



Land Use Scenario Planning and Long-Range Transportation Plans:

Do They Fit?

Keith Bartholomew
College of Architecture + Planning
University of Utah

Scenario & Transportation Planning



What is “Scenario Planning”?

Scenario:

“an internally consistent view of what the future might turn out to be – not a forecast, but one possible future outcome.”
(Porter, 1985)

Scenario Planning:

A process utilizing a series of scenarios to gauge possible future conditions, and to select an appropriate course of action in response.

“Scenario planning can amount to something like anticipatory disaster relief.” (Ogilvy, 2002)

Scenario & Transportation Planning



Scenario Planning – *History*

Military

Dating from ancient Asian and Western cultures – “maintaining a view of alternate possible forms of threat, and hence the ability to react.” (Ringland, 1998)

Substantially refined by RAND Corp. in the 1950s, especially with regard to nuclear threats

Business

“that part of strategic planning which relates to the tools and technologies for managing the uncertainties of the future” (Ringland, 1998)

E.g., Royal Dutch/Shell’s anticipation of the Arab Oil Embargo

Scenario & Transportation Planning



Scenario Planning – *History*

Transportation Planning

Federal-Aid Highway Act of 1962

Introduction of the “3C” planning process (continuing, comprehensive, cooperative) for urban areas

BPR’s guidance for the ’62 Act institutionalized the use of alternative scenarios in the development of metropolitan transportation plans

[The 3C planning process was not required at a statewide level until the 1991, with the adoption of the Intermodal Surface Transportation Efficiency Act.]

Scenario & Transportation Planning



Scenario Planning – *History*

National Environmental Policy Act of 1969 (NEPA)

“all agencies of the Federal Government shall ... include in ... major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on ... alternatives to the proposed action”

42 USC § 4332(2)(C).

The consideration of alternatives to a proposed action is “the heart of the environmental impact statement.”

Colorado Env'tl. Coalition v. Dombeck (10th Cir. 1999).

State “NEPAs” – 14 states; most adopted in the 70s

CA, CN, DC, GA, HI, IN, MA, MN, MT, NC, SD, VA, WA, WI

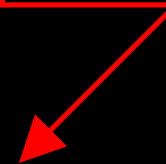
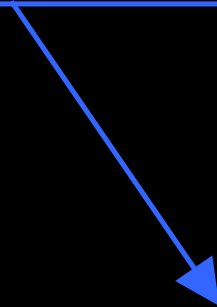
Scenario & Transportation Planning



Military/Business Scenario Planning

“3C” Transportation
Planning
NEPA Alt. Analyses

Land Use-Transportation Scenario Planning



Scenario & Transportation Planning



Early Applications

1970s – Academic, Energy Focused

E.g., Edwards & Schofer, “Relationships between Transportation Energy Consumption and Urban Structure: Results of Simulation Studies” (1976).

1980s – Nonprofits, Highways & Sprawl Focused

E.g., 1000 Friends of Oregon, “Making the Land Use, Transportation, Air Quality Connection (LUTRAQ)” (1988).

Early 1990s – MPOs, Urban Form Focused

E.g., Baltimore Regional Council of Governments, “Baltimore Region 2020” (1993)

Scenario & Transportation Planning



Envision Utah

Scenario A: how the region might develop if development trends from the previous 3-5 years continued in the future.



Scenario B: assumes growth will follow existing planning and zoning.



Scenario C: accommodates new growth by focusing a significant percentage in existing urbanized areas as infill/redevelopment.



Scenario D: significantly increases regional densities by assuming large amounts of infill/redevelopment concentrated in rail transit corridors.



