

Chapter 11

Coordinated Infrastructure Planning at the Areawide Level

This chapter sketches the urban sprawl problem and presents a rationale for an areawide planning role in addressing problems of urban sprawl. It outlines some strategies for better coordination of areawide planning and for better planning services to local jurisdictions that could help to address the problem.

I. Areawide Agency Roles

NOACA has been designated to develop and maintain a long range plan for the region's federally- funded transportation infrastructure as a Metropolitan Planning Organization (MPO), under federal transportation law. The agency has also been designated to develop and maintain a water quality management plan under the federal Clean Water Act which addresses public investments in wastewater infrastructure and other water quality management planning issues for the region. These two plans guide infrastructure investment decisions for transportation and water quality made by local jurisdictions.

NOACA also serves as a forum for discussion of regional land use planning issues. As an organization of local elected officials from throughout the metropolitan area, the agency provides an opportunity for these local officials to think and debate regional issues, and serves as a resource for informing that debate and guiding actions taken at the local level.

The Akron Metropolitan Area Transportation Study serves as the Metropolitan Planning Organization for Summit and Portage Counties. NEFCO is the designated areawide water quality planning agency for these counties. Both AMATS and NEFCO serve as regional forums for the discussion of land use planning issues.

A. Urban Sprawl Issues

Urban sprawl is one major regional land use issue that has generated a considerable amount of discussion and debate in Northeast Ohio. Chapter 3 above discusses the water quality implications of Northeast Ohio's continuing dispersal of urban populations, housing and employment. A report presented at 1995 State of the Lakes Ecosystem Conference sponsored by the USEPA and Environment Canada concluded "the most significant population and related development issue in the Great Lakes Basin and surrounding region is the continuing growth of major metropolitan areas and the virtually uncontrolled sprawl of lower density residential areas and other development."¹

Urban sprawl surfaces as a public problem because it results in significant costs for the community. These include direct costs such as increased taxes to pay for a larger public

¹Allardine, D. R. And S. Thorp. August 1995. A Changing Great Lakes Economy: Economic and Environmental Linkages. SOLEC Working Paper presented at State of the Lakes Ecosystem Conference. EPA 905-R-95-017. Chicago, Ill.: U.S. Environmental Protection Agency.

infrastructure investments, increased utility rates for operation and maintenance of wastewater and water systems and indirect social costs such as increased consumption of land, degradation of air and water resources, loss of open space, increased tax burden on older urban areas experiencing population loss and loss of tax base, the shifting of jobs away from older urban areas and increasing difficulty of access of urban residents to these jobs. Urban sprawl also contributes to the isolation and impoverishment of old neighborhoods in the core of the urban areas.

The impacts of urban sprawl are also felt by developing communities. With development comes a reduction in open space. But these communities also incur increased community service costs such as police, fire, schools, and general administration that come with increases in population and infrastructure. And these trends bring environment impacts as well including increased storm water runoff and flooding from increases in impervious surfaces, increases in erosion, and additional costs in maintaining culverts and the like.

Urban sprawl is the result of decisions of individuals and businesses taken over a long period of time to locate and work and operate in previously undeveloped areas of the metropolitan region. These individual and business decisions are made for a variety of economic, cultural, social and technological reasons. Concerns about the quality of urban schools, personal safety and racism are among the factors influencing these decisions. Inefficiencies caused by urban sprawl help to make the region less competitive in the global market.

Urban sprawl is also the result of public policies, many driven by policies established at the federal and state level in transportation, housing, and economic development that have the effect of lowering the cost and inconvenience to individuals and businesses in moving to previously undeveloped areas of the country. The land use and public infrastructure investment decisions that are made by local governments accommodate these individual choice and public policies.

B. Rationale for Government Response

There are two rationales for government response to reverse this process: First, governments bear the costs of urban sprawl directly by having to fund, through taxes, new infrastructure and indirectly by having to fund through tax programs that strive to address environmental and social impacts. Second, since urban sprawl is the result of public policies that have encouraged a certain direction to land use decisions and infrastructure investments by local governments, public policy has a legitimate part to play in reversing this trend. Such a policy would guide local government decisions to adjust land use decisions and infrastructure investments avoiding actions leading to urban sprawl, and thereby reducing direct and indirect costs borne by these governments.

In 1993, the NOACA Board adopted a statement of planning principles that, among other things, expresses the intent “to encourage efficient, compact land use development that facilitates mobility, saves infrastructure costs, preserves environmentally sensitive and agricultural lands, and enhances the economic viability of existing communities within the region.” In 1999, the NOACA Board adopted its *Framework for Action 2025*, which will guide transportation investments in the region. One goal of this plan is to encourage “the

region's competitiveness based on a sustainable development approach.” Similarly, one goal of this 208 Plan update is to ‘optimize use of existing investment in infrastructure, not encourage public investments in new infrastructure.’ Coordinated areawide infrastructure planning would seem to be a reasonable method for advancing these regional public policy goals.

