



## CMAP Scenario Development Process June 2009

A central piece of the *GO TO 2040* planning process is the evaluation of alternative future scenarios. Scenarios are combinations of actions (policies, strategies, and investments) that represent alternative paths that the region could take toward reaching its desired future, as expressed in the Regional Vision. The purpose of the scenario evaluation process is *not* to select one single scenario that will be adopted in its entirety. Instead, it is meant to allow us to examine different potential paths that the region could take toward the realization of its vision. Ultimately, the most effective pieces from each of the scenarios will be chosen and combined into a single preferred scenario.

As described in the accompanying “scenario construction notes” document, CMAP constructed scenarios using a thematic method. In thematic scenario construction, each scenario is a combination of individual strategies, or a course of action.

During summer 2008, CMAP’s working committees were involved in developing potential courses of action within their areas of expertise which could be components of scenarios. Their contributions are summarized below. Toward the end of this document, this information is also summarized graphically.

### **Economic and community development**

This committee developed four courses of action to be reflected in the scenarios. The first of these is *human capital*, which focuses on improving the region’s workforce; this fits into “preserve”. The second is *innovation*, which relies on the region becoming a center of innovation (including but not limited to technological innovation); this matches with “innovate”. The third is *infrastructure*, which includes substantial investments in physical infrastructure; this fits with “reinvest”. The fourth is *regional collaboration*, which involves having a regional economic development strategy; this could conceivably fit within any or all of the scenarios, and staff will be working further with this committee to identify its best fit.

- Human capital investment (“preserve”): This course of action promotes business retention, attraction, and development by ensuring a vibrant, well-educated and adaptable workforce with an entrepreneurial spirit, and with a skills base that meets the demand of the business sector. Improving workforce skills is central to the region’s

economic development, because a better skilled workforce will achieve increased competitiveness and profitability for business, and enhanced career options and higher wages for individuals. The region's economy, available job opportunities, and skills requirements have changed significantly over time and will continue to change, so this strategy would make investments in education (early childhood, K-12, colleges and universities, and other training institutions) and workforce development, and develop better linkages between educational institutions and other regional stakeholders including businesses and labor organizations. This scenario will provide high-quality educational and employment opportunities for all people and promote regional equity.

- Innovation (“innovate”): This course of action promotes business retention, attraction, and development by focusing on innovation. Investments could be made in incentivizing the clustering of businesses as well as fostering technology commercialization between our research institutions and the private sector. Businesses would be attracted to the region based on this course of action, and the overall business environment would improve because of the efficiencies created. While innovation does not necessarily come as a result of technology, this course of action does feature growth in new technologies which will be of regional benefit.
- Infrastructure (“reinvest”): This course of action promotes business retention, attraction, and development by prioritizing investments in infrastructure, which will promote redevelopment of sites such as vacant or underutilized former industrial land. It also acknowledges shifts in the economic base by providing infrastructure that is appropriate to future needs, and seeks to strengthen links to ports and airports, as well as upgrades to railroads, to maximize the benefits of these assets and support sustainable distribution strategies within the region. The definition of infrastructure in this context covers transportation (road, transit, freight, air, and other modes), sewer, water, and telecommunications including internet, broadband and wireless communications. Infrastructure needs are seen in the context of regional planning objectives, including limiting travel times for potential employees, encouraging more sustainable modes of transport, promoting land conservation, and other goals.
- Regional collaboration (not assigned to a specific scenario): This course of action promotes business retention, attraction, and development through the creation of a regional economic development strategy (i.e. promoting the growth of clusters) and encouraging all sectors to respond to regional policy and participate in regional planning that seeks a balanced economy with planning guidance. Strategic alliances between developers and communities would be used to encourage public-private partnerships as the core foundation of this course of action. An integrated approach across the region and between counties will promote equity, provide policy solutions and discourage the displacement of problems from one area to another. The region would have a coherent strategy for land use, planning, transportation, and development, resulting in public-private partnerships leading reinvestment

opportunities. Linked to this course of action is the need to continue to build capacity across the region to promote global competitiveness.

