



**Institutionalizing  
Smart Growth  
Principles  
into the  
Metropolitan  
Planning Process**







ASSOCIATION OF  
METROPOLITAN  
PLANNING  
ORGANIZATIONS

## **INSTITUTIONALIZING SMART GROWTH PRINCIPLES INTO THE METROPOLITAN PLANNING PROCESS**

*A PARTNERSHIP BETWEEN THE ASSOCIATION OF  
METROPOLITAN PLANNING ORGANIZATIONS AND THE U.S.  
ENVIRONMENTAL PROTECTION AGENCY*

*The Association of Metropolitan Planning Organizations (AMPO) and the U.S. Environmental Protection Agency (EPA) entered into a formal partnership in September 2000 to address smart growth in the metropolitan planning process. EPA awarded AMPO an Innovative Community Partnership (ICP) grant to carry out this project. EPA's ICP program awards funding to organizations to encourage innovation and promote tools to assist communities in addressing livability.*

### **PROJECT OBJECTIVE**

*MPOs have demonstrated a strong interest in applying smart growth principles to better coordinate transportation planning with local development decision-making (see text box). MPOs are the second largest type of grantee under the first three years of TEA-21's Transportation and Community and Systems Preservation (TCSP) Program, second only to counties/cities in the number of awards, and higher than state DOTs. This program provides funding for developing innovative strategies that use transportation to build livable communities. Additionally, several MPOs have requested to work with EPA to use the Agency's Smart Growth Index model as a transportation planning tool. This software is designed to display the environmental and quality of life impacts of one development scenario compared to another—including both transportation and land use measures.*

*The need to address land use and growth in the transportation planning process is gaining recognition. National statistics show that the population of our nation will have passed the 300 million mark by 2010, an increase of more than 25 million people over the 2002 population. The number of vehicles will increase by almost that amount. Ten million new homes will be built by 2010. These forces will combine to place more personal and work trips on transportation systems that are already overburdened in most metropolitan areas.*

*AMPO is a nonprofit, membership organization established in 1994 to serve the needs and interests of MPOs nationwide. AMPO offers its member MPOs technical assistance and training, conferences and workshops, frequent print and electronic communications, research, a forum for transportation policy development and coalition building, and a variety of other services. The nine-member AMPO Board of Directors is elected by the membership. The majority of the Board seats are held by local elected officials who are active members of their respective MPOs and play a vital leadership role in the affairs of AMPO. Full-membership in AMPO is open to all MPOs and an associate membership is available to all interested parties.*

*Few tools are in use today that allow these connections to be explored and to provide decision makers and planners with data on which to make difficult decisions. Many*

***MPOs are applying innovative approaches to examine these connections, but often lack the necessary technical capacity and financial resources to adequately utilize them.***

***About Metropolitan Planning Organizations***

***Federal highway and transit statutes require, as a condition for spending federal highway or transit funds in urbanized areas, the designation of MPOs which have responsibility for planning, programming and coordination of federal highway and transit investments. MPOs complete three activities as required by federal law. They develop a twenty-year long range transportation plan, they annually develop a three-year Transportation Improvement Program (TIP), and annually develop a plan of studies to determine transportation needs called a Unified Planning Work Program (UPWP).***

***In the 1970's, Congress required urbanized areas to establish MPOs that are composed largely of local officials. The purpose was to build agreements on transportation investments across metropolitan areas and better balance highway, mass transit and other transportation needs. State and local governments were required to gain MPO approval of TIPs and long range plans in order to obtain federal transportation funds.***

***With passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991, MPOs acquired increased responsibilities along with increased funding. ISTEA changed the focus of transportation and linked it to national goals such as social equity, clean air, and economic progress. The Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21), passed in 1998, upheld and confirmed this approach to transportation planning.***

