

The Downtown Hartford Transportation Project: Public-Private Collaboration on Transportation Improvements

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ABSTRACT

The implementation of innovative approaches to managing transportation resources in downtown areas has frequently proven difficult. In addition, traffic, transit, parking, pedestrian, goods delivery, urban design, and economic development concerns typically are addressed in isolation rather than as part of an integrated program. The Downtown Hartford Transportation Project (DHTP) was a collaborative effort by public and private sector organizations to plan and implement a broad range of actions in anticipation of unprecedented levels of building and employment growth in the downtown. The DHTP represents a unique model of a transportation planning process--it is multimodal in scope, involves both physical and management-oriented improvements, and features a process of consensus building about solutions that served to smooth the transition between planning and implementation. The key features that make the Downtown Hartford Transportation Project unique and contributed to its success are described. These features include the type and level of public and private sector participation, the definition of the project's scope, the process of achieving consensus on solutions, and the use of information and technical analysis to guide decisions. Based on the experience of the DHTP, a set of guidelines is presented for following the Hartford example. It is concluded that although unique conditions in Hartford precipitated the DHTP, many features of the DHTP could be successfully adapted in other locales that want to better manage their transportation resources.

Hartford, the capital of Connecticut, has a population of 135,000 and is located at the junction of two interstate highways (I-91 and I-84) in the central portion of the state. Hartford is the home of several large insurance companies, including Aetna (more than 13,000 employees) and Travelers (9,000 employees). Hartford's business community has long been active in downtown transportation issues--due both to a concern for employee benefits in a highly competitive environment, and to a recognition of the importance of good access and a pleasant downtown to maintaining retail vitality. Aetna's vanpool program, initiated in 1977, now operates 135 vans and is one of the largest employer vanpool programs in the country. In 1980 the Greater Hartford Ridesharing Corporation was formed. Supported by public and private sector funds, it has a membership of more than 40 companies in the Hartford area. The history of public-private cooperation in Hartford laid the groundwork for the Downtown Hartford Transportation Project.

PROJECT OVERVIEW

The Downtown Hartford Transportation Project (DHTP) was organized to examine the likely impacts of unprecedented downtown growth on traffic congestion, parking availability, and the street environment in an era of decreasing availability of transportation funding. Jointly sponsored by major employers and the city of Hartford, the project's purpose was to develop and trigger implementation of a comprehensive program of actions to address Hartford's anticipated

downtown transportation problems and to better manage the overall transportation system throughout the 1980s.

The DHTP was unique in many respects. Unlike more conventional, single mode transportation planning efforts, it examined all components of downtown transportation as an interactive system: traffic, parking, transit, pedestrian flow, and goods delivery. The implementation program that has been developed is comprehensive as well, including physical projects, such as crosswalk striping and traffic signal synchronization; management actions, such as peak-hour parking restrictions and work schedule changes; ongoing policy tools, such as requirements for transportation access plans for new developments; and organizational changes, such as the establishment of a Transportation Management Organization to coordinate private sector transportation actions. Most important, the DHTP has been conducted with a special concern for producing a widely accepted and implementable plan of actions.

Impetus

With more than 4 million ft² of scheduled new downtown development, both the city and the corporate community were concerned that Hartford's existing transportation facilities were inadequate to comfortably serve this much additional activity. Without improvements to the transportation system, downtown growth was likely to result in increased traffic congestion and air pollution, a worsening of an already tight parking situation, and a hostile pedes-

trian environment--all of which could make Hartford a less desirable place to work and shop. In fact, a major downtown department store announced plans to relocate to the suburbs, citing inadequacy of the transportation system as a major reason.

It was clear that there were no simple solutions to this dilemma--the shrinking availability of federal funds for major investments in street and transit facility expansion precluded relying on "big fixes." Although a number of efforts were underway in both the public and private sectors to manage more efficiently the use of existing transportation capacity (for example, carpool and vanpool programs and traffic engineering techniques), these efforts were not sufficiently aggressive or coordinated to produce the kind of results needed to make a dent in traffic or parking problems. Further, there was a sense of frustration in both public and private sectors that past transportation planning efforts were not producing results in a reasonable time frame, due both to a lack of general consensus about what should be done, and to the cumbersome bureaucratic process necessary for getting projects off the shelf.

In the summer of 1981, members of the corporate community acted on these concerns and initiated discussions with the city about conducting a comprehensive downtown transportation project, under joint public-private direction. The project was to develop a coordinated set of downtown transportation policies, an action plan of downtown traffic, parking, transit, pedestrian, and goods movement improvements, and an improved system of transportation project management. By January 1982, the project was underway, supported by \$150,000 in private sector funds, and in-kind contributions from the city and other public agencies.

Accomplishments

The Downtown Hartford Transportation Project produced a set of goals, policies, and actions that the city and the corporate community have endorsed and that currently are being implemented. Clear roles and responsibilities for implementing each recommended action have been set forth and are forming the basis for currently ongoing activities. Perhaps most important, the project has established working relationships between the public and private sectors that are proving to be crucial not only for implementation of the action plan, but for future coordinated transportation planning and decision making in Hartford.

