

Maricopa Association of Governments

Population and Projections Overview

September 26, 2006

Agenda

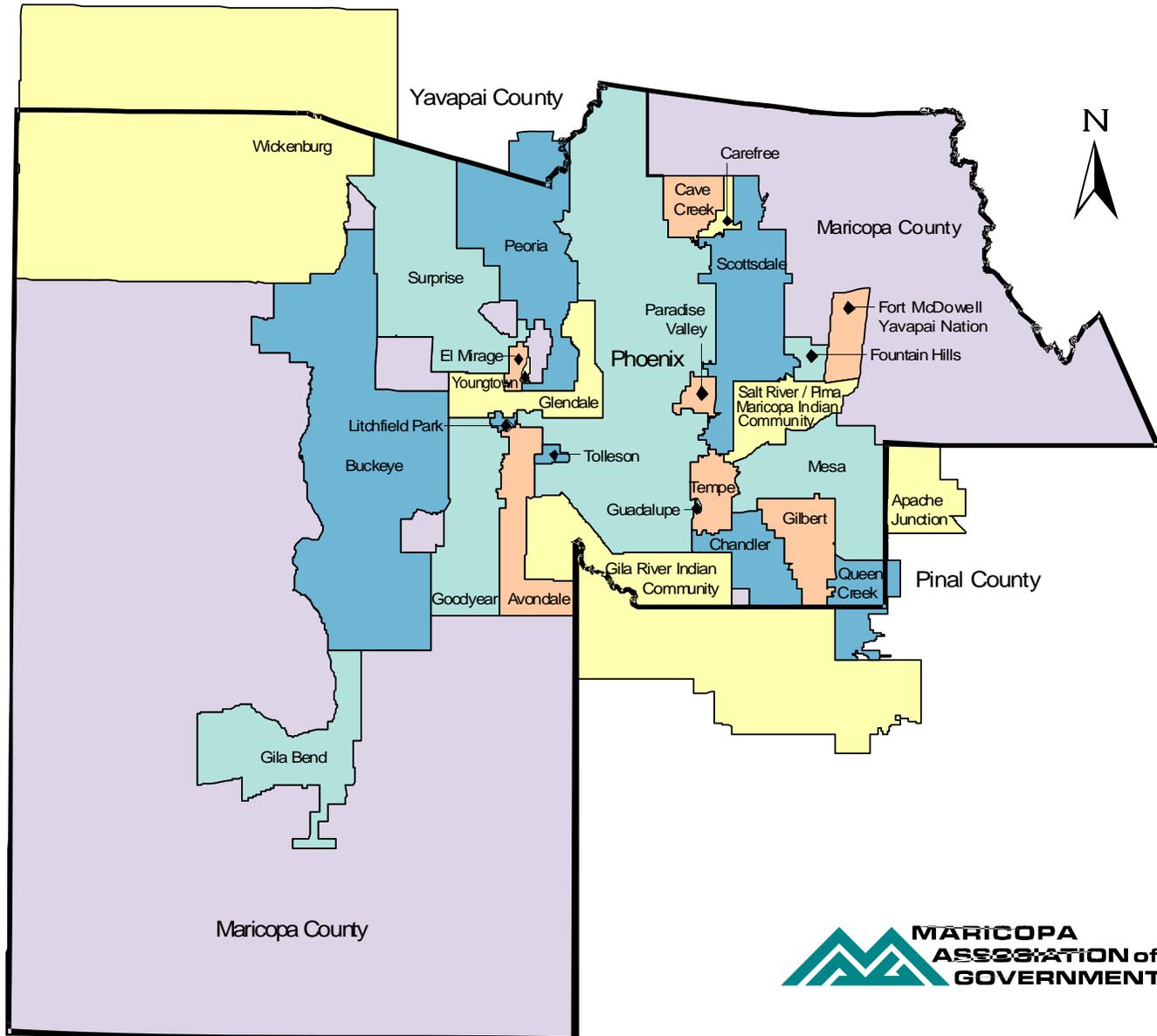
- **What is MAG?**
- **Population Estimates**
- **Socioeconomic Projections**
- **Future Directions**

What is MAG?

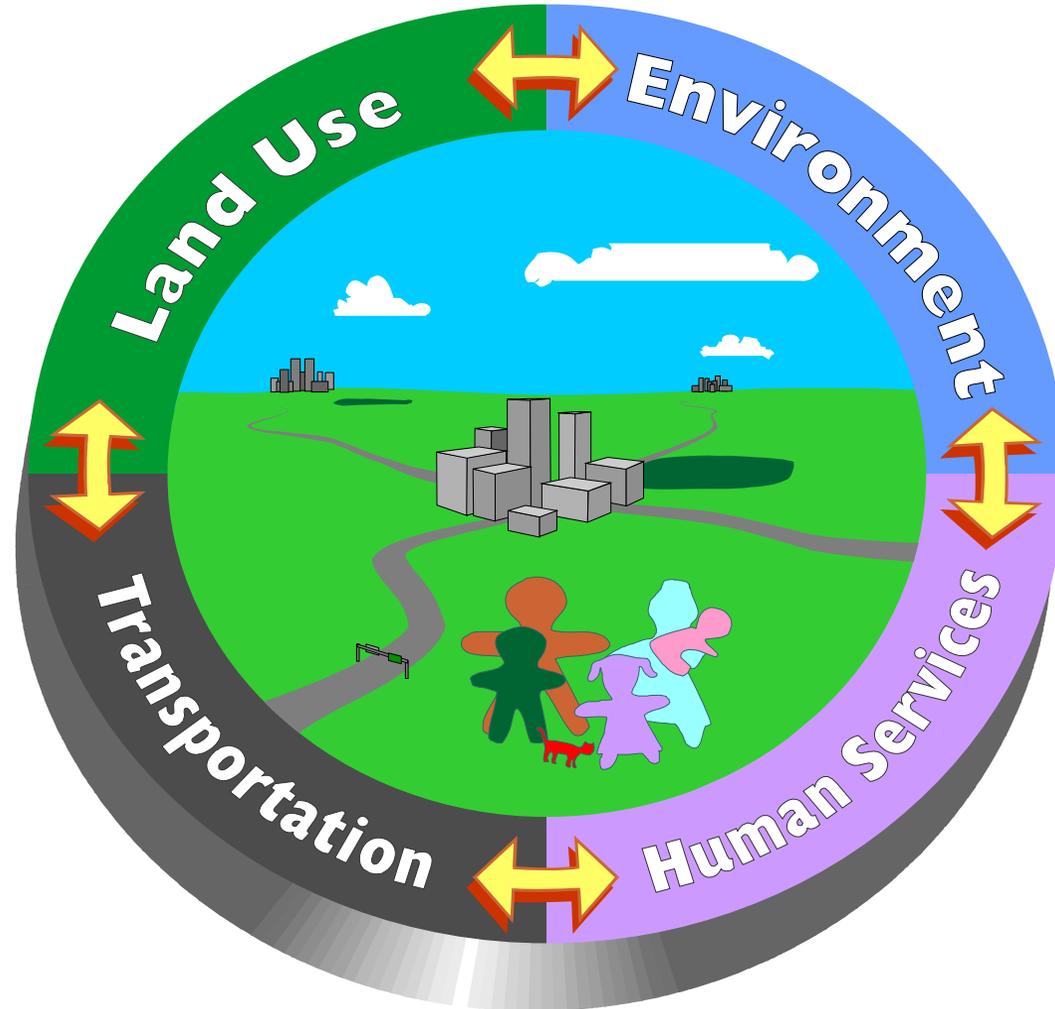
What is MAG?

- **Council of Governments**
- **Metropolitan Planning Organization**
- **Its member agencies**
- **Staff to**
 - Technical committees
 - Management Committee
 - Regional Council

MAG Membership



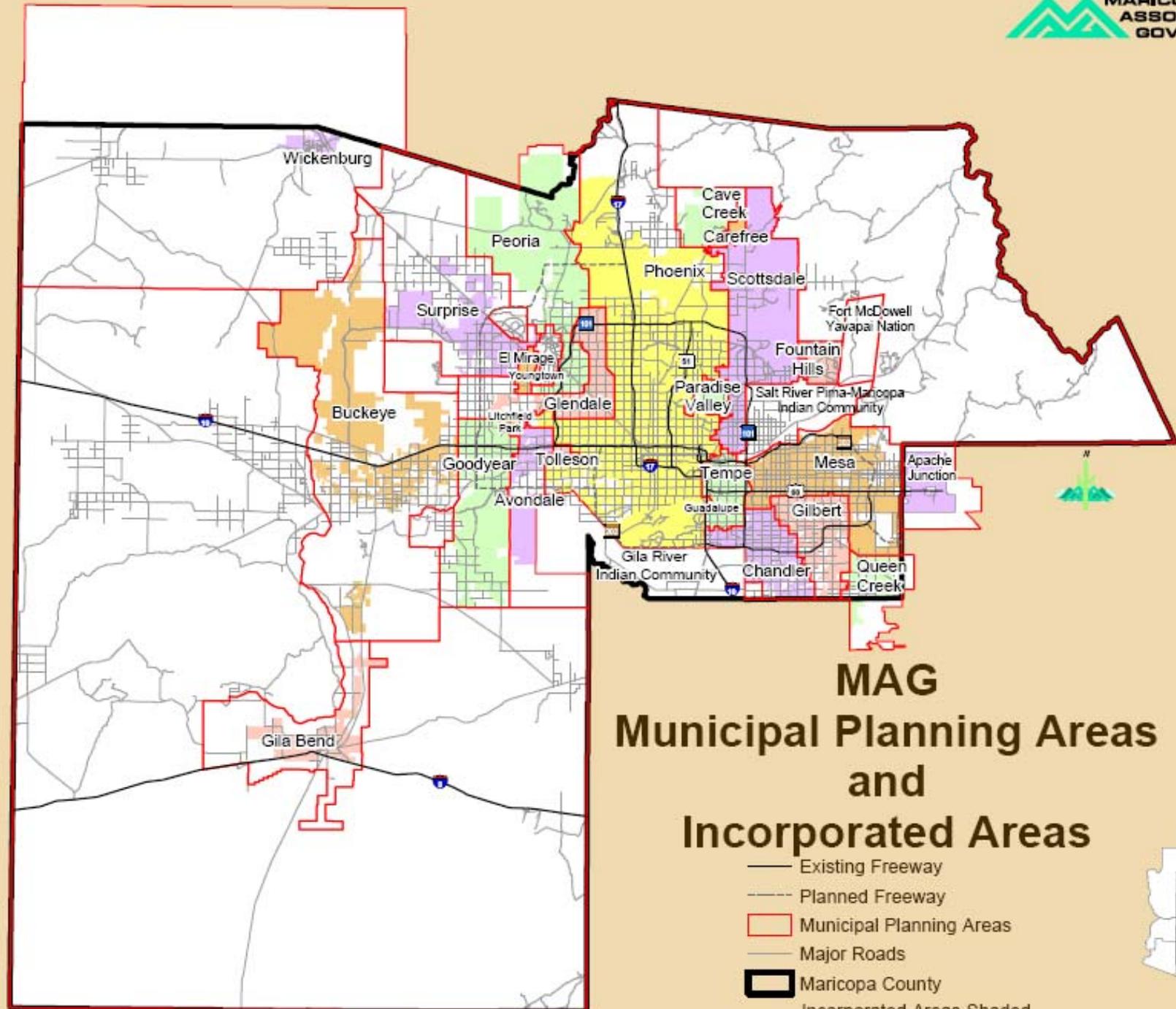
MAG Planning Activities



Population Estimates

Basic Estimates Framework

- Prepared for July 1 of each year
- Account for resident population
- Use Census as base
- Based on current corporate limits



Why Are We Required to Prepare Population Estimates?

- **State law requires preparation of estimates each year**
- **Executive Order 95-2**
 - DES responsible for preparing state and county resident population estimates
 - COGs authorized to prepare municipality estimates

How Are Estimates Used?

- **To distribute \$23 million in lottery funds to cities and towns**
- **To calculate expenditure limitations where appropriate**
- **To provide consistent base data from which population estimates are calculated for other purposes**

Two Level Estimates Process

- **State and county estimates - DES**
- **Municipality estimates**
 - Other counties – DES
 - Maricopa county – MAG

State and County Estimates

- **Housing Unit Method (70%)**
- **Composite Method (30%)**

How is POPTAC Involved in the Process?

- **Reviews methodology**
- **Supplies data**
 - Residential completions
 - Annexations
 - Group quarters
- **Verifies data**
- **Recommends approval of estimates**

County Estimates

- **Two methods used to estimate population in households**
 - Housing Unit Method (HUM)
 - Composite Method
- **Survey used to estimate population in group quarters**
- **Sum of population in households and in group quarters is resident population**

Housing Unit Method

- **Population in households based on**
 - Number of housing units (2005 units plus new units added to June 30, 2006 - demolitions)
 - Occupancy rates
 - Persons per household
- **Population in group quarters based on survey**
- **Assumptions**
 - Use previous year as base
 - Use occupancy rates and persons per household from Census

Composite Method Assumptions

- **Census ratios used**
- **Ratios are constant over time**
 - School enrollment
 - Drivers licenses
 - Medicare
- **Age distribution of group quarter population constant over time**
- **Data collection methods remain the same from year to year**

Composite Method

- **Different data per age group**
 - 0-4 births minus deaths
 - 5-17 school enrollment
 - 18-64 drivers licenses
 - 65+ medicare

- **Application of ratios**
 - 2000 school enrollment/ population 5-17 from census
 - 2005 school enrollment X ratio = 2005 population 5-17

Review Process

- **MAG Ad Hoc Subcommittee**
- **MAG POPTAC**
- **MAG Management Committee**
- **MAG Regional Council**
- **DES POPTAC**
- **DES Director**
- **Economic Estimates Commission**

Place Estimates: **HUM**

- **Collect HU by jurisdiction from 2005 Census Survey**
- **Add housing units built from Sept 1, 2005 to June 30, 2006**
- **Subtract demolitions from Sept 1, 2005 to June 30, 2006**
- **Add housing units annexed**
- **Derive total housing units for July 1, 2006**

Place Estimates: **Computation**

- **Obtain occupancy rates and persons per household from 2005 Census Survey by jurisdiction**
- **$HU \times \text{occ rate} \times \text{persons per household}$ for each jurisdiction = resident population in households**
- **Adjust population in households for each jurisdiction to county control total**
- **Add population in group quarters derived from survey to each jurisdiction = total resident population and round to nearest 5**

Place Estimates: **Quality Control**

- **Review current year and past year estimates to identify any inconsistencies**
- **Examine percent growth in past year to detect any inexplicable changes**
- **Check accuracy of input data**
- **Make manual calculations to corroborate estimates table**

Place Estimates: **Review Process**

- **Review of estimates by MAG POPTAC Ad Hoc Subcommittee and MAG POPTAC**
- **Draft estimates forwarded to Management Committee for consideration**
- **Draft estimates forwarded to Regional Council for consideration**
- **Estimates forwarded to State POPTAC for consideration**

