



CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

SUSAN B. SCHLESINGER
*Assistant City Manager for
Community Development*

BETH RUBENSTEIN
*Deputy Director for
Community Development*

March 26, 1998

TO: Robert W. Healy,
City Manager

FROM: Susan B. Schlesinger, ^{FRS}
Assistant City Manager for Community Development

DATE: March 26, 1998

RE: Public Hearing on Development, Planning Process and Zoning in the City

In response to Council Order #1, dated March 2, 1998, enclosed is a package of materials for the City Council which will inform our discussion on March 30 of development, planning processes and zoning in the City.

City Hall Annex
57 Inman Street
Cambridge, MA 02139
Voice: 617 349-4600
Fax: 617 349-4669
TTY: 617 349-4621



CITY OF CAMBRIDGE
COMMUNITY DEVELOPMENT DEPARTMENT

SUSAN B. SCHLESINGER
*Assistant City Manager for
Community Development*

BETH RUBENSTEIN
*Deputy Director for
Community Development*

Enclosures

1. Excerpts from *Toward a Sustainable Future: Cambridge Growth Policy Document*
 "Cambridge in Context"
 "Historical Background"
2. Update of "Historical Background", CDD, 1/27/98
3. Major Construction in the Mid 1990's, CDD, 3/26/98
4. Annotated List of Zoning Petitions Considered in the Past Four Years, CDD, 3/26/98
5. Storm and Sanitary Review Process for New Developments, Department of Public Works, 3/25/98
5. Historic Preservation Fact Sheet, Cambridge Historical Commission, 3/23/98
6. Relating Development and Traffic, Philip Herr and Associates, 7/14/97

City Hall Annex
57 Inman Street
Cambridge, MA 02139
Voice: 617 349-4600
Fax: 617 349-4669
TTY: 617 349-4621

1 • Cambridge in Context

Cambridge, Massachusetts is home to 95,802 persons tightly packed into 6.3 square miles. (In the last Census, only five cities over 75,000 in population were denser.) Its density affords residents a rich social and architectural mix, which finds thriving commercial centers cheek by jowl with village-like residential districts.

The streetscape and urban pattern of Cambridge have evolved from three and a half centuries of development, starting with the 1630 settlement of Newtowne in present day Harvard Square as the colonial seat of government and learning. Industrial hubs and villages would subsequently grow up around Cambridgeport, East Cambridge, and later, the clay pits and stockyards of North Cambridge and Alewife. The tight weave of roads and "village" form is at times an uneasy fit with modern city activities, such as automobile travel and office-based enterprises. The mix of old and new, of tradition and change continues to give Cambridge its unique stamp and also presents hard choices as the city faces the final decade of this century.

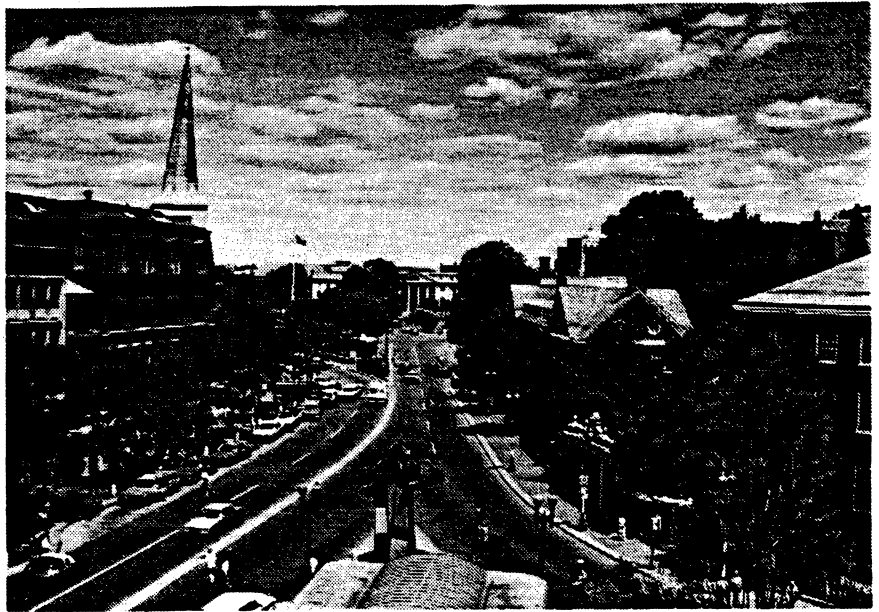
Cambridge is in actuality many communities: within its boundaries, it contains a multitude of architectures, neighborhoods, ethnic and social groups, and political persuasions. Most importantly, it is perceived and experienced differently by its diverse inhabitants. There is the Cambridge of Harvard Square's academics and professionals, and another lived in by police and fire fighters who dwell nearby in North Cambridge triple deckers. Still another is inhabited by immigrants and others of modest means blocks away in the Rindge Towers, or by homeless men and women along Massachusetts Avenue. This diversity helps attract people to cities. A city's well-being depends on a common experience, a shared commitment to dwelling in a place and making it better.