Scenario & Transportation Planning



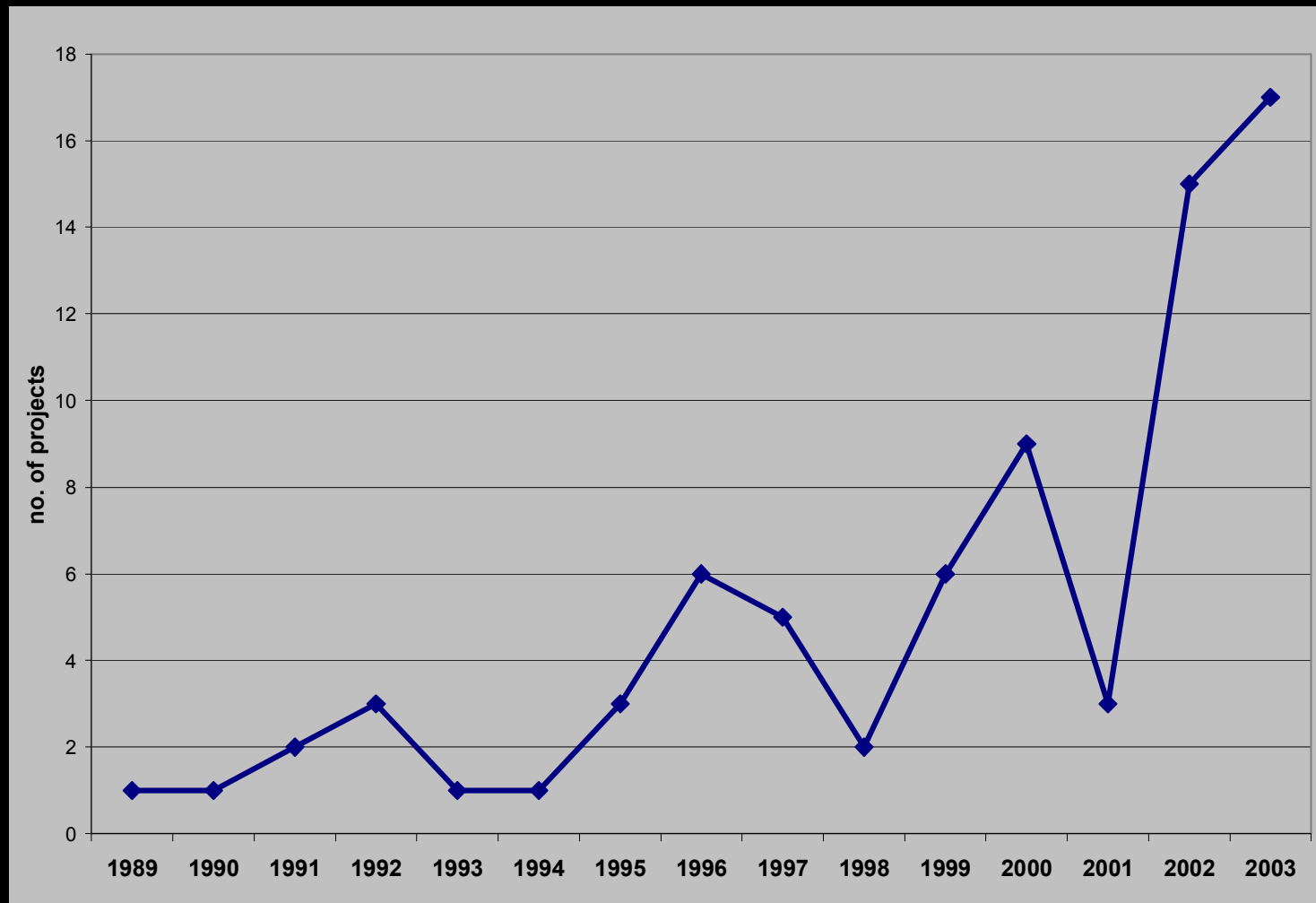
Envision Utah

Scenarios	Persons/ Residential Acre	Daily VMT	% Transit Work Trips	% Pop. 1/2 mi. of Rail Transit	Acre-Feet Water Consumed	Infrastructure Capital Costs
A	5.0	85,300,000	2.9	1.5	1,025,900	\$37,600,000,000
B	5.6	79,200,000	3.2	1.7	954,200	\$29,800,000,000
C	7.6	76,600,000	4.2	25	808,600	\$22,100,000,000
D	8.2	76,000,000	4.8	32	770,500	\$23,100,000,000
Quality Growth	7.6	76,800,000	5	22.6	915,600	\$21,932,000,000

