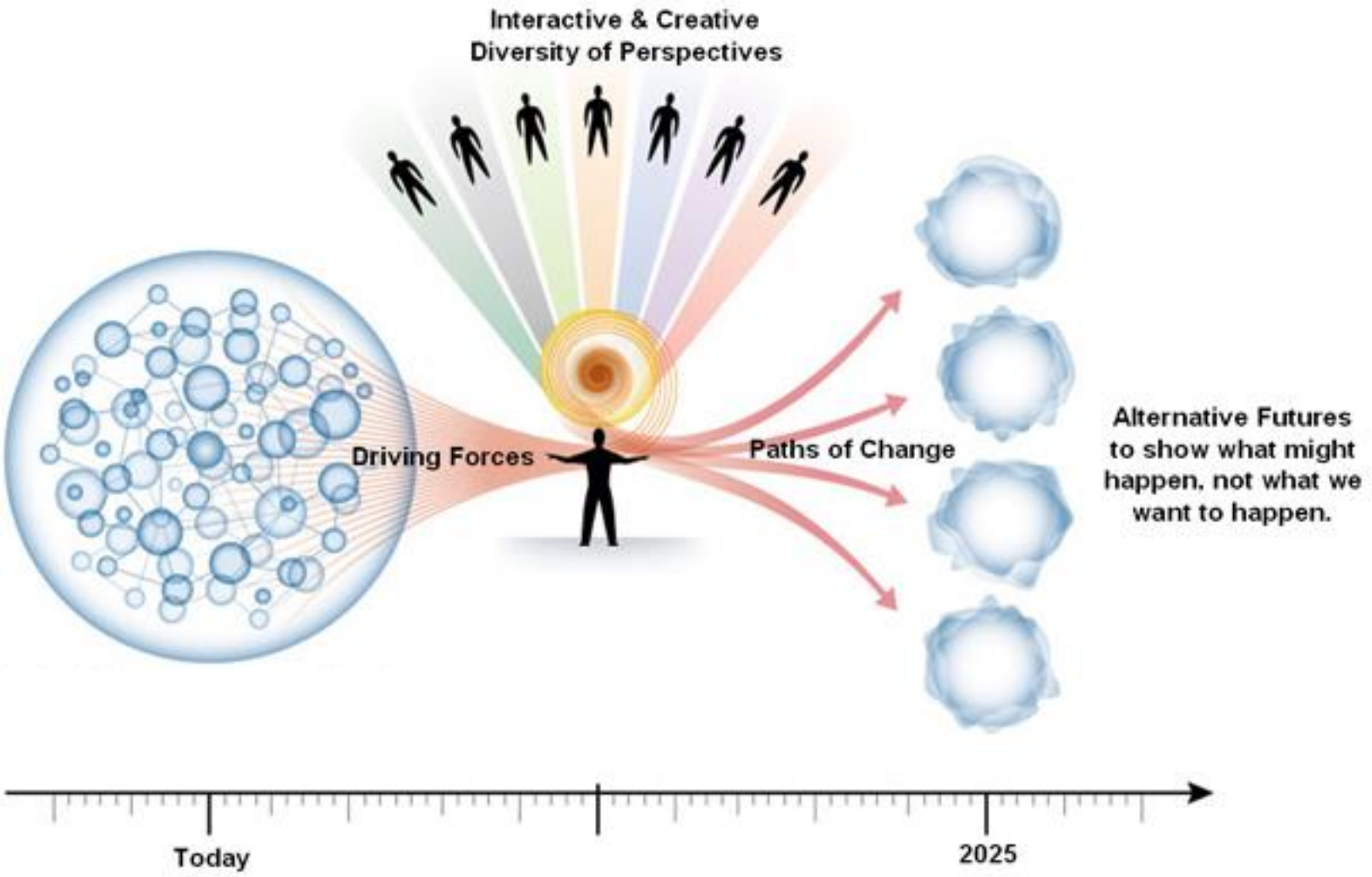
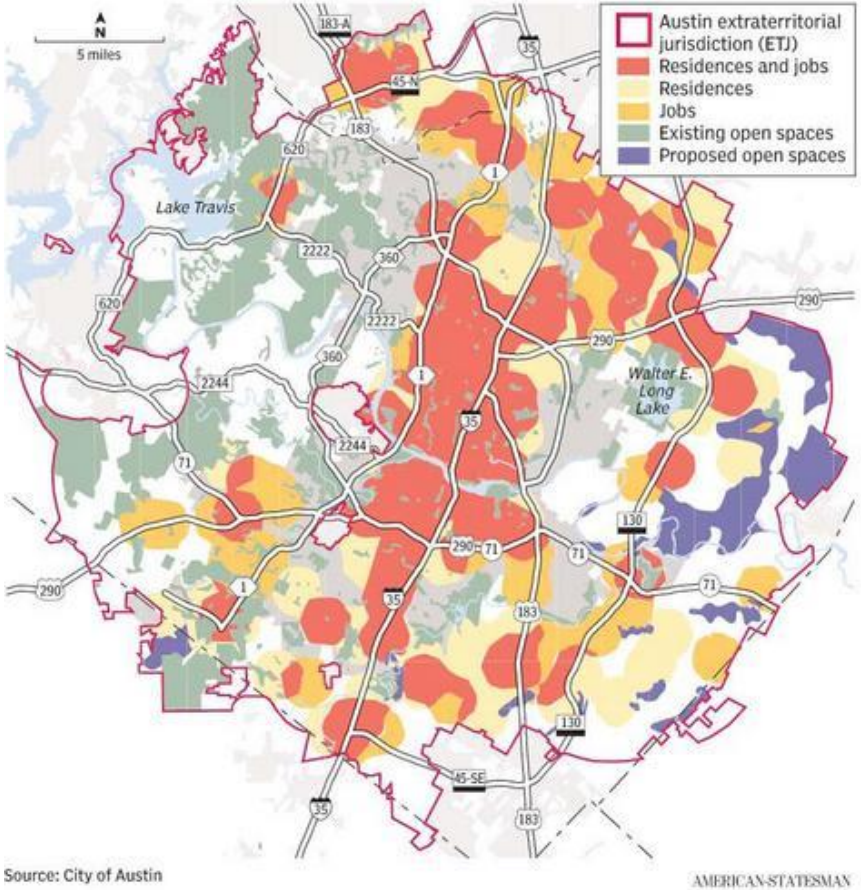
Scenario Planning

A Case of GeoDesign

D+SRC



Source: itcilo.wordpress.com



Source: City of Austin

AMERICAN-STATESMAN

Current trends scenario

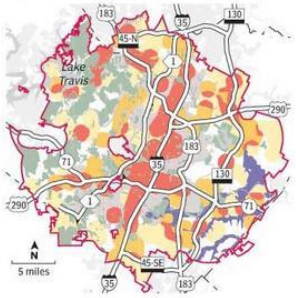
This scenario was created by City of Austin staff based on current population and employment trends and on planned and funded projects. It assumes no shifts in new development practices or market forces. Reflecting what would happen if current trends continue, it:

- Develops all known large projects.
- Creates one regional center downtown.
- Creates mixed-use corridors along major urban core roads.
- Generates intense development at major highway intersections.
- Places significant residential infill in most existing single-family urban core neighborhoods.

Note: This scenario represents a planning concept taken to an extreme. The final product that the city will adopt will be a melding of several concepts, based on public opinion.

Note: Each of these scenarios represents a planning concept taken to an extreme. The final product that the city will adopt will be a melding of these five concepts, based on public opinion.

Scenario A

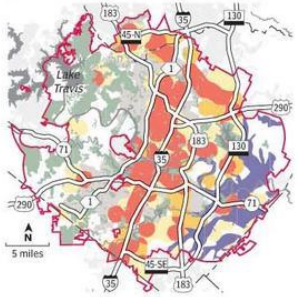


Scenario A

This scenario distributes new development throughout the planning area, primarily along major roads. About half its development occurs through separated housing and jobs and half occurs as mixed use, in which businesses and residences are in the same building or in close proximity. New open space to the east protects creeks and flood plains. Development occurs:

- Primarily along major roads (Interstate 35, Texas 71, Texas 130, U.S. 183) and undeveloped areas near those roads.
- Modestly as infill and redevelopment of existing areas.
- At mixed-use activity centers at intersections of major roads and along transit lines.
- Primarily on vacant land.
- On more square miles of farmland and aquifer zones than in any other scenario.

Scenario B

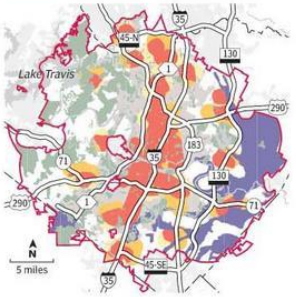


Scenario B

This scenario is characterized by preserving land to the west, concentrating new development to the east and redeveloping within the urban core. Redevelopment and infill of existing land in the city typically features a mix of people and jobs. New open space to the east protects creeks and flood plains. Development occurs:

- At new and redeveloped centers along major roads and transit lines.
- Through modest infill within existing residential areas between MoPac Boulevard (Loop 1) and Texas 130.
- Primarily as some form of mixed use.
- On fewer square miles of farmland and aquifer zones than Scenario A.

Scenario C

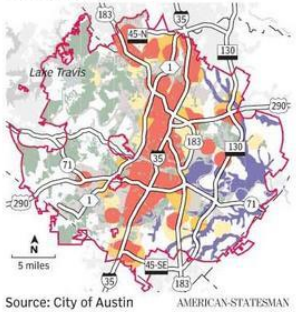


Scenario C

This scenario is the second most compact scenario, using 99 square miles of developed land. Most new development places a mix of people and jobs close to one another. New open space to the east protects creeks and flood plains. Development occurs:

- In mixed-use activity centers throughout the planning area at transit stops or the intersections of major roadways.
- By encouraging infill within existing residential areas between MoPac Boulevard (Loop 1) and Texas 130.
- Primarily between MoPac and Texas 130, preserving land to the east and west.
- In a clustered manner, leaving open space to the east available for agriculture.

Scenario D



Scenario D

This scenario is the most compact, using only 88 square miles of developed land. Most new development places a mix of people and jobs close to one another. Open space to the east is available for agriculture. Development occurs:

- In a concentration between I-35 and MoPac Boulevard (Loop 1).
- At five major activity centers served by transit as well as along mixed-used corridors between them.
- By encouraging infill within existing residential areas between MoPac and Texas 130.
- At new activity centers near Austin-Bergstrom International Airport, Lake Walter E. Long and Manor and at the intersection of I-35 and Texas 45 Southeast .
- On fewer square miles of farmland and aquifer zones than in any other scenario.

