

# AZ-SMART - OVERVIEW

Arizona's Socioeconomic Modeling, Analysis, & Reporting Toolbox

MAG POPULATION AND TECHNICAL ADVISORY COMMITTEE (POPTAC)  
JANUARY 24, 2012



# AZ-SMART – OVERVIEW

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- Socioeconomic Modeling at MAG
- AZ-SMART:
  - What Is It?
  - Data Model
  - Simulation Model Process
- 2012 Projections: Model and Data Review Process



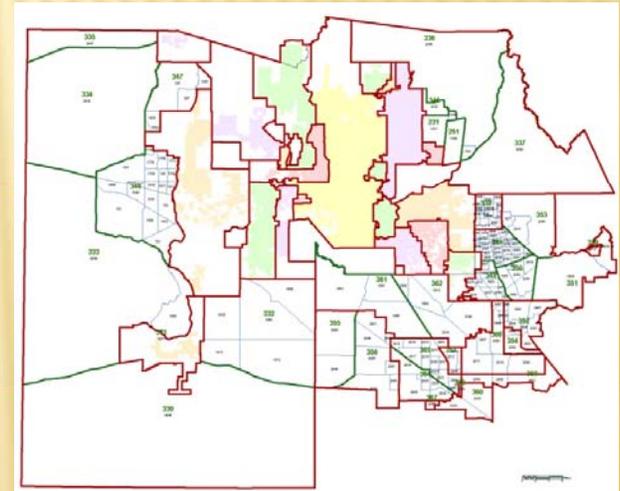
# MODELING @ MAG

- ❑ Have been producing official sub-regional projections
  - ❑ Over 30 years
  - ❑ Last set in July 2007
  - ❑ Executive Order 2011-04 – Projections prepared every 3 to 4 years
  - ❑ Based on DES county control totals
    - ❑ Working with AZ State Demographers Office and Council for Technical Solutions

- ❑ 2012 MAG geographies currently being developed

- ❑ 2007 Geographies
  - Municipal Planning Area (MPA)
  - Regional Analysis Zone (RAZ)
  - Socioeconomic Analysis Zone (SAZ)

28  
148  
1955



- ❑ MAG Approval Process

- ❑ POPTAC
- ❑ Management Committee
- ❑ Regional Council

- ❑ 40+ variables projected

- ❑ Housing units, households, population in households and group quarters
- ❑ Employment by 5 land use and 2 other categories
- ❑ Employment by 15+ NAICS categories
- ❑ Additional variables like seasonal, transient population, etc.



