



# Superstition Vistas Interim Report Presentation

A Sustainable Community  
for the Next Century

*June 30<sup>th</sup> 2009*

*Superstition Vistas*

# Interim Report Cover

- Layout and design for the interim report
- Key section headings
- Overall flow and readability



**SUPERSTITION VISTAS EXECUTIVE SUMMARY**  
A SUSTAINABLE COMMUNITY FOR THE NEXT CENTURY

JUNE 2009

*Superstition Vistas*







# Intro and Visioning



## SUPERSTITION VISTAS

### An Oasis of Opportunity

At the edge of the Phoenix metropolitan area, sits an undeveloped expanse of land that represents an oasis of opportunity, Superstition Vistas. As the urbanized areas of Phoenix and Tucson grow ever closer together, over the long term this area could also urbanize. However, much of the development happening in the area occurs in a scatter shot pattern, unplanned and uncoordinated.

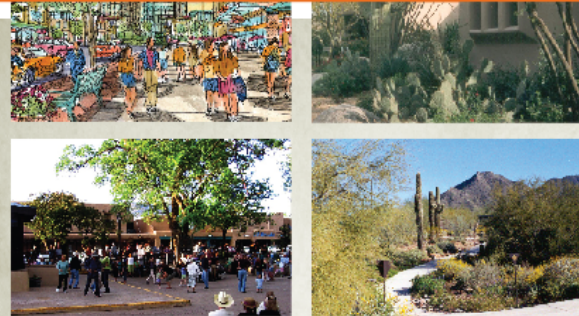
Roughly the size of the cities of Mesa, Chandler, Tempe and Gilbert combined; Superstition Vistas includes about 175,000 acres of land. Its general boundaries extend from the Superstition Mountains Wilderness Area south to Florence and from the Pinal County line on the west to east of Florence Junction.

A group of stakeholders have come together to form the Superstition Vistas Steering Committee (SVSC) to consider the future of this area. The SVSC includes representatives from the State Land Department, the Governor's Growth Cabinet, Pinal and Maricopa Counties, Apache Junction, Florence, Queen Creek, Mesa, Valley Partnership, Salt River Project, Resolution Copper Mining Limited, the Sonoran Institute and Lincoln Institute of Land Policy.

Currently, Superstition Vistas is held in trust by the Arizona State Land Department, which is mandated to manage the land for the benefit of its trustees. The trustees are essentially the schoolchildren of Arizona. The development (or preservation) of this land must be managed in a way that meet the needs of future Arizonians, and maximizes the return to trustees. If the land is sold it will result in large-scale development.

Encroaching sprawl-type development in the region has already led to some negative consequences including the loss of open space and habitat, and dispersed housing that requires residents to drive great distances to meet daily needs. Given a changing world and economic situation, a master plan for Superstition Vistas needs to be developed to wisely consider the future of this area, the impacts of a growing region, and the realities of a mandate that requires a high return on the value of state land. The purpose of the Superstition Vistas project is to develop such a master plan to help guide future decision-making regarding this precious resource in the decades to come.

## ENVISIONING THE FUTURE



### Sustainability

Sustainability is one of those words heard everywhere today. And everybody seems to have a different definition, which is often fuzzy. In Arizona, we need to define sustainability in practical ways. Sustainability involves balancing economic, community and environmental goals and ensuring future generations can meet their own needs. For example, we cannot consider short-term economic gain at the expense of the natural environment's ability to recharge and replenish. One of the goals for Superstition Vistas is to consider how any proposed development could truly be sustainable. One of the guiding principles for the Superstition Vistas project is to:

- Consider how to make Superstition Vistas one of the most sustainable communities in the country by focusing on balanced development, water conservation and capture, energy efficient buildings, and land use and transportation systems that reduce auto use.

A primary first question is what kind of, if any, new development in the Superstition Vistas region could be sustainable? As we consider possible future development in the Superstition Vistas area, are we destroying the natural environment? How could new development build an economy that allows residents to live comfortably and securely in the future? How could we develop a new community where everyone has access to a good education, decent housing and a living wage?

The Superstition Vistas project is all about finding that balance between economic, environmental, and community goals — not in theory, but with practical, achievable plans.

*Superstition Vistas provides a unique opportunity to apply the latest technology and ideas in how to build a new community in harmony with the desert ecosystem.*



# Intro and Visioning

- **An Oasis of Opportunity**

The purpose of the Superstition Vistas project is to develop a master plan to help guide future decision-making regarding this precious resource in the decades to come.

- **Sustainability**

Consider how to make Superstition Vistas one of the most sustainable communities in the country by focusing on balanced development, water conservation and capture, energy efficient buildings, and land use and transportation systems that reduce auto use.



*Superstition Vistas*



# Recent Trends & Regional Values

## RECENT TRENDS

### and Future Projections

Predicting the future is risky — we don't know what will happen next year, let alone 50 years from now. With the recent national economy and the precipitous drop in housing prices, very little seems certain. Nevertheless, we can make some reasonable guesses about the future, about what will likely change, and what will likely remain the same.

It is fairly certain that our nation will continue to grow from our current population of 304 million people. While the range of forecasts for our population in 2050 varies, the mid-range projection from the US Census Bureau is 419 million by 2050. The Phoenix metropolitan area is expected to share in that national growth — most forecasts show the Phoenix area growing from the current 4 million to between 7.4 to 11.5 million. The southeast valleys of the Phoenix region consistently represent about 30 percent of the region's growth. We may infer from these trends that south eastern Maricopa and Pinal County will probably grow by one to two million more people in the next 50 years.

As a nation, we are growing older — our average age will increase and then stabilize about 25 years from now. It is likely many older Americans will move into smaller homes, and many will want to live in different kinds of housing. Our nation is becoming more ethnically diverse, and the Hispanic population, in particular, is growing faster than the population as a whole.

It is probable that petroleum will become much more expensive in time and spur our transportation system to change. However, there is disagreement regarding how higher fuel prices will change transportation. In addition due to the increase of carbon in the atmosphere, in part from transportation emissions, scientists now confidently predict that the climate is changing and will continue to change in the decades to come. In Arizona, this will probably mean higher temperatures and more summer thunderstorms.

In terms of Superstition Vistas, recent growth patterns and the need for additional state revenue could mean the area becomes home to considerably more people. The future population in the area will likely be older and more ethnically diverse. The future could also bring unknown advancements in how we build new housing, transport ourselves, and harvest energy.

Some things will likely stay the same. Although our economy will evolve, people will still need jobs, homes, and our children will need good schools. In addition, the same regional attributes that attract residents will remain— vast open space and the sparse landscape, the desert climate, and economic opportunity.



## REGIONAL VALUES

### and Perspectives

Values research conducted by Harris International, for the Superstition Vistas project found that residents of the greater Phoenix area enjoy a good quality of life which they attribute to living in safe and secure communities, being surrounded by friends and family, enjoying access to nature and the outdoors. Area residents are more positive about their quality of life than the rest of the country and far more optimistic about their future. They are generally more likely to feel their communities are headed in the right direction.

The notion of sustainability carries weight in the greater Phoenix area. Residents put more emphasis on protecting the environment than Americans nationwide, but momentum over the past few years has increased support for economic development. The majority of greater Phoenix residents are concerned about global climate change. They believe temperatures are increasing due to man-made causes that will impact their lives. Residents believe the type and size of new home construction negatively impacts the environment, but they want to see the real financial benefit of buying a "green home". However, residents do say they would pay a 6-10 percent premium for a more efficient, environmentally-sensitive home.

Interviews and surveys of people in leadership positions within the Phoenix area found they view Superstition Vistas as becoming a potential model of sustainable development. They emphasized the need for a regional approach to the planning and implementation of any development program in the area. They agreed regional interests, rather than local ones, should guide the process, but that parochial divisions could be formidable obstacles. The leaders, representing key business, non-profit, and government positions, also agreed a successful plan for Superstition Vistas should consider:

- New and better ways of planning and funding infrastructure;
- How to solicit government leadership to support a long-term vision or plan;
- How the State Land Trust system could be reformed; and
- How to empower the State Land Trust to do a better job of infrastructure planning, preserving open space, and financing projects.

### TESTING POSSIBLE DEVELOPMENT SCENARIOS FOR SUPERSTITION VISTAS

To consider the impact of possible future development in the Superstition Vistas area, a series of scenarios were developed. The Superstition Vistas development scenarios help evaluate the effects of land use policy, infrastructure investments, and energy and water conservation strategies. The scenarios help answer questions such as how much land will be consumed if a city builds predominantly single-family homes on large lots compared to diversifying housing by including townhomes and multi-family units.

The Superstition Vistas future growth scenarios were designed to test a range of factors including: land consumption, carbon footprint, water demand, energy use, and transportation emissions and mobility. The scenarios help illustrate what kind of community is possible in Superstition Vistas given a range of land use and transportation strategies.

Each scenario is told as a story of how the region could look, feel, and operate in the future.



### LISTENING TO CITIZENS

The qualitative and quantitative values research included:

- Sixty-three in-depth online values interviews;
- An Advanced Strategy Lab session with 35 regional leaders in Apache Junction, Arizona;
- An online survey of 1,068 year-round residents of Maricopa or Pinal counties 18 years or older; and
- An online survey of 211 "key citizens" active in business, non-profit and government.



# Recent Trends & Regional Values

***“In this world  
nothing can be  
said to be  
certain, except  
death and  
taxes.”***

**Benjamin Franklin,  
1789**

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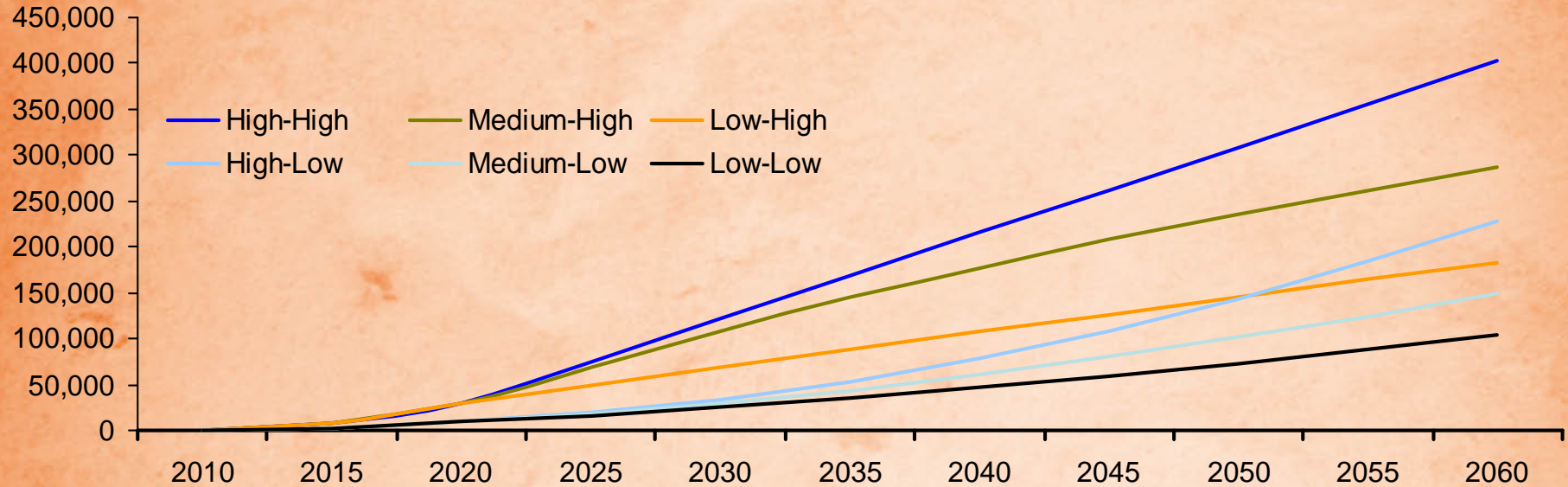
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*Superstition Vistas*



# SUPERSTITION VISTAS POPULATION PROJECTIONS RANGE FROM 261,000 TO OVER 1 MILLION

## Superstition Vistas Cumulative Households by 2060



## Superstition Vistas Average Annual Household Growth 2010-2060

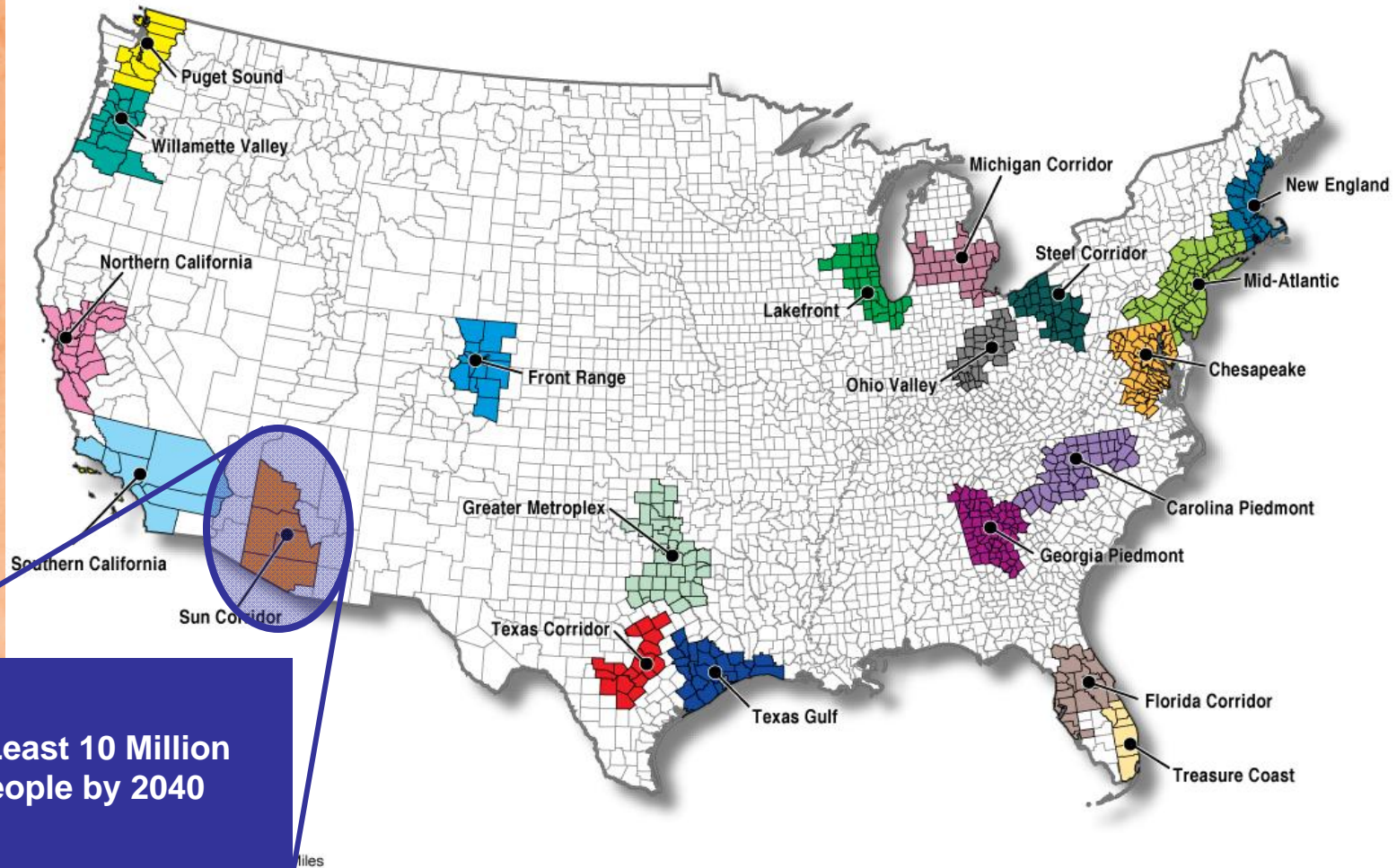
LOW-LOW	LOW-HIGH	MEDIUM-LOW	MEDIUM-HIGH	HIGH-LOW	HIGH-HIGH
2,000	3,700	2,800	5,700	4,000	8,000





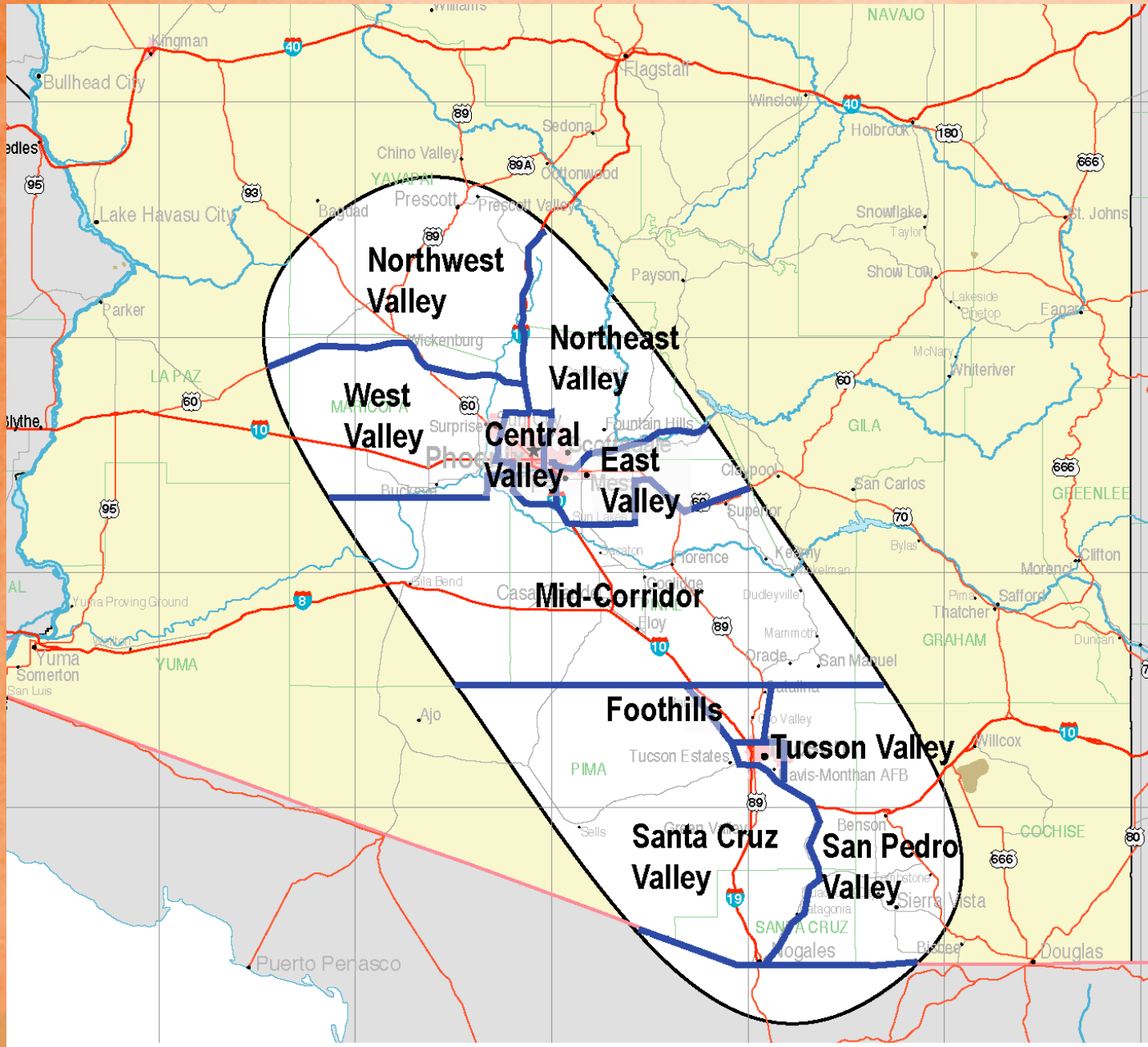
100 MILLION PEOPLE WILL BE ADDED TO THE U.S. POPULATION BY 2040; 60 MILLION IN 20 MARKETS

### Megapolitan America



At Least 10 Million People by 2040



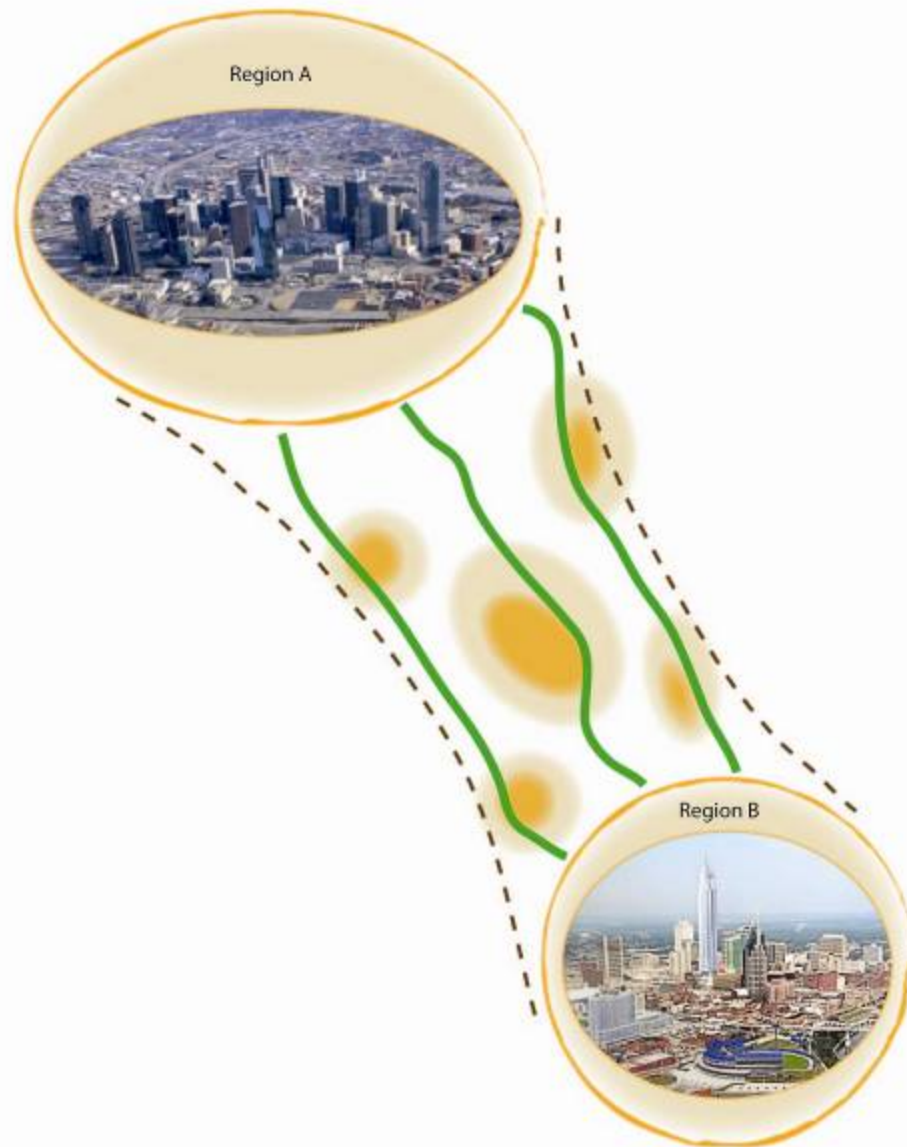


# Arizona Sun Corridor

*Superstition Vistas*



*An Emerging Megapolitan*



**New Cities  
Emerge Along  
these Corridors.  
The two Regions  
are Connected by  
a well Planned  
Transportation  
System and  
Concentrated City  
Centers**

*Superstition Vistas*



# Regional Visioning Starts with Regional Values

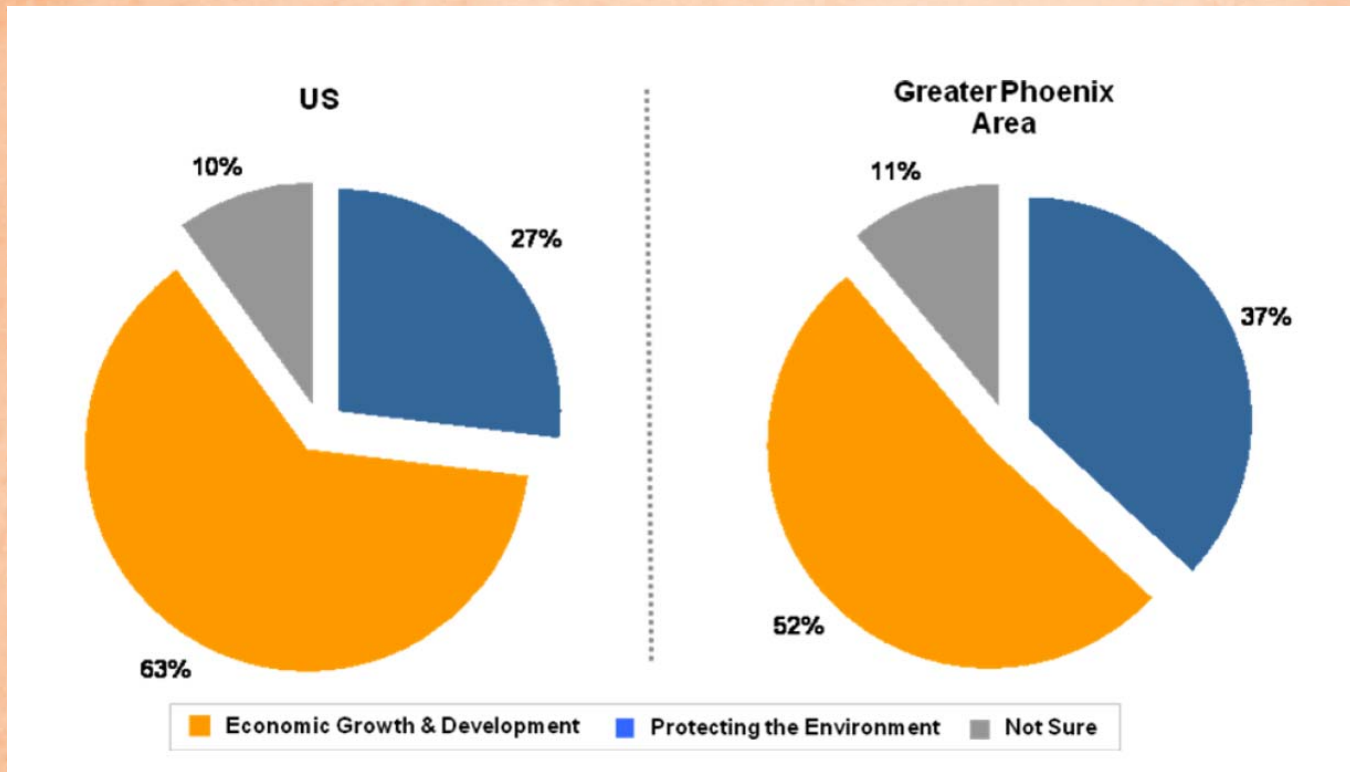
- Values are stable and enduring; life's "tides" as opposed to the "waves."
- Values are widely shared and create consensus among diverse groups.
- Satisfying ones' values is the foundation of personal decision making.



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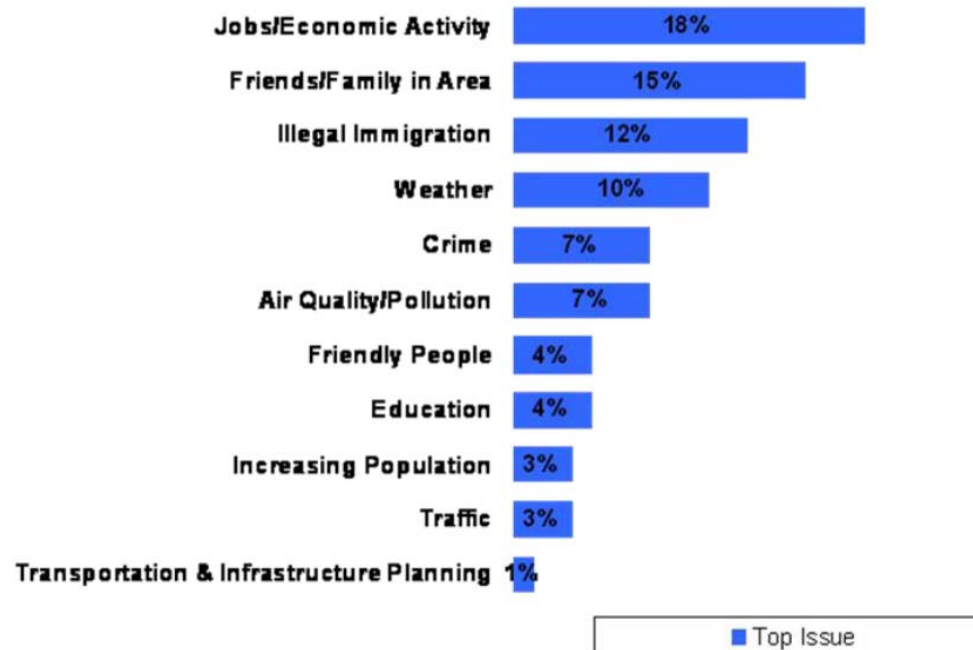
# Regional Visioning Starts with Regional Values





# Regional Visioning Starts with Regional Values

## Most Important Factors in Quality of Life in Greater Phoenix Area



# Scenario Overview

- Testing Possible Development Strategies for Superstition Vistas
- Each scenario is told as story of how the region could look, feel, and operate in the future.

