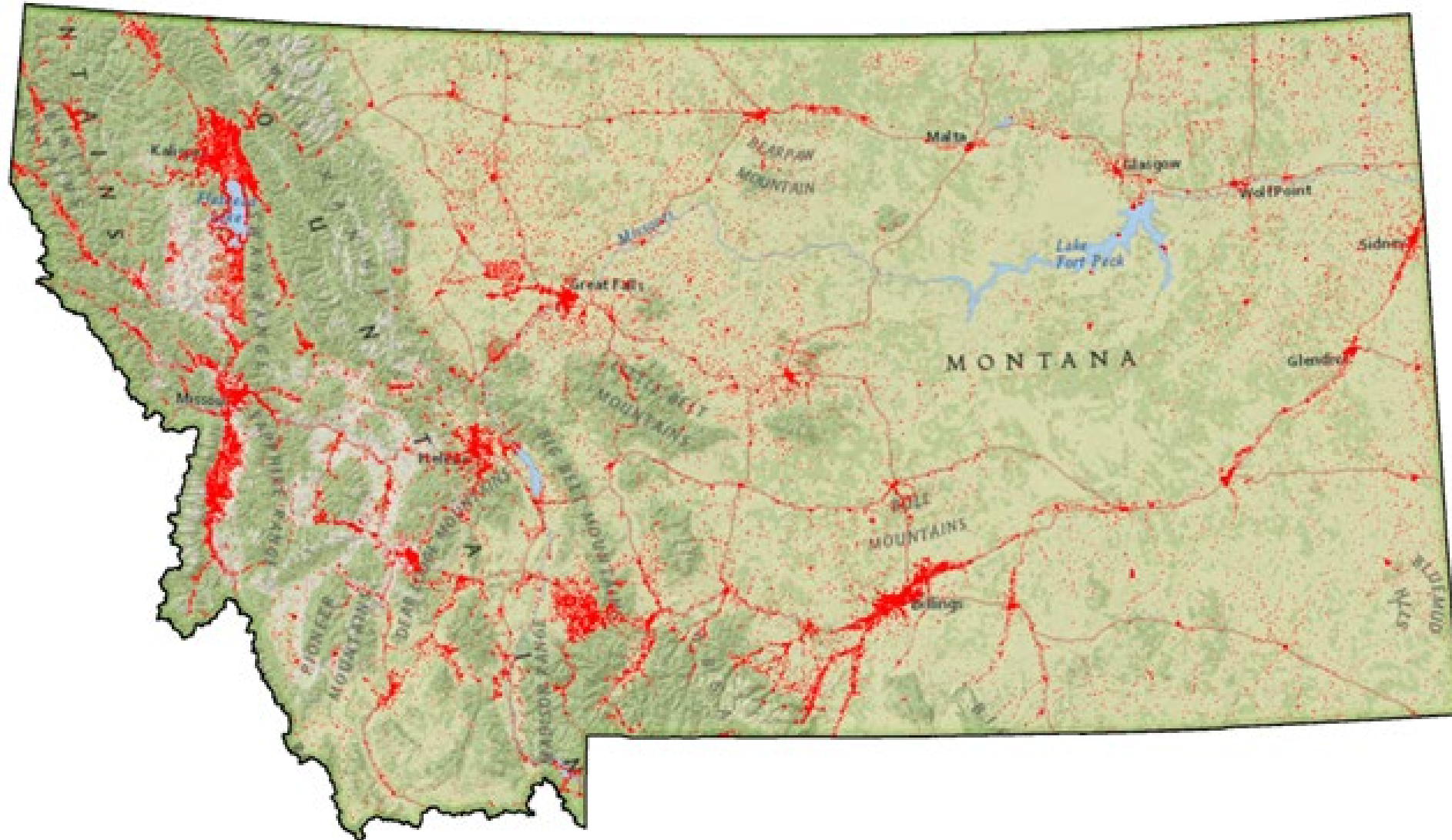
1980



Home Construction in Montana

1900-2016

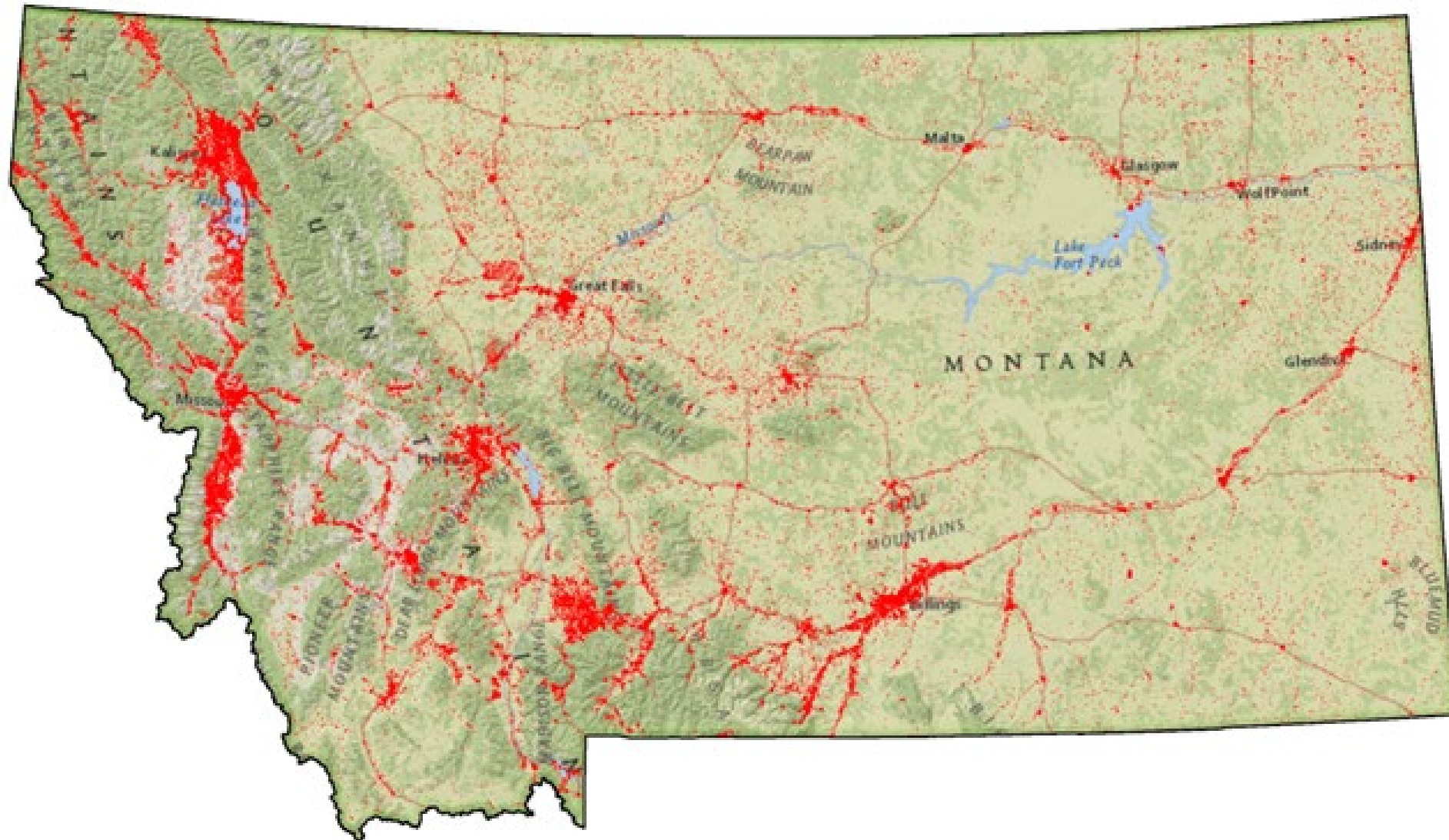
1990



Home Construction in Montana

1900-2016

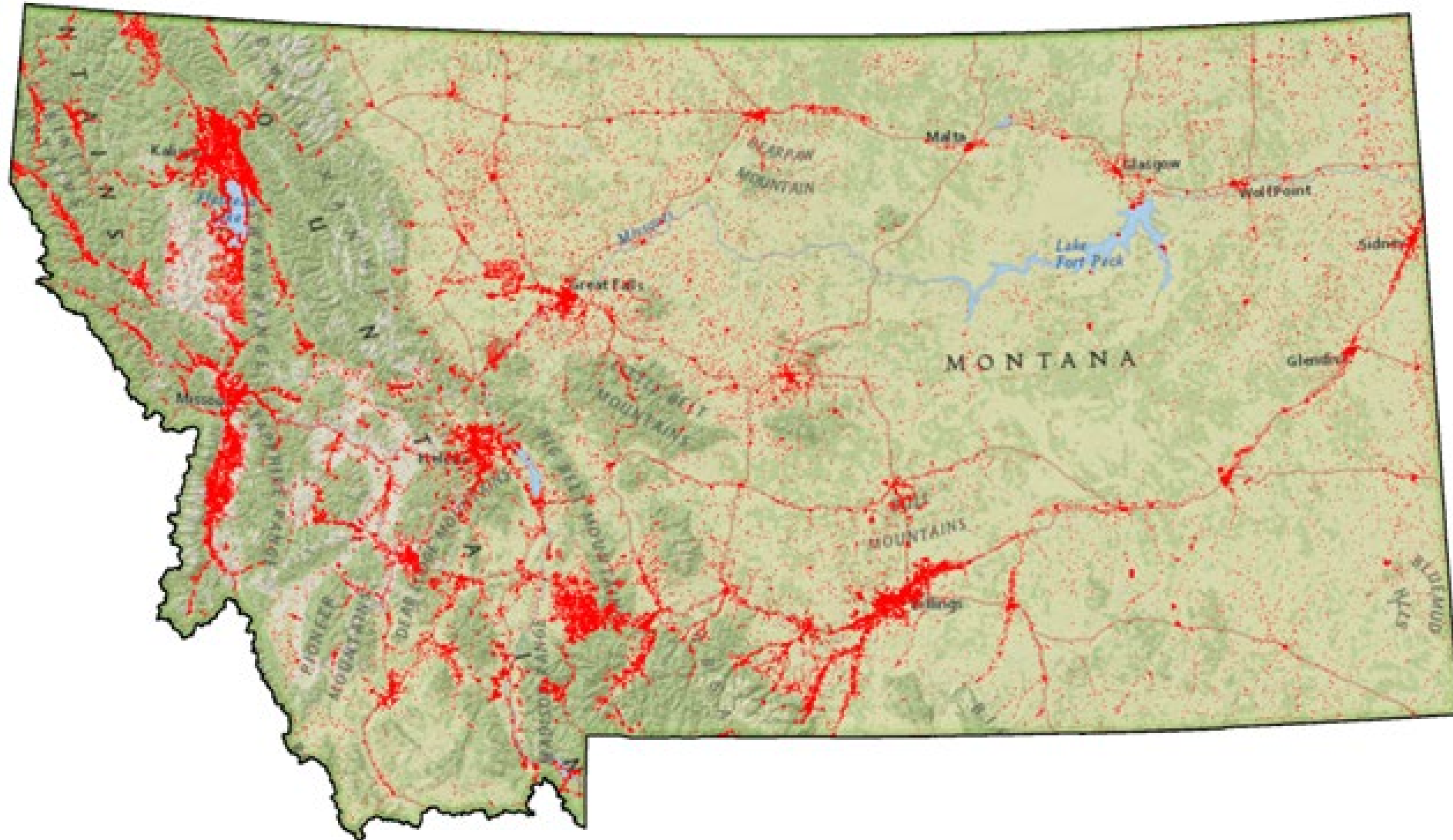
2000



Home Construction in Montana

1900-2016