Cambridge's contrasts have sharpened over time. Over half of its residents over 25 have earned college or advanced degrees, yet one in six have not finished high school, and over one in five high school students drop out in a four year period. The city contains a higher proportion of professionals than the Boston metropolitan area, but it also contains a greater percentage of children in poverty. As the economic base has retooled from making footwear and furniture to software and pharmaceuticals, many remain left out, lacking sufficient skills and education to prosper.

Where one out of three residents could count on goods production (factory and construction work) to make a living in 1950, slightly more than one in ten are so employed today. Education, health and other professional services employ the greatest share of Cambridge residents.

The city's diversity is also a source of cultural richness and vitality. More than one in five Cambridge residents is foreign born. Students from 64 nationalities attend the public schools. Their families speak 46 different languages. An out-of-town visitor might be treated to a Greek festival or a Caribbean gala on the same weekend. On any morning the scents of Portuguese bakeries and fish markets greet pedestrians along Cambridge Street. Over 28% of all residents identify themselves as non-White or Hispanic, compared to five percent in 1950. The fastest growing minority, Asians, nearly tripled their share of the population in the past decade.

Cambridge is a city of contrasts, as shown by these views of Harvard Square and the three Rindge Towers in Alewife.



Other demographic trends point to Cambridge's unique character, as well as to patterns occurring nationwide. One quarter of the population is enrolled in college. In a five year period, over one-third of the population turns over. Fewer Cambridge households contain children. In 1950, one in four residents were under age 18, while in 1990, just one in seven were under 18. Today, under 8,000 households, or 20%, include children; more than twice that number are occupied by single people living alone. Children under four have made something of a comeback in the past decade, however. While family and individual incomes have been rising, even after inflation, one in three single mothers with children under 18 lives in poverty — a figure that has changed little in decades.

In comparison to many other communities, Cambridge benefits from a high degree of participation by its residents in a wide range of civic affairs. Each neighborhood has its own political and civic organizations, and few changes in the built environment occur without some form of organized comment or intervention. People care passionately about the quality of the social and physical environment — and disagree at times with equal passion. There is a sense of civic duty which results in a responsive local government. People do not simply criticize; they act to influence the outcome of decisions that affect their lives.

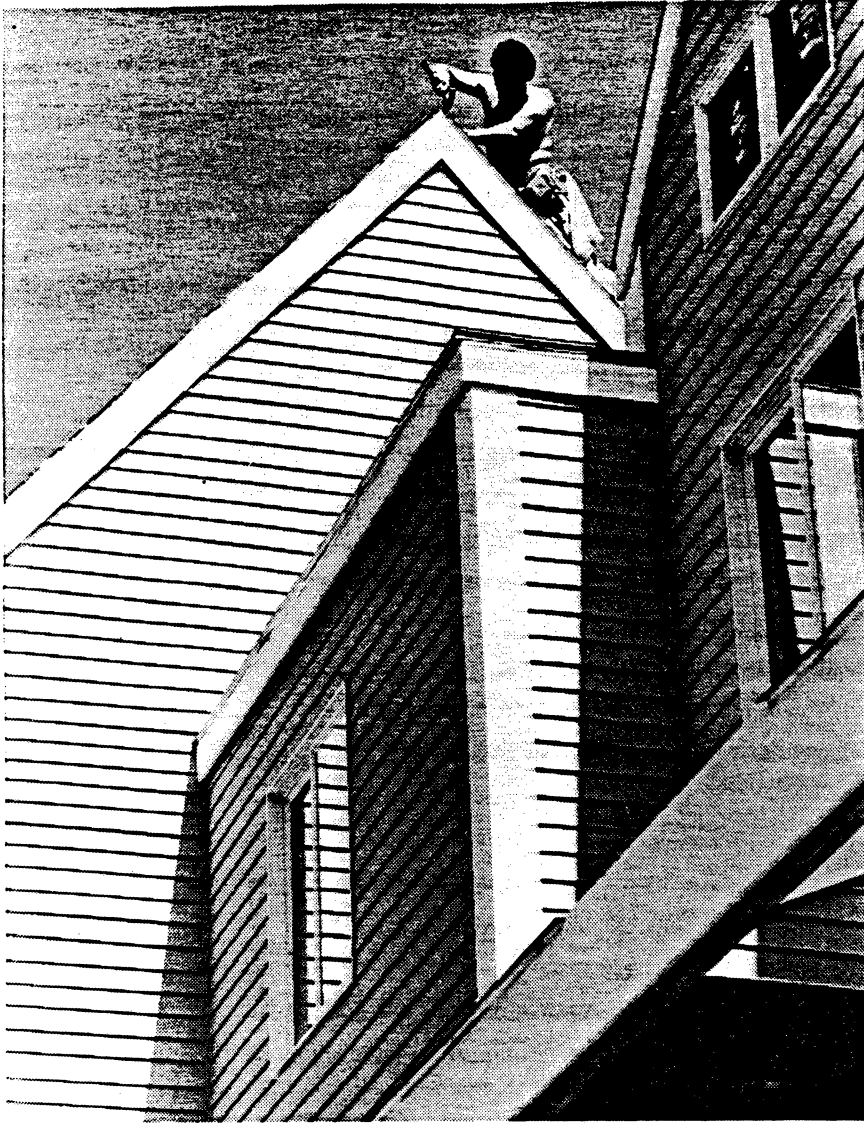
Cambridge blends tradition and change in equal parts, sometimes in the same building or institution. Nearly as old as the city itself, Harvard University and its academic community bring both the solidity of tradition and the flux of new ideas and inventions. MIT straddles this divide, as well. High technology firms spun off by MIT and Harvard occupy the former factory buildings which speak to a vanished tradition of manufacturing prominence. (Cambridge was once the Commonwealth's second largest industrial center.) These renovated buildings, such as One Kendall Square, formerly the Boston Woven Hose factory, illustrate the city's new-found prominence in cutting edge industries such as biotechnology, computer software and optics. They also point to the continuity of knowledge linking Cambridge past and present.