Source: City of Austin

AMERICAN-STATESMAN

Source: City of Austin

weber

davis

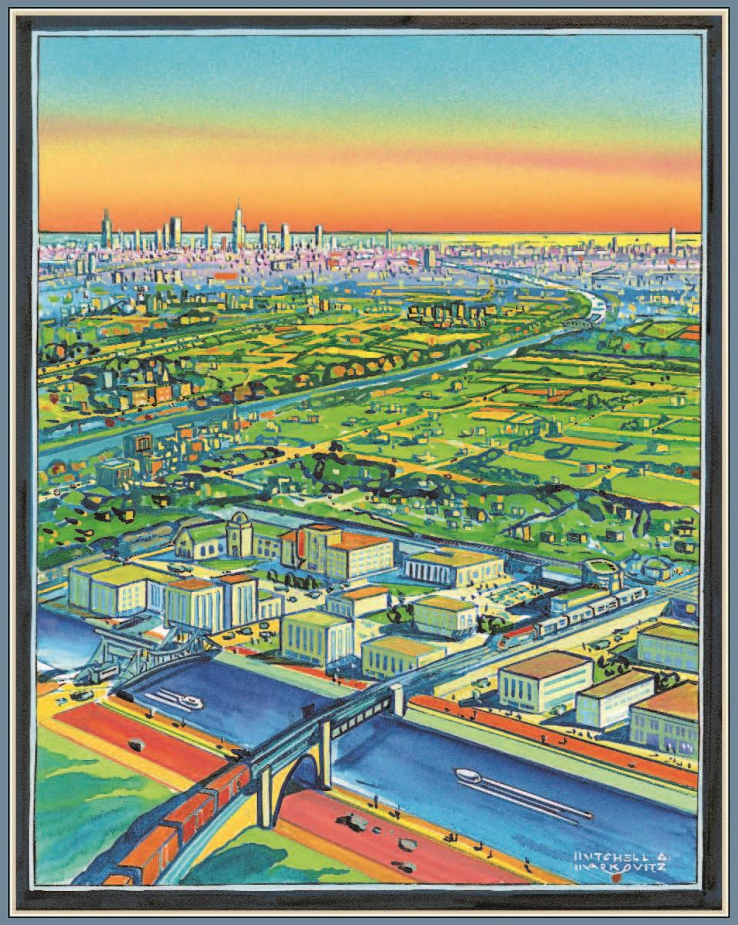
salt lake

utah

WASATCH CHOICES 2040

A Four County Land-Use and Transportation Vision

Envision Utah How we grow matters.



The Metropolis Plan:
Choices for the Chicago Region

Chicago Metropolis 2020

IMAGINE 2040

- The Triangle Region Scenario Planning Initiative

Imagine 2040
YOUR VISION OUR FUTURE

Final Summary Document

Version 1.0 | February 19, 2013

INDEX

Criterion Planners

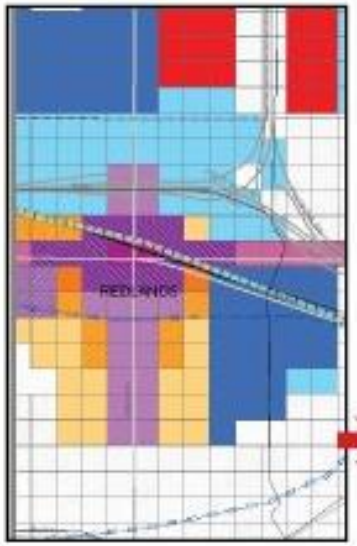
1 Develop building prototypes

Create prototype buildings using the Return On Investment (ROI) Model.

2 Combine buildings to create Development types

Mix buildings, streets, parks and other urban elements to create development types.

3 Build scenarios



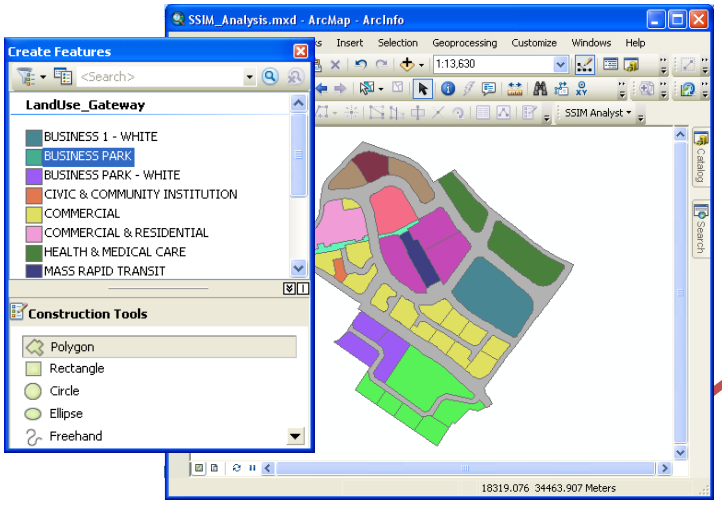
Create scenarios by applying the development types to the landscape using the Scenario Builder.

4 Evaluate scenario performance

Using the ROI model, examine a whole host of benchmarks based on the built scenario.

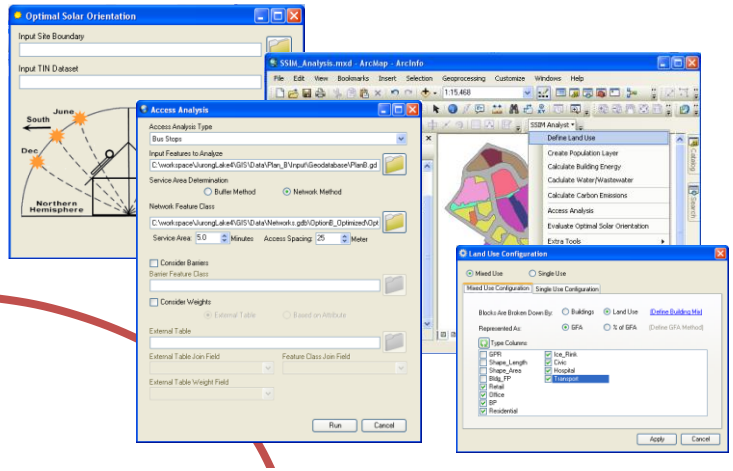
Envision Tomorrow

Fregonese Associates



1 Draw Concept with GIS Sketch Tools

With Project specific land use editing templates



2 Run Indicator, Urban Form Analysis Model & Generate Land & Building Program

Using Intelligent Prototyping of Land Use and SSIM Analyst for ArcGIS 10

3 Get Performance Results

SSIM

AECOM

CommunityVIZ

Placeways

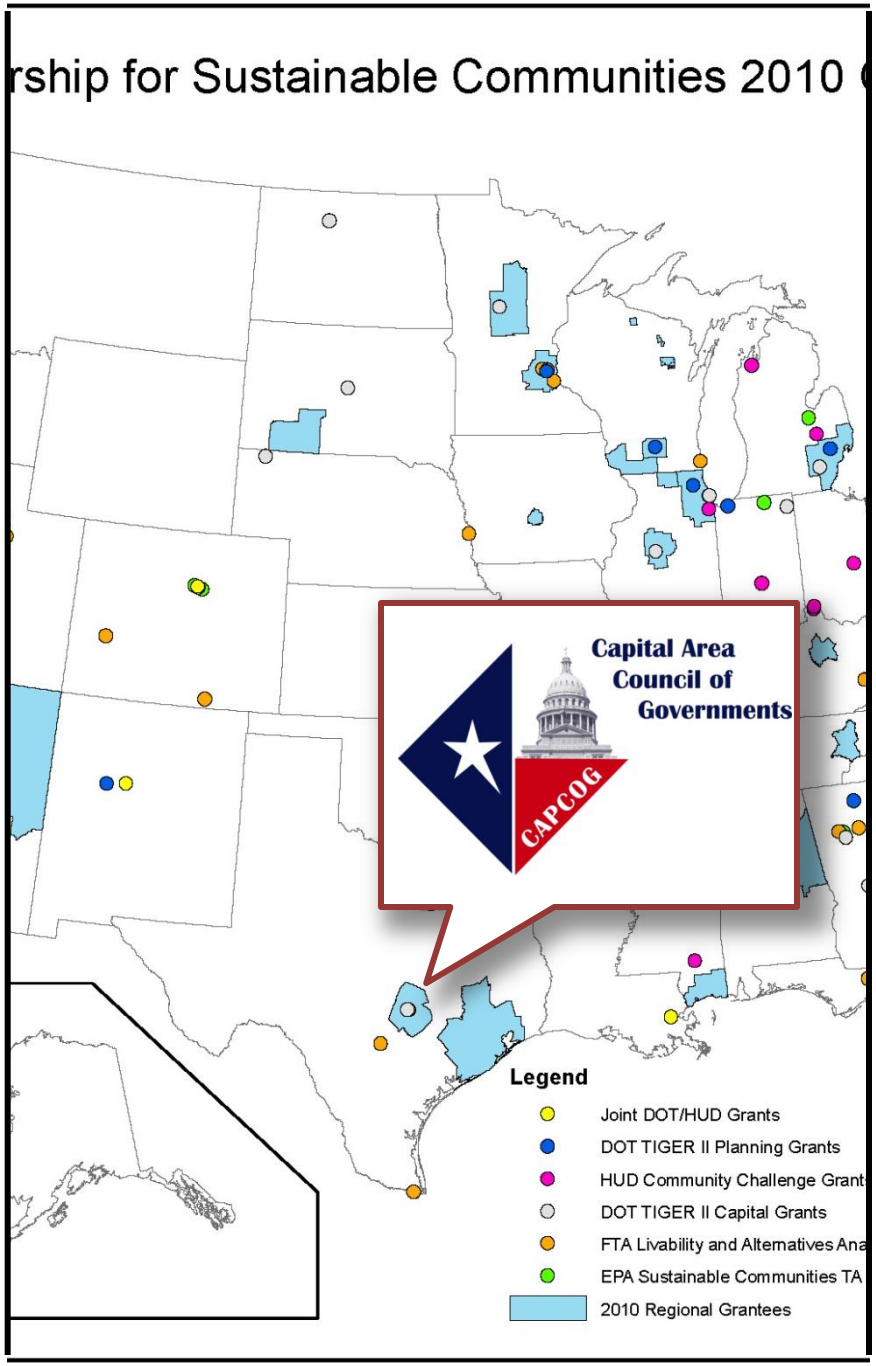
partnership for Sustainable Communities
an interagency partnership HUD • DOT • EPA