Implementation of the agreed-on policies and actions (see Table 1) was projected to enable the planned growth in downtown employment to be accommodated without a corresponding amount of growth in vehicle trips to the downtown. Because there is relatively little potential to increase the street capacity in Hartford through either construction or operational changes, emphasis instead was placed on management of the existing downtown transportation system, including actions to limit the increase in single occupant commuter trips and to encourage a wide range of more efficient travel choices. The goals of these actions is to increase central business district (CBD) work trips by transit and ride-sharing modes from the present 52 percent to 61 percent over a 3-year period (see Figure 1). If this is achieved, a traffic analysis indicates that there will be no increase in the number of intersections experiencing serious delays. In the absence of the recommended actions, traffic at virtually every downtown intersection is projected to move more slowly than today, with almost twice as many inter-

TABLE 1 The Downtown Hartford Transportation Action Plan

Recommended Actions to be Implemented within a Year	Recommended Actions to be Implemented by End of 1984
<p>Public Sector</p> <ul style="list-style-type: none"> Peak hour parking prohibitions Improved enforcement at bus stops Peak hour delivery prohibition Bus stop consolidation Uniform Signing Designate streets pedestrian, vehicular, both Restrict turns Transit fare-free zone Increase on-street meter rates Restructure city parking facility rates Zebra-stripe cross-walks at major intersections Designate City Responsibility Center <p>Private Sector</p> <ul style="list-style-type: none"> Restructure private parking facility rates Strengthen Downtown Council <p>Joint Public/Private</p> <ul style="list-style-type: none"> Develop off-street delivery/pickup areas Develop off-street carpool staging areas Flextime/Staggered hours Establish target modal shares Main/State/Asylum pedestrian/transit improvements Adopt streetscape design guidelines Develop Main Street between Pearl and Gold as a streetscape prototype Develop Transportation Management Organization 	<p>Public Sector</p> <ul style="list-style-type: none"> Signal interconnection Time of day signal phasing Eliminate selected exclusive pedestrian phases Classify streets for parking uses Require site access plan for zoning approval Improve on-street parking enforcement (increased tickets) <p>Private Sector</p> <ul style="list-style-type: none"> Begin phase-out of employee parking subsidy Begin phase-in of travel incentives <p>Joint Public/Private</p> <ul style="list-style-type: none"> Strengthen multi-passenger alternatives Hartford Federal block pedestrian improvements Implement target modal share program <p>Recommended Actions to be Implemented in 2-5 Years</p> <p>Public Sector</p> <ul style="list-style-type: none"> Computerized signal system Priority bus lanes <p>Joint Public/Private</p> <ul style="list-style-type: none"> Develop remote parking facility Main Street streetscape improvements Civic Center/Allyn St. connector Bushnell Park gateways

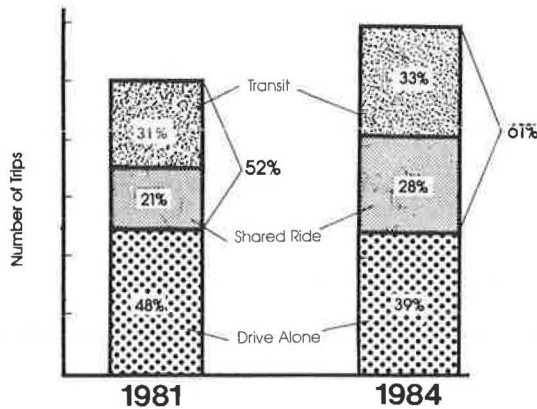


FIGURE 1 Target modal shares.

sections causing serious delays during the afternoon peak. Implementation of the action plan would provide 4,000 short-term parking spaces in the downtown, and at the same time continue to provide for adequate commuter parking (Figure 2). Currently, all but 2,000 of the 18,000 off-street parking spaces are full by 10 a.m. and only a handful are available at noon.

Implementation of the action plan will contribute to other important city, state, and federal objectives, in addition to economic growth. For example, although the project was not directly aimed at improving Hartford's air quality, the recommended actions were estimated to reduce downtown work-trip-related carbon monoxide and hydrocarbon emissions by 14 percent relative to what otherwise would occur in 1985, as well as contribute to decreased fuel consumption.

Of course, the individual recommendations that were adopted during the course of the DHTP were by no means new or unique. Many cities have instituted some form of access planning for new development--particularly in relation to granting reductions in minimum parking requirements in exchange for Transportation System Management (TSM) commitments (1). Groups of employers or nonprofit organizations representing the private sector have become increasingly involved in transportation issues during the past 5 years (2). Traffic and parking management techniques have long been applied in downtown areas. The notable aspect of the DHTP is not the individual projects that were recommended, but the nature of the planning process that occurred and that permitted a coordi-

nated program of these individual actions to be adopted.

The DHTP provides an important model of a downtown transportation planning process that is collaborative and action-oriented. Key aspects of the DHTP--the type of public and private sector participation in the project, its scope of work, the process of "consensus-building" about actions that occurred, and the kinds of information and technical analysis used--are applicable to most downtown areas where significant new economic activity is occurring.

KEY FEATURES OF THE DOWNTOWN HARTFORD TRANSPORTATION PROJECT

Participation

There have been three types of "core" participants in the DHTP: representatives of Hartford businesses, public agency personnel, and consultants (Table 2).

Although the project was initiated and primarily funded by the private sector, funding was administered by the city, and responsibility for project management was assigned to the city Public Works Department. The city's project manager, however, worked out of a neutral territory--a special project office provided by one of the participating companies.