# AZ-SMART

Model System & Data



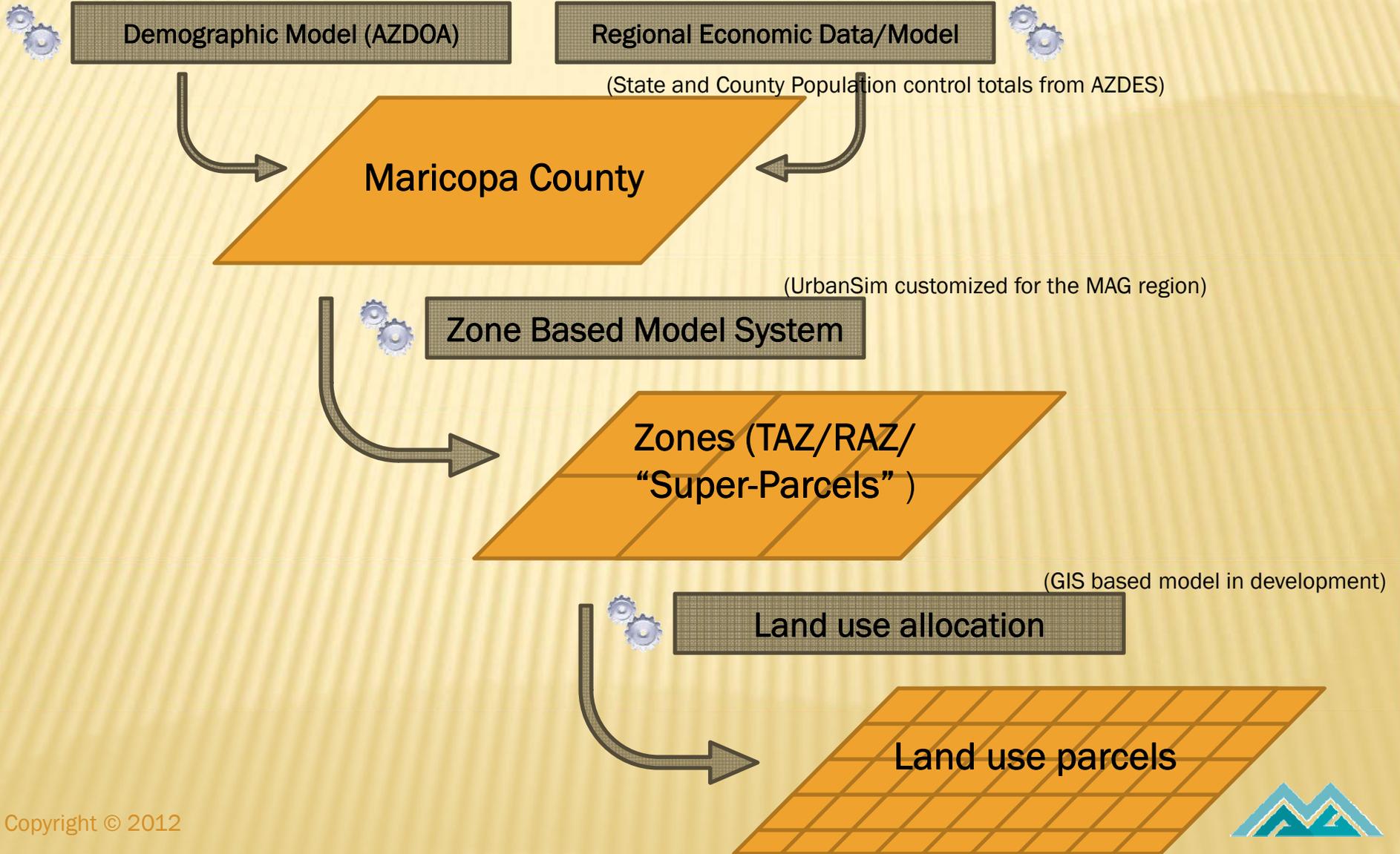
# AZ-SMART: WHAT IS IT?

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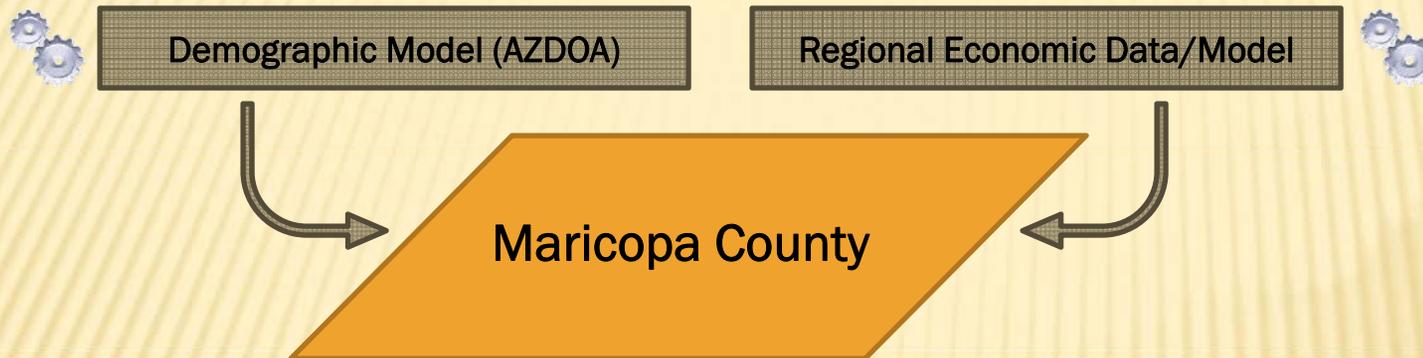
- ❑ A flexible and modular framework for making socio-economic projections at varied levels of geography
- ❑ Tools for data development and maintenance
  - ❑ Land use, general plan, inventories, etc.
  - ❑ Population and employment synthesis
- ❑ Tools for data analysis
- ❑ Tools for configuring, estimating, calibrating, and running simulation models
- ❑ Tools to assist in scenario building