There are some inherent difficulties with this method. Planning to deter a phenomenon requires some understanding of its costs and its benefits, both monetary and non-monetary and understanding the distribution of these effects among communities. It can be a means of assuring that common planning assumptions are made in an environment where decisions are dispersed among a number of authorities with useful planning inputs. The costs and benefits of urban sprawl effects have emerged over a long period of time and as a consequence are difficult to perceive, monitor, quantify, document and resolve. Hard information about the impacts of urban sprawl are critical to public policy makers and local decision makers. Planning coordination at the areawide level is extremely difficult given the dispersal of decision making responsibilities among many largely autonomous units of government in the metropolitan area with home rule powers who actively compete for new tax base.

NOACA's recently adopted transportation plan, *Framework for Action 2025* (February, 1999), summarized the Northeast Ohio's local planning environment well:

“Early in this century the Ohio Constitution was amended to establish “home rule’ powers for municipalities. These powers continue to affect the planning environment of the NOACA region. Home rule gives municipalities (with few exceptions) the power to regulate the use of land within their jurisdiction without oversight from or coordination with other local or State governments. Coupled with home rule is the circumstance that state-enabling legislation for local land use planning is permissive, not mandatory.

“Also, with few exceptions, the State has no oversight of local land use planning. Therefore, individual communities can plan and regulate their land development independently from their immediate neighbors and from others in their region. County-level and regional or multi-county plans for land use are truly accepted only when adopted by the individual local governments within the plan area, and are truly effective only when those individual governments choose to regulate land use according to the larger area plan.”

Moreover, there are values and rights imbedded in the community life style choices that produce urban sprawl. These will be recognized and given their due in a public decision process. These include the value of freedom to choose where you want to live, the values of a free market place, private property rights, etc. These values will continue to operate in the community and compete with desires to curb urban sprawl through growth management. Conflicts between property rights of private landowners and developers and the public interest will continue to animate this debate and these questions will often be settled in court.

C. Areawide Planning Response

The current environment of dispersed authority for decision-making and inherent limits in the authority of areawide plans means that the capacity of an areawide plan to direct or coordinate

effect local government actions will be quite limited. Yet it is reasonable to consider whether it is possible to synchronize regional planning for transportation and water quality and provide local public officials with information that considers the relationship between transportation and water quality infrastructure plans. There is also the potential for coordinating with regional water supply planning efforts of water agencies. However, neither NOACA nor NEFCO have been designated to perform this planning function. This kind of information could be employed in a manner that encourages growth management and encourages new investments in the already settled areas of the region. How far coordinated regional plans can go in guiding land use planning and infrastructure investment decisions will ultimately be decided by local and county public decision-makers.

II. Proposed Areawide Strategies to Address the Problem

This section outlines seven planning strategies for enhancing value of areawide planning for local public agency decision-makers.

1. Enhancing coordination of the Transportation Plan and the Water Quality Plan development processes including technical planning coordination and policy development coordination.
2. Compiling and reporting regional information on trends in impacts on tax base, the environment, the population, etc., that can inform land use and planning decisions made by local governments.
3. Developing case studies on the effects of uncoordinated land use and infrastructure planning decisions.
4. Developing models of how local land use and infrastructure decisions are typically made, discussing the current role of areawide planning bodies in these decisions, and how this relationship can be enhanced.
5. Encouraging uniform practices at the county level on the use of community level data and forecasts for use in county and local comprehensive plans.
6. Developing and facilitating uniform urban sprawl and environmental impact evaluation criteria for use in county and city comprehensive plans.
7. Developing and coordinating GIS based infrastructure planning tools for use in county and city comprehensive planning.

III. Detailed Discussion of Proposed Strategies

Strategy 11-1: Enhance coordination of the Transportation Plan and the Water Quality Plan development processes including technical planning coordination and policy development coordination.

NOACA continues to employ a four-step planning model to gauge future demand for vehicular and transit travel in the metropolitan area. The outputs of this model are estimates of VMT, VHT and average daily traffic (ADT) for links in the highway system and estimates of demand for other modes of transportation including transit. The transportation model produces these outputs based on forecasts of population, employment, households, and other parameters which are allocated to traffic zones from regional forecasts and translated into future demands on the transportation systems expressed as projected travel on the various modal links in the system in future years. The model's outputs are then used as input to a Congestion Management System analysis which evaluates the future traffic burden on the existing or future networks. The projected levels of service (LOS) in the metropolitan transit and highway arterial networks are used to aid in developing the region's transportation plan and transportation improvement program.