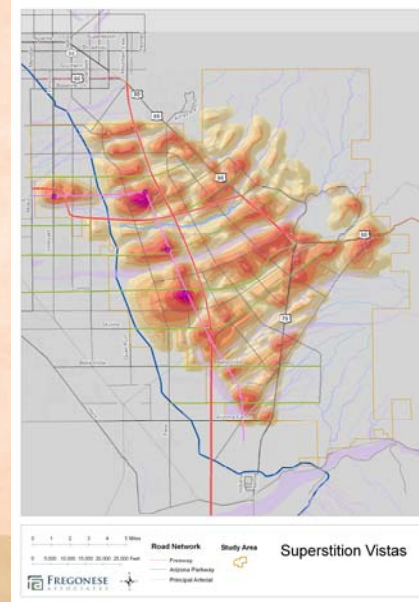
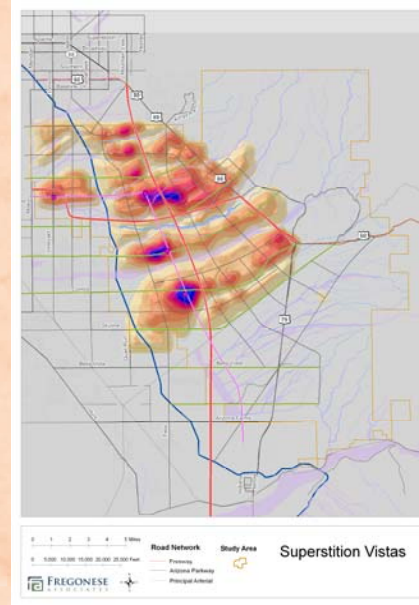
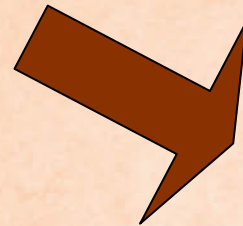
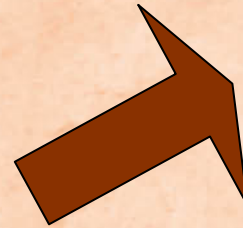
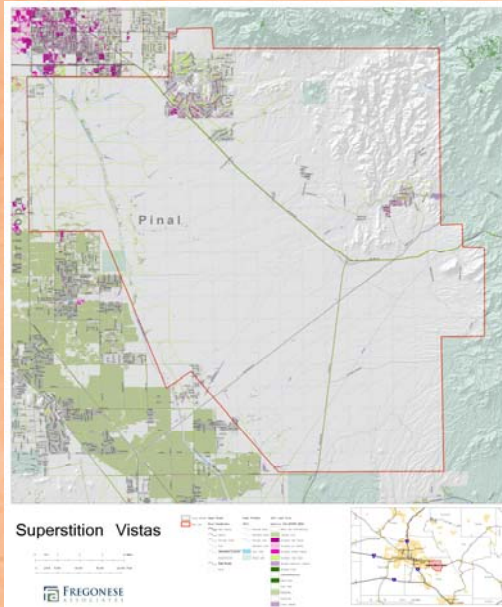


*Superstition Vistas*



# Scenarios for Superstition Vistas

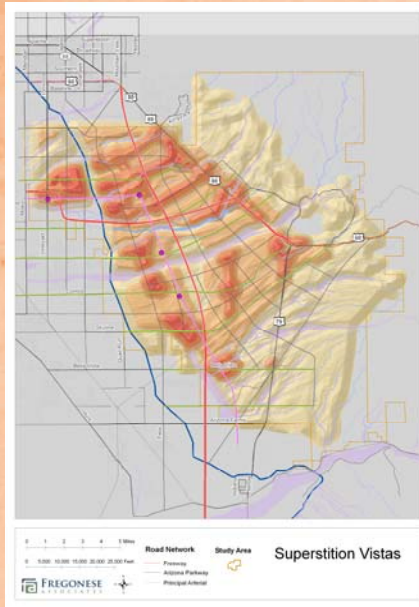
**Plausible stories about the future:**



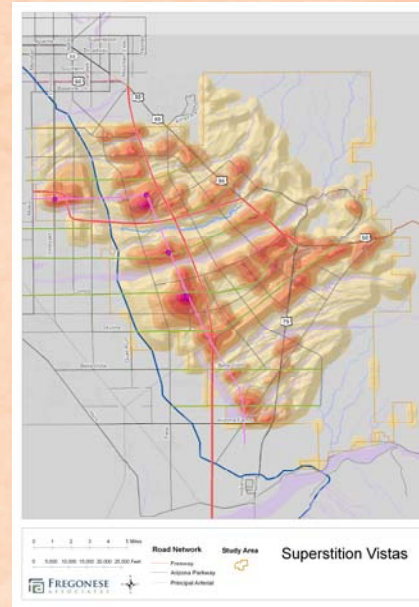
*Superstition Vistas*

# Develop a Range of Scenarios

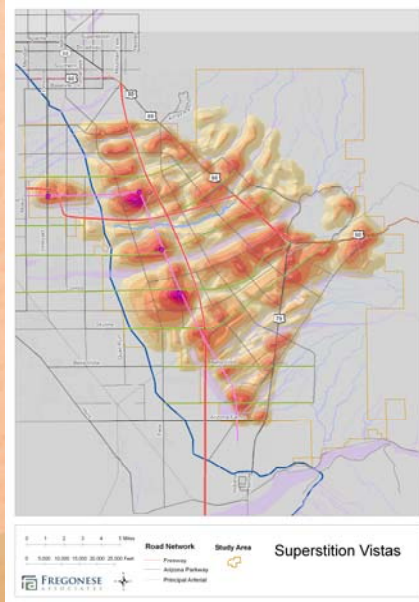
A



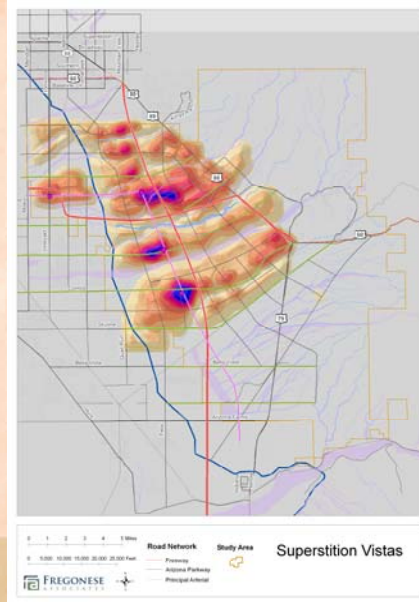
B



C



D



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# Scenario A Description

## SCENARIO A: TRENDS CONTINUE



### A Slice of Life in Scenario A

Superstition Vistas, a residential suburb of the Phoenix metro area, is just beginning its Monday morning. It already feels like it's going to be a scorcher, and it isn't even eight o'clock. The morning sun radiates off thousands of windshields as commuters merge onto Highway 60 for another long commute to downtown Phoenix. Most people work in Phoenix, Scottsdale, or somewhere in the North Valley. Jobs around Superstition Vistas are mostly in retail, at the mall, or a few office parks.

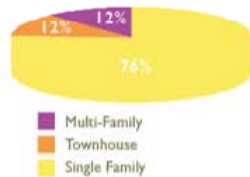
The morning news reports last night's rainstorm caused flooding in a neighborhood at the foothills of the Superstition Mountains. Many housing subdivisions were built close to natural drainage channels, which left few places for storm water to migrate during monsoon season. Engineers estimate building flood control infrastructure will be costly and disruptive in these neighborhoods.

Yellow school buses wind their way through neighborhoods, stopping every few blocks to pick up kids. Almost everyone lives within a mile or two of a school as the crow flies, but walking there isn't easy; sidewalks are intermittent, streets end on cul-de-sacs, and fast moving traffic on major streets makes it dangerous to cross. Kids who play sports or other after-school activities have to be sure to arrange rides with their parents or friends; walking or biking home isn't easy.

To live in Superstition Vistas is to love your car. Work is in Phoenix, the kids need to be driven to school and soccer practice, and the grocery store is on a busy road behind a sea of parking. To escape the heat, everyone heads to the mall. Concerts, festivals, and other events tend to happen in Phoenix, rather than in town. Superstition Vistas has some great neighborhoods, and people are happy to have big homes they can afford, but sometimes it feels a bit too much like a big suburb, without a real center or culture of its own.

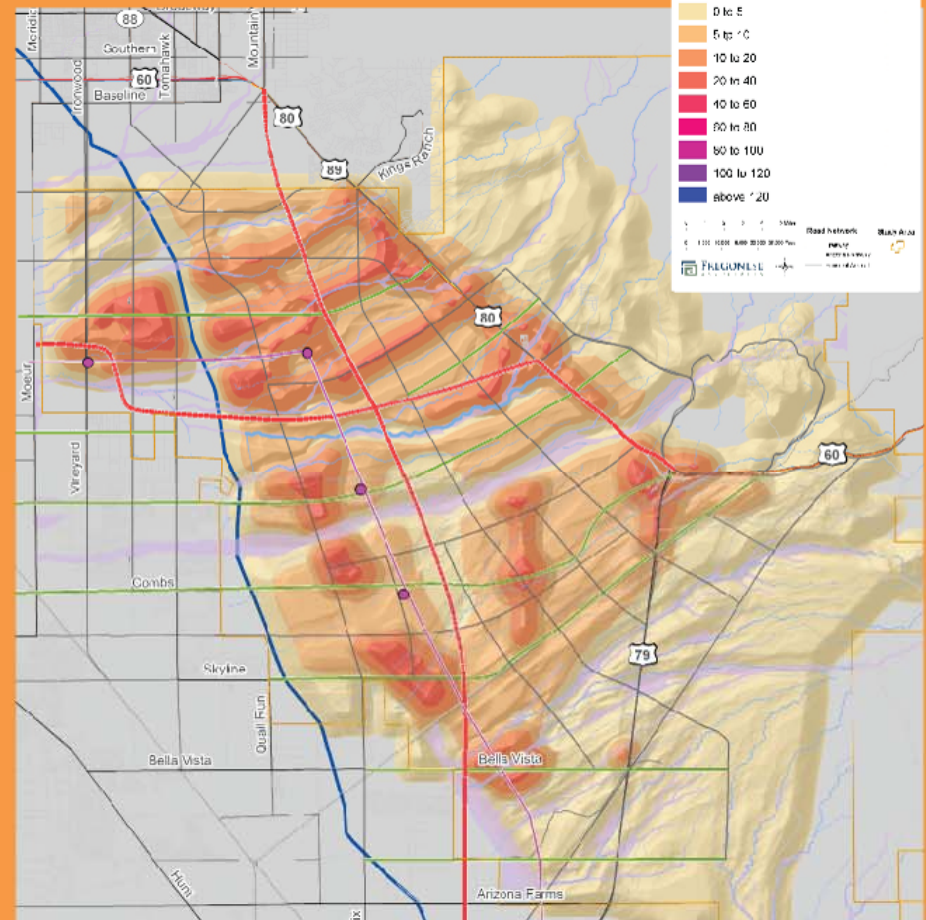
CO2 Production by Source (million tons) <sup>a</sup>	Scenario A
Transportation	2.6
Buildings	9.4
Total	12.0

### Scenario A Housing Mix



Scenario Statistics	
Land consumed by development	196 square miles
Percentage of homes 1/2 mile from transit service	11%
Acres of open space per 1,000 people	61
Average time spent in the car per day	30 mins.
Transit trips per day	58,000

### Scenario A Development Pattern



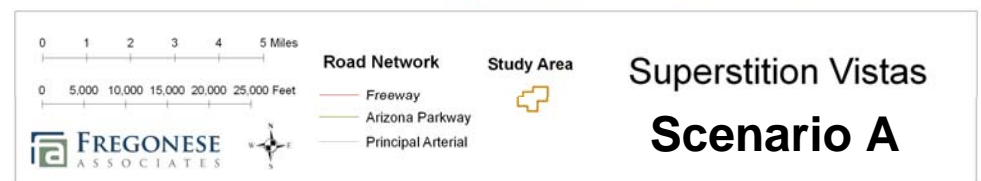
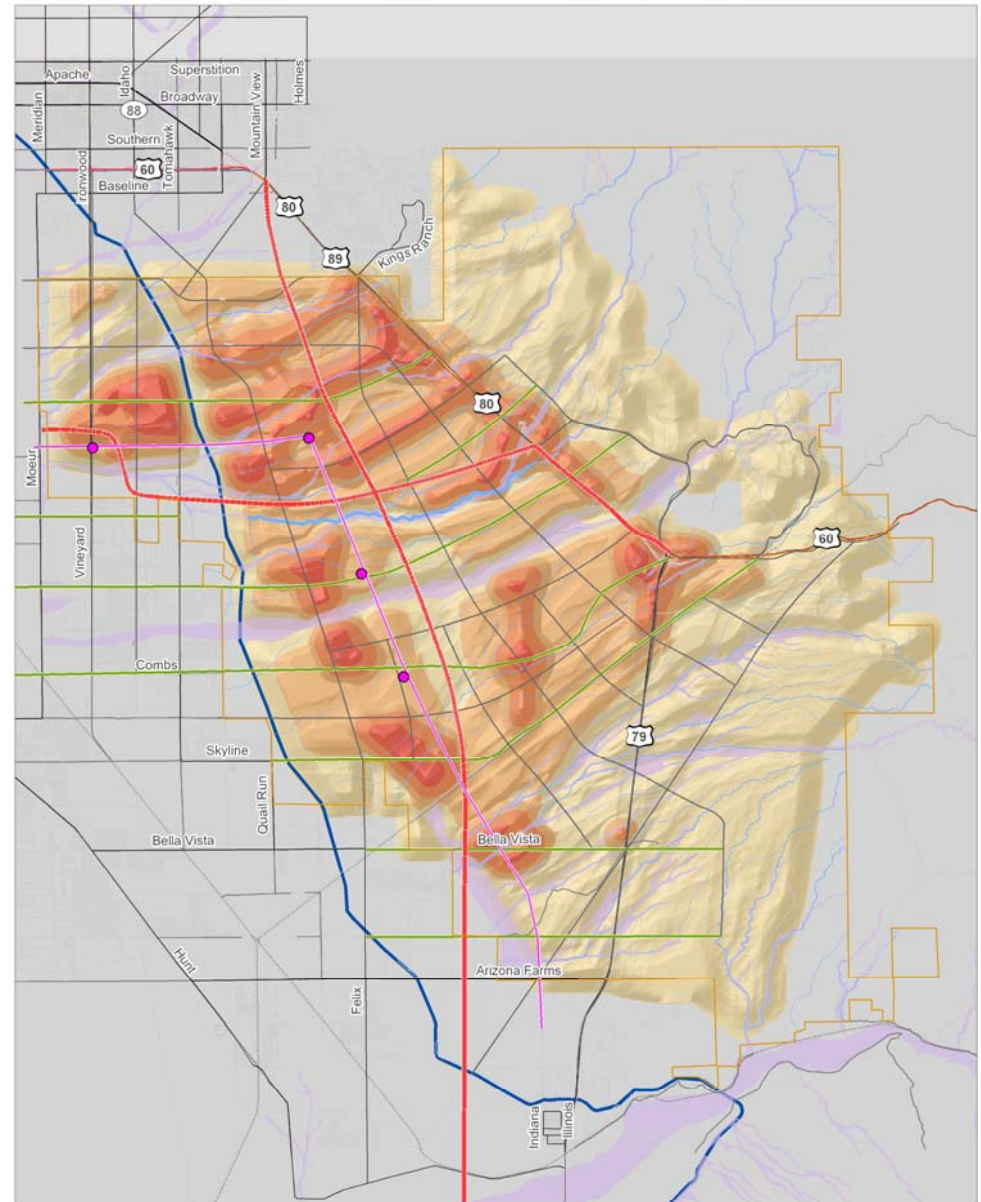
Scenario A presents a typical Bonsidei auroaraviv hocaperet fur. Tum. et re tur sus hostrum acutum iam octus re. nihicazdam. Caequi senatis. factus, que praeris periverusque is, cret fug, aciendam ras bondit; nostra; sultibus side facipuniquam tabes pris.



# Scenario A

- Shown using overall density to represent future growth
- “Density” = Households + Jobs per acre

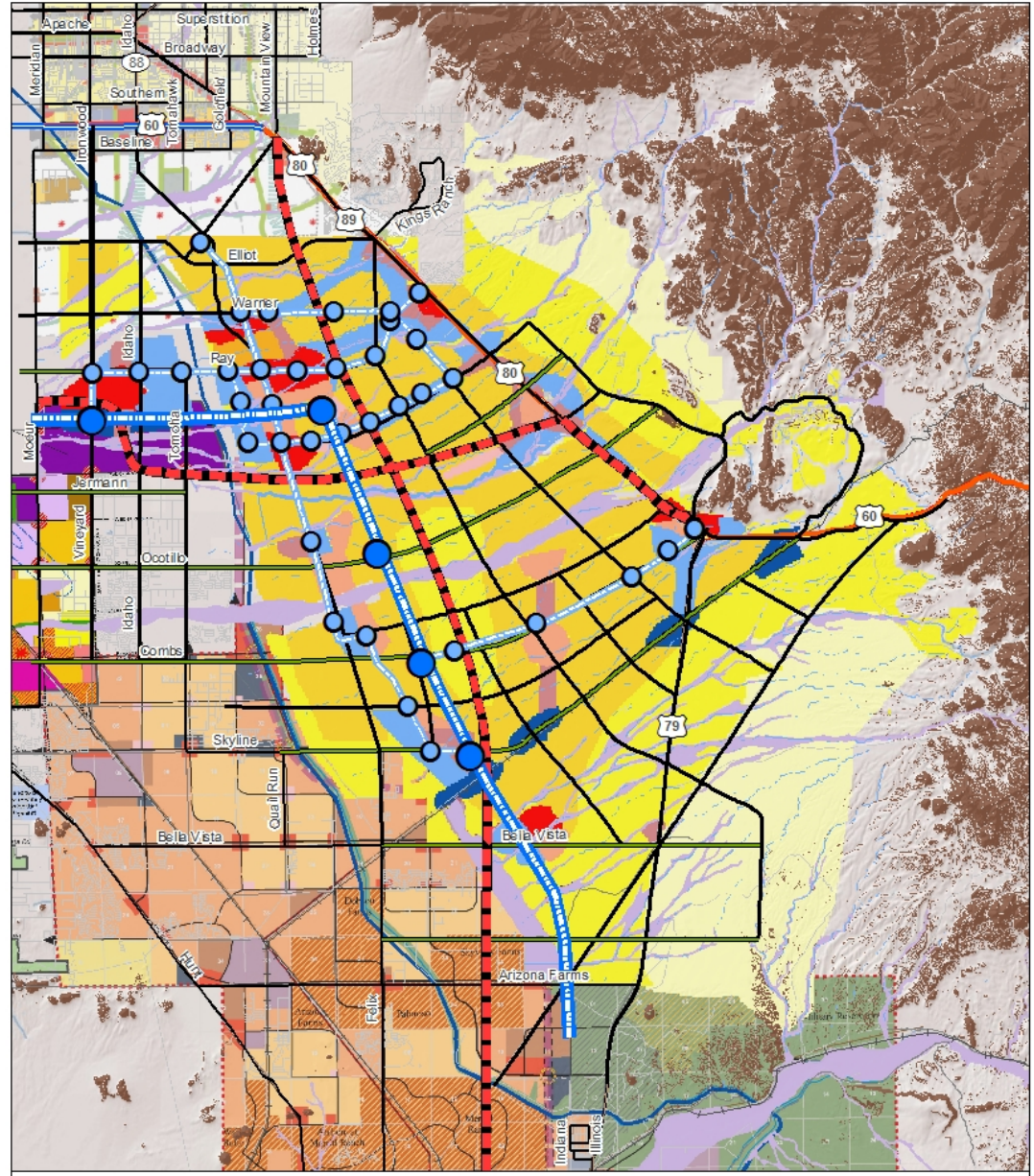
## Density (HU + Jobs per acre)





# Scenario A

Shown with the transportation network and existing surrounding plans



0 1 2 3 4 5 Miles  
0 5,000 10,000 15,000 20,000 25,000 Feet

### Road Network

- Freeway
- Arizona Parkway
- Principal Arterial

### Study Area



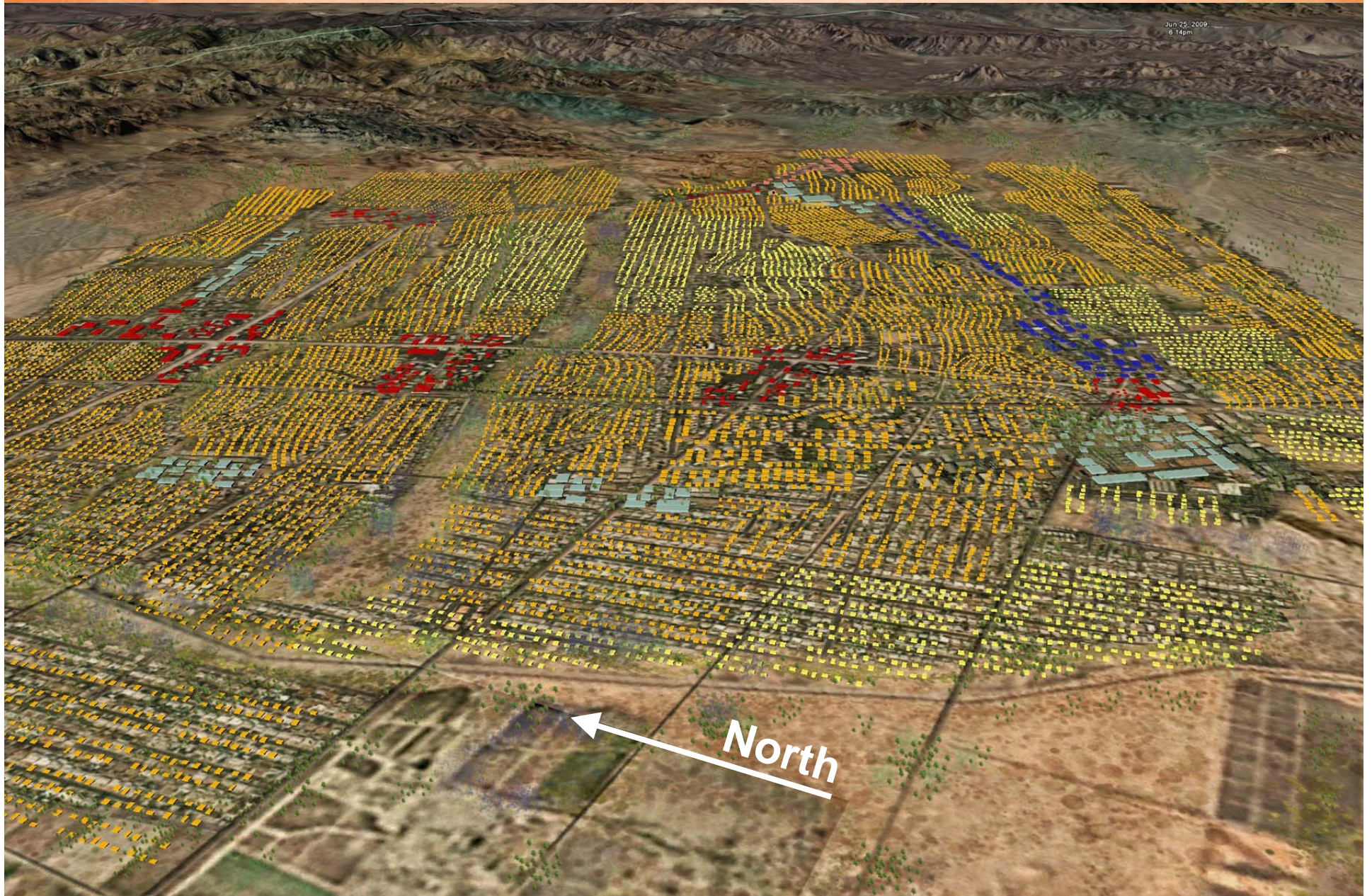
Superstition Vistas

**Scenario A**





# Perspective View of Scenario A





# Scenario B Description

## SCENARIO B



### A Slice of Life in Scenario B

Despite the heat, late Friday afternoon in Superstition Vistas is a lively time to be out and about. Classes at Superstition State University, located in the heart of downtown have just gotten out, and the shady promenades are full of students lounging on the grass, drinking iced coffees, and planning their weekends. Workers in nearby office buildings are shutting down their computers and winding down from a busy but exciting week. It seems like everyone is looking for talent these days, with new startups and branches opening up shop around town.

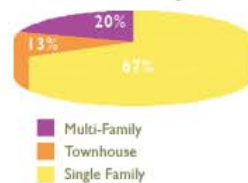
While evening town traffic might be considered heavy by Superstition Vistas standards, it's remarkably free-flowing for those who've just arrived from Phoenix. The region's light-rail spine is supported by a network of fast and efficient buses and local streetcars. School-aged kids can easily walk or bike to school, or take a quick transit trip across town for a soccer match. Neighborhoods are designed to connect with the grid, much like streetcar suburbs were built over 100 years ago.

The airport is busy; crews are flying home out from a week's work filming on location, while visitors are flying in for a weekend at Superstition Resort & Spa. The resort setting is up in the foothills, which have been protected from any sort of development. The region's natural creeks and washes channel monsoon rains away from neighborhoods. Some of the runoff is collected to help irrigate the many tree-lined boulevards, bike paths, and linear parks that crisscross the neighborhoods.

To live in Superstition Vistas is to be in one of the more exciting and dynamic parts of the country. Investments in key infrastructure, like the airport, transit, and a focus on attracting high-growth industries have made this one of the most competitive regions for capital and talent. Superstition Vistas is giving Phoenix a run for its money.

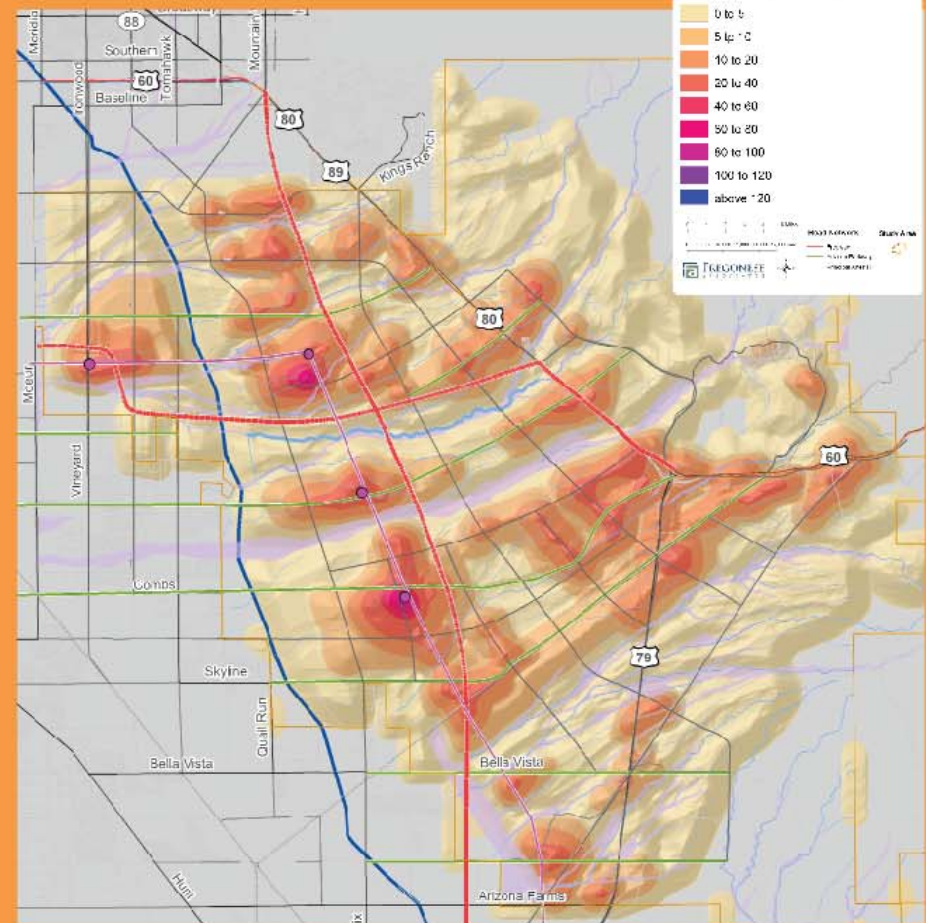
Scenario B Carbon Production by Source (in million metric tons)	
Transportation	1.9
Buildings	9.3
<b>Total</b>	<b>10.1</b>

### Scenario B Housing Mix



Scenario B Statistics	
Land consumed by development	187 square miles
Percentage of homes 1/2 mile from transit service	21%
Acres of open space per 1,000 people	64
Average time spent in the car per day	24 mins.
Transit trips per day	358,800

### Scenario B Development Pattern



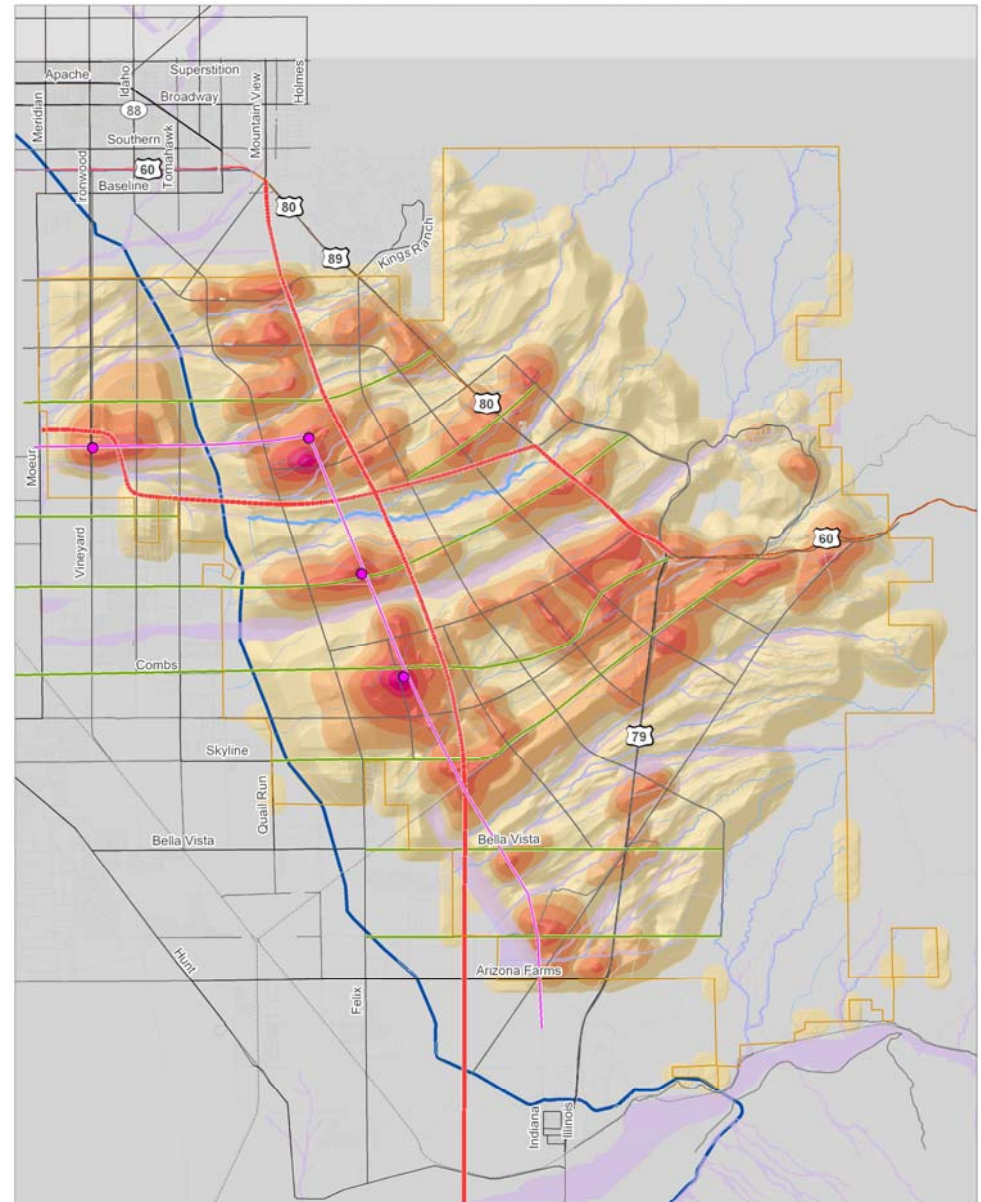
Scenario B presents a typical Bonsidei aurioranivil hocaperet fur. Tum, et re fur, sus hostrum actum iam octus re, mihicadum, Caequi senatis, factus, que praeris periverusque is, cret fus aciemdam res bondit; nostrae sulibus side facibuniquam tabes pris.