Scenario & Transportation Planning



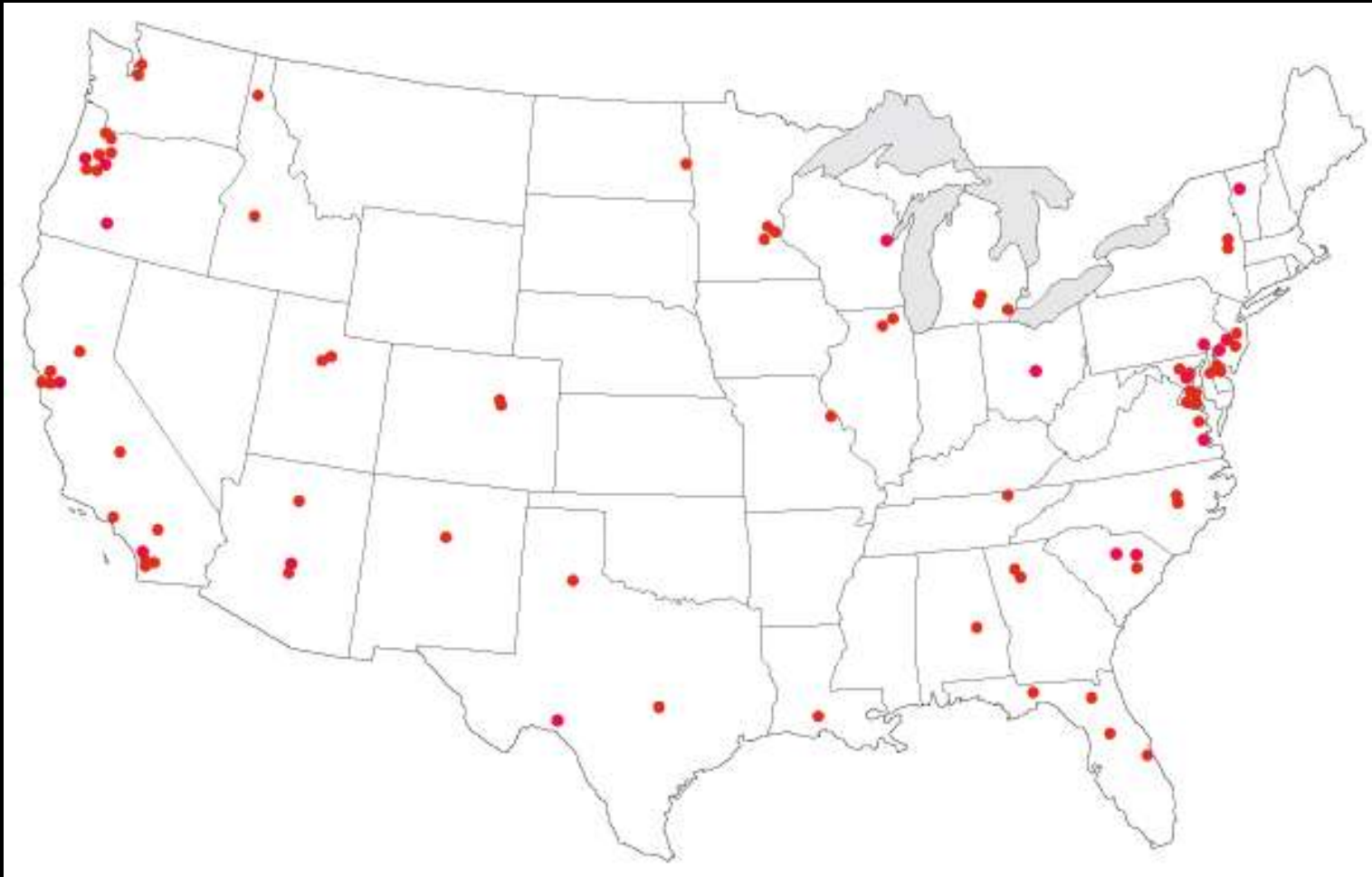
U.S. Land Use-Transportation Scenario Planning Projects



