

## Transportation Planning, Urban Goods Movements and the Trucking Industry

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### I. INTRODUCTION

Since 1962 government officials have attempted to "comprehensively" plan for transportation development of the urban environment.<sup>1,2</sup> Transportation planning efforts have been directed toward discernment of how *people* can move expeditiously and economically within the urban area, without any overt concern for urban *freight* movements. For all the studies that have been conducted, at a cost of millions of dollars, one is struck by the fact that this planning effort has not been truly comprehensive. This lack of comprehensiveness results from the fact that very few cities have included urban freight movements as an integral part of the total planning process.

The attention devoted to the movement of goods in the urban areas by planners, government officials, private citizens and members of affected industries has been sparse. Perusal of previous transportation studies reveals that all that has really been done is to document truck origins and destinations within the urban area.<sup>3</sup> Illustrative of this fact is the "comprehensive plan" of a Colorado community in which concern for urban goods

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1. BUREAU OF PUBLIC ROADS, U.S. DEPARTMENT OF TRANSPORTATION, POLICY & PROCEDURES MEMORANDUM 1 (June 21, 1967).

2. Federal-Aid Highway Act of 1962, 23 U.S.C. § 134 (1970).

3. F. BOLGER & H. BRUCK, AN OVERVIEW OF URBAN GOODS MOVEMENT AND DATA SOURCES (1973).

movement is nonexistent.<sup>4</sup> In fact, the plan contains the statement that "mass transportation and bike paths are essential ingredients in the plan, to be actively and imaginatively pursued in meeting the transportation needs and desires of all residents. . . ."<sup>5</sup> No mention is made of urban freight or the fact that the citizens and industries need to receive freight in order to exist.

Major urban areas defined by Standard Metropolitan Statistical Areas (SMSAs) do not exhibit much difference from the attitude of this community. As one report has indicated, "there is absolutely no commodity flow data on a metropolitan region or intra-urban bases,"<sup>6</sup> where such data refers to the type of shipment, size, weight, and so forth. The report further relates "that only the work in Chicago and New York is being done in the context of continuing metropolitan transportation planning studies."<sup>7</sup> Of the other three cities cited in the report—Baltimore, San Francisco, and St. Louis—data is either not being collected or the data collected is only for the central city and not the entire urban area.<sup>8</sup>

This paucity of urban goods movement<sup>9</sup> information is somewhat understandable since truck traffic represents only a small proportion of the total vehicle traffic in urban environments. Thus, individual planning efforts have been directed toward eliminating pollution and congestion caused by the automobile. Even though trucks constitute a small portion of the total traffic, the cost of moving freight by truck within the urban area is significant. The costs arise both from the standpoint of freight rates and social diseconomies such as pollution and energy consumption. As will be demonstrated in the remainder of this article, total commitment to resolving the personal mobility problem may prove to be detrimental to truly comprehensive planning.

The receipt and delivery of goods within the urban area is crucially important to everyone. Without the receipt of raw materials, production ceases, unemployment rises and workers no longer have the need to travel during morning and evening rush hours. This simple fact indicates a more complex analysis which establishes a direct positive correlation between the movement of people and commodities. A positive correlation between land use and the movement of goods and people may then be derived from such analysis.

As manufacturing, wholesaling and retailing activities increase on any parcel of land, more workers will be needed to assist in the production and selling processes and more raw materials must be provided. Even if a

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4. See BOULDER COUNTY PLANNING COMMISSION, THE BOULDER VALLEY COMPREHENSIVE PLAN (1970) [hereinafter cited as BOULDER COUNTY PLANNING].

5. *Id.*

6. F. BOLGER & H. BRUCK, *supra* note 3, at 16.

7. *Id.* at 28.

8. *Id.* at 29-31.

9. Urban goods movement is defined as the movement of all items other than people within the urban area, e.g., bread, steel, and mail.

production or service facility were totally automated, workers would still need to be present to monitor the dials on the equipment, sell merchandise or provide other services. Thus, as manufacturing and selling activities increase, an increasing number of trucks and automobiles or transit vehicles will be required to bring goods and personnel to these facilities.

It is the purpose of this article to address the urban goods movement problem with respect to urban planning, to discuss some of the more complex issues, and to suggest some possible future courses of action. While transit of both goods and people is important, the latter is discussed only as it relates to urban goods.