***Through ISTEA and TEA-21, the nation's transportation policy direction is being implemented through a state and local partnership that takes place at the MPO level. This partnership, together with the participation of the public, is leading to transportation decision making that better serves the needs of people across metropolitan areas.***

***At the same time, the metropolitan transportation planning process is an ideal***

***place to address smart growth. Although environmental considerations are addressed at the project level during environmental impact statement and NEPA analyses, it is typically too late at that point to make improvements beyond the scope of that project. In contrast, MPOs conduct planning for entire metropolitan areas. The MPO process brings together the major stakeholders within metropolitan areas to discuss and decide upon a range of issues that affect the form of growth that will take place in the near and long term.***

***PROJECT APPROACH***

***This project provided a means for interested MPOs to work with EPA to apply smart growth principles to the transportation planning process. Under the project, EPA provided technical assistance and informational resources to four volunteer MPOs interested in addressing smart growth in their established planning processes. Through this approach, the participating MPOs were able to further their goals of addressing smart growth. In addition, a steering committee comprised of EPA, Federal Highways Administration, and Federal Transit Administration staff provided guidance and technical input to the process.***

***The four participating MPOs are:***

***Charlottesville-Albemarle MPO in Charlottesville, Virginia;  
Dover-Kent MPO in Dover, Delaware;  
Hillsborough County MPO in Tampa, Florida; and  
Northwestern Indiana Regional Planning Commission in Portage, Indiana.***

### ***EPA's Development, Community, and Environment Division***

*EPA's Development, Community, and Environment Division (DCED) works with states and communities to find ways to grow while minimizing environmental and health impacts. Studies have demonstrated that smart growth development approaches have clear environmental benefits, including improved air and water quality, increased wetlands preservation, more brownfield sites cleaned and reused, and increased preservation of open spaces. To move smart growth forward, DCED works with federal agencies, state and local governments, communities, and the development, banking, and other private business sectors to:*

- 1. Identify areas of new policy initiatives;*
- 2. Facilitate collaboration and communication between varied sectors;*
- 3. Provide technical assistance; and*
- 4. Create incentives for increasing the efficiency of environmental protection.*

***Primary Contacts:***

*Division Director -- Geoff Anderson, 202-260-2769.*

*Senior staff -- Tim Torma, 202-260-5180, Brett Van Akkeren, 202-260-6914.*

*Lead secretary -- Carolyn Inge, 202-260-9609.*

***Three primary participants were involved over the course of this two-year the project: AMPO, EPA, and the four MPOs. AMPO kicked off the project by soliciting MPOs who were seeking assistance in applying smart growth principles to their planning processes and who welcomed EPA's involvement with their technical approaches. Several MPOs desired to participate, but the number had to be kept low to make best use of resources and staff time.***

***AMPO's role was to work with the MPOs to identify the desired activities to be undertaken, develop work plans, coordinate the involvement of EPA, and document the process and findings. EPA technical staff from the Development, Community, and Environment Division (DCED) worked directly with the MPOs to focus on the tasks, brainstorm ideas, gather resources, and review MPO data. EPA staff shared their knowledge of smart growth activities underway across the country with MPO staff.***

***This approach of working in partnership to focus on discrete tasks identified by the MPOs represents a new approach to problem solving for MPOs and EPA. Traditionally,***

***MPOs have recognized EPA as having regulatory authority over transportation planning and air quality. However, EPA's smart growth program is non-regulatory, and works to help communities by providing tools and technical assistance, developing information and policies, performing research, and conducting outreach.***

### ***PARTICIPATING MPOS***

#### ***Charlottesville-Albemarle MPO, Virginia***



***Thomas Jefferson  
Planning District  
Commission***

***Geographic Area: City of Charlottesville  
and County of Albemarle, 726 sq. miles  
2000: 79,236 (MPO area)  
[www.avenue.org/tjpd](http://www.avenue.org/tjpd)***