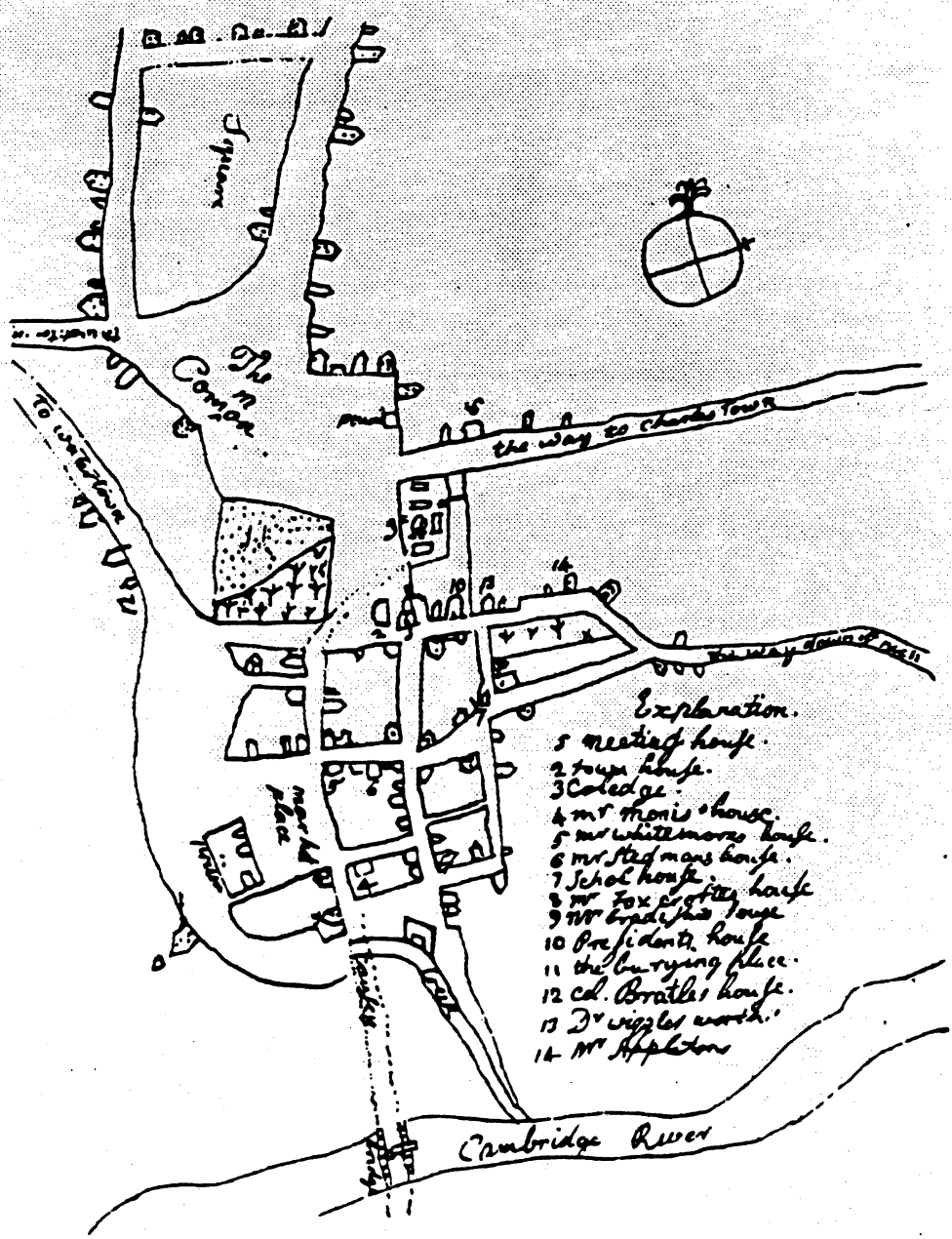
This attractively landscaped plaza which is the focus for ground floor retail at One Kendall Square was carved out of the complex of industrial buildings which made up the Boston Woven Hose factory.