## II. REVIEW OF EXISTING TRANSIT PLANNING EFFORTS

Philosophically, urban planning is undertaken in order to improve the urban environment and maximize the urban dweller's satisfaction. As noted in one typical comprehensive plan: "Planning is the art and science of guiding, in a comprehensive way, the physical development of a community. Order, convenience, efficiency and beauty are its watchwords."<sup>10</sup> But this philosophy has not been realized, in part because of a lack of local financial resources and a commitment to planning and, in part, because of the problems created by federal government highway construction programs, the federal government provided the impetus for comprehensive planning.

As stated previously, current transportation planning requirements were initiated at the federal level of government by the Federal-Aid Highway Act of 1962.<sup>11</sup> Section 9 of that Act required that areas with more than fifty thousand people must conduct a continuous comprehensive transportation planning effort in order to qualify for federal assistance on proposed transportation projects.<sup>12</sup>

A basic phrase used throughout that Act is "comprehensive planning." As pragmatically defined by planners, citizens, and government officials, comprehensive planning has meant concern, almost exclusively, for the movement of people and automobiles within the urban area. Freight movements have received little, if any, attention in the majority of transportation studies. This is highlighted by the fact that only five cities have exhibited any overt concern with this issue.<sup>13</sup> None really have included freight as an *integral* part of the total planning process except New York and Chicago. While the existence of freight movement has been recognized, it has received little attention because politicians and planners have responded to constituent demands for the resolution of congestion, delays and pollution-filled environments. Based upon this author's observations as both a consultant and member of civic groups involved in transportation planning, indus-

10. *Forward* to HARE & HARE, COMPREHENSIVE PLAN ALLIANCE, NEBRASKA (1965).

11. Federal-Aid Highway Act of 1962, 23 U.S.C. § 134 (1970).

12. *Id.*

13. F. BOLGER & H. BRUCK, *supra* note 3.

try and truck fleet owners have participated very little in the transportation planning effort thus contributing to a general failure to identify the magnitude of the goods movement problem.

The creation, by the Colorado legislature in 1969, of the Regional Transportation District (RTD) for the Denver metropolitan area is illustrative of this assertion with respect to politicians. As related in one RTD publication, the planning efforts of RTD are to be directed toward a study of the regional ecological and social composition and identifying areas where air pollution is great.<sup>14</sup> In this study, RTD merely identified the number of trucks in the area, even though they contribute greatly to pollution. Furthermore, future planning efforts of RTD are to be directed toward developing, maintaining, and operating a mass transportation system and are not to be directed toward studying and analyzing urban freight movements.<sup>15</sup> Since only five urban areas in the United States have exhibited an overt interest in urban freight flows, Denver is not a unique city in this respect.

Concern for the environment and lack of funding have contributed to this state of affairs. Funds for urban transportation are channeled toward resolving the problem of moving people in the urban area not toward freight studies. These funds, primarily from the federal government, have been appropriated in order that personal urban mobility can be improved and continued dependence upon highways and the automobile can be lessened. Before one can gain a full appreciation of the role of the urban goods movement problem, it is important that the urban transportation planning process be comprehended.

### III. THE EXISTING URBAN TRANSPORTATION PLANNING PROCESS

Initially, the planning process requires that an inventory (itemized list) of all facets pertaining to the urban area be prepared. Such factors as population (categorized by sex, age, income, race), land uses (residential, commercial, industrial), transportation facilities (highways, streets, automobiles, transit vehicles, ridership), travel patterns, and financial resources are a few examples of these factors used to describe the SMSA. This inventory will reveal to the planner such things as: how many people live in the urban area and their distribution, how many automobiles there are, how the total land acreage is used, and how many personal trips are made and the type of mode utilized.

Once the inventories have been completed, the data that has been generated can be analyzed and then developed into forecasting models for each of these elements. Typically, the forecasts are made through some predetermined time horizon, usually twenty to twenty-five years. Upon completion of the forecasts, a composite urban system is constructed whereby

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14. REGIONAL TRANSPORTATION DISTRICT, A PROGRAM FOR PUBLIC TRANSIT SERVICE FOR COLORADO'S REGIONAL TRANSPORTATION DISTRICT 3 (1973).