Because past transportation planning efforts had suffered from a lack of consensus about recommended actions and from a lack of emphasis on implementation, the project was set up from the beginning to involve those agencies and organizations whose cooperation, support (either technical or political), or resources might be needed for implementation of the recommended action plan. Within the private sector, the Chamber of Commerce, the Downtown Council (a chamber-sponsored group focusing specifically on the downtown), and the Greater Hartford Ridesharing Corporation were and are key participants. These organizations were responsible for coordinating the input from the many businesses and groups that actively participated in the project. Within the public sector, participants included the city manager, the city council, and key department heads within the city of Hartford, the Greater Hartford Transit District, the Connecticut Department of Transportation, and the Capital Region Council of Governments.

A team of five consulting firms was assembled to perform the technical work with collective expertise and experience in transportation planning, traffic

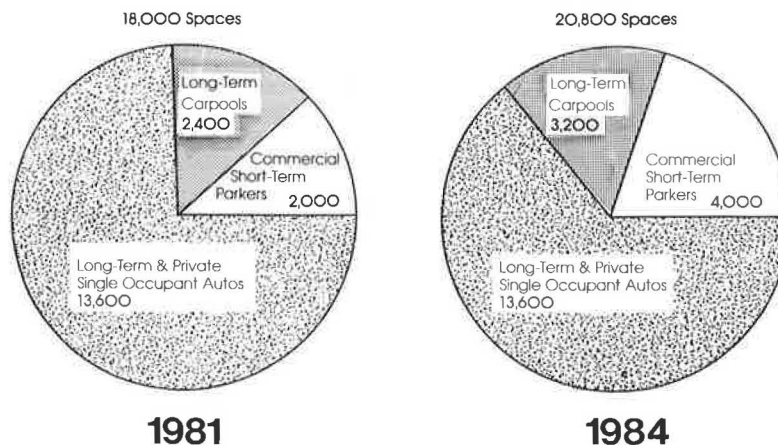


FIGURE 2 Target parking supply and use.

TABLE 2 Major Participants in Hartford Transportation Decisions

<u>City</u>	<u>Regional</u>
Court of Common Council City Manager Public Works Director City Engineer Transportation Services Engineering Services Management Services Operating Services	Capitol Regional Council of Governments (CRCOG) Policy Board Transportation Committee Staff
Planning Director Transportation Planner	Greater Hartford Transit District Board Staff
Finance Director Purchases & Insurance Accounting & Control Pre-Audit Financial Management	<u>Federal</u> Federal Highway Administration Division Office Regional Office
Office of Management & Budget Police Department Traffic Division	Urban Mass Transportation Administration (UMTA) Regional Office
Fire Department Traffic Signal Maintenance	Environmental Protection Agency
Development Commission Parks and Recreation Human Relations Commission Redevelopment Agency Corporation Counsel Division on Aging Grants Administration	<u>Public/Private Partnership</u> The Greater Hartford Ridesharing Corporation
	<u>Downtown Council</u> Board of Directors Staff
<u>State</u> Governor Office of Policy & Management Bond Commission Legislature Attorney General Department of Transportation Commissioner Bureau of Planning & Research Bureau of Public Transportation Bureau of Highways Municipal Systems Bureau of Administration Consultant Negotiation Board	<u>Chamber of Commerce</u> Board of Directors Executive Committee President-Staff Transportation Committee Highway Subcommittee Employer Initiatives Subcommittee Transit Subcommittee
State Traffic Commission Public Transit Authority	<u>Downtown Mobility Task Force</u> <u>Retailers</u> <u>Employers</u>

to produce a well-defined plan of action. Moreover, it allowed for substantive input from the area merchants and employers, which was important to the development of a consensus about the action plan. In contrast to more commonplace corridor-level and regionwide transportation studies, which often include the downtown only as one component, the DHTP has been able to involve both important constituents for actions and key implementors of these actions. The result has been a transportation project equipped to develop realistic transportation policies and to put into practice management-oriented as opposed to capacity-expansion strategies for coping with downtown growth.

The DHTP is multimodal in scope because the expected increase in downtown activity will have impacts on all components of the downtown transportation system--parking, traffic, transit use, pedestrian activity, and goods delivery needs will all increase. Because these subsystems are so closely interrelated in a compact downtown area, addressing the expansion needs of one will have impacts on the others. For example, long-standing recommendations to improve pedestrian conditions on two major retail streets--Main and Asylum--would reduce traffic flow and transit capacity, while the potentially most effective signal rephasing improvement would have negative impacts on pedestrian movement. Development of an integrated plan of improvements and management strategies for all transportation system components allows potential conflicts among different users of street and sidewalk space to be addressed explicitly and provides an opportunity to develop coordinated and mutually reinforcing improvement strategies. The DHTP recommended an integrated street classification system that accommodates both traffic and pedestrian goals, allowing measures to increase capacity on certain streets, while restricting traffic and parking during peak hours on streets with heavy pedestrian activity (Figure 4).

Another important aspect of the DHTP's multimodal approach is that it includes policies for managing future growth in trips by encouraging use of the most efficient transportation modes, rather than merely planning around projections of unconstrained demand for each individual mode. For example, setting target modal shares (the relative split of trips by automobile and transit), reducing the amount of subsidized employee parking downtown, and expanding employer ridesharing and transit incentive programs are DHTP recommendations aimed at keeping traffic congestion in check by encouraging use of multioccupant travel modes.