### ***Project Goals and Outcomes:***

***Build on existing project (Eastern  
Planning Initiative) being developed  
under a TEA-21 TCSP grant.***

***Implement EPA's Smart Growth INDEX  
tool to:***

*Analyze effects of land use plans and timing of infrastructure development. Link the MPO's long range plan with local land use plans.*

*The Charlottesville MPO has a great deal of experience in terms of modifying technical tools and planning processes. In the 1990's the region developed policies on traffic reduction and land use/transportation planning through the MPO long range plan and a regional Sustainability Council. The MPO's 1998 long range plan identified city street congestion due to metropolitan area growth as a critical problem, and determined a need to model and plan for combined road, transit and land use alternatives. The MPO proposed in 1998-99 development of an MIS on this topic, centered on a proposed eastern bypass. The MIS never materialized, but the concept was repackaged for a successful TCSP grant.*

*The TCSP project, titled the Jefferson Area Eastern Planning Initiative, kicked off in January 2000. The project will culminate in a modeling tool called CorPlan that is capable of evaluating transportation and land use options. CorPlan will be used to develop a 50-year transportation and land use vision for the five-county region surrounding Charlottesville.*

*The CorPlan model involves mapping the entire region in 20 categories of Community Elements (CEs), which were developed by inventorying the region's characteristics. CEs range from rural agricultural (single use, lowest density) to urban mixed use (multiple use, highest density). Each CE has a spreadsheet of data developed by averaging real data from the region on percent of land dedicated to streets, parking, open space, square footage of various building types and uses. Each also has*



*average trip lengths and travel modes of households*

*The MPO sees CorPlan as an opportunity to encourage development of comprehensive plans from a regional perspective and also set the stage to improve connection of local land use plans to the statewide transportation planning process.*

*Under this AMPO-EPA project, Charlottesville is focusing on implementation and integration of EPA's Smart Growth INDEX tool (SGI) with CorPlan. This will allow the MPO to link the long range transportation plan with the land use plans being developed by local jurisdictions in the planning area. SGI is a GIS-based tool for analyzing alternative development patterns. (See*

*Appendix B for more information about SGI.) It produces indicators of environmental, transportation, and community performance and allows easy comparison across alternatives via maps and tables. SGI can be used to estimate the relative impacts of regional land use transportation policies. For transportation performance, SGI includes a simpler version of the conventional four-step urban travel demand model, and estimates changes in vehicle-miles of travel (VMT) and trips. This simpler model allows faster production of alternatives and results. The MPO intends to use the landuse plans developed with CorPlan as inputs to SGI.*

*By implementing SGI with CorPlan, the Charlottesville MPO will help the region develop transportation indicators for the Sustainability Council, enhance the available set of planning tools, and document experience to share with other communities that are interested in comparable approaches.*

*EPA worked with the MPO staff during the selection of SGI and attended technical meetings to present information on SGI and answer questions. Once the MPO approved the use of SGI, EPA worked with the MPO to obtain a site license and begin use of the model. EPA continues to serve as a technical resource as the MPO moves forward with CorPlan and SGI.*



**Dover/Kent MPO,  
Delaware**

**Geographic Area: Kent  
County, 800 sq. miles  
2000 Population:  
126,697**

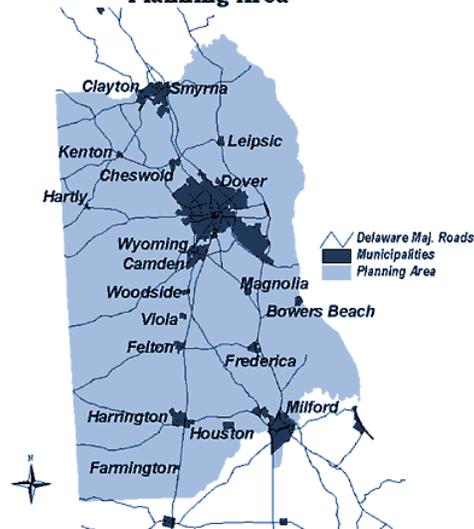
[www.doverkentmpo.org](http://www.doverkentmpo.org)