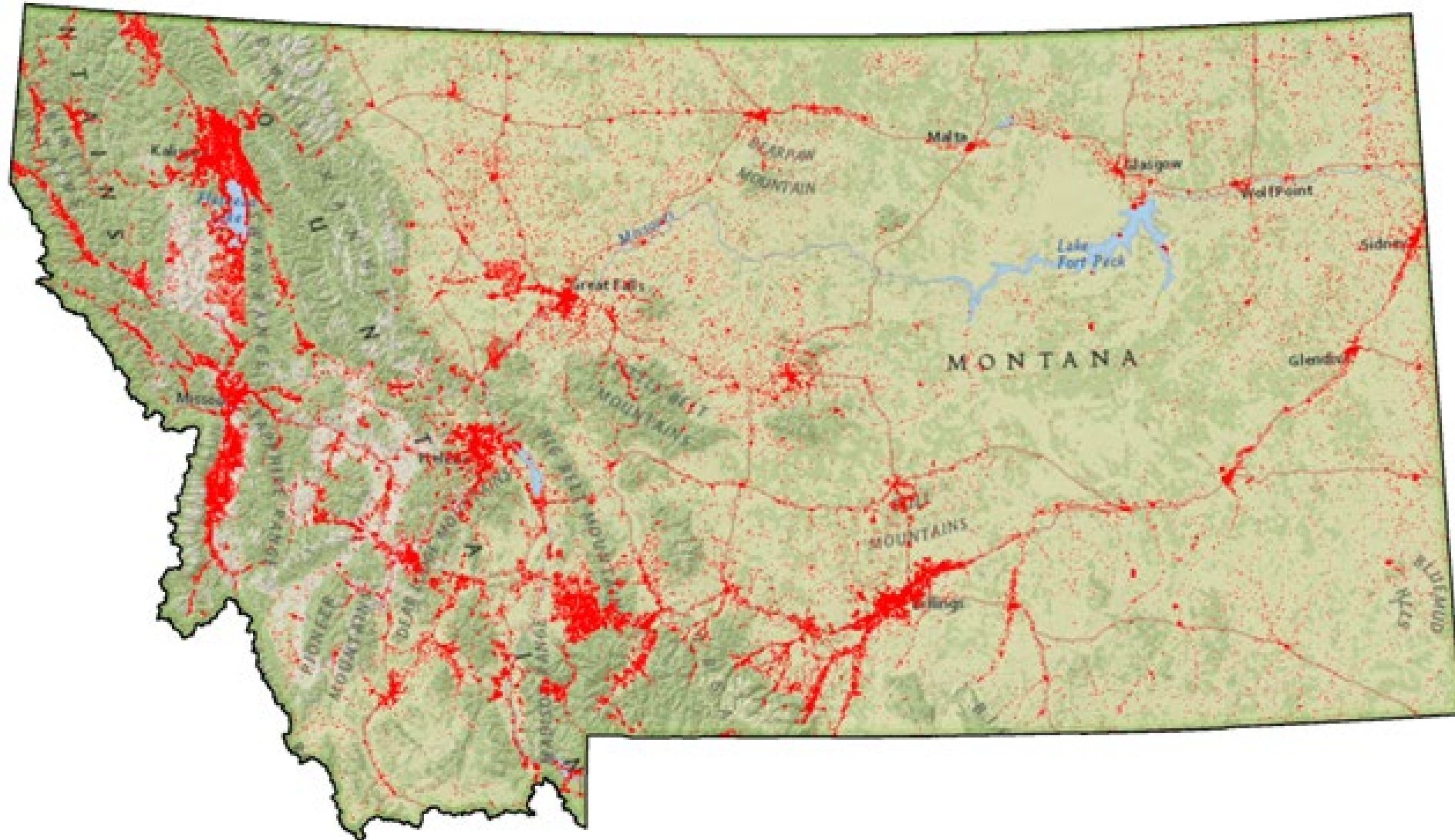
2010



Home Construction in Montana

1900-2016

2016



Homes Built Per Year

1970 - 2018

Montana



Homes Built Per Year

1970 - 2018

Montana



Homes Built Per Year

1970 - 2018

Montana

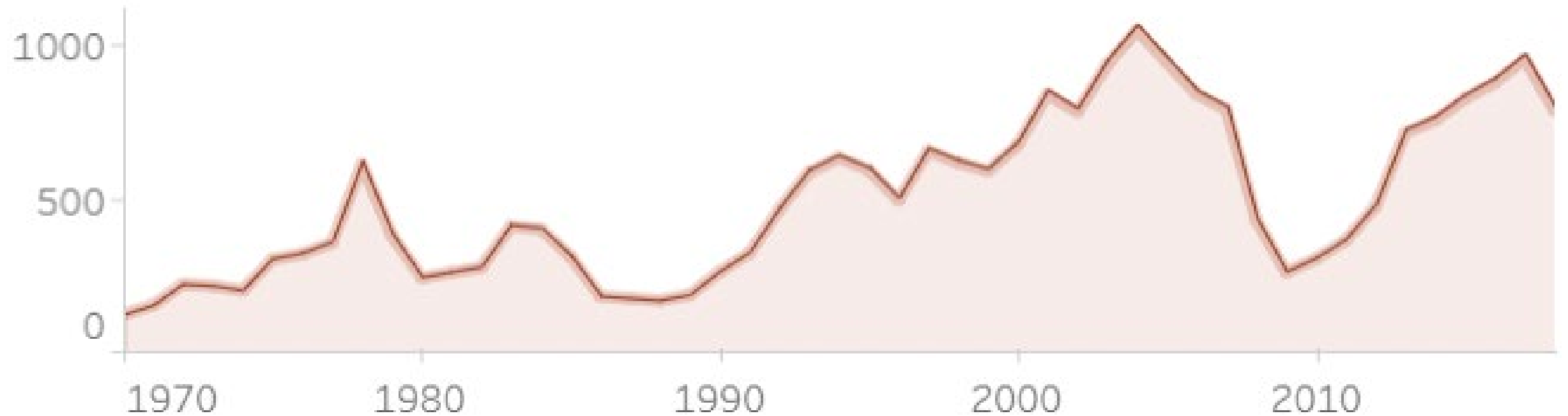