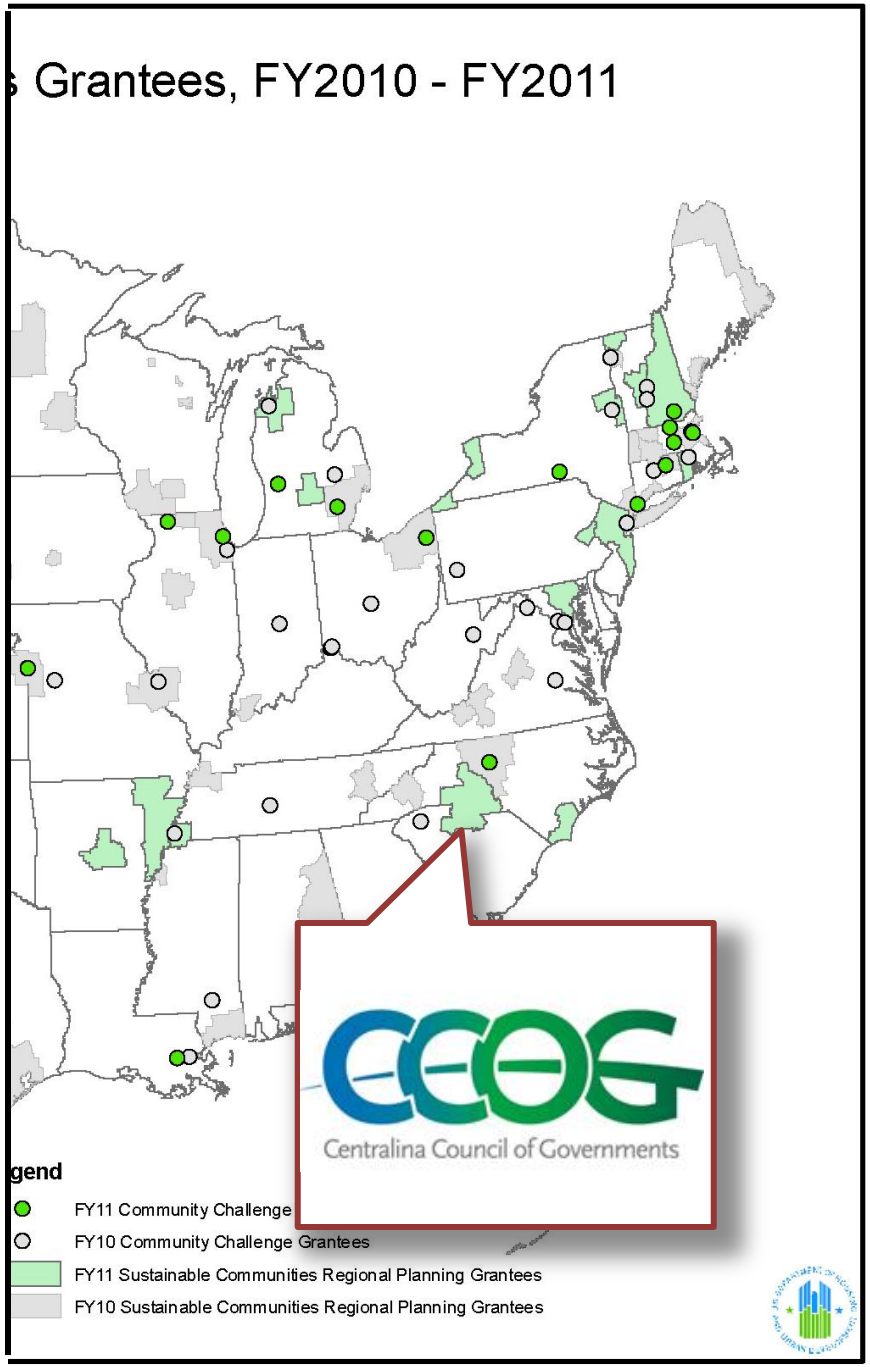
Sustainable Communities Regional Planning Grants

Overview

The Sustainable Communities Regional Planning (SCRP) Grant Program supports locally-led collaborative efforts that bring together diverse interests from the many municipalities in a region to determine how best to target housing, economic and workforce development, and infrastructure investments to create more jobs and regional economic activity. The Program places a priority on investing in partnerships, including nontraditional partnerships (e.g., arts and culture, recreation, public health, food systems, regional planning agencies and public education entities) that translate the Six Livability Principles into strategies that direct long-term development and reinvestment, demonstrate a commitment to addressing issues of regional significance, use data to set and monitor progress toward performance goals, and engage stakeholders and residents in meaningful decision-making roles. The SCRP program is a key initiative of the **Partnership for Sustainable Communities**, in which HUD works with the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to coordinate and leverage programs and investments. To date, HUD has awarded over $[illegible] to 74 regional grantees in 44 states and helping to improve the lives of approximately 112 million people.

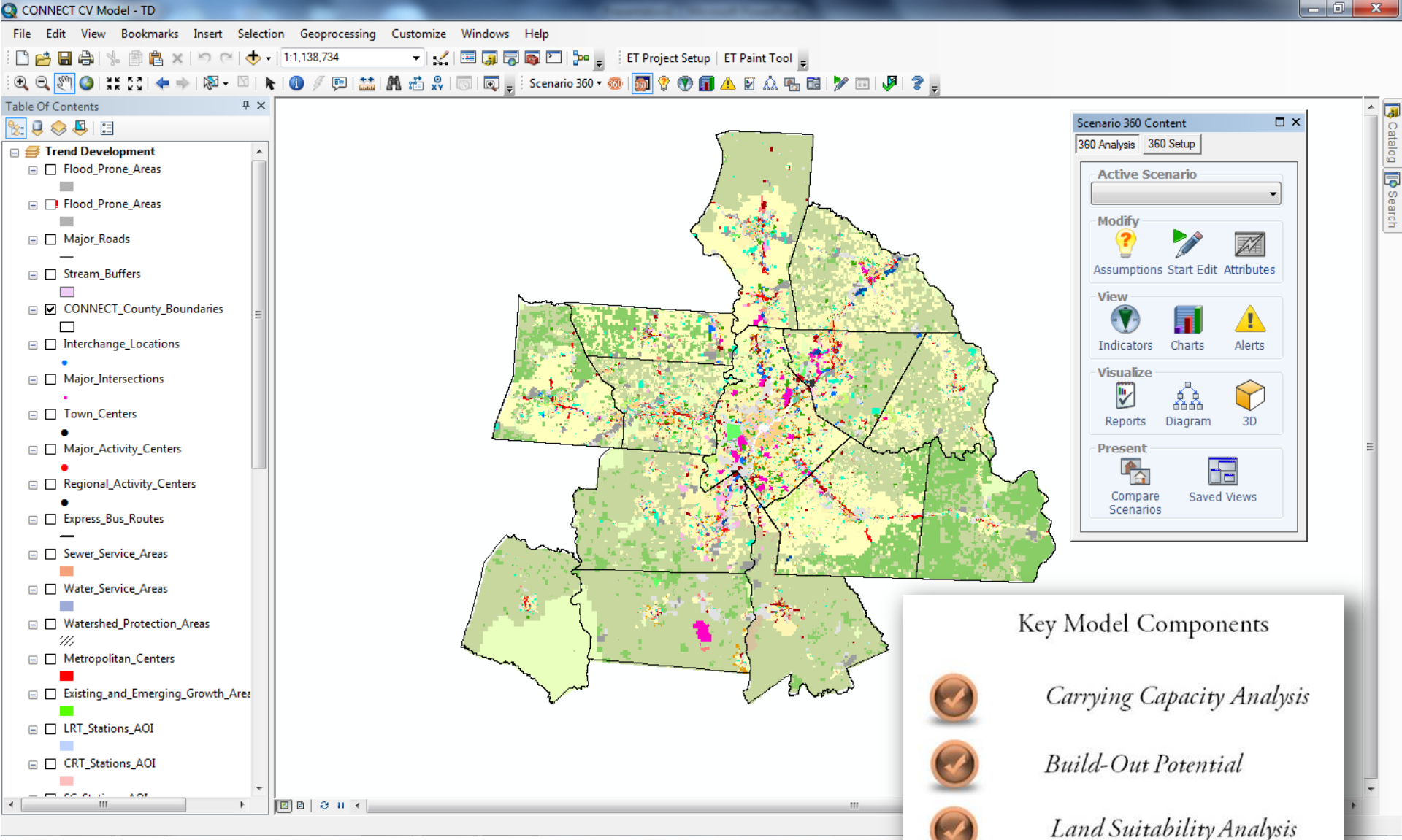
Source: portal.hud.gov


rship for Sustainable Communities 2010
Capital Area Council of Governments
CAPCOG
Legend
Joint DOT/HUD Grants
DOT TIGER II Planning Grants
HUD Community Challenge Grant
DOT TIGER II Capital Grants
FTA Livability and Alternatives Ana
EPA Sustainable Communities TA
2010 Regional Grantees


Grantees, FY2010 - FY2011
CCOG
Centralina Council of Governments
gend
FY11 Community Challenge
FY10 Community Challenge Grantees
FY11 Sustainable Communities Regional Planning Grantees
FY10 Sustainable Communities Regional Planning Grantees

Source: connectourfuture.org

Centralina Council of Governments



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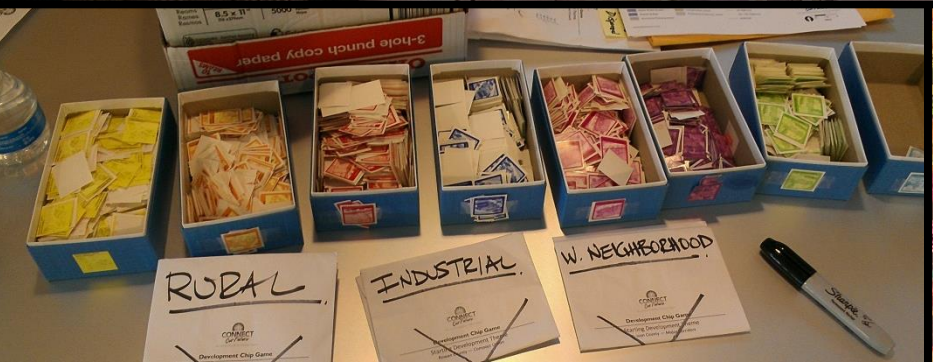
communityviz®

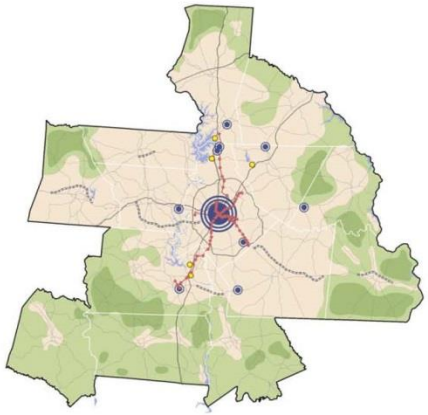

3-hole punch copy paper
RURAL
INDUSTRIAL
W. NEIGHBORHOOD

Side-by-Side Alternative Growth Concept Comparison

CONNECT Our Future
Vibrant Communities - Robust Region

Decentralized Growth Concept

The Decentralized Growth Scenario considers how the region might develop if a dispersed pattern of growth was to spread throughout the region. Future growth would favor single-use, low-density development patterns and intensities, which promote travel by car because of the distance and general isolation between complementary land uses. Farms and undeveloped land in rural areas would be rezoned to support expanding suburban development patterns and intensities. Major transit investments and redevelopment opportunities for mixed-use, walkable development would be limited to the most urban areas of the region.