**Project Goals and Outcomes:**

- Provided visual examples of “attractive” high density development.*
- Developed list of more than 30 land use software tools.*
- Assisted with selection of land use software to use for LRP development*

*The Dover/Kent area is a small, somewhat rural area that is part of a large ozone nonattainment area (Philadelphia). The MPO is facing challenges meeting transportation conformity due to rising VMT resulting from growth in the Dover community. Dover, with a significant amount of land available for new development, is interested in policies that will slow VMT growth in the mid- to long-term, and tools that will allow the MPO to quantify those policies to present information to the public and to decision-makers.*

**Dover/Kent County MPO  
Planning Area**



*With this goal in mind, the MPO set out to examine the transportation effects of increasing density of development as a means to prevent sprawl conditions. Limited resources at the MPO prevent effective use of staff time on initiatives such as this, as staff is fully dedicated to meeting*

*routine transportation planning requirements. EPA assisted the MPO by gathering visual examples of attractive higher-density development from around the country that may be appropriate for a community like Dover. The MPO can use these examples in outreach to the public and decision-makers as discussions about higher density are held.*



*As a next step, the MPO pursued the use of a land use or sketch planning tool to take a look at longer term impacts of current and alternate transportation and development patterns. The MPO was interested in a tool that requires a relatively low level of staff resources to operate. EPA consulted with Dover to identify criteria that would be used in tool selection and developed a matrix of 34 currently available software tools to assist with land use analysis. The matrix includes the model name, company, cost, website address, tool type, and current users known to EPA.*

*Armed with this information and the ideas of MPO representatives, the MPO held a Smart Growth Measurement Workshop. EPA attended this workshop and presented information on the tools and experiences of other MPOs across the country and assisted the MPO in narrowing to choice to two models – either CorPlan or SGI. The MPO will use the tool to analyze scenarios in preparation of a future long range plan update.*

### Hillsborough County MPO

**Geographic Area: Hillsborough County, 1,266 sq. miles**

**2000 Population: 998,948**

**[www.hillsboroughmpo.org](http://www.hillsboroughmpo.org)**

### Project Goals and Outcomes:

*Develop smart growth performance measures for long range plan update. Assist with survey data analysis to identify/quantify mode shifts in sub-areas of the metropolitan region.*



*Several activities related to smart growth were underway in the Hillsborough MPO region during the project timeframe. The MPO was in the process of developing performance measures to assess the transportation system and guide the long range plan update. An urban service boundary (USB) exists in the region whereby limited public infrastructure is provided for development that occurs outside the USB. The county's Planning Commission proposed a "tiered" development framework offering incentives for in-fill development to complement restrictions on development outside the USB. Hillsborough County also approved a sector plan embodying neo-traditional development to foster more compact growth.*

*Under this project, the MPO set out to further develop many of the transportation objectives in the existing long range plan. The MPO worked with EPA to identify and gather objectives and performance measures*

*related to smart growth and obtain technical feedback on feasibility. EPA researched performance measures used in long range plans around the country and compiled a matrix for the Hillsborough MPO. The performance measures focused on livability and mobility indicators at the system and corridor levels. The MPO used this input as the goals and objectives were developed for the Plan update, which was completed during the course of this project.*

*The MPO's travel demand model does not capture the full range of non-motorized trips occurring in the MPO area. The MPO collected travel survey data to re-validate the model. In particular, new household travel survey data is available for non-motorized trips, including walk and bicycle "tours" that may begin and end at home for recreation or exercise. EPA compiled a list of suggested changes to four step travel demand models to better account for pedestrian and bicycle trips.*

**Northwestern Indiana Regional Planning Commission, Indiana**

**Geographic Area:**  
La Porte, Lake,  
and Porter  
Counties, 1,761  
sq. miles  
**2000 Population:**  
741,460  
[www.nirpc.org](http://www.nirpc.org)



