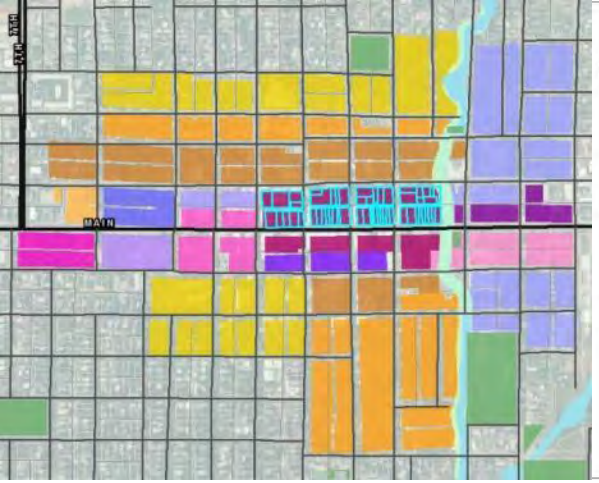
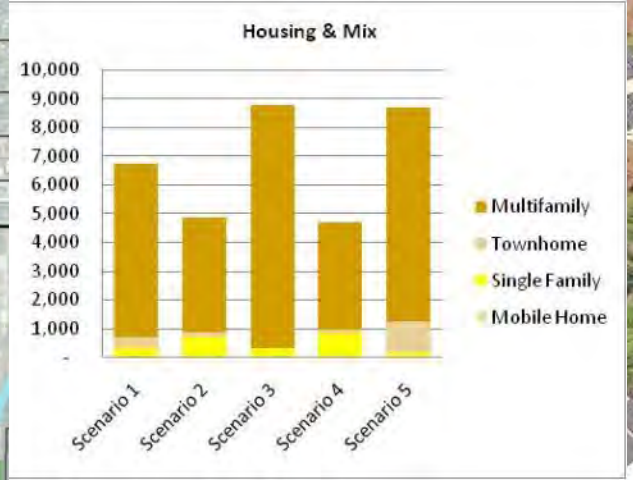




Scenario Planning with Envision Tomorrow Plus

ENVISION Tomorrow
suite of urban and regional planning tools

Tools For Scenario Planning

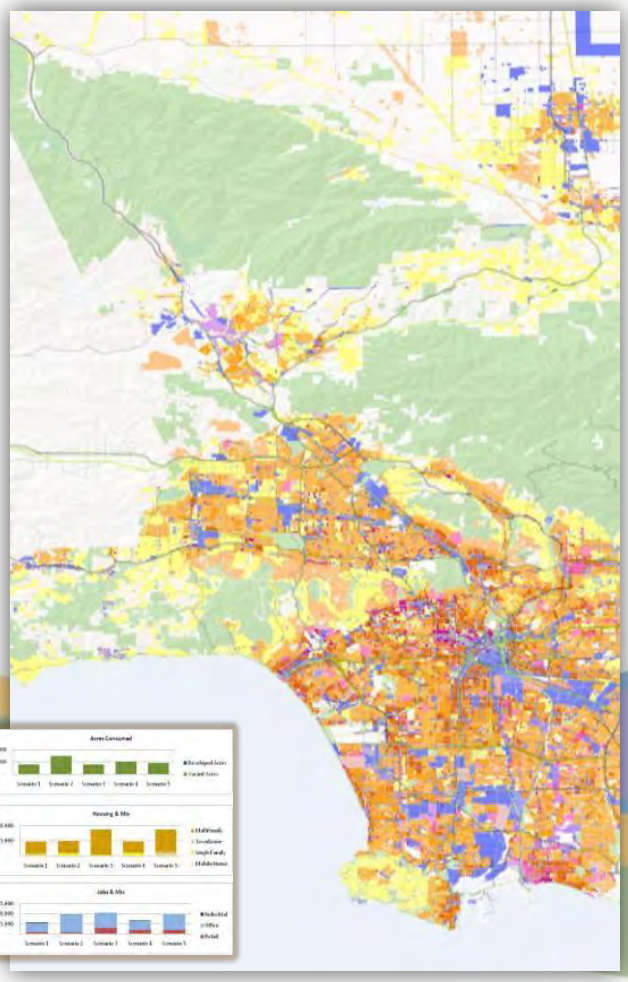
Wasatch CHOICE for 2040

- Weigh choices against consequences
- Test policy options quickly
- Prepare for uncertainty
- Develop strategies to optimize outcomes

What is Envision Tomorrow?

Wasatch CHOICE for 2040

- Growing suite of planning tools
- Two Core Components:
  - Prototype Builder
    - Return on Investment (ROI) model
  - Scenario Builder
    - Extension for ArcGIS



ENVISION Tomorrow

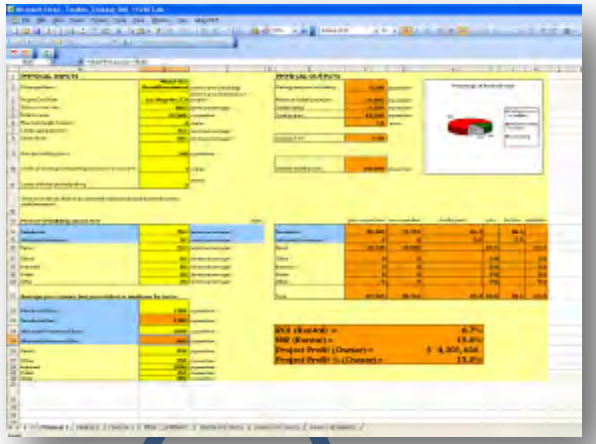
suite of urban and regional planning tools

Prototype Builder (ROI Model):

Quick Building Modeler: Physical & Financial

Wasatch CHOICE for 2040

- Powerful as standalone tool or integrated with Scenario Builder
- Test existing regulations for financial feasibility
  - Identify regulatory roadblocks
- Test impact of new development regulations on:
  - Financial feasibility
  - Fiscal impact
  - Housing affordability, etc.
- Experiment with sensitivity of key variables:
  - Height / FAR
  - Parking / Landscaping
  - Land Costs / Rents / Subsidies

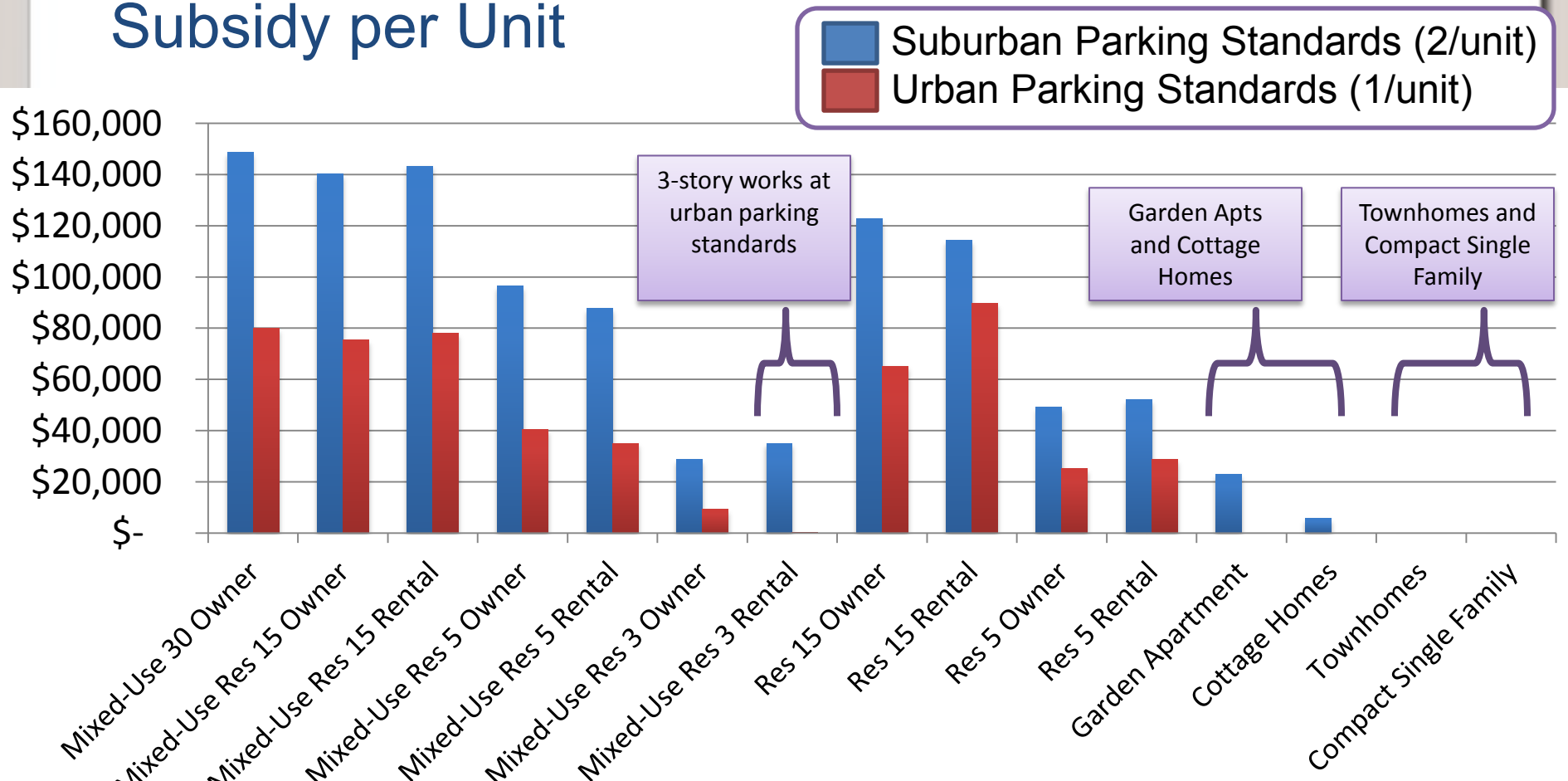


Sensitivity Testing for Development Regulations

Wasatch CHOICE for 2040

Suburban Parking vs. Urban Parking Standards

Subsidy per Unit



Model Prototypes Using Real Market Research:
Allows for “Reality-based Visualizations”

Wasatch
CHOICE for 2040

Use Prototypes for Reality-based Visualizations and 3D Modeling

Reality-based Visualizations:

Exposition and Vermont Blvd, Los Angeles CA

Scenario Builder:

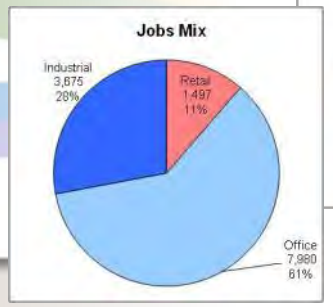
Scenario Painter for ArcGIS

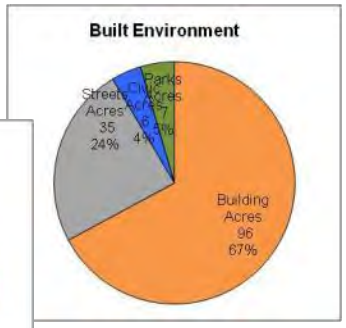
- ☐ Quickly paint scenarios using financially feasible building blocks
- ☐ Compare multiple scenarios across variety of indicators
- ☐ Track progress in real-time

Buildings

Scenarios

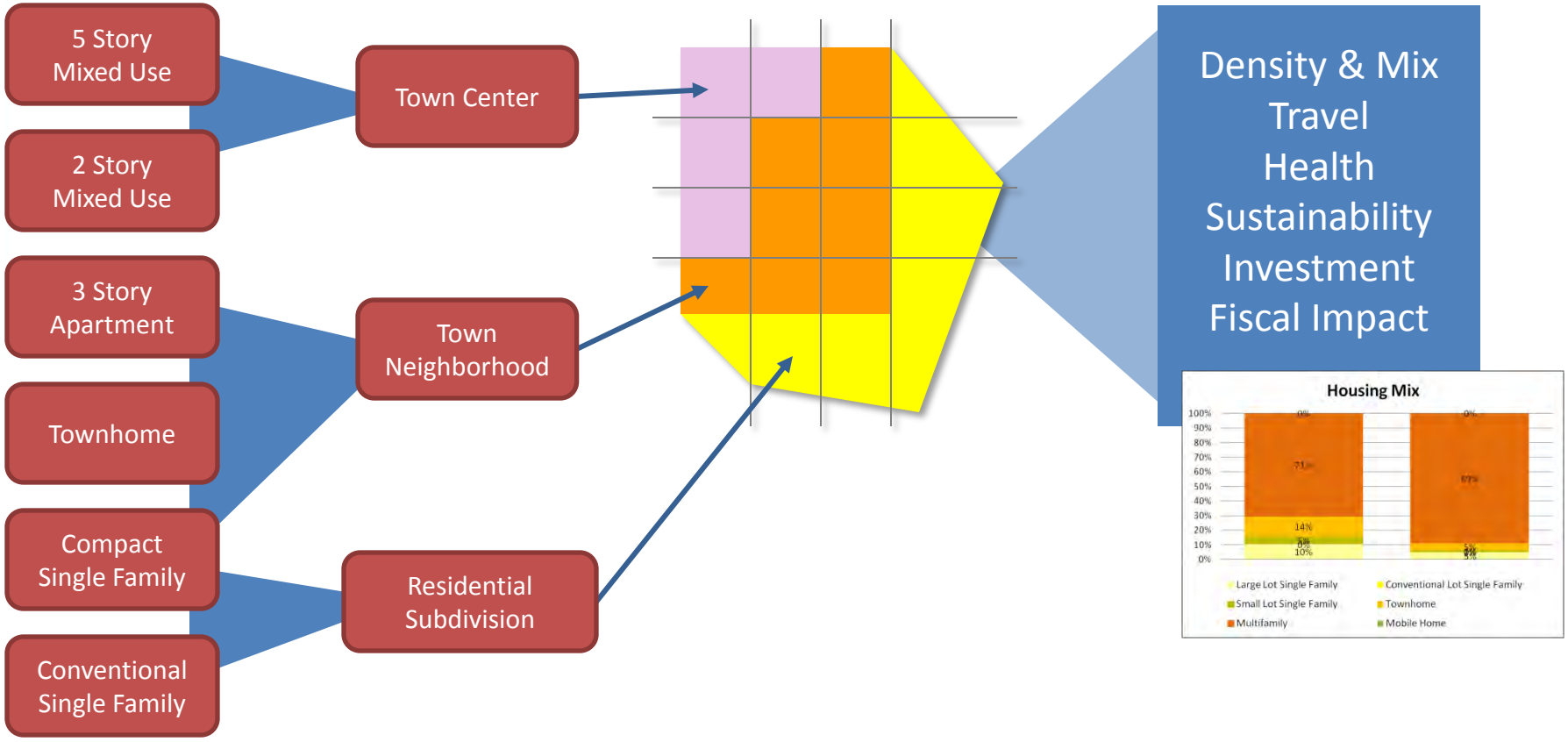
Indicators





A Linked System of Spreadsheets and GIS

Buildings	Development Types	GIS Painting	Evaluation Criteria
ROI Model	Scenario Spreadsheet	ArcGIS	Scenario Spreadsheet