# Scenario B

- Shown using overall density to represent future growth
- “Density” = Households + Jobs per acre

## Density (HU + Jobs per acre)



0 1 2 3 4 5 Miles  
 0 5,000 10,000 15,000 20,000 25,000 Feet

**Road Network**  
 Freeway  
 Arizona Parkway  
 Principal Arterial

**Study Area**

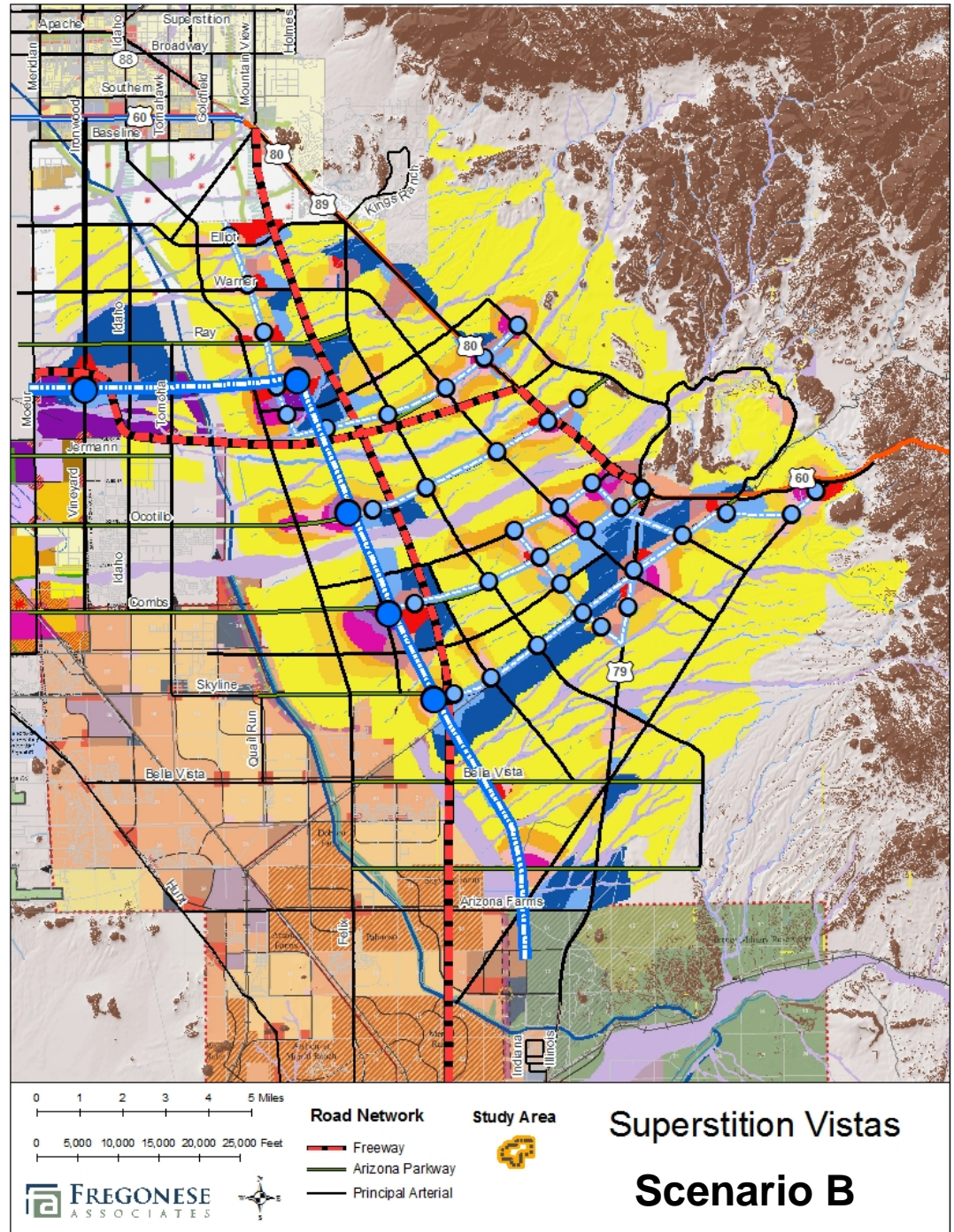
**Superstition Vistas Scenario B**

FREGONESE ASSOCIATES



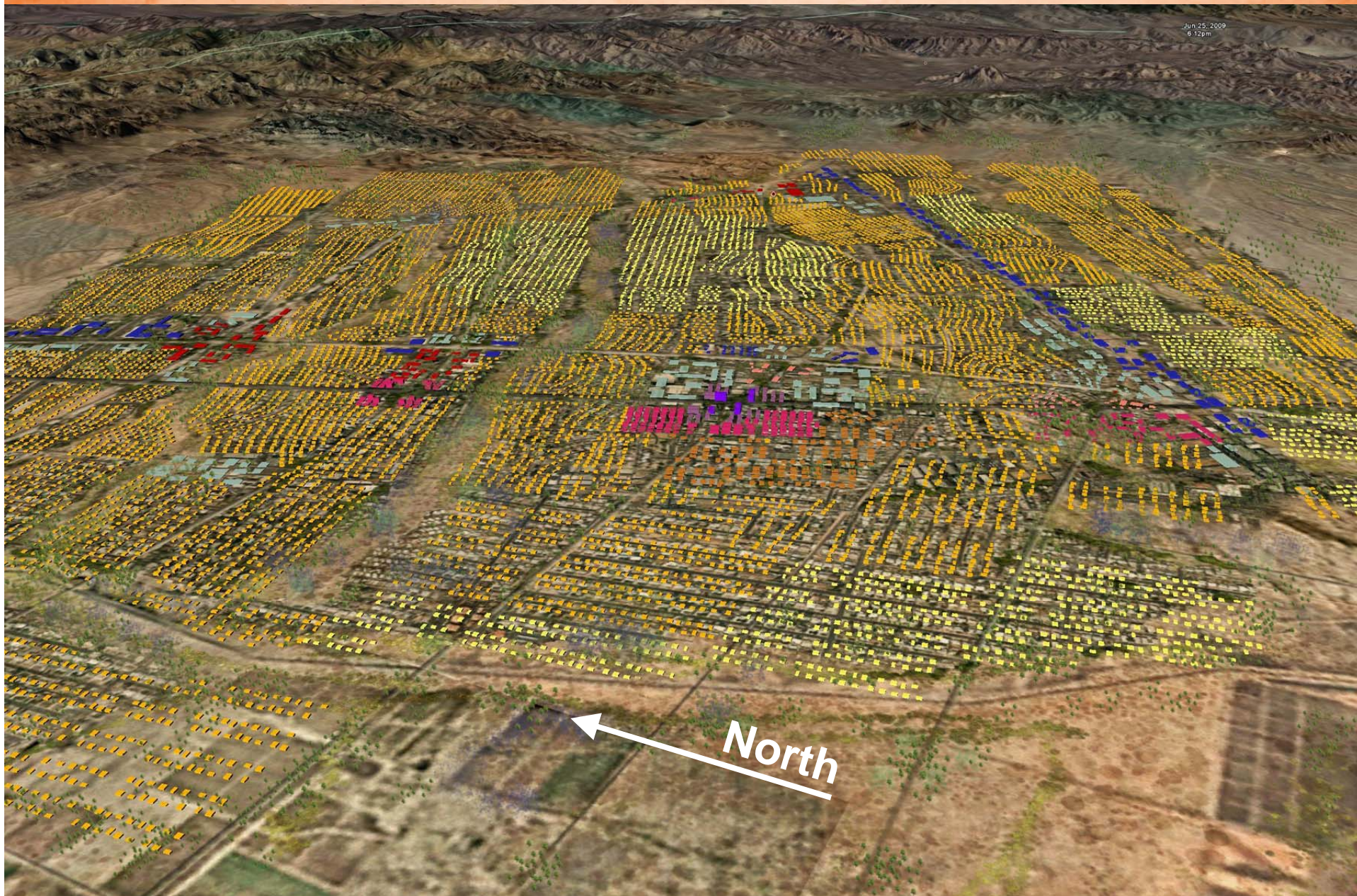
# Scenario B

Shown with the transportation network and existing surrounding plans





# Perspective View of Scenario B





# Scenario C Description

## SCENARIO C



### A Slice of Life in Scenario C

Its lunchtime and downtown plazas are filled with people enjoying their lunch break. Some people hop on a trolley or streetcar to run home for lunch; downtown has many apartments and condos just five or ten blocks away. A lot of people live in more traditional single-family neighborhoods a few miles away, and either drive and park in one of the many downtown garages, or take the rapid bus service. There are people who work in downtown Phoenix who live here; they usually take carpool or take the regional light rail system.

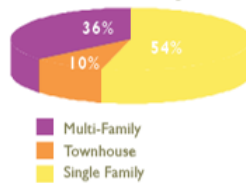
The Superstition Vistas farmers market is in full swing. Locally grown fruits, vegetables, and other goods are on sale, and a fleet of small food carts serves up lunch fare. This is one of the unforeseen benefits of preserving large sections of the Superstition Vistas area from development. Drawn by available land and a growing appetite for locally-produced goods, young people who want to try their hand at bringing greenery to the desert are flocking to the area. The local community college has recently established a program to teach highly efficient arid agricultural techniques from around the world.

A class of school kids is riding a rapid bus from their downtown science academy to the outskirts of the city for a field trip. The region's natural flood control and mitigation infrastructure has both kept urbanized areas safe from inundation and preserved habitat. Last year this same class traversed the entire length of the Queen Creek natural preserve, cataloging species and habitats from the floodplains to their source in the mountains.

The people who live in Superstition Vistas are all newcomers. They were drawn by the spectacular scenery of the area, but also the promise of living in a city where you could have a home with a yard, and still be able to bike or take transit to work downtown. It's a place that works to strike a balance between nature, the suburbs, and the city.

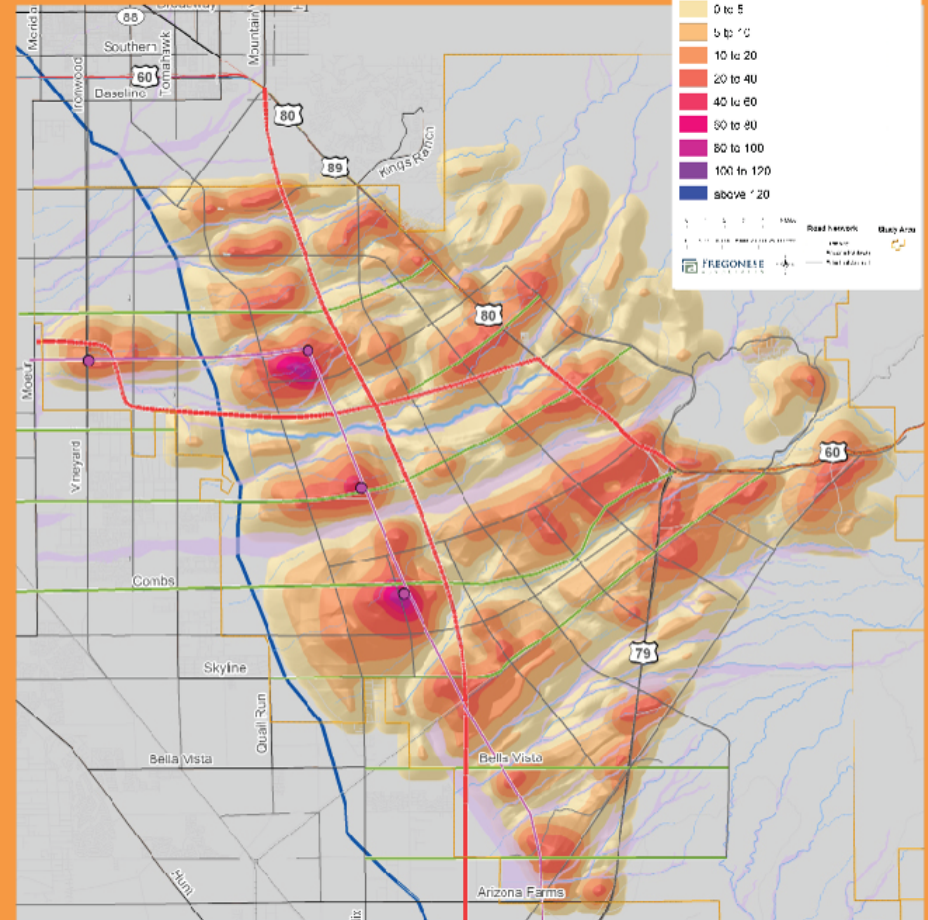
Scenario C Carbon Production by Source (in million metric tons)	
Transportation	1.8
Buildings	6.8
Total	8.7

### Scenario C Housing Mix



Scenario C Statistics	
Land consumed by development	143 square miles
Percentage of homes 1/2 mile from transit service	26%
Acres of open space per 1,000 people	87
Average time spent in the car per day	18 mins.
Transit trips per day	387,400

### Scenario C Development Pattern

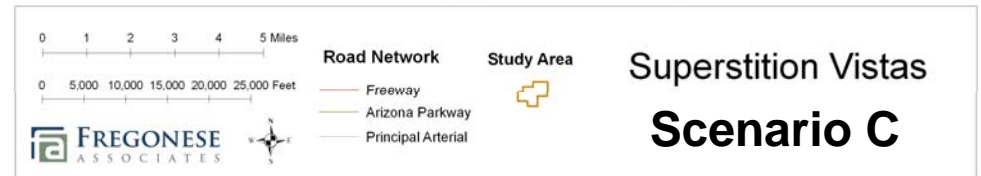
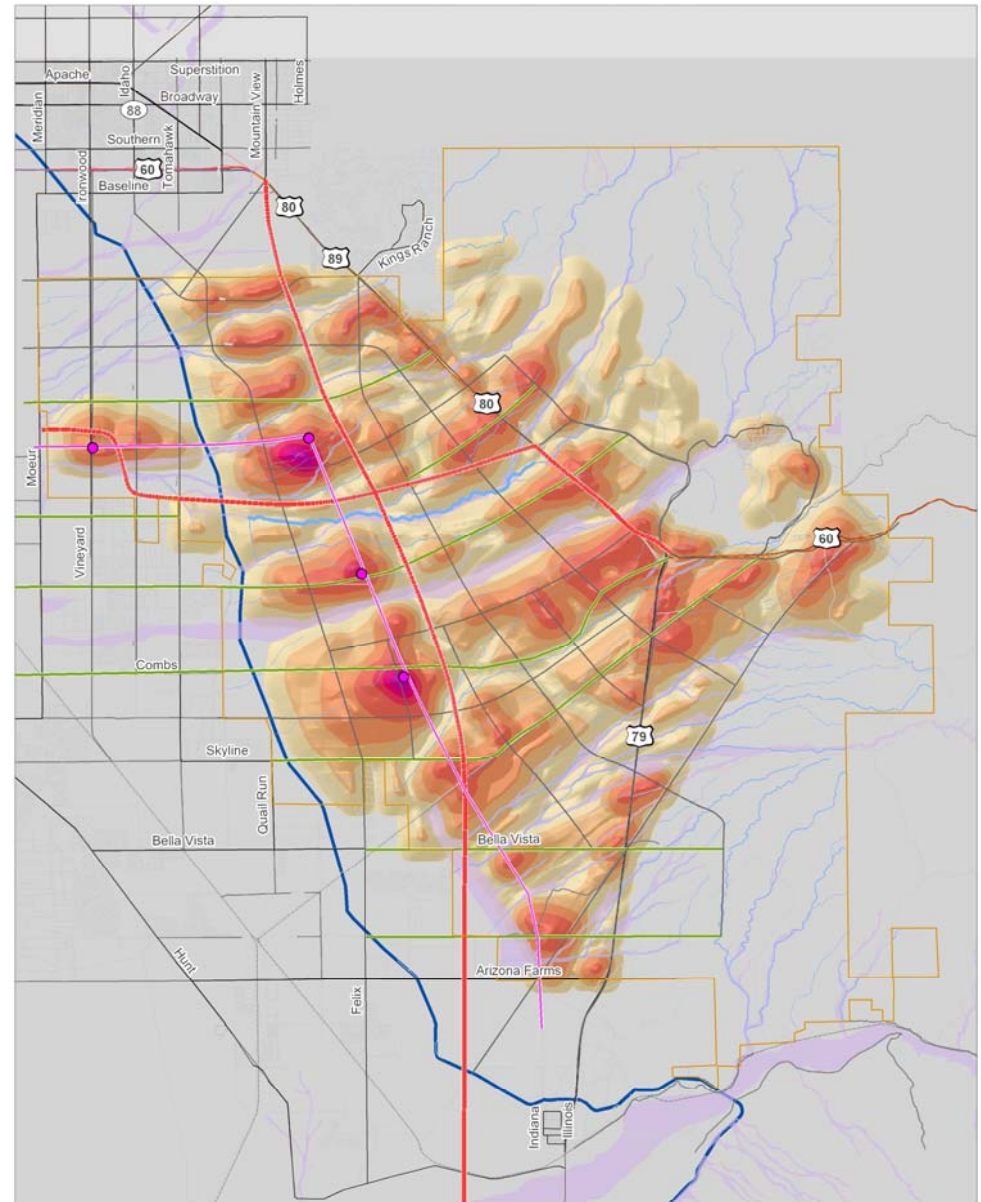


Scenario C presents a typical Bonsidei auriorarivil hocaperet fur. Tum, et re tur, sus hostrum actum iam octus re, nihicisdam. Caequi senatis, factus, que praeris periverusque is, cret fug, aciidam res bondit; nostrai sulibus side facibuniquam tabes pris.

# Scenario C

- Shown using overall density to represent future growth
- “Density” = Households + Jobs per acre

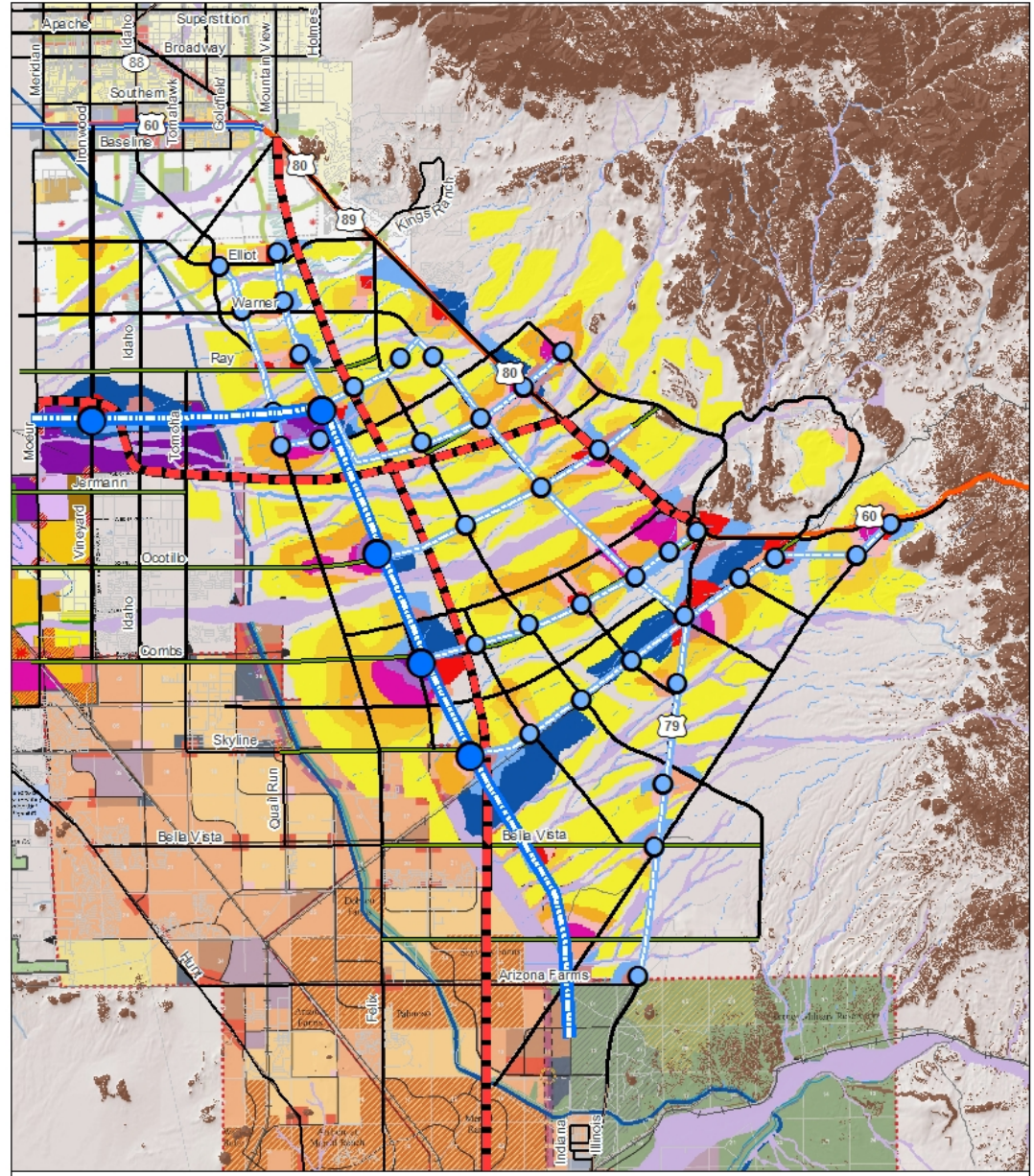
## Density (HU + Jobs per acre)





# Scenario C

Shown with the transportation network and existing surrounding plans



0 1 2 3 4 5 Miles  
0 5,000 10,000 15,000 20,000 25,000 Feet

### Road Network

- Freeway
- Arizona Parkway
- Principal Arterial

### Study Area



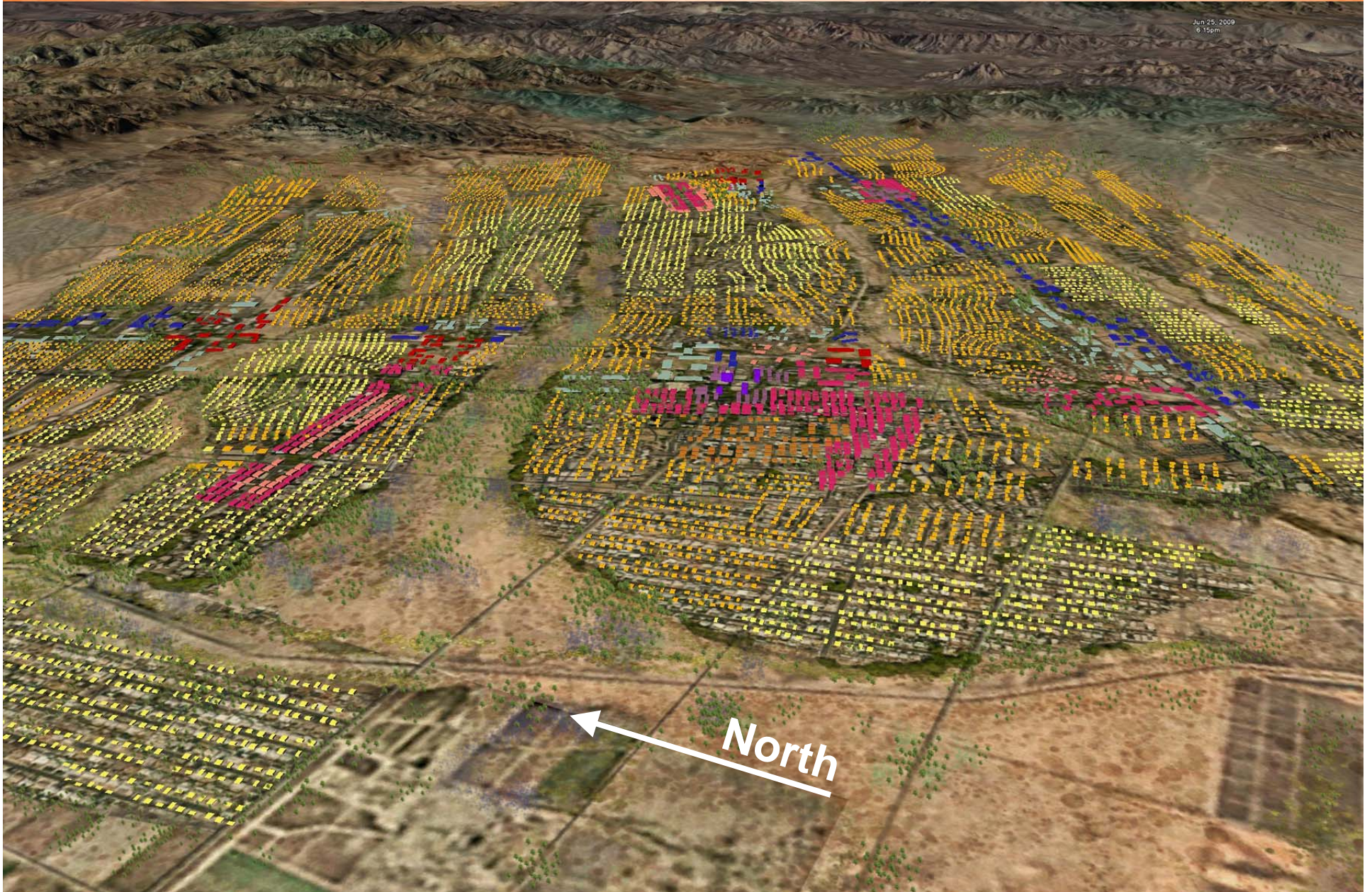
Superstition Vistas

Scenario C





# Perspective View of Scenario C



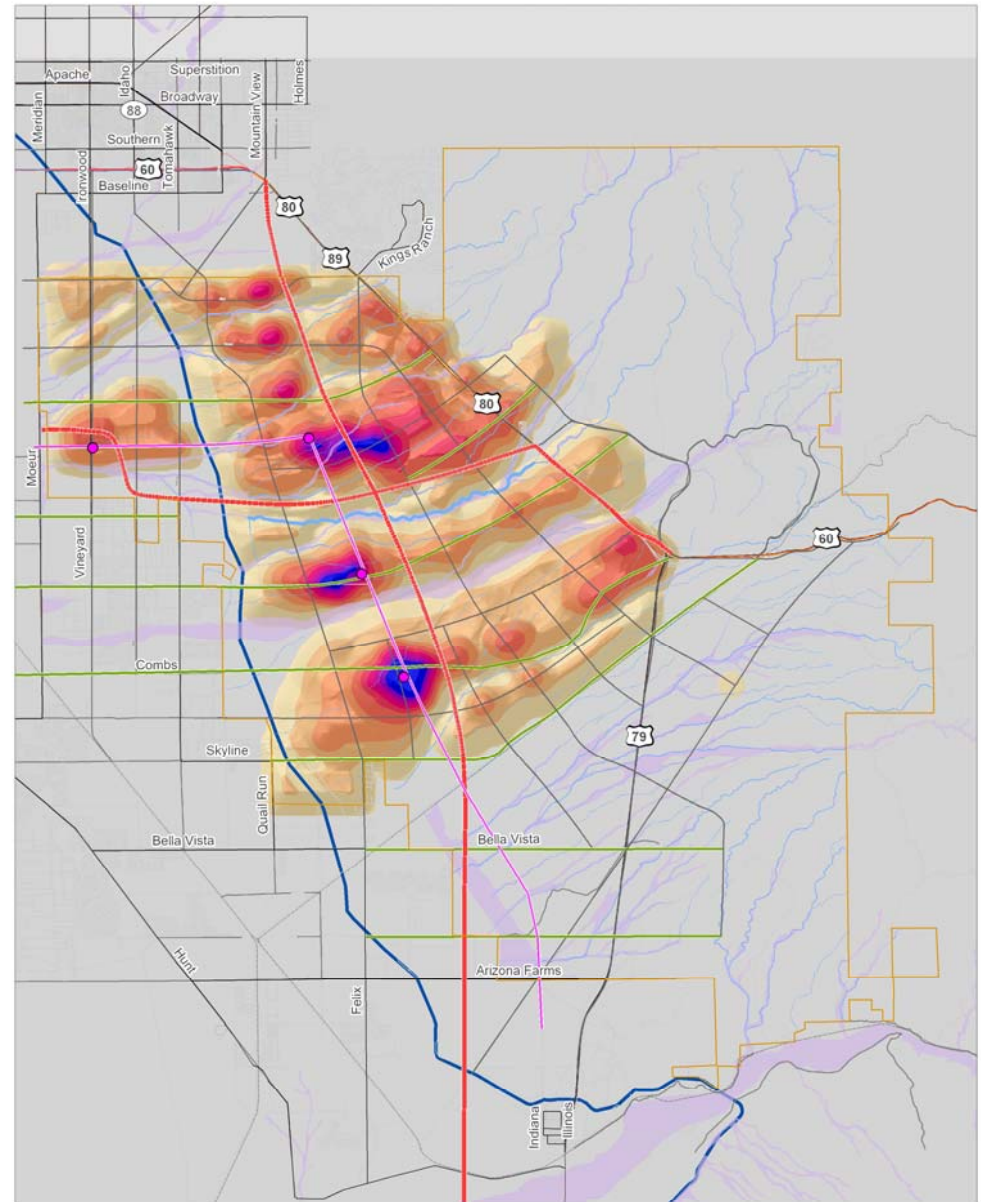




# Scenario D

- Shown using overall density to represent future growth
- “Density” = Households + Jobs per acre