**Project Goals and Outcomes:**

*Provide guidance as MPO begins outreach to link Plan update with quality of life.  
Assist with implementation of watershed management plan.*

*NIRPC is the MPO for the Northwest portion of Indiana and is part of the greater Chicago metropolitan area. In the MPO area, some redevelopment is underway in the older urban areas, with sprawl development occurring in less developed areas. The 2020 Regional Transportation Plan contains smart growth initiatives, some land use measures, and a focus on redevelopment of the urban core. Federal transportation project funds are focused on regional priority corridors and approximately 70% are spent to preserve and maintain the existing system. That system is largely in the urbanized area, concentrated in the urban core. However, development pressure exists outside of the urban area. According to MPO staff, the metropolitan area is "ready" for smart growth and a focus on land use, and the MPO is in the early stages of addressing smart growth in the transportation planning process.*

*NIRPC completed a transit needs analysis, which recommended enhancing and expanding the transit system. NIRPC has also established a watershed alliance and developed a watershed management plan that will utilize best management practices to address nonpoint source pollution concerns and bring about desired changes, coordinate watershed planning efforts already underway in the region, develop a watershed inventory, and produce a written plan.*

*NIRPC is a member of the Quality of Life Council, a regional group that has broad representation from area elected officials, business leaders, environmental groups, labor representatives, religious groups, and others.*

*Under this project, MPO and EPA staff built on these MPO initiatives to link growth and*

*transportation planning. Midway through the project, NIRPC held the first in a series of meetings to identify how the transportation plan can be used to enhance “quality of life” in the region. With the MPO’s lead, EPA and FHWA staff planned this meeting. EPA brought ideas that the Agency gathered from other parts of the country. The parties defined the meeting agenda, invitee list, form and content of invitation letter, roles and responsibilities of the participants, and desired outcomes. EPA and FHWA traveled to attend the meeting and provide support to NIRPC. It was a successful initial meeting in that it brought people together to address the plan update that had not yet met face to face, but who need to actively participate if the plan is to address quality of life. These parties will continue to meet.*

*EPA also helped NIRPC with implementation of a watershed management plan. The NIRPC area is discussing development of an urban growth boundary based on watershed principles, which will impact transportation investments and vice versa. EPA compiled a resource document that describes tools and resources for examining water quality impacts of*

*transportation and development scenarios, information on state and local watershed management programs, journal articles regarding watershed protection techniques, and additional EPA resources.*

## **CONCLUSIONS**

*The project involved bringing together technical experts from the federal government and MPOs to focus on concrete steps in the transportation planning process where smart growth principles and tools can be implemented. Some common observations were seen in this work with four different MPOs:*

*MPOs need technical tools to do better planning to incorporate smart growth concepts. They also need non-technical tools, including reasonable policy options to achieve change in the near and long term, and effective marketing and outreach to build constituents for smart growth initiatives.*

### ***The Federal Role in Smart Growth***

*Development patterns and practices have significant impacts on the achievement of national economic, transportation, and environmental goals. Environmentally, development patterns influence air and water quality, climate change, and brownfields redevelopment. Urban run-off is the leading contributor to estuarine pollution and the third leading contributor to pollution of our nations lakes. USDOT attributes a third of the recent rises in vehicle miles of travel to increasingly spread out development patterns increasing auto air pollution. While farm and forest lands are consumed, more than 400,000 brownfields go undeveloped. Development patterns have a clear impact the nation's ability to achieve environmental goals.*