Scenario Indicators:

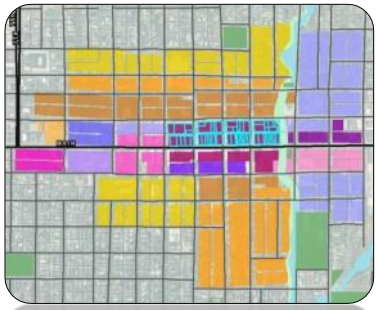
- *Anything we can know about a building, we can know about a scenario…*
  - Housing and jobs: mix and density
  - Economic profile: square feet, jobs, wages
  - Housing affordability
  - Match of housing demand and housing supply
  - Land consumption and impact: vacant, agricultural, infill, floodplains, steep slopes
  - Access to transit, parks, schools and services
  - Resource Usage: energy and water
  - Waste Production: water, solid, carbon
  - Air quality: CO2 emissions from buildings and transportation
  - Transportation: travel mode choice, vehicle miles traveled
  - Fiscal Impact: local revenue and infrastructure costs

Scenario Building Process

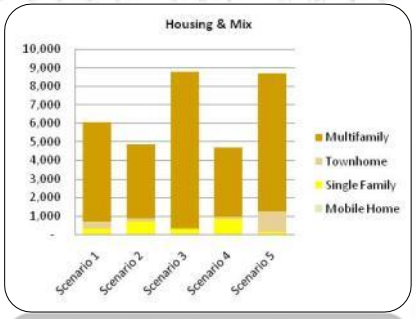
Wasatch CHOICE for 2040

Building Types

Development Types



Scenario Development



Evaluation

1

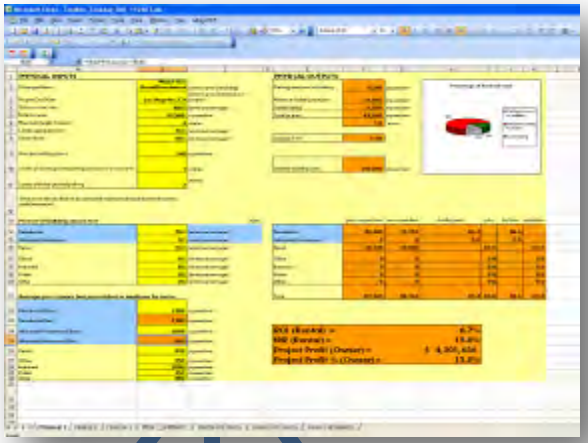
Step 1: Model a library of building types that are financially feasible at the local level.

Create Prototype Buildings

Why start with buildings?

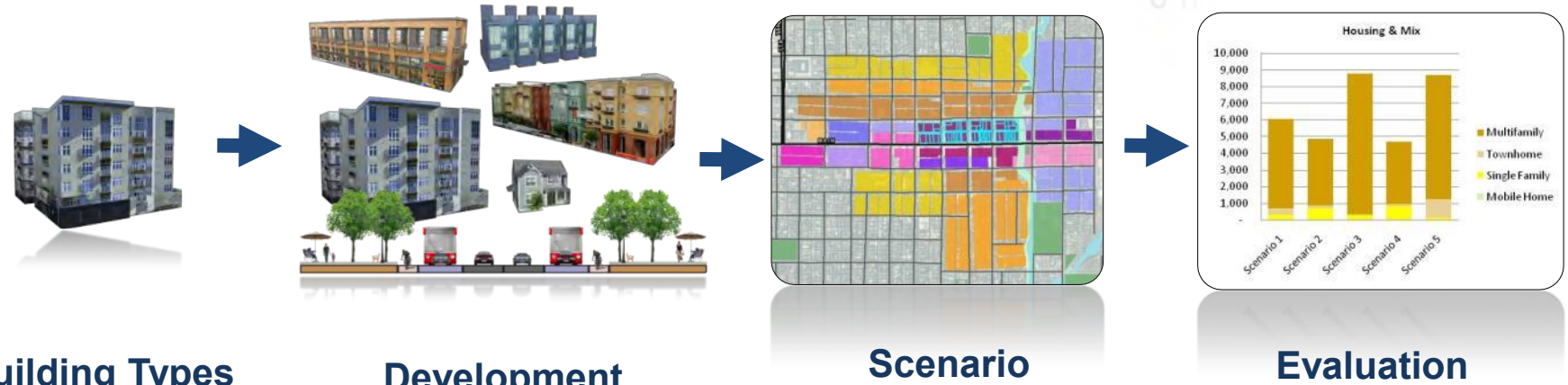
- ☐ *Easily modeled & lots of existing data*
  - Density and Design
  - Rents and Sales Prices
  - Costs and Affordability
  - Energy and Water Use
  - Fiscal Impacts

Use ROI Model…



…to Create a Range of Buildings

Scenario Building Process



Building Types | **Development Types** | **Scenario Development** | **Evaluation**

2

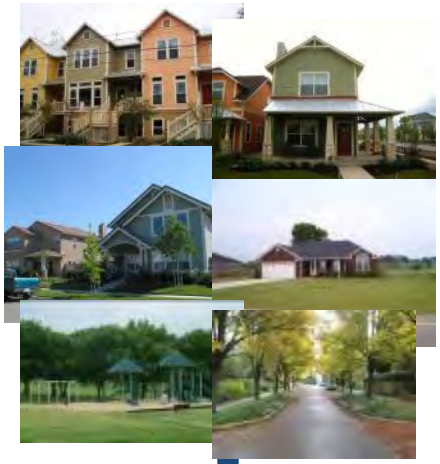
Step 2: Define the buildings, streets and amenities that make up all the “places” in which we live, work and play.

Development Type Mix

A Variety of Buildings, Streets and Amenities Create a “Place”

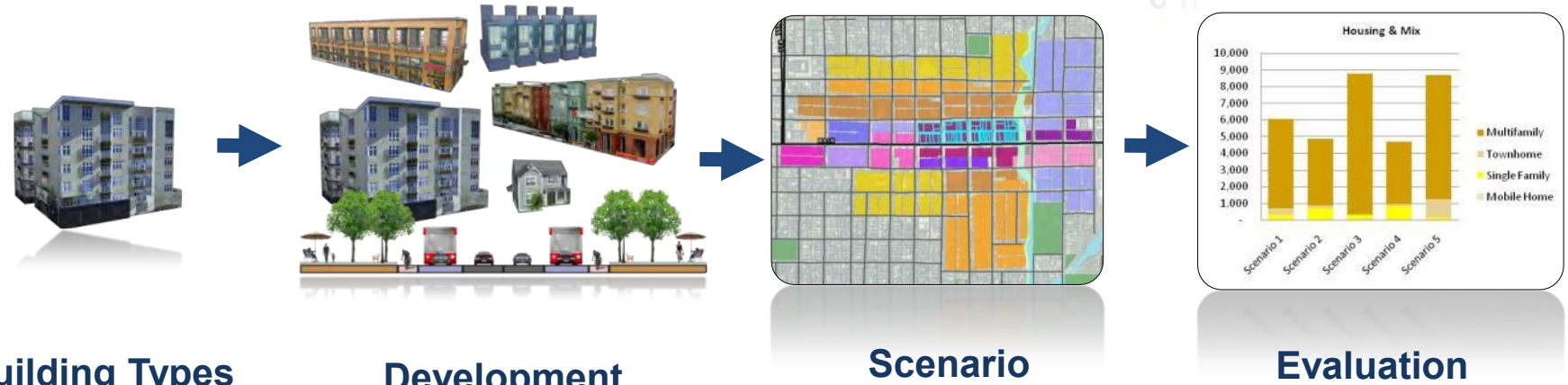
Town Center

Medium-Density Residential



Single-Family Residential

Scenario Building Process

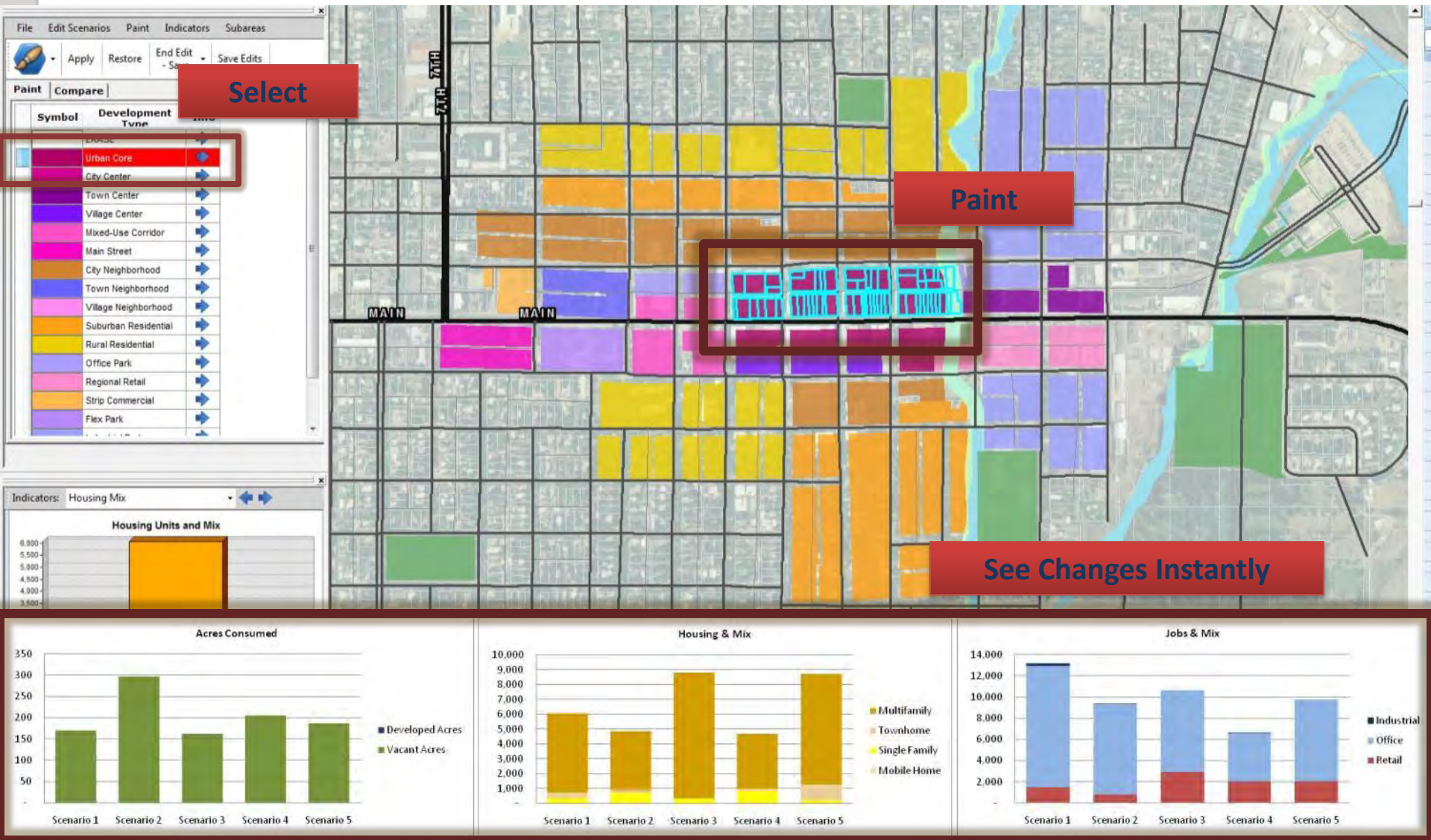


Building Types → **Development Types** → **Scenario Development** → **Evaluation**

3

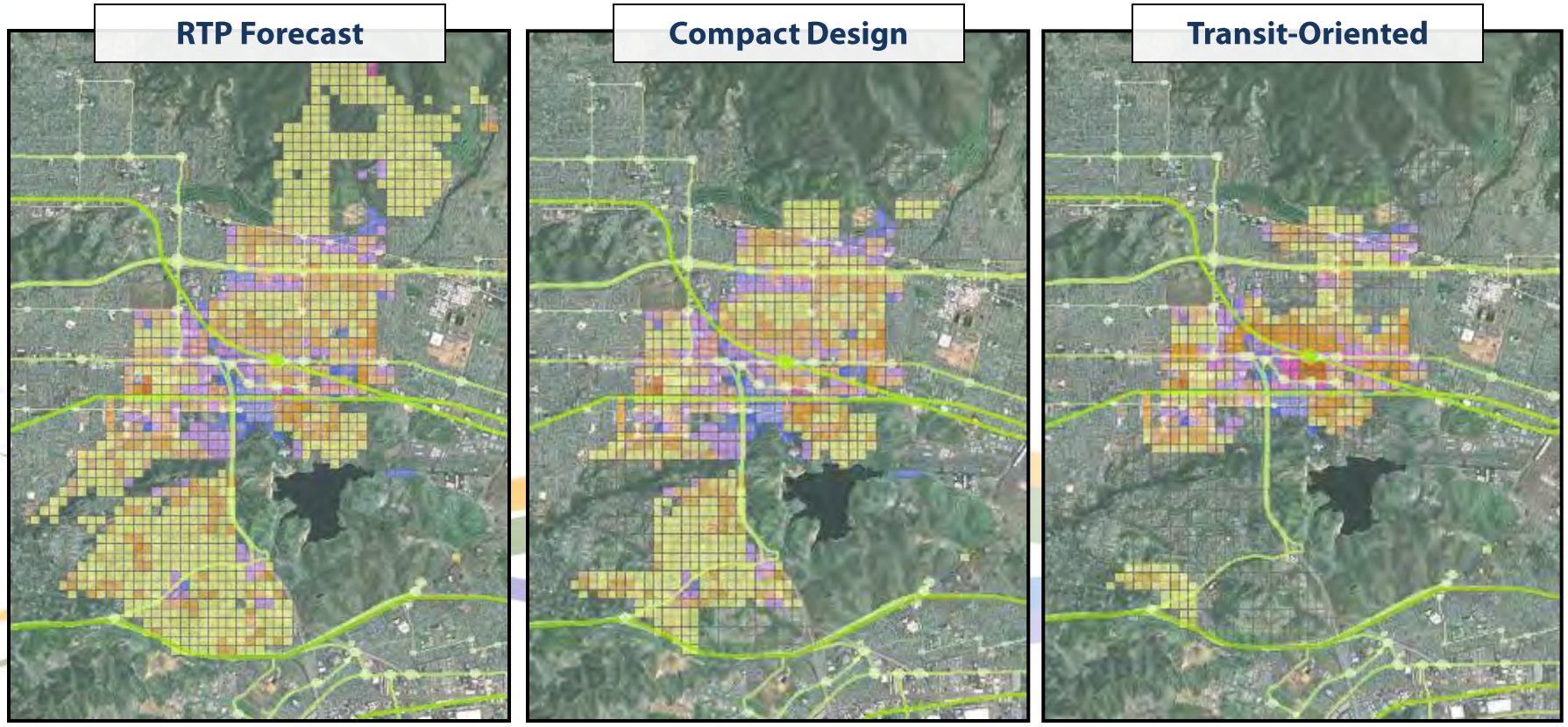
Step 3: Paint future land use scenarios to test the implications of different decisions or policies.