15. LEAGUE OF WOMEN VOTERS, TRANSPORTATION NOW 8 (1971).

the projected growth of the area and travel demand of residents can be accommodated.

These projections rest upon many assumptions made with respect to the factors being studied. One major assumption is that someone—citizen, planner, or government official—can identify the manner in which the area should develop. It is assumed that such person or group of persons can discern a consensus among the residents in terms of urban growth. Other assumptions include linearity of population growth, continued neighborhood cohesiveness, continued travel patterns, and continued limitations of financial resources. It is also assumed that commercial activity will grow in proportion to the population growth of the area.

Of particular importance to this article is the personal subjectivity of land use forecasting—an assumption which may involve more serious problems for the movement of freight in the urban area. As one authoritative source has noted, "The development of sound land use models, however, is still in the evolutionary stage."<sup>16</sup> The author acknowledges that land use models, even though evolutionary are more sophisticated for residential areas and the movement of people than for freight and truck movements.

In contrast to personal mobility, "the location patterns of other commercial and manufacturing facilities are best predicted on an individual industry basis, with judgment supplemented by a forecasting model."<sup>17</sup> In other words, industrial land use models rely on subjectivity and intuition. Given this "level of sophistication," one must question the viability of such models and, more especially, whether or not the impact upon urban freight flows caused by industrial growth is both being truly comprehended and receiving adequate attention by planners. If only the impact of individual industries is forecasted, it would seem difficult to establish mathematically accurate models to forecast freight movements because of the inability to appreciate the relationships of freight flows between industrial activities.

Forecasting model accuracy is also difficult because of land use zoning. As one plan suggests, "It should be kept in mind that the zoning map is a day to day regulatory tool and that the General Plan is long range in nature, thus changes in the zoning map, based upon property owner request, will be in order."<sup>18</sup> Property owners make their requests for zoning variances to local governments and, therefore, predictions of land use are tied to political fortunes.

As politicians are voted into and out of office with each election, different perspectives of land usage arise. In response to their constituents, some politicians may view parcels of land as being best suited for industrial development. Others may envision the same parcel of land as being best

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16. L. PIGNATORO, *TRAFFIC ENGINEERING* 47 (1973).

17. *Id.*

18. R. KELLENBERG & COMPANY, *GENERAL PLAN ALLIANCE, NEBRASKA* (1976).

utilized for residential purposes. A perusal of nearly any daily newspaper demonstrates that public officials grant zoning variances quite readily. By virtue of these variances, it is nearly impossible to predict where and when land use changes will occur. It is, therefore, nearly impossible to predict accurately the patterns of freight flow.

Normally, the factors included in projecting future land use include population growth, employment patterns, numbers of households, travel times and other traffic generating forces operating within the urban area. Such factors are included because travel, whether truck or any other mode, is dependent upon the spatial configurations and intensity of land use within the urban area. Noticeably absent from these factors, however, are elements characterizing urban freight movements, including changes in production technology and the rate of these changes, corporate decision factors impacting upon the location of production facilities, types of commodities, and the patterns of movement of commodities within or beyond the urban area.

Such factors are important because firms seek to remain competitive in the free market economy. Firms will seek to incorporate new technologies so that products can be produced more economically. If new technologies are to be utilized or revolutionary products are to be developed, a business may either have to seek a new site and construct a new facility or remodel existing facilities in order to utilize modern equipment and machinery. As these changes occur through zoning variances, freight flow patterns between a plant and its customers will be altered.

By excluding variables for commodity flows, little or nothing is known about the existing freight system; therefore, it is impossible to project urban freight demands. In the past, this data has been excluded because firms were reluctant to divulge the needed information (relocation and plant expansion) to planners or anyone else because of the fear that a competitor might gain an advantage. But without this data, planners are left with subjective planning.

In addition to the assumptions made with respect to land use planning are those assumptions involving future highway construction. Typically, the transit planning process assumes that no additional highways will be constructed beyond those for which plans have been developed or finances committed. As one plan relates, "the plan shows very few new transportation routes. Highway design and abutting land treatment will be given major consideration so as to protect the efficiency of roads while eliminating as much disruption to residential areas as possible."<sup>19</sup> Such assumptions are predicated upon the fact that as travel demands are discerned and as a transit system is developed to accommodate those demands, new high-

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19. BOULDER COUNTY PLANNING, *supra* note 4, at ii.

ways or expanded highways will not be necessary. This assertion is made because an improved transit system should create a demand for its services. As more people are diverted from their automobiles to the transit system, fewer automobiles will be traveling the highways, and, therefore, fewer new highways will be necessary.