*Development decisions have always been the purview of local and state governments and should remain so. However, federal actions have had a profound impact on those decisions and ultimately on the shape of communities nationwide. In a 1999 survey conducted by the Fannie Mae Foundation, urban experts were asked to rank the top 10 influences on the American metropolis over the last 50 years. The two top-ranking influences cited were the 1956 Interstate Highway Act and the Federal Housing Administration's mortgage financing program. The Housing Act of 1949 was ranked fourth. "The single most important message," according to this report, "is the overwhelming impact of the federal government on the American Metropolis, especially through policies that intentionally or unintentionally promoted suburbanization and sprawl." Now, as localities and states pursue smart growth, they expect the federal government to be a partner in their efforts.*

***The Federal Role:*** *The federal government can provide assistance to state and local governments to address the multiple and varied issues associated with dispersed development.*

*Development decisions should be made at the local level. The EPA cannot and should not be a national or regional development board. EPA can help states and communities realize the economic, community, and environmental benefits of smart growth by:*

*Providing information, model programs, and analytical tools to inform community decisions about growth and development*

*Working to remove federal barriers that hinder smarter community growth*

*Creating new resources and incentives for states and communities pursuing smart growth*

***Support for Federal Action:*** *A GAO survey of local officials indicated strong support for federal assistance on smart growth. Of those surveyed, 84% percent of cities and counties support or strongly support federal incentives for local governments to pursue smart growth. More than 75% of this group support or strongly support targeting of federal funding for regional water quality planning. Greater than 70% support or strongly support increased federal technical assistance to help communities forecast growth patterns and the impact of development alternatives. And, the vast majority want improved federal coordination.*

*Process is important. The initial focus for most of the tasks identified by the MPOs was on technical tools and methodologies. It became clear that when furthering an initiative at the MPO level, the process for making decisions about those tools and the objectives the MPO*

*hopes to accomplish by using them are just as important as the tools themselves. This was an important learning opportunity for those outside the MPO process, as they saw first hand the decision-making process that MPOs must go through and the consensus that must be*

*reached. These are time-consuming activities that must take place within the structure and timeframe of TIP and long range plan updates.*

*Air quality is a primary motivator in efforts to quantify the impacts of development policies. MPOs want to know not only how smart growth can improve mobility, but also what the VMT reductions and air quality benefits are.*

*Local conditions matter – local regulations, policies, tools, zoning, political will, public acceptability, local champions, relationships with state DOTs and planning departments – all these factors effect what the MPO can accomplish and how they go about it. And they differ significantly from one area to another.*

*EPA continues to learn about the MPO planning process, the constraints, the limits of current tools, and the procedures for starting new initiatives.*

*These tasks accomplished under this project provide examples of what planning can accomplish at the metropolitan level when thinking outside the box. The project provided a more comprehensive assessment of planning tools and methodologies available to MPOs, and identified some of the barriers faced in incorporating these principles.*

*AMPO and the participating MPOs are grateful to EPA for providing the resources to pursue these initiatives. By working in partnership with the federal government and among MPOs on the development of their required documents, smart growth plans and practices will continue to be infused into the institutional structure of the MPOs, allowing them to pursue smart growth approaches that are appropriate for their metropolitan areas. As this practice expands, benefits will accrue in the form of reduced vehicle emissions, VMT, number of vehicle trips, trip lengths, increased mode shift, and reduced congestion levels.*

Appendix A: Resource List



Beimborn, Edward and Rob Kennedy et al. "Inside the Blackbox: Making Transportation Models Work for Livable Communities." Citizens for a Better Environment. Milwaukee, WI. 1996.

"Developing Brownfields with Federal Transportation Funds", AMPO and EPA, February 2001.

[http://smartgrowth.org/pdf/brownfields\\_tea21.pdf](http://smartgrowth.org/pdf/brownfields_tea21.pdf)

"Getting to Smart Growth: 100 Policies for Implementation", Smart Growth Network and International City/County Management Association (ICMA).

<http://www.smartgrowth.org/pdf/gettosg.pdf>

Numerous Publications <http://www.epa.gov/dced/publications.htm>

"Recognizing the Air Quality Benefits of Local and State Land Use Policies and Projects in the Air Quality Planning Process", EPA420-P-00-002, June 2000.