The model is only one tool employed by NOACA for identifying project needs. Since the region is not growing, the model frequently shows declining traffic and traffic dispersion indicating less congestion. However NOACA's transportation plan goal of more compact, mixed land use is not model driven. If realized, this goal would lead to more intense development and localized traffic congestion. This in turn would enhance prospects for increased mass transit usage and more frequent switching of trips to bicycles and walking. Similarly the transportation plan goal to enhance environmental conditions can affect the process of advancing and selecting projects for implementation that have positive environmental impacts. Similarly the Congestion Management System analytical process is not wholly driven by the model but relies on a system of monitoring and identification of existing problems.

State and local transportation project sponsors utilize projected levels of service and other considerations such as safety to develop a program of transportation infrastructure needs. NOACA consolidates the infrastructure needs of project sponsors in a regional long range program plan taking into consideration a number of factors, such as the agency's planning principles, system balance, etc., and evaluates the regional plan in terms of overall impacts on the environment and safety. Regional needs are then compared to available financial resources. The long range transportation plan must, by federal law, be financially reasonable. The adoption of the regional long range transportation plan qualifies infrastructure programs and projects for supportive consideration for state and federal funding assistance.

This regional transportation planning process appears to afford several opportunities for interaction with the water quality planning process.

1. Community level forecasts of population, employment and households to ascertain future demand for services can be utilized by both the transportation and water quality planning processes. This has been done with this 208 Plan Update. In the case of water quality these forecasts need to be disaggregated to a treatment plan service area which, however, are not coterminous with traffic zones.

Additionally there is a need to recognize that the goals of one plan can have an impact on the assumptions of the other plan. For instance, a transportation project may create the demand for development and commercial services that are not reflected in local

wastewater facility plans incorporated into the 208 plan. Likewise, the local wastewater facility plans that reflect a community's choice not to sewer for intense development may influence population and transportation demand forecasts.

Other changes to forecasting methods which could enhance their utility for water quality planning purposes include developing a clearer understanding of impediments to population or household increases in specific areas. Is a community already fully developed and thus unable to add to building stock? Are there areas that are off limits to development, that is, wetlands or permanent open space present? County and municipal planning departments must be engaged in such an analysis.

Similarly, are there extensions of population or household increase forecasts which could enhance our understanding of the hydrologic impact of development? For example, could estimates of pavement surface area associated with housing subdivisions typical of Northeast Ohio be developed? This could provide a tool for understanding increases in impervious surfaces to be expected with population growth in an area.

2. Utilization of transportation model outputs of vehicle miles traveled (VMT), vehicle hours traveled (VHT) will be of limited direct use for water quality planning purposes, but are used to assess the air quality effects of transportation infrastructure investments. Also these outputs can be used to illustrate past and projected changes over time in regional commuting patterns and the land use implications of these changes. The utilization of level of service projections for links in the highway system will also be of very limited direct use for water quality planning purposes. Are there indirect uses of these parameters?
3. The step of consolidating and evaluating the transportation infrastructure needs of project sponsors into a long range plan program would appear to offer an opportunity for assessing the water quality infrastructure service implications associated with capacity adding transportation infrastructure projects under consideration. Once adopted, the long range transportation infrastructure plan identifies locales in the region where future demand for wastewater infrastructure can be expected. This information could be fed back into the forecasting process to help in the zonal allocation step. See Table 11-1 for Transportation and Water Quality Planning Correspondence.

Strategy 11-1A: Refine NOACA project planning review procedures for federal aid transportation improvements to take into account a project's impact on the environment.

Project planning review encompasses four components: Project Planning Assessment (PPA), committee review, intergovernmental review and public involvement. The PPA is a NOACA staff function. PPA could be modified to afford a staff assessment on proposed individual projects to the end of encouraging projects to employ environmentally sensitive designs, to help assure mitigation for negative impacts, and to help encourage projects which are designed to correct environmental impacts of past transportation projects constructed before 1958.

Strategy 11-2: Compile and report regional information on trends in impacts on tax base, the environment, the population, etc., that can inform land use and planning decisions made by local governments.

NOACA is launching a project to develop indicators of sustainable development and environmental impacts for use as a benchmark in assessing the impact of the region's transportation plan. Indicators selected will be at the regional scale. There are certain indicators at the community scale that could be developed which can inform community level land use and planning decisions.

Strategy 11-2A: Conduct and encourage research to explore the impact of land use decisions on the integrity of water resources with the goal of identifying effective intervention strategies.