Such reasoning could very easily be fallacious because urban goods movement has not been included in the planning process. A basic fault with this logic is that it has been assumed that transit systems will be a panacea for the automobile and its related ills. It has yet to be demonstrated that such an event will occur. A recent study has indicated that by the year 2000 (with the advent of a new transit system) only twenty percent of all travel in the urban area will be by transit.<sup>20</sup> Thus as the urban automobile traffic continues to grow, so too will the demand for highways. It remains to be seen whether or not congestion levels can be appreciably reduced. It is entirely possible that, because of the level of use of mass transit systems, truck travel times will either remain the same or be increased, depending upon the volume of travel in the year 2000.

The study further relates that parking spaces also will be reduced significantly.<sup>21</sup> Were this to occur, trucks would then have fewer spaces in which to park and make deliveries or pick up freight. Given this event, trucks would continue to be forced to park on the streets which would result in congestion for the remaining automobile drivers. Furthermore, any of the parking spaces removed from large tracts of land would release this land for other uses. As this land is then developed, the demand for freight would increase and escalating delays and costs result.

#### IV. MAGNITUDE OF THE URBAN GOODS MOVEMENT PROBLEM NOW

In 1974 the total cost of moving freight in the United States was approximately \$139 billion, about ten percent of the gross national product.<sup>22</sup> This figure also represented 46% of the total transportation expenditures in the United States.

At the urban level, trucks account for the preponderance of freight moving costs. Again, costs of movement are high. Urban truck costs of moving goods were approximately \$50.5 billion in 1972.<sup>23</sup> This figure represents a 205.4% increase in the cost of moving goods in the urban area since 1962.<sup>24</sup> Therefore, urban trucking costs represented 55% of the total trucking costs (\$92,166,000 total truck costs and \$50,498,000 local truck costs)<sup>25</sup>

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20. REGIONAL TRANSPORTATION DISTRICT, LONG RANGE TRANSIT DEVELOPMENT ANALYSIS TRANSIT CONCEPT COMPARISON 9-2, 9-4 (1975).

21. *Id.* at 9-4.

22. TRANSPORTATION ASSOCIATION OF AMERICA, TRANSPORTATION FACTS & TRENDS 3 (1976) [hereinafter cited as TRANSPORTATION ASSOCIATION].

23. *Id.* at 4.

24. *Id.* at 8.

25. *Id.*

in this country. Given the increases in costs and associated increases in rates, it is readily apparent that this industry has a significant impact upon urban consumers.

Quite apart from the direct costs of moving goods in the urban area by truck are social costs accompanying truck movements. Significant social costs arise with truck congestion. In one study, approximately five percent of the total pollution in the city was due to trucks.<sup>26</sup> Again, any increase in freight demand would likely result in increased pollution levels.

Between 1962 and 1974, there was a 92.4% increase in the number of trucks registered in this country.<sup>27</sup> Of all truck miles driven, 43% (114.3 million miles) occurred in urban areas.<sup>28</sup> Thus not only did trucks contribute significantly to traffic congestion and pollution, but they also contributed to a rapid consumption of energy resources in view of the fact that trucks average less than nine miles per gallon.<sup>29</sup> Such evidence readily demonstrates that the exclusion of trucks from the urban planning process can have serious implications for any plan that is developed. Given the goals of the urban area to reduce congestion, pollution, and energy consumption and the fact that truck growth is rapidly increasing, it makes little sense to exclude trucks from the planning process.

In part, the growth of truck traffic can be attributed to urban growth in terms of both population and increased land area. As mentioned previously, the increased land area resulted from changes in zoning restrictions. These changes resulted in greater demands for urban trucking. Furthermore, as one author has noted, densely settled residential zones generate less truck traffic per unit of population than do low density residential zones.<sup>30</sup> This seemingly inexorable expansion, in other words, has resulted in an increased demand for truck traffic as suburban residents demand more frequent and rapid deliveries.

This means that transportation costs are high and will increase since such service requires more capital and labor investments on the part of truck firm owners. Truck owners would have to expand their fleet sizes, other things being equal, as new suburbs are developed. This would occur because of the increasing distances that would be involved and because of the increased number of pick-up and delivery points that would result from growth.