The types of actions considered and recommended range from conventional, "tried and true" traffic engineering techniques to zoning code changes and employer-based transportation management practices. In contrast to more conventional transportation planning efforts that often focus on what one particular agency should do, the Hartford Action Plan was developed by and depends on the participation of many implementers, both public and private sectors, either working together or in sequence. For example, the integrated urban design component of the project provided a context for transportation planning, requiring that actions designed to improve transportation in the downtown contribute as well to the development of a more coherent city plan and a livelier streetscape.

In general, the action plan (3) features measures aimed at managing the use of existing transportation facilities through techniques such as:

- Improving facilities so they operate more efficiently,

engineering, transit planning, goods movement, parking management and enforcement, and urban design. Two of the consultants were former transportation officials from other cities; all of the firms had prior experience with transportation projects requiring public-private cooperation.

Scope

The scope of the DHTP was determined by the nature of the project sponsors' concerns, which were: (a) what can be done to maintain access to and circulation within the downtown given planned new developments; and (b) how to make sure that necessary transportation improvements are implemented given funding constraints and the slowness of project approval processes. These concerns dictated a very focused scope in terms of the geographic area, the time frame of concern, and the specificity of the solutions to be recommended, yet a rather open and comprehensive approach both to identifying potential problems affecting all components of the downtown transportation system and to devising types of solutions for addressing these problems.

Geographically, the DHTP is focused on the Hartford CBD, a 50-block area with a workforce of 42,000. (See Figure 3 for study area map.) The compactness of the study area allowed the kind of fine-grained data collection and detailed problem focus necessary

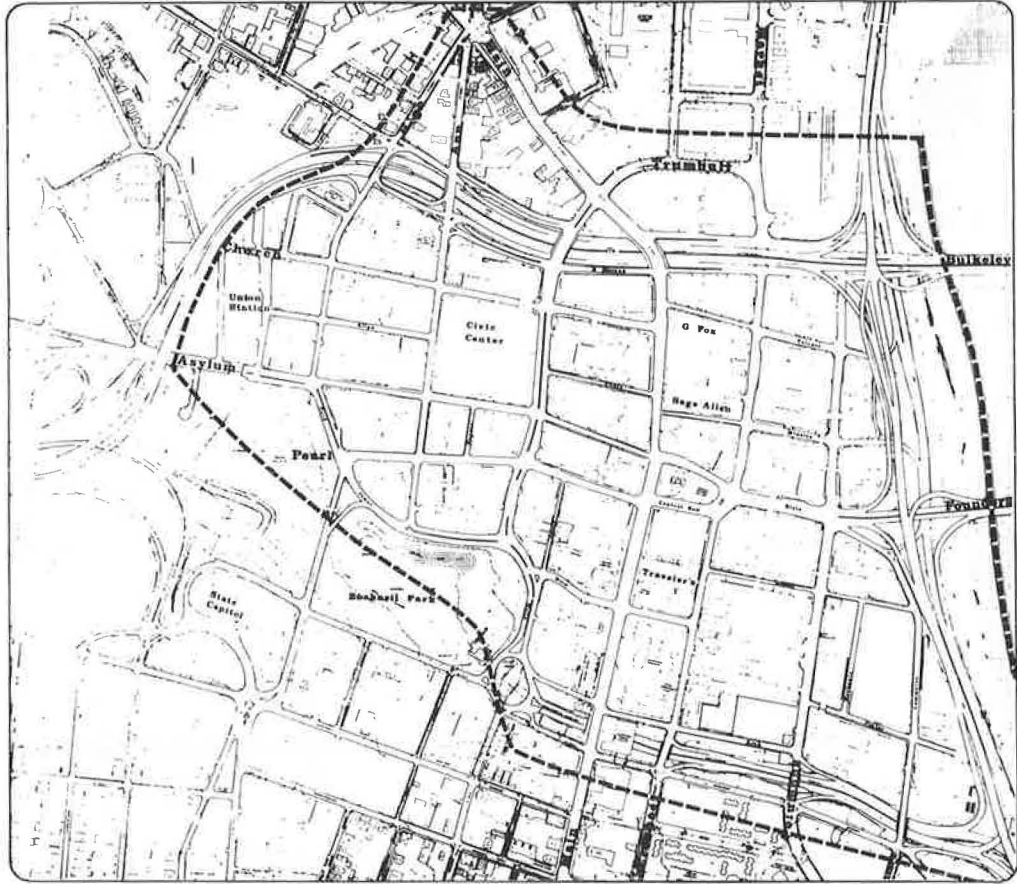
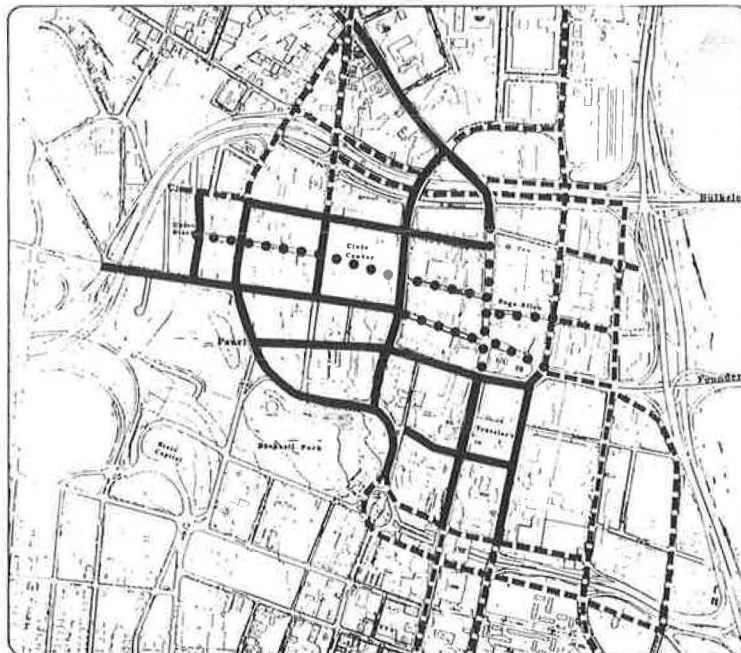


FIGURE 3 Geographic scope.