Housing Boom to Great Recession



Homes Built Per Year

1970 - 2018

Gallatin County



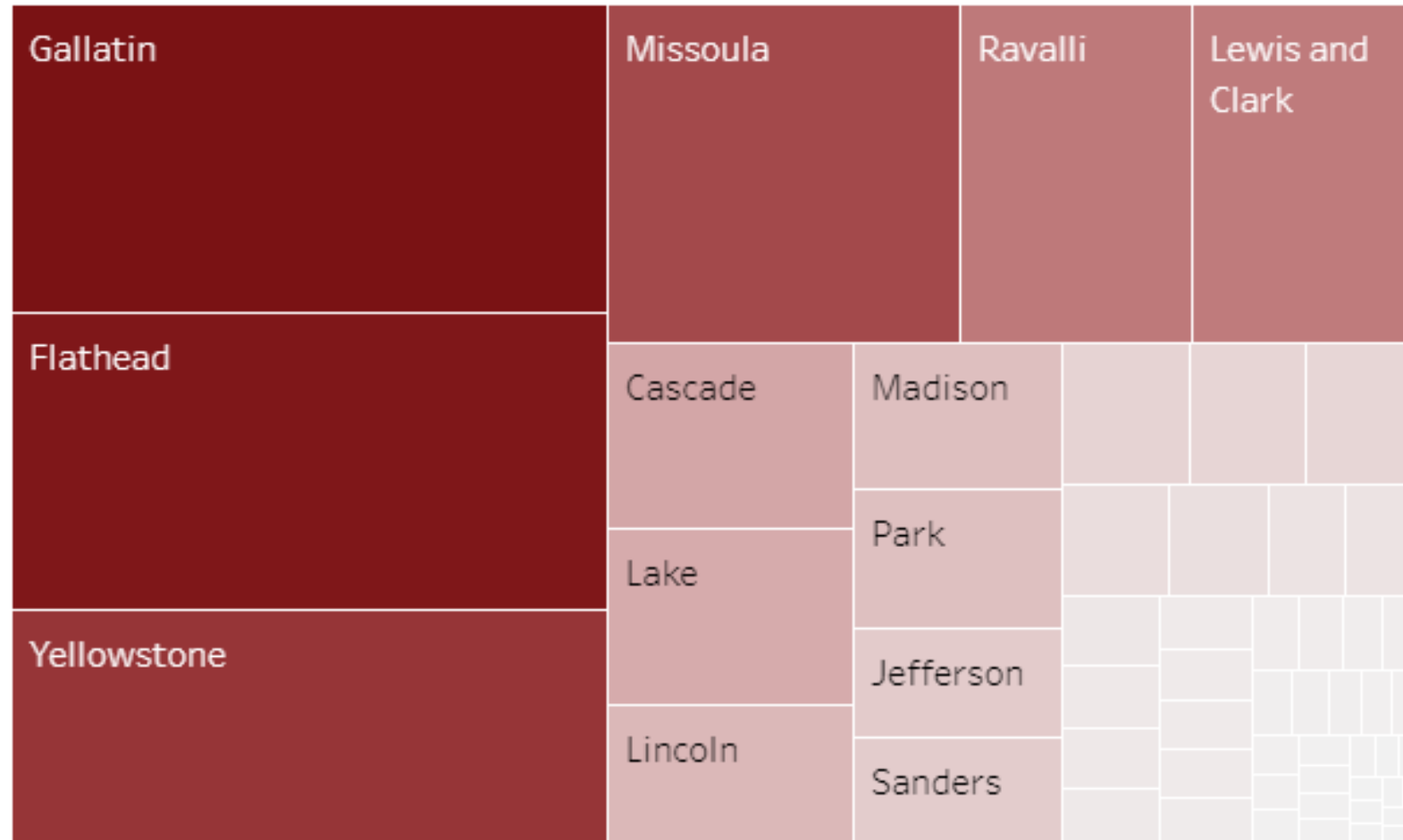
Homes Built Per Year

1970 - 2018

Granite County



More than half of new homes are in four counties



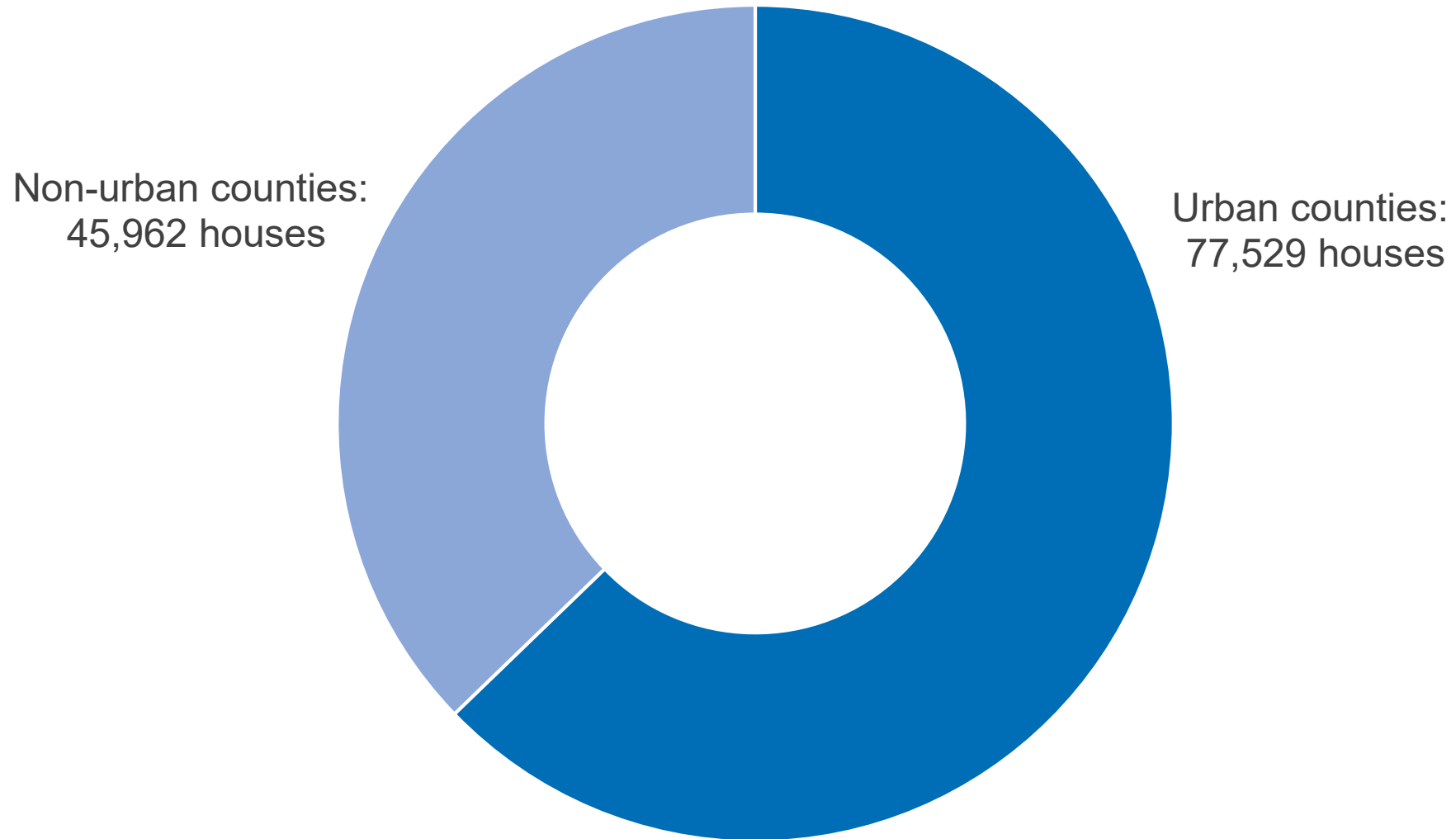
Data Source: Montana Department of Revenue, Property Assessment Division

An aerial photograph of a vast, flat landscape, likely a rural or agricultural area. A prominent, light-colored, winding road or path cuts through the center of the image. Several small, dark-colored buildings or structures are scattered across the landscape, particularly along the road. The terrain is a mix of brownish and greenish hues, suggesting different types of land use or vegetation. A semi-transparent white circle is overlaid on the right side of the image, containing text.