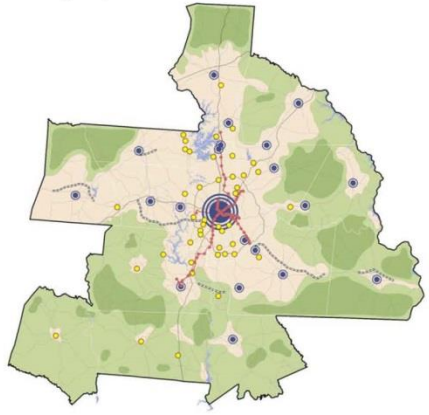


Population (2050)	4,241,000
Employment (2050)	2,177,255
Development Footprint	
Preserved Open Space	*7%*
Natural Areas / Rural Living	*28%*
Farmland / Timberland	*11%*
Suburban Development	*54%*
Activity Centers	
No. of Metro Centers / Walkable Communities	*10 [A]*
No. of Mixed-Use, Walkable Activity Nodes	*5 [B]*
No. of Transit-Oriented Development Nodes	*90 [C]*
Housing Mix	85% SFD / 15% SFA [D]
Jobs-Housing Proximity	Limited Potential
Viable Travel Options	Car-Bus-Rail [E]
Supporting Infrastructure	
Transit Service in Dedicated Right-of-Way	*91.5 Miles [F]*
New Highways	*85.1 Miles*
Water / Sewer Service Areas	*Greatly Expanded*

Community Plans Concept

The Community Plans Scenario considers how the region might develop if adopted community plans for cities, towns, and counties are strictly followed to guide future growth. Preferred development locations, types, patterns, and intensities recommended in the local plans generally vary from rural to suburban to urban for different parts of the region.

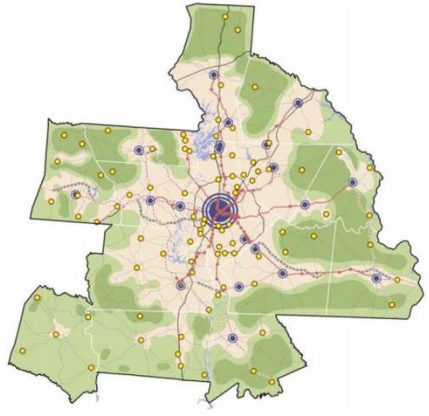
Information for building the scenario was translated directly from locally-adopted plans. It assumes other rules, requirements, and policies that influence development would conform with the vision and goals summarized in the local growth plans.



Population (2050)	4,241,000
Employment (2050)	2,177,255
Development Footprint	
Preserved Open Space	*10%*
Natural Areas / Rural Living	*32%*
Farmland / Timberland	*19%*
Suburban Development	*39%*
Activity Centers	
No. of Metro Centers / Walkable Communities	*21 [A]*
No. of Mixed-Use, Walkable Activity Nodes	*43 [B]*
No. of Transit-Oriented Development Nodes	*91 [C]*
Housing Mix	75% SFD / 25% SFA [D]
Jobs-Housing Proximity	Some Potential
Viable Travel Options	Car-Bus-Rail [E]
Supporting Infrastructure	
Transit Service in Dedicated Right-of-Way	*91.5 Miles [F]*
New Highways	*85.1 Miles*
Water / Sewer Service Areas	*Follow Master Plans*

Big Ideas Concept

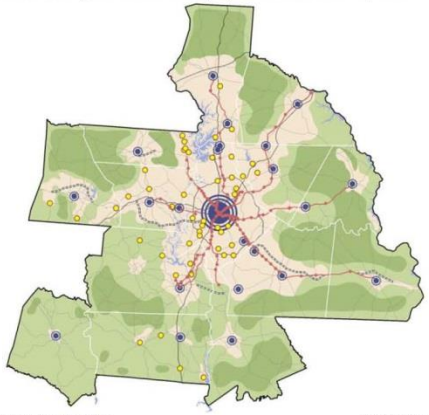
The Big Ideas Scenario considers how the region might develop based on the thoughts and opinions shared by residents who participated in one of 57 community growth workshops for CONNECT Our Future. Future development would be focused in mixed-use, walkable activity centers planned throughout the region. Woodlands, farmland, natural features, and rural areas outside the activity centers would be preserved as green space. Significant investments in premium transit (i.e., bus rapid transit, light rail, or commuter rail) would connect several of the activity centers and reduce residents' need for a car to satisfy their daily travel needs.



Population (2050)	4,241,000
Employment (2050)	2,177,255
Development Footprint	
Preserved Open Space	*17%*
Natural Areas / Rural Living	*20%*
Farmland / Timberland	*27%*
Suburban Development	*36%*
Activity Centers	
No. of Metro Centers / Walkable Communities	*21 [A]*
No. of Mixed-Use, Walkable Activity Nodes	*88 [B]*
No. of Transit-Oriented Development Nodes	*106 [C]*
Housing Mix	50% SFD / 50% SFA [D]
Jobs-Housing Proximity	Greater Potential
Viable Travel Options	Car-Bus-Rail-Walk-Bike [E]
Supporting Infrastructure	
Transit Service in Dedicated Right-of-Way (Before 2050 / After 2050)	*277.5 / 566.5 Miles [F]*
New Highways	*85.1 Miles*
Water / Sewer Service Areas	*Inward Investment*

Centers & Corridors Concept

The Centers and Corridors Scenario considers how the region might develop based on the big ideas that have emerged through all phases of CONNECT. Infrastructure investments would maximize the efficiency of existing systems, helping control the cost to government for providing future public facilities and services. A greater concentration of activity centers along premium transit corridors (compared to the big ideas scenario) would also increase the amount of land preserved as open space and reduce further residents' need for a car to satisfy their daily travel needs. Opportunities to live, work, shop, and be entertained in new mixed-use, walkable activity centers would draw people to urban or urbanizing areas.



Population (2050)	4,241,000
Employment (2050)	2,177,255
Development Footprint	
Preserved Open Space	*22%*
Natural Areas / Rural Living	*19%*
Farmland / Timberland	*28%*
Suburban Development	*31%*
Activity Centers	
No. of Metro Centers / Walkable Communities	*23 [A]*
No. of Mixed-Use, Walkable Activity Nodes	*47 [B]*
No. of Transit-Oriented Development Nodes	*136 [C]*
Housing Mix	40% SFD / 60% SFA [D]
Jobs-Housing Proximity	Greatest Potential
Viable Travel Options	Car-Bus-Rail-Walk-Bike [E]
Supporting Infrastructure	
Transit Service in Dedicated Right-of-Way	*277.5 Miles [F]*
New Highways	*85.1 Miles*
Water / Sewer Service Areas	*Existing Service Areas*

Notes:

[A] = Local governments that have adopted mixed-use, walkable development principles for the entire jurisdiction.
[B] = Specific areas of a jurisdiction where mixed-use, walkable development nodes are called for in adopted plans.
[C] = Mixed-use, walkable development nodes located along a premium transit corridor.
[D] = SFD (Single-Family Detached Housing) / SFA (Single-Family Attached / Multifamily Housing)
[E] = Bus service could be regional bus or bus rapid transit. Rail service could be light rail, commuter rail, or streetcar.
[F] = Transit service in dedicated ROW could be bus rapid transit, light rail, streetcar, or commuter rail

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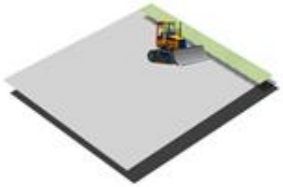
TOWN PLANNING GROUP

Urban Footprint



Decentralized Growth

Compact Centers

Green Print Initiative

Jobs – Housing Balance

Agriculture Land Consumed

Decentralized Growth

Compact Centers

Green Print Initiative

Jobs – Housing Balance

Eco-Core Land Consumed

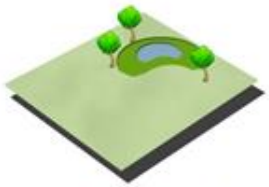
Decentralized Growth

Compact Centers

Green Print Initiative

Jobs – Housing Balance

Amount of Protected Open Space



Decentralized Growth

Compact Centers

Green Print Initiative

Jobs – Housing Balance

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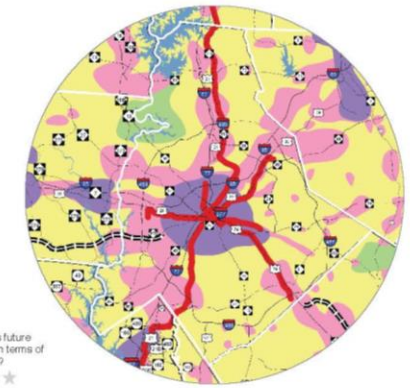
Maintain Suburban Focus

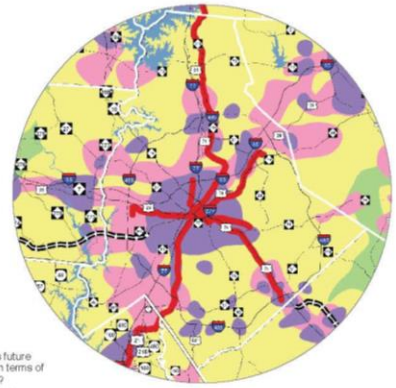
The "maintain suburban focus" growth option shows how the region might develop if current zoning and land use practices are continued or if community plans are not followed.



How does this future work for you in terms of your priorities?

Follow Community Plans

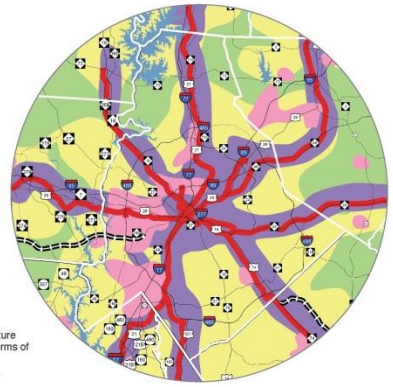
The "follow community plans" growth option shows how the region might develop if adopted community plans are followed.



How does this future work for you in terms of your priorities?

Grow Cities, Towns, Centers, and Transit

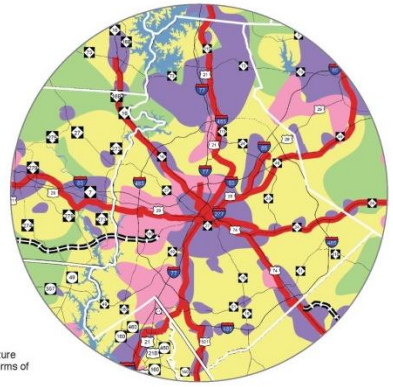
The "grow cities, towns, centers and transit" growth option shows how the region might develop using all the ideas that have emerged from the public throughout CONNECT. People throughout the region have more opportunities to live, work, shop, and play in existing cities or town, or in new activity centers in towns.