URL <http://www.epa.gov/oms/transp/trancont/p00002.pdf> linked from

<http://www.epa.gov/oms/transp/traqsusd.htm>.

"Comparing Methodologies to Assess Transportation and Air Quality Impacts of Brownfields and Infill Development", by ICF Consulting, Interim Deliverable for EPA Contract 68-W-99-054 WA 0-01, dated 3/22/2000.

URL <http://www.epa.gov/oms/transp/trancont/0324infi.pdf> linked from

<http://www.epa.gov/oms/transp/traqsusd.htm>.

"The Transportation and Environmental Impacts of Infill versus Greenfield Development: A Comparative Case Study Analysis", by Hagler Bailly with Criterion, EPA Publication 231-R-99-005, dated 10/1/1999.

Contact Christopher Forinash at EPA for copies: [forinash.christopher@epa.gov](mailto:forinash.christopher@epa.gov).

"Transportation and Environmental Analysis of the Atlantic Steel Development Proposal", by Hagler Bailly, EPA, dated 5/10/1999.

URL [http://www.epa.gov/ProjectXL/atlantic/as\\_51099.pdf](http://www.epa.gov/ProjectXL/atlantic/as_51099.pdf) linked from

<http://www.epa.gov/ProjectXL/atlantic/page1.htm>.

"Land Use Impacts of Transportation: A Guidebook", NCHRP Report 423A.

Available from TRB Bookstore.

"Data Collection and Modeling Requirements for Assessing Transportation Impacts of Micro-Scale Design", by Parsons Brinckerhoff, FHWA DTFH61-95-C-00168 Task Order 7, dated 3/2000. Available at: <http://www.bts.gov/tmip/abstracts/landuse.htm>

"Land Use Forecasting Case Studies: A Synthesis and Summary", by Parsons Brinckerhoff, FHWA DTFH61-95-C-00168 Task Order 4, dated 2/17/2000.

*Available at : <http://www.bts.gov/tmip/abstracts/landuse.htm>*

*"Integrated Urban Models for Simulation of Transit and Land Use Policies: Guidelines for Implementation and Use" TCRP report TC048, Available at TRB Bookstore:  
[http://209.43.39.201/acb1/showdetl.cfm?&DID=92&Product\\_ID=3105&CATID=1&series=14](http://209.43.39.201/acb1/showdetl.cfm?&DID=92&Product_ID=3105&CATID=1&series=14)*

*"Transportation Case Studies in GIS." Studies performed under the direction of the Travel Model Improvement Program (TMIP). US DOT, FHWA. <http://www.bts.gov/tmip/gis.htm>*

*For hundreds of reports on all aspects of modeling, visit the Travel Model Improvement Program (TMIP) website at <http://www.bts.gov/tmip/>*

*Appendix B - Smart Growth INDEX model*

*EPA's Office of Policy Economics and Innovation has developed the Smart Growth INDEX model with Criterion Planners as a GIS sketch model for simulating alternative land-use and transportation scenarios, and evaluating their outcomes using indicators of environmental performance. Sketches can be prepared and analyzed for:*

- Regional growth management plans.*
- Comprehensive land-use plans.*
- Transportation plans.*
- Neighborhood plans.*
- Land development proposals.*
- Environmental impact reports.*
- Special projects, e.g. brownfield redevelopment, annexation, etc.*

*Smart Growth INDEX is distinguished by an internal travel demand submodel that can estimate transportation outcomes from land-use changes without the use of a traditional four-step transportation model. It can also run in tandem with TRANSCAD and MINUTP transportation models.*

*Smart Growth INDEX scores its sketches with a set of 24 performance indicators that measure such outcomes as land consumption, housing and employment density, proximity to transit, pollution emissions, and travel costs. Land allocations are also tabulated for land-use classes and local jurisdictions.*

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