Real-time Scenario Building and Evaluation

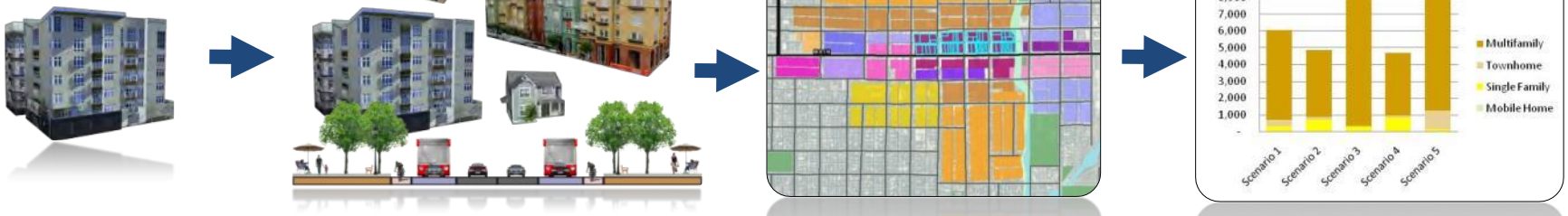


Compare Multiple Scenarios

- ☐ Test land use policies
- ☐ Experiment with new development patterns



Scenario Building Process



Building Types | **Development Types** | **Scenario Development** | **Evaluation**

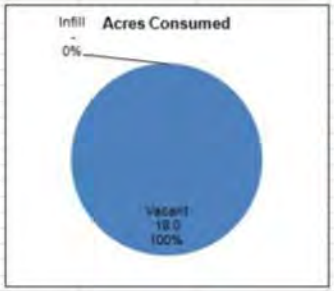
Step 4: Compare the scenarios and monitor the impact of land use decisions in real-time.

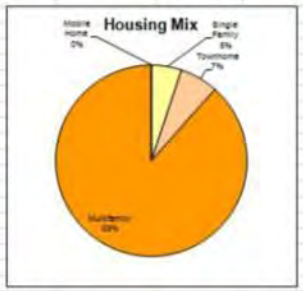
Monitor Indicators in Real-time

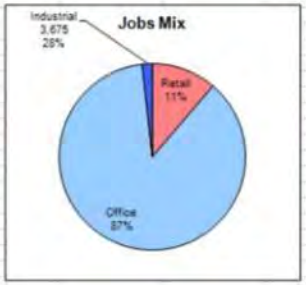
Detailed Tables

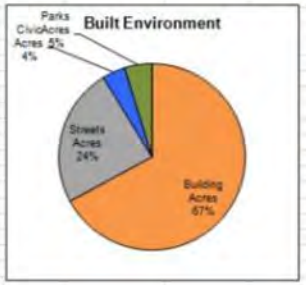
Enter Scenario Name or Theme	Acres Consumed				Total Housing Units	Housing Mix				Total Jobs	Employment Mix			Built Environment			
Dev type	Total Vacant Acres	Total Developed Acres	Discounted Developed Acres (*Redev %)	Total Acres		Single Family	Townhome	Multifamily	Mobile Home		Retail	Office	Industrial	Building Acres	Streets Acres	Civic Acres	Parks Ac
Urban Core	13.6	-	-	13.6	2,179	-	-	2,179	-	11,838	888	10,950	-	9.26	3.40	0.54	
City Center	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Town Center	3.4	-	-	3.4	343	-	-	343	-	121	121	-	-	2.32	0.85	0.14	
Village Center	3.2	-	-	3.2	132	-	-	132	-	113	113	-	-	2.17	0.80	0.13	
Mixed-Use Corridor	5.7	-	-	5.7	149	-	-	149	-	199	199	-	-	3.80	1.42	0.23	
Main Street	4.0	-	-	4.0	2,567	-	-	2,567	-	-	-	-	-	2.65	0.99	0.16	
City Neighborhood	24.5	-	-	24.5	344	-	344	-	-	-	-	-	-	16.44	6.14	0.99	
Town Neighborhood	4.0	-	-	4.0	50	-	50	-	-	-	-	-	-	2.67	1.00	0.16	
Village Neighborhood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Suburban Residential	35.9	-	-	35.9	210	210	-	-	-	-	-	-	-	24.07	8.62	1.44	
Rural Residential	34.3	-	-	34.3	100	100	-	-	-	-	-	-	-	22.96	8.23	1.37	
Office Park	1.9	-	-	1.9	-	-	-	-	-	487	-	487	-	1.30	0.47	0.08	
Regional Retail	5.6	-	-	5.6	-	-	-	-	-	98	98	-	-	3.74	1.28	0.22	
Strip Commercial	2.1	-	-	2.1	-	-	-	-	-	62	62	-	-	1.42	0.49	0.08	
Flex Park	3.7	-	-	3.7	-	-	-	-	-	27	-	-	27	2.51	0.86	0.15	
Industrial Park	27.5	-	-	27.5	-	-	-	-	-	201	-	-	201	18.42	6.32	1.10	
Totals	**169.5**	-	-	**169.5**	**6,073**	310	394	5,370	-	**13,145**	1,480	11,437	228	**116**	**41**	**7**	
			0%			5.1%	6.5%	88.4%	0.0%		11.3%	87.0%	1.7%	67.1%	24.1%	4.0%	
			0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

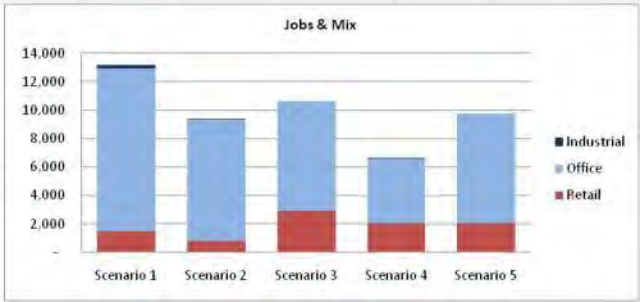
Quick Reference Graphs









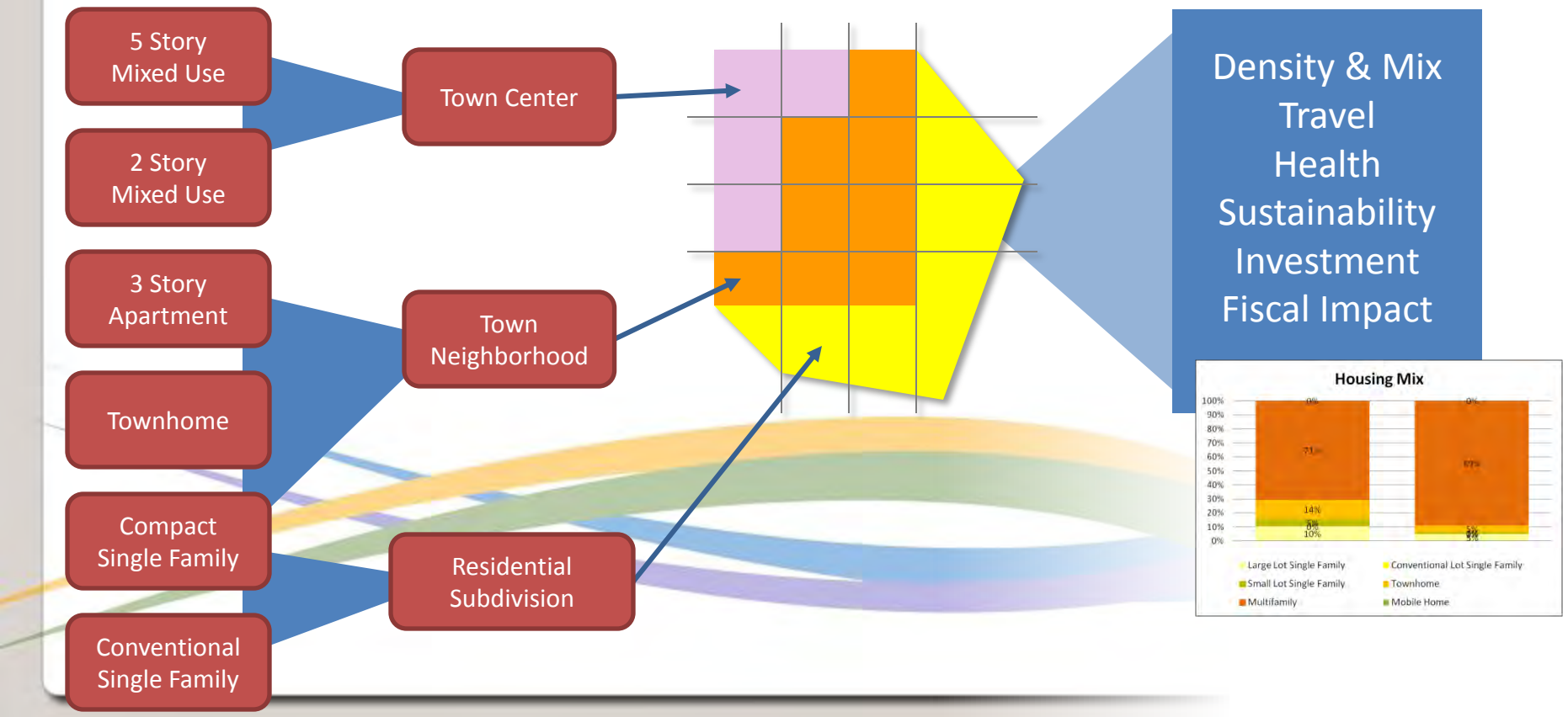


Scenario Evaluation

- Evaluation Indicators:
  - **Tier 1:** *minimal inputs required*
    - Housing and Jobs: mix and density
    - Jobs-Housing Balance
    - Land Consumption: vacant, agricultural, infill
    - Impervious Surface
    - Open Space
  - **Tier 2:** *moderate inputs required*
    - Housing Affordability
    - Resource Usage: energy and water
    - Waste Production: water, solid, carbon
  - **Tier 3:** *detailed inputs required*
    - Transportation: travel mode choice, vehicle miles traveled
    - Fiscal Impact: local revenue and infrastructure costs
    - Balanced Housing Index: how scenario housing mix matches expected future demographic profile

A Linked System of Spreadsheets and GIS

Buildings	Development Types	GIS Painting	Evaluation Criteria
ROI Model	Scenario Spreadsheet	ArcGIS	Scenario Spreadsheet



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CHOICE for 2040

The “Plus” in Envision Tomorrow Plus

What is the PLUS?

Wasatch CHOICE for 2040

"Apps" = Models

Based on latest thinking in the field, exhaustive research and large, current datasets

Each app builds on the existing ET output to provide enhanced scenarios

ET+ enhanced capacity in:

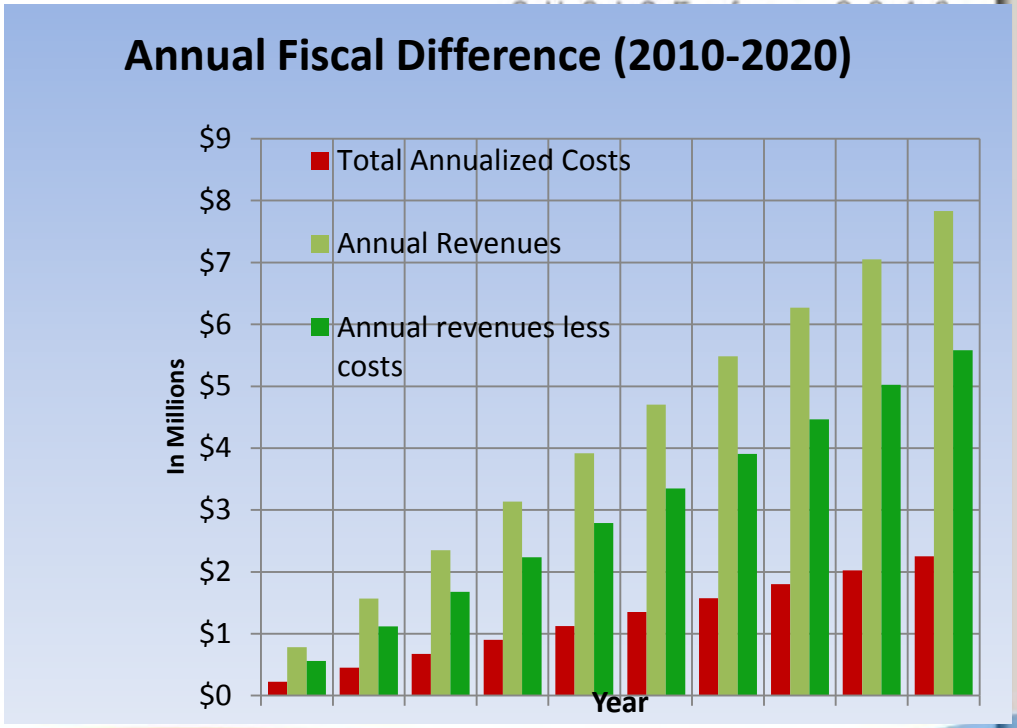
Wasatch CHOICE for 2040

- Fiscal/economic analysis
  - What kind of development is feasible NOW?
  - Can we build on existing capacity to save $$?
  - How do we create value through public investment?