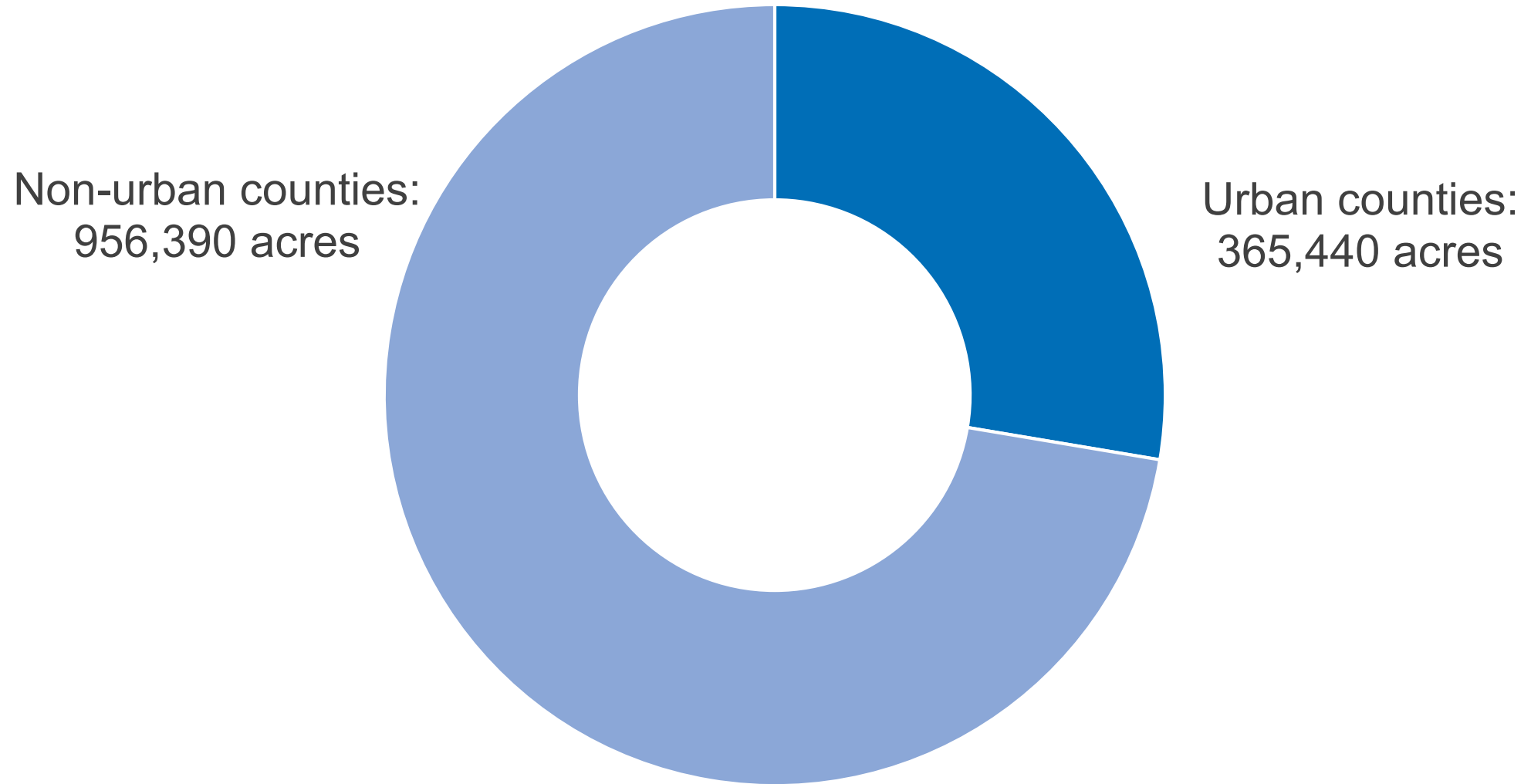
Land conversion is not
just an urban or
western MT issue.



