



**MEMORANDUM**

**To:** Working Committees

**Date:** July 2009

**From:** Bob Dean, Principal Regional Planner

**Re:** Initial Conclusions from Scenario Evaluation

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The development and evaluation of alternative scenarios has been a major part of the *GO TO 2040* planning process for the past two years. The preliminary results of this process are posted at [www.goto2040.org/scenarios](http://www.goto2040.org/scenarios), and committee members are encouraged to visit this site.

The next step in scenario evaluation is to develop a “preferred scenario” which will form the basis for the plan’s recommendations. The preferred scenario will highlight the most desirable elements of each of the alternative scenarios. An early draft of the preferred scenario will be available in early fall 2009, with the final version scheduled for approval at the end of the year.

While public engagement is still underway and will continue through the summer, some initial conclusions can be drawn from the results of the technical analysis. These should be considered highly tentative until a better sense of stakeholder and public priorities are known.

The remainder of this memo describes initial conclusions reached through scenario analysis and the background research that supports them. This does not repeat the presentation of results available at [www.goto2040.org/scenarios](http://www.goto2040.org/scenarios); it is meant to complement rather than duplicate the information on this website.

## Background and supporting materials

The conclusions described in this memo are based on research and analysis conducted by CMAP over the past two years. This section describes these work products. Unless specifically noted, all work products in this section are available at [www.goto2040.org/strategy\\_papers.aspx](http://www.goto2040.org/strategy_papers.aspx).

Papers produced by CMAP staff included the following: agricultural preservation, arterial operations, bicycling, brownfields, car-sharing, context sensitivity, economic incentives, historic preservation, housing preservation, human services coordination (211 system), inclusionary zoning, parks and open space, pricing and managed facilities, public transportation, regulatory barriers to affordable housing, school siting, stormwater, teardowns, transportation demand management, urban design and walkability, waste disposal, wastewater, water supply, and waterway planning. A report on parking is underway but not yet complete.

Additional quantitative evaluation beyond the strategy papers was also done by staff for selected strategies: agricultural preservation, brownfields, conservation design, housing preservation, inclusionary zoning, open space, parks, and wastewater. This was discussed with the working committees through a series of webinars during winter and spring 2009. The initial papers and notes from the discussion are online at [www.goto2040.org/panel.aspx](http://www.goto2040.org/panel.aspx).

While not part of the strategy paper series, snapshot reports on topics including sustainability, infill, jobs-housing balance, Latino population growth, industry clusters, and air quality have also provided background that informed the scenario evaluation conclusions. These reports are online at [www.cmap.illinois.gov/snapshot.aspx](http://www.cmap.illinois.gov/snapshot.aspx).

Transportation strategies were also evaluated by staff during spring 2009. The analysis of these was organized and presented by scenario, and a separate paper was prepared for each scenario. These are online in the following locations:

- Reinvest scenario: [www.goto2040.org/reinvest\\_transportation.aspx](http://www.goto2040.org/reinvest_transportation.aspx)
- Preserve scenario: [www.goto2040.org/preserve\\_transportation.aspx](http://www.goto2040.org/preserve_transportation.aspx)
- Innovate scenario: [www.goto2040.org/innovate\\_transportation.aspx](http://www.goto2040.org/innovate_transportation.aspx)

Consulting work undertaken included:

- The Volpe Center, which is the research branch of US DOT, produced several papers on the topics of alternative fuels, climate change, freight, interregional transportation, public-private partnerships, and transportation security. These generally did not contain quantitative analysis but did provide recommendations for potential CMAP approaches to these issues.
- RCF Economic and Financial Consulting is preparing reports on selected economic development topics, including export promotion and import substitution, innovation,

and infrastructure impacts on economic development. They have also worked with the Delta Institute to prepare a report on green economic development. These reports are providing CMAP with background on these issues as well as specific recommendations for how they could be addressed in *GO TO 2040*.

- The Center for Neighborhood Technology (CNT) is developing a snapshot on energy and greenhouse gas emissions in the region, and also has explored a number of strategies that could reduce energy use and emissions.
- The Chicago Community Trust funded the development of research papers on eleven different topics in the human and community development field, including arts and culture, crime and justice, education (early childhood education, K-12 education, and higher education), emergency preparedness, food, health, human relations, hunger, and workforce development. These reports were prepared by groups of experts in each area. Full reports are being released throughout the summer, and interim products are available online at [www.goto2040.org/human\\_community\\_development](http://www.goto2040.org/human_community_development).
- A report on freight is currently being prepared by Cambridge Systematics. This is expected to guide the recommendations of *GO TO 2040* in the area of freight, and will be complete by January 2010.