Scenario & Transportation Planning



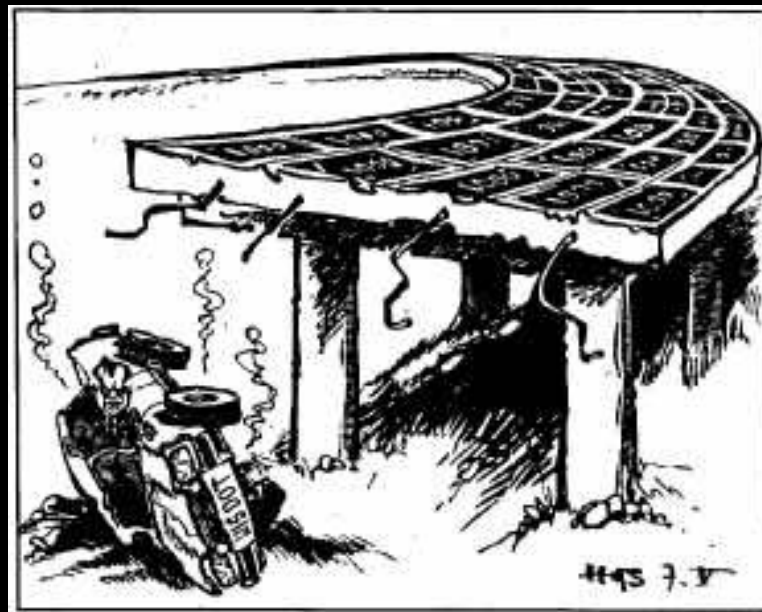
U.S. Land Use-Transportation Scenario Planning Projects



Scenario & Transportation Planning



How does land use-transportation scenario planning fit with long-range transportation planning requirements of SAFETEA-LU?



Scenario & Transportation Planning



SAFETEA-LU

The metropolitan planning process for a metropolitan planning area under this section shall provide for consideration of projects and strategies that will—

- (A) support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency;
- (B) increase the safety of the transportation system for motorized and nonmotorized users;
- (C) increase the security of the transportation system for motorized and nonmotorized users;
- (D) increase the accessibility and mobility of people and for freight;
- (E) protect and enhance the environment, promote energy conservation, improve the quality of life, and **promote consistency between transportation improvements and State and local planned growth and economic development patterns;**
- (F) enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- (G) promote efficient system management and operation; and
- (H) emphasize the preservation of the existing transportation system.

SAFETEA-LU §6001(a).

Scenario & Transportation Planning



TEA-21 Planning Regulations

The following factors shall be explicitly considered, analyzed as appropriate, and reflected in the planning process products:

(4) The likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short- and long-term land use and development plans (the analysis should include projections of metropolitan planning area economic, demographic, environmental protection, growth management, and land use activities consistent with metropolitan and local/central city development goals (community, economic, housing, etc.), and projections of potential transportation demands based on the interrelated level of activity in these areas);

23 CFR §450.316(a) (2005).

Scenario & Transportation Planning



The Out

The failure to consider any factor specified in paragraph (1) shall not be reviewable by any court under this title or chapter 53 of title 49, subchapter II of chapter 5 of title 5, or chapter 7 of title 5 in any matter affecting a transportation plan, a TIP, a project or strategy, or the certification of a planning process.