Socioeconomic Projections

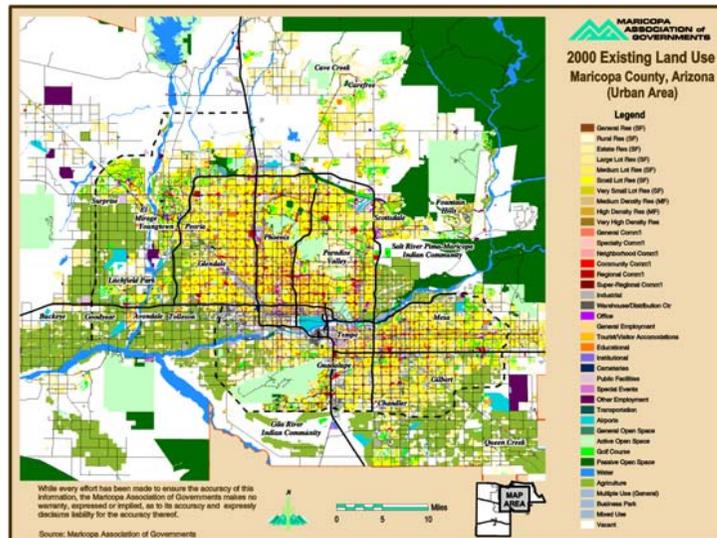
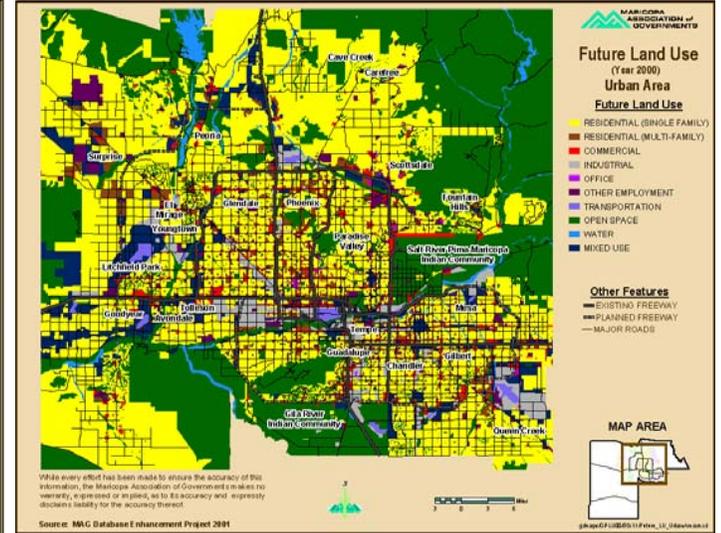
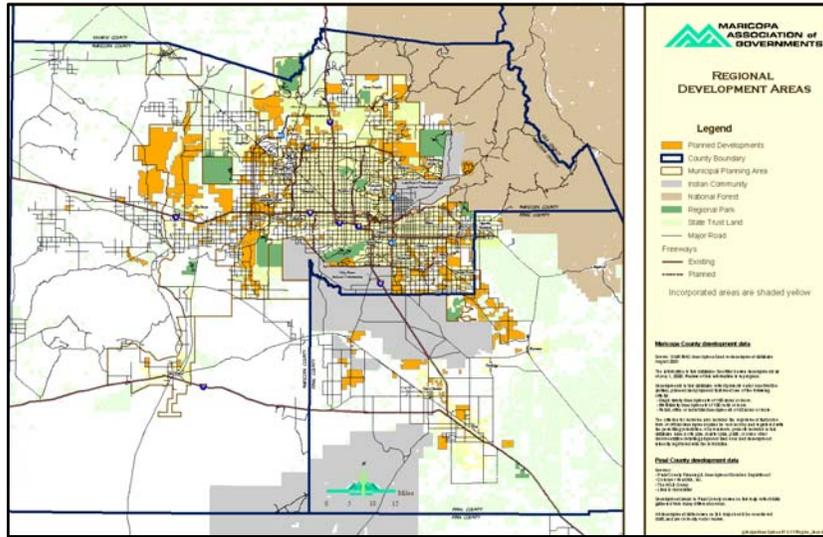
Why Are Projections Required?

- **Executive Order 95-2**

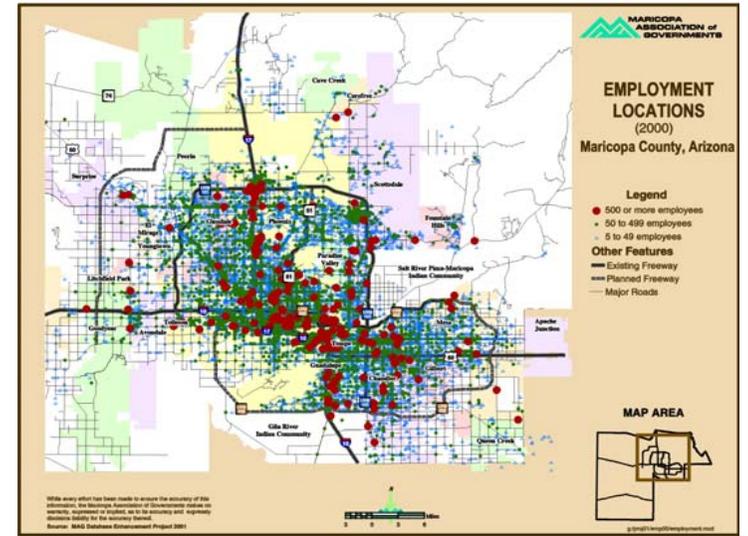
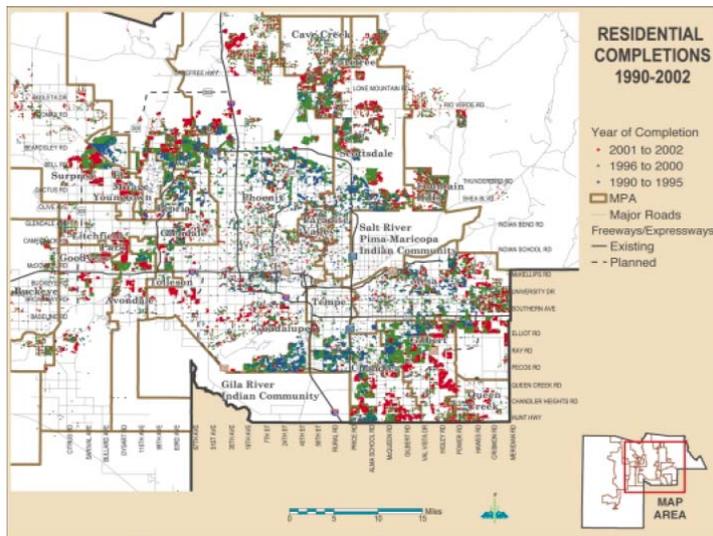
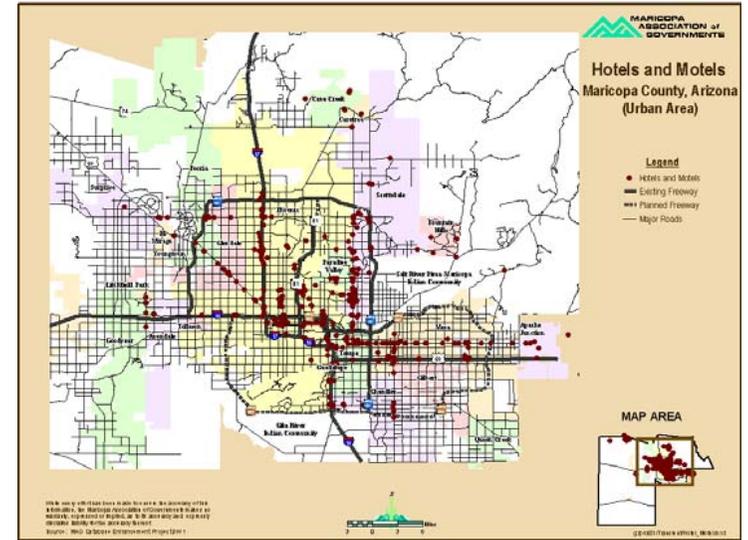
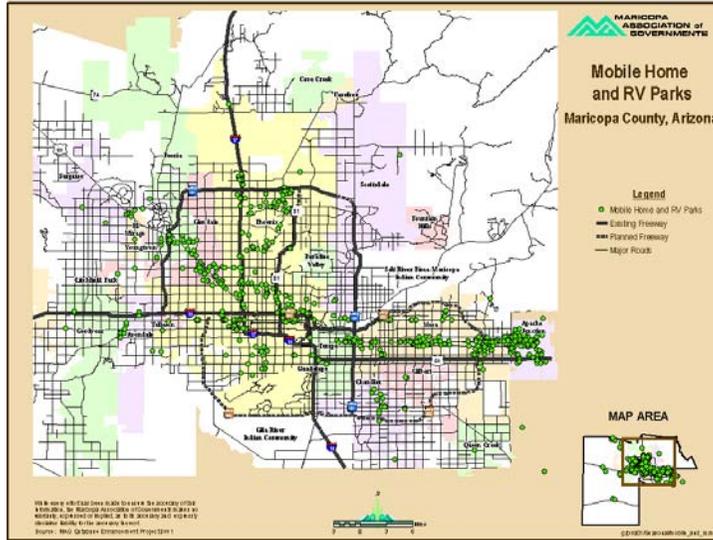
- Requires official socioeconomic projections
- DES prepares state and county estimates and projections with input from the state Councils of Governments (COGs)
- COGs may prepare subcounty estimates and projections for their respective counties

Data Collection Activities

Member Agencies Provide or Review Land Use Information



And Local Information



We Ensure Consistency with the Most Recent Census

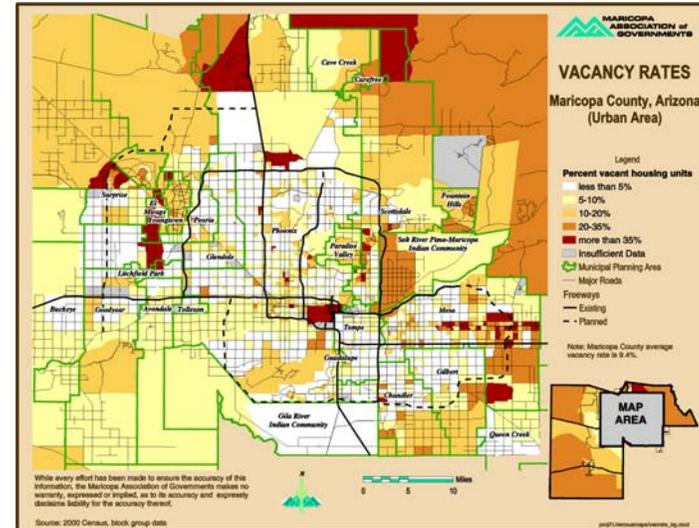
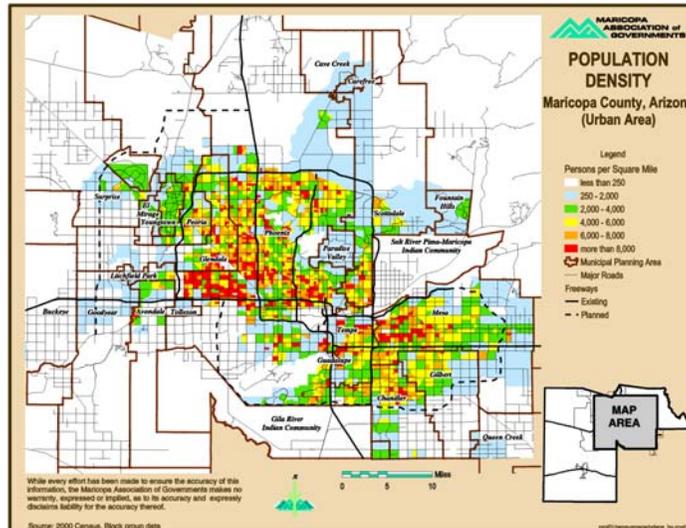
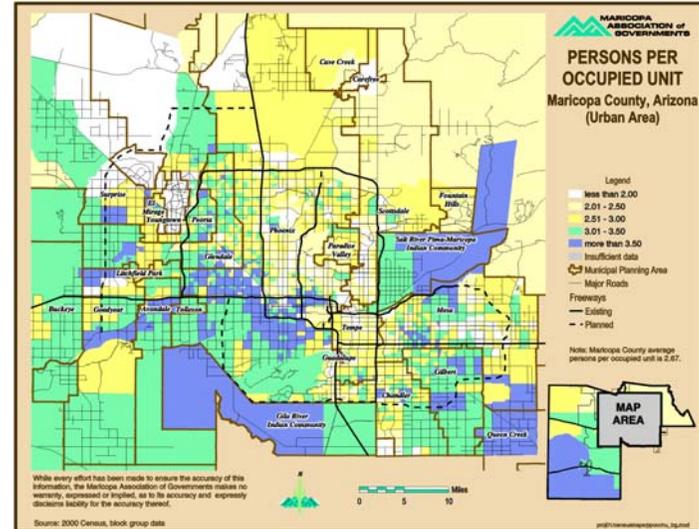
CENSUS
2005
COUNT ME IN!