Some may contend that this pattern would not arise if there were no urban growth by claiming that some areas may now have a zero growth.

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26. McDermott & Robeson, *The Role of Terminal Consolidation in Urban Goods Distribution*, 4 INT'L. J. OF PHYSICAL DISTRIBUTION 166, 173 (1974).

27. TRANSPORTATION ASSOCIATION, *supra* note 22, at 8.

28. *Id.*

29. *Id.*

30. W. SMITH, *State of Research and Data on Urban Goods Movements and Some Comments on the Problem*, URBAN COMMODITY FLOW (1970) (Special Report 120, Highway Research Board).



This would not affect the need to study the urban freight problem for two reasons. First, the level of personal consumption may be changing. Second, population shifts are occurring in this country. Thus, one city's loss may be another city's gain. The fact remains that there is a need to study this problem.

Finally, urban truck transport costs are high because a multitude of inefficiencies exist within the urban transport system. For example, one study has found that the average speed of trucks in an urban area was 5.2 miles per hour.<sup>31</sup> A continuation of this average speed, coupled with a growth in the geographic size of an area means that more trucks will be needed to accomplish the same level of service. It also means that, with this low operating speed, trucks inefficiently consume fuel and contribute to pollution. Furthermore, the same study found that by consolidating truck shipments (obtaining greater load factors per truck), a 90% reduction of truck traffic could be achieved with a resultant annual savings of \$2.1 million.<sup>32</sup> This data suggests that not only are planners deficient in studying truck movements, but also owners are paying needlessly high monetary costs.

#### V. PLANNING AND URBAN GOODS MOVEMENT CONFLICTS

From the foregoing, it is obvious that private savings and public benefits can be obtained from a thorough study and comprehension of the goods movement problem. There are, however, other factors associated with this issue.

In general, transit and land use planning may dictate that certain types of building construction can occur only in designated portions of an urban area. Some portions of an area may be zoned commercial (downtown business districts for example) so that only office buildings and retail outlets may be built in this area. Similarly, commercial development may not be permitted in sections of the city zoned residential. The planning effort fails at this point by not proceeding one additional step. Study is needed to more fully determine the relationships between freight flow and building configurations, the relative location of various business enterprises, and pedestrian flow.<sup>33</sup>

Another deficient area in the planning process concerns the use of exclusive bus lanes (streets or highway lanes designated for buses only) as

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31. McDermott & Robeson, *supra* note 26, at 169.

32. *Id.* at 173.

33. Indicative of this fact is an actual instance where a pedestrian mall is being constructed in Boulder, Colorado, which results in difficult accessibility for trucks. The trucks must use narrow alleys to make freight deliveries and pick-ups because streets have been abandoned for the mall. This means that truck drivers queue up to make deliveries in alleys or park on streets. This does not mean that malls should not be constructed. Rather, planning of this nature results in higher transport costs, poor service to the customer, and higher freight rates. This may be socially desirable, but a cost-benefit analysis and informed public might reveal other results.

an attempt to make the use of transit more attractive to automobile users. While greater transit passenger volumes can be achieved by this system, since buses do not have to compete with automobiles, such procedures can prove detrimental to trucking operations. For example, a normal procedure is to designate one lane of a four-lane highway as an exclusive bus lane. Assuming that only buses may use the exclusive lane, trucks and automobile users would, therefore, be left with only three lanes of highway. If there were no change in auto use and truck traffic remained the same, additional congestion would occur on the remaining three lanes. As noted in the *Highway Capacity Manual*:

From the viewpoint of the driver, low flow rates or volumes on a given lane or roadway provide higher levels of service than greater flow rates or volumes on the same lane or roadway. Thus, the level of service for any particular lane or roadway varies inversely as some function of the flow or volume, or of the density.<sup>34</sup>

To the trucker this occurrence has serious implications. If, for example, a driver had been able to make a delivery every fifteen minutes (four per hour) when there were four highway lanes available, a fifteen minute delay due to congestion with only three lanes would mean that only three deliveries could be made in one hour. A trucking firm desirous of maintaining the same level of service to its customers would then have to obtain another truck in order to make the delivery to the fourth destination.