- Urban form/land use analysis
  - How does our urban context affect our housing and transportation decisions? Our health? The environment?

Fiscal/economic

- Return on Investment
- Fiscal impacts
- Public Amenities
- Employment Growth & Resilience



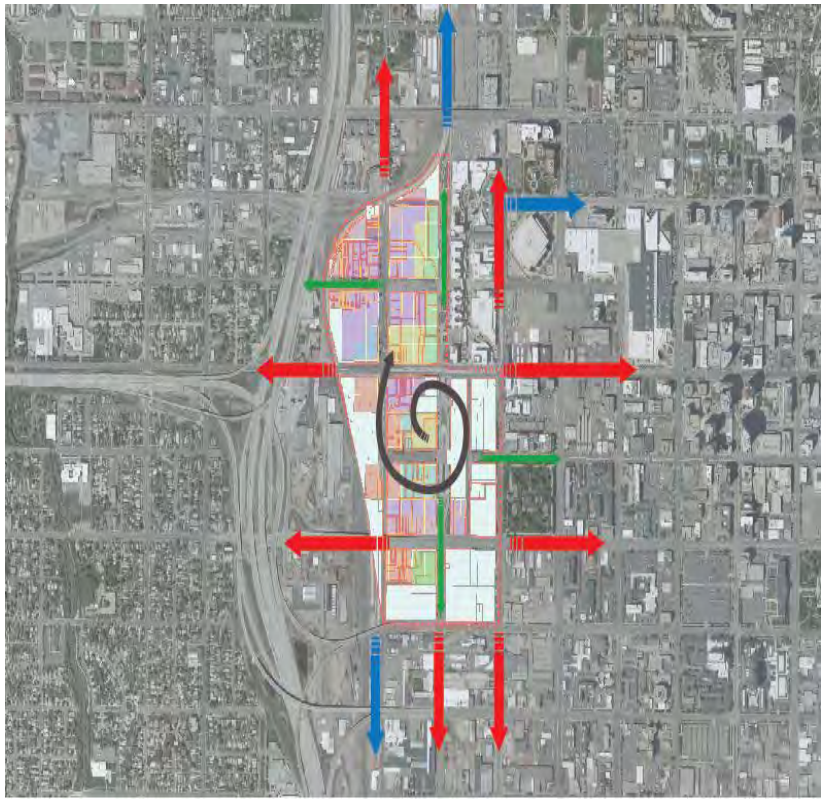
Investment Targets and Performance			
Performance Indicator	Target	Actual	NPV
Cash-on-Cash After Year 3	10.00%	8.95%	
IRR on Project Cost (Unleveraged Return)	12.00%	10.08%	($2,775,422)
IRR on Investor Equity (Leveraged Return Before Tax)	25.00%	21.81%	($685,407)
Debt Service Coverage Ratio (Year 3)	1.25	1.59	
IRR on Public Participation	5.00%	4.24%	($422,291)

Fiscal/economic

- ROI
- Fiscal Impacts
- Public Amenities
- Employment Growth
- Employment Resilience

Urban form/land use: 7D's

- Density
- Diversity
- Design
- Destination accessibility
- Distance to transit
- Development scale
- Demographics



Analysis of the urban environment

Wasatch CHOICE for 2040

- Mixed-use trip generation
- Household travel patterns
- Parking requirements
- Transportation safety
- Jobs-housing balance
- Street Life
- Redevelopment timing
- Health/active lifestyle
- Food Deserts
- H+T+E costs (true cost of living)
- LEED-ND
- Air Quality
- Water consumption
- Building energy use
- Ecosystem services

Data Needs for Enhanced Analysis

Wasatch CHOICE for 2040

Spatial Data

- Required:
  - Planning geography
    - Parcels or Census
  - Environmental constraints
- Recommended
  - Existing land use
  - Plans: Comprehensive Plans, Zoning
  - Assessor/parcel-level data
  - Key infrastructure: existing and planned
    - Roads, sewer, water

Forecast and Market Data

- Forecast for new growth
- Future market demand
- Market analysis

Wasatch
CHOICE for 2040

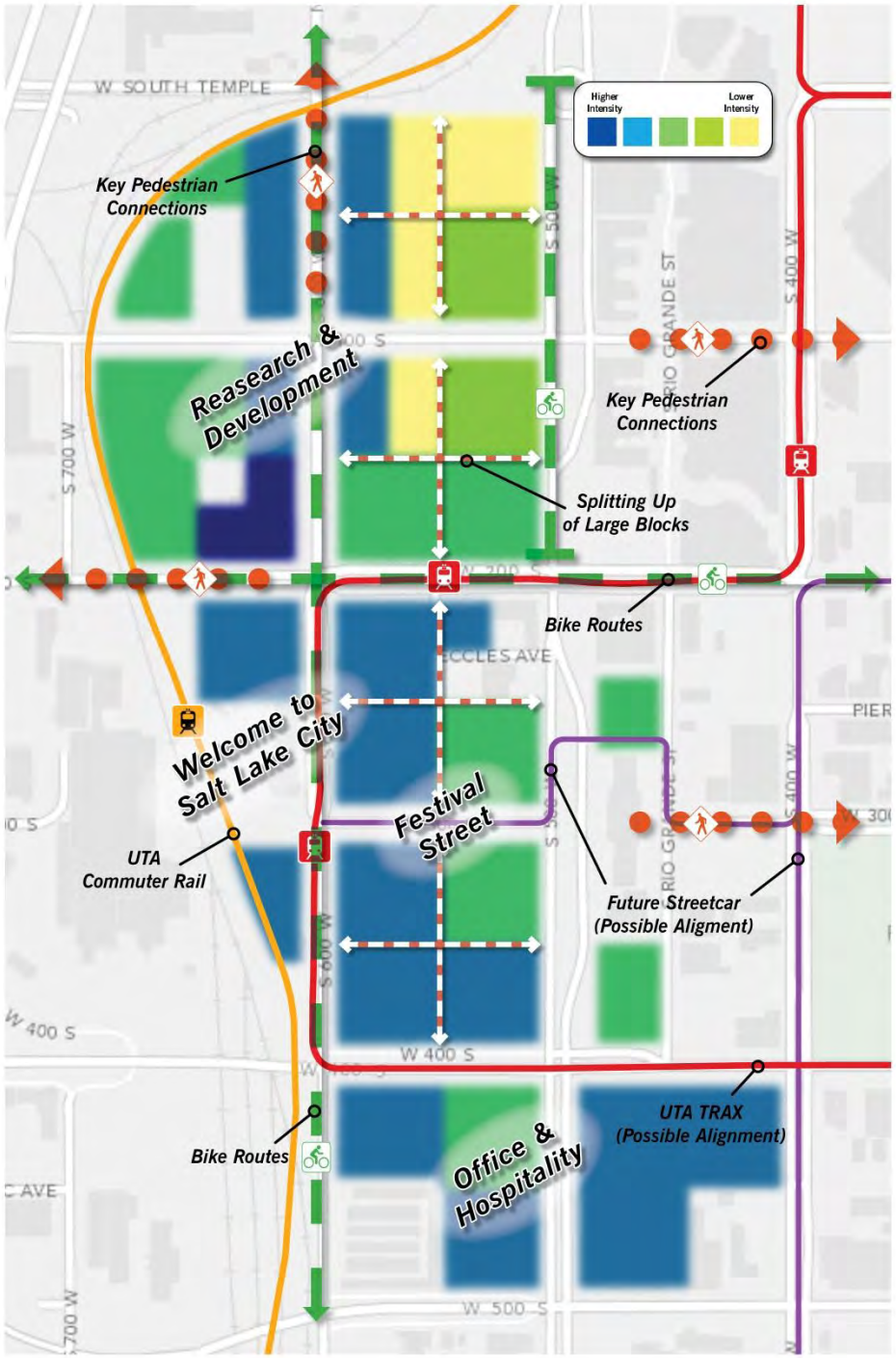
Envision Tomorrow Plus in Action

Salt Lake City Depot District ET+ and Visioning

Wasatch
CHOICE for 2040

Scenario A:

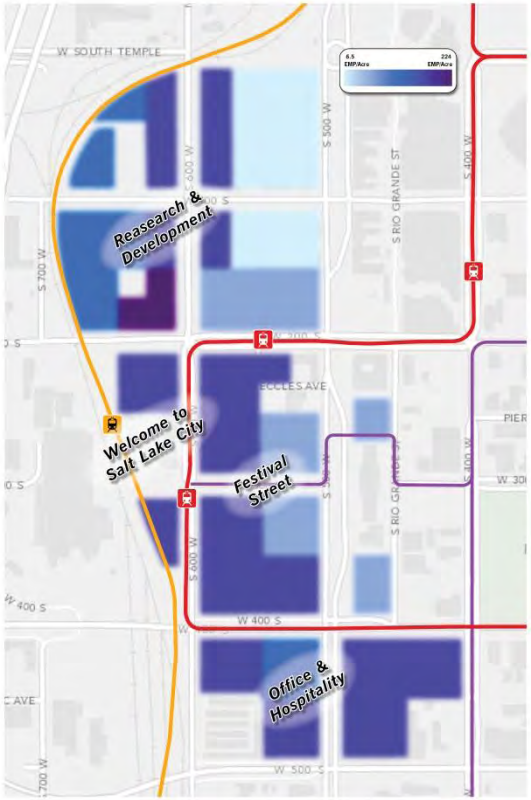
Work | Live | Play



Scenario A:

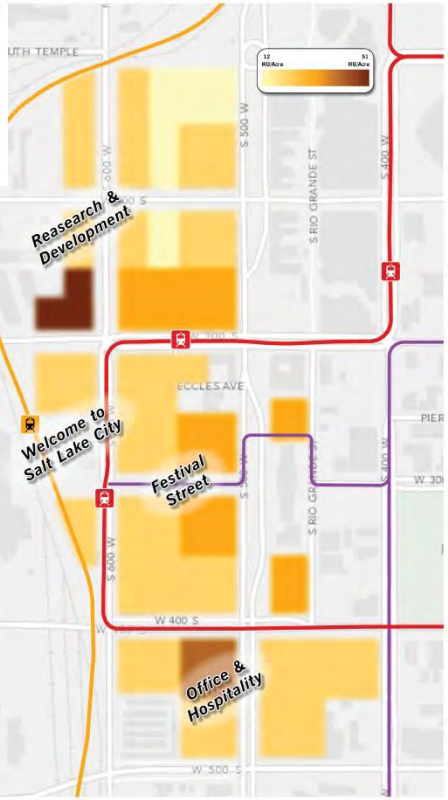
Work | Live | Play

- Mid-rise office and R&D, higher education
- Service focus: restaurants, daycare
- Residential focused near Gateway
- Pocket parks
- 1500 HH | 5400 Jobs



Housing Intensity

Employment Intensity



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Scenario A:

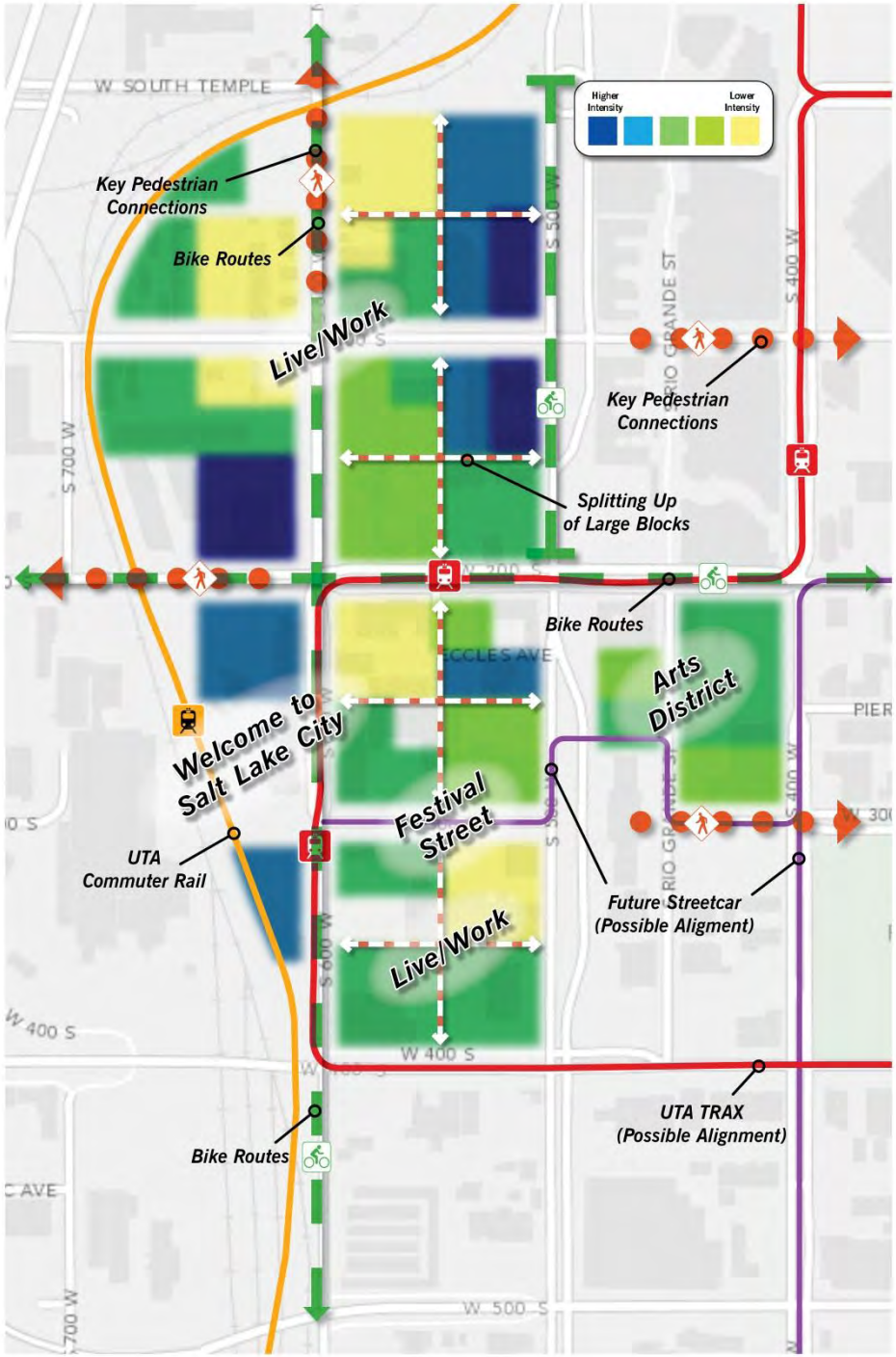
Work | Live | Play

Scenario A:

Work | Live | Play

Scenario B:

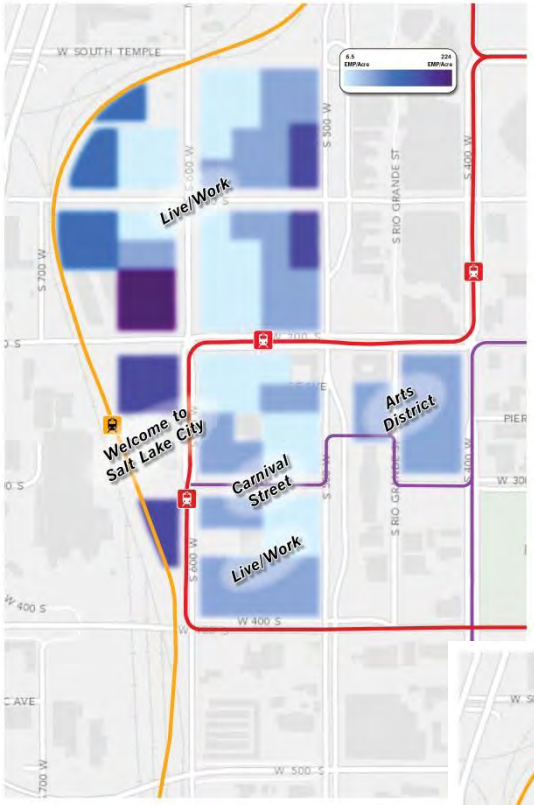
Play| Live | Work

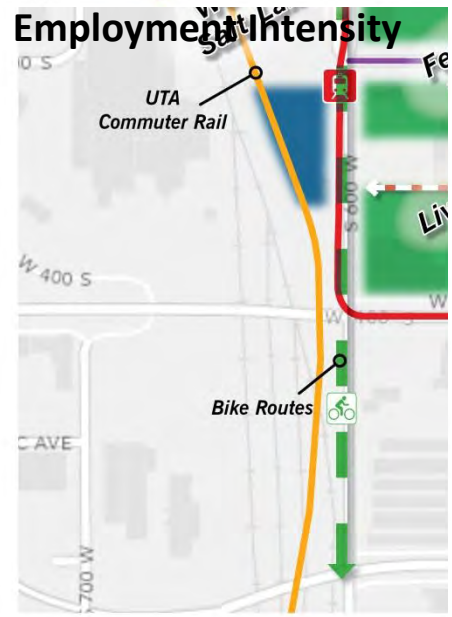


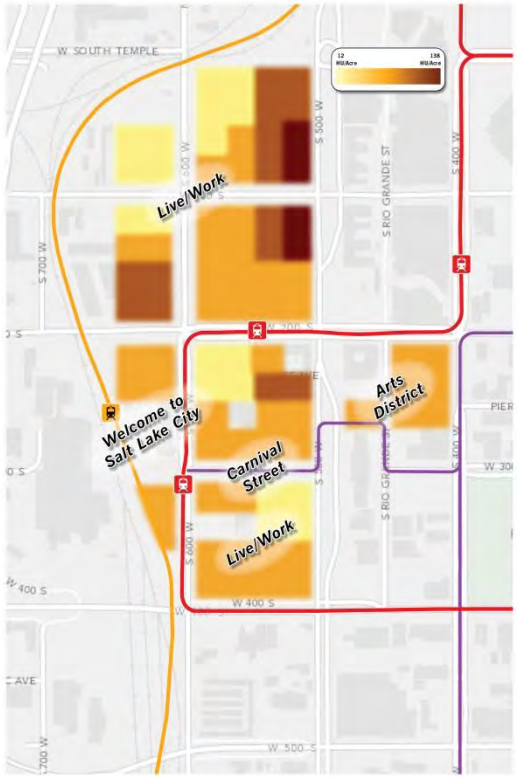
Scenario B:

Play| Live | Work

- Fine-grained scale
- Arts and entertainment quarter
- Live/work
- Plazas and public art
- 1600 HH | 2600 Jobs







Scenario B:

Play| Live | Work

- Fine-grained scale
- Arts and entertainment quarter
- Live/work
- Plazas and public art
- 1600 HH | 2600 Jobs

Scenario B:

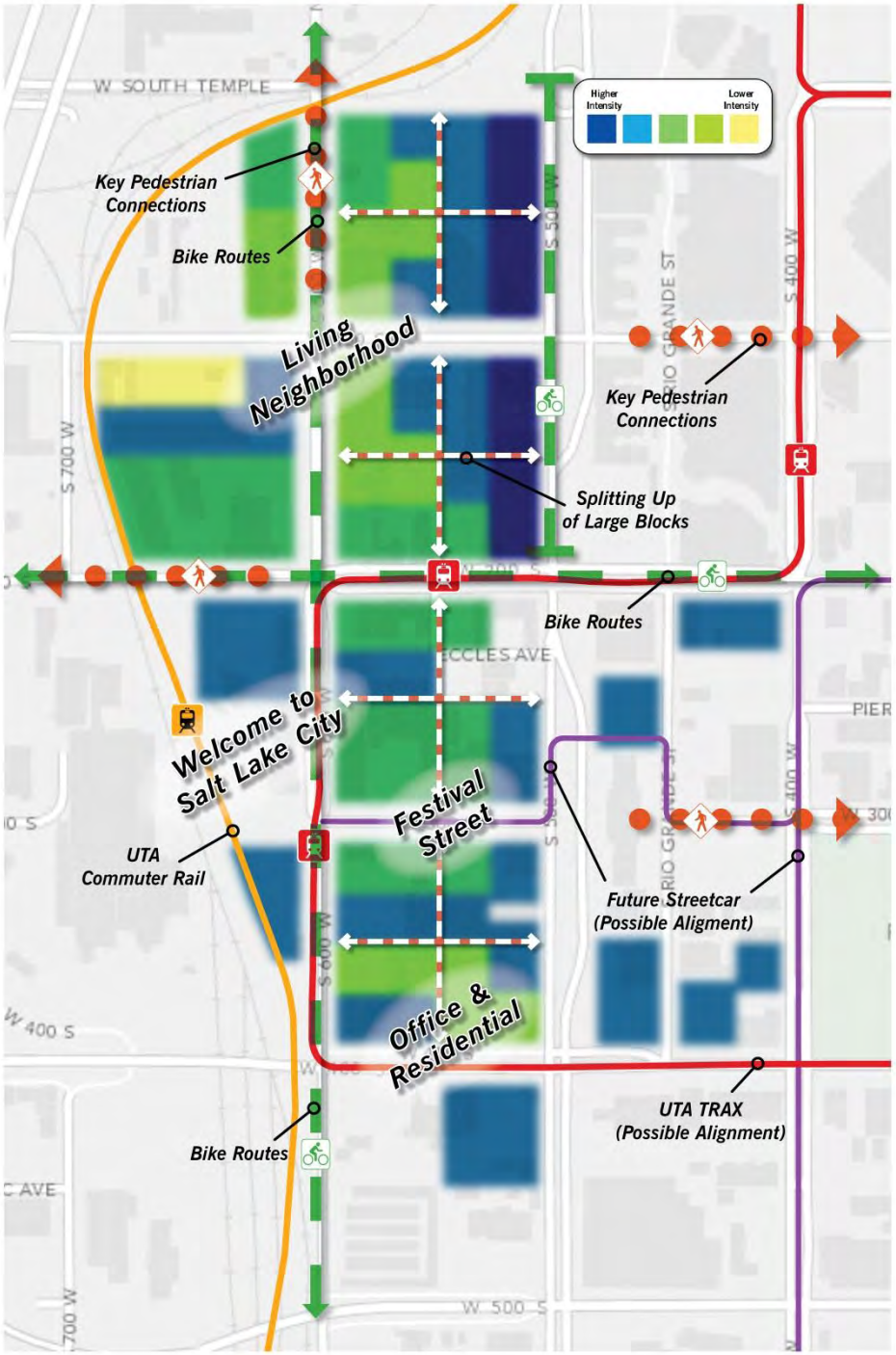
Play| Live | Work

Scenario B:

Play| Live | Work

Scenario C:

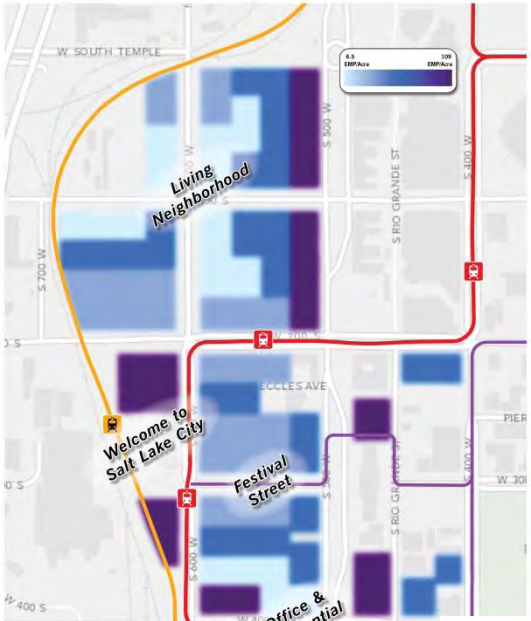
Live| Play| Work



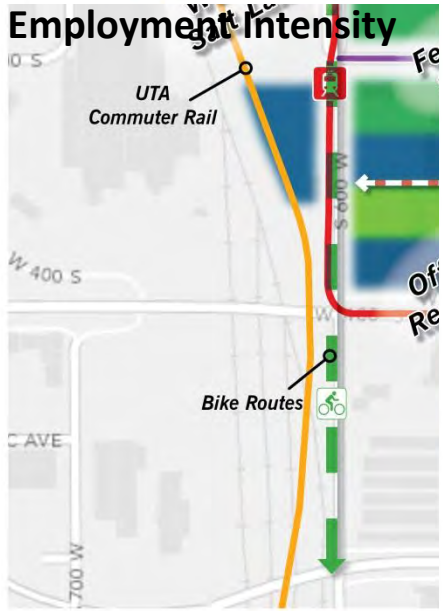
Scenario C:

Live| Play| Work

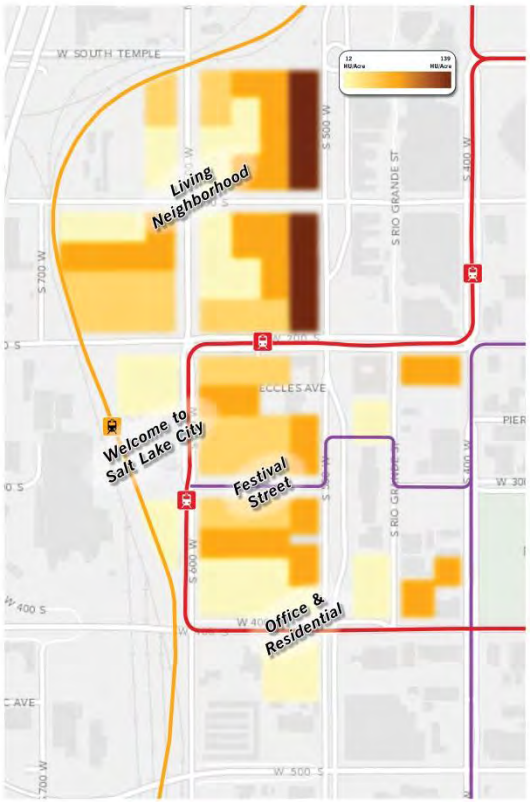
- Residential throughout
- Neighborhood: housing, services, grocery, school
- Playgrounds and playfields
- Office/retail/residential mix on major streets
- Family friendly in an urban way
- 2600 HH | 2800 Jobs



Housing Intensity



Employment Intensity



Scenario C:

Live| Play| Work

- Residential throughout
- Neighborhood: housing, services, grocery, school
- Playgrounds and playfields
- Office/retail/residential mix on major streets
- Family friendly in an urban way
- 2600 HH | 2800 Jobs

Scenario C:

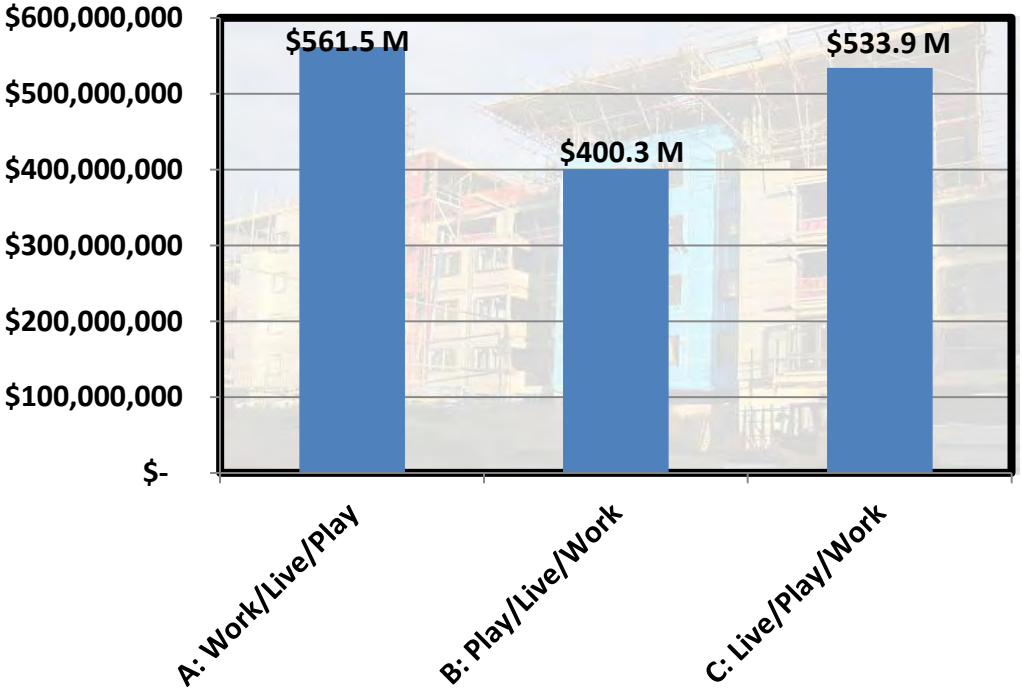
Live | Play | Work

Scenario C:

Live | Play | Work

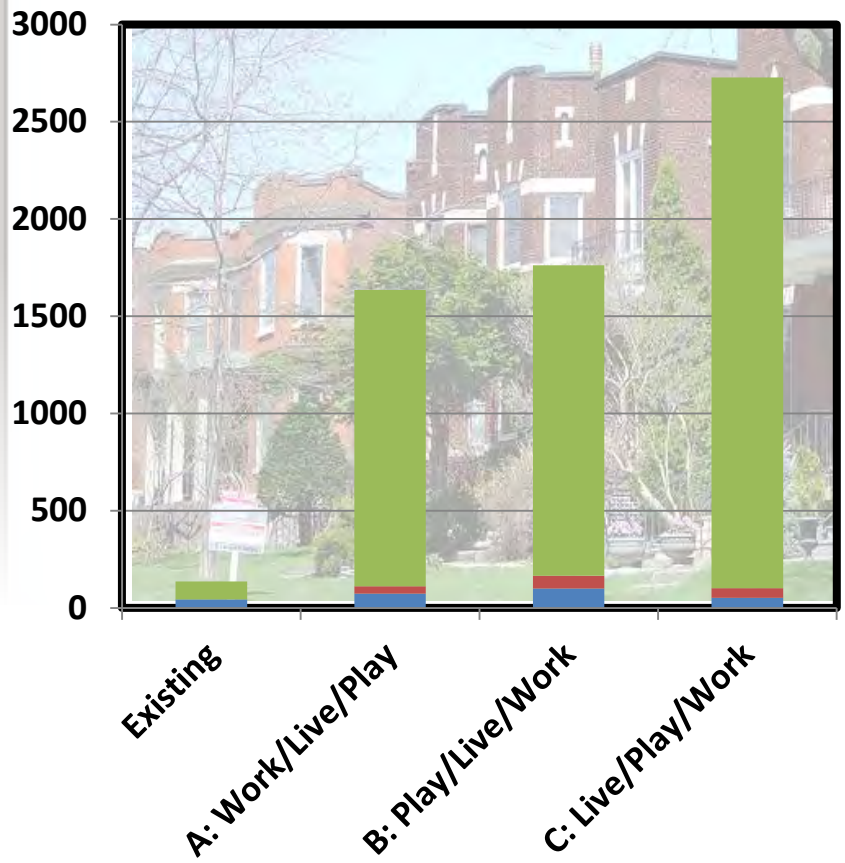
Value of New Construction

Investing in our city, investing in our future



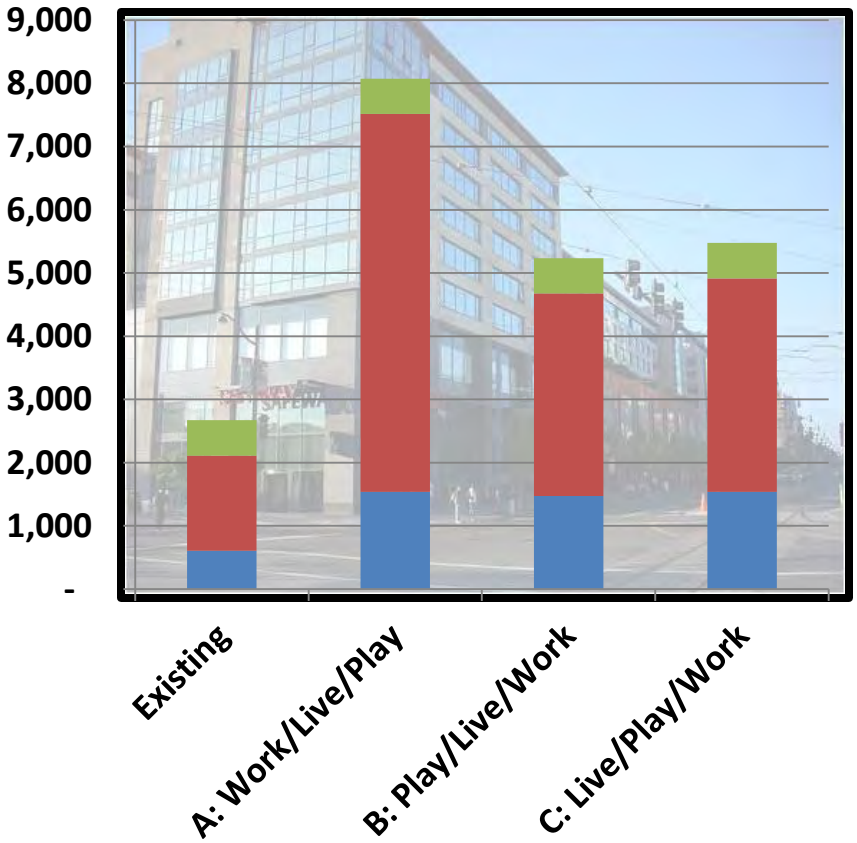
Depot District Housing Mix

More housing options, better meet market demand



Depot District Employment Mix

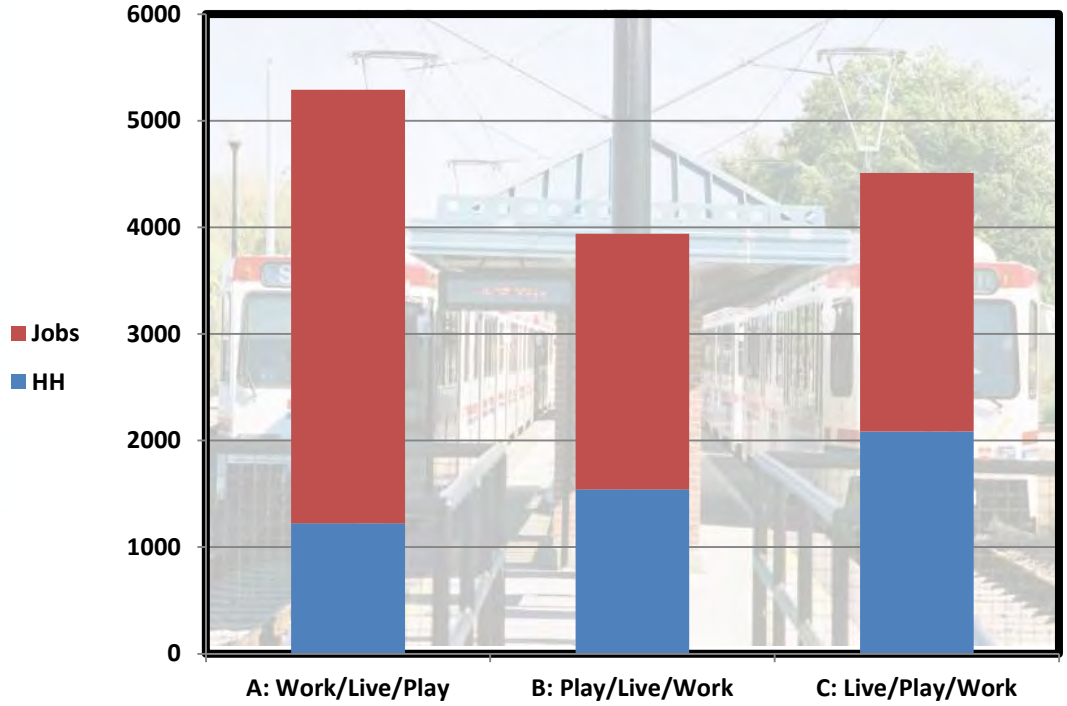
Provide for our families and keep our dollars in our region