23 U.S.C. §134(h)(2) (2005).



Scenario & Transportation Planning



But . . .

Sierra Club v. U.S. Department of Transportation:

[T]he final impact statement contains a socioeconomic forecast that assumes the construction of a highway such as the [proposed] tollroad and then applies that forecast to both the build and no-build alternatives. The result is a forecast of future needs that only the proposed tollroad can satisfy. As a result, the final impact statement creates a self-fulfilling prophecy that makes a reasoned analysis of how different alternatives satisfy future needs impossible.

962 F.Supp. 1037, 1043 (N.D. Ill. 1997).



Scenario & Transportation Planning



Scenario and Long-Range Planning Integration: In Practice

Three Basic Options

1. Ignore the Vision
2. Partially/Selectively Incorporate the Vision
3. Fully Incorporate the Vision



Scenario & Transportation Planning



Option 1:

Ignore the Vision

Region 2020 (San Diego)

Primary motivation: insufficient supply of buildable land to accommodate forecasted growth under trend conditions.

Background: The 1993 SANDAG Regional Growth Management Strategy included a Land Use Distribution Element calling on the region's local governments to place high densities in transit station areas and to promote land use mixing.

Purpose: The Region 2020 analysis was intended to craft several alternative methods to implement those policies and assess their impacts.

Scenario & Transportation Planning



Four Scenarios

Existing Policies

Current general and community plans and development policies with development following recent density trends.

Land Use Distribution Element (LUDE)

Demonstrates the maximum implementation of the LUDE element from the Regional Growth Management Strategy;

Land Use Distribution Element Plus

Same as LUDE, plus residential development outside station areas was set at the highest allowed densities under current plans.

Targets

Same as LUDE Plus, except that it capped residential development in unincorporated areas.

Scenario & Transportation Planning



The (non)Hookup with Mobility 2030

“In REGION2020, we were advocating for more smart growth in certain areas of the region. We worked with local jurisdictions to identify potential commitments, and then factored those into the Preliminary 2030 Forecast, which was then used as the basis for MOBILITY 2030, the 2030 RTP. However, as we finalized the forecast, we went back to relying on the existing plans and policies of the local jurisdictions, given lack of buy-in for the potential commitments.”

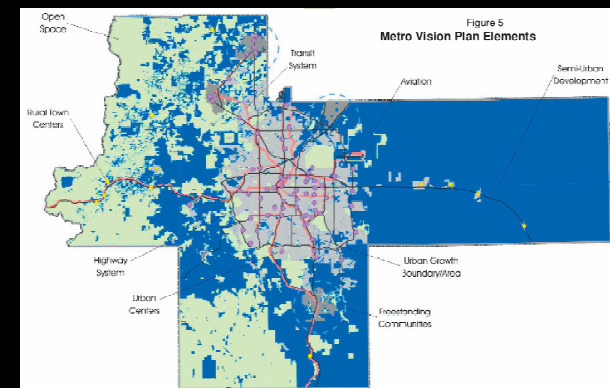


Scenario & Transportation Planning



Other Scenario Planning Projects with Similar Fates

- Metro Vision 2020 (Denver)
- Regional Transportation Plan 2025 (Wilmington)
- Community Connections: A Transportation Vision for the Next 25 Years (Orlando)
- Vision 2030 (Baltimore)