Two-thirds of houses were built in urban counties

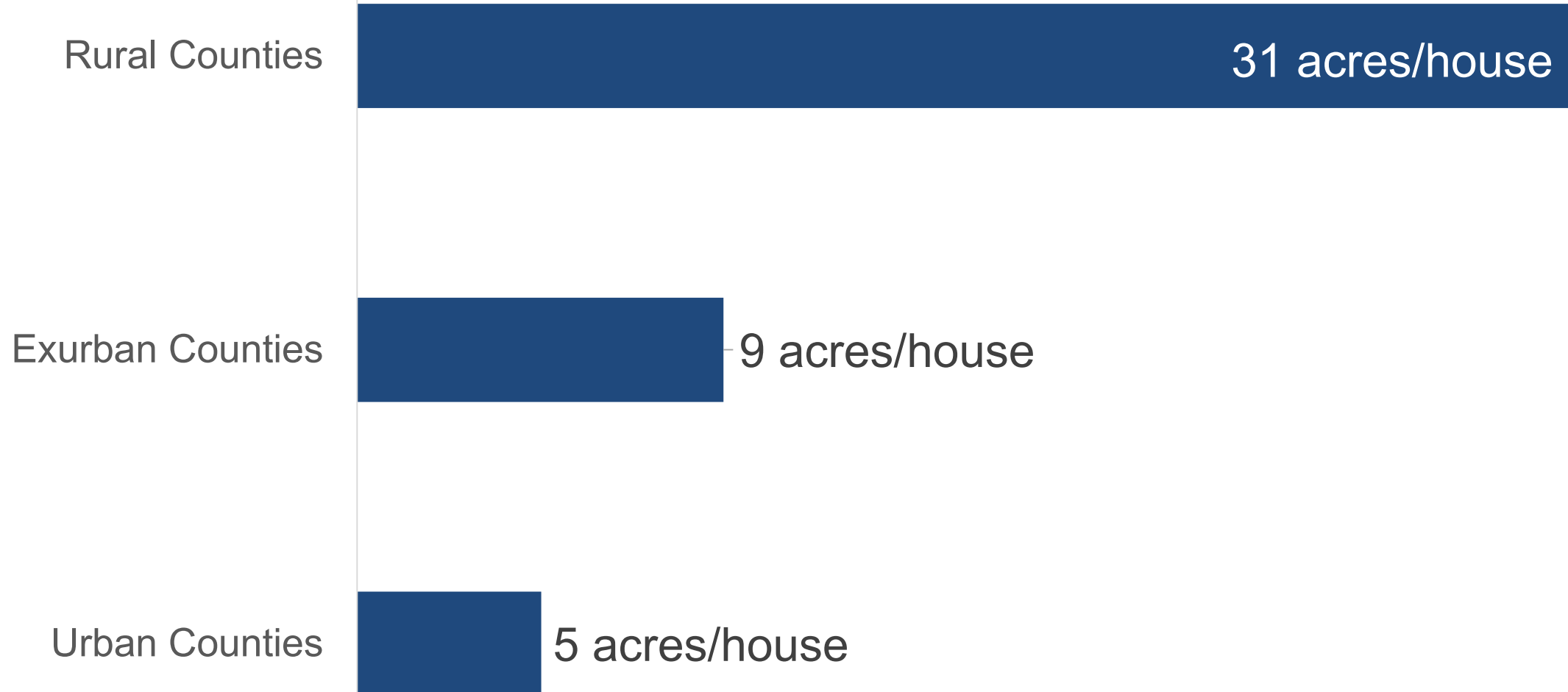


Three quarters of land used is not in urban counties

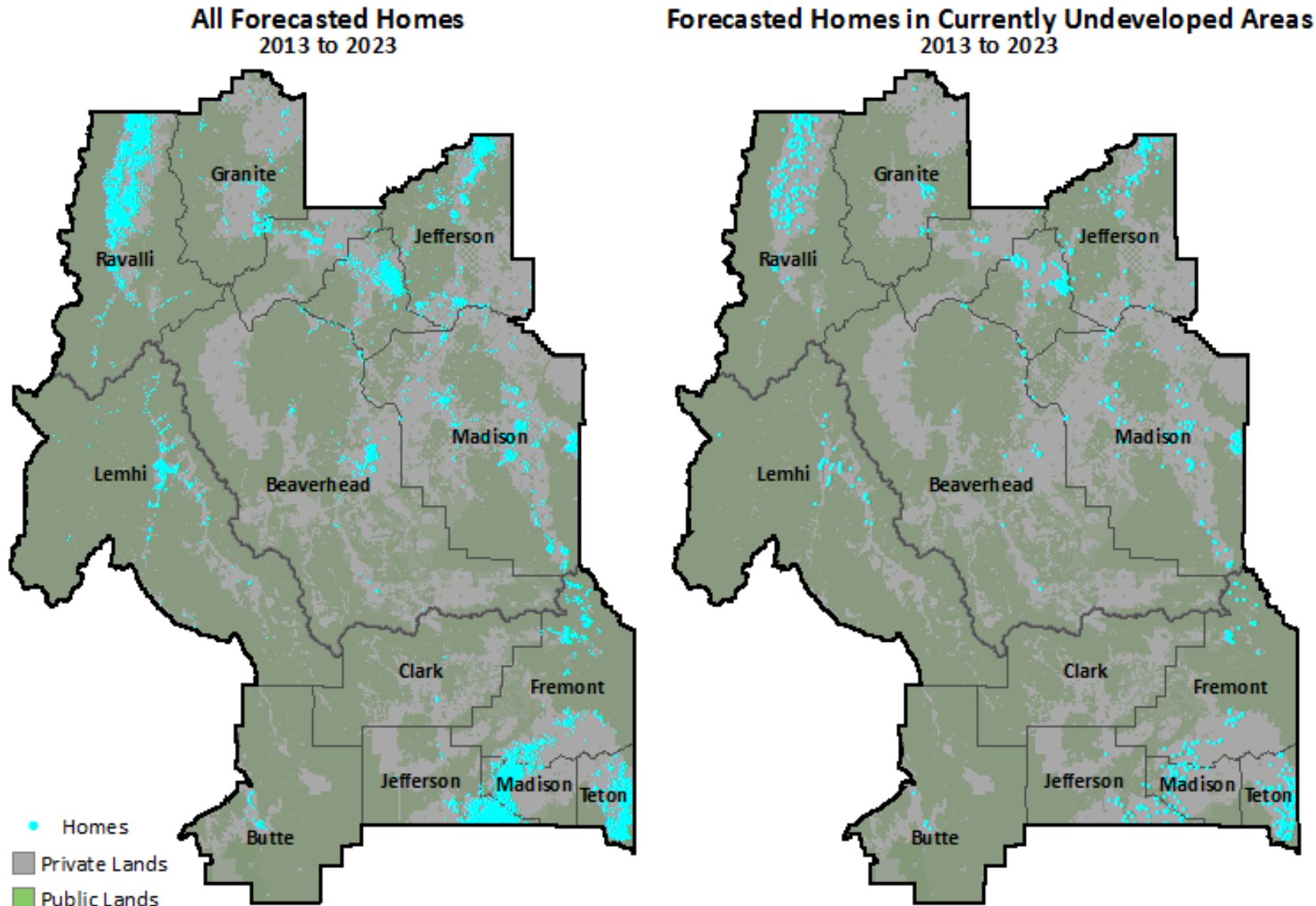


2

Housing consumes land



Housing development forecast example




3

What can we do with these models?