2040 Households and Jobs Within ¼ Mile of Transit

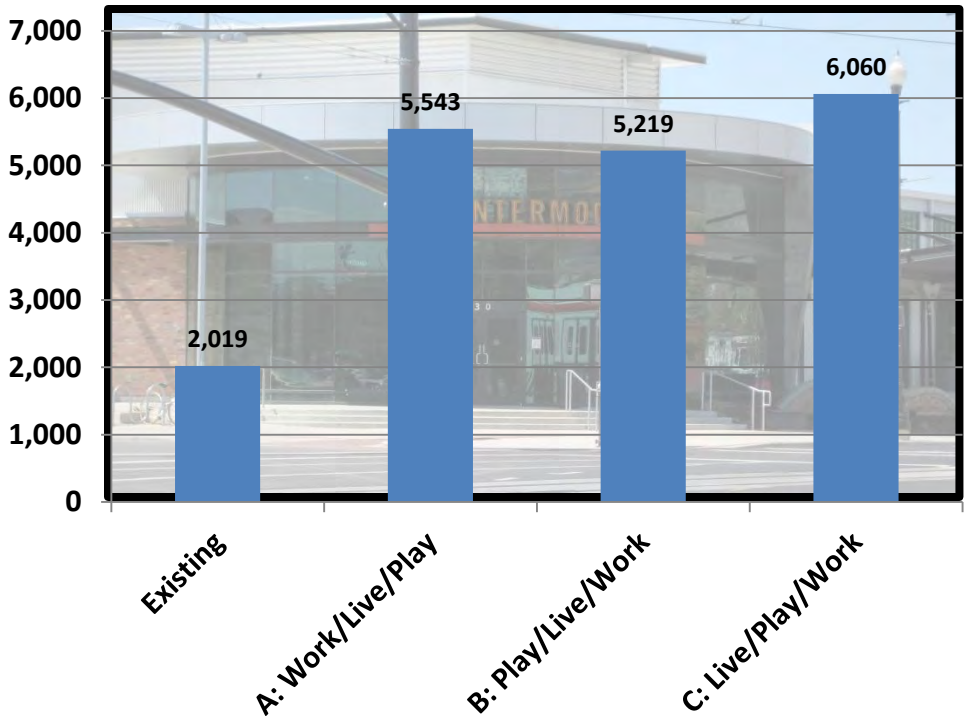
More convenient transportation options

Wasatch CHOICE for 2040



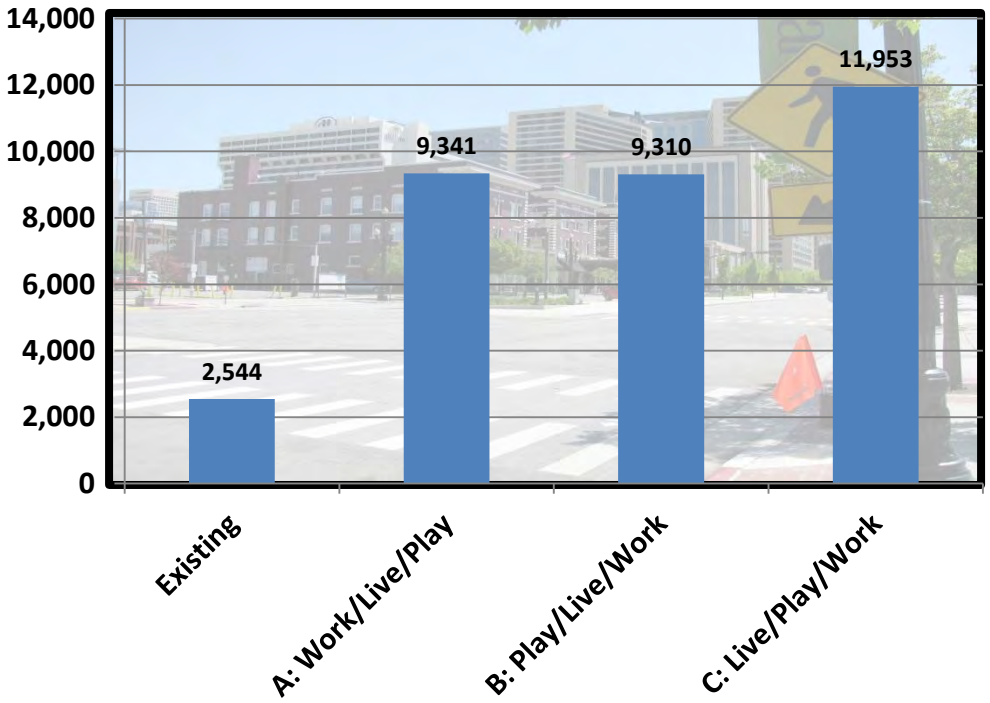
Depot District Transit Trips

Improve air quality, less time in traffic, more time doing what we enjoy



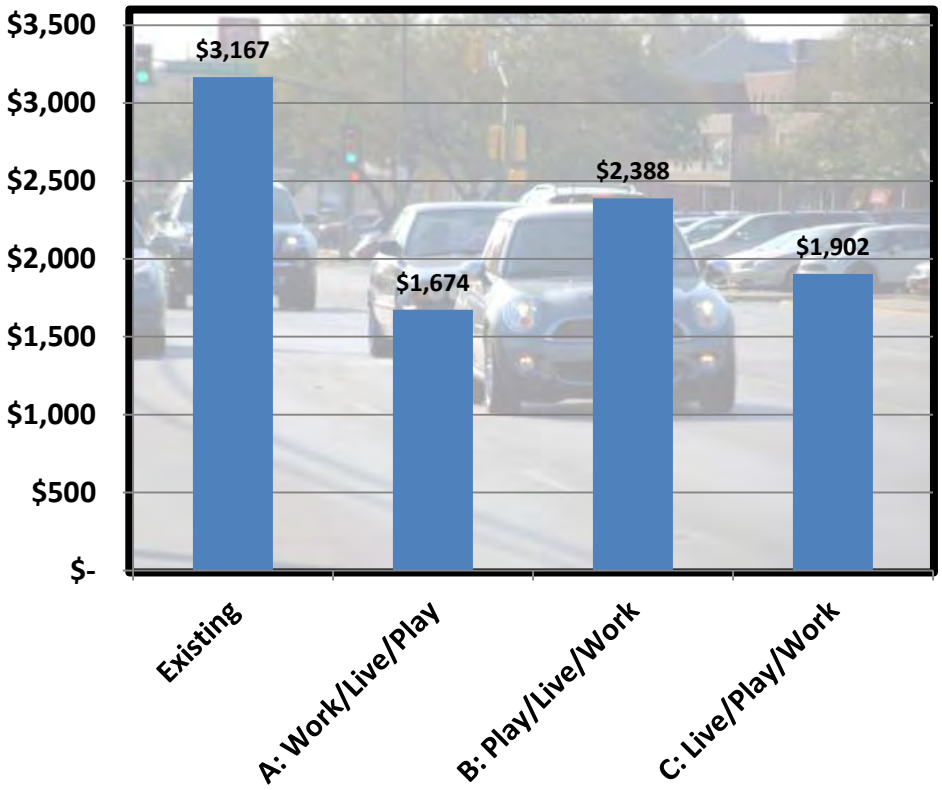
Depot District Walk Trips

Health, more time for friends and family



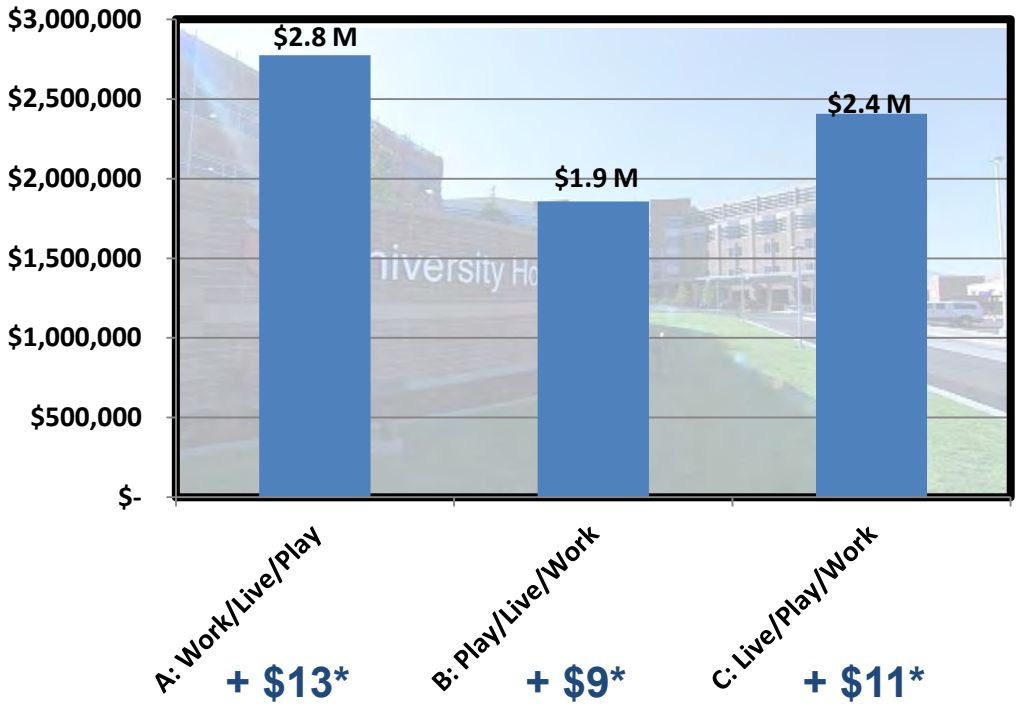
Annual Cost of Gasoline per Resident + Employee

More money for what matters



Annual Property Tax Revenue

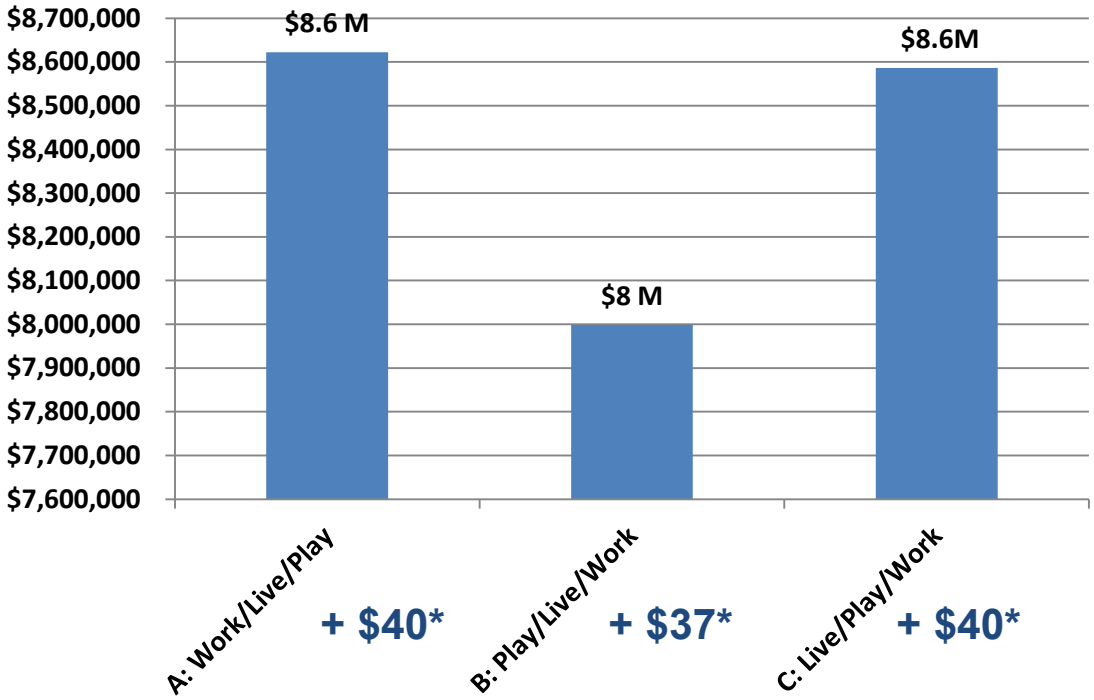
Public health, safety and welfare

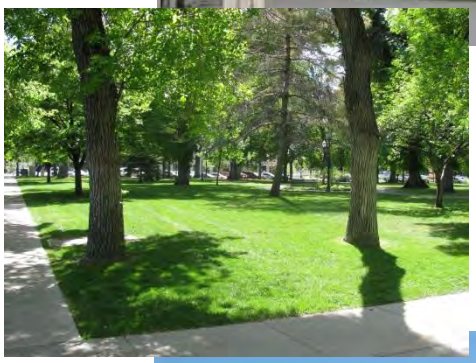


*Additional revenue per resident in Salt Lake City…

Annual Sales Tax Revenue

Public health, safety and welfare





***Additional revenue per resident in Salt Lake City…**

What are the strongest ideas?

What makes the most sense for…

Wasatch CHOICE for 2040

…our region?

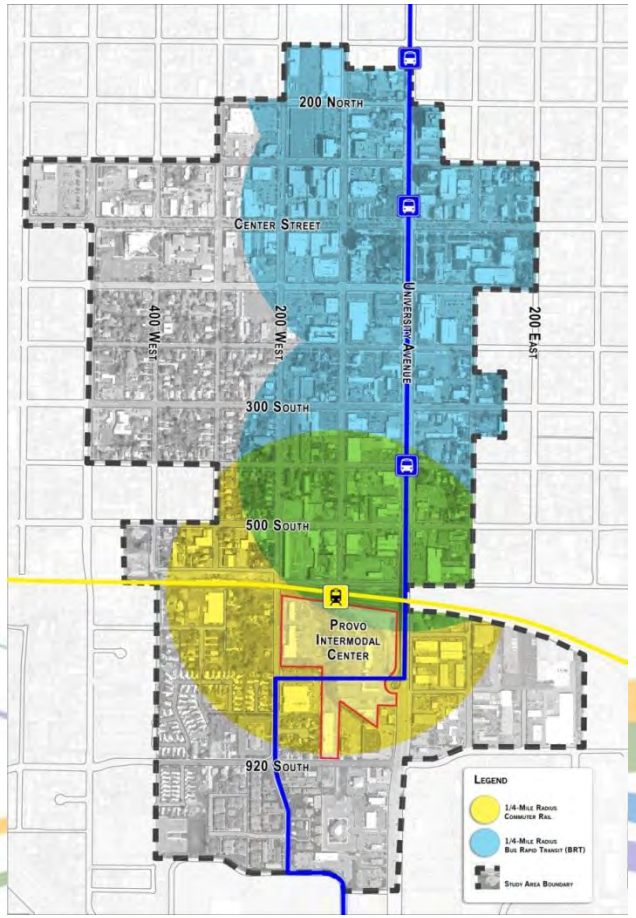
…our city?

…residents?

Keep our region beautiful, neighborly, healthy and prosperous for the next generation