How does this future work for you in terms of your priorities?

Focus on Regional Transportation

The "focus on regional transportation" growth option shows how the region might develop based on ideas of people who came to the 57 community growth workshops for CONNECT Our Future, with great interest in transit and transportation. Most new residents will live in the many activity centers in or near existing communities, with housing, work, and shopping options near each other.



How does this future work for you in terms of your priorities?

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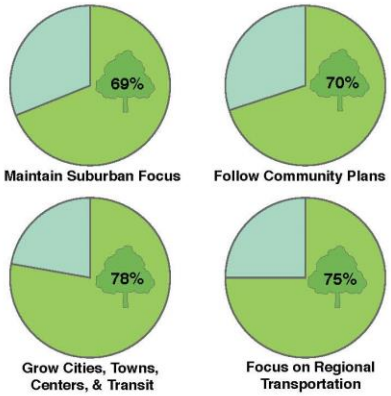
Side by Side Comparison of Individual Priority Growth Indicators:

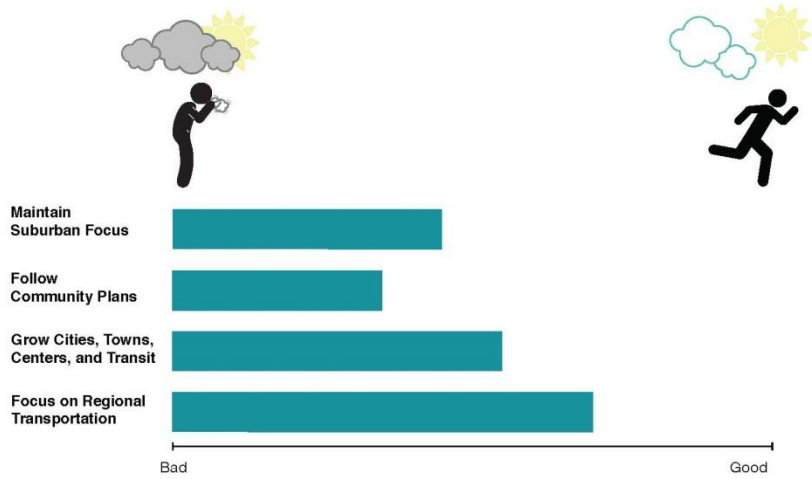
01. Parks and Open Space:
Percentage of Households Close to Existing Parks



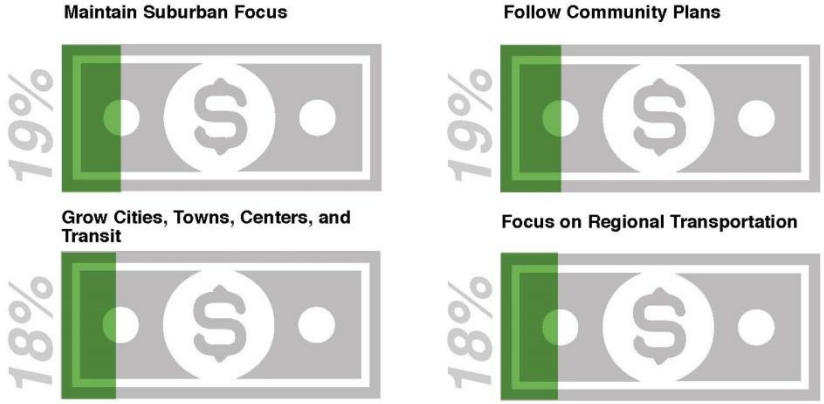
02. Support Local Farms:
Impact of Farmland in the Planning Horizon

03. More Housing Choices:
For New Residences

04. Improved Air Quality:



05. Cost of My Commute:
Percentage of Dual Income Household Income Spent on Transportation



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SUSTAINABLE PLACES Project

CAPCOG

SUSTAINABLE PLACES Project

- Analytics Tool
- Indicators Project
- HUD OSHC
- CAPCOG
- ECT
- CAMPO
- Documents

AUSTIN

ELGIN

DRIPPING SPRINGS

HUTTO

LOCKHART

Austin

The proposed Urban Rail system is located primarily within the Central Austin and Mueller Activity Centers and has the potential to be the most significant community investment on the future sustainability of Central Texas. Urban Rail would link downtown, UT, the Capitol, Mueller Redevelopment, the airport, and the regional rail network.

JOIN MAILING LIST

Email:

your email joins the project-wide list. Choose cities below if desired

- ☐ Austin Updates
- ☐ D.S. Updates
- ☐ Elgin Updates

Welcome to the Sustainable Places Project

CLICK PICTURES ABOVE TO VISIT HOME PAGES FOR EACH CITY

The Capital Area Texas Sustainability (CATS) Consortium, through a grant from HUD and a regional partnership of local governments and other stakeholder groups, is developing a new approach to planning in Central Texas through the Sustainable Places Project. The project will examine several growth scenarios for activity centers in Austin, Dripping Springs, Elgin, Hutto, and Lockhart. An innovative analytics tool is being developed to identify the long-term effects of the various scenarios on municipal budgets

NEWS UPDATE

Date	Title
2012-09-26	Housing and Transportation Affordability Initiative
2012-09-07	September 2012 Newsletter
2012-08-22	Hutto and Elgin Public Events Announced