Scenario & Transportation Planning

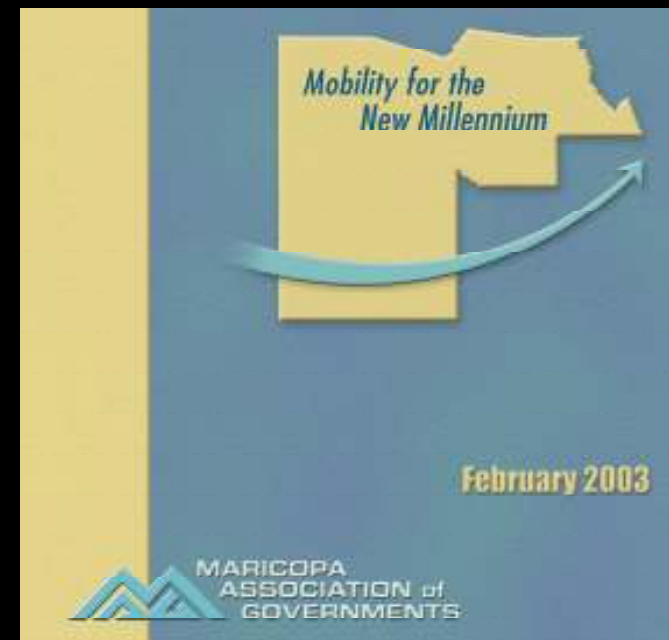


Option 2:

Partially/Selectively Incorporate the Vision—Using the “Vision” Land Use Pattern to the Extent Adopted

MAG (Maricopa Association of Governments) Regional Transportation Plan: Mobility for the New Millennium

Context/Purpose: analysis of alternative growth scenarios was part of the region’s effort to update its long-range transportation plan.



Scenario & Transportation Planning



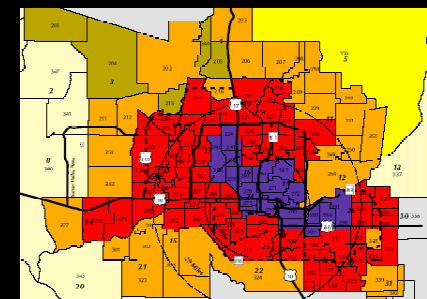
Four Scenarios

Base Case/General Plan Framework: focuses on continued development according to existing or soon to be adopted general plans in the region.

Infill/Urban Revitalization Emphasis: seeks to maximize use of existing infrastructure by focusing growth in already urbanized areas, especially in fixed-guideway transit corridors.

Activity Center Emphasis: focuses growth in identified activity centers and in transportation corridors.

Suburban Fringe Growth Emphasis: spreads growth in a pattern more dispersed than the Base Case.



Scenario & Transportation Planning



Scenarios	Av. Trip Length (miles)	PM Peak VHD	Daily Transit Boardings
Base Case/General Plan Framework	10.5	1,833,000	337,000
Infill/Urban Revitalization Emphasis	9.8	1,262,000	446,000
Activity Center Emphasis	10.1	1,427,000	371,000
Suburban Fringe Growth Emphasis	10.3	918,000	286,000

Scenario & Transportation Planning



The Link to the Long-Range Plan

“In the RTP process, the growth concepts and their analysis served as a resource for local governments in evaluating the potential transportation impacts of various growth patterns. This information was available to them as they developed and revised local land use plans. The local plans, in aggregate, provided the basis for developing regional population and employment distribution forecasts that were used in preparing and testing transportation plan alternatives.”



Scenario & Transportation Planning

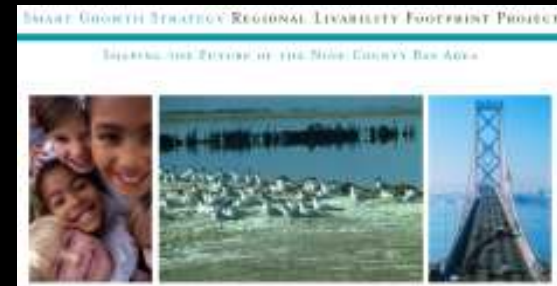


Option 3:

Fully Incorporate the Vision—Use the “Vision”
Land Use Pattern as the Forecast

Smart Growth Strategy/Regional Livability Footprint Project (Bay Area)