Downtown Provo: ET+ and Next Steps

Wasatch CHOICE for 2040

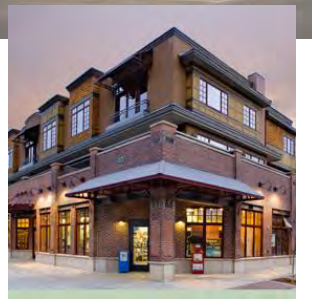


Prototypes Vary in Feasibility

Wasatch CHOICE for 2040

Main Street Retail

Townhomes Compact Single Family



3- and 4-story mixed-use

6+ Story

Most Feasible

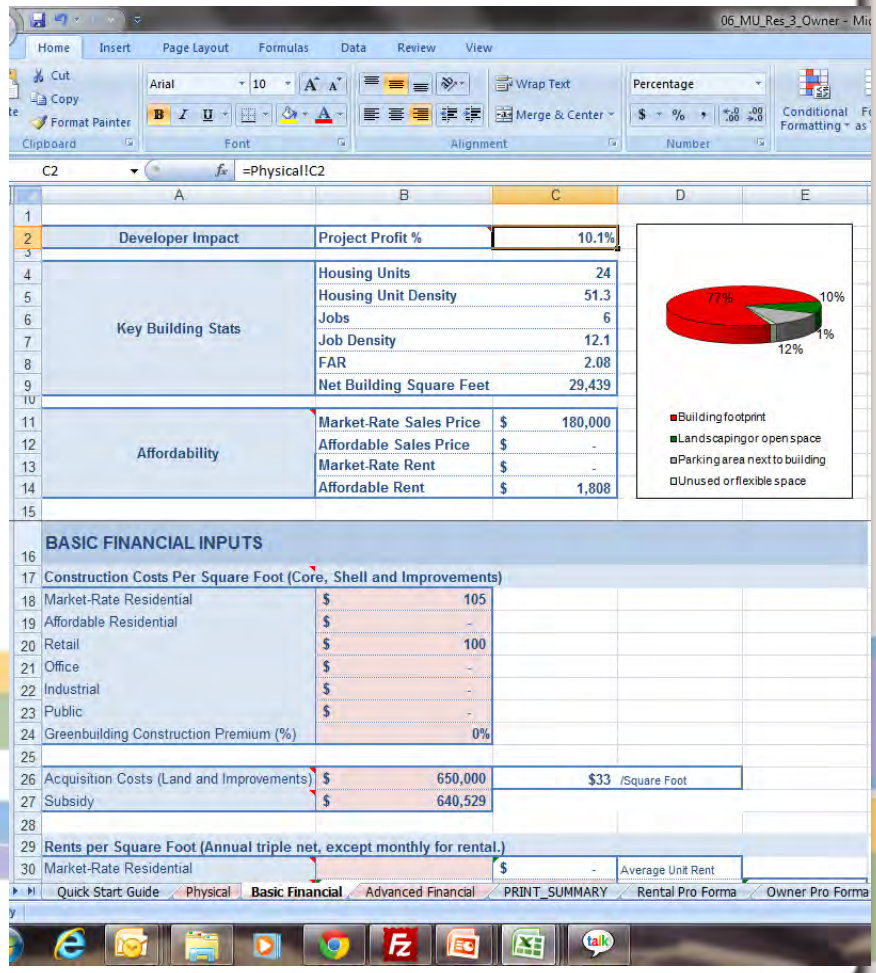
Most Challenging

Optimize Development Regulations

Wasatch CHOICE for 2040

- Use ROI analysis to make regulations market feasible

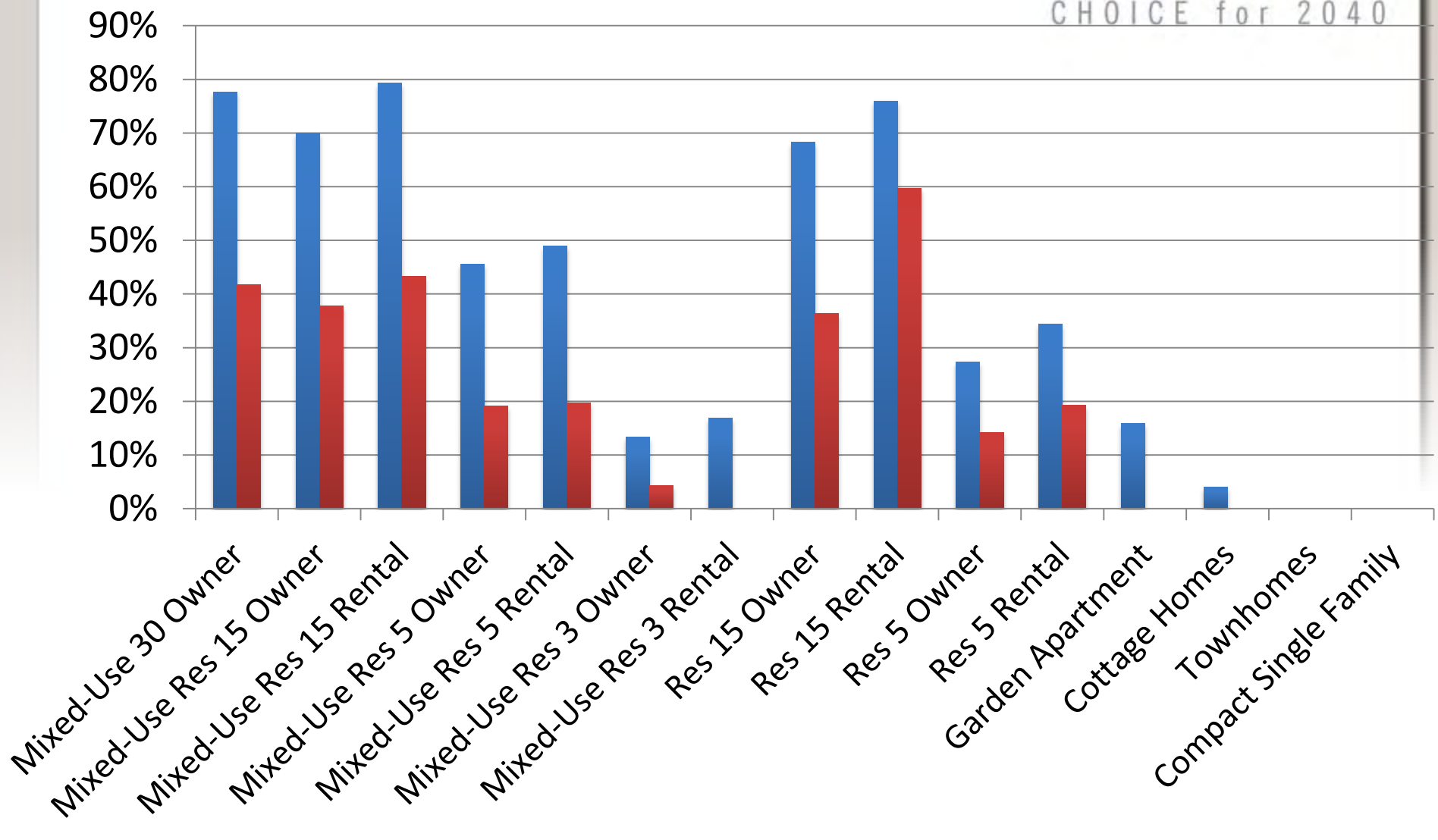
- Experiment with:
  - Height
  - **Parking requirements / type**
  - Unit sizes
  - Landscaping requirements
  - Etc.



Suburban Parking ***vs.*** *Urban Parking*

Subsidy vs. Project Value (%)

Wasatch CHOICE for 2040

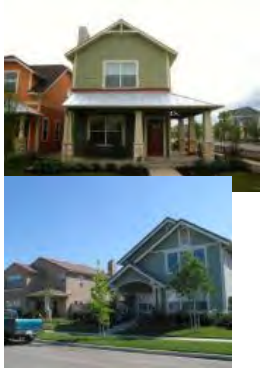


Relationship of Amenity and Development Potential

- Urban amenity level can impact average rent levels
  - Increases desirability
  - Broadens housing demand
  - Increases achievable rents & sales prices
- Results in expanded development options

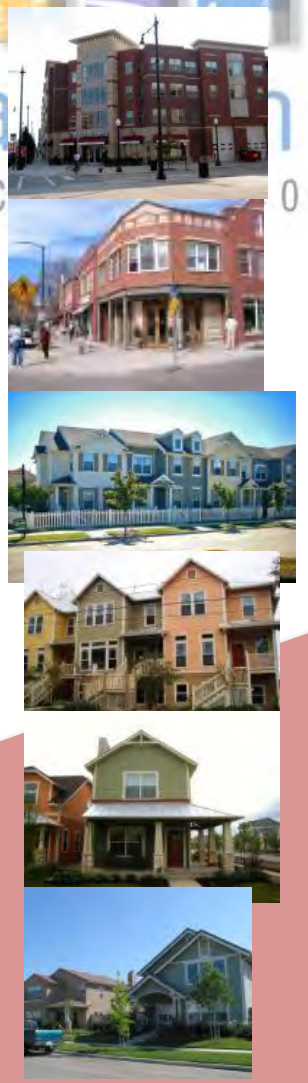
Development Feasibility Spectrum Changes with Increase in Desirability

What Can Be Built?



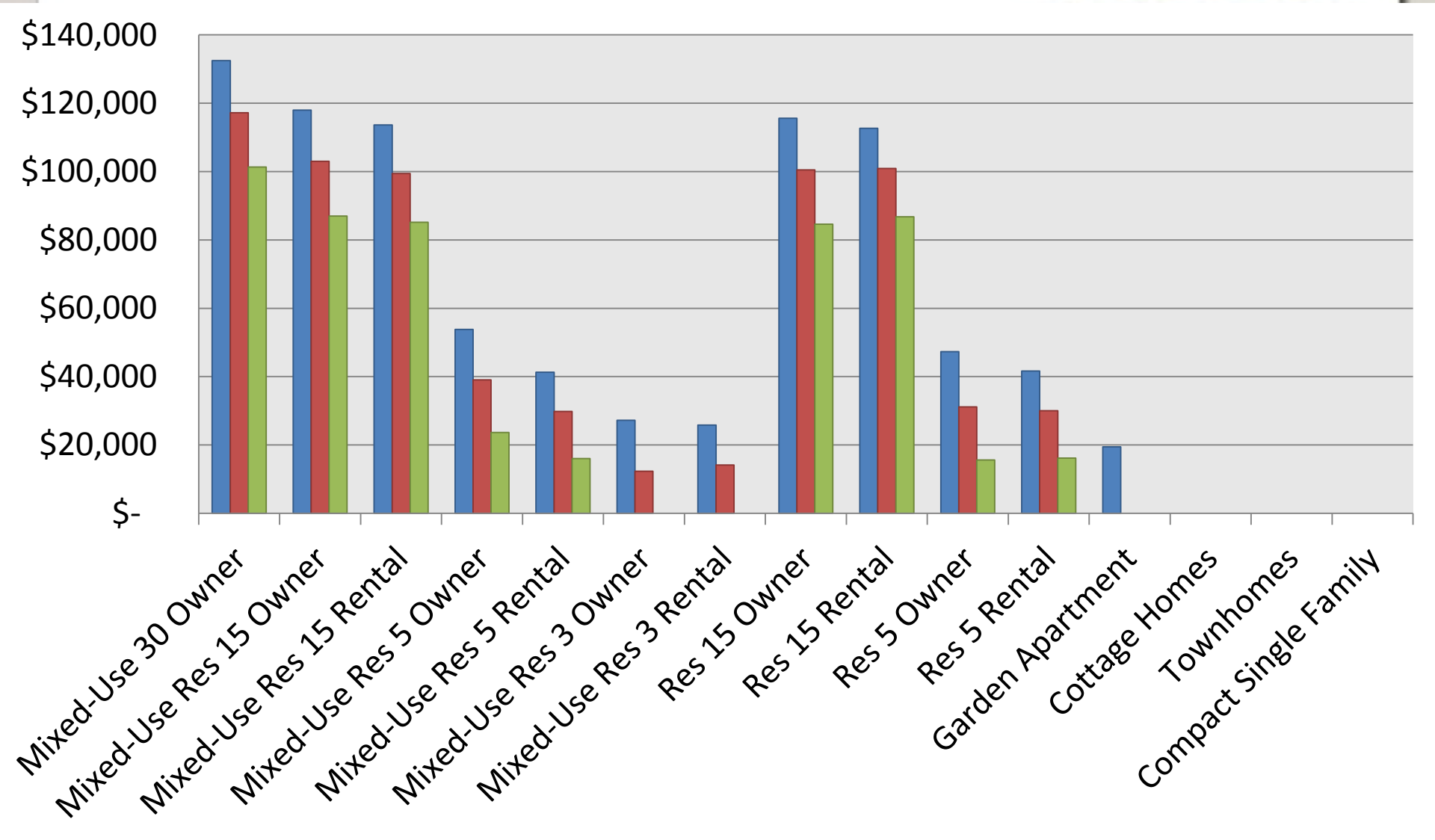
Today's Rents & Sales Prices

10% Increase in Average Rent

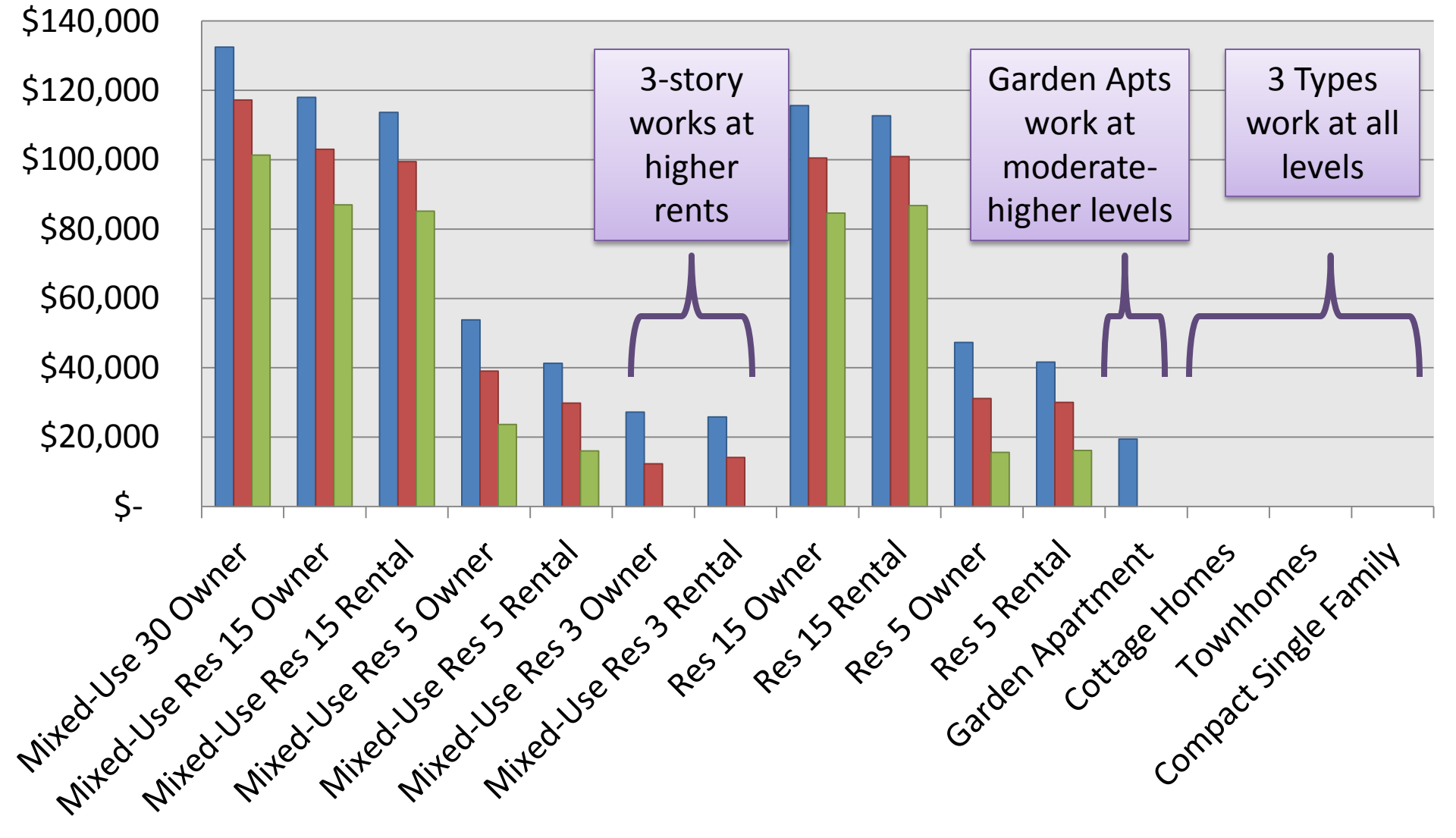


20% Increase in Average Rent

Gap per Unit


$1.10 Rent or $180 Sales Price / sq ft
$1.21 Rent or $198 Sales Price / sq ft
$1.32 Rent or $217 Sales Price / sq ft
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$-
Mixed-Use 30 Owner
Mixed-Use Res 15 Owner
Mixed-Use Res 15 Rental
Mixed-Use Res 5 Owner
Mixed-Use Res 5 Rental
Mixed-Use Res 3 Owner
Mixed-Use Res 3 Rental
Res 15 Owner
Res 15 Rental
Res 5 Owner
Res 5 Rental
Garden Apartment
Cottage Homes
Townhomes
Compact Single Family

What's Feasible Today?



Short Term Market May Differ from Long Term Vision – Embrace Both.

Wasatch CHOICE for 2040

- ***Allow inexpensive and/or interim building types that meet urban design standards***
- 1-story main street retail/office with no parking required
  - Increases street activity, generates downtown activity
  - Cheap to build, no subsidy required
  - Can be redeveloped when market heats up

Embrace the Market: Urban Single Family

- Cottage Homes
- Townhomes
- Compact Single Family
  - 12-20 units per acre
  - Potential for hundreds of new units near downtown cores
  - No subsidy required
  - Transit efficient and walkable/bikable

Embrace the Market: Incubator Space

Wasatch CHOICE for 2040

- Food Carts
  - Instant street activity
  - Low overhead
  - Incubator model for future brick and mortar

Discussion Questions

- Questions for us?
- Our questions for you:
  - Would you use ET+?
  - At what scale (parcel/building, development, regional)?
  - What barriers might stand in your way?
  - Which apps would help you to answer the questions you're most interested in?

Presenters:

- Alex Joyce
  - Fregonese Associates
- Christie Oostema
  - Envision Utah
- Sarah Hinners
  - University of Utah