**Downtown
Hartford
Transportation
Project
1982**

Recommended
Emphasis of
Street Use

- Primary Vehicular Use
- Heavy Pedestrian Emphasis
- Balanced Emphasis (Vehicular and Pedestrian)

FIGURE 4 Recommended emphasis of street use.

- Improving the downtown streetscape and ease of circulation for pedestrians, and
- Providing Hartford with ongoing policy tools for managing future growth.

Assembling varied types of measures into an integrated package allows each measure to be viewed as part of an overall policy framework, thereby strengthening the implementation prospects for individual components of the plan. Another important aspect of packaging measures together was that inclusion of revenue generating actions (such as stepped-up enforcement of on-street parking regulations and institution of employer parking charges) tended to make the package as a whole more palatable from a financial perspective.

The final aspect of the DHTP's scope that is unique was the inclusion of an organizational analysis of the existing transportation project implementation process (4). This involved tracing the process by which city transportation improvement projects move from conception and initial design through the various stages of approvals, and finally to procurement of necessary materials and services for their implementation. Because the recommended plan of action was sufficiently ambitious that it would severely strain the existing project management and implementation process in the city, it was essential to identify the major sources of delay and take steps to create streamlined procedures. It was also necessary to establish an ongoing institutional mechanism for the public and private sectors to continue working together to successfully implement the developed transportation improvements. Thus, a system of two parallel responsibility centers was recommended, designating the city's Department of Public Works and the Greater Hartford Ridesharing Corporation as lead project management agencies in the public and private sectors, respectively (Figure 5).

Process

The DHTP can be characterized as a process of consensus-building which involved

1. Identification of, and agreement on, the most pressing downtown problems and needs to be addressed,
2. Agreement on a general approach to solving the identified problems, and
3. An iterative process of developing and screening successively more detailed policies and actions to be taken.

The problem identification phase of the project was organized around five subelements of the transportation system: traffic, parking, transit, pedestrian movement and urban design, and goods movement. The problems as perceived by the participants formed the initial nucleus. Site observation, interviews, field data collection, and projection of the impacts of new development were conducted for each of the five subelements, and existing and potential future deficiencies were summarized and presented to the DHTP participants. In some instances, the technical analysis confirmed the perceived problems (e.g., most off-street parking really was full at midday); in other instances, project participants learned that perceived problems, when measured objectively, were not as intense as initially thought (e.g., traffic congestion really was not very bad yet). In all cases, the technical work was presented in enough detail to assure its credibility. For example, questions about the number of additional employee trips that would be generated by new construction were answered at some length, with background information provided on the actual experiences with recent development in Hartford and other cities.

As a result of this explicit process of problem identification, general agreement was reached among project participants that future development could push Hartford's parking and traffic problems to levels they considered intolerable, and that something had to be done. Both public and private sector participants recognized that it would be both cost-prohibitive and damaging to the downtown environment to address these problems only by widening streets and building more parking facilities. From the beginning, there was a desire to determine what could be done to supplement construction improvements by managing the transportation system's use and growth, and participants made it clear that they were open to considering a wide variety of management strategies.

Four goals for the action plan evolved out of the assessment of problems and constituted the agreed-on general approach for solving the identified problems:

- Reducing the inconvenience of congestion,
- Managing the parking supply,
- Improving the street environment, and
- Improving public and private sector capability to manage the transportation system.

As the next step, an initial list of more than 30 policy options was drawn up that served as the basis for a more detailed, iterative design process. As

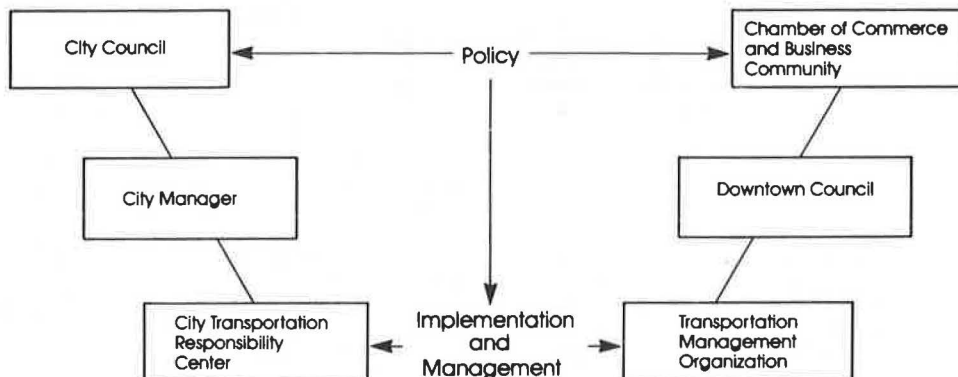


FIGURE 5 Recommended decision-making structure.