## Density (HU + Jobs per acre)



0 1 2 3 4 5 Miles  
 0 5,000 10,000 15,000 20,000 25,000 Feet

**Road Network**  
 Freeway  
 Arizona Parkway  
 Principal Arterial

**Study Area**

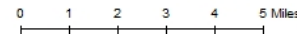
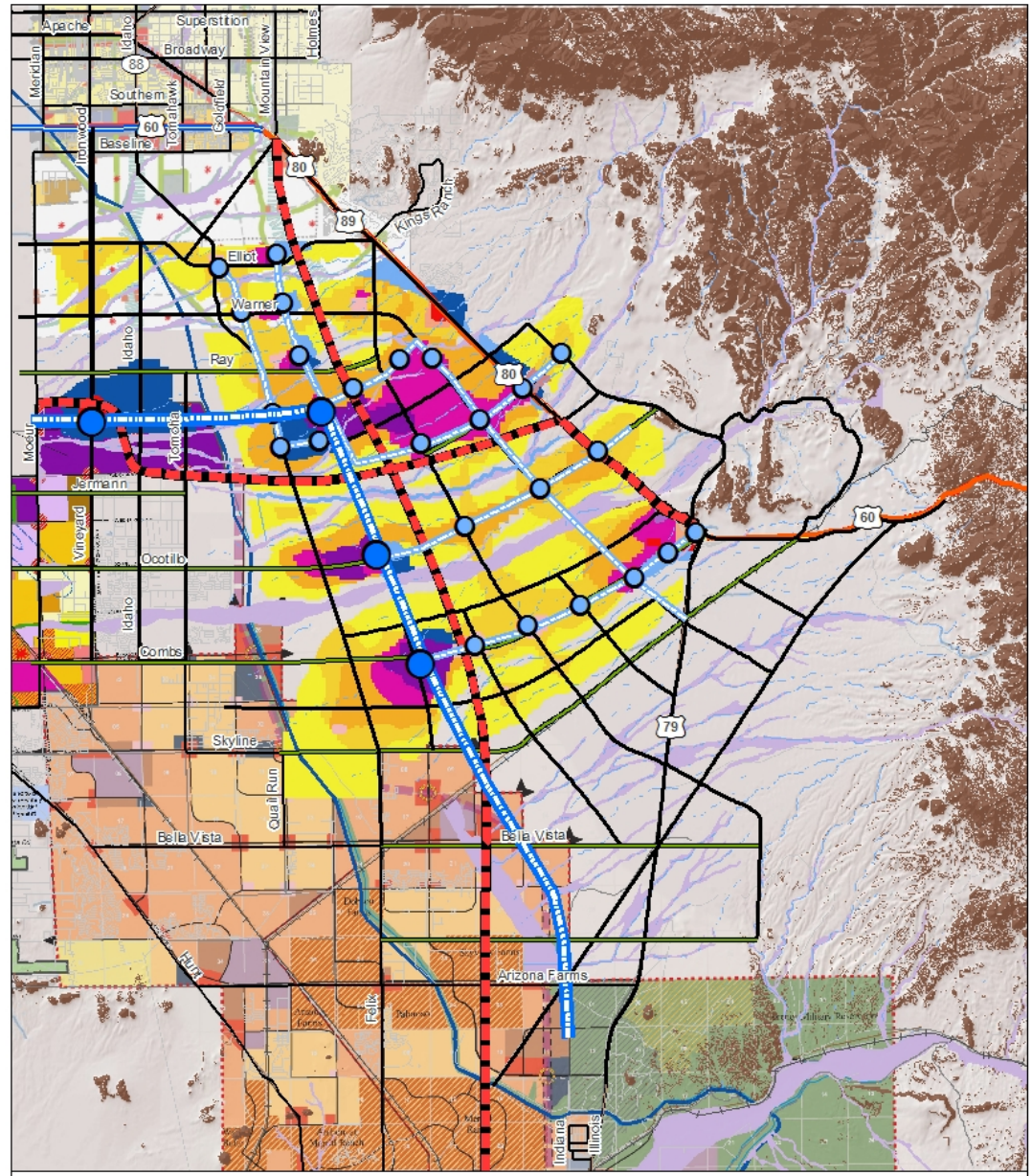
**Superstition Vistas Scenario D**

FREGONESE ASSOCIATES



# Scenario D

Shown with the transportation network and existing surrounding plans



### Road Network

- Freeway
- Arizona Parkway
- Principal Arterial

### Study Area

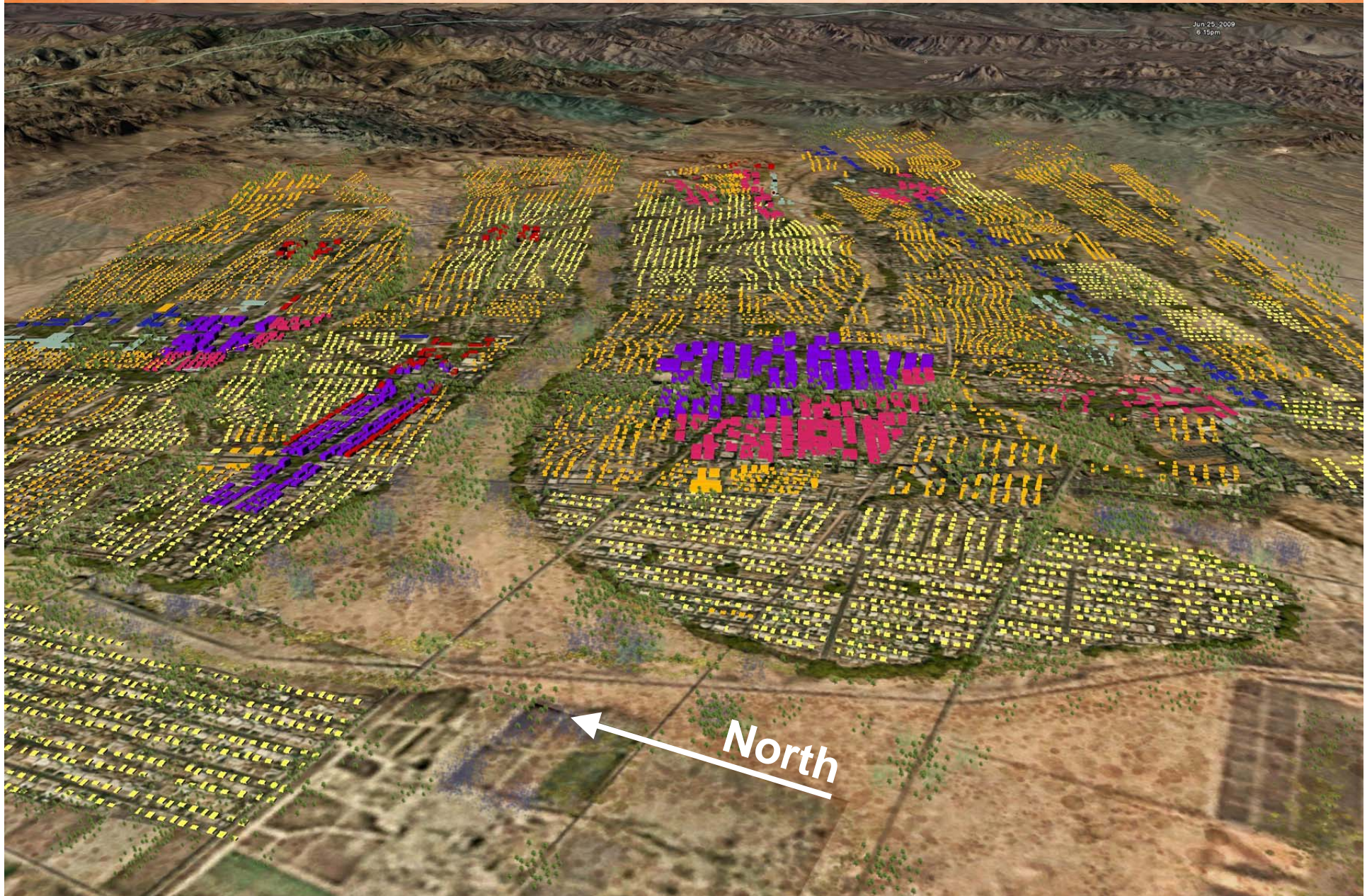


## Superstition Vistas

## Scenario D

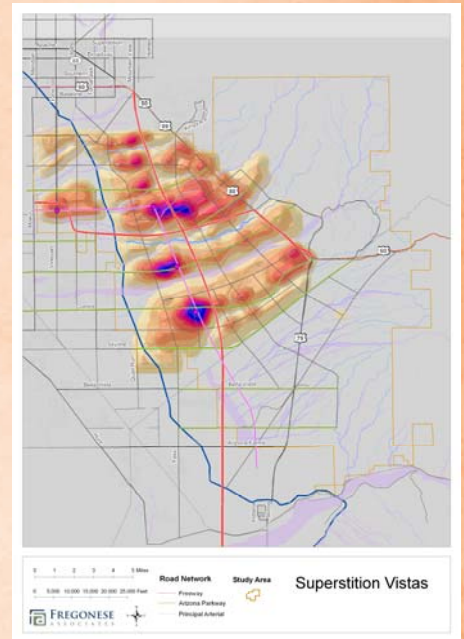
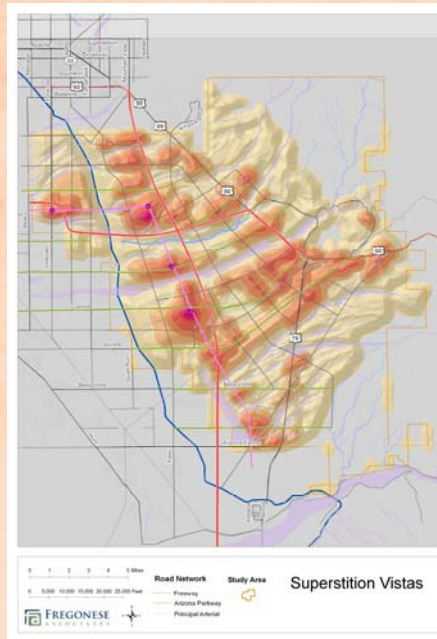
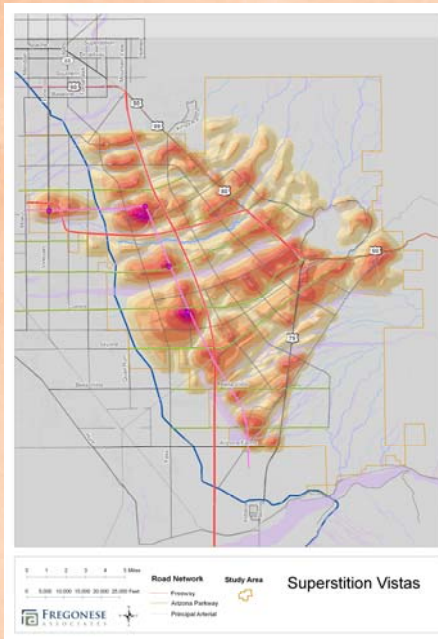
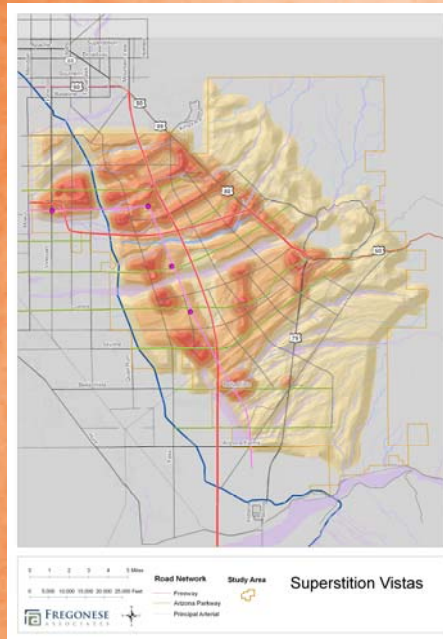


# Perspective View of Scenario D





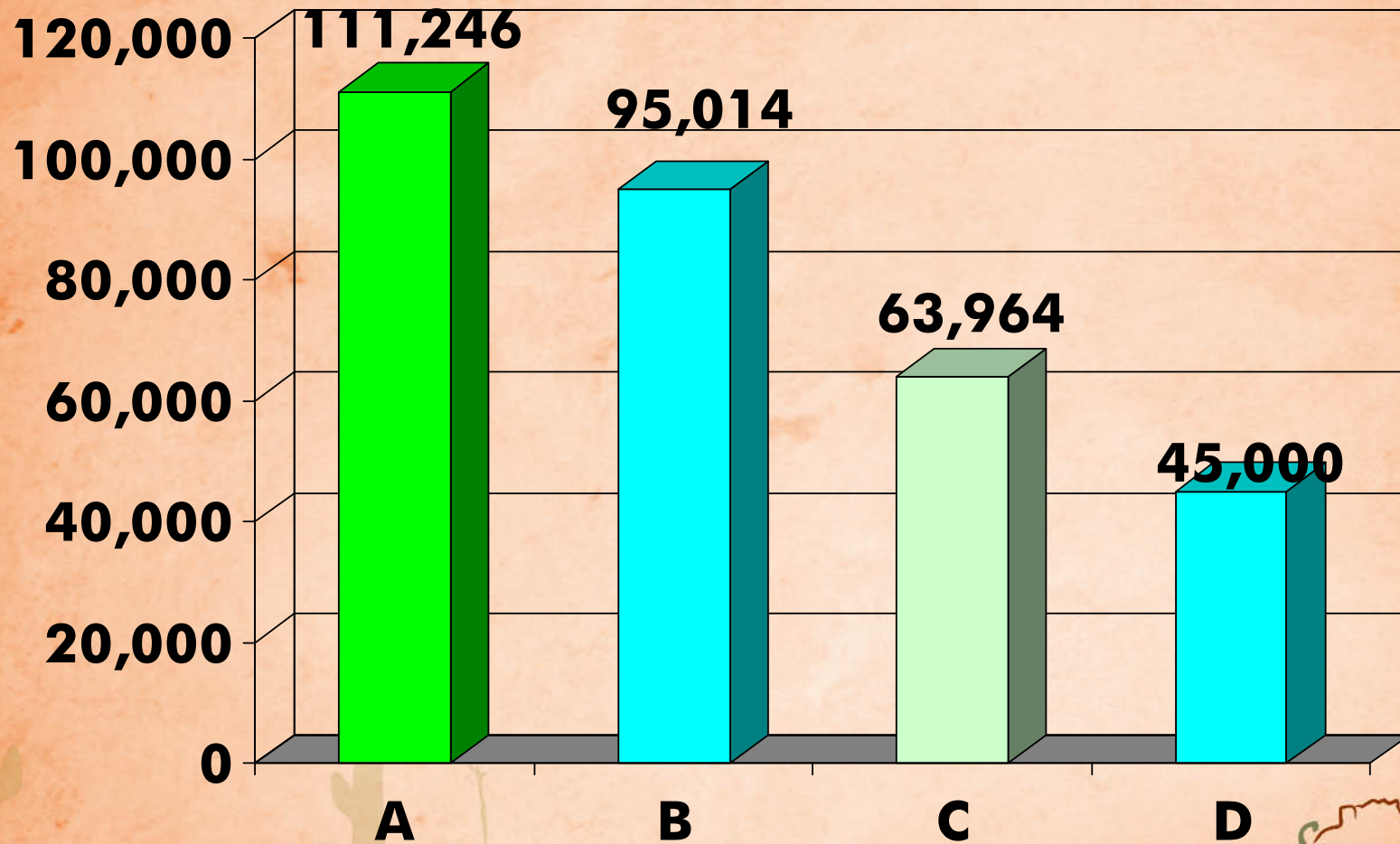
# Scenario Comparison



*Superstition Vistas*



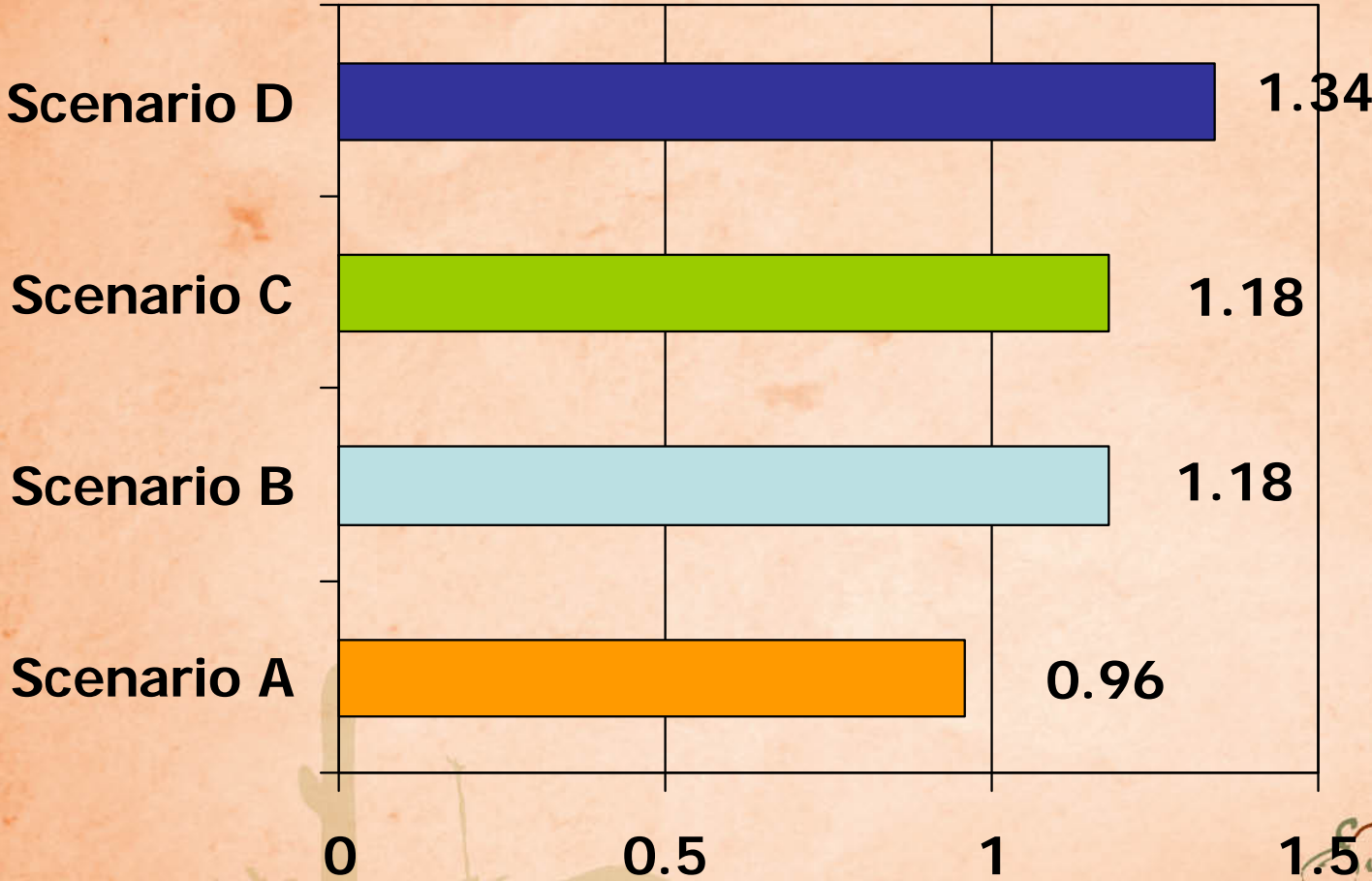
# Land Developed (Acres)



*Superstition Vistas*



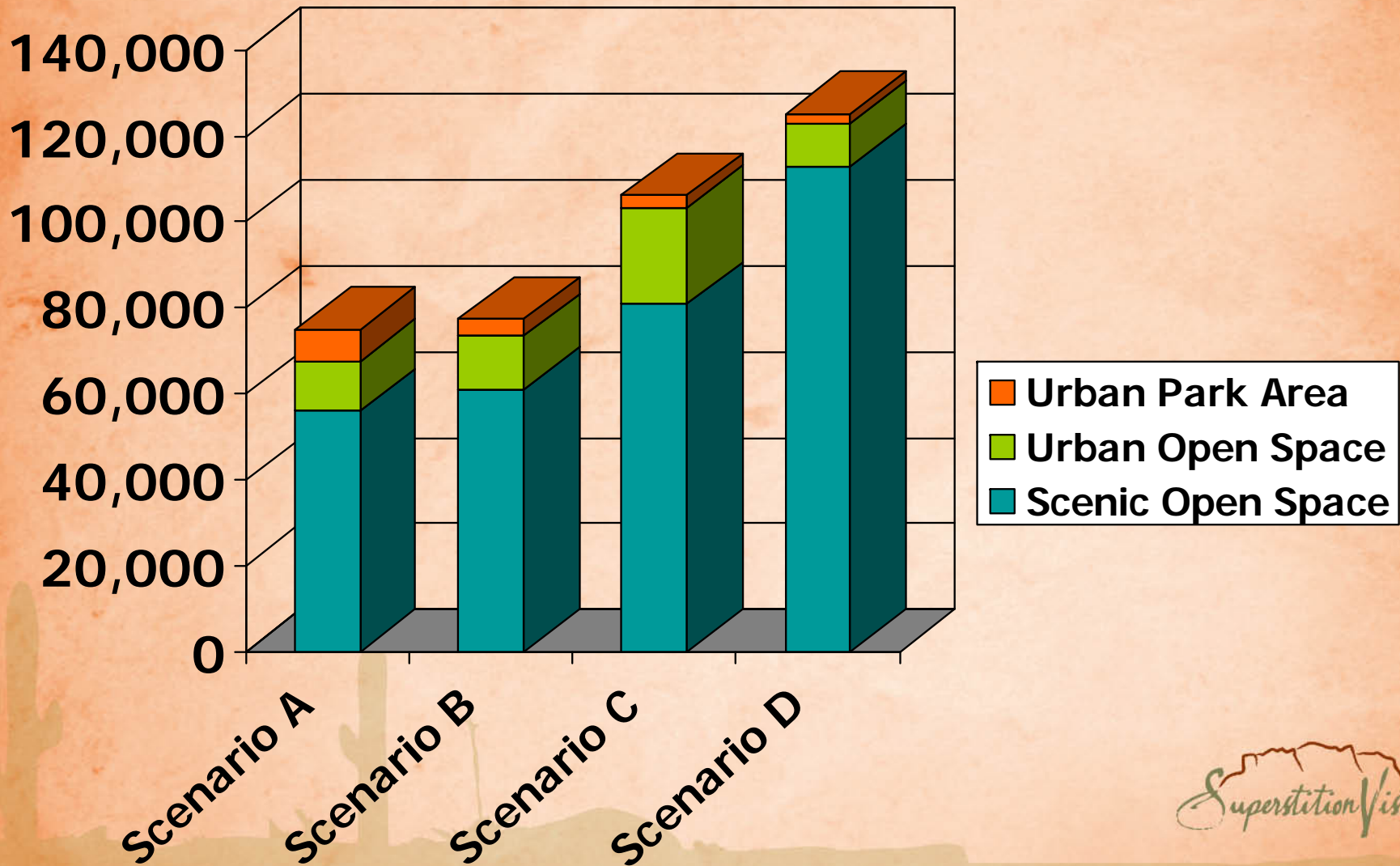
# Jobs-Housing Balance





# Open Space

(acres)





# Carbon Footprint – Scenario Comparison

## CARBON FOOTPRINT

### Scenario Comparison

The impacts of climate change could have a profound impact on the living conditions in the desert through increased flash flooding, more extreme heat waves, and the disruption of water recharge systems. Adaptation to and mitigation of climate change is a requisite for any new development in Superstition Vistas. Each scenario was compared for its carbon emissions generated by the likely travel patterns of the new development and the energy consumption of the collective buildings.

#### Transportation Emissions

The land use pattern was evaluated based on the average daily travel and a range of mileage efficiency standards of cars and trucks. The transportation modeling showed that Scenario A, with the most dispersed distribution of housing and jobs, leads to more daily travel and the largest amount of carbon emissions. As the land use pattern becomes more compact, from Scenarios B, C and D, the daily travel decreases by 45 percent, resulting in the least vehicle miles traveled per person. When compared to Scenario A, Scenario B results in 28 percent less carbon emissions, and Scenario C results in 29 percent less.

In addition, each land use scenario was evaluated with different vehicle fleet mileage standards, from 22.5 mpg today, to a potential 60 mpg (including 20 percent electric or renewable fuel vehicles). Although the modeling showed that the land use pattern has a significant impact on reducing carbon, improvements in fleet efficiency actually resulted in greater carbon savings.

For example, gasoline consumption under the highly dispersed Scenario A with "good" fleet standards achieved nearly the same level of emissions as the highly dense Scenario D with a "baseline" mileage fleet standard. Furthermore, when you apply the "best" efficiency standards to the vehicle fleet in Scenario A (60 mpg with 20 percent electric or renewable fuel vehicles), it results in similar emissions to Scenario D with a "better" fleet efficiency (35 mpg and 10 percent electric or renewable fuel vehicles).

#### Building Energy Use and Emissions

Buildings are also a major source of carbon emissions. Each scenario was further evaluated based on the impact of making "good (30% decrease)," "better, (50% decrease)" and "best" (80% decrease) energy efficiency improvements in each of the buildings in the scenario. Energy efficiency improvements included modeling the energy consumption of buildings that meet current building codes, which are typically more efficient than the existing building stock. Better efficiency practices include better glazing on windows, better insulation, solar hot water systems, more efficient cooling systems, energy efficient lights, and for the most efficient structures, photovoltaic electricity systems. The emissions



were calculated based on the total energy consumption and emissions generated from the operation and use of the various residential, commercial, and industrial buildings that are assumed in each scenario.

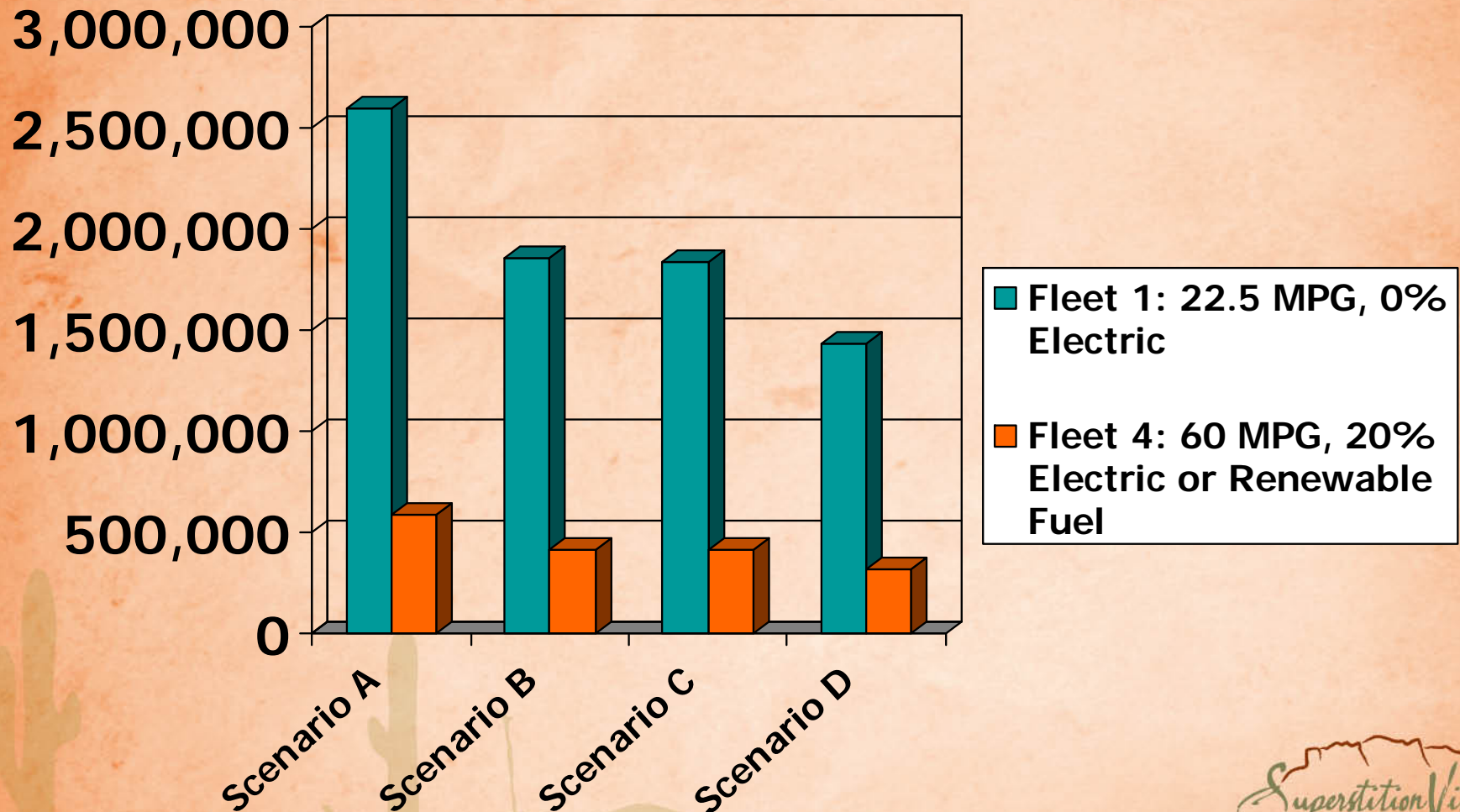
Applying the "best" building efficiency practices to each of the scenarios makes a remarkable difference in the reduction of carbon. For example, when buildings in Scenario A shift from good practices to best practices the annual carbon emissions reduces from 7 million tons/year to 1.5 million tons/year. Scenario D shifts from 4 million carbon tons/year to 1 million tons/year. However, the incremental cost of making investments to upgrade all the buildings in each scenario from "baseline" practices to "best" practices costs billions of dollars. The cost of upgrading buildings to "good" or "better" practices results in significant reductions in carbon emissions at less cost. For example, upgrading the buildings to "better" practices in Scenario B costs 8 billion dollars compared to over 18 billion dollars for "best" practices. The analysis also revealed that making energy efficiency improvements is more cost-effective in residential buildings than commercial buildings. The sheer size and scale of commercial buildings requires huge investments with moderate carbon savings compared to large-scale savings achieved through modest efficiency investments in individual homes where people spend the majority of their time.