1980
Census of Population

1970
CENSUS OF POPULATION

1995 SPECIAL CENSUS
We're Counting on You!

United States
Census
2000
THIS IS YOUR CHANCE
DON'T LEAVE US BLANK



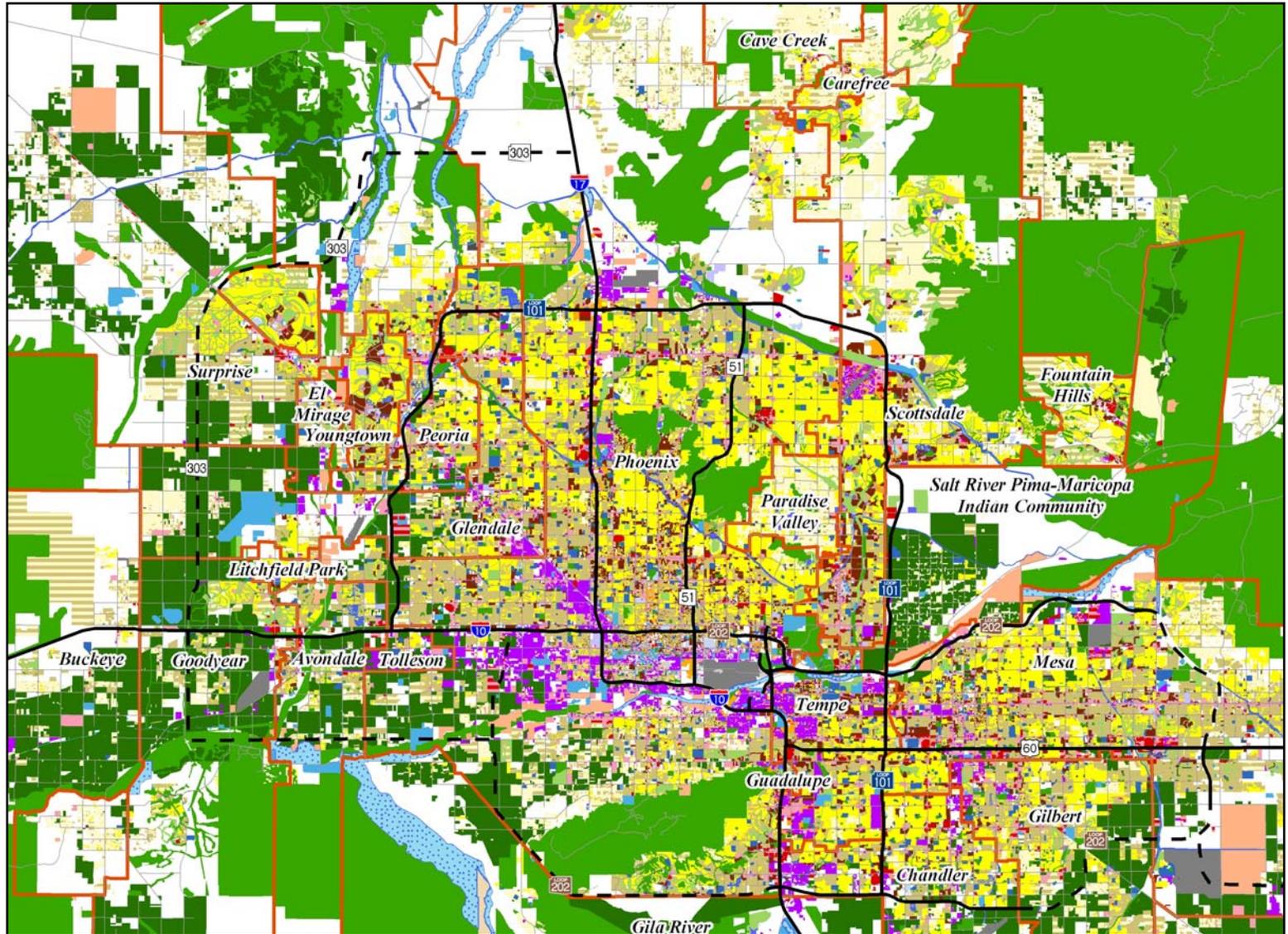
We Have Population-based Surveys and Assumptions

- Occupancy rates over time
- Population per household over time
- Units per acre by land use
- Seasonal population
- Transient population
- Post High School enrollment

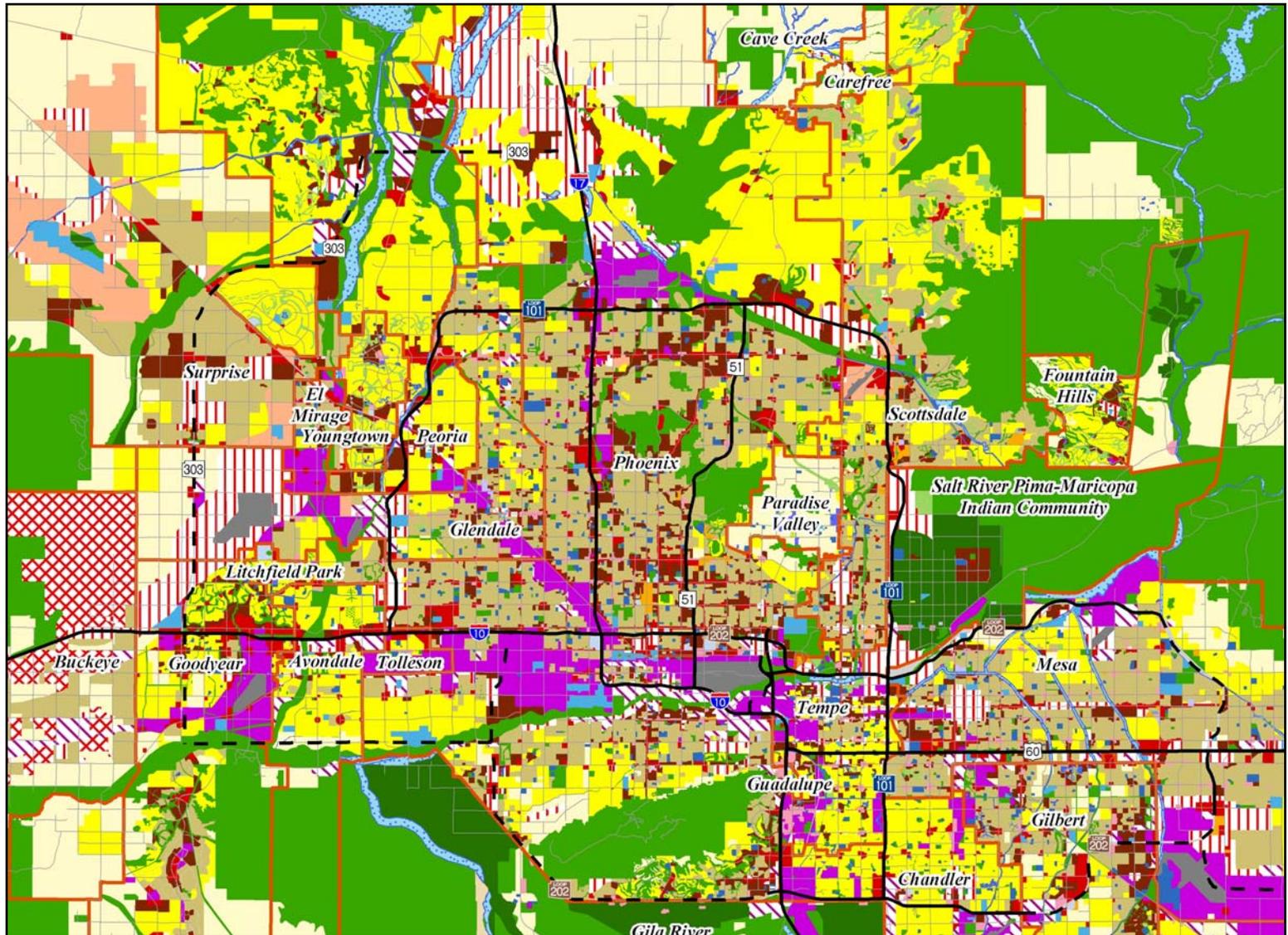
And Employment-based Surveys and Assumptions

- Employment/Population ratios
- Employment control totals by sector
- Floor area ratios by land use
- Employment per 1000 square feet by employment category/land use
- Work at home employment
- Construction employment
- Non basic employment

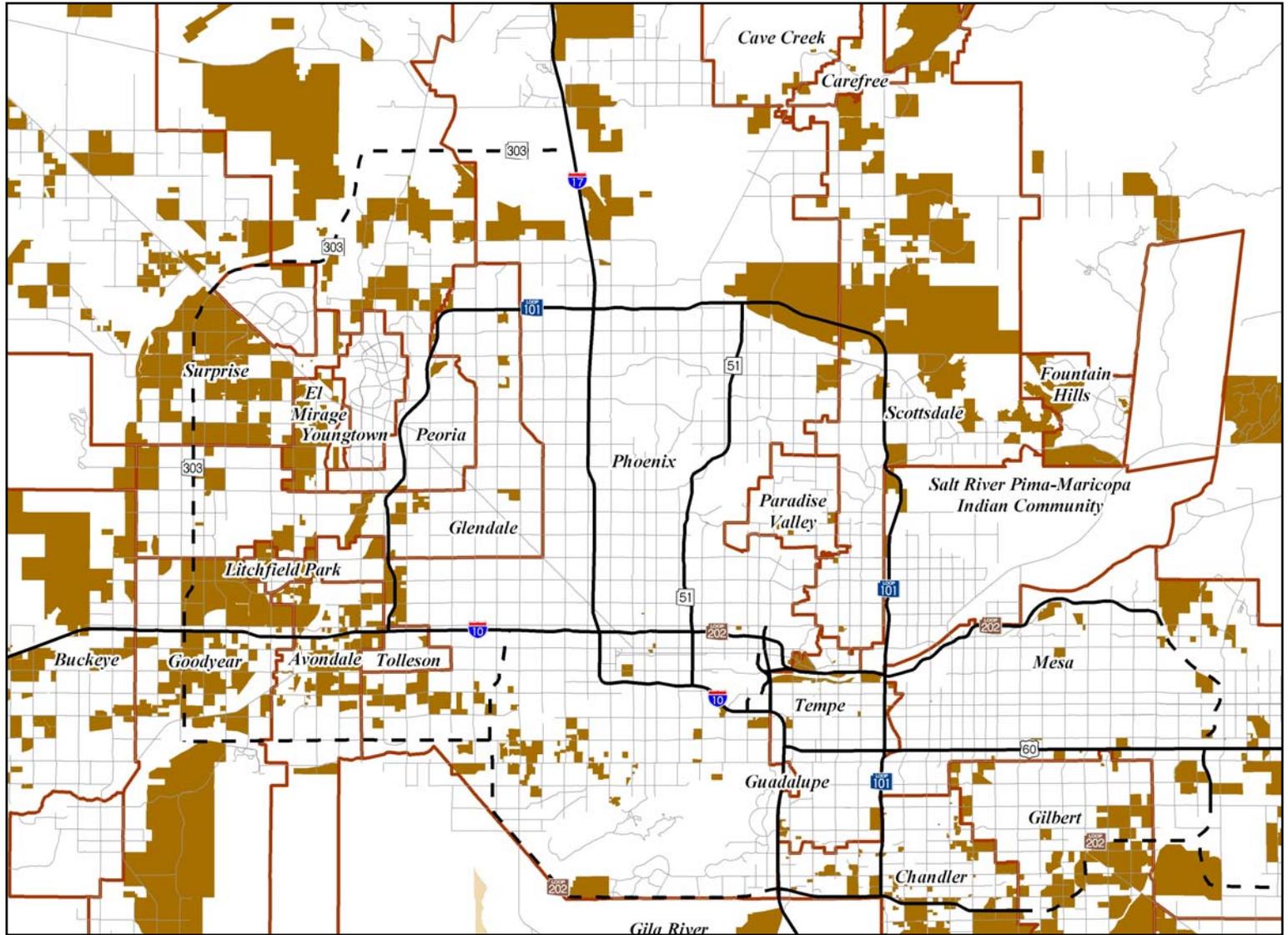
Existing Land Use Determines Available Land



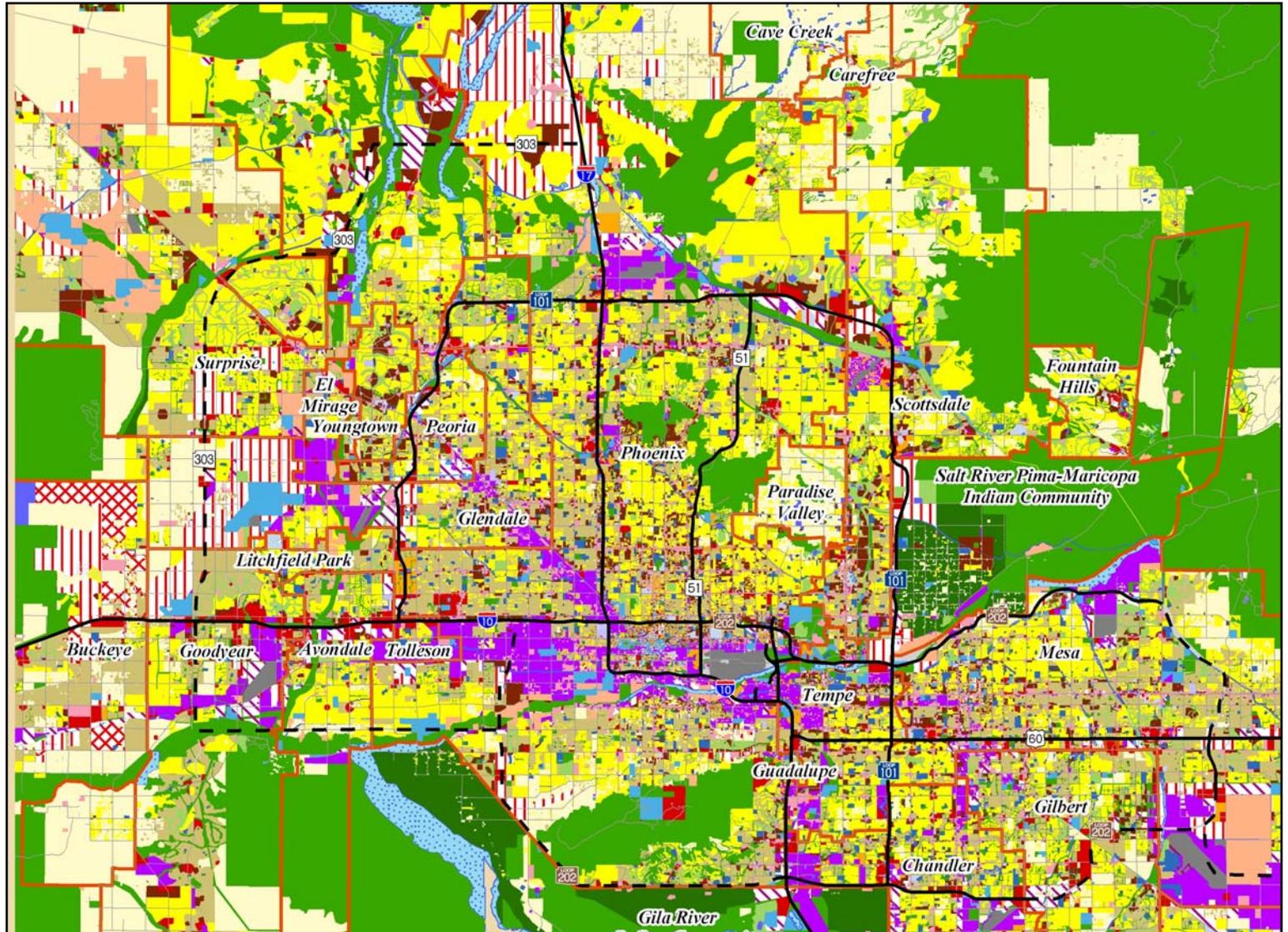
General Plans Are an Indication of the Future