### **Natural environment and energy**

This committee developed three courses of action for the natural environment and for energy. For the environment, the first is *ecocentric*, or the preservation of the most sensitive environmental land; this matches with the emphasis on preservation in “preserve”. The second is *human-nature connection*, or bringing more environmental and open space opportunities to existing developed areas; this fits with the redevelopment and infill emphasis of “reinvest”. The third is *green development*, which focuses on applying conservation design and similar techniques where new development does occur; this is consistent with “innovate”. In the area of the natural environment, potential courses of action for inclusion in scenarios could be:

- Ecocentric (“preserve”). This course of action seeks to preserve and restore functioning ecosystems. It includes major purchases of land for environmental preservation, and restoration of ecosystems in the most viable areas. It also includes constraining the alignments of transportation facilities to avoid impacts on environmentally sensitive land.
- Human-nature connection (“reinvest”). This course of action seeks to maximize the accessibility of open space and environmental amenities to residents, particularly existing developed areas. It targets open space acquisition and restoration efforts to urban sites (“greenfill”) and also increases the accessibility of existing parks and open space. River restoration is targeted toward urban sites with a goal of improving recreation on waterways. Additionally, this course of action targets water and energy conservation to older developments through retrofitting.
- Green development (“innovate”). This course of action seeks to minimize the impact of new development, while accepting that new development will occur by 2040. It includes increased use of conservation design, development restrictions in environmentally-sensitive corridors (as identified through Green Infrastructure Vision and water supply study) and cutting-edge stormwater BMPs and wastewater land application techniques. It also relies on alternative energy sources.
- Individual action (not assigned to a specific scenario). This course of action includes increased general awareness and interest by individual residents of the environmental consequences of their actions.

In the area of energy, potential courses of action for inclusion in scenarios could be:

- Building efficiency (“preserve”). This course of action seeks to reduce energy consumption by making residential and commercial buildings more efficient. It includes retrofits of older buildings to increase their energy-efficiency, appliance replacement, other small-scale improvements.
- Transportation and land use efficiency (“reinvest”). This course of action seeks to reduce energy consumption by creating a more efficient, transit-oriented development based land use pattern, as well as infrastructure improvements to support this.

- Alternative energy (“innovate”). This course of action relies on “supply-side” improvements to reduce regional energy consumption. It includes the use of alternative fuels for transportation purposes and alternative energy sources for residential, commercial, and industrial use. It also includes an increase in research and development for alternative energy in the region, focusing on attracting and retaining “green collar” jobs and businesses. This scenario also includes new ideas or technologies to be applied to new developments.
- Individual household action (not assigned to a specific scenario). This course of action includes activities that individuals can take that when taken together can have significant energy consumption impacts. Some of these actions are assumed in all scenarios, while others (such as small-scale building improvements) are more specific to the “preserve” scenario.
- Further details on the approach to energy in each scenario are contained in a forthcoming report on the subject.

## Housing

This committee developed four courses of action. The first of these is *preservation*, or seeking to preserve and restore the existing housing stock; this fits with “preserve”. The second is *balanced development*, or seeking a diversity of housing options throughout the region; there were multiple elements of this course of action, and it was split between the scenarios. The third is *green and energy-efficient development*, which minimizes the impact of new development and also retrofits existing homes to reduce energy usage and costs; this fits with “innovate”. The fourth is *compact, mixed-used, and transit oriented development*, which focuses on the location of denser housing development in infill areas; this matches well with “reinvest”.

- Preservation (“preserve”). This course of action seeks to preserve and restore the existing housing stock with an emphasis on the region’s rental housing. It includes prioritizing government resources towards housing rehabilitation, and the adaptation of building codes to better facilitate efficiency and cost effectiveness in housing rehabilitation. The preservation of housing affordability, in addition to the actual stock, is also an element of this course of action.
- Balanced Development (not assigned to a specific scenario). This course of action seeks to supply a diversity of housing options throughout the region. It focuses on the distribution and mix of housing stock allowing a jobs-housing balance and on the type of housing that is affordable to residents at varying income levels. This course of action also seeks to develop housing that is appropriate to each community and meets the changing demands of its workforce and demographics. It includes policies that are responsive to community’s needs, for example, creating more affordable housing opportunities or allowing for a more diverse housing stock. Other elements of this course of action include increasing the rental housing stock, permitting accessory units, developing workforce housing initiatives or providing special needs housing.
- Green Development (“innovate”). This course of action seeks to minimize the impact of new development, while accepting that new development outside of the existing urban footprint

will occur by 2040. It includes increased use of conservation design and an emphasis on sustainable building and energy efficient practices. This also includes retrofits of older buildings to increase their energy-efficiency and stricter design codes (using LEED or similar system) for new buildings to ensure that they are efficient.

- Compact, Mixed-Use, and Transit Oriented Development (“reinvest”). This course of action seeks to reduce land consumption by permitting more housing units on less land, and to provide a range of housing options in close proximity to other land uses. It includes increasing density, decreasing lot sizes and incorporating good urban design principles to mitigate any negative impacts of more intensive development. This course of action also reduces the cost of housing construction by minimizing infrastructure and land costs. This course of action emphasizes transit-oriented development to reduce the need for auto travel.