Capital Area Council of Governments

CAPCOG

Source: sustainableplacesproject.com

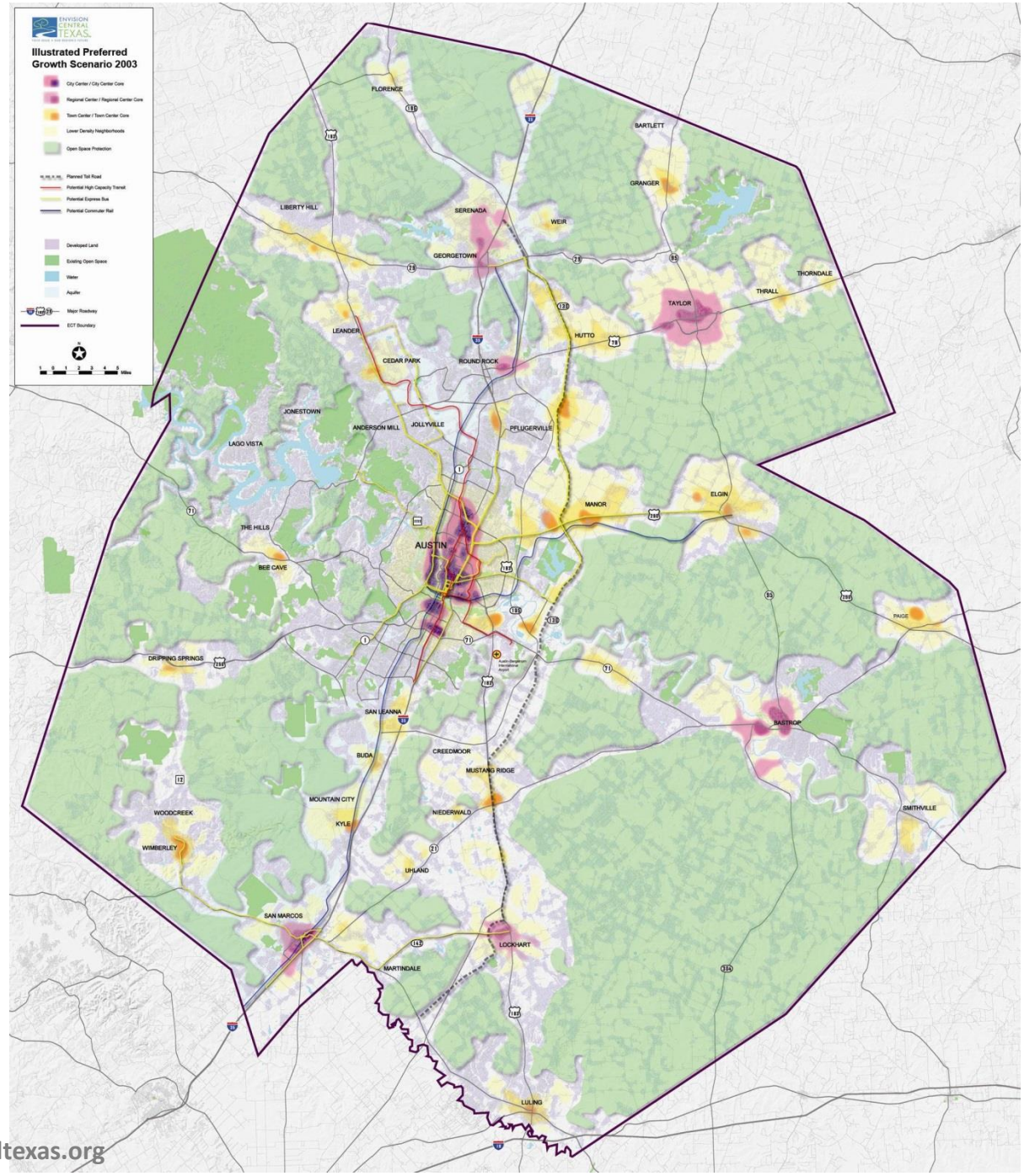
Painting by Mary Doerr

A Vision for Central Texas

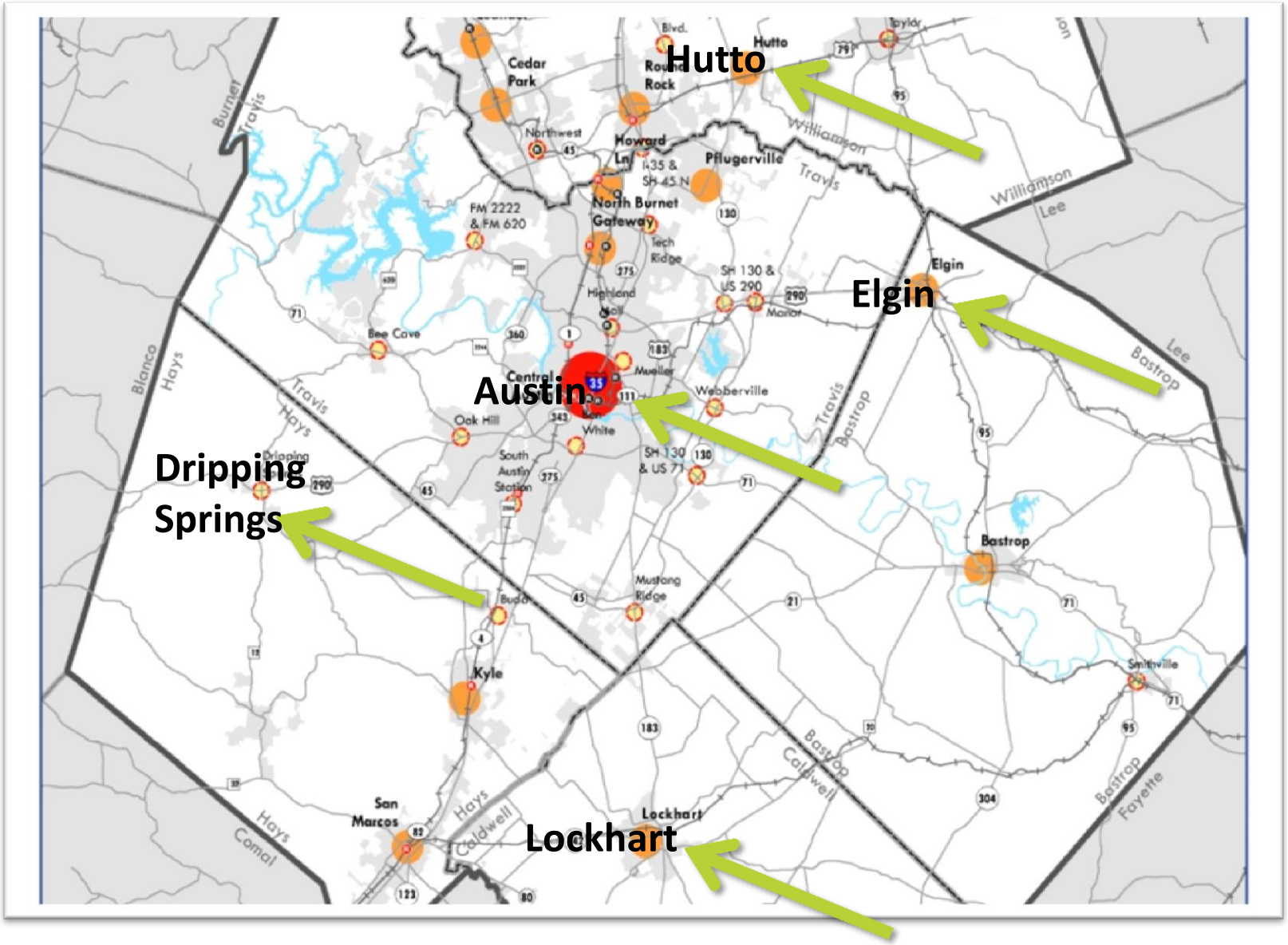
May 2004

ENVISION CENTRAL TEXAS.

YOUR IDEAS + OUR REGION'S FUTURE



Source: envisioncentraltexas.org



Source: sustainableplacesproject.com

SUSTAINABLE
PLACES Project

csd
Center for Sustainable Development

TACC
TEXAS ADVANCED COMPUTING CENTER
Powering Discoveries That Change The World

College of
ARCHITECTURE + PLANNING
THE UNIVERSITY OF UTAH

CTR
Center for Transportation Research
The University of Texas at Austin
Research • Education • Public Service

FREGONESE
ASSOCIATES

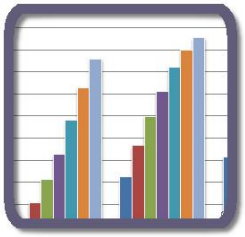
CAMPO
CAPITAL AREA METROPOLITAN PLANNING ORGANIZATION

CRITERION
PLANNERS
CRITERION
crit.com

CyberCity 3D

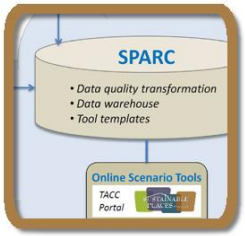
esri
CityEngine

Scenario Planning Software



Models & Apps for Scenario Planning

Web Portal



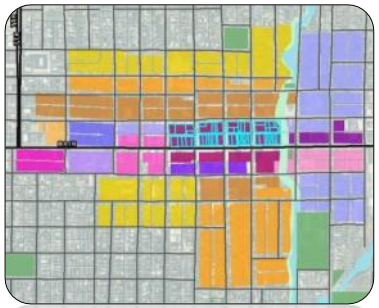
Data Quality Wizard

3D Modeling Engine

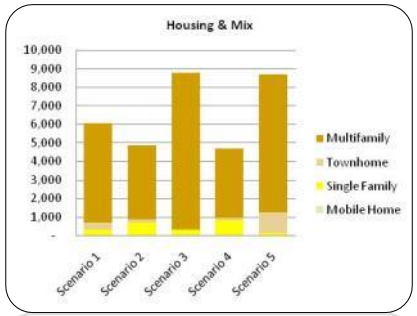
Scenario Planning Software

Building Types

Development Types



Scenario Development



Evaluation

Source: Fregonese Associates

FREGONESE ASSOCIATES

envision tomorrow
a suite of urban and regional planning tools

Web Portal

Envision Tomorrow

et.tacc.utexas.edu/users/ETMap.aspx

Envision Tomorrow User: demo Account Logout

Paint Development Type

Select a drawing tool:

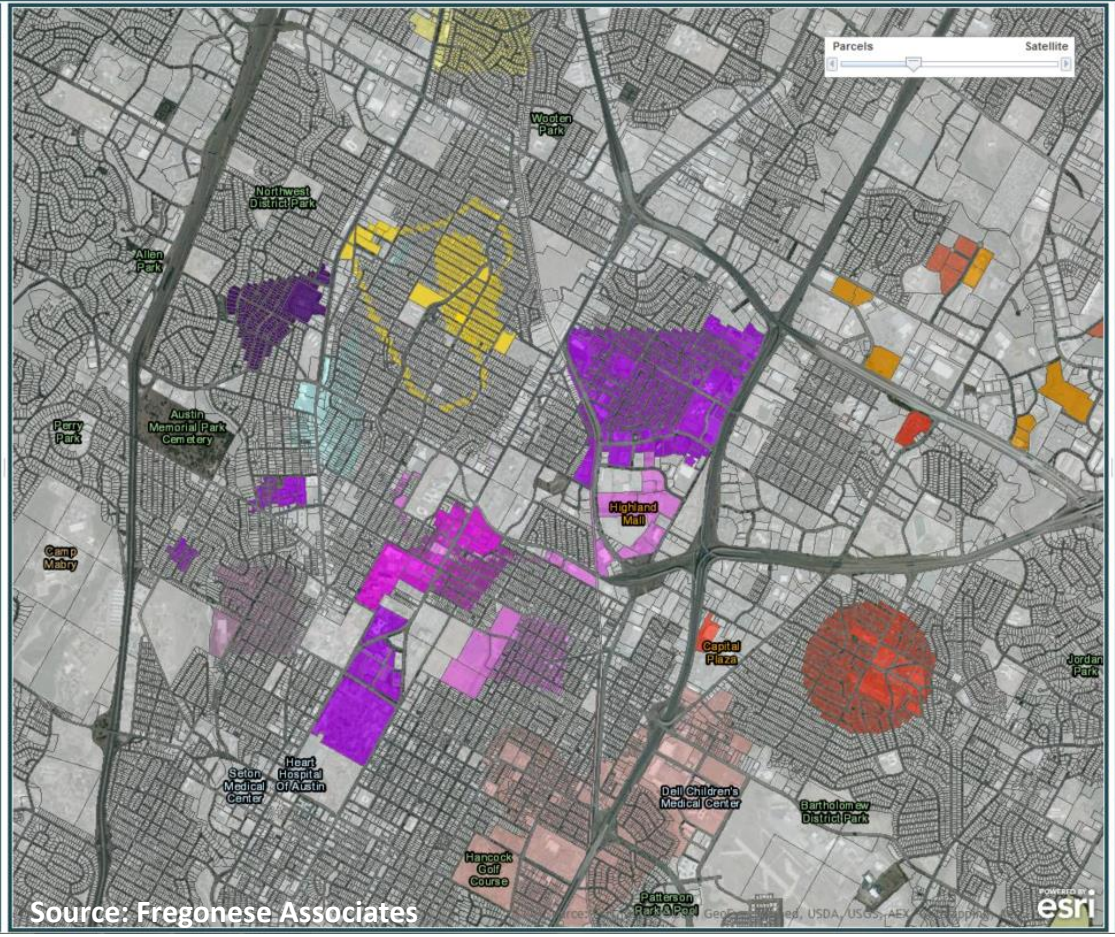
Freehand Polygon | Navigate Map

Status: Editing the scenario...

Select a development type:

Development Type	Symbol	Info
Town Center		
Neighborhood Center		
City Neighborhood		
Town Neighborhood		
Compact Neighborhood		
Single Family Subdivision		
Large Lot Single Family		
Urban Office District		
Suburban Office District		
Flex Employment Space		
Light Industrial		
Heavy Industrial		
Main Street Commercial		
Strip Commercial		
Big Box Commercial		
Civic		
Adaptive Reuse (Strip Commercial)		
Open Space		

1. Select a drawing tool.
2. Select a development type.
3. Draw on map to change the development type for selected parcels.
4. Click 'Navigate Map' to allow zooming and panning the map.

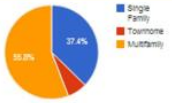


Source: Fregonese Associates

View Results

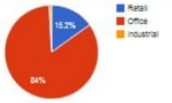
Housing Mix

Description	Acres
Single Family	54,261
Townhome	9,870
Multifamily	81,090
Mobile Home	0



Jobs Mix

Description	Acres
Retail	26,491
Office	146,845
Industrial	1,455



Acres Consumed

Description	Acres
Total Vacant Acres	23,620
Discounted Developed Acres (*Redev %)	3,456

Built Environment

Description	Acres
Building Acres	22,703
Streets Acres	4,373
Civic Acres	0
Parks Acres	0

3D Modeling Engine

Source: Fregonese Associates

FREGONESE ASSOCIATES

Step 1

Geodatabase/2D Information

Step 2

3D Streets, Blocks, and Parcels (import or creation)