with the problem identification phase, special care was taken to include both new ideas and pending proposals developed by the participants. This original list of policy options was exclusive as well as inclusive, reflecting a deep skepticism about the feasibility of both transit expansion and "big build" solutions. The design process also involved a large number of off-the-record briefings and discussions to explain the rationale behind particular strategies and to discover and resolve disagreements about what should be done before formal presentation at a public meeting. In many cases, recommendations were modified to reflect concerns presented. It was during this period, for example, that a remote parking facility recommendation was clarified and an employee parking charge recommendation was strengthened and complemented with a range of other employee benefit options. Other concepts, such as identification of target modal shares and a target number of short-term parking spaces for the downtown, were developed into specific numerical recommendations during this period.

Some participants had concerns not about the intent of proposed actions, but rather about their associated costs; how they would be implemented, and how effective they would be. As a result of these kinds of concerns, further detail could be developed to put certain of the proposed actions on a firmer footing. Thus, the design process addressed both technical issues and potential implementation problems. Because low priority, high controversy actions were screened out, project resources were not unduly spent on analyzing measures that did not have a good chance of being implemented. These resources could be focused instead on working out necessary details for high-potential measures, which in turn helped project participants become comfortable with the evolving project recommendations.

There were five formal meetings of the project participants during the 11 months that the action plan was being developed. At each of these meetings (with the exception of the first, which was an introductory session) an endorsement or "yes" vote was given by the project participants for some major project milestone: agreement on the major problems, commitment to a set of general goals for addressing these problems, selection of policies to be analyzed for each goal, and finally, commitment to pursuing a specific set of actions. This process of obtaining periodic endorsements was facilitated by anticipating and responding to specific criticisms before recommendations were presented. The more informal, continuing discussions were a critical component of this overall process and constituted an extremely effective strategy for building a consensus. Most important, a central group of visible, respected individuals who had helped to initiate the project stayed deeply involved, taking the time to fully understand the technical work during each phase and then leading and focusing public discussion toward consensus on the most important issues.

Information and Technical Analysis

Information about existing downtown Hartford transportation conditions, and technical analysis to predict future conditions and the potential impacts of improvement measures played a key role in the DHTP. A solid, objective picture of transportation problems was essential for communicating a sense of priority to project participants and for laying the groundwork for developing policies. It was very important that the information collected be timely and credible--any suspicion about the quality or accuracy of the data could discredit the project

from the start. Data collected for the project included traffic counts at all downtown intersections, morning and midday occupancy checks at all public off-street parking facilities, and turnover studies for a sample of on-street spaces. In addition, up-to-date information on transit ridership was analyzed, and subjective assessments of problems related to pedestrian movement, urban design, goods movement, as well as parking, traffic, and transit were made on the basis of site observation. Projections of trips to be generated by new development in 3 and 10 years were made and allocated to travel modes according to current shares. From the trip projections, estimates of future parking deficits and intersection level of service were derived.

It was also important to translate the technical analysis into nontechnical language and to use examples that participants could understand and easily relate to. For example, current and projected level-of-service rankings for intersections were displayed on maps and were discussed in terms of the length of delays a driver would experience. Parking conditions were described in terms of both the percent and actual number of spaces available at different times of day, and compared to conditions in other cities (5).

Because the action plan was to be comprised of very specific targeted measures, the data collected not only had to provide a good picture of what the problems were, but it also had to provide insights into both the causes of the identified problems and the policy initiatives that might effectively address them. For example, localized congestion problems were analyzed on a block-by-block basis to pinpoint causes, which included illegal parking, peak-hour deliveries, and passenger pick-ups. The shortage of midday parking in the downtown was traced, in part, to the fact that many Hartford employers subsidize parking for their employees, thereby encouraging them to drive alone into the downtown.

Experience at the Hartford Steam Boiler Inspection and Insurance Company indicates the impacts of decreasing employee parking subsidies and increasing transit subsidies (Hartford Steam Boiler, unpublished report). In 1982 the company provided a 40 percent transit subsidy and charged employees an average of \$24 a month for parking (a 46 percent subsidy). In 1983 the transit subsidy was increased to 50 percent, and the average parking charge was increased to \$44 a month (a 35 percent subsidy for solo drivers and a 50 percent subsidy for car pools). The result was an increase in bus use from 35 to 39 percent and a decrease in employee parking from 61 to 46 percent.

Putting the observed conditions into perspective by comparing them to other cities was useful throughout the project for distinguishing between real and perceived problems. For example, although congestion was perceived as being severe by many project participants, field observation showed that congestion was quite mild compared to other cities. Similar kinds of comparisons, such as the relative split between transit commuters and drivers in different cities, provided participants a basis for setting reasonable future goals for keeping congestion down by encouraging non-drive-alone modes.