The city's housing stock is a blend of old and new as well. Residential building styles range from the Tory-era mansions of Brattle Street to the modern brick apartment high rises along Harvard Street. Turn of the century two- and three-decker apartments and similar wood-framed dwellings are a feature of many neighborhoods. Single-family houses on larger lots predominate in much of West Cambridge while multi-family structures are more common in the city's denser northern and eastern sections. High demand for this stock and the city's appeal to an increasingly professional, higher income population drove up home prices and rents in the past decade. While an unusually large subset of the stock is protected from the market by subsidies or rent control, most units which enter the market are either unaffordable or inaccessible to the majority of potential home buyers and renters, especially low- or moderate-income families. Cambridge remains a city of renters (30% of households are owner-occupied, compared to 60% of all units countywide), though homeownership increased by one-third in the past decade, due mainly to construction and conversion of condominiums. This was the largest jump in ownership in 40 years.





Cities such as Cambridge are unique laboratories of social and technical innovation. Inc. magazine recently dubbed East Cambridge "the most entrepreneurial place on Earth," in part because over 17,000 jobs were created here during the last ten to fifteen years. Cambridge is an engine of innovation not simply because of its great institutions, but because of its ability to bring people together to exchange ideas and make things happen. This is an attribute of all great cities, but special care must be taken to preserve and build on those amenities and public spaces which make Cambridge a good place for collegiality and conversation. The balance of tradition and innovation is a fragile but vital one.



- Explanation.
- 1 meeting house.
 - 2 town house.
 - 3 College.
 - 4 Mr. Thonis' house.
 - 5 Mr. Whittemore's house.
 - 6 Mr. Steedman's house.
 - 7 School house.
 - 8 Mr. Foxcroft's house.
 - 9 Mr. Bradish's house.
 - 10 President's house.
 - 11 the burying place.
 - 12 Col. Brattle's house.
 - 13 Dr. Wigglesworth's.
 - 14 Mr. Appleton.

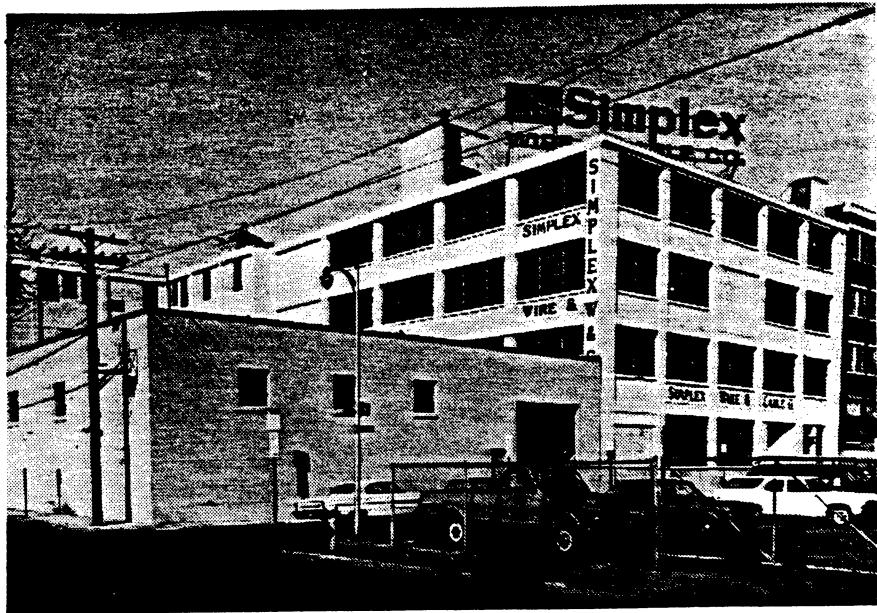
Cambridge River

2 • Historical Background

Before outlining the planning assumptions and policies in the areas of land use, housing, transportation, economic development, open space, and urban design, a broader perspective is presented. Much of what the City encouraged in the 1980s as development and planning policy was an outgrowth of decisions made and efforts undertaken in the decade before. Those efforts in turn were initiated in response to the lessons learned in the decade before that. Some historical perspective helps to explain how the City evolved its set of planning assumptions and how the policies that grew out of those assumptions can be profitably altered to serve the city better in the decades that lie ahead.

The late 1950s and 1960s are important to consider because much of what transpired in subsequent decades, and what is occurring even today, is in response to actions taken and policies established in those decades. Each subsequent decade assumed a definable character that, when revisited, helps illuminate the circumstances that shape our decisions today. In each decade, the changes in the demographic character of the city's population, in the evolution of its economic base, in the changing character of land use, housing, and the institutions, and in the evolving modes of transportation can be traced and their impact on today's policy discussions understood.

This sketch of Old Cambridge (1745) shows the origins of the familiar street pattern of Harvard Square.