The scenario conclusions presented in the rest of this memo are built on the research and analysis described above.

### **Notes on initial scenario conclusions**

The notes below are organized into the general topics covered by the working committees. More information supporting these initial conclusions is contained in the links above or on the general scenario evaluation website, [www.goto2040.org/scenarios](http://www.goto2040.org/scenarios). *As described in the introduction to this memo, these are initial thoughts from staff, do not reflect any public engagement results, and should be considered preliminary.*

#### Transportation

- Management and operations strategies and ITS activities improved transportation system performance, and were particularly effective at shifting trips to transit or nonmotorized modes. However, mobility was improved the most dramatically by capital investments in the existing system (new major capital projects were not considered in the scenarios). Additional operating efficiencies can be gotten from the existing system, but this only provides part of the solution; substantial infrastructure investment is needed, which is costly.
- Congestion pricing (and to a lesser extent, variable parking pricing) had dramatic results that were mixed in terms of positives and negatives. In the analysis, it created two “classes” of travelers – those who would pay higher prices for additional mobility, and those who would or could not. For the first group, the region became more accessible as

travel times on expressways were reduced. For the second group, trips were shifted onto slower arterial roadways or onto public transit, increasing overall travel times for those users. This obviously creates equity concerns. Congestion pricing also demonstrated significant ability to raise revenues. The impacts of congestion pricing on freight are a concern but have not been fully explored in the scenario analysis and further work on this is needed.

- Increases in highway capacity led to rises in VMT, even if transit services were also improved and land use patterns grew denser. The increases in highway capacity appeared to generate additional auto travel. Although transit and non-motorized trips rose compared to the reference in every scenario, auto travel also increased in the scenarios that increased roadway capacity either through new construction or operational improvements.
- One of the more surprising results concerned air quality. In some cases, actions taken to reduce congestion also increased auto demand, leading to more auto trips and negative net air quality impacts. This was not expected – staff assumed that the air quality benefits of congestion reduction would exceed the disbenefits of increased auto tripmaking, but the particular strategies that were tested had the opposite effect. In particular, strategies that shifted traffic from higher-speed to lower-speed roadways (either through pricing or through arterial improvements) increased some pollutants because vehicles are less efficient at lower speeds. However, the differences between scenarios were minor, and were overwhelmed by the impacts of technological change expected to occur between now and 2040.
- Interest in interregional high-speed rail is increasing, and it appears to be a relevant topic for the *GO TO 2040* plan. This topic appears most appropriate to address at the “mega-region” level.
- Improving access to jobs was considered a key transportation outcome by groups working in human and community development, and was expected to improve workforce participation of lower-income people, increase overall public health, lower household costs, and reduce crime. The link between transportation and health was especially strong, and the education group emphasized the importance of children being able to walk to school.
- The scenario analysis was not successful in meaningfully evaluating freight strategies. The plan needs to address freight directly, so additional work on this issue is underway and should be complete by the time the plan’s recommendations are being developed.

#### Land use

- Increasing density of development had major positive impacts on many of the outcomes measured. See the “environment” section for more on this.
- Brownfield remediation and transit oriented development attracted growth to infill locations, leading to an overall pattern of denser development. These strategies were most effective when linked with infrastructure improvements.

- Mixed-use developments intended to foster a sense of community were seen to have many benefits in the human and community development areas. Positive impacts were noted for arts and culture, crime and justice, education, emergency preparedness, health, human relations, and workforce development. Density had particularly positive impacts in terms of allowing better access to education and health facilities.
- Improving access to open space (defined as the number of people with adequate amounts of open space within a short distance) is different than increasing the region's overall supply of open space. Improving access requires creating new open space and parks in densely developed parts of the region, which can be difficult and costly, but has health and social benefits.

#### Human services

- Elderly, disabled, and other vulnerable residents would benefit from mixed land uses, moderate to high development densities, multimodal transportation options, and widely available affordable housing.
- In the human and community development area, delivery of services could be improved by information and data sharing between governmental agencies offering similar services as well as increased transparency. Better coordination of federal and state funding programs was also identified by a number of groups as a key issue.

#### Housing

- Increasing densities was projected to increase housing affordability even without any other action, as denser housing tends to be more affordable (this is admittedly an oversimplification, but it is generally true). However, increasing growth in infill areas can lead to challenges in maintaining affordable housing in these areas. In particular, transit-oriented development, combined with improved transit service, attracted more development to areas served by transit; without public sector action, this could also drive up housing costs in these locations.
- Research on housing preservation and inclusionary zoning found that public programs of these types, while important, had less impact on overall housing affordability than the operation of the private sector housing market. Reducing barriers to efficient market function appears to be effective in addressing long-term housing affordability.
- One of the better ways to reduce the region's water use, energy use and greenhouse gas emissions involved efficiency improvements to housing. This also improves affordability by lowering utility costs.