Analysis of specific improvement measures focused on an assessment of what each action could accomplish toward achieving the agreed-on goals (Table 3). In addition, considerable emphasis was given to developing realistic cost and revenue projections, reflecting the implementation focus of the project. Estimates of implementation costs were developed, revenue sources were identified, and implementation responsibilities were assigned. Estimates of impacts were used to guide the technical design process and to illustrate how a comprehensive package of small-

TABLE 3 Estimated Traffic Volume Impacts of Recommended Program

Action	Effect on Peak Hour Traffic Volume	
1981 Base	11,000 vehicles	
1984 Increase	+2,500	(+23%)
Eliminate Employer Parking Subsidy	-750	(-7%)
Employer Program to Increase Transit/Rideshare Use to 62% of Work Trips	-500	(-4.5%)
Flextime to 1 Hour	-380	(-3.5%)
Convert 2,000 Additional Spaces to Short-Term Use (-750 and +500)	-250	(-2%)
Restrict Peak Hour On-Street Parking	-112	(-1%)
1984 With Recommended Action Plan	11,508	(+5%)

scale improvements could have a noticeable impact on congestion. While some parts of this analysis were modeled in detail, an appropriate mix of "back-of-the-envelope" techniques and experience with similar measures in other cities also were used in order to provide the participants an understanding of the likely impacts of a policy.

Implementation Focus

The developed action plan was designed to focus on those actions having a high probability of effective implementation and to provide project participants a clear understanding of their specific responsibilities for implementing the agreed-on recommendations. This includes an estimated budget for each action and a 1-, 2-, and 3- to 5-year timetable. The assignment of responsibility was an effort, at the request of both the public and private sector participants, to put project participants on the spot.

Overall, this approach is proving to be successful. At this time, the private sector is well underway with implementation of the initiatives for which they have either exclusive responsibility or share implementation responsibility with the public sector. This includes a major funding commitment to the Downtown Council and a substantial effort, coordinated by the Greater Hartford Ridesharing Corporation in its expanded capacity as the downtown Transportation Management Organization, to develop policy consensus among major employers. The public sector, assigned prime responsibility for 12 actions as well as shared responsibility with the private sector for other actions, has also taken important implementation initiatives, though at a slower pace than the private sector.

The city council directed the city manager to centralize transportation responsibilities in the city, as recommended, and has recently approved the closing of one block of State Street to facilitate development of an improved pedestrian space in the vicinity of the Old State House. Funding for other measures has been secured and the city has initiated detailed engineering design for the designated street improvements related to pedestrian and transit movement.

FOLLOWING THE HARTFORD EXAMPLE

Transferability

In Hartford, there were unique conditions that precipitated the DHTP. The business community had long been involved in transportation issues and was willing and able to commit resources toward transporta-

tion improvements. The Downtown Council in association with the Greater Hartford Chamber of Commerce had sponsored several studies, which provided many ideas for consideration by the DHTP, and both groups had been involved in raising funds for and setting up the Greater Hartford Ridesharing Corporation 1 year before the DHTP began. These activities, combined with the substantial commitment on the part of a number of Hartford employers to vanpool programs, paved the way for the type of public-private cooperation that characterized the DHTP.

Although every city has its own unique characteristics, history, politics, and problems, subsequent experience in San Antonio (6) and elsewhere indicates that certain features of the DHTP can be successfully adapted in other locales that want to better manage their transportation resources.

The sources of impetus for the DHTP--major downtown development plans, a shortage of parking, growing traffic congestion, tight transportation funding, major downtown employers seriously considering an exodus to the suburbs--can provide the necessary basis for a DHTP-like project, even in downtowns where public-private collaboration on transportation problems has been limited or nonexistent.

The following general guidelines can be used by cities that want to pursue a similar approach to that taken by Hartford in developing and implementing transportation improvements.

Organizing a Public-Private Collaborative Effort

The following steps should be taken to organize a public-private collaborative effort:

1. Find the right people to direct the project. The involvement of effective leadership from both the private and public sectors is central to a project of this nature, which involves considerable lobbying, support-building, and opening of new communication channels. Having the right people from the start can be critical to assembling the critical mass necessary for a successful project. People with leadership experience and contacts in both sectors can be especially valuable.
2. Share sponsorship and direction of the project between public and private sectors. Public-private collaboration can be initiated by either the public or private sector, as long as both public and private sectors invest in the project and have shared responsibility to direct it and ensure that it is responsive to the concerns of both. This will increase the likelihood that the project will produce a unified plan of action to which both public and private sectors are strongly committed.
3. Involve all parties having potential resources or responsibilities for project implementation. To ensure that the project will produce actions that are practical and implementable, it is important to obtain the involvement of all potential implementers of the proposed actions. Although it may not be productive to have everyone involved in a formal and substantive way, an effort should be made to periodically touch base with all relevant parties to eliminate unanticipated barriers.
4. Take advantage of "neutral experts." People with expertise in design and implementation of transportation management measures can play a critical role in the project not only by contributing technical expertise and knowledge about how similar measures have worked in other cities, but by serving as neutral mediators among involved parties.

Defining the Scope of Work

To define the scope of work:

1. Address the pressing concerns of downtown employers and of public agencies responsible for downtown transportation system planning and operation. Framing the project in terms of the "hot issues" on everybody's agenda (in Hartford, the parking shortage was an issue) will attract the interest and involvement necessary to make the project more than just a "paper study."

2. Be comprehensive enough to account explicitly for the interrelationship among transportation system components. The key to successful downtown transportation system management is recognizing and addressing conflicts among different users (pedestrians, cars, buses, parkers) and maximizing the people-moving capacity of the system. Failure to address the problems and capabilities of any of the system components may close key opportunities to solve problems of another related component.