This problem is further compounded by the fact that many production firms adhere to tight production schedules. Deliveries are permitted to many facilities only during specified hours to coincide with the arrival of the labor force. For example, deliveries are made at a store during working hours because the owner does not want to pay overtime or hire additional labor in order to handle deliveries during normally non-working hours.<sup>35</sup> Rapidly increasing production costs and the desire to maintain better levels of inventories have led to these stringent schedules. Thus, the removal of one highway lane may be deemed a social benefit today and criticized tomorrow for causing higher prices due to higher costs.

Parking restrictions also pose a problem for freight movement. As is true with highways, a reduction of parking facilities is classified as a net social benefit.<sup>36</sup> This perceived social benefit occurs because parking spaces are viewed as traffic generators and use vast amounts of urban property. However, any reduction in their availability causes problems for truck deliveries.

In a survey conducted by this author, the lack of parking facilities for making pick-ups and deliveries was one of the most frequent responses to

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34. HIGHWAY RESEARCH BOARD, SPECIAL REPORT 187, HIGHWAY CAPACITY MANUAL 1965, 7-8 (1966).

35. C. ORSKI & W. JAKOBSBERG, *Improvements and Innovations in Urban Goods Movement*, URBAN COMMODITY FLOW 102 (1970) (Special Report 120, Highway Research Board).

36. F. FRYE, ALTERNATIVE MULTIMODAL PASSENGER TRANSPORTATION SYSTEMS 31 (1973).

the survey.<sup>37</sup> Many truck owners related that as parking spaces were curtailed, their trucks were forced to park on the streets. While parked on the street, drivers were ticketed for illegal parking or had their trucks stolen while the drivers were in the store.

A better appreciation for this highway and parking space problem can be gained from the example of a transit study done for the Denver metropolitan area. This study indicated that provision of an innovative transit system (one requiring the adaptation of new technology) would reduce the need for parking spaces in activity centers (shopping centers for example) by 11-15,000 and highway lane miles by a minimum of 1,378 miles.<sup>38</sup> The deletion of the need for these parking spaces and highway lanes would result because automobile drivers would divert to the new transit system. The major difficulty with this assertion is that the impact upon the trucking industry requirements was not studied. As discussed previously, simply providing better transit service and deleting parking spaces is not a panacea to transportation problems given the metabolism of the city. The planning was not truly "comprehensive."

Studies done in other cities, as previously cited, indicate that the existing street systems are antiquated and the removal of more parking spaces and highway lanes would only exacerbate the goods movement problem.<sup>39</sup> Again, this occurs because many stores are dependent upon on-street parking. As trucks block traffic or use spaces designed for auto parking, the net social gains asserted in the plan are negated.<sup>40</sup>

This problem is given further credence by an analysis of the data presented for one of the traffic zones<sup>41</sup> in a 1971 origin/destination study. This study indicates that in that year there were 3,672 truck trips for that zone.<sup>42</sup> For the same zone in the year 2000, the projected estimates indicate that there will be a total of 38,625 truck trips, an increase of 950%. This means that the number of truck trips per hour (based on a twenty-four-hour day) would increase from 153 per hour in 1971 to 1,609 per hour in the year 2000. An assumption made by planners in the comprehensive plan was that no new highways would be built in that zone. It is logical to conclude that traffic congestion levels would rise precipitously, given increases in auto traffic, and production schedules of manufacturing firms would suffer.

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37. A survey of twenty local trucking firms was conducted during October 1974. While the survey was not random, answers to the question, "What is the major problem you encounter in the Denver area in delivering freight?" did not differ from other evidence on the subject.

38. REGIONAL TRANSPORTATION DISTRICT, *supra* note 20, at 13.

39. Hedges, *Urban Goods Movements: An Overview*, 12 TRANSP. RESEARCH FORUM PROCEEDINGS 173 (1971).

40. C. CHAPPELL & M. SMITH, *Review of Urban Goods Movement Studies 170-171*, URBAN COMMODITY FLOW (1970) (Special Report 120, Highway Research Board).

41. Traffic zones in an urban area are small geographic subdivisions created by planners to facilitate the measurement of traffic flows.