#### Environment

- As noted in the "land use" section, increasing development density had significant environmental benefits. A dense development pattern was as effective as any specific environmental program at limiting imperviousness, reducing land consumption, or reducing water use (particularly groundwater).

- All of the environmental strategies analyzed worked best when paired with strategies that increased infill. For example, conservation design did not have major benefits when applied only to new growth, but when applied to redevelopment and considered in conjunction with other strategies that supported redevelopment, it had better results.
- Similarly, agricultural preservation strategies that focused on preserving high-productivity soils tended to simply shift growth from higher-productivity to lower-productivity farmland. The prevalence of agricultural land in the region means that most greenfield growth will consume farmland; increasing infill and reducing overall greenfield growth is necessary as part of an approach to preservation. Linking agricultural preservation with local food systems was also recommended in the human and community development research.
- Access to open space has been discussed in the “land use” section. Prioritizing open space conservation in places with the highest natural resource value rather than access potential would have different results, leading to preservation of land in less developed parts of the region.
- A disappointing result of the scenario analysis was that no scenario appears likely to reduce greenhouse gas emissions at the rate necessary to truly address the issue of climate change. A common target for emissions is to reduce them to 20% of their levels in 1990; none of the scenarios approach this level. This can be interpreted two ways: first, that more aggressive strategies are needed, including even denser development, more investment in alternative transportation modes, and more retrofits of buildings; or second, that this ambitious target is just not achievable without dramatic technological change. Staff believes that both of these interpretations are probably correct. *GO TO 2040* should set a realistic target for greenhouse gas emission reductions with existing technology that is challenging but possible, but also support the rapid development of technological improvements as well as mechanisms (like cap-and-trade systems) for emission reductions.
- Energy retrofits of existing institutional buildings were highlighted in the areas of education, health, and arts and culture, as these could reduce the costs of operating large facilities of these types.
- Water supply and water quality were not addressed in detail during the *GO TO 2040* process because of the ongoing work of the Regional Water Supply Planning Group (RWSPG). The conclusions of the RWSPG are expected to inform the recommendations of *GO TO 2040*. In particular, the RWSPG will be addressing the connection between land use and water for the next several months, and the results of this work will also be relevant for *GO TO 2040*.

### Economic development

- Economic incentives are best addressed by targeting sectors or clusters whose growth and increased specialization in the region is desired. They appear to be less appropriate

for affecting land use decisions or encouraging growth to occur in one location rather than another.

- Land use development decisions are highly influenced by fiscal impacts, which are caused in part by tax policy. This means that tax policy is among the factors that influence development that should be examined in the *GO TO 2040* plan.
- Economic innovation has proven difficult to measure or even describe, but it is important for our region's future economic health. The public sector can have a role in supporting innovation through technology transfer programs or assistance in planning technology parks, for example (although innovation is not limited to technology-based fields).
- Human capital was not directly analyzed in the scenarios, but there is consensus that it is vitally important. Education and workforce skills must be addressed in some way in *GO TO 2040*. The results of the work on early childhood education, K-12 education, higher education, and workforce development are expected to be used to inform the plan's approach; so will the results of ongoing work on industry clusters that have particular workforce requirements.
- A number of human and community development groups noted the importance of maintaining a supply of jobs in the region that pay a good wage but do not require advanced education. This was seen to improve workforce development, and would also reduce poverty, with positive effects on crime, health, human relations, and hunger. Industries that support many jobs with "middle class" incomes, rather than a few high-paying jobs and many low-paying jobs, are preferable in this regard.
- Significant potential for economic growth exists in the "green jobs" sector; the preparation of a report that gives additional detail on this is underway.
- Insufficient quantitative analysis of the economic outcomes of scenarios was done during the scenario evaluation, which is a significant gap because of the importance of this issue. This needs to be improved during the evaluation of the preferred scenario.

### **Schedule for preferred scenario development**

The purpose of scenario evaluation is to support the development of a "preferred scenario," which will in turn form the basis of *GO TO 2040*'s recommendations. The preferred scenario will be organized and presented in a similar way to the alternative scenarios. A timeline for its development follows:

- July-August: present initial scenario evaluation conclusions (contained in this memo) to committees for input
- July-August: continue public engagement process and produce interim reports on results to date
- September-October: develop draft preferred scenario based on evaluation conclusions, public engagement, and key stakeholder feedback; discuss preferred scenario with committees and release for public comment

- November-December: finalize preferred scenario and receive Board and MPO endorsement

**Action requested:** Information and discussion.