Developments Identify Near Term Growth



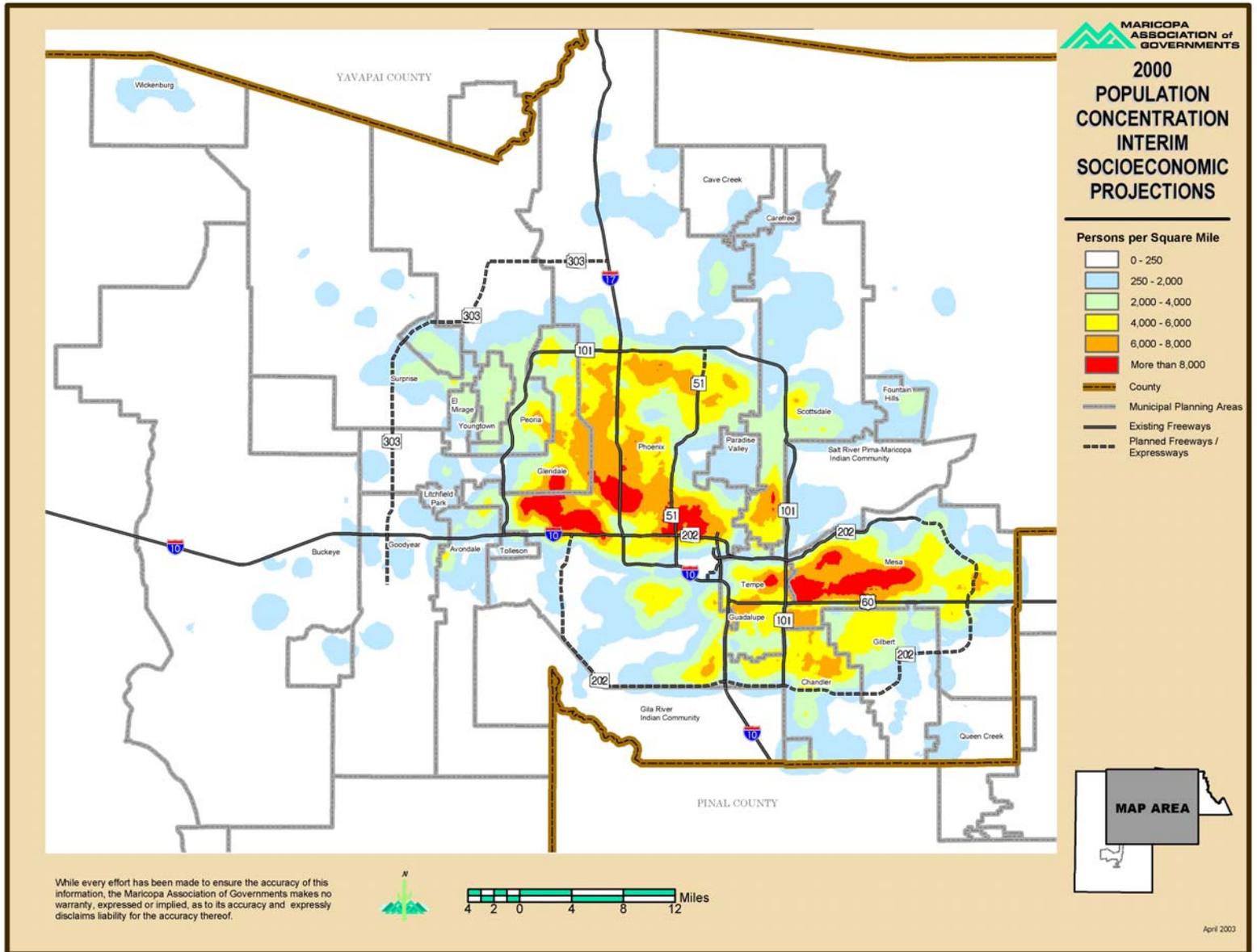
All Combined are the Vision of the Future



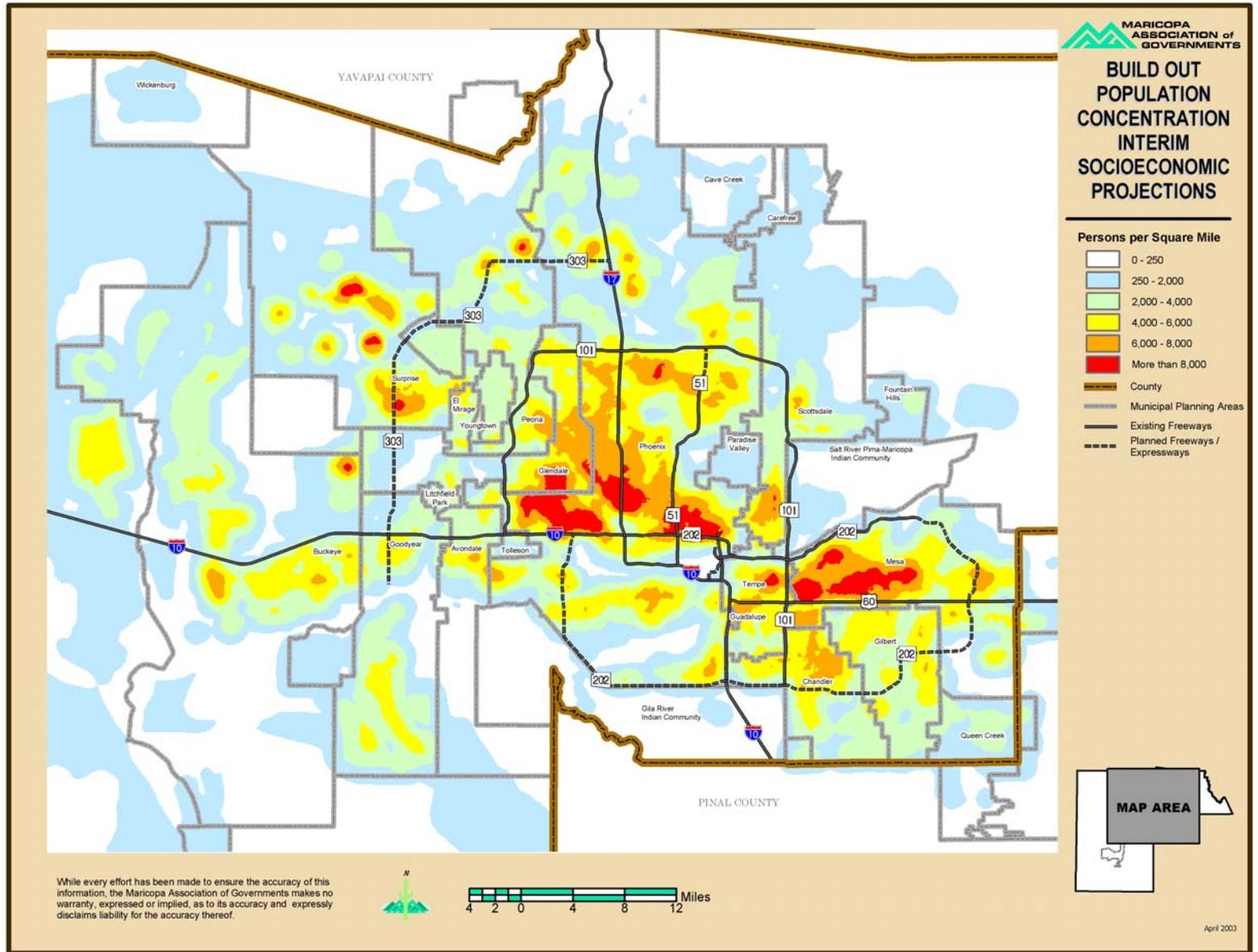
MAG Member Agency Involvement

- **Review of all data and GIS coverages on an ongoing basis**
- **Review of Census data**
- **Review of all surveys**
- **Agency input on target densities, mixed use categories, persons per household and occupancy rates over time, etc.**
- **POPTAC approval of all assumptions and their related methodologies**

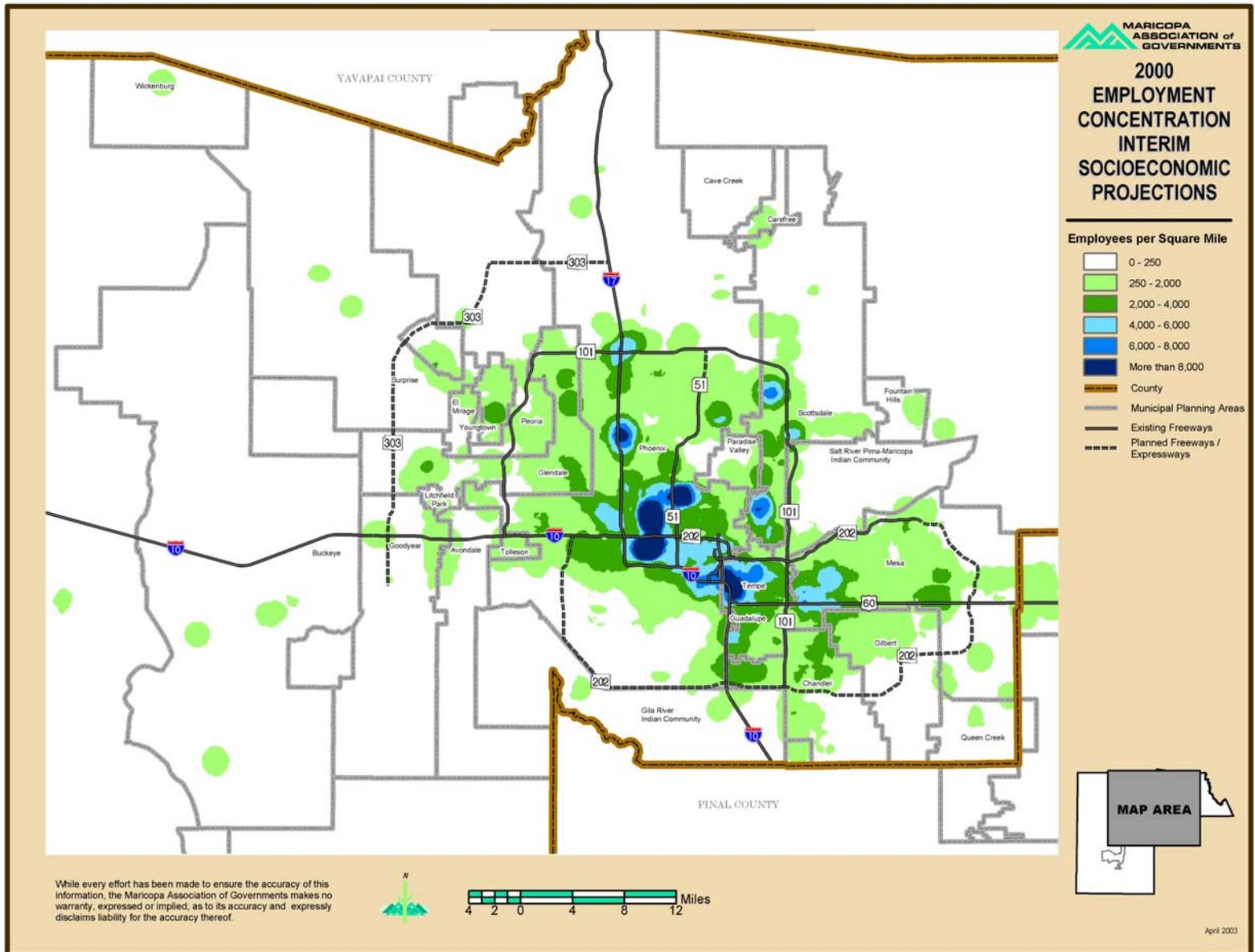
Population Base



Population Capacity



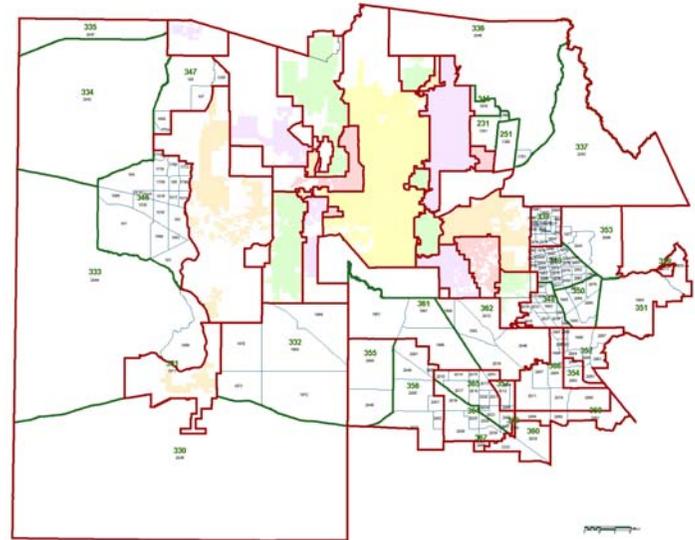
Employment Base



Current Socioeconomic Projections Modeling

MAG Geography (2003)

- In Maricopa County MPAs:
 - Municipal Planning Area (MPA) 27
 - Regional Analysis Zone (RAZ) 147
 - Traffic Analysis Zone (TAZ) 1868
- In Pinal County MPAs:
 - MPAs 7
 - RAZs 22
 - TAZs 133



Current Three-tier Modeling Process

Maricopa County Control Totals
DES Demographic Model
ASU/UofA/DOC State Economic Strategy
REMI Economic Model

Sub-Regional Model
DRAM/EMPAL
Spatial Distribution Model

Small Area Model
SAM-IM
Small Area Allocation

County Level Models

- **Population**
 - Births
 - Deaths
 - Net Migration

- **Employment**
 - By Industry
 - By Sector
 - office
 - retail
 - industrial
 - public
 - other

Sub-county Regional Analysis Zone Model

- **Spatial Allocation Model**
- **Projections in five year intervals**
- **Uses such factors as**
 - Available land
 - Current population and employment
 - Accessibility
- **County projections used as control totals for**
 - Employment by Sector
 - Households