Step 3

3D Extrusion, Roof Generation, and Street Furniture

Step 4

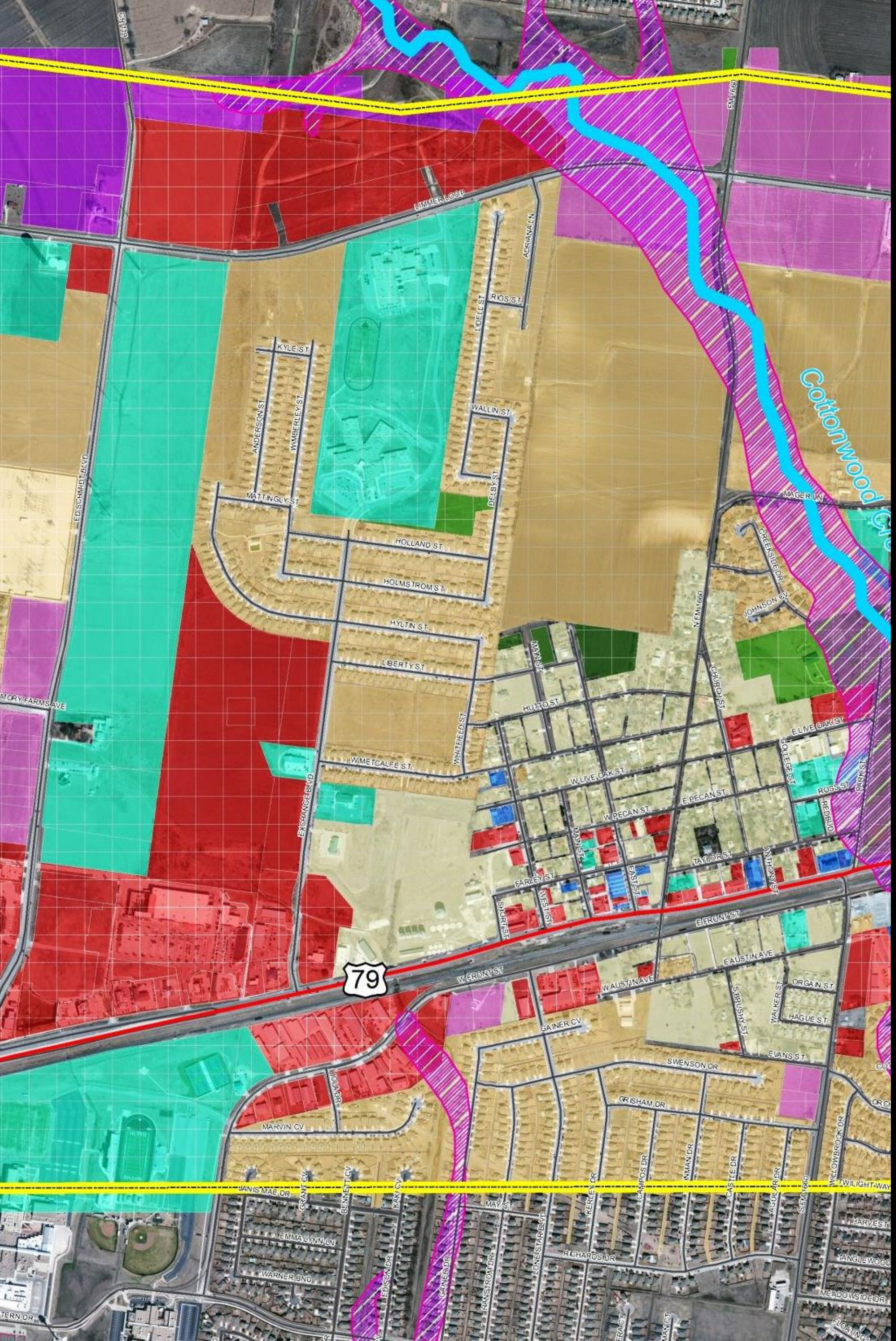
Texturing and Façade Creation (details)

Step 5

Finished 3D City Shared on the Web and Updated in the Geodatabase

Source: www.esri.com/software/cityengine

esri


Cottonwood
79
KYLE ST
RIOS ST
WALLIN ST
MATTINGLY ST
HOLLAND ST
HOLMSTROM ST
HYLTIN ST
LIBERTY ST
HUTTO ST
W METCALFE ST
W LIVE OAK ST
W PECAN ST
E PECAN ST
TAYLOR ST
FARLEY ST
E FRONT ST
W FRONT ST
E AUSTIN AVE
W AUSTIN AVE
GAINER CV
SWENSON DR
GRISHAM DR
MARVIN CV
HAGUE ST
EVANS ST

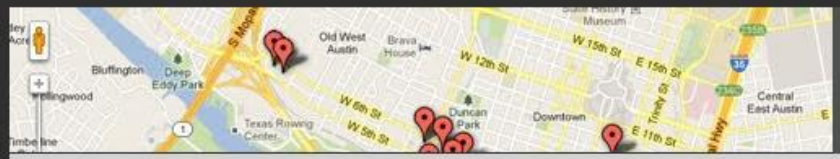
Planning - Sustainable Pla

https://sites.google.com/a/divaimaging.com/diva/sustainable_places

DIVA imaging geospatial planning

Planning - Sustainable Places

The University of Texas Sustainable Places Project is developing a new land use scenario planning tool. Di
Imaging is creating a building type image library to support 3D visualization of these land use scenarios. Cli
image below to view the corresponding building type image gallery or visit the image library and login with y
Gmail account to view and download the source images. Don't have a Gmail account? Click here to visit the
library.



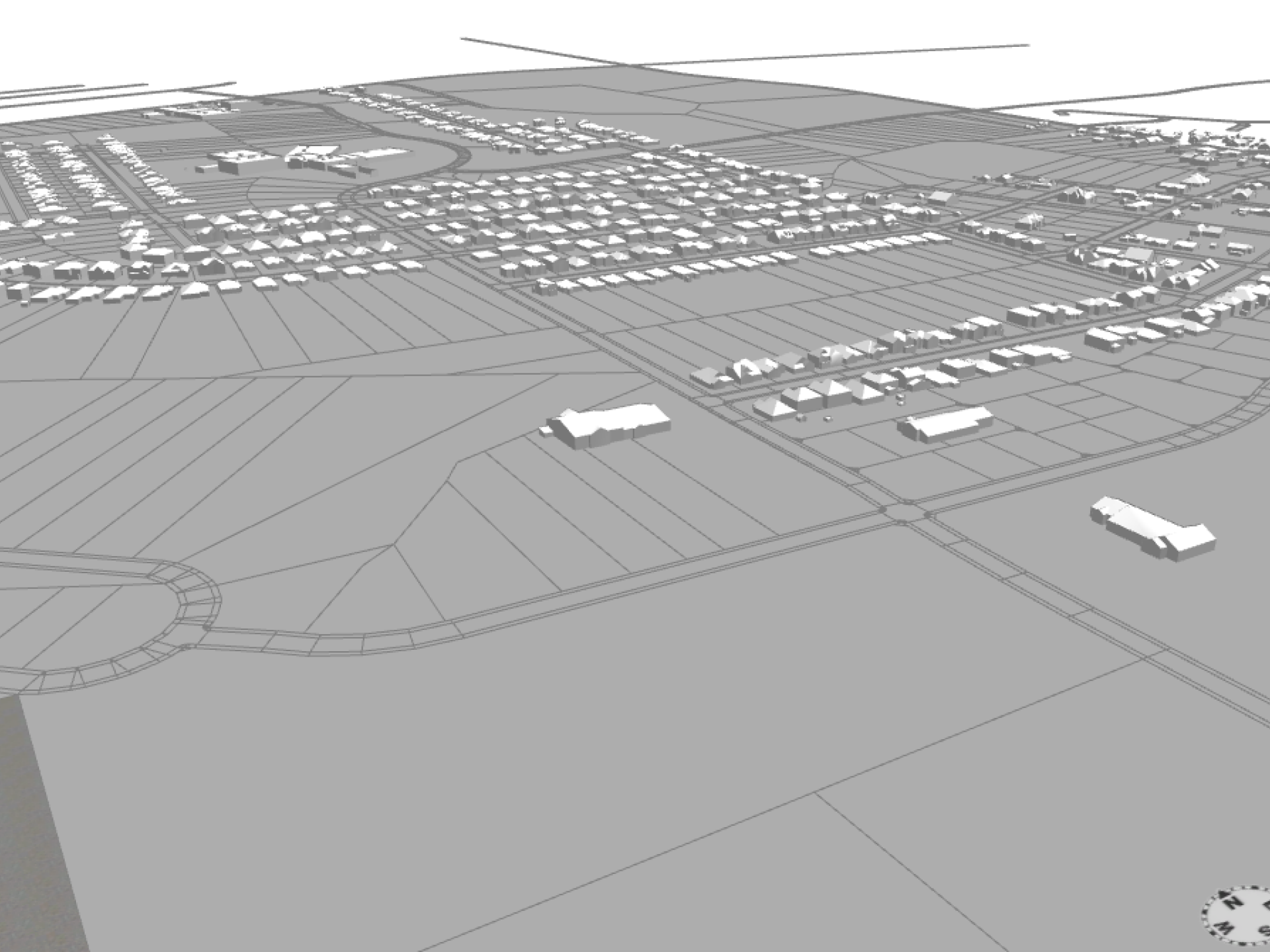
Google Earth KML Map Index
UT Sustainable Places

Business Park Flex
UT Sustainable Places

Civic and Education
UT Sustainable Places

Commercial Low Density
UT Sustainable Places

Commercial Main Street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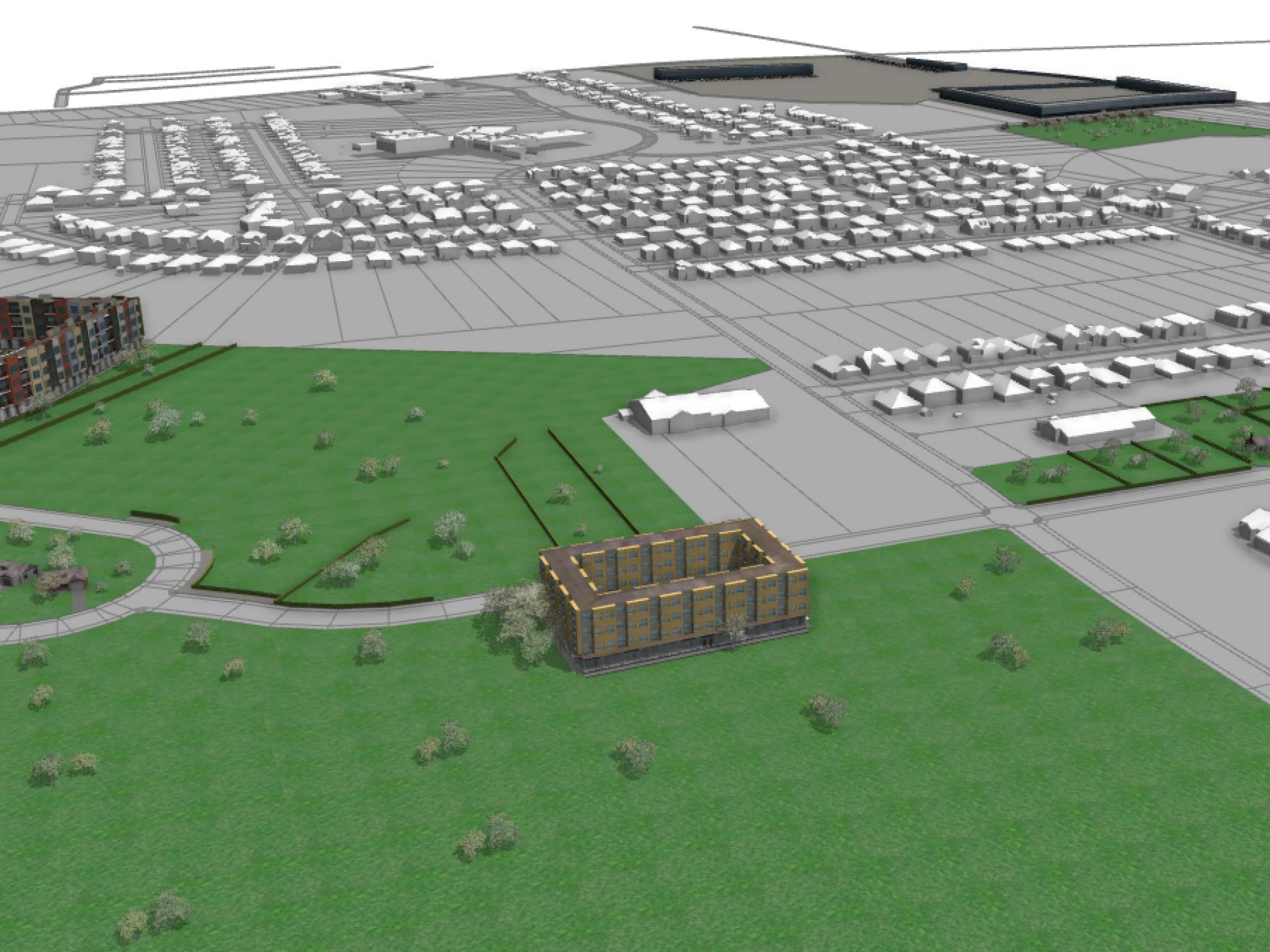