The 1950s and the 1960s — Trending Downward

Indicators of Decline

As we look forward from these decades, and particularly from 1960 onward, the future of the City of Cambridge did not look nearly as secure as it might from our vantage point in 1993. The city's population peaked in 1950 and each succeeding census would record a further decline. That decline reflected the national trend to suburbanization of the urban populations of the older central cities after World War II and the declining size of the family in later decades, compounded in Cambridge by the special influence of the large educational institutions and their distinctive populations. While young families and the financially upwardly mobile moved to the suburbs a parallel trend was clearly evident: the wholesale flight of the economic base of the city as the old industries that filled the brick factories of Kendall Square and Cambridgeport left Cambridge for distant suburbs, or for different regions of the country. The loss of Lever Brothers in Kendall Square was a hallmark; later Simplex Wire and Cable Company abandoned Cambridgeport. The former has been replaced by Technology Square, the paradigm for what would later prove to be the new Cambridge economy. The vacant Simplex Wire site is only now beginning to be occupied with what may prove to be the economic engine of the 1990s: biotechnology and other rarefied forms of research and manufacturing. Major employment sectors were being lost but it was not clear in these early decades what would replace them, either as job providers or taxpayers. Furthermore, those enterprises which remained in Cambridge found it difficult to thrive given tight capital and financing constraints. At the time the only growth industry was the education of other people's children at the two major institutions of higher learning, Harvard and MIT.

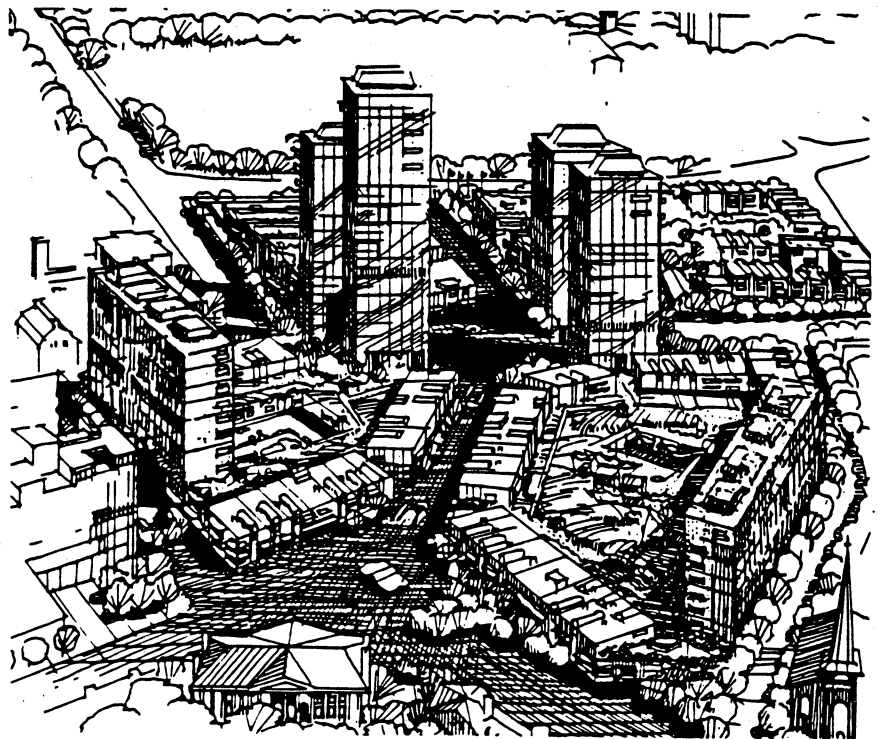
The flight of its young and prosperous population and the loss of the major elements of the old industrial economic base had serious implications financially for the City. From the perspective of the recent past it is easy to forget how precarious the financing of local government had become in the 1960s and 1970s and that two-thirds of the burden of financing City services was born by the residential segment of the city's tax base.

Redevelopment as a Solution

It is not surprising then that in those decades the city and its physical fabric were viewed as antiquated and in need of renewal. The dense residential neighborhoods which are so valued today were then viewed as cramped anachronisms. The intricate weave of narrow streets looked very claustrophobic in a new age where the automobile was gaining ascendancy.

It is no surprise either that the decade of the 1960s saw the establishment of the Cambridge Redevelopment Authority. The vision of the decade was expressed explicitly in several documents published by the Authority and its predecessor agencies, one lamenting the hopelessly outdated character of the city's triple decker neighborhoods and the vital need to renew - that is demolish - them. Another envisioned the day when the center of Harvard Square would be flanked by office towers in the mold of the now emerging Kendall Square. Their early efforts, as illustrated by the residential building at 221 Mt. Auburn Street, promoted the vision of old neighborhoods replaced by a new contemporary development pattern of more efficient land use in large buildings specifically designed to accommodate the automobile.

In 1968, the Cambridge Redevelopment Authority envisioned a dramatically transformed Square, including four high-rise towers. Harvard Yard is in the foreground.