# AZ-SMART FULL MODEL SYSTEM



# AZ-SMART LARGE AREA MODELS



## ❑ Demographic Model:

- ❑ Official population projections at the county level for the State of AZ
- ❑ Model developed by the AZ Office of Employment and Population Statistics (AZ Department of Administration)

## ❑ Regional Economic Data/Model:

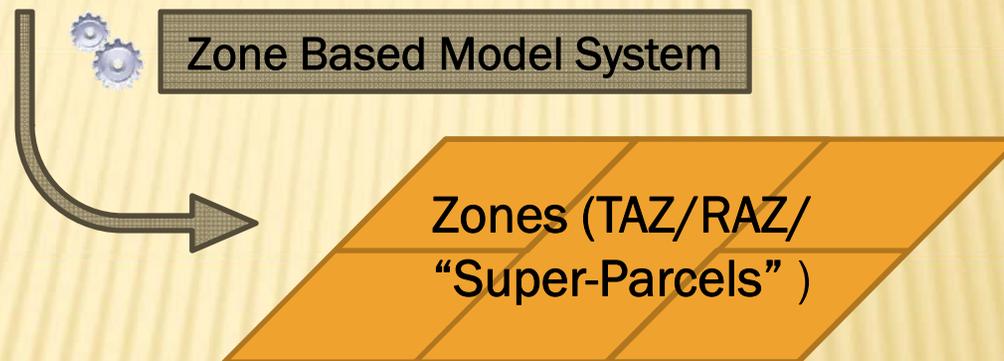
- ❑ Projections of employment by NAICS code at the county level
- ❑ Employment projections from a commercial source for 2012 official projections (e.g. Moody's Analytics, Global Insight, etc.)
- ❑ Long term - model to produce these projections in-house



# AZ-SMART MID-LEVEL MODEL: URBANSIM

## □ UrbanSim

- Fully disaggregate micro-simulation model
- Can model at any level of geography (zones, parcels, gridcells)

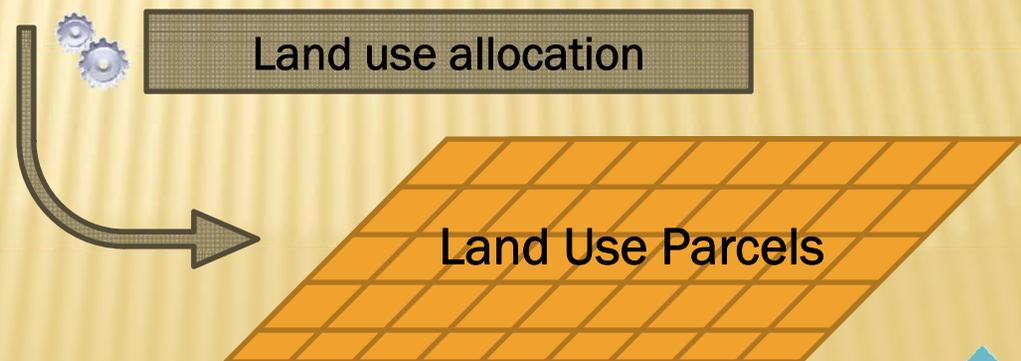


- Developed by Paul Waddell @ UC Berkeley
- Funded by the EPA, NSF, FHWA, plus numerous COGs\MPOs
- Emerging as a national standard for integrated land use\transportation modeling
- Currently being used at 10 MPOs