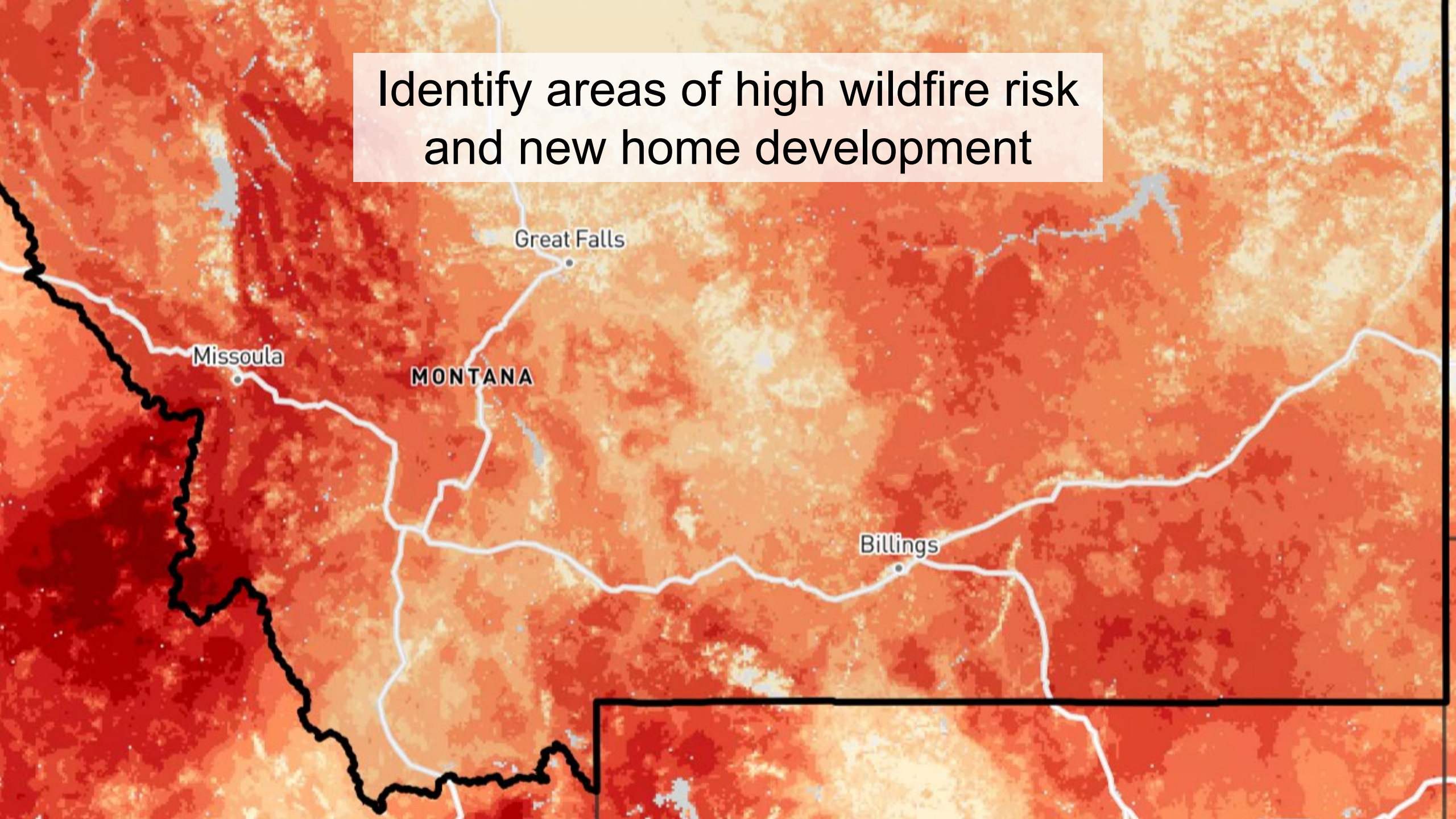


Anticipate which communities face
expensive infrastructure upgrades

An aerial photograph showing a new residential development in a rural valley. The development features several large, modern houses with dark roofs and light-colored siding, interspersed with green lawns and clusters of evergreen trees. A network of light-colored, unpaved or gravel roads winds through the area, connecting the various property lots. The surrounding landscape is a vast, open valley with rolling green hills and fields. In the far distance, a range of rugged, blue-toned mountains stretches across the horizon under a sky filled with white and grey clouds. A semi-transparent white rectangular box is overlaid on the upper portion of the image, containing the text "Identify working lands likely to face development pressures".

Identify working lands likely to face
development pressures

Identify areas of high wildfire risk
and new home development





Three things to remember:

- 1. Data are readily available!**
- 2. Lots to learn from historic patterns**
- 3. Rural and urban patterns differ dramatically.**

Thank you!

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