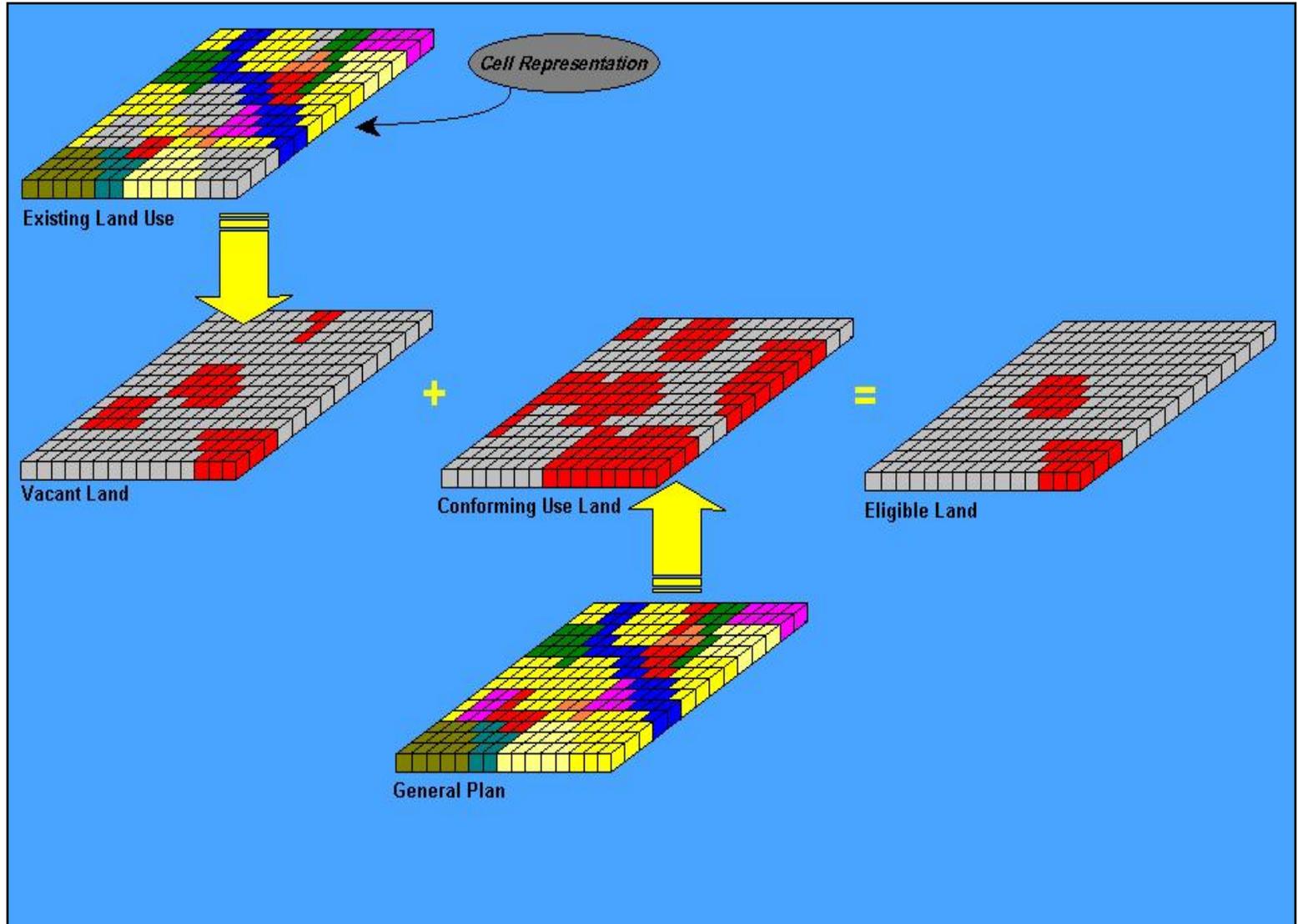
Subarea Allocation Model – Information Manager (SAM-IM)

- **Totally within GIS**
- **County or sub-county control totals are used**
- **Each land use dealt with separately and in any order**
- **Different factors influence growth of each land use**
- **Grid based – currently 1 acre**

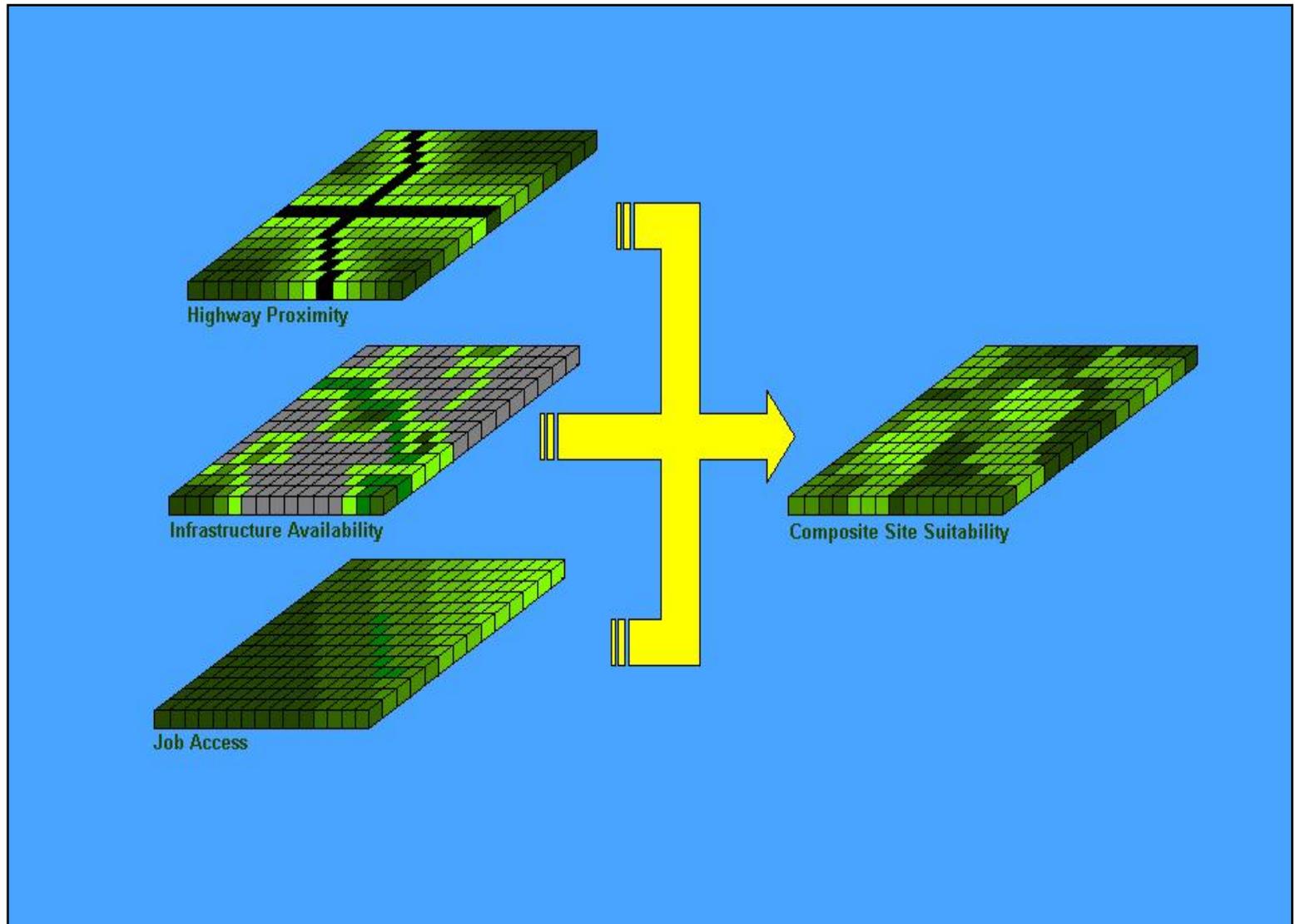
SAM-IM Special Features

- **Development velocity curves determine timing of construction in active developments**
- **Automatic policy overrides to set minimum and maximum growth in each zone**
- **Scenario capability without rerunning entire model**
- **Feedback loops with sub-county model and with transportation model**

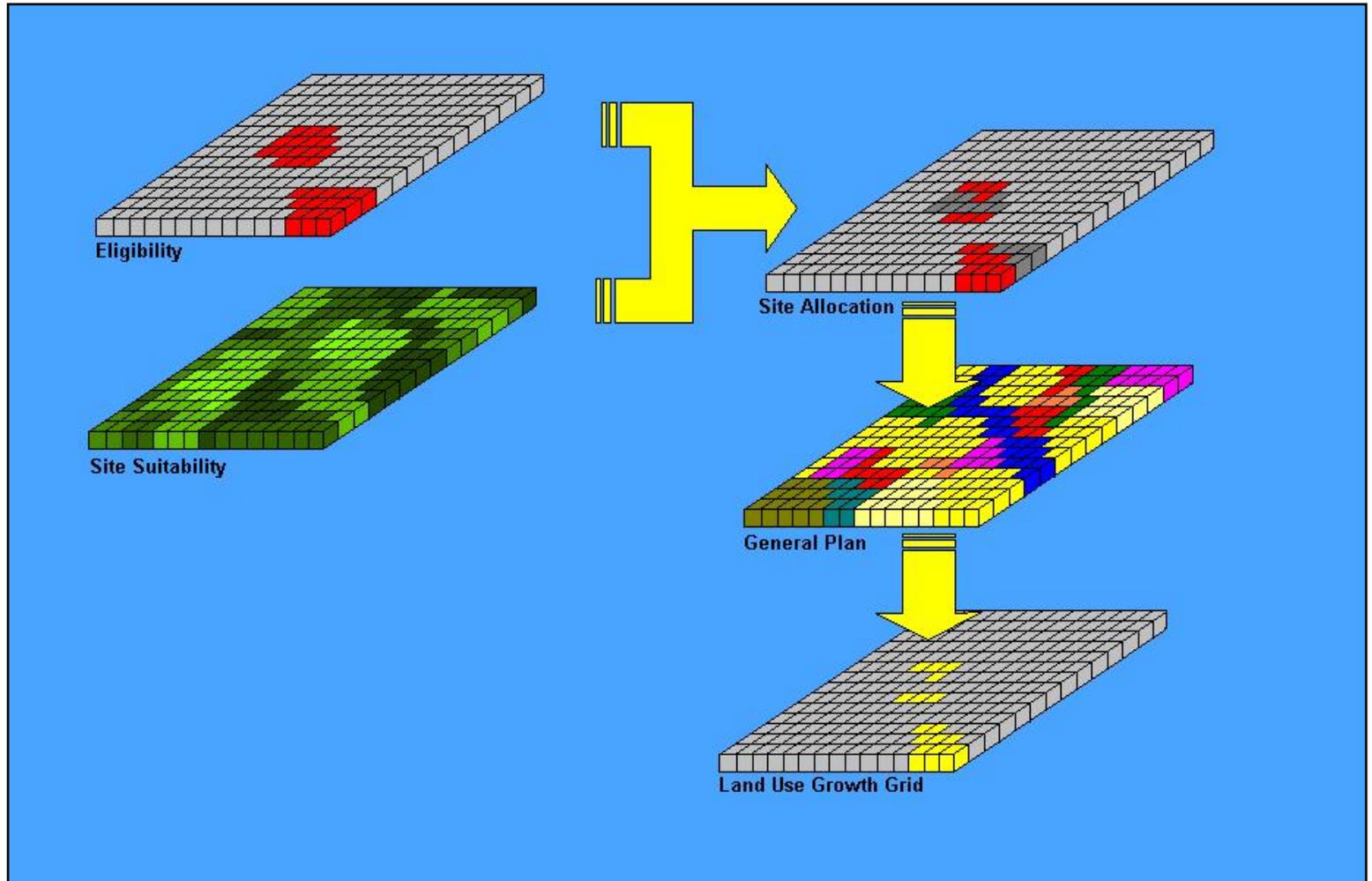
Determine Eligibility to Absorb Growth (by Land Use)



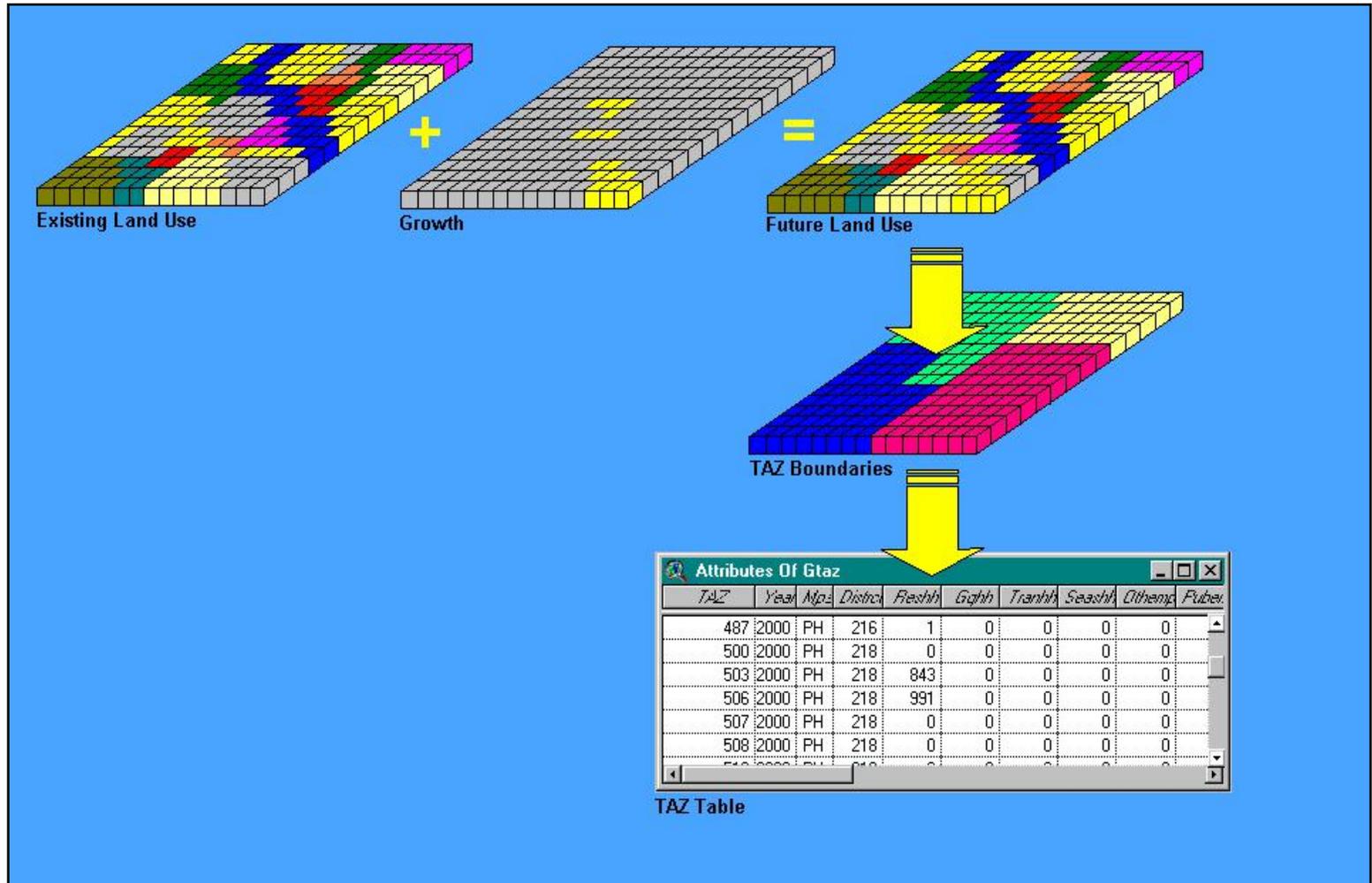
Identify Growth Factors and Perform Suitability Evaluation