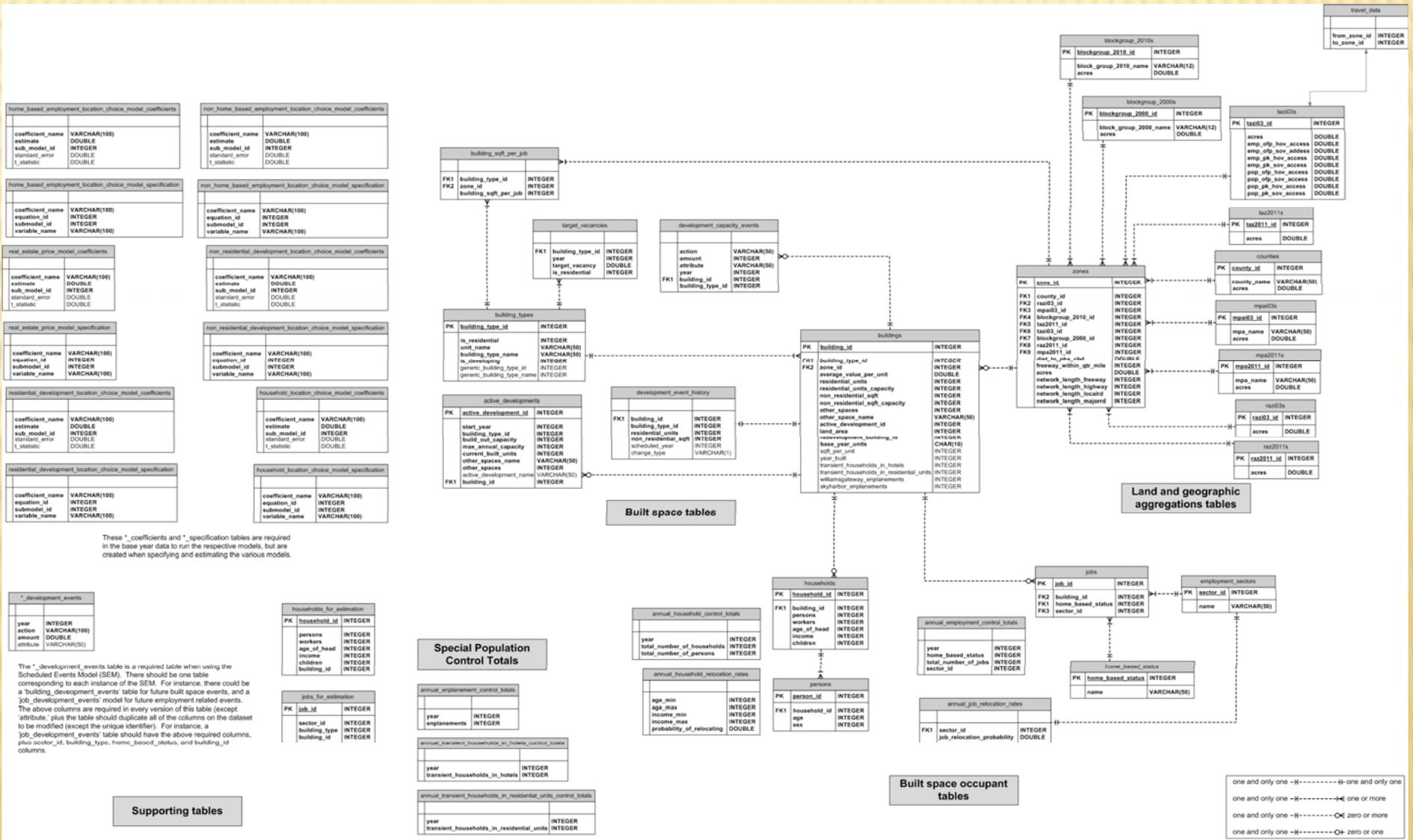


# AZ-SMART SMALL AREA MODEL

- ❑ GIS based model to allocate UrbanSim results down to smaller levels of vector geography – built on ArcGIS
- ❑ Currently under development at MAG - in collaboration with a consultant
- ❑ Will allow aggregation of results to any geography
- ❑ Will have additional tools for exporting results to a travel model, reporting, visualization, etc.



# AZ-SMART DATA MODEL



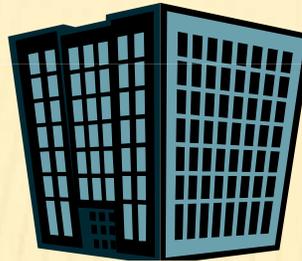
# PRIMARY DATABASES

## INPUTS AND OUTPUTS – PHYSICAL ENVIRONMENT

Parcels / Zones



Built space



Constraints



Development Projects



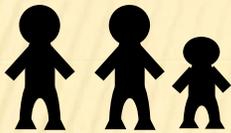
Unique ID Field	Parcel ID/ Zone ID	Building ID	Constraint ID	Proposal ID, Template ID
Location Links	Zones, tracts, cities, zip codes, etc.	Parcel ID / Zone ID	Parcel ID / Zone ID	Parcel ID / Zone ID
Data Source	Census boundaries, assessor's parcels, etc.	Assessor's data	City/ Town General Plan, slopes, flood plains, env. sensitive areas, etc.	Known development projects from City/Town