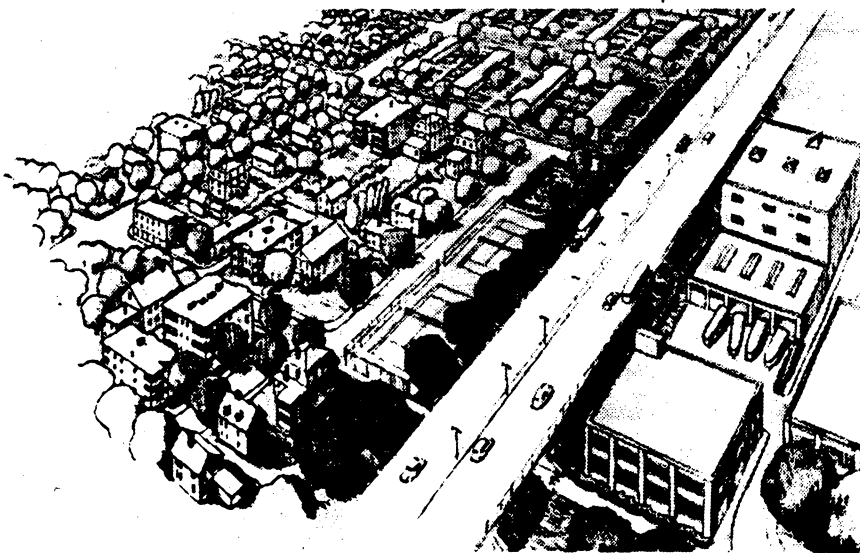
Zoning Amendments

Reflecting the new reality as well was the Zoning Ordinance adopted in 1960. It, and many subsequent changes to the document through the 1960s and much of the 1970s, reflected the prevailing notion that higher densities were desirable as an incentive to redevelop the older neighborhoods through private renewal and, in part, to accommodate the expansionist vigor evident at least in the city's two major institutions of higher learning. These were the decades when new programs were being developed at the national level to help inner cities overcome their new found obsolescence, through urban renewal, housing subsidies, and model cities. Substantial portions of Agassiz, Mid-Cambridge and Cambridgeport were rezoned to increase significantly the allowed density of development, to a level alien to these neighborhoods as they then existed. Harvard Street between Harvard and Central Squares is sprinkled with the brick products of that vision; large, blocky, apartment buildings replacing one or more wood frame homes and skirted by or perched upon an ample supply of parking. Some of the highest and densest housing in these years employed one or other of the several housing subsidy programs available to stem the flow of people out of inner cities.

Rise of the Automobile

One of the principal agents of the changing patterns of development in the 1960s, the automobile, was receiving its due. While we trouble ourselves today with the growing press of cars on all city streets, it is easy to forget that a six lane expressway (the innerbelt) was proposed to march down Brookline Street in Cambridgeport, cross Massachusetts Avenue at Central Square and bore its way through the Area Four and Wellington-Harrington neighborhoods in a headlong rush to join the similarly configured Route Two extension. That extension was to course through North

This image from the 1955 Cambridge Capital Improvement Program illustrates a different attitude toward the automobile than we have today.



The Belt Expressway, if built on the route of Brookline Street, would act as a buffer between residential and industrial districts. See CP-6, next page.

Cambridge, along what is now the main commuter rail line out of Porter Square, and meet the inner belt in a grand interchange in Somerville. Simultaneously, the Metropolitan Transit Authority (now known as the MBTA) was slipping into decline.

The 1970s — Incipient Revival

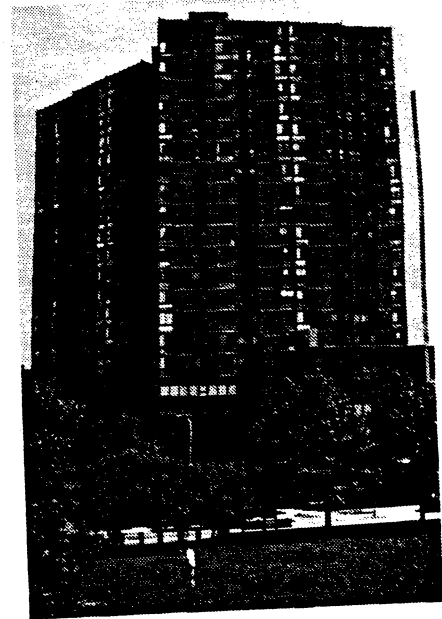
The Highrise as Exemplar

The former Commonwealth Energy building at 669 Massachusetts Avenue in Central Square was the commercial development vision for Cambridge in the 1960s and early 1970s. At the extreme, Rindge Towers, or more benignly 295 Harvard Street, or the several elderly housing towers constructed throughout the city, reflected the housing vision for that same period. It is this vision that formed the redevelopment plan for Kendall Square which is slowly emerging into reality at Cambridge Center today. It is a vision that could be easily accommodated in many of the zoning districts established or continued in the 1960 zoning ordinance revision. From North Point on the easterly edge of the city to the tip of Cambridgeport at the Cottage Farm Bridge, an unbroken band of Industry B zoning permitted commercial development of almost any kind with few constraints, and no height limit. Central, Harvard, Porter, Inman and Trolley Squares were similarly unregulated at the same high density except that industrial uses generally were not permitted. Similarly permissive zoning could be identified in many residential neighborhoods of the city as well. Despite that permissive zoning and some new commercial development, as at Technology Square, the economic vulnerability of the city continued to deepen. No clear successor to the old industrial economy was on the horizon.

The Revival Strategy

The Kendall Square renewal area remained vacant. The industrial areas in East Cambridge, Alewife, and Cambridgeport continued to deteriorate as marginal uses began occupying the space left by the departing industries.