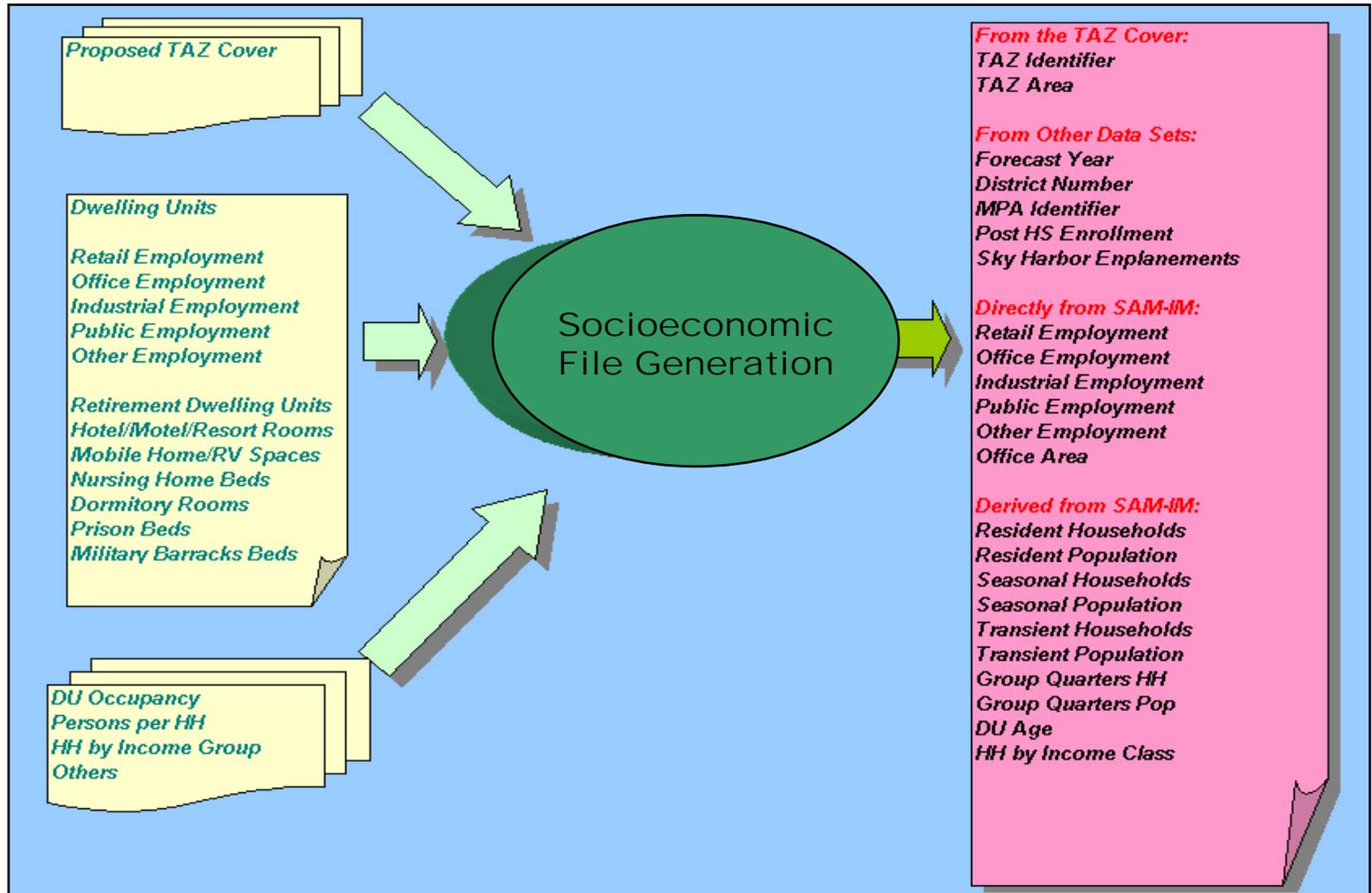
Prioritize Allocation of Sites to Eligible Lands and Limit by Control Totals



Create Land Use Map for Time Period and Sum to any Geography



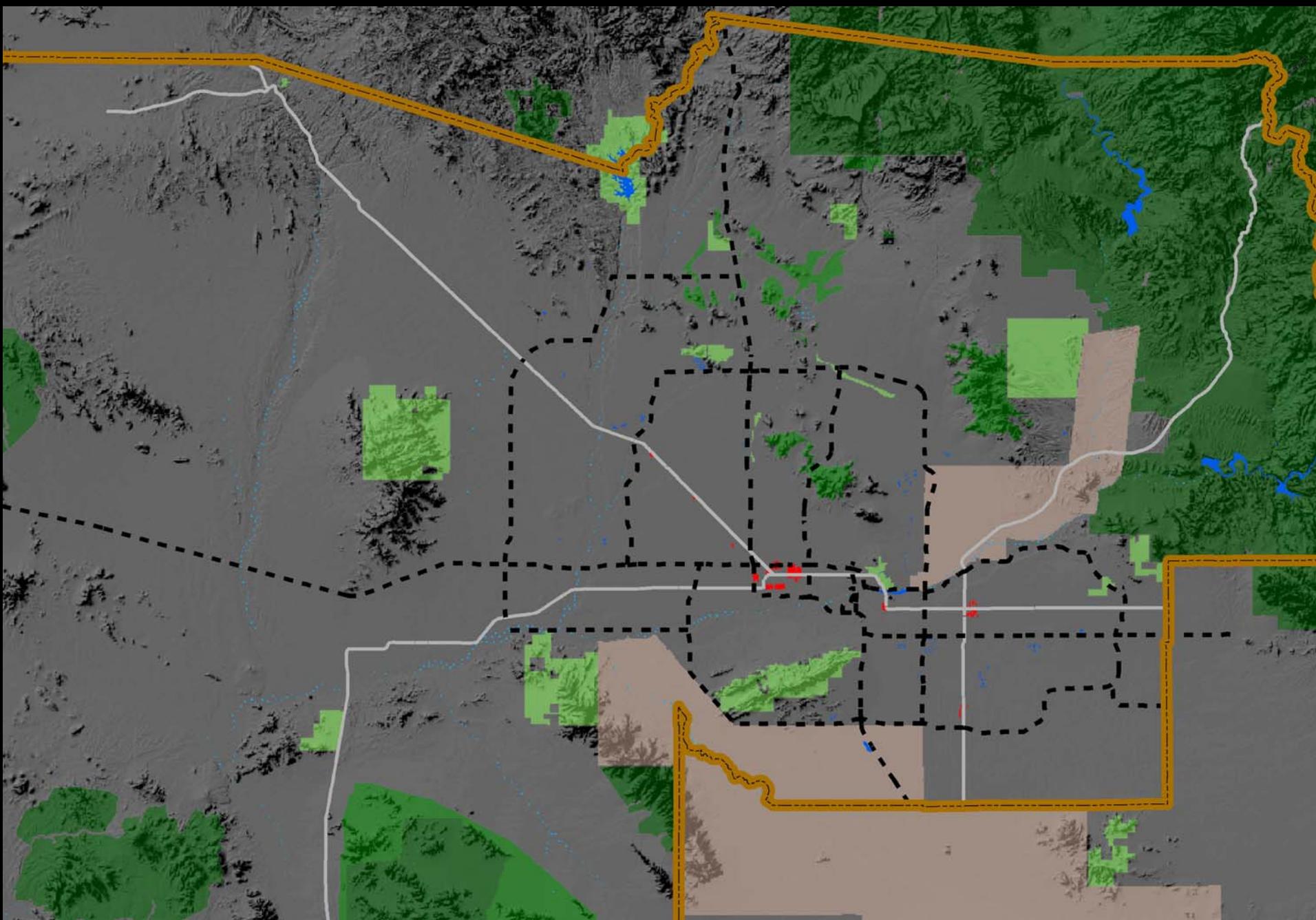
Socioeconomic File Generation For any Geography, any Output Format



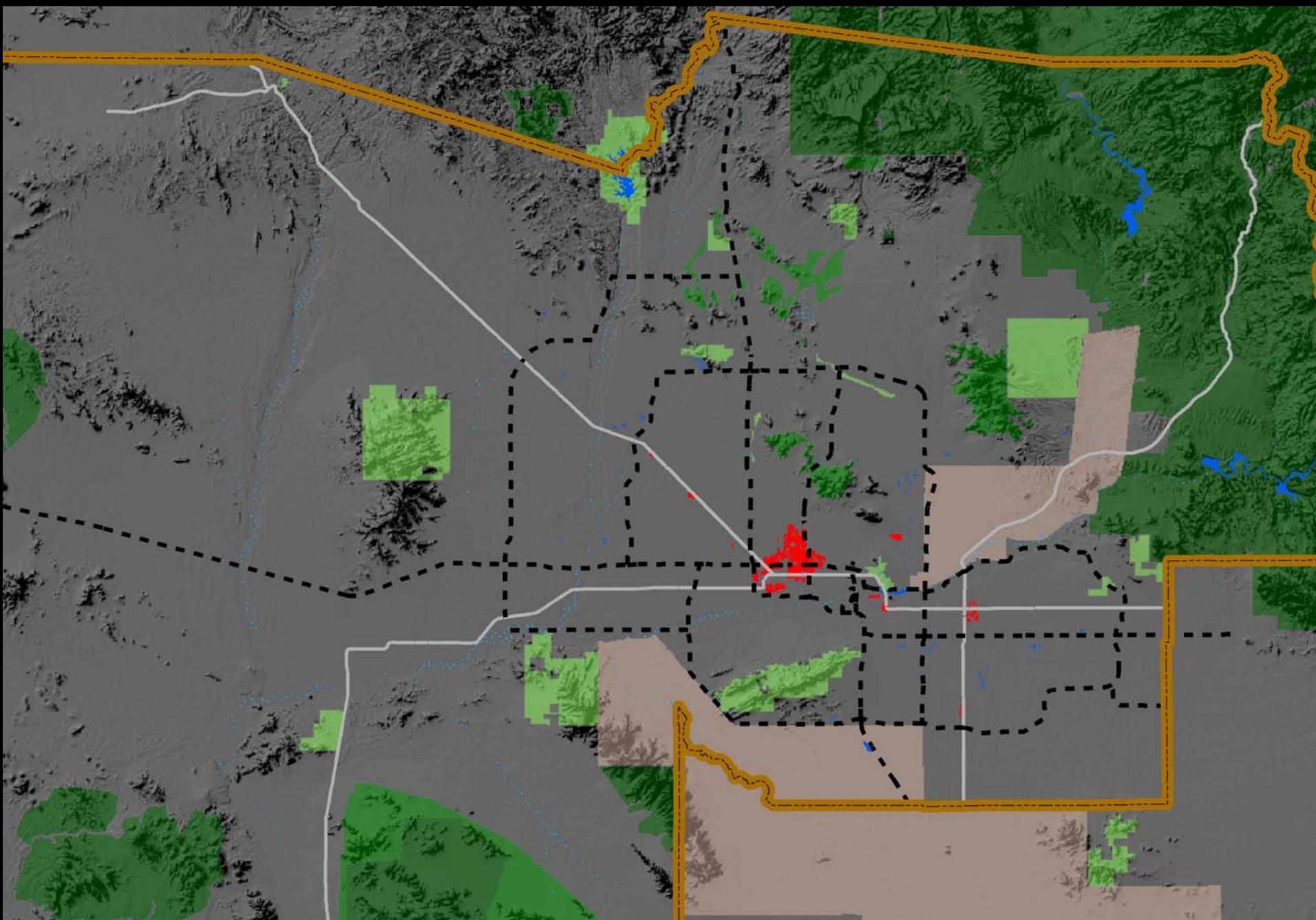
Projections for any Length Time Period

- **Process is iterative**
- **Output for one time period becomes input to the next**
- **All GIS coverages can be maintained for each time period**