# PRIMARY DATABASES

## INPUTS AND OUTPUTS - AGENTS

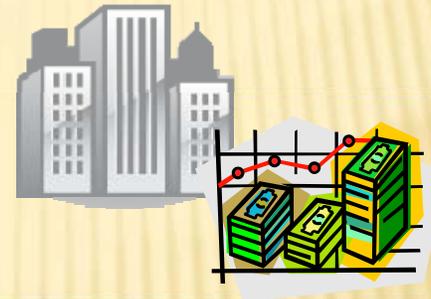
Households



Persons



Businesses



Jobs



Unique ID Field	Household ID	Person ID	Business ID	Job ID
Location Links	Building ID	Household ID	Building ID	Business ID
Data Source	Synthesized from Decennial Census, American Community Survey (ACS), Public Use Microdata Samples (PUMS)		Synthesized from Employment data base from Quarterly Census of Employment and Wages (QCEW) / other proprietary sources	



# AZ-SMART OVERALL MODEL SEQUENCE

Demographic Evolution Models



Real Estate Development Models



Household Location Models

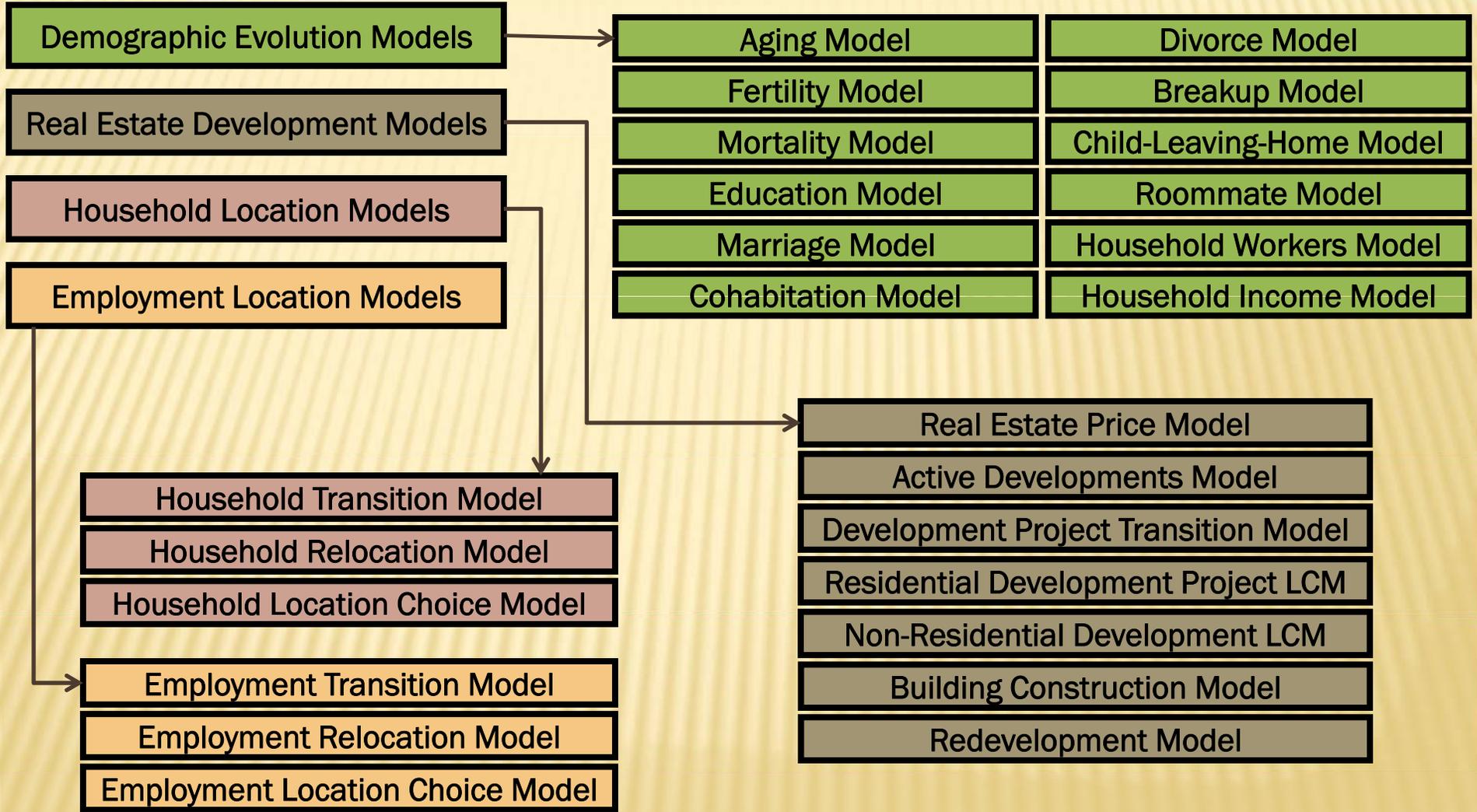


Employment Location Models

- ❑ Simulates demographic change in households and persons
- ❑ Predicts price, location, timing, and types of real estate development and re-development
- ❑ Simulates migration and location choices of households
- ❑ Simulates growth (or decline) and location of regional employment