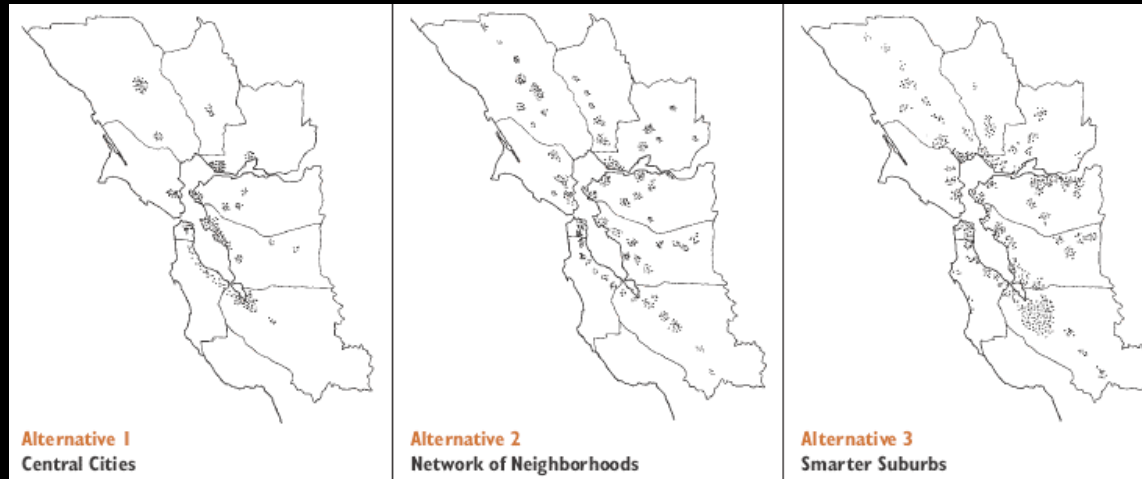
Motivation: provide regional context and support to the growing number of smart growth projects in the Bay Area; trend conditions unlikely to supply sufficient housing for the region’s population, or to achieve the three aims of sustainability: economic growth, social equity, and environmental protection.



Scenario & Transportation Planning



Four Scenarios



Trend: projects into the future recent development trends in density, development type, and location.

Central Cities: Most of the growth in this scenario is located in the existing urban cores of the region.

Network of Neighborhoods: Development is focused in the urban core areas, but not as densely as in the Central Cities scenario.

Smarter Suburbs: Development is placed in the core and community areas, but not as densely as in the Network scenario.

Scenario & Transportation Planning



Vehicle Travel

	1998 Base Year	2020 Baseline	Central Cities (Alt #1)	Network of Neighborhoods (Alt #2)	Smarter Suburbs (Alt #3)
Vehicle Miles of Travel (VMT) (000s)	128,373	174,695	166,652	171,635	176,140
Vehicle Trips (000s)	13,103	16,477	16,229	17,016	17,161
Average Vehicle Trip Length (Miles)	9.8	10.6	10.3	10.1	10.3

Scenario & Transportation Planning



Projections 2005 City and County Forecasts - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <http://data.abag.ca.gov/p2005/summary.htm>

- Ordering Information
- Table of Contents
- Summary of Findings
- Regional Projections
- Glossary of Terms
- Modeling System
- Census Tract Forecasts