In that depressed economic environment, the City began to search for a strategy to revitalize its economy and secure a tax base to ease the burden on city homeowners and stem the decline of the city's financial health. The strategy chosen was to make comprehensive plans for selected declining industrial areas to attract those activities that could find an inner city location acceptable. It was also hoped that a comprehensive planning effort would make it possible to secure some of the growing array of subsidy and economic incentive programs developed by the federal government to help ailing local communities revitalize their economies.



Most people were unaware that there was a Lechmere Canal in the 1970s, when it was a derelict body of water surrounded by parking lots and former industrial uses.



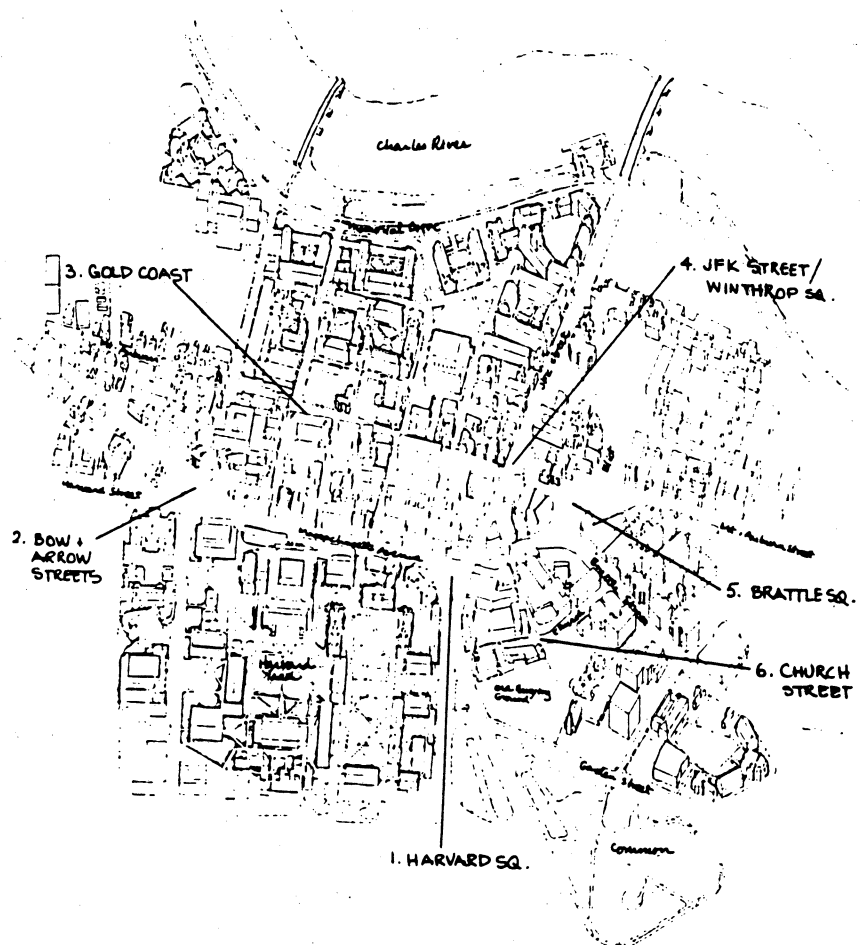
East Cambridge and Alewife were initially chosen for those planning efforts, in part because the potential side effects of the proposed new development could be contained most easily with the least disruption to residential neighborhoods. In the latter years of the decade, the City produced two plan and policy documents for those respective areas, in 1978 for East Cambridge and in 1979 for Alewife. As a companion to those planning efforts, the City adopted the first significant downzoning of an anachronistic Industry B area, reducing the density of permitted development and instituting many detailed controls by which the City could shape the direction of any private development in the study areas. It is in part a reflection of the state of the city and regional economy even as late as 1978 that such a significant reduction in development potential was accepted by property owners with only modest protest.

Residential Revival - Further Rezoning

Earlier and perhaps less dramatically, other changes were occurring in the city's residential neighborhoods. People were beginning to come back to Cambridge to live; these were not exactly the same families who left in the 1950s and 1960s, and these newcomers viewed the old neighborhoods and commercial centers with a more approving eye. The "1960s" versions of development were viewed with disdain and, beginning after mid-decade, a growing trend can be detected in the record of citizen sponsored, and at times City sponsored, rezoning petitions reversing, area by area, the increased density and development potential of the landmark zoning revision adopted a decade earlier in 1960.

The establishment of rent control in Cambridge in 1969 illustrates the complexity of the demographic trends shaping the future city. Adopted in response to low vacancy rates and spiraling rents throughout the 1960s, it is clear that the city and its housing stock was not being abandoned; rather the suburban working and middle class families were being replaced by others forming a different kind of household, of single persons and unrelated individuals, frequently associated with the education industry growing so dramatically in Cambridge and Boston. Two-thirds of the rental housing stock, about twenty thousand (20,000) units, were initially affected by the adoption of rent control.

In 1973 commercial Inman Square was rezoned; until that date it was permissible, if physically unlikely, to construct a 669 Massachusetts Avenue building in that neighborhood square. In 1973 and 1974 substantial portions of the Agassiz neighborhood were downzoned; Mid-Cambridge followed quickly in 1975 with reductions in density along Broadway and Harvard Street. In rapid succession other major downzonings were adopted: Porter Square in 1977, lower residential Cambridgeport in the same year, large areas of industrial and residential North Cambridge in 1978, most of the industrial portions of East Cambridge in the same year. In 1979 the Harvard Square Overlay District was adopted, establishing height limits there for the first time.