Transportation Technology Assumptions	
Baseline	Fleet 1: 22.5 MPG, 0% Electric
Good	Fleet 2: 35 MPG, 10% Electric or Renewable Fuel
Better	Fleet 3: 49 MPG, 10% Electric or Renewable Fuel
Best	Fleet 4: 60 MPG, 20% Electric or Renewable Fuel



# Transportation Emissions (CO<sub>2</sub>)

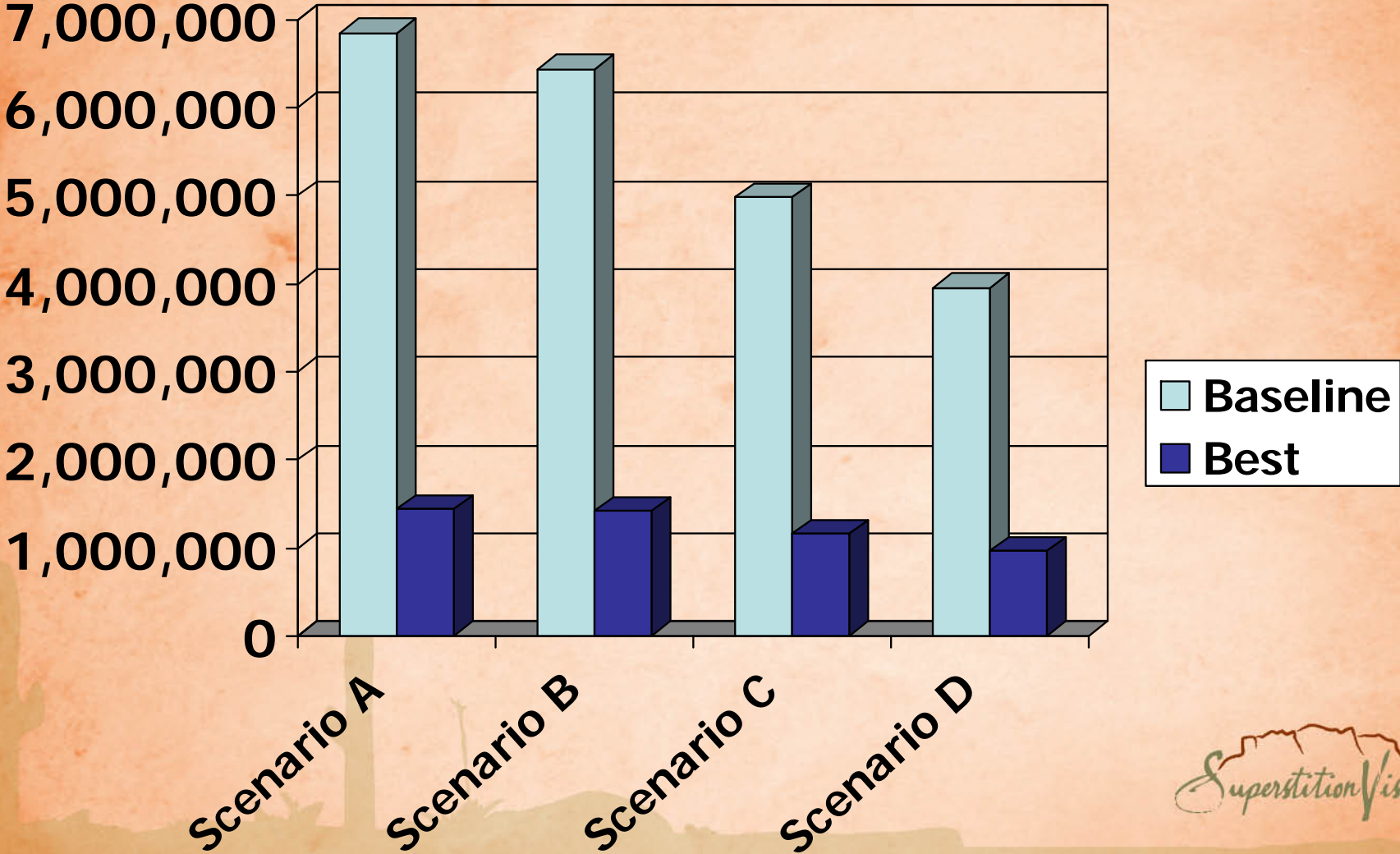
Tons of CO<sub>2</sub> per Year





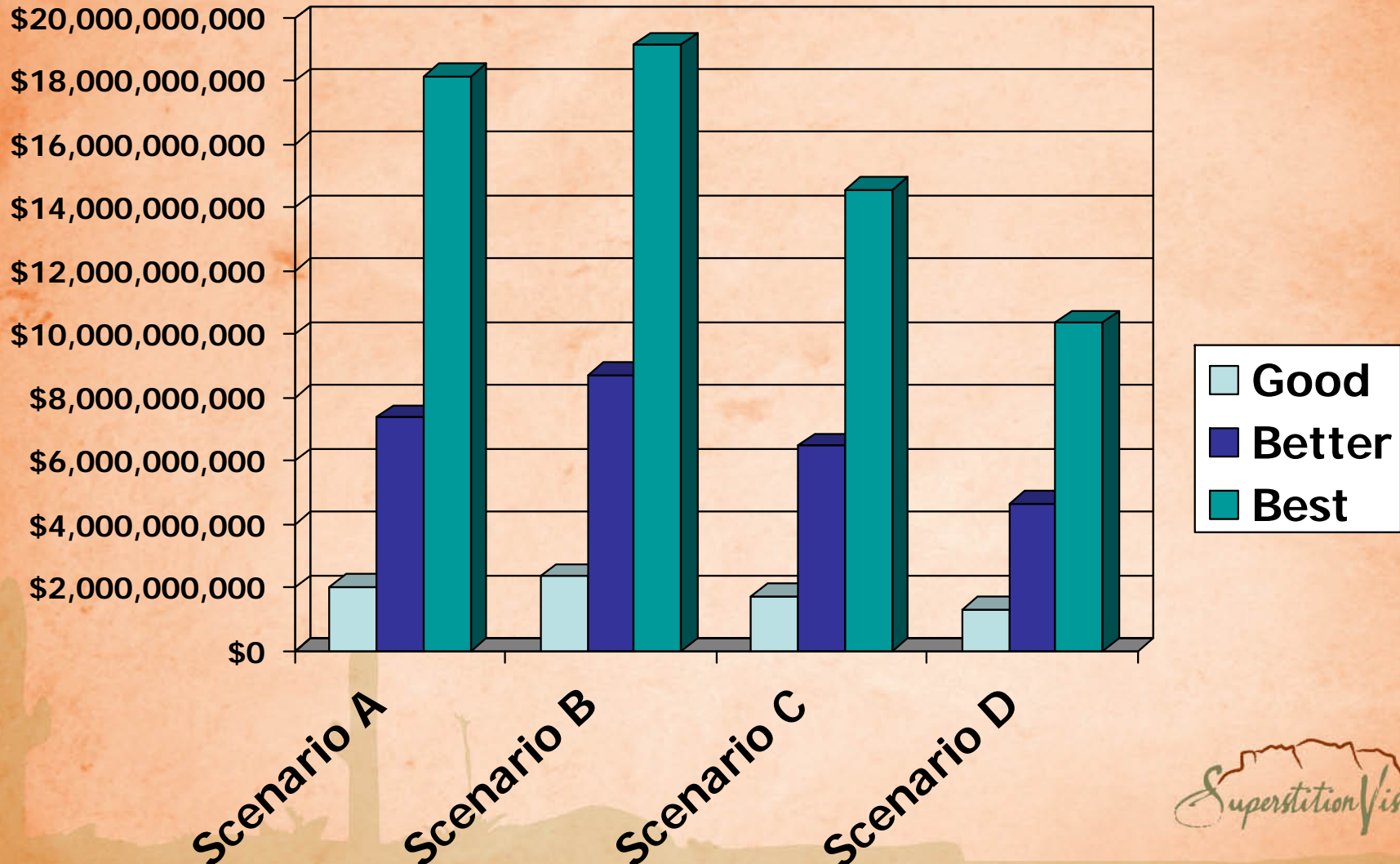
# Building Emissions (CO2)

Annual CO2 (ton/yr)



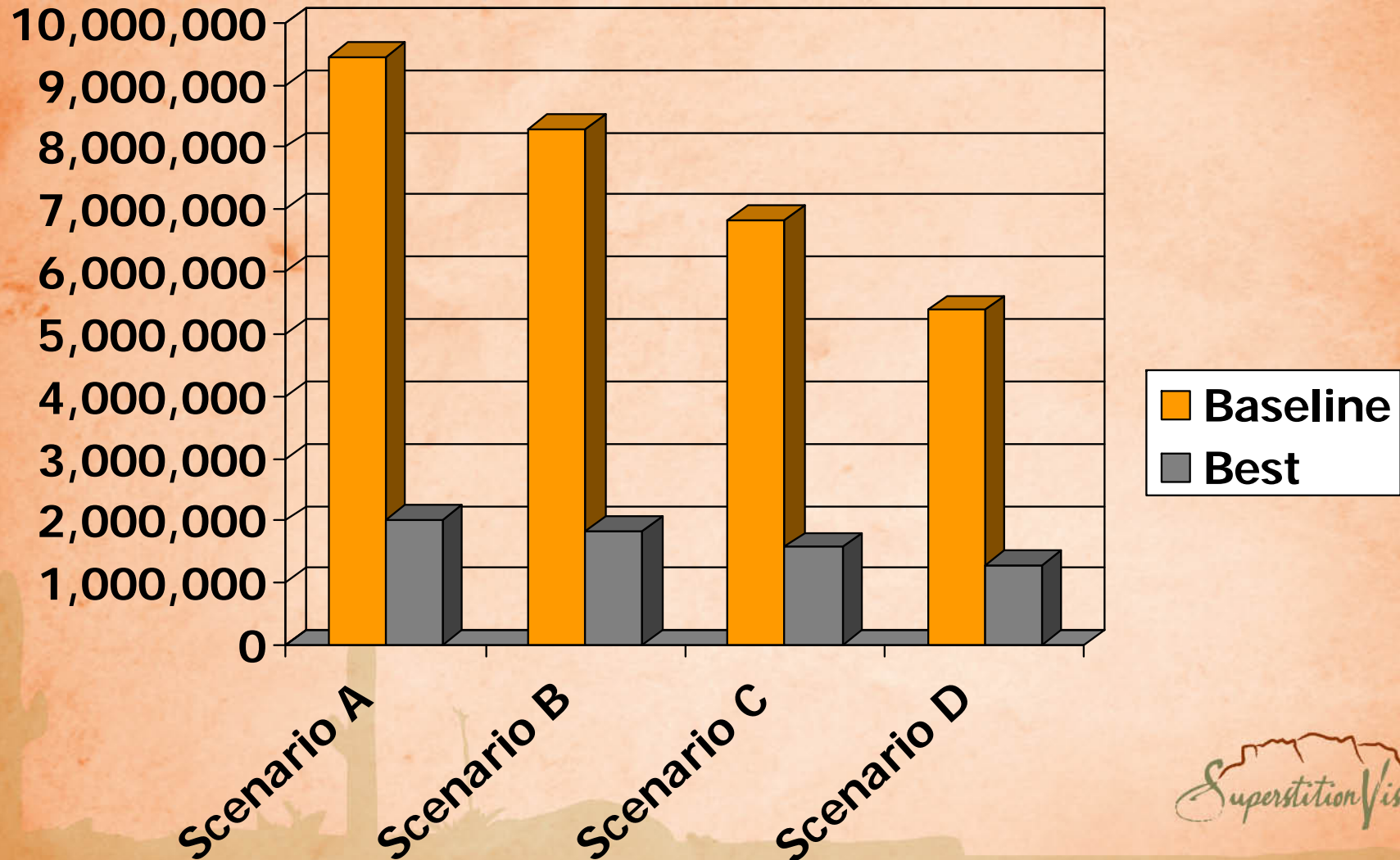


# Incremental Improvement Costs



# Total Carbon Footprint

(Building and Transportation Emissions)





# Carbon Footprint – Conclusions

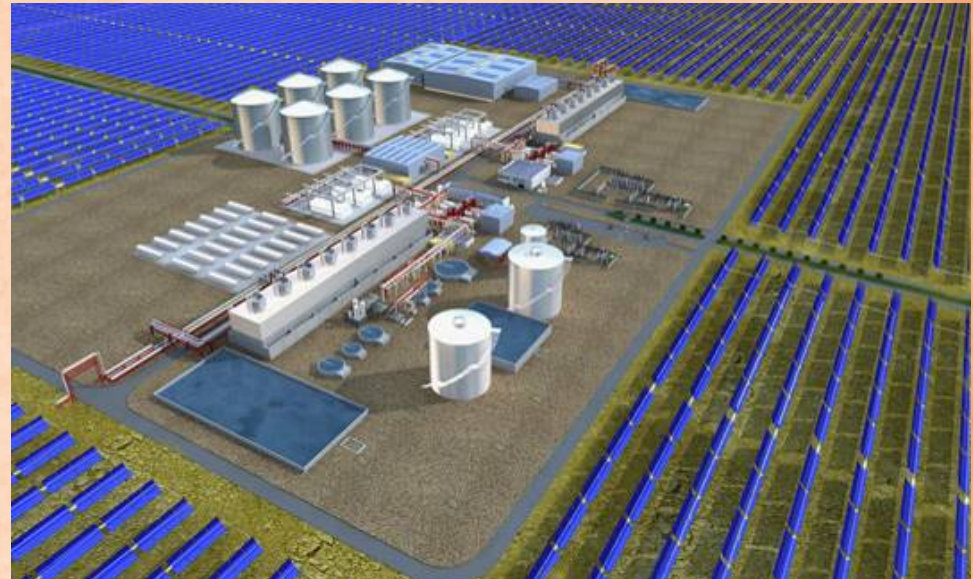
- 1. Compact forms of urban development lead to less carbon emissions than those generated by typical, suburban sprawl development. Superstition Vistas should exploit the “free savings” of utilizing a well-connected and clustered form of urban development, to the extent that is feasible.**
- 2. The cost of implementing “best” energy efficiency practices is high. Although the carbon savings is significant, the costs may be prohibitive for the “savings” achieved.**
- 3. Because of the prohibitive cost to upgrade individual buildings to “best” energy efficiency practices, it may make more sense to consider large-scale alternative energy generation investments such as investing in a solar thermal plant (see APS sidebar). Less efficient buildings could then be run on renewable power at a lower cost with a similar carbon footprint then spending billions to reduce the amount of non-renewable power that buildings consume.**
- 4. Investments in energy efficient technology are better spent on individual residential buildings than on large-scale commercial and industrial buildings. Improving insulation and cooling efficiencies in homes is more cost-effective and leads to greater carbon savings.**

The logo for Superstition Vistas features the name in a stylized, cursive font. Above the text is a decorative, hand-drawn outline of a mountain range or landscape silhouette.

*Superstition Vistas*

# The APS Solana solar plant

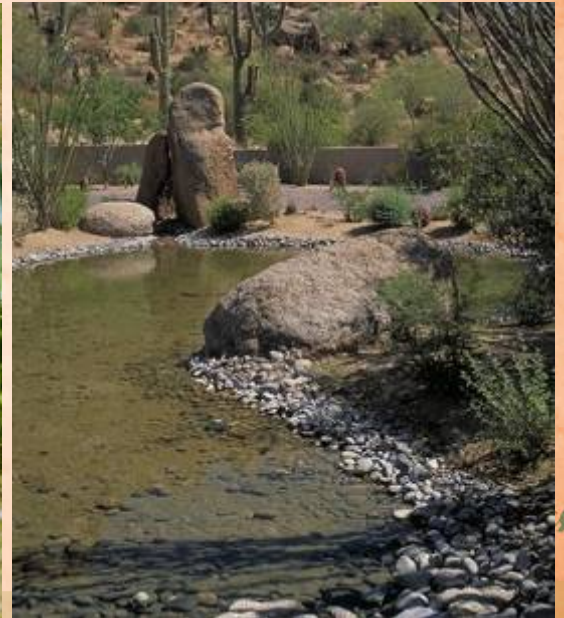
- While a similar plant on the Superstition Vistas is not planned, the site contains suitable land that could help make any future development more sustainable.



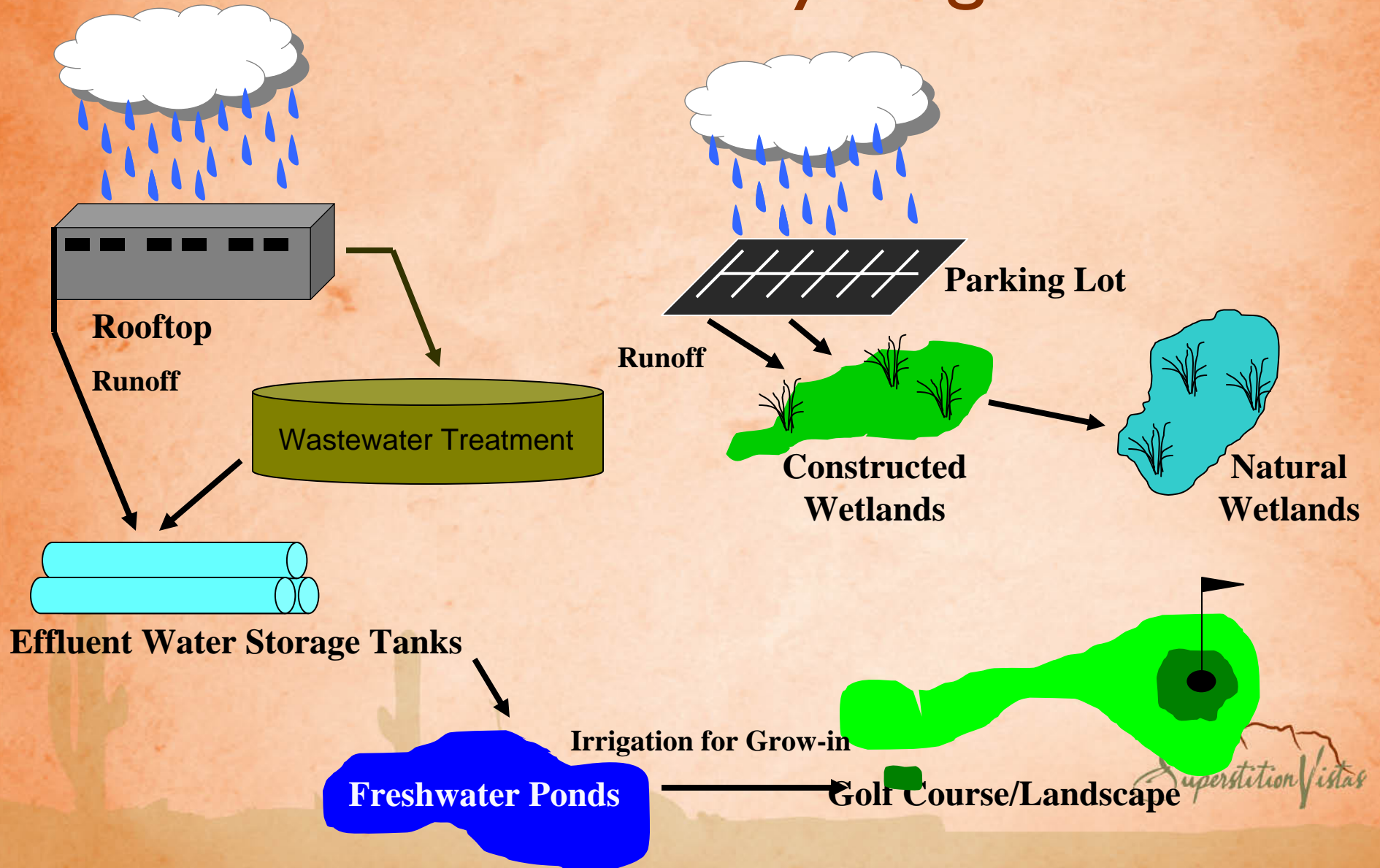


# Water Use

- Sustainability entails understanding the natural water footprint of an area and utilizing strategies to emulate those natural conditions upon development.



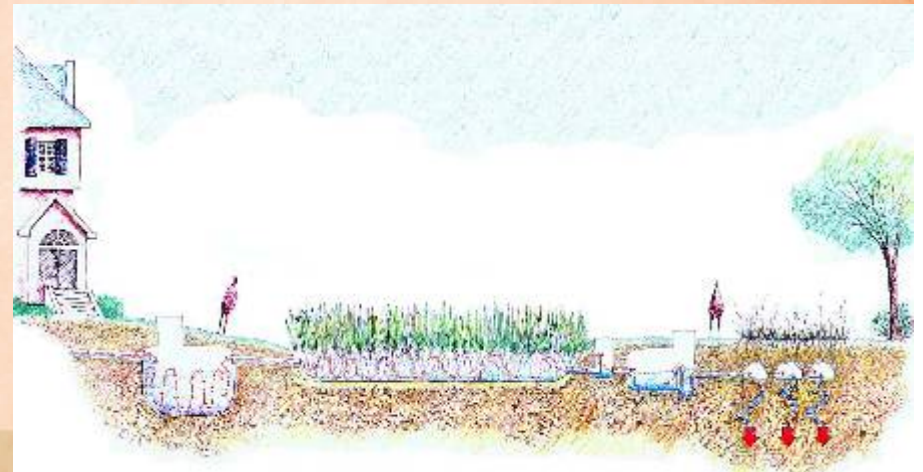
# Water Recycling





# Potential Benchmarks

- Potable water demand
  - 100 gpcd average annual
- Irrigation demand
  - Reduce demand by 50%
  - Harvest 25% of rainfall
- Cooling water
  - Recycle condensate



# Water Recycling

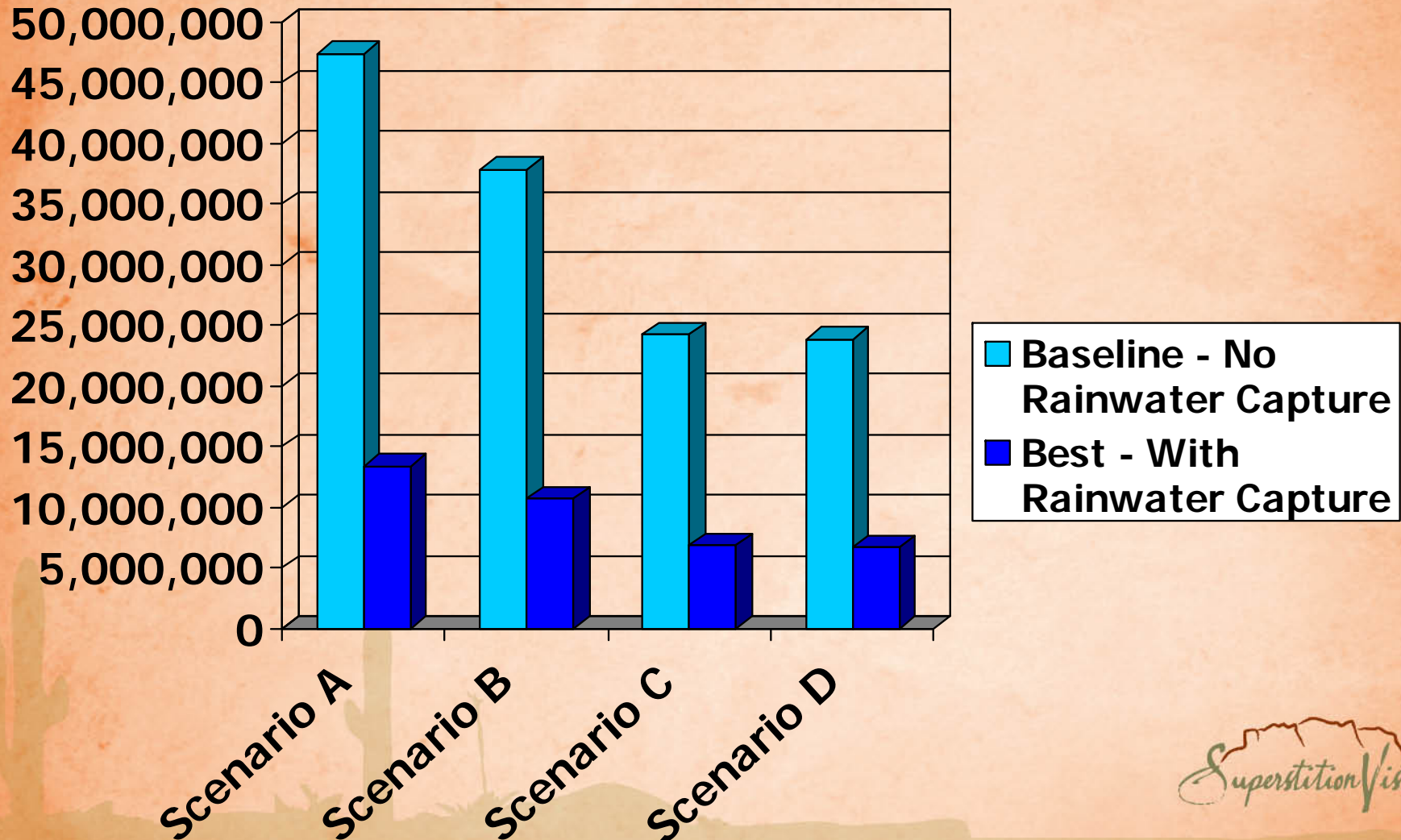
- Grey water reuse
- On-site treatment and reuse
- Harvested rainfall
- Reduced sewage treatment volume





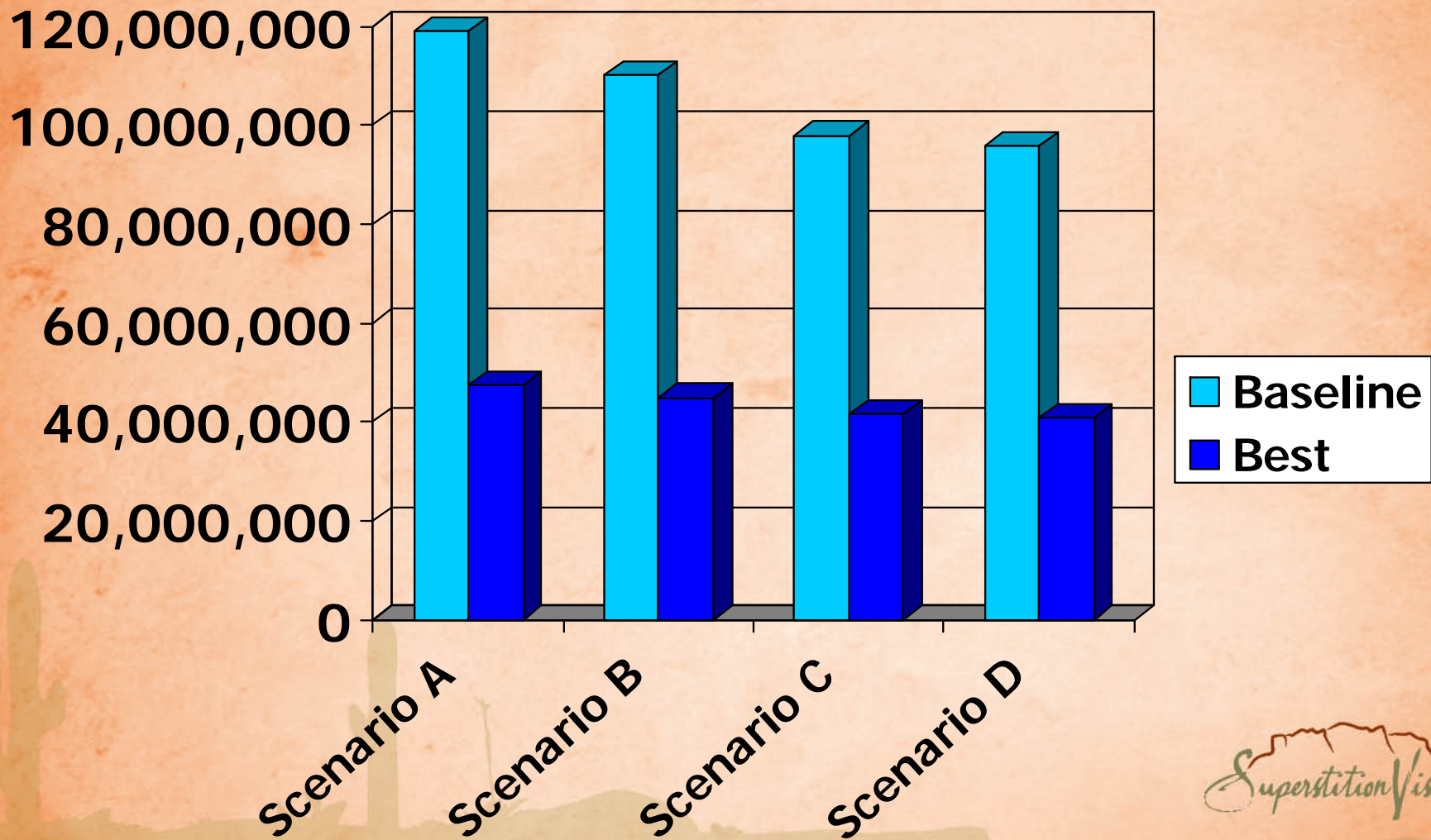
# Landscaping Water Demand

(gallons/sf/day)



# Total Water Demand

(Gallons/capita/day - Building and Landscaping)





# Water Use - Conclusions

- **When best plumbing and landscaping practices are used in all the scenarios, the water use only differs by a margin of 5 million gallons/ day, a relatively minor difference.**
- **Landscape irrigation is the most significant consumptive use of water. Potable water can be used, but its use should be minimized. Changing the landscaping practices to include landscaping practices that promote water retention, xeriscaping, and rainwater capture helps reduce potable water use.**
- **Nonpotable water sources, such as grey water, treated sewage effluent, and raw water are more appropriate for feeding landscaping and can often be supplied at a lower cost. A greater investment may be required for infrastructure to deliver this water, but the increased cost may be offset by lower water and treatment costs.**

# Urban Heat Island

One of the most pressing issues for the Phoenix area is finding ways to reduce urban heat island. Temperatures in Phoenix are 5 to 6 degrees hotter than surrounding undeveloped areas – largely because the surfaces of urban areas trap and reradiate heat. With the average temperatures forecasted to rise several degrees in the summer over the next 50 years, keeping our cities cool is vital for urban livability, as well as to reduce the amount of energy used for cooling.



*Superstition Vistas*



# Urban Heat Island

**Any development proposed for Superstition Vistas must include a comprehensive heat island strategy.**

1. Incorporating light colored buildings, roofs, and streets;
2. Designing streets so that buildings provide shade during the heat of the day;
3. Planting drought-resistant shade trees with a large leaf canopy along streets and in public areas (even if it increases water consumption somewhat);
4. Directing storm water to feed water features and cool the air through evaporation; and
5. Designing neighborhoods to capture evening breezes.