Current studies have identified a strong link between land uses and the environmental integrity of the water resources which emanate from those lands. However, current studies leave many questions unanswered. For example, Ohio EPA's work has identified that imperviousness, while a good general indicator of expected resource degradation does not correlate well enough to be the sole basis for water quality management planning. Ohio EPA's work suggests that for a given level of imperviousness there are ranges of environmental quality that can be achieved. For instance new developments with high quality natural riparian corridors may help to mitigate for development outside of the riparian area. Additionally, work is needed to quantify the impacts of various best management practices and to help determine when they are most cost effectively applied. In currently degraded urban streams that are undergoing restoration there is a need to establish relationships between land uses and attainable goals for the water resource (See Chapter 8 above).

Strategy 11-3: Develop case studies on the effects of uncoordinated land use and infrastructure planning decisions to better understand the environmental and urban sprawl consequences.

NOACA has completed two reports which address the issue of uncoordinated land use planning. The first is a five-county zoning map that indicates the development potential of the region from a current local land use policy perspective. An analysis of this map shows that many localities in the region have zoned for "wall-to-wall" development. This scenario is inconsistent with forecasted growth for the region.

NOACA has also completed a report on the potential impact of current zoning in New Russia Township in Lorain County. This report highlights the profound land use changes and impacts on public services that would occur were the Township to develop as zoned.

Additional analyses of this type would provide important information for local decision makers. These analyses could focus on the land use and environmental consequences of major transportation investments such as new freeway interchanges, commuter rail lines and park-and-ride lots.

Strategy 11-4: Develop models of how local land use and infrastructure decisions are typically made, discussing the current role of areawide planning bodies in these decisions, and how this relationship can be enhanced.

Examples abound in Northeast Ohio which could be examined more closely. These include the SR- 82/I-71 interchange makeover, the pending SR-615/I-90 interchange, the Chagrin Highlands project, and the US-422 extension into Geauga County. Case studies of these projects could be developed that would elucidate the decision making process and the areawide agency and state roles in that process.

Strategy 11-5: Encourage uniform practices at the county level on the use of community level data and forecasts for use in county and local comprehensive plans.

NOACA's Planning Advisory Committee is an excellent forum for exchange of information among county and city planning departments in the region. NOACA updates its forecasts on a 10-year cycle. The opportunity exists for systematic employment of NOACA's forecasts in county and local comprehensive plans.

County planning departments are the source of building permits for a county. This information could be provided to NOACA on a regular basis and compiled in a regional update report which could then be used by the planning staff in the counties and municipalities.

A need persists for a regional land use update. Consideration and funding should be given to engaging the county planning departments in a regional land use update effort.

The 2000 Census provides an opportunity for the development of a seven-county travel file which would provide invaluable data on work trip origins and destinations across MPO boundaries.

Strategy 11-6: Develop and facilitate uniform urban sprawl and environmental impact evaluation criteria for use in county and city comprehensive plans.

Collectively, the planning staff among the counties and cities in Northeast Ohio are a good source of planning ideas. These could be engaged in an effort to develop uniform urban sprawl and environmental impact evaluation criteria for use in county and city comprehensive plans, Issue 2 projects and Transportation Review Advisory Council (TRAC) recommendations.

The planning staff should be engaged in a peer review of comprehensive plans developed by member counties using evaluation criteria developed by them. This could be done under the auspices of the Planning Advisory Committee.

Strategy 11-7: Developing and coordinating GIS based infrastructure planning tools for use in county and city comprehensive planning.

There has been a revolution in the past several years in use of and access to GIS systems and files. NOACA's environmental program has been involved in an effort to compile critical GIS files that would be useful for water quality, environmental and land use planning purposes. One particular need is a tool that accommodates regional scale analysis of the impacts on water quality of potential developments.

Table 11-1: Enhancing Coordinated Transportation and Water Quality Infrastructure Planning at the Areawide Level

Transportation Plan Stages	Use for Transportation Planning	Use for Water Quality Planning
A. Forecasts	Future Travel Simulations	Future Sewer Service Needs: Volumes and Area (Note: once identified, future sewer service needs can be inputs to the Forecasts step).
B. Model Outputs	Input to CMS; Level of Service; Identification of Future Capacity Needs	Not of use
C. Draft Long Range Plan	Financial and Air Quality Assessment	Evaluation of Future Sewer Service Needs Associated with Capacity Projects
D. Approved Long Range Plan	Initiate Project Development	Evaluation of Future Sewer Service Needs Associated with Capacity Projects
E. Project Implementation	Environmental Assessments Public Involvement Right of way Needs Engineering Design	Evaluation of Future Sewer Service Needs Associated with Capacity Projects