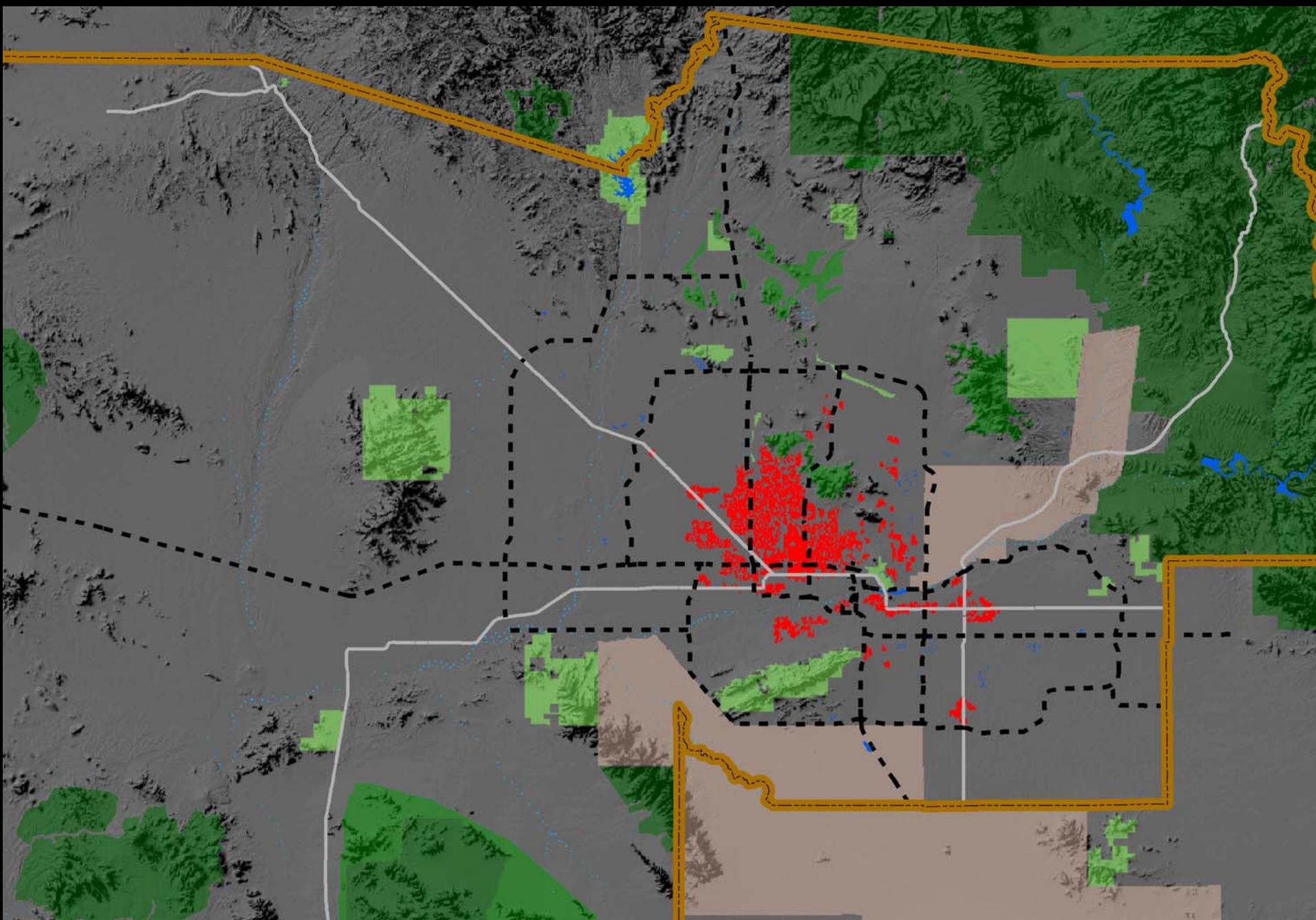
1912



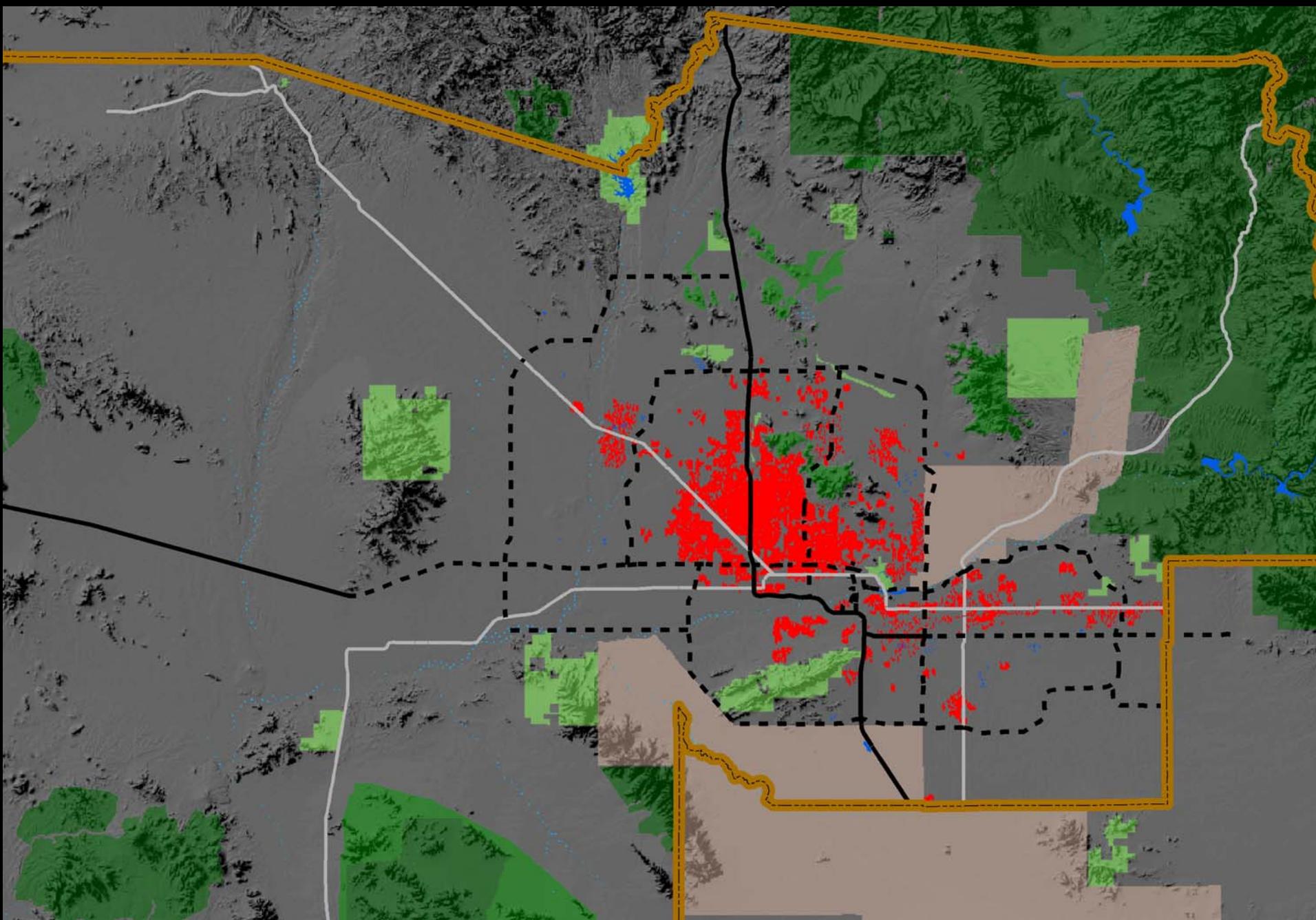
1934



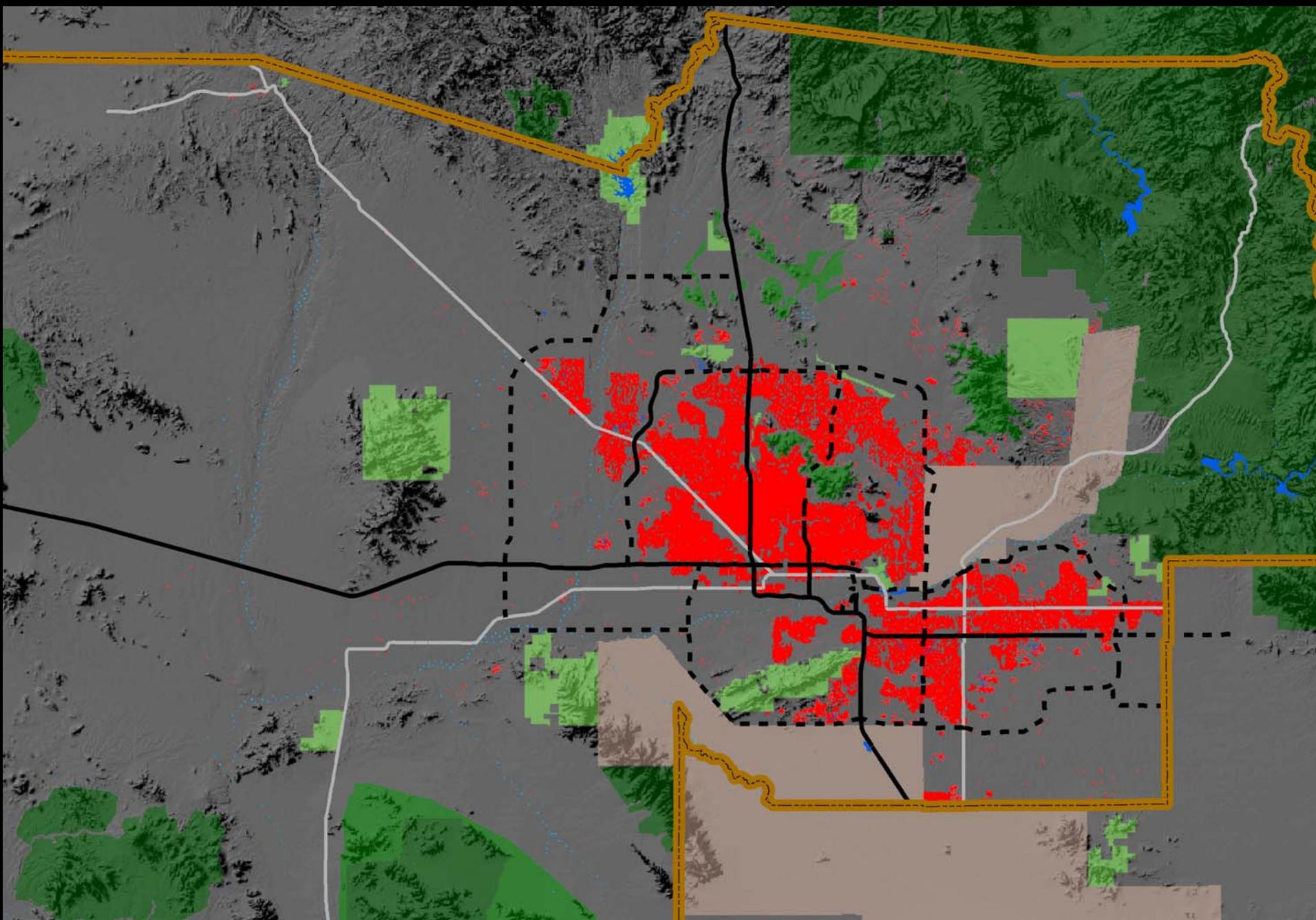
1955



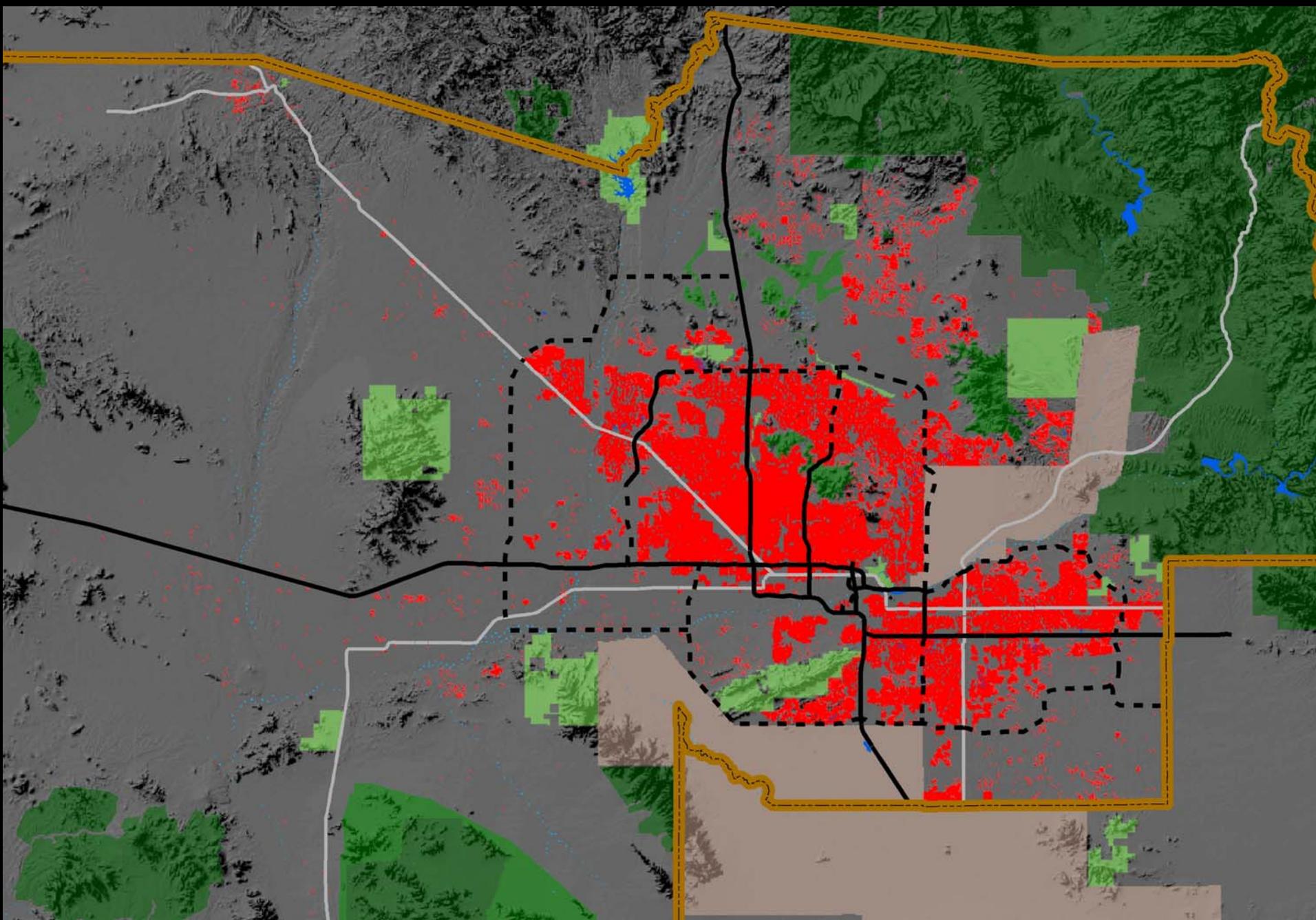
1975



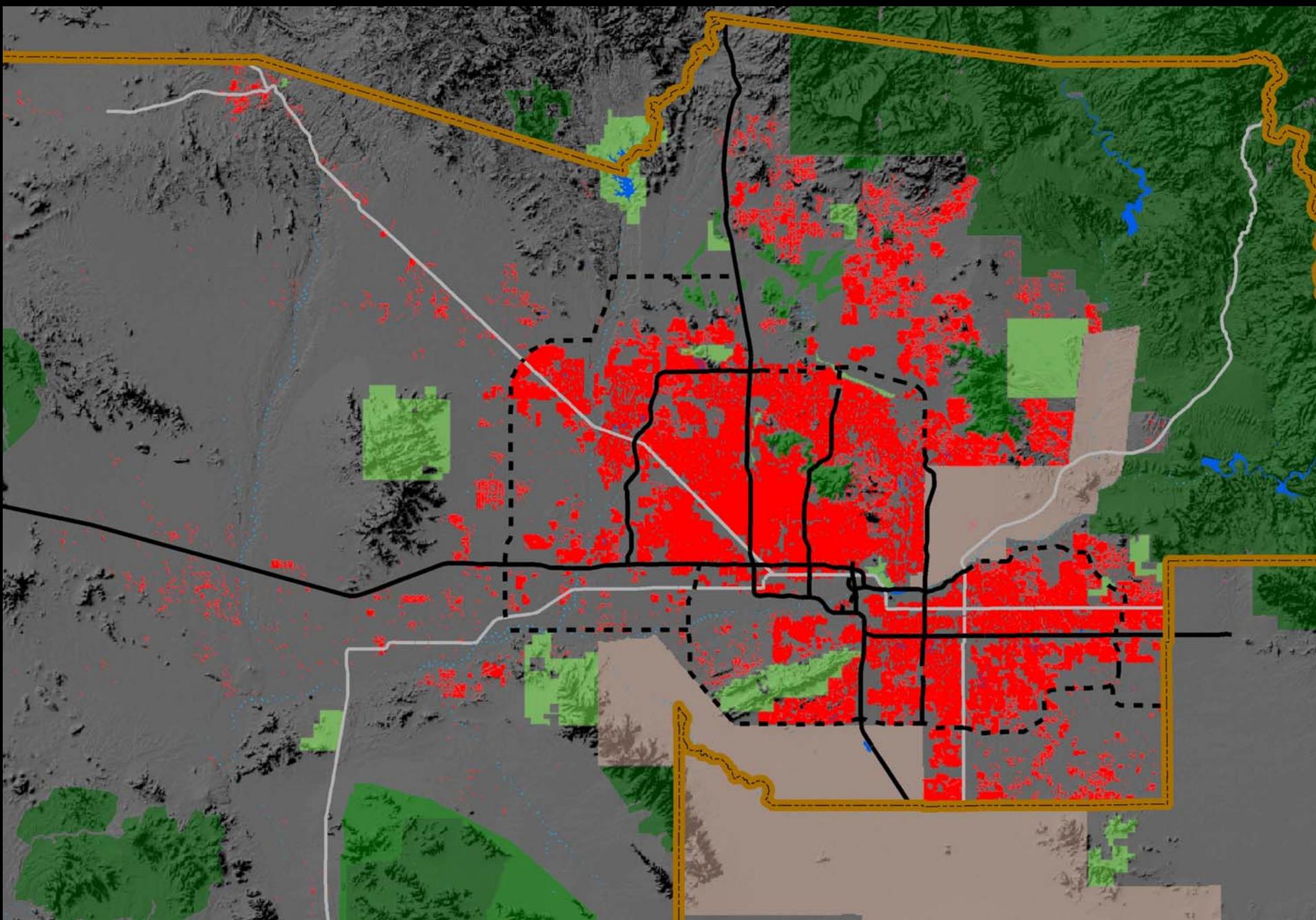
1990



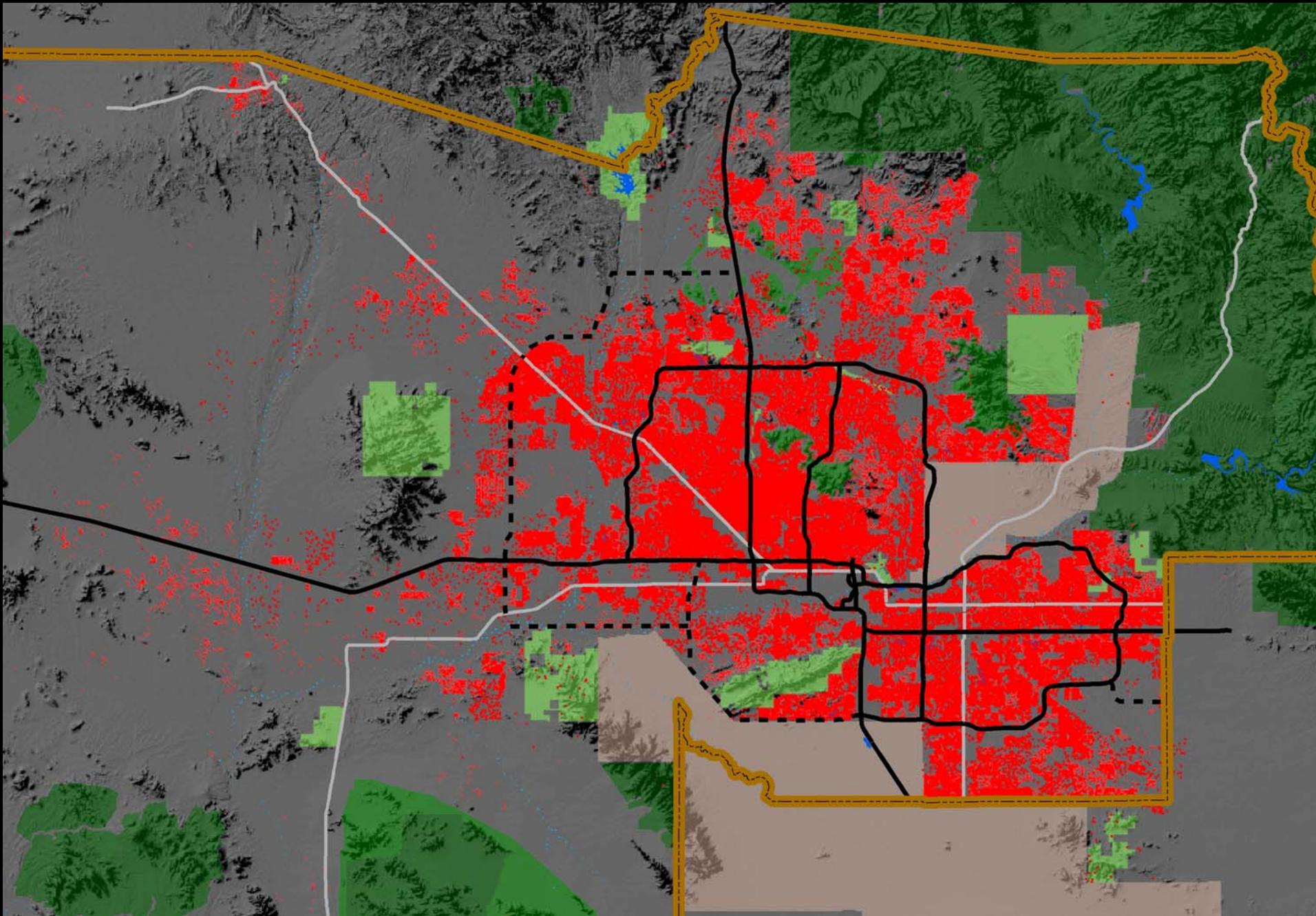
1995



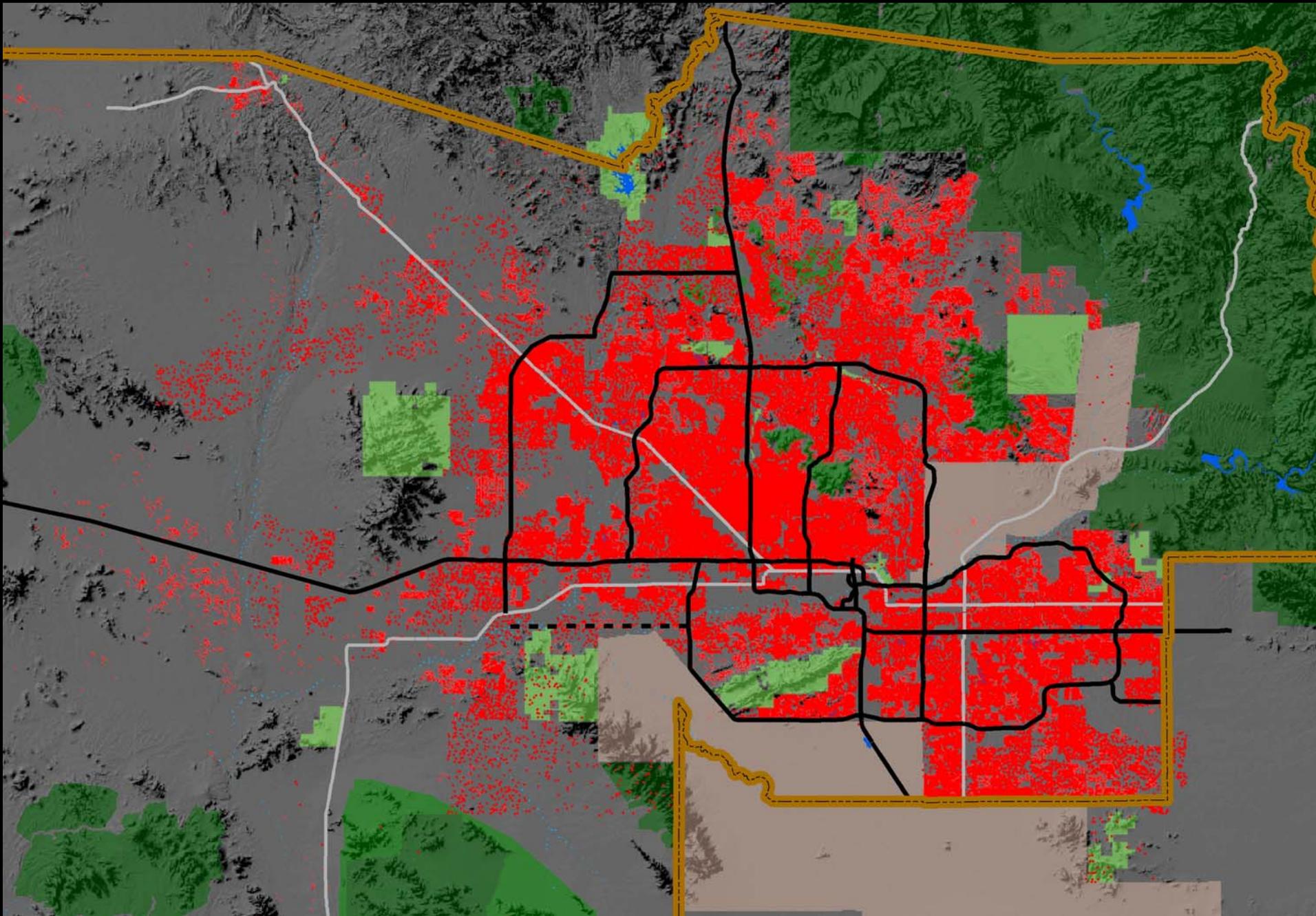
2000



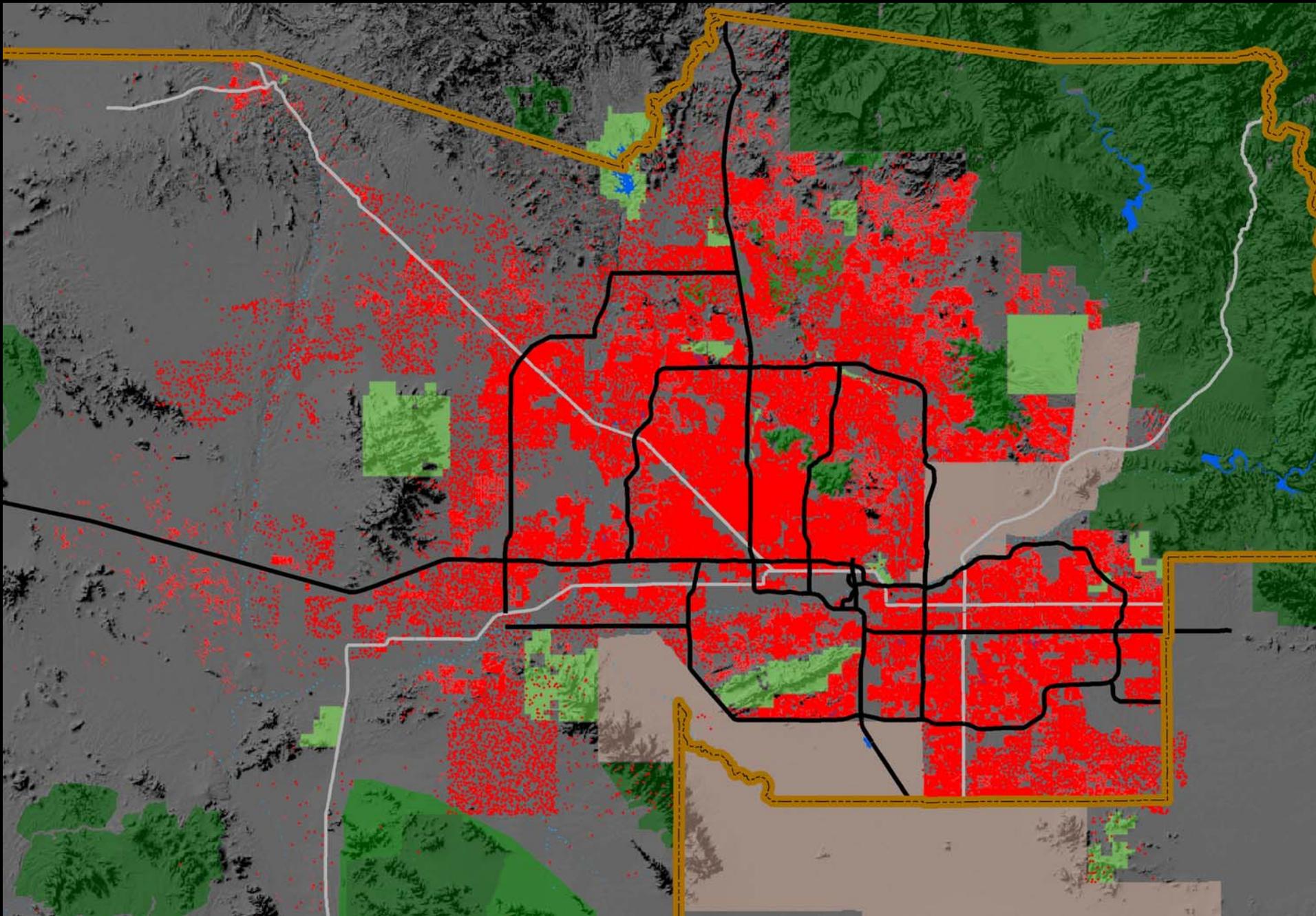
2010



2020



2030



Future Socioeconomic Projections Modeling

What It Is?

- **Tools to create, edit, manage other tools**
- **Tools to model, analyze, summarize, visualize**
- **Ability to project land use, population, employment, other socioeconomic variables in GIS environment**