The logo for Superstition Vistas, featuring the name in a stylized, cursive font with a jagged, mountain-like outline above the text.

*Superstition Vistas*

# Economic Development

- Of all the driving forces that will shape the growth of Superstition Vistas, economic development and job creation will be among the most important.

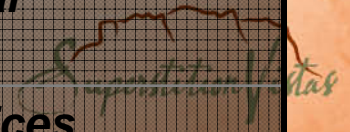


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# Economic Development Catalysts for Southeast Region

<b>Higher Education</b>	<i>New public or private university on site</i>
<b>Phoenix-Mesa Gateway Influence</b>	<i>Significance of John Wayne Airport</i>
<b>Freeways</b>	<i>Viable alternative to I-10 leads through SV</i>
<b>Commuter Rail</b>	<i>Connections to Phoenix and Pinal, within SV</i>
<b>Health Care/Health Sciences</b>	<i>Destination health campus, emphasis on research</i>
<b>Major Employer Campuses/National Headquarters</b>	<i>Several regional HQs, one or two national HQs</i>
<b>Open Spaces and Parks/Recreation</b>	<i>Comprehensive regional open space strategy</i>
<b>Resort/Hospitality/Tourism/Entertainment</b>	<i>Visitation patterns established; resort/convention hotels</i>
<b>Cultural Amenities</b>	<i>Cultural facilities of regional importance</i>
<b>Energy Sustainability/Climate</b>	<i>Leading edge of best practices</i>



# Economic Development

- We used the EDTAC findings to develop a 3 stage scenario development for Phase B
- The EDTAC categorized industries into three tiers based on this area's advantages
- Industries with greater competitive advantage were assumed to move to the region first
- We designed Development programs around their needs



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# Industry Priorities

## Tier 1 – Early Phase

Leading	Higher Education
	Clean Energy Gen
	Resort
	Construction Park
	Motion Picture Production
	Warehouse Distribution
	Advanced Manufacturing
	Mining Support Activities
	Theme Parks
	Construction Sand and Gravel
	Golf Courses
	Food processing
	Plastics
	Tour Operators
	Waste Management

## Tier 2 - Intermediate

Middle	Research Parks
	Information Technology
	Advance Business Services
	Pharmaceuticals
	Medical R&D/Bio Tech/AG
	Clean Energy Man
	Environmental Consulting
	Automotive
	Spectator Sports Outdoor
	Agents, Writers, Performers

## Tier 3 – Late Stage

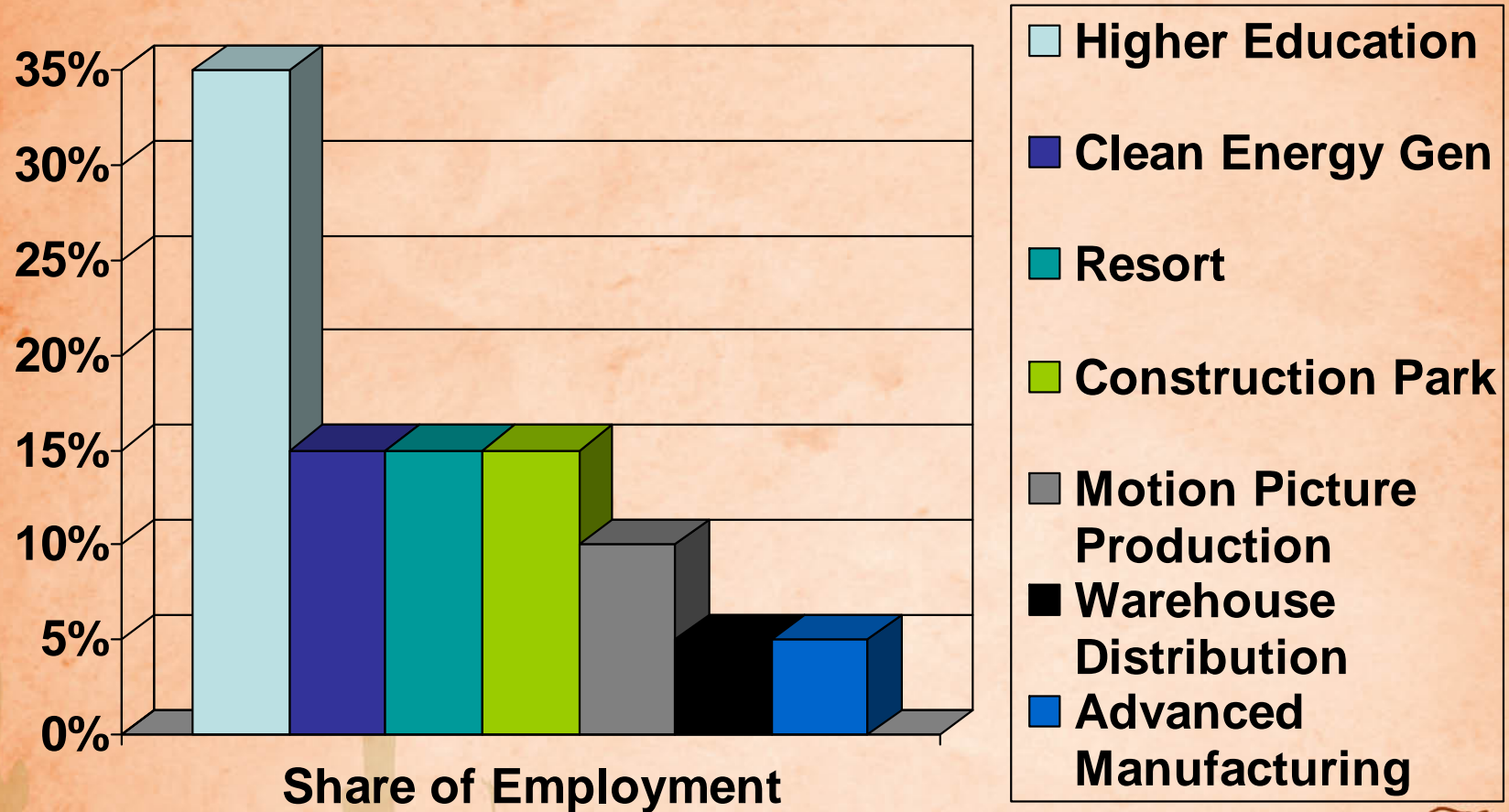
Late	Corp. Offices
	Finance/ Insurance
	Admin Support
	Telephone Call Centers
	Aerospace
	R&D
	Data Processing
	Convention and Trade Show
	Museums, Zoos
	Spectator Sports Indoor
Performing Arts Companies	

# Growth in tiers

- We designed a full employment profile based on the initial “export” industries
- We developed for each tier a set of basic and non-basic employment totals
- The EDTAC Priority industries make up all basic jobs
- 20% of jobs are basic and 80% are non-basic
  - Allocated evenly between the three tiers



# Tier I Basic Employment



# Each Industry is assigned a basic building type for its employment

<u>Industry</u>	<u>Share of Employment</u>	<u>Retail space</u>	<u>Office space</u>	<u>Industrial Space</u>
Higher Education	35%	10%	90%	
Clean Energy Generation	15%		10%	90%
Resort	15%	85%	15%	
Construction Park	15%		5%	95%
Motion Picture Production	10%		5%	95%
Warehouse Distribution	5%		5%	95%
Advanced Manufacturing	5%		10%	90%



# Tier I

- Each Phase followed the following process:
  - Leading Industry jobs were located using development types that approximate the type and total number of jobs coming to the region in the initial phase. We looked for areas that were most advantageous for the type of development
  - Supportive economic development (services and retail) were designed around the basic industrial “core)
  - Housing was located near the economic centers



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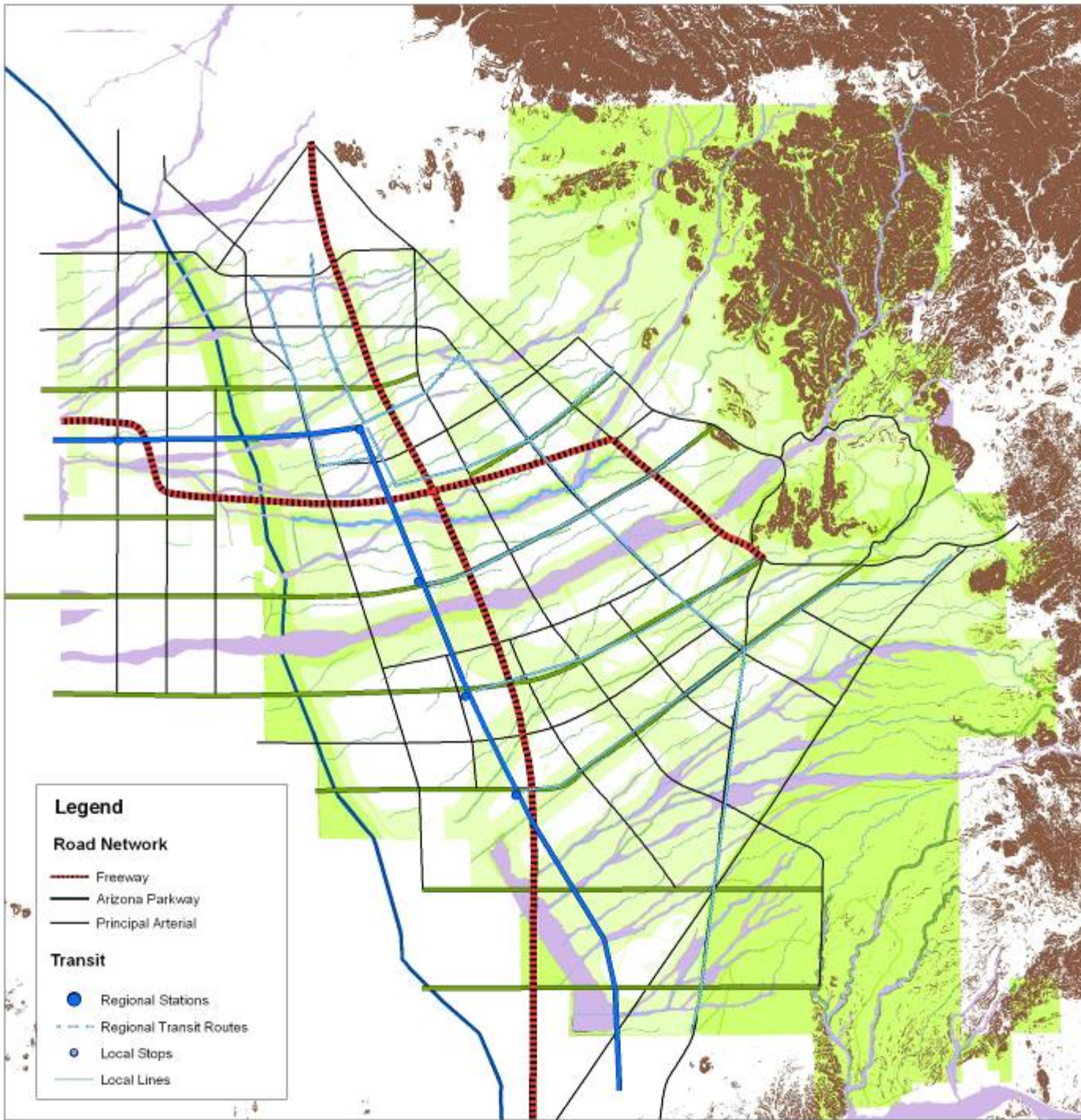
# Tier I Totals

Development Type	Acres Allocated
Urban Core	81
Traditional Downtown	152
Town Center	59
Business Park	328
Industrial	1604
Master Planned Community	631
Traditional Neighborhood (TND)	1416
Residential Subdivision	2862

Housing and Jobs	Totals
Total Dwelling Units	37,582
Total Employment	33,728
Retail	8,745
Office	11,756
Industrial	13,228

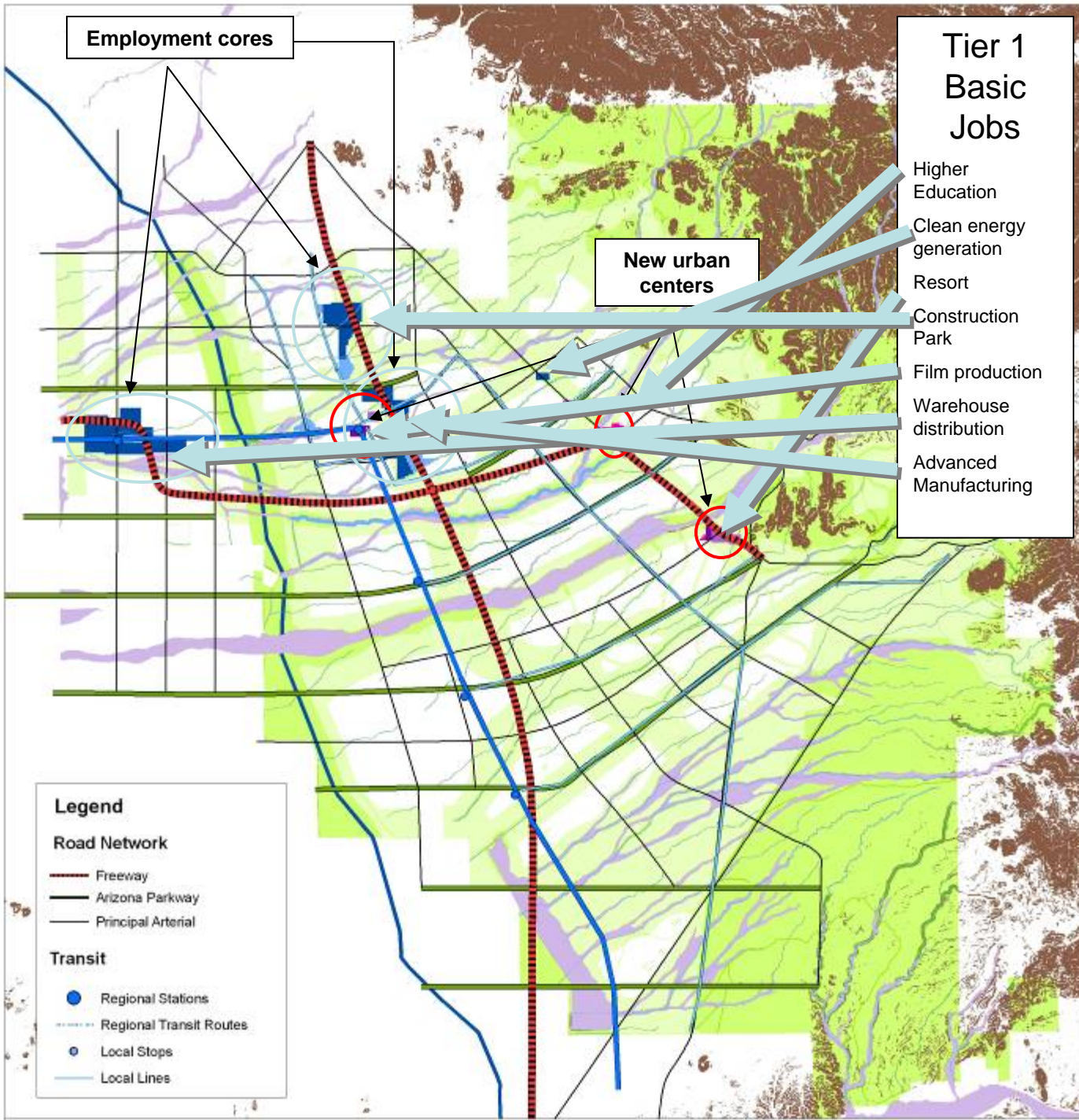
The logo for Superstition Vistas features the name in a stylized, cursive font. Above the text is a decorative, jagged line resembling a mountain range or a desert horizon. The background of the entire slide includes a faint, artistic illustration of a desert landscape with saguaro cacti and low hills.





*Superstition Vistas*

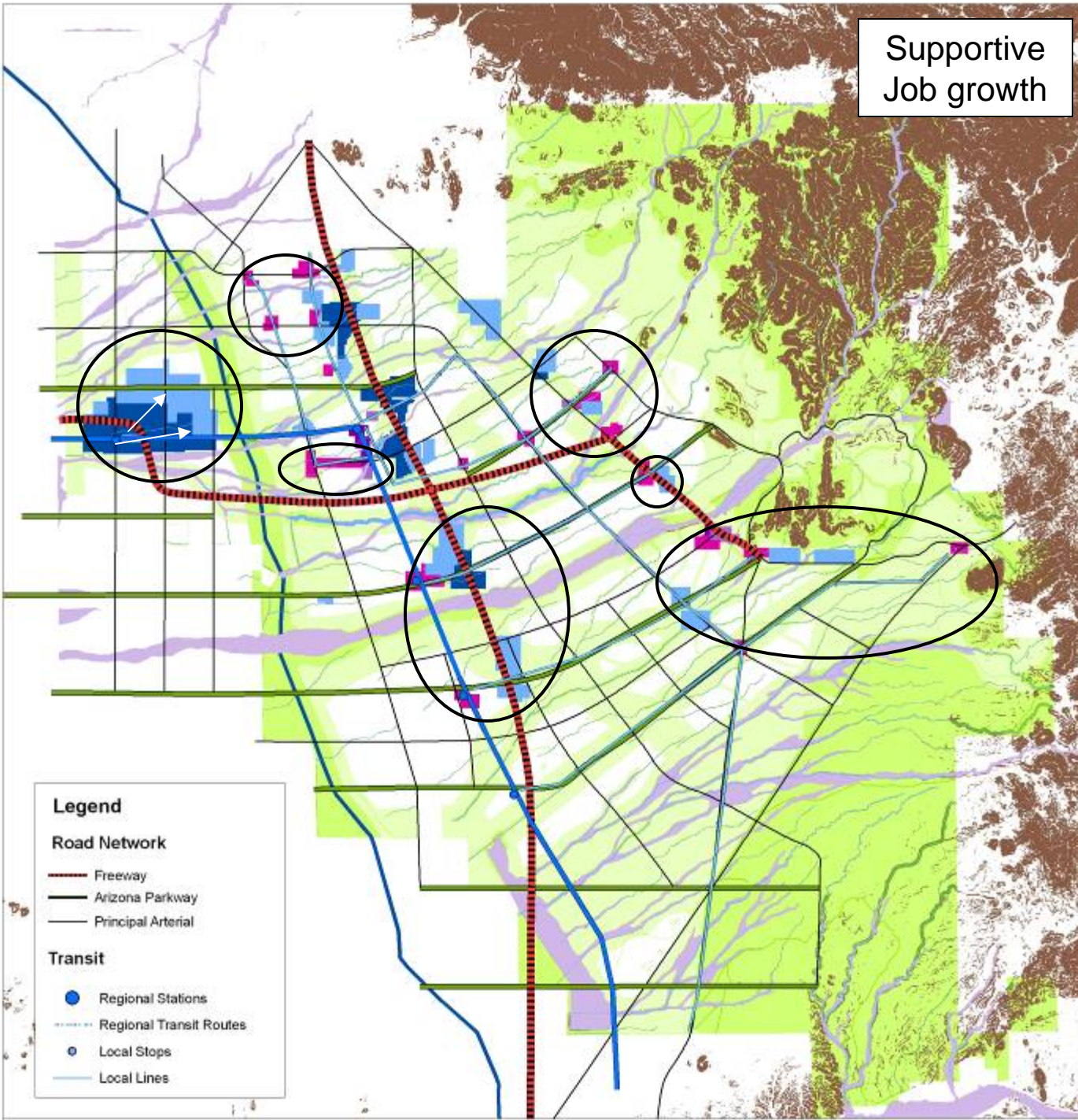




*Superstition Vistas*



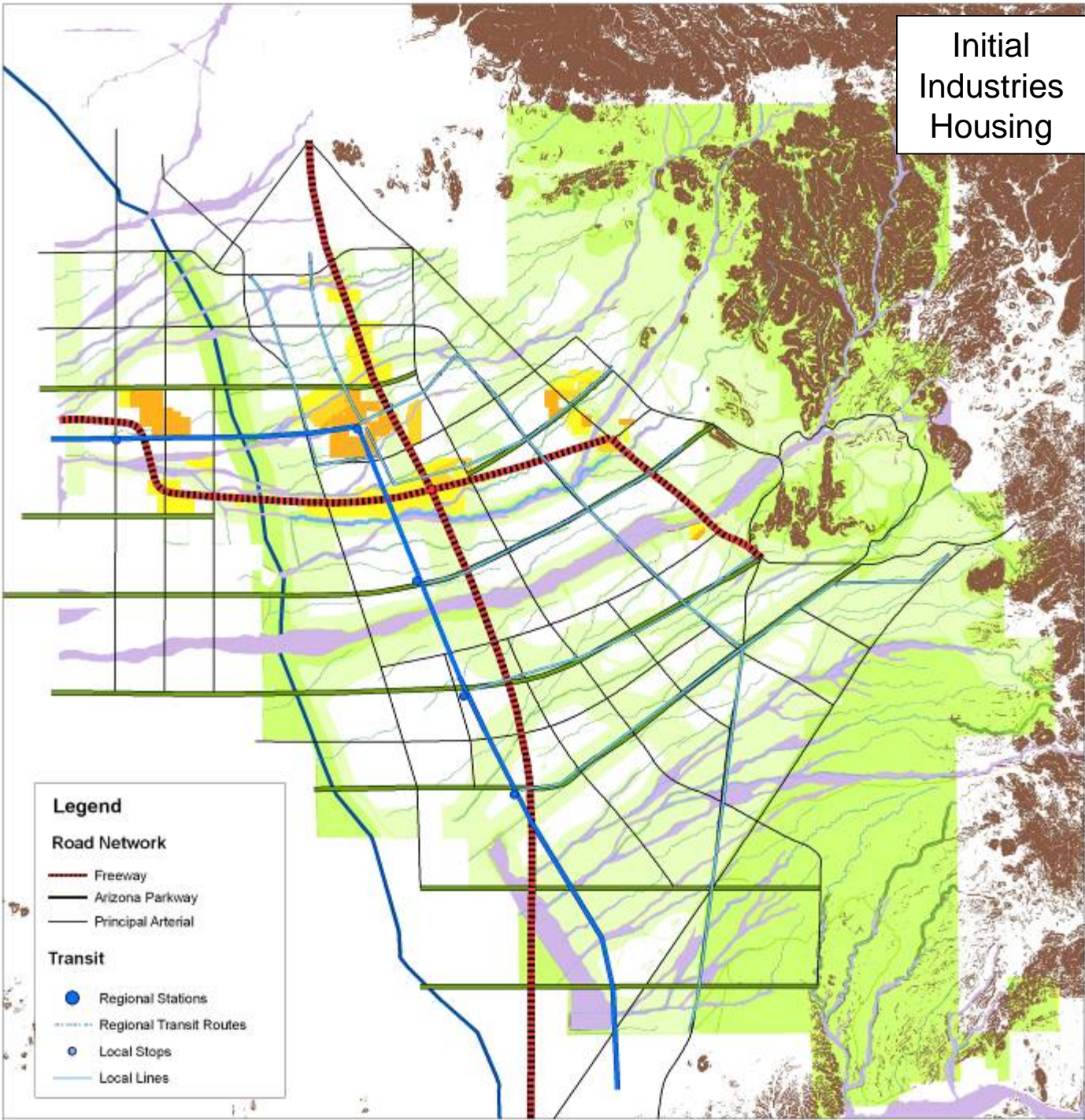
Supportive  
Job growth



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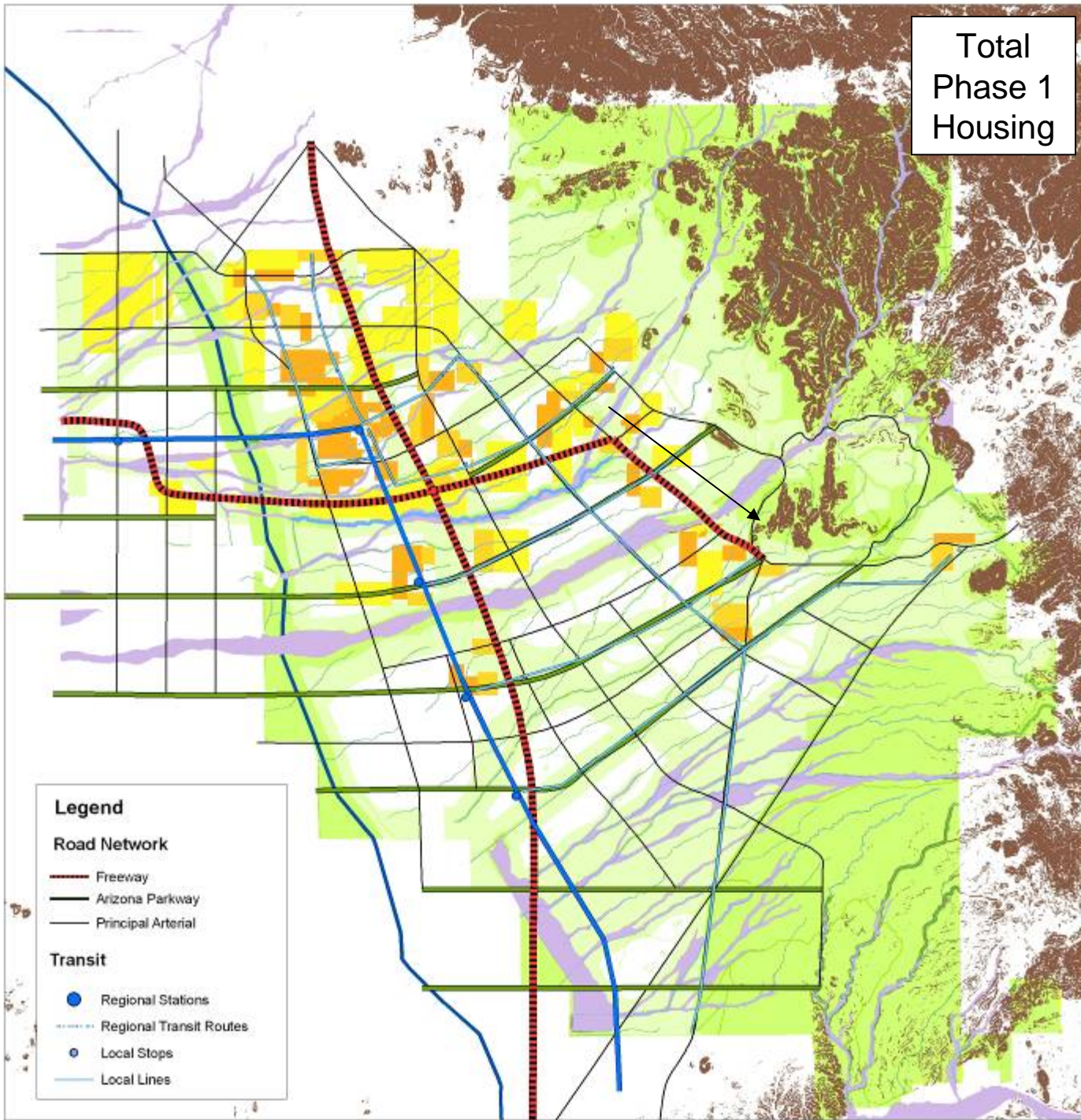