SCENARIO A: Business As Usual

The Trends Continue

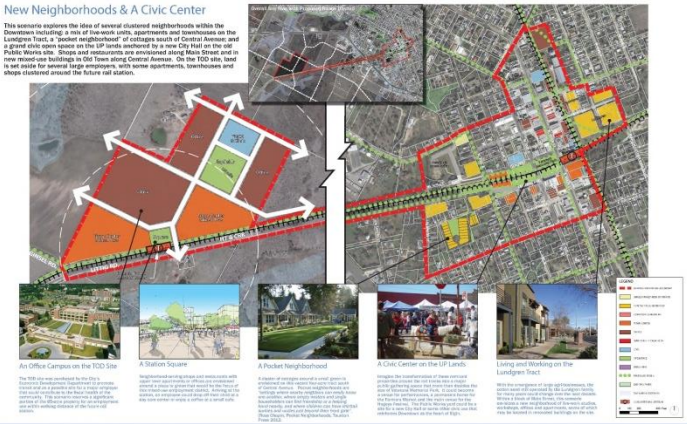
Scenario A follows a "business as usual" trend of growing outward on vacant land near the edge of the city. Most housing is built is new single-family subdivisions. A small amount of new jobs are in automotive-oriented uses and infill office buildings. This scenario is based on existing trends, plans, policies, and practices played out to 2050.

Single-Family Neighborhood on TOD Site | Townhomes Near Station | Commercial Infill on Main Street | Office and Automotive Uses

SCENARIO B: New Neighborhoods & A Civic Center

New Neighborhoods & A Civic Center

This scenario explores the idea of several clustered neighborhoods within the Downtown including: a mix of live-work units, apartments and townhouses on the Lundgren Tract, a "pocket neighborhood" of cottages south of Central Avenue; and a grand civic open space on the UP lands anchored by a new City Hall on the old Public Works site. Shops and restaurants are envisioned along Main Street and in new mixed-use buildings in Old Town along Central Avenue. On the TOD site, land is set aside for several large employers, with some apartments, townhouses and shops clustered around the future rail station.

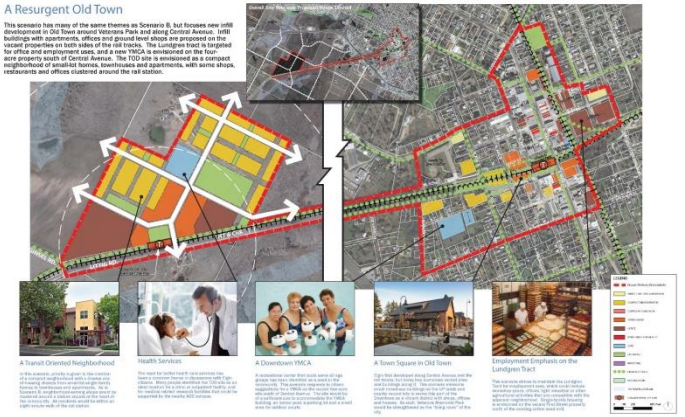


An Office Campus on the TOD Site | A Station Square | A Pocket Neighborhood | A Civic Center on the UP Lands | Living and Working on the Lundgren Tract

SCENARIO C: A Resurgent Old Town

A Resurgent Old Town

This scenario has many of the same themes as Scenario B, but focuses new infill development in Old Town around Veterans Park and along Central Avenue. Infill buildings with apartments, offices and ground level shops are proposed on the vacant properties on both sides of the rail tracks. The Lundgren tract is targeted for office and employment uses, and a new YMCA is envisioned on the four-acre property south of Central Avenue. The TOD site is envisioned as a compact neighborhood of small-lot homes, townhouses and apartments, with some shops, restaurants and offices clustered around the rail station.



A Transit Oriented Neighborhood | Health Services | A Downtown YMCA | A Town Square in Old Town | Employment Emphasis on the Lundgren Tract

SCENARIO INDICATORS

Compare each scenario's performance over the next couple of decades based on its impact on community, the economy, transportation and the environment.

INDICATOR	MEANING	A — Trends Continue	B — Neighborhoods and Civic Center	C — Resurgent Old Town
Population Growth	Future vitality depends a lot on its ability to grow. Each scenario performs differently in how it attracts newcomers to the city.	1,840	1,322	1,871
New Housing Mix *% of all* **new** *construction*	Each scenario emphasizes a different mix of new kinds of housing.	51% / 14% / 14% / 8% / 6% / 7% Total Dwelling Units (du): 650	14% / 34% / 43% / 9% Total Dwelling Units (du): 777	33% / 22% / 23% / 22% Total Dwelling Units (du): 792
Jobs-Housing Balance	Jobs-housing balance refers to the approximate distribution of employment opportunities and workforce population across the area. It is measured in terms of the proportion of jobs per household.	0.8	3.0	1.8
Fiscal Impact *Revenue/Cost Ratio*	Each scenario would stimulate a different amount of new revenue and costs in the city based on new growth.	1.04	1.05	1.00
Fiscal Impact **Net Revenue** *(Revenues minus Costs)*	Net income is calculated by taking the total revenue then removing the total cost of new growth.	$$$ $125,000	$$$$ $303,000	$$ $16,000

New Population

Standard Single Family (A: 292du B: 2du C: 4du) | Small Lot Single Family (A: 93du B: 1du C: 1du) | Apartment (A: 54du B: 762du C: 182du)
Cottage Home (A: 47du B: 71du C: 261du) | Townhome / Duplex (A: 37du B: 10 du C: 172du) | Mixed Use Apartment (A: 91du B: 334du C: 171du)

Jobs-housing balance ratio

Fiscal impact ratio

Elgin Open House

February 11, 2013

elgin.sustainableplacesproject.com

Source: McCann Adams Studio

SUSTAINABLE PLACES Project

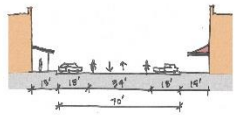
Scenario B for UP Lands/Old Town: A Civic Center

Scenario C for UP Lands/Old Town: A Mixed Use District

CONCEPTS FOR MAIN STREET

CONCEPT A:
Keep it as it is.

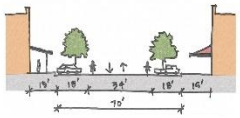
- 70' curb-to-curb
- Diagonal pull-in parking



Main Street, Elgin

CONCEPT B:
Add trees and "bulb-outs".

- Reduce walking distance at crosswalks
- Possible reverse angle parking



Congress Avenue, Austin

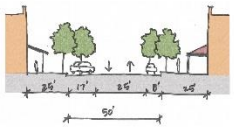
CONCEPT C:
Add a tree-lined median.

- Pedestrian refuge at crosswalk
- Calm traffic
- A green "ribbon"

Main Street, Marble Falls

CONCEPT D:
Widen the sidewalks.

- Replace diagonal with parallel parking on one side
- Add trees
- Reduce street width



University Avenue, Palo Alto, CA

mccann adams studio

Elgin Open House

February 11, 2013

elgin.sustainableplacesproject.com

Source: McCann Adams Studio

SUSTAINABLE PLACES Project

SCENARIO
PLANNING
PARTICIPANTS
IMPORTANT
STAGE
PROCESS
ANALYSIS
STEP
FACTORS
FUTURE
ONE
ALSO
THREE
NOTES
GROUPS
DRIVERS
ORGANIZATIONS
MAKE
APPROACH
ISSUES
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OFTEN
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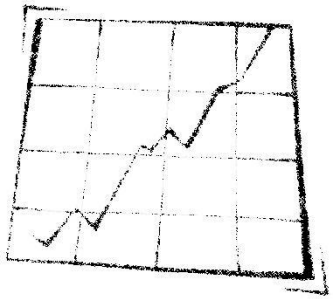
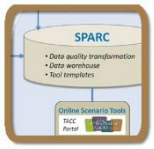


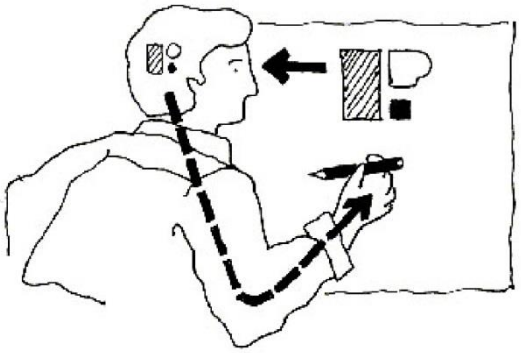
Evaluation

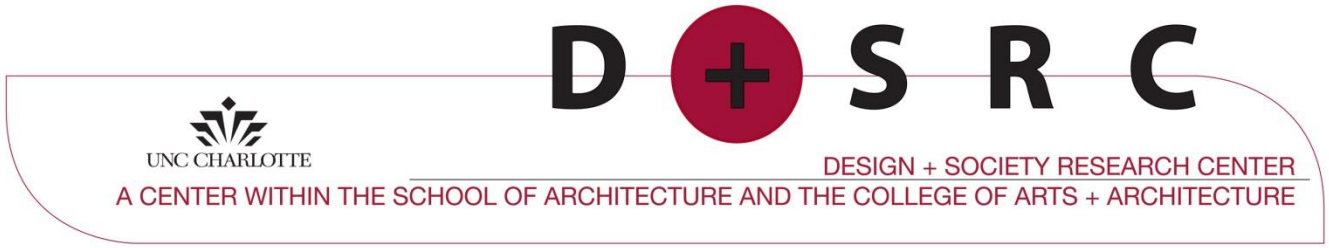


GeoDesign

Collaboration

Visualization





CHARLOTTE
AUSTIN

[ming-chun.lee @ uncc.edu]