ABAG Projections 2005

City, County and Census Tract Forecasts 2000-2030

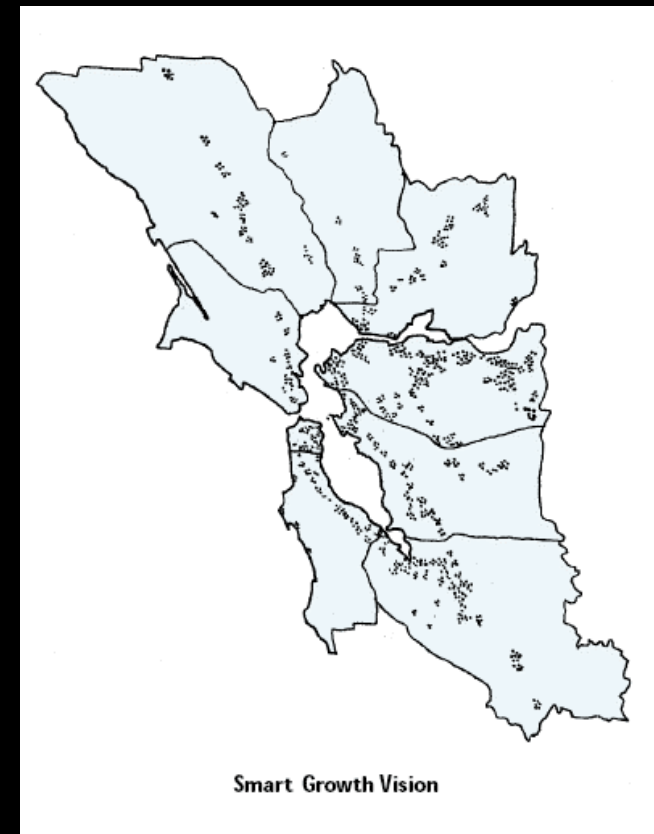
Projections 2005: New Patterns of Regional Growth

PROJECTIONS 2005 is the official forecast of the Association of Bay Area Governments (ABAG). Like its most recent predecessor, Projections 2003, this forecast includes a set of policy assumptions that are a departure from ABAG's historical practice. Policies and programs are assumed to change in a way that shifts new growth toward areas near transit and existing downtowns. These Smart Growth policies and programs are assumed to have an increasing effect over the thirty-year forecast horizon.

ABAG produces a forecast so that other regional agencies, including the Metropolitan Transportation Commission (MTC) and the Bay Area Air Quality Management District (BAAQMD), can use the forecast to make regulatory and project funding decisions. In actuality, the ABAG projections document is a summary of the census tract information that ABAG produces for modeling purposes. ABAG projections are also widely used for local land use planning and by individuals and organizations examining their long-term objectives in the Bay Area.

Smart Growth: Its Role in the Forecast

This forecast is not a business-as-usual scenario, and it is not just a set of regional goals. Instead, it is a single scenario that assumes a certain amount of long-term progress toward Smart Growth policy goals. This seems appropriate since the forecast can have practical consequences for funding decisions and land use policies.



Scenario & Transportation Planning



Other Scenario Planning Projects Fully Integrated into Long-Range Plans

- Southern California Compass (Los Angeles)
- 2020 Transportation Plan: The Livable Community Reinvestment Plan (Gainesville)
- Treasure Valley Futures Project (Boise)
- Regional Growth Choices for Our Future/Regional 2025 Transportation Plan (Lansing)
- Region 2040 (Portland)
- Jefferson Area Eastern Planning Initiative (Charlottesville, VA)
- Vision 2020: Growth Strategy and Transportation Plan for the Central Puget Sound Region
- Year 2020 Sheboygan Area Transportation Plan (Greenbay, WI)

Scenario & Transportation Planning



What We Know

- Statutes/Regulations are ambiguous
- NEPA seems to require different land use patterns for each transportation alternative.
- Transportation investments decisive in determining land use patterns
- Full integration seems to be the norm
- Intuition supports full integration: costs of analysis; aroused public opinion/involvement
- Partial integration leads to patchwork implementation—balkanized “smart growth,” not a regional plan; seems inconsistent with 3C planning
- MAG example: unique circumstances of local governments updating plans all at once to comply with new smart growth law

Scenario & Transportation Planning



“[B]ecause the MTPO consists of all members of the City of Gainesville Commission and the Alachua County Board of County Commissioners and is the only routine occasion for those two boards to sit together as a single body, the MTPO is arguably in the best position to discuss and promote policies relating to the integration of land use and transportation on a broad, regional scale.”

2020 Transportation Plan: The Livable Community Reinvestment Plan (Gainesville)