Initial  
Industries  
Housing



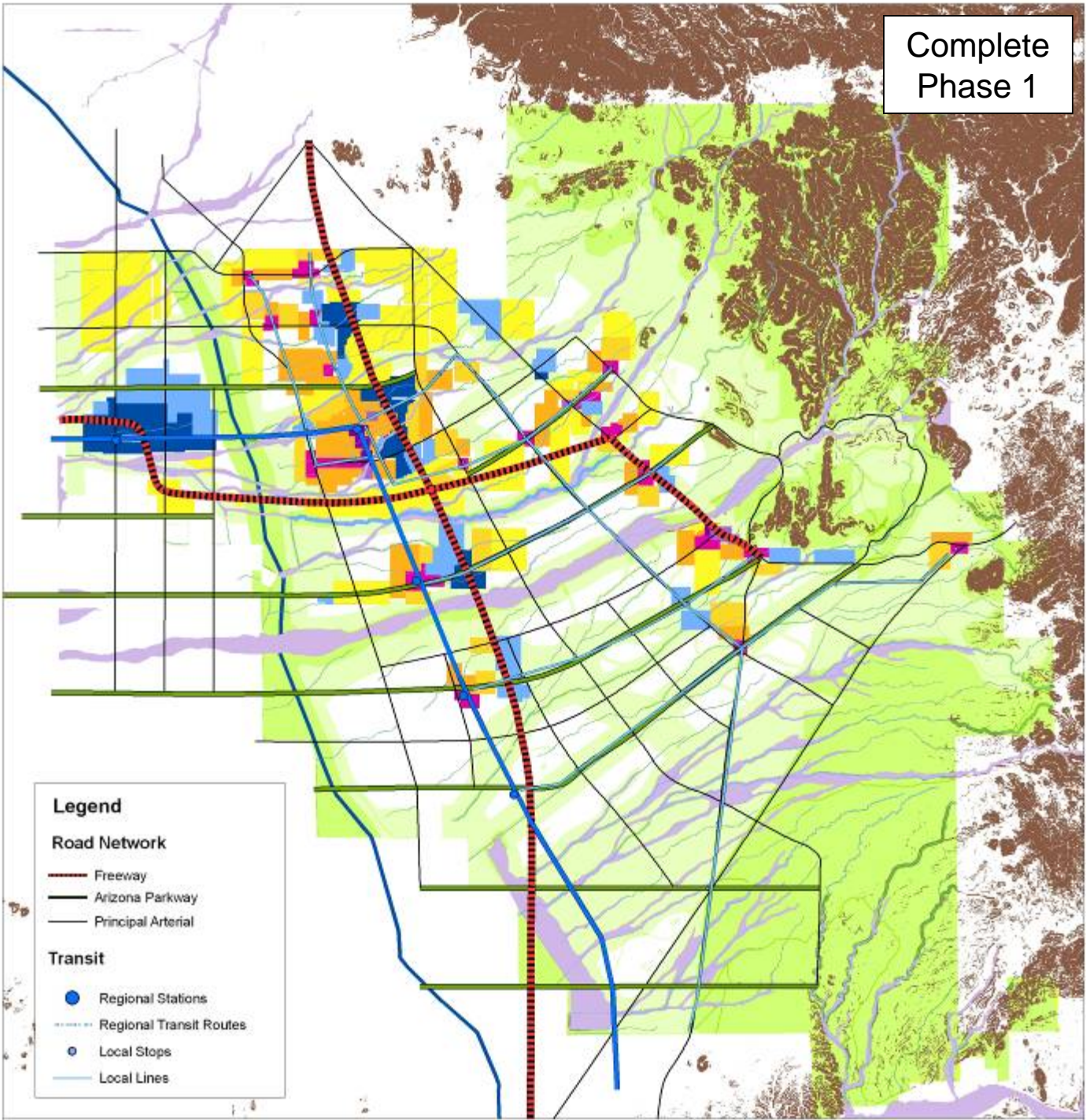
*Superstition Vistas*







Complete  
Phase 1



*Superstition Vistas*



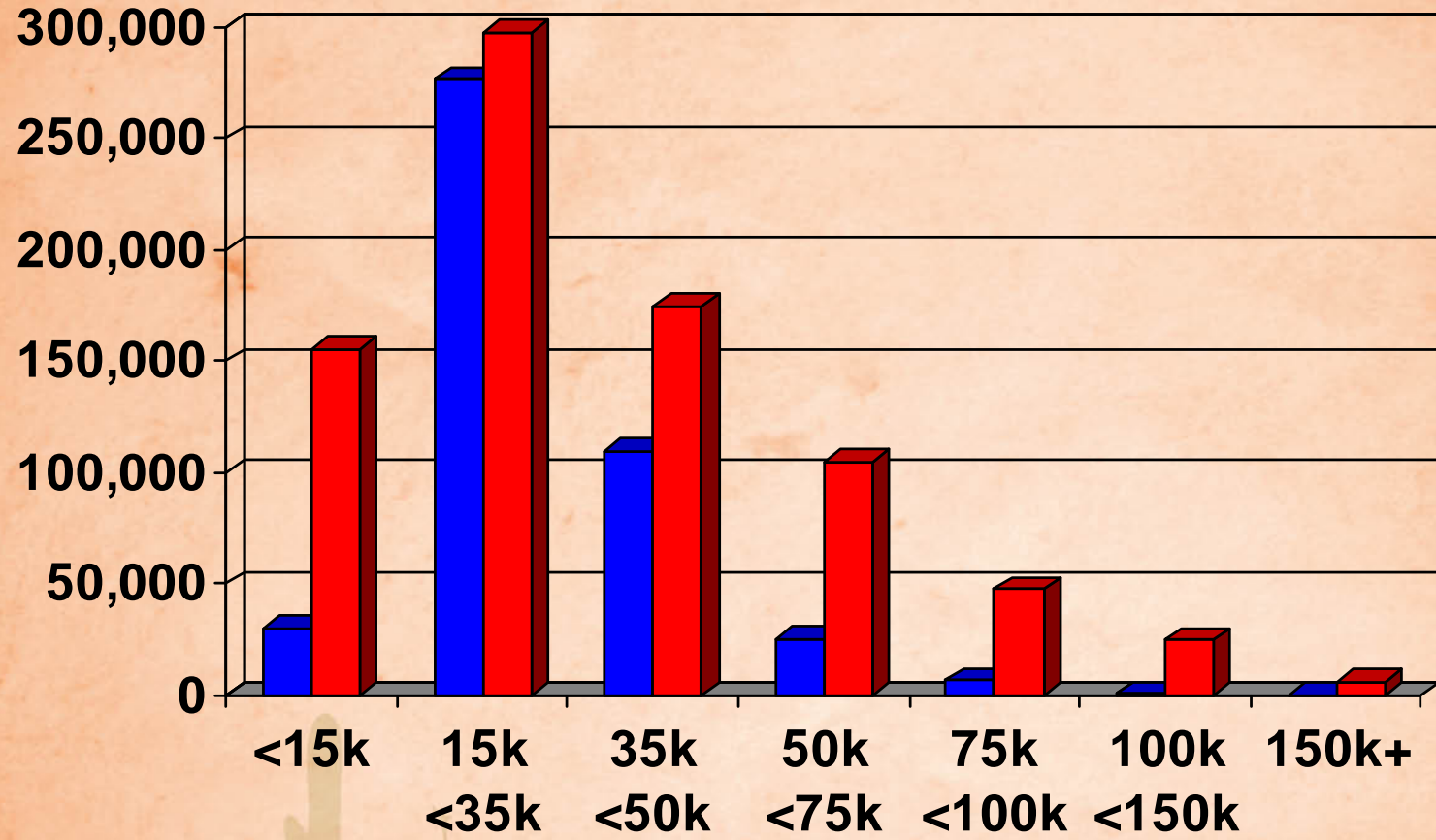
# Superstition Vistas

## Overview of Housing Analysis



*Superstition Vistas*

# Current Rental Housing Compared with 2030 Demand (Phoenix MSA)

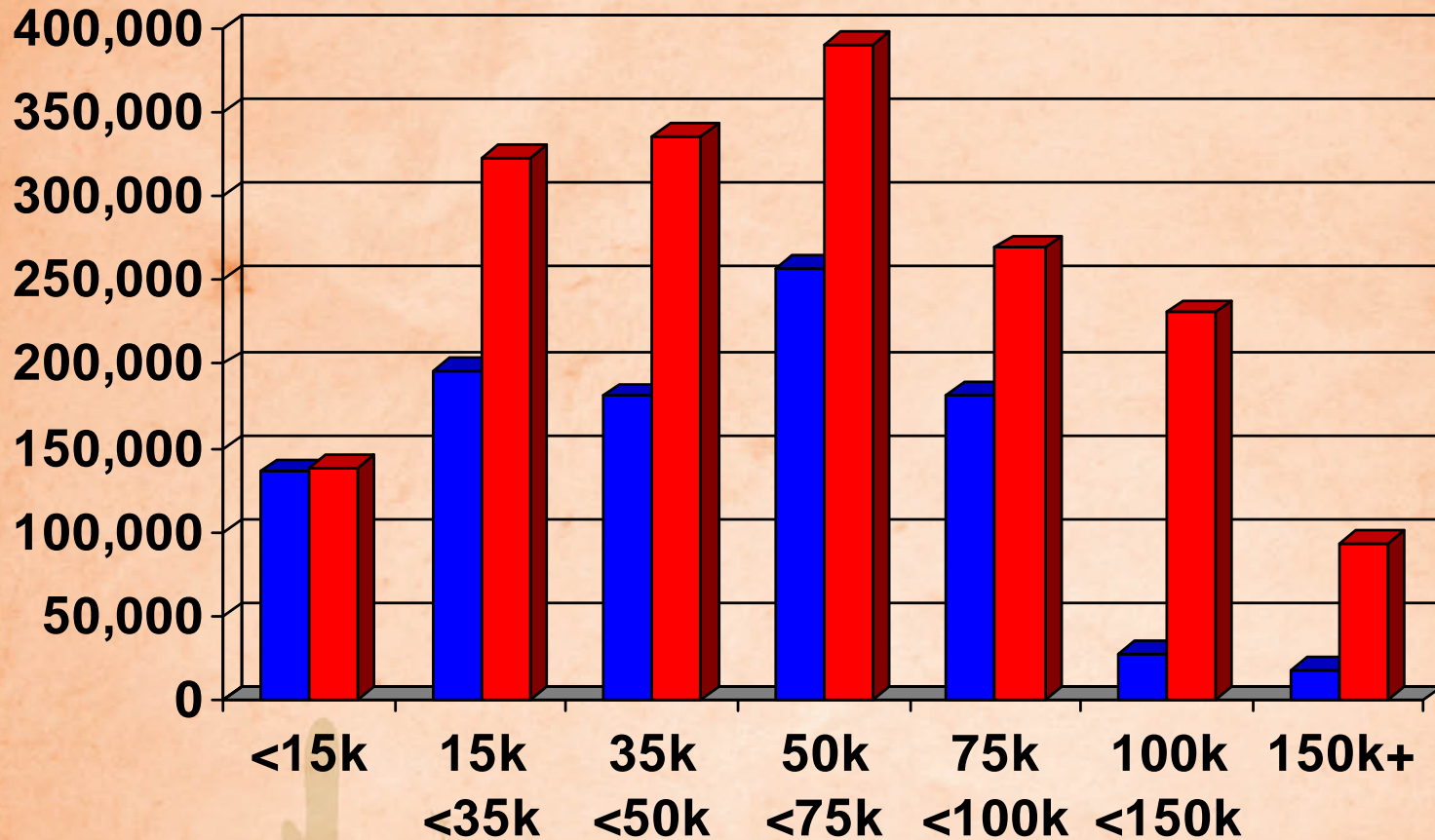


**■ Housing Stock Affordable at 30% of Income (2007)**  
**■ 2030 Projected Housing Units Demanded by Income**





# Current Owner Housing Compared with 2030 Demand (Phoenix MSA)



■ Housing Stock Affordable at 30% of Income (2007)  
■ 2030 Projected Housing Units Demanded by Income

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# Superstition Vistas' Balanced Housing Indicator

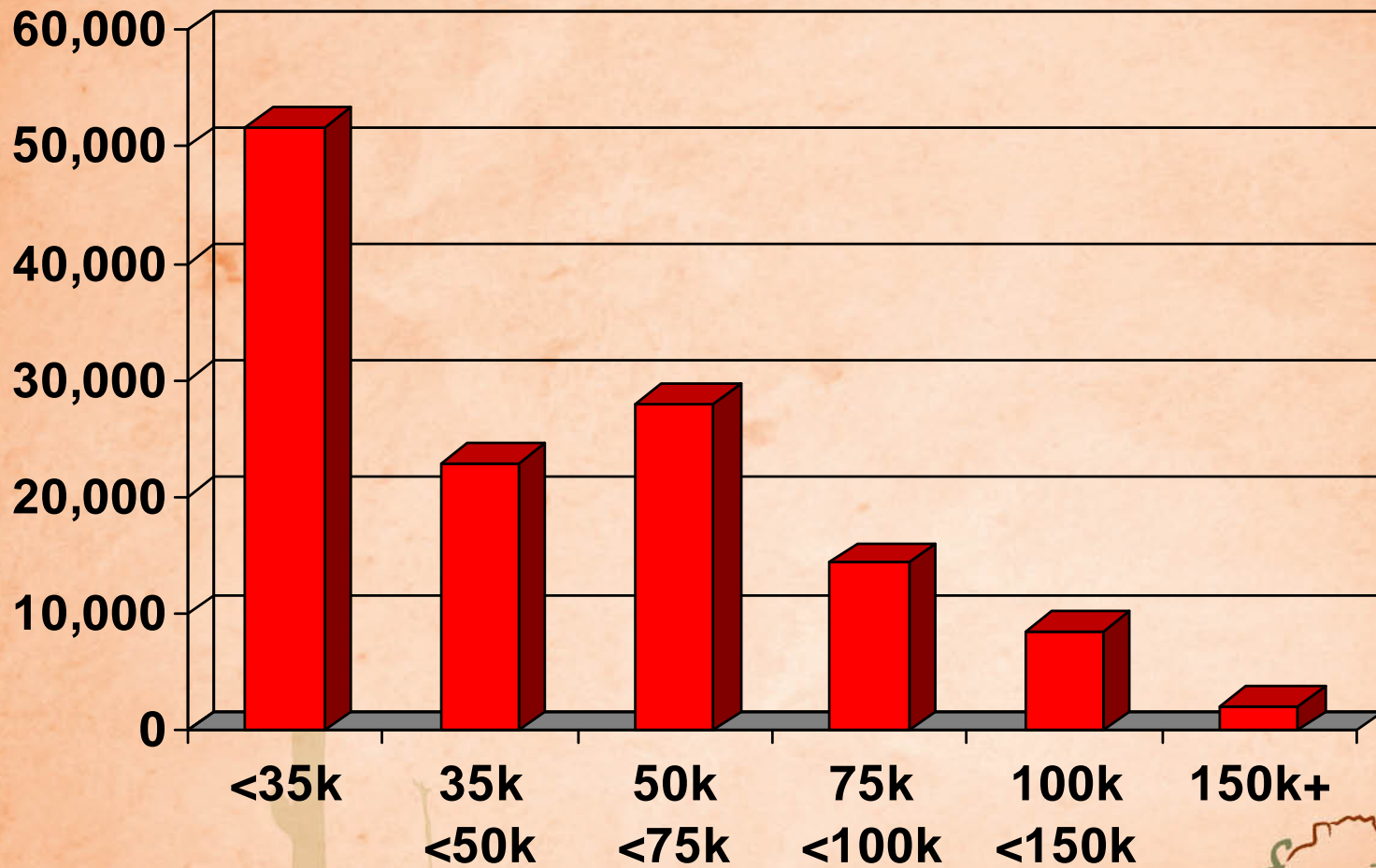
- Assumed that Superstition Vistas' 405,000 unit forecast could accommodate approximately 35% of the Phoenix MSA's future demand
- Created a "Proportional Housing Profile" for Superstition Vistas



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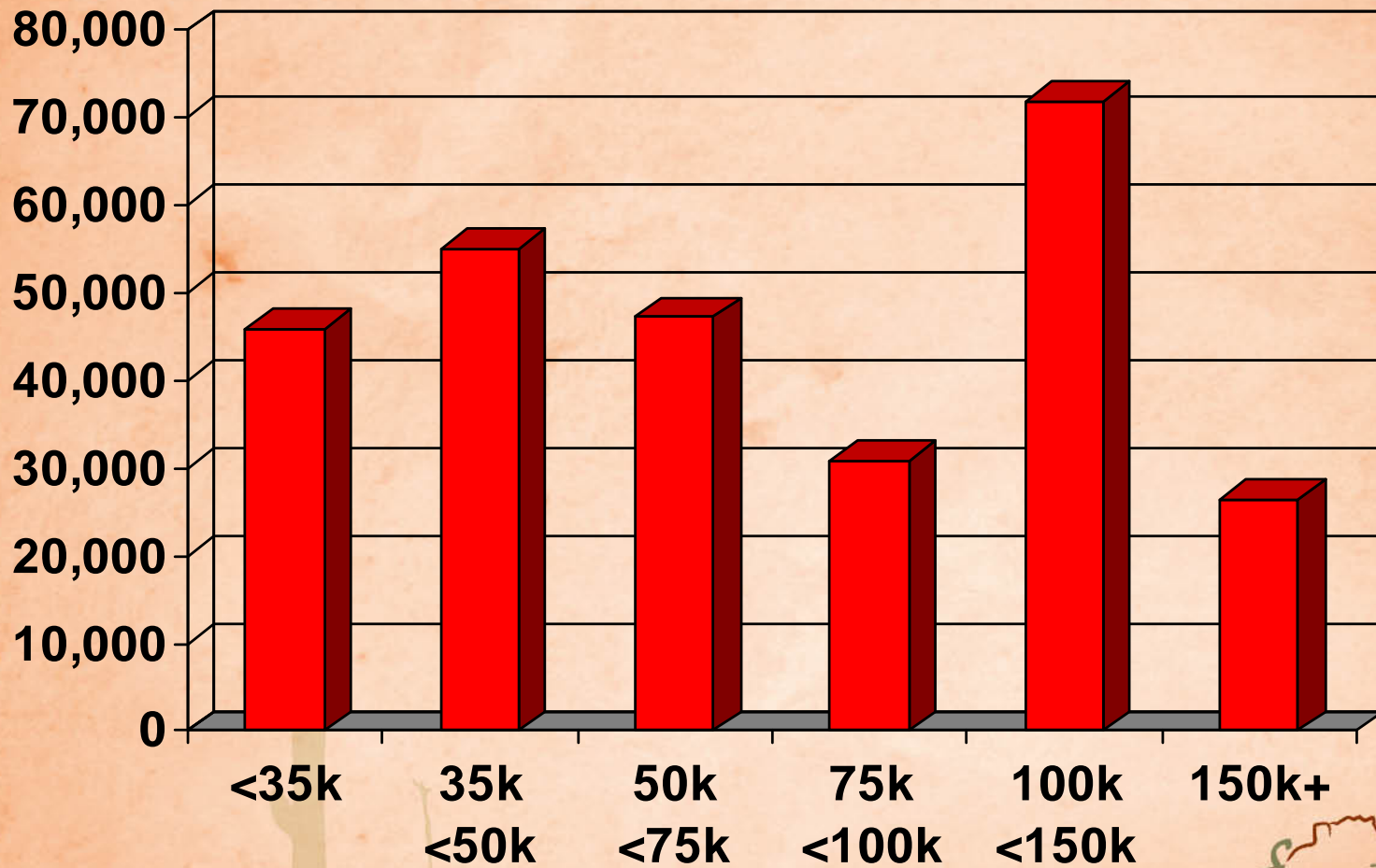
# Superstition Vistas Proportional Housing Profile by Income (Rental)



■ Projected Rental Units Demanded by Income

*Superstition Vistas*

# Superstition Vistas Proportional Housing Profile by Income (Owner)



■ Projected Owner Units Demanded by Income

*Superstition Vistas*



# Estimating the Affordability of Prototype Units (Rental)

## 3 Story Apartment



\$950 month/rent

=

\$38,000 annual  
income

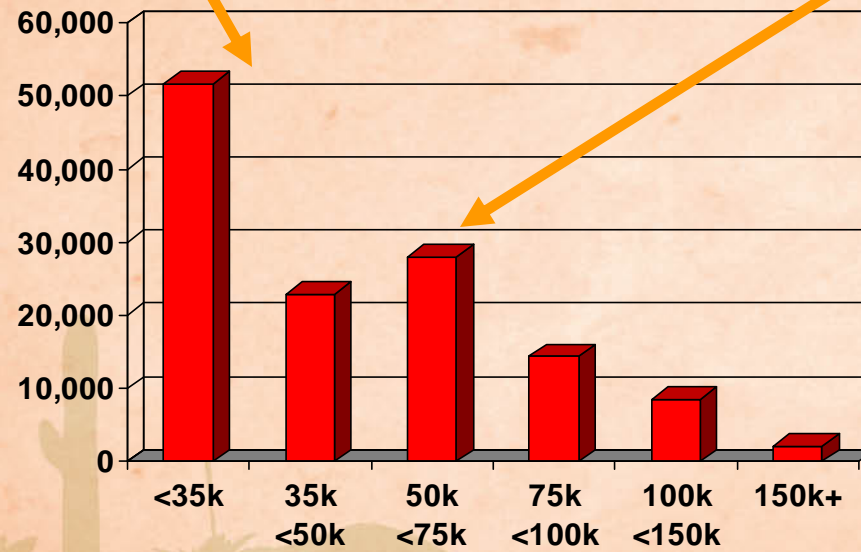
## 8-Story Mixed Use Retail/Residential



\$1,400 month/rent

=

\$56,000 annual  
income



■ Projected Rental Units Demanded by Income

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# Estimating the Affordability of Prototype Units (Owner)



## 2 Story Townhome

\$250,000 sales price

=

\$66,000 annual income \*

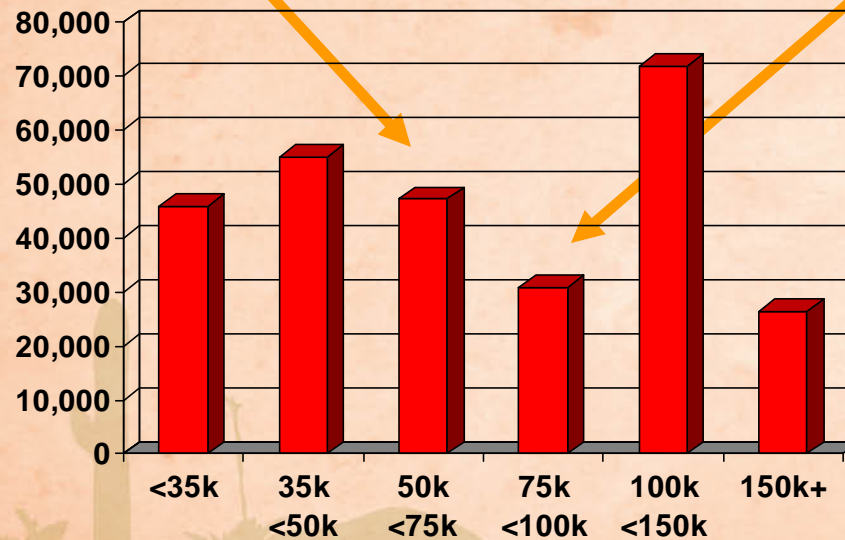


## 2 Story Single Family

\$322,000 sales price

=

\$76,500 annual income \*



\* Assumes 10% down payment, 7% interest, 30 year term

■ Projected Owner Units Demanded by Income



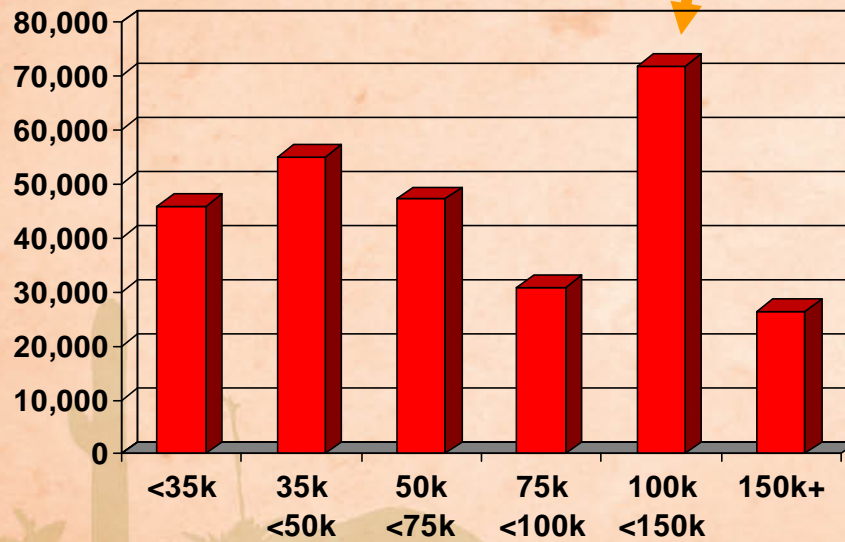


# Estimating the Affordability of Prototype Units (Owner)

**Large Lot Single Family**



\$570,000 sales price  
=  
\$135,000 annual income \*

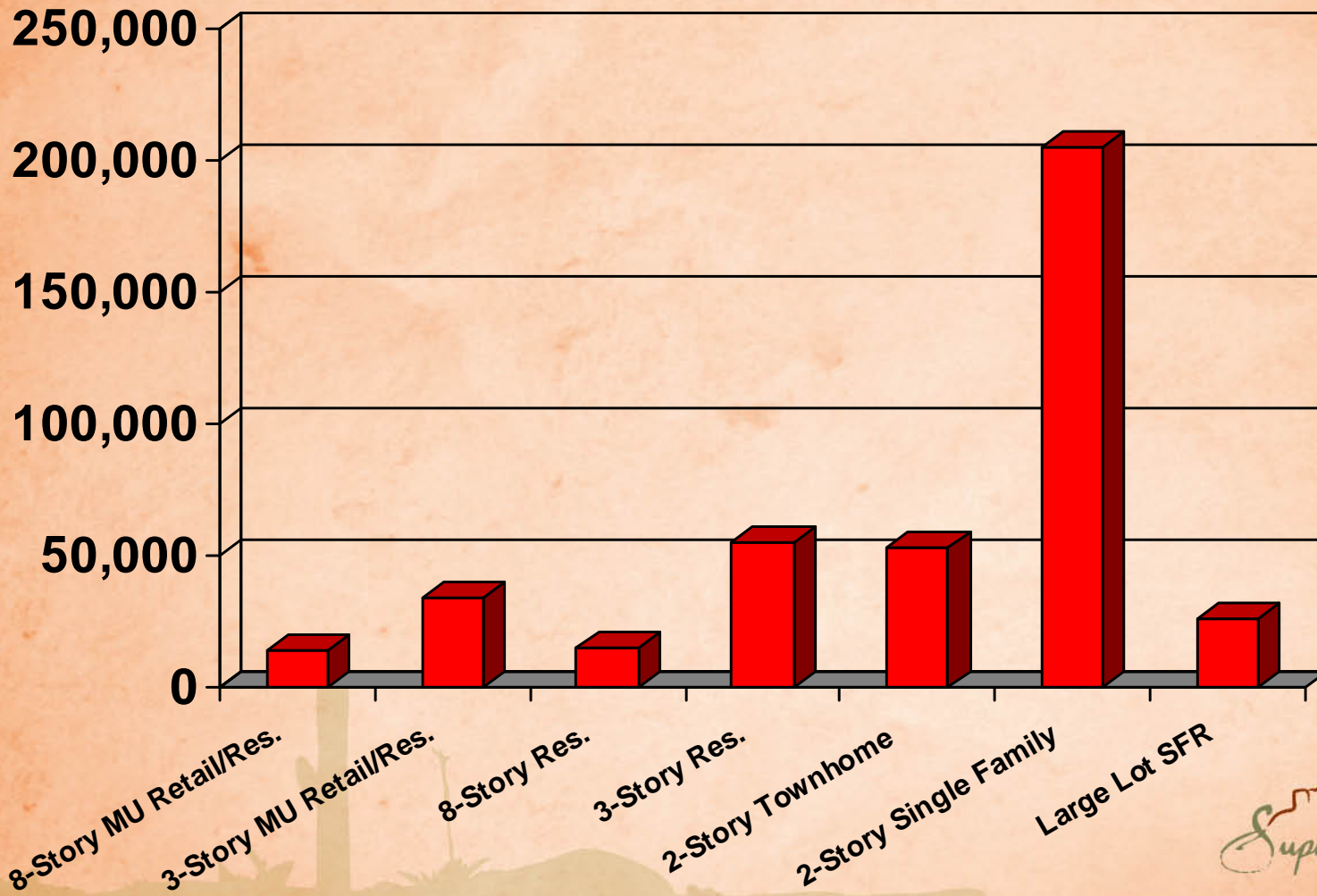


\* Assumes 10% down payment, 7% interest, 30 year term

■ Projected Owner Units Demanded by Income



# Balanced Proportional Profile by Prototype

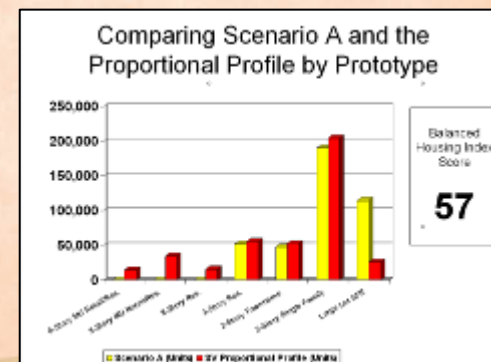


*Superstition Vistas*



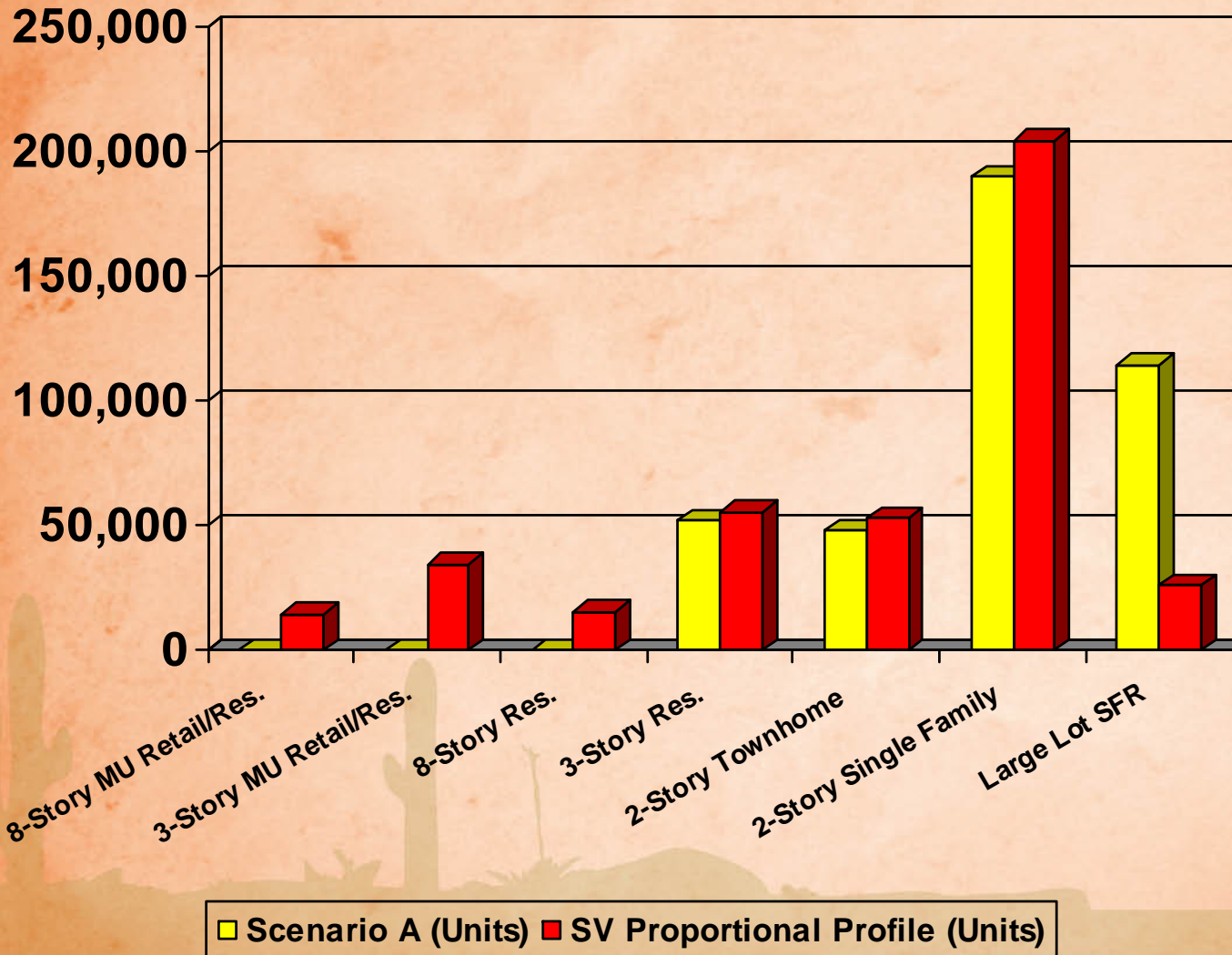
# Balanced Housing Index

- We created a Balanced Housing Index to compare the housing in each scenario with an affordable, balanced mix of prototypes that meets the region's future demand
- **Balanced Housing Index scores each scenario from 0-100**
  - Unbalanced fit = 0
  - Perfect fit = 100