3. Pay attention not only to "one-shot" actions, but also to continuing policies and institutional mechanisms required for effective ongoing management of the transportation system. It is important that the project result in a set of commitments to implement a specific set of actions in order to demonstrate that the public-private partnership is indeed an effective mechanism for getting things done. Management of a downtown transportation system, however, is an ongoing process that must continually be adjusted to respond to changing downtown conditions, particularly as downtown development occurs. Therefore, it is important to establish a policy framework for future transportation decision making along with corresponding institutional mechanisms in both the public and private sectors to carry out the agreed-on policies.

Assembling the Necessary Information

In order to assemble the information needed

1. Use high-quality, up-to-date data. Good quality information on transportation conditions is essential for both developing appropriate management strategies and for developing the necessary support for implementing strategies. Thus, using out-of-date information, data collected in previous studies that have been challenged on technical grounds, or collecting only limited information when the whole picture is needed (e.g., counting the cars in only a small sample of parking facilities) may cut costs but can seriously impair the project's credibility and ability to achieve a consensus about actions to be taken. Although existing data may be available and useful, selective and carefully designed new data collection will almost always be necessary.

2. Assemble information that is relevant to policies and management strategies that may be considered. While data collection is traditionally conducted before policies and other potential solutions start to be developed, anticipating the kinds of policies and transportation management measures that may be appropriate allows a data collection effort to be structured to provide policy-sensitive information. For example, if traffic signal synchronization appears to be needed, an effort might be made during data collection to quantify the range of delay that could be avoided through institution of this type of measure. If on-street parking enforcement is perceived as a problem, violation rates could be observed and the potential benefits of stepped-up enforcement (greater turnover, increased parking availability for shoppers) could be quantified.

3. Make relevant information from other cities available. Information about how other cities are coping with similar transportation problems is in-

valuable for fueling the project with ideas, and for reducing the uncertainty and natural hesitancy about implementing new kinds of strategies.

Building a Consensus

In building a consensus, it is necessary to

1. Employ a phased strategy of consensus building, starting with general agreement on what the problems are, and moving toward agreement on specific actions. The set of actions ultimately agreed on should evolve inexorably from agreement on the major problems to be addressed, the general approach to be taken to addressing them, and the policy framework to be adopted. This sequence involves project participants in an important learning process beginning with a clear understanding of the problems, an exploration of alternative solutions, elaboration of the strengths and weaknesses of each proposal, and the building of confidence that the final recommendations are the result of a careful and systematic assessment of opportunities.

2. Encourage extensive informal discussions among participants. Formal meetings of project participants serve an important function, but the real work of eliciting honest opinions and resolving concerns, for a variety of reasons, is best done "behind the scenes." Project participants can use informal, small group discussions to be more specific about interests and concerns, and project staff have the time in this setting to provide a detailed discussion of a particular point. Building an effective consensus involves marshaling a great deal of technical analysis to address problems that have many small components. Discussing each aspect in enough detail to satisfy the legitimate concerns of each individual participant in a large, formal meeting is likely to be extremely tedious for most participants during those portions of the meeting when their own personal interests are not being addressed. The result is an obscuring of the larger, more important issues. Smaller meetings are an ideal forum for this type of detailed discussion.

3. Use a screening process to eliminate low-priority or unpopular actions from consideration. Although it is important to start off with a wide range of alternatives for consideration, it is wasteful of project resources and damaging to the project's credibility and support to prolong consideration of alternatives that would be ineffective, infeasible, or the target of insurmountable opposition. This does not mean, however, that all alternatives that may be controversial should be eliminated. For example, in Hartford, the recommended phasing-in of employer parking charges has been extremely controversial but was nevertheless included as a recommendation not only because project participants agreed that it would be an extremely effective strategy, but also because major employers were ready to explore alternatives to continued employer-provided parking subsidies.

4. Include strategies with revenue generating potential to offset costs of other strategies in the recommended package. Parking fees are becoming an increasingly important transportation revenue source in cities and can be used both to adequately price the use of scarce downtown land resources and to support other strategies aimed at improving the pedestrian environment or encouraging use of alternative travel modes to the downtown. Inclusion of revenue-generating measures in a comprehensive downtown transportation action plan can significantly add to the implementation potential of the package as a whole.

Using these guidelines, the Hartford experience can serve as a useful model for approaching similar transportation problems in other cities.

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Urban Development Models for the San Francisco Region: From PLUM to POLIS

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ABSTRACT

Most of the operational urban development models were designed 15 years ago and do not reflect the planning concerns of the 1980s. PLUM (Projective Land Use Model), the land use system developed for the Bay Area in 1970, suffers from conceptual and operational limitations that hinder its use. A new model, which is structurally and behaviorally different from the traditional Lowry models, was designed at the Association of Bay Area Governments. The new model, referred to as POLIS (Projective Optimization Land Use Information System), is based on microeconomic behavioral principles; it is formulated as a mathematical programming problem and considers job location, housing selection, and trip making in an integrated fashion.

Urban modeling is the science that attempts to represent in mathematical terms the location and interactions of activities within a metropolitan urban environment. The origins of the field can be traced back to the early 1960s when the growing problems of cities and the widespread use of automobiles in every aspect of everyday life necessitated the development of analytical tools that could assist

planners in evaluating policy alternatives and predict and prescribe the future.

A transportation planning process that focused on comprehensive planning and long-range capital investments for transportation facilities, coupled with a massive increase in federal assistance to state and local governments, led to the design of urban development models for several metropolitan