- **Different installations, different methodologies**
- **Module approach – plug and play**

Three Main Modules

Tool
Manager

- **Library of tools**
 - **Similar to ESRI ToolBox and ModelBuilder**

Data
Manager

- **Manage databases**
 - **Similar to ESRI ArcCatalog**

Project
Manager

- **Links tools with data**
 - **Creates projects and scenarios**

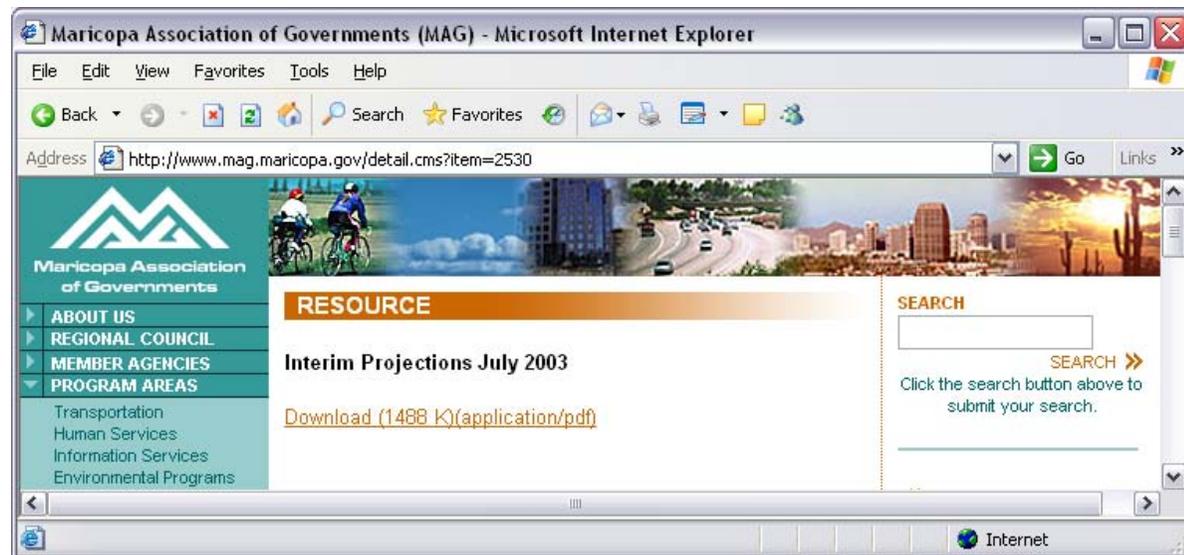
Projections on the Web

Interim Projections 2003

www.mag.maricopa.gov/detail.cms?item=2530

Documentation describing the projections process in detail

www.mag.maricopa.gov/detail.cms?item=2531



For More Information

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