tion Vistas

# Comparing Scenario A and the Proportional Profile by Prototype



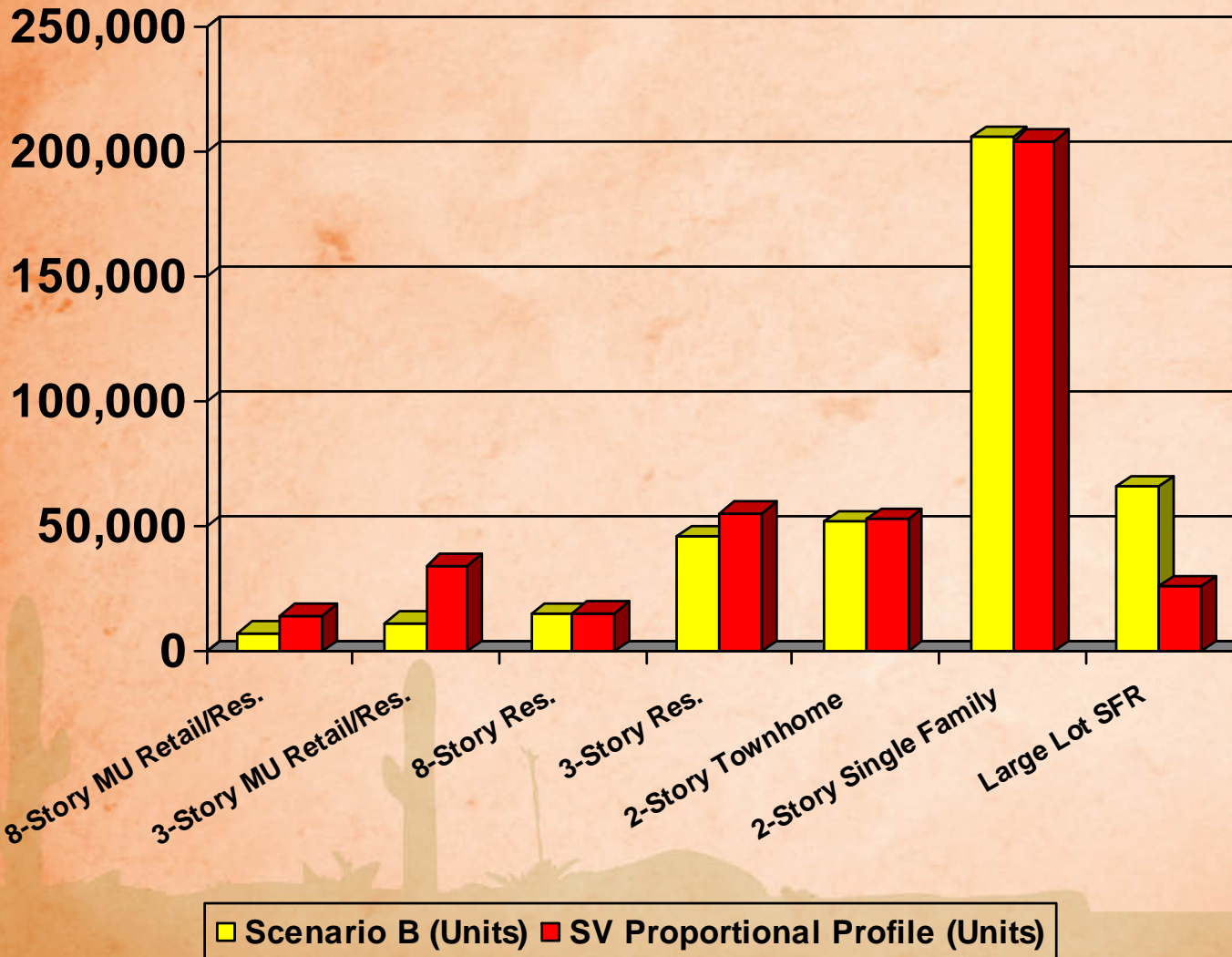
Balanced Housing Index Score

**57**





# Comparing Scenario B and the Proportional Profile by Prototype

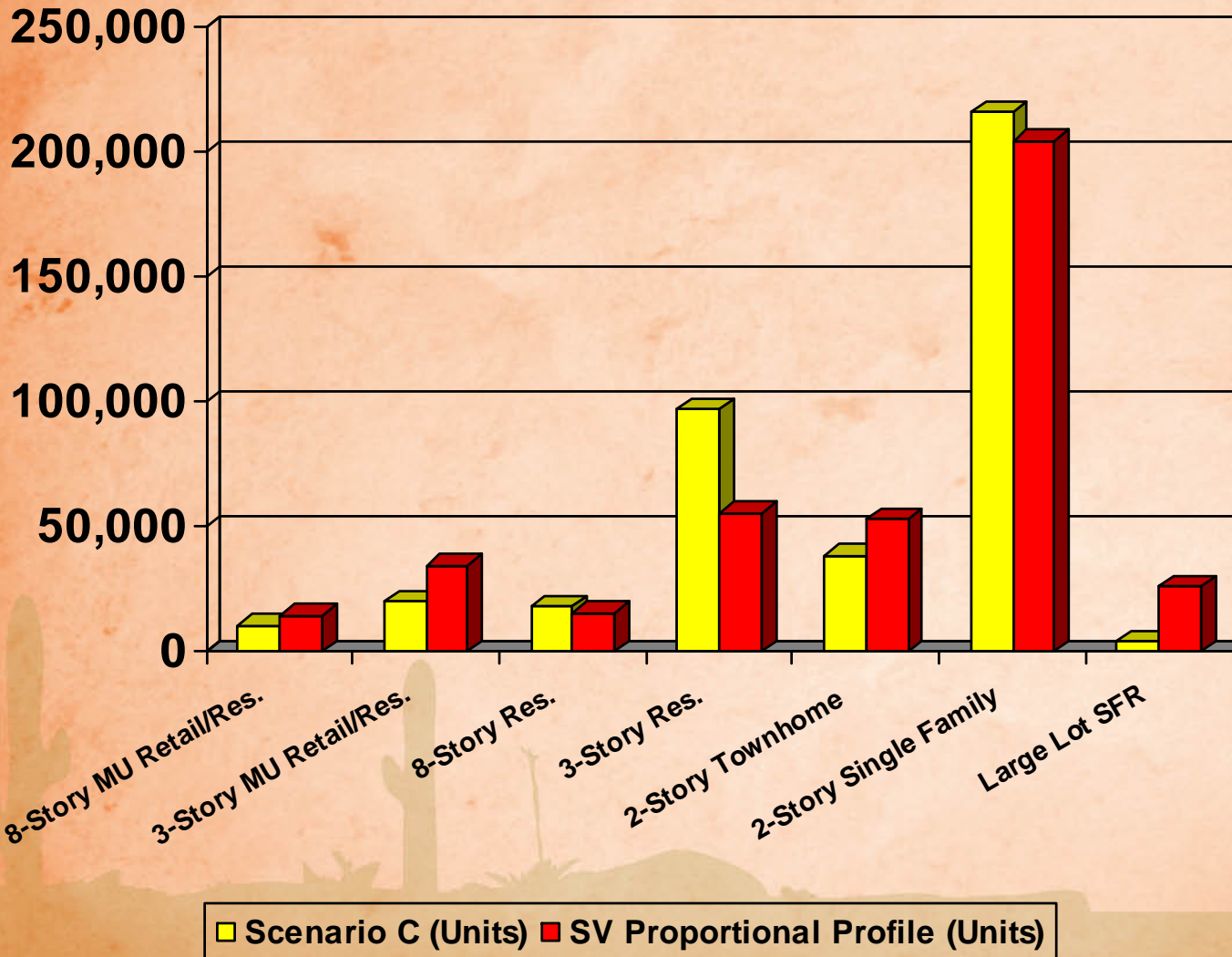


Balanced  
Housing Index  
Score

**80**



# Comparing Scenario C and the Proportional Profile by Prototype



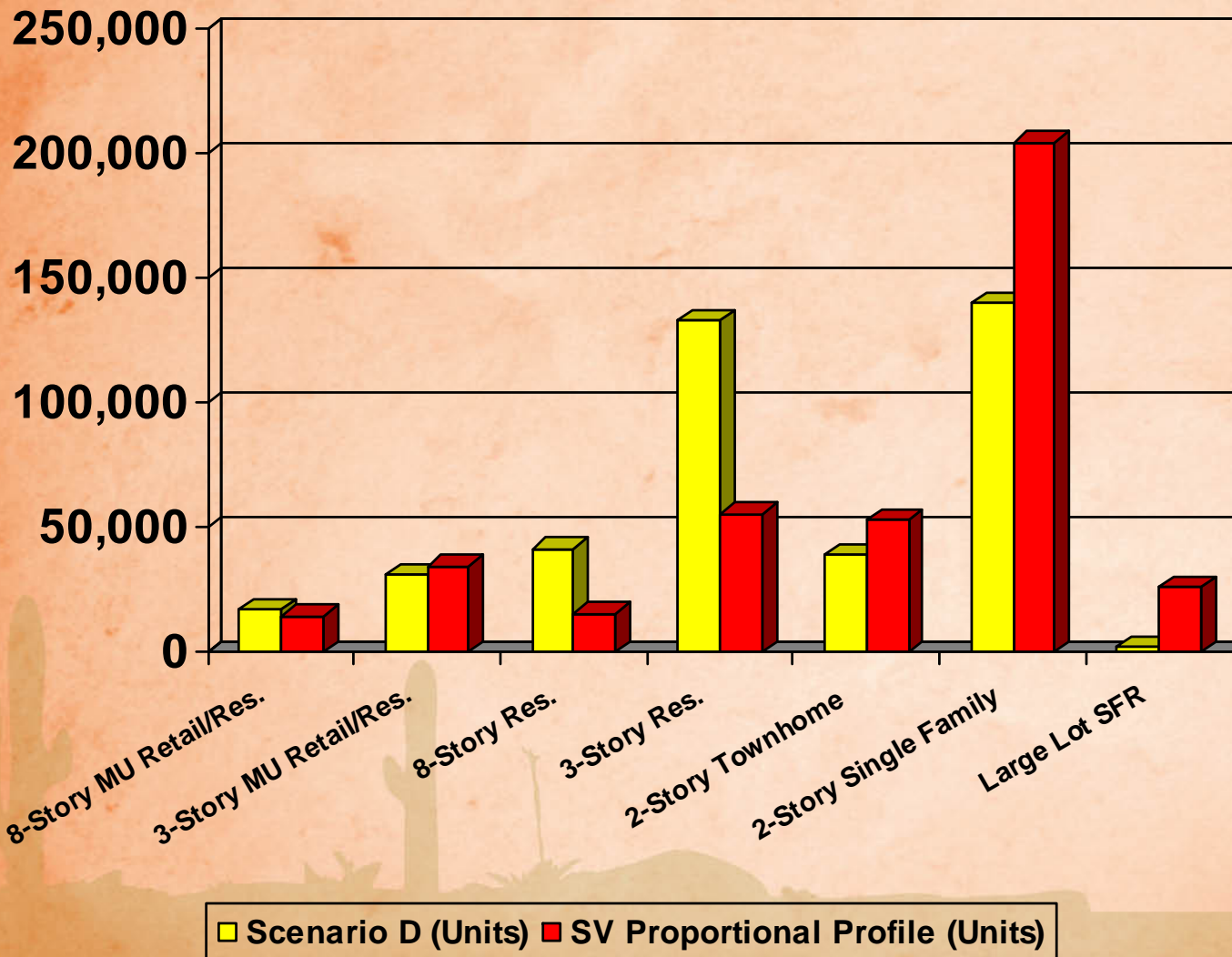
Balanced Housing Index Score

**73**





# Comparing Scenario D and the Proportional Profile by Prototype



Balanced Housing Index Score

**48**



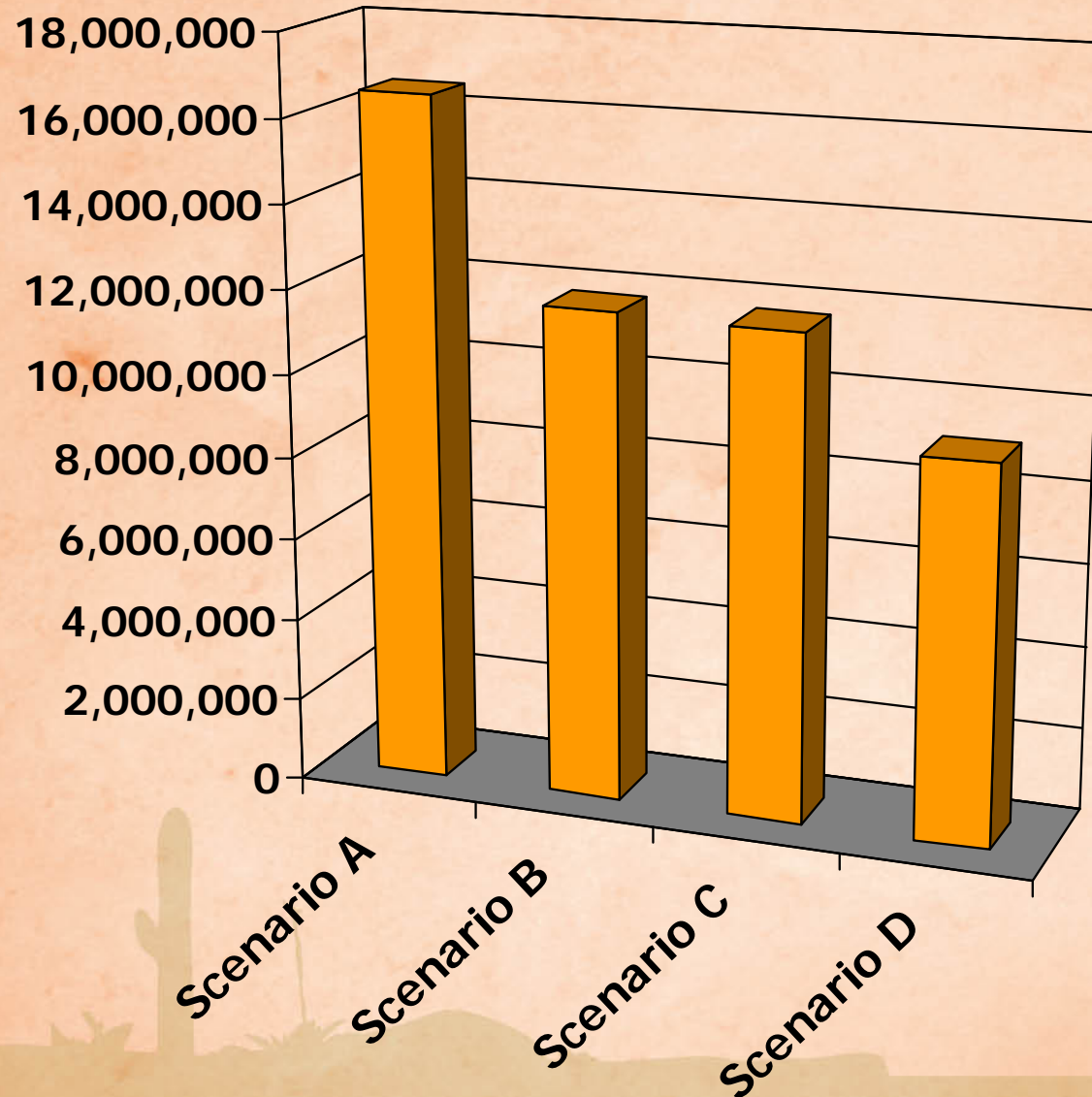
# Transportation Options by Scenario



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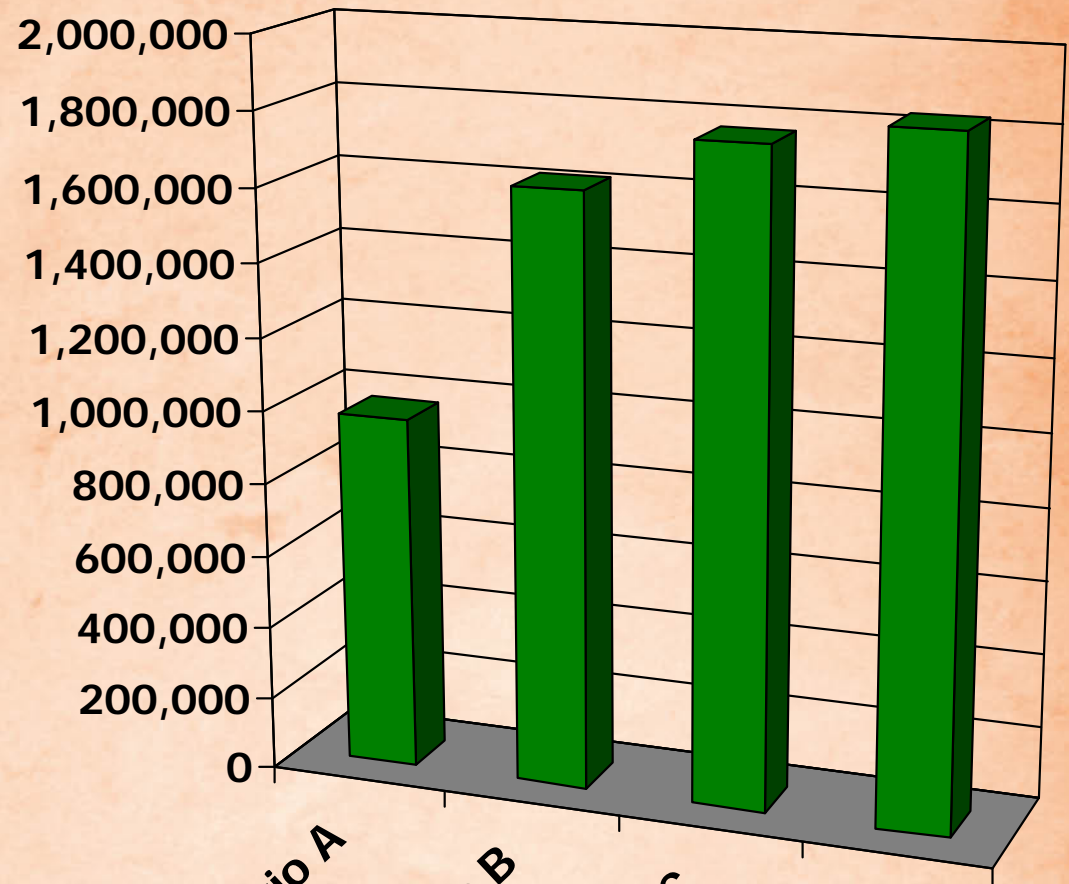
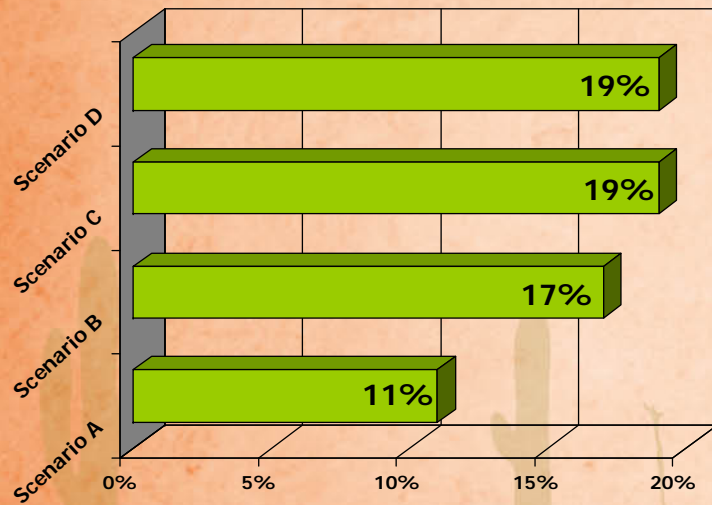


# Vehicle Miles Traveled (VMT)



# Trip Counts – Walk & Bike

Percent of Trips



Scenario A

Scenario B

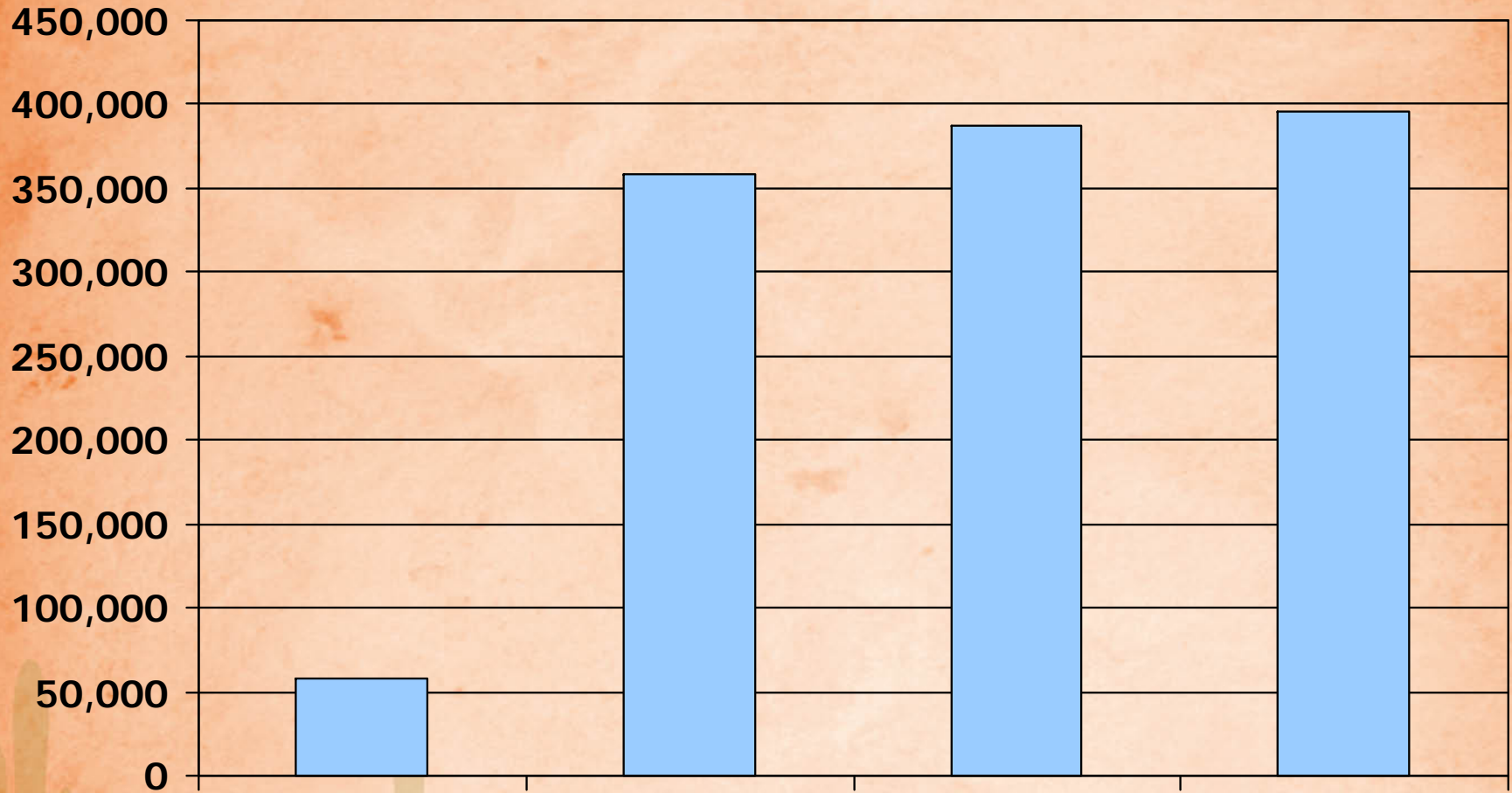
Scenario C

Scenario D

*Superstition Vistas*



# Daily Transit Ridership



Scenario A

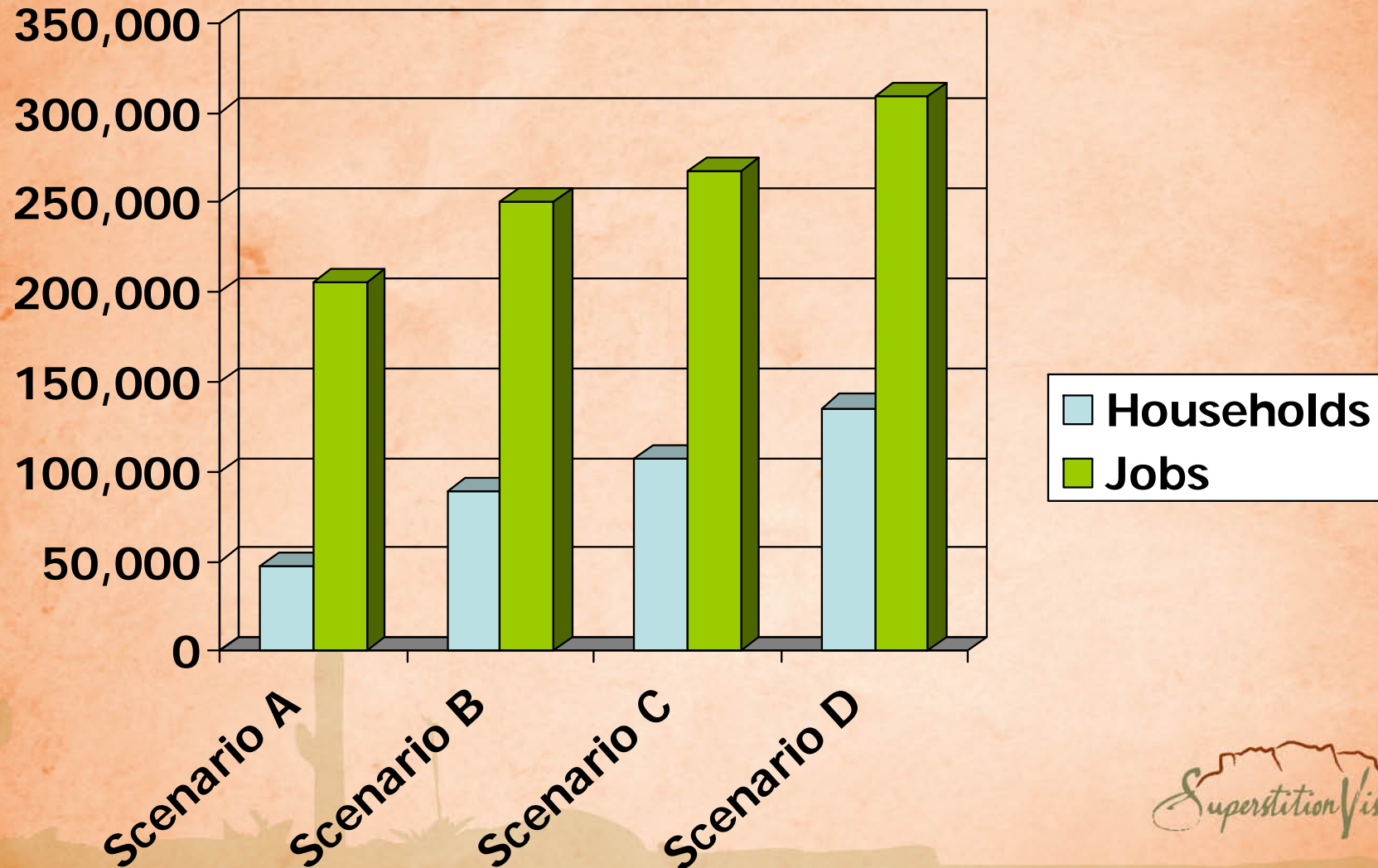
Scenario B

Scenario C

Scenario D

*Superstition Vistas*

# Proximity to Transit





# Best Practices for Planning a Superstition Vistas Transportation Network

- Prioritize local street connectivity
- Connect regional transportation networks
- Preserve possible transportation corridors
- Develop a comprehensive trail system and link open space
- Design an adaptable transportation system.
- Develop mixed-use centers along transportation corridors
- Locate transit stops within mixed-use centers
- Implement shared parking strategies



*Superstition Vistas*

# Lessons Learned

- The scenarios are not plans to follow, but rather alternative futures based a series of assumptions. When compared against each other, the scenario analysis yields some important lessons learned.



# Lessons Learned

1. **The lifeblood of any sustainable community is a vibrant economy**
2. **Economic Catalysts are critical ingredients**
3. **The key to developing a strong economy is to lead housing with employment**
4. **Housing needs will change**
5. **Build green and compact**
6. **Superstition Vistas will need a Transit System**
7. **Walking and biking could be important travel modes**
8. **Designing a city with appropriately spaced and well designed mixed use centers is more important than just density**
9. **All the components of sustainability: a vibrant local economy, equitable and marketable housing, and good environmental design must be balanced**

# Next Steps

1. **Craft the Preferred Scenario**
2. **Develop a Shared Vision for Superstition Vistas**
3. **Develop Best Practices and Strategies**
4. **Strategic Implementation**
5. **Open Houses and/or Other Public Events**



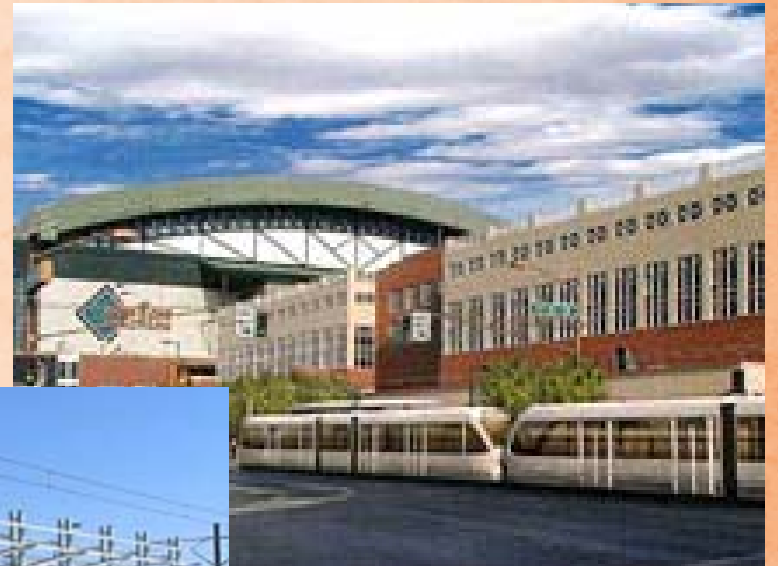
*Superstition Vistas*



# EXTRA SLIDES

- Images...

*Superstition Vistas*







*Superman y las*





*University of Florida*





*Superior Vista*