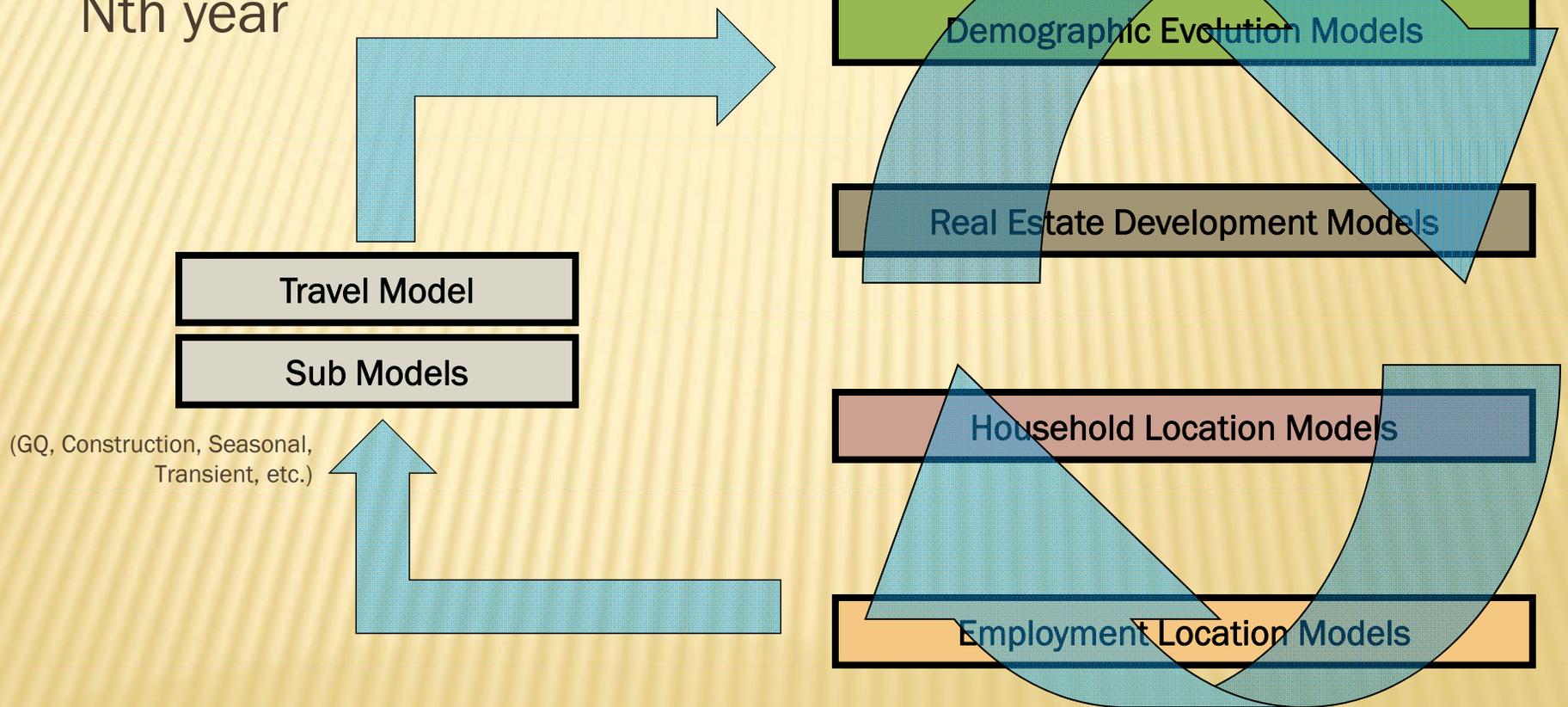


# AZ-SMART DETAILED MODEL SEQUENCE



# AZ-SMART OVERALL MODEL SEQUENCE

- ❑ Models repeat for every year
- ❑ Run external models every Nth year