42. DENVER REGIONAL COUNCIL OF GOVERNMENTS, REGIONAL TRANSPORTATION STUDY TRUCK INTERVIEW REPORT (1971).

Such truck traffic growth is not surprising although the actual figures may vary by the year 2000. One author has noted that every urban area demonstrates a metabolic rate; he found the people in his study city consumed sixteen tons of freight per year.<sup>43</sup> Furthermore, he found that "internal truck freight (measured in tons per person) grew by 143 percent from 1945 to 1965, while population increased by 31 percent."<sup>44</sup> This would suggest that personal consumption patterns are, in fact, increasing.

Even if a specific city had no change in its population size or geographic configuration, it would still require freight. As already pointed out, economic theory would suggest that any increase in disposable income by the residents of the city would likely result in larger quantities of freight being demanded. Thus with more income, people would purchase more color televisions, clothes or other items and freight transportation per capita would rise. While this is a reasonable expectation, research is needed in this area to better determine the actual rate of change in freight demand.

It is highly probable that, were such events to occur, truck owners would begin to lobby their political leaders to stimulate highway construction. In fact, these owners might even speak loudly enough to have new highway lanes and parking spaces constructed. To the extent that their efforts were successful and highways were expanded, the "comprehensive plan" would have been subverted.

#### VI. CONCLUSIONS AND RECOMMENDATIONS

Previous discussion has suggested that there are serious deficiencies in the current planning process. Continued exclusion of urban goods movements from the comprehensive planning endeavor may eventually lead to "unplanned" growth in highways as the need to deliver goods outweighs the need for increased transit ridership.

As a freight terminal, the existence of the city is dependent upon the receipt and delivery of freight. While it is true that people in their automobiles constitute the preponderance of congestion, it is not true that elimination of auto congestion will necessarily eliminate the goods delivery problem. Financial resources by all levels of government must be committed to the study of this issue in order that areas of economic efficiency can be discerned. With such knowledge, the "total" urban environment can be better planned and community objectives attained.

Obviously, an urban area will change with the passage of time and so too will the objectives of the area. It matters little how the urban area changes, to the extent that people will still need to eat and produce goods

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43. Hedges, *supra* note 39, at 173.

44. *Id.*

and services. The problem is that all facets of the urban area must be planned in light of community objectives. We need only look at the cities in the northeast during the winter of 1977 to realize what happens when freight services are halted.

All individuals having an interest in the problem must become involved. Planners in all cities must be made to realize that optimizing personal mobility may be suboptimal for goods movements and result in higher consumer prices as freight costs rise. To that extent, planners must be given direction by government and by the private citizen as to where the threshold is between social benefits and both social costs and consumer prices.

Truck owners must be made aware of the issues of this problem and they must commence participation in the planning process. In part, this problem has arisen through their negligence. They must be made to realize the detrimental impacts their industry imposes upon society. They must also realize that their lack of comprehending the many facets of this problem contributes to their rising operating costs. Correction of this deficiency lies in both education and an active solicitation by planners to seek input from the trucking industry.

Freight consignees must also become involved in planning. They too must be made to understand that, through their actions, greater demands are being placed upon the trucking industry and inappropriate locational decisions may result in higher consumer prices. In this regard, a coordinated effort is needed between planners, truck owners and business owners *before* locational decisions are made.

All levels of government—federal, state, regional, and local—must begin to question their previous actions. The federal government, by requiring comprehensive planning, recognized that simply providing highways would not curtail the urban transportation problems. Similarly, continued funding of passenger transit studies only will not likely resolve the issue. The federal government must begin to demand truly comprehensive planning. State, regional, and local governments also must begin to play a more active role in the urban goods movement problem. As land use and zoning are crucial to the planning process for both *people* and *freight*, these governments must seriously consider existing practices, rules and regulations of land use and zoning. Perhaps stronger land use commissions are needed. Perhaps local control over zoning should be absorbed by a regional or state agency. This is not to suggest a socialistic state; rather, the intricacies of land use and transportation need to be studied and then changes made on the basis of the results obtained.

With respect to funding, transit planning should be considered in terms of marginal costs and marginal benefits. Is the marginal increase being attained in transit ridership worth the marginal costs? To the extent that the

answer is *no*, a re-allocation of the funding may be permitted and funds can be channeled into a study of the goods movement problem.

It is quite apparent that there are neither any simple answers to this problem nor any concrete solutions. Equally evident is the fact that *people* and *freight* are inextricably bound. We have studied one and now we must begin to analyze the other.