## Land use

Three basic courses of action were developed. The first is *preservation*, or preserving the most valued aspects of the region; this matches with “preserve”. The second is *infill and reinvestment*, or focusing our development into existing communities with existing infrastructure; this matches with “reinvest”. The third is *green development*, or using innovative design techniques and alternative energy sources to mitigate the impacts of development, even while substantial growth may take place on currently undeveloped land; this fits with “innovate”.

- “Preserve”: This scenario features a moderate density of development, and will focus on preserving those aspects of the region that we value most, including sensitive environmental features, open space, affordable housing, historic buildings, and other features. It will include low-capital transportation improvements that support livable communities, such as improved pedestrian and bicycle facilities and increased transit operations. Although this scenario does not have extensive investment in physical improvements, it will invest heavily in human capital.
- “Reinvest”: This scenario features high development densities, and will reinvest heavily in infill development in our existing communities and infrastructure. “Existing communities” are defined here as those areas where development already exists. Land use patterns will follow infrastructure investments, leading to development that is transit-oriented, compact, and mixed-use. This scenario will include high levels of brownfield redevelopment and other use of existing vacant or underused land in infill locations.
- “Innovate”: This scenario features the lowest development densities of the alternative scenarios, and will focus on innovation, in terms of new technologies or policy solutions, to reach our vision. The scenario is expected to feature more development of currently undeveloped land than the other scenarios, but the negative impacts of this development would be minimized through the use of innovative urban design and conservation design techniques. This scenario would also rely on alternative energy sources and fuels, and on overall technological and policy innovation.

## Transportation

Three courses of action were developed for transportation, based partially on the scenarios used in the 2030 Regional Transportation Plan prepared by CATS. The first is a *low-capital* approach, which focuses on pedestrian and bicycle facilities, car-sharing, transit operating improvements, and transportation demand management (TDM) techniques; this fits with “preserve”. The second includes substantial *reinvestment in infrastructure*, with significant financial investment in improving our physical infrastructure, particularly focused on the infrastructure that already exists; this matches with “reinvest”. The third includes technological and policy *innovation* such as pricing, alternative fuels, and context sensitivity, and also includes transportation investments that support innovative land use planning techniques such as transit oriented development; this matches well with “innovate”.

- “Reinvest”: This scenario features capital improvements to existing transit facilities that increase speeds; transit headway reductions on existing service; freight operations improvements; systematic addition of truck/HOV-only lanes on expressways; arterial and expressway expansions in congested redeveloping areas; and pedestrian improvements in redeveloping areas.
- “Preserve”: This scenario focuses on transportation demand management focused on employer encouragement of transit; parking policy changes that reduce the availability of free parking; expansion of car-sharing programs; regionwide pedestrian and bicycle system improvements; bus service additions to underserved areas; transit headway reductions on existing service; paratransit service increases; access management policies along arterial roadways; and increased intersection efficiency due to frequent signal optimization.
- “Innovate”: This scenario includes Intelligent Transportation Systems (ITS) improvements that affect both autos and transit, such as advanced signal systems, transit signal priority, and Arterial Rapid Transit (ART); advanced pricing options for expressways and for parking; the use of alternative fuels and advanced vehicle technology; and other innovative facility design features.

## Graphic presentation of courses of action

The table below shows the themes organized by topic area and by scenario. As it shows, each course of action was assigned to one scenario in a way that created generally consistent themes but respected the courses of action developed by the working committees.

Theme	Courses of action in "reinvest" scenario	Courses of action in "preserve" scenario	Courses of action in "innovate" scenario
Economic development	Infrastructure	Human capital	Innovation
Energy	Conservation – land use and transportation	Conservation – buildings	Clean energy
Environment	Accessibility	Biodiversity	Green development
Housing	Transit oriented development	Preservation of affordability	Green housing
Land use	Very dense	Moderately dense	Least dense
Transportation	Major capital investment	Management and operations	Technology

A challenge in using a thematic means of scenario construction is the complexity of the scenarios that result. As the above table shows, each scenario is a combination of courses of action from a number of different fields. While there are no direct contradictions between elements of any scenario, there are some areas of seeming arbitrariness. For example, there is not a clear reason why the "human capital" economic course of action should be paired with the "management and operations" transportation strategy – except that other courses of action in the economic development and transportation areas provided more obvious links (infrastructure matching with major capital investment, and innovation matching with technology).

The challenges in using thematic scenarios were noted when choosing this form of scenario construction. However, it was determined that the level of analytical detail possible using thematic scenario evaluation overwhelmed the communication challenges. Scenario evaluation results are available for public review during summer 2009 at [www.goto2040.org/scenarios/outcomes/comparison](http://www.goto2040.org/scenarios/outcomes/comparison).