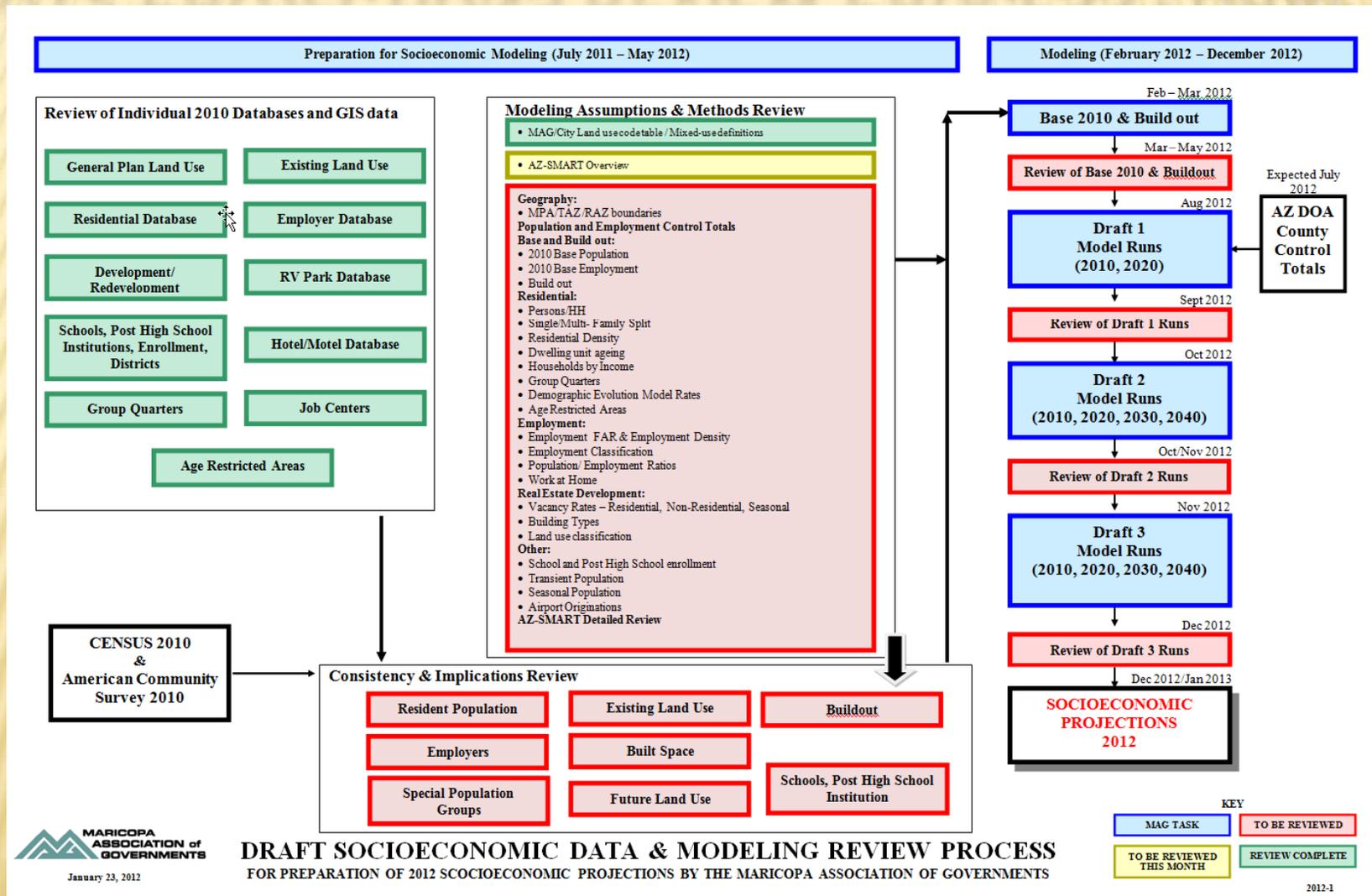


# AZ-SMART

2012 Projections: Model and Data Review Process



# 2012 PROJECTIONS REVIEW PROCESS - DRAFT



# QUESTIONS?

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