The Harvard Square Overlay District was refined in 1986 to recognize the special characteristics of six subdistricts and to encourage historic preservation.

New Transportation Directions

Early on, the decade began to bear the fruits of the growing opposition to major metropolitan highway construction, planned as far back as 1948 and advancing strongly in the 1960s. Protest throughout the region prompted a state moratorium on limited access highway construction within Route 128 in 1969; in 1972, after several years of study the inner belt and the Route Two extension into Cambridge from Alewife were officially deleted from the state's regional transportation plan. In a companion action, the State committed itself to major extensions of the MBTA transit system including one on the Red Line from Harvard Square to Arlington. The perennial problem of commercial traffic on the streets of Riverside and East Cambridge, and the boom in commercial development in Harvard Square, Alewife, and to a lesser extent Porter Square, keenly felt in the 1980s, have been influenced in part by the transportation decisions made in the early years of the decade before.

Trends into the 1980s — The New Prosperity

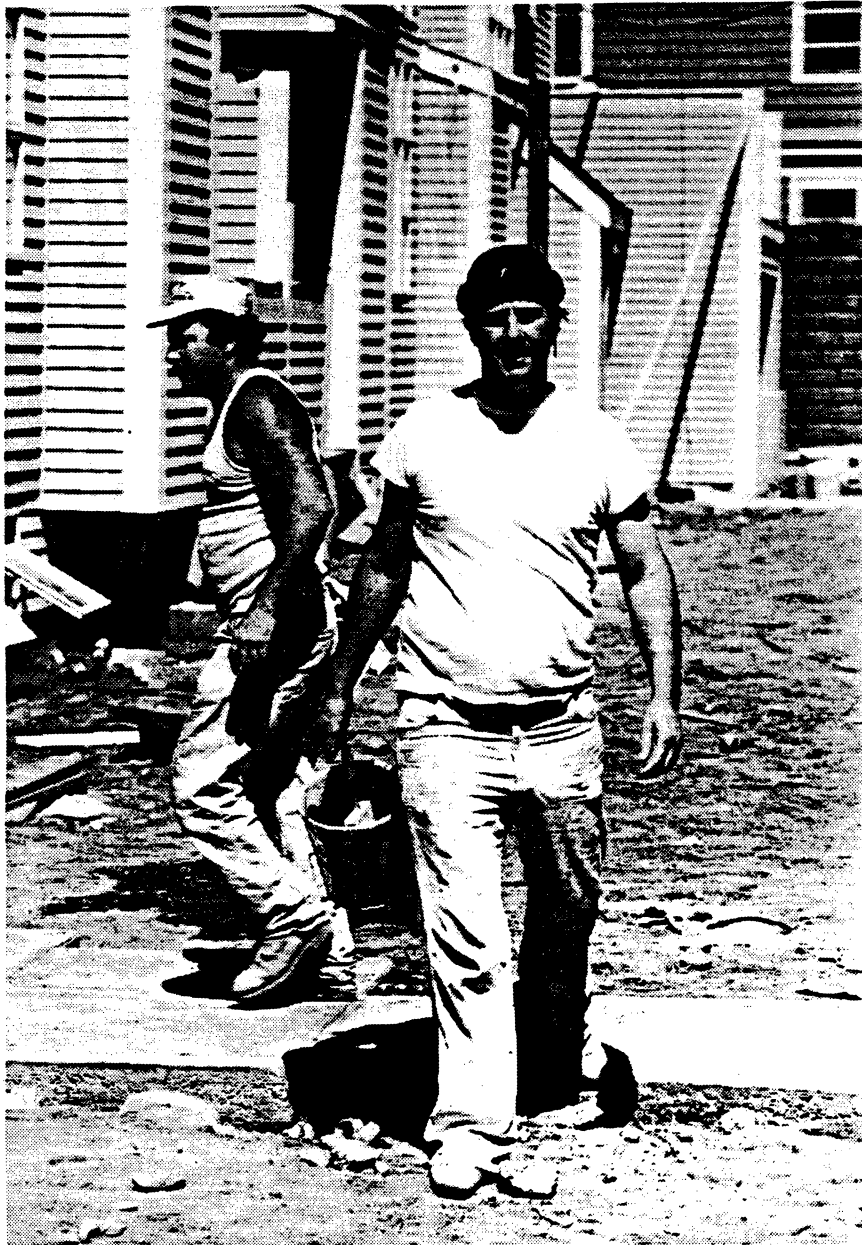
By the end of the 1970s a number of trends were clearly discernible. A gathering momentum would propel those trends headlong into the next decade, accompanied by an unprecedented level of regional prosperity. The 1980s would highlight the complexity of managing and balancing the consequences of an exceptionally high level of economic activity in the private commercial economy. The decade would also bring with it many extraordinary opportunities to enhance the public realm that only prosperity, and the leverage and income that flow from it, make possible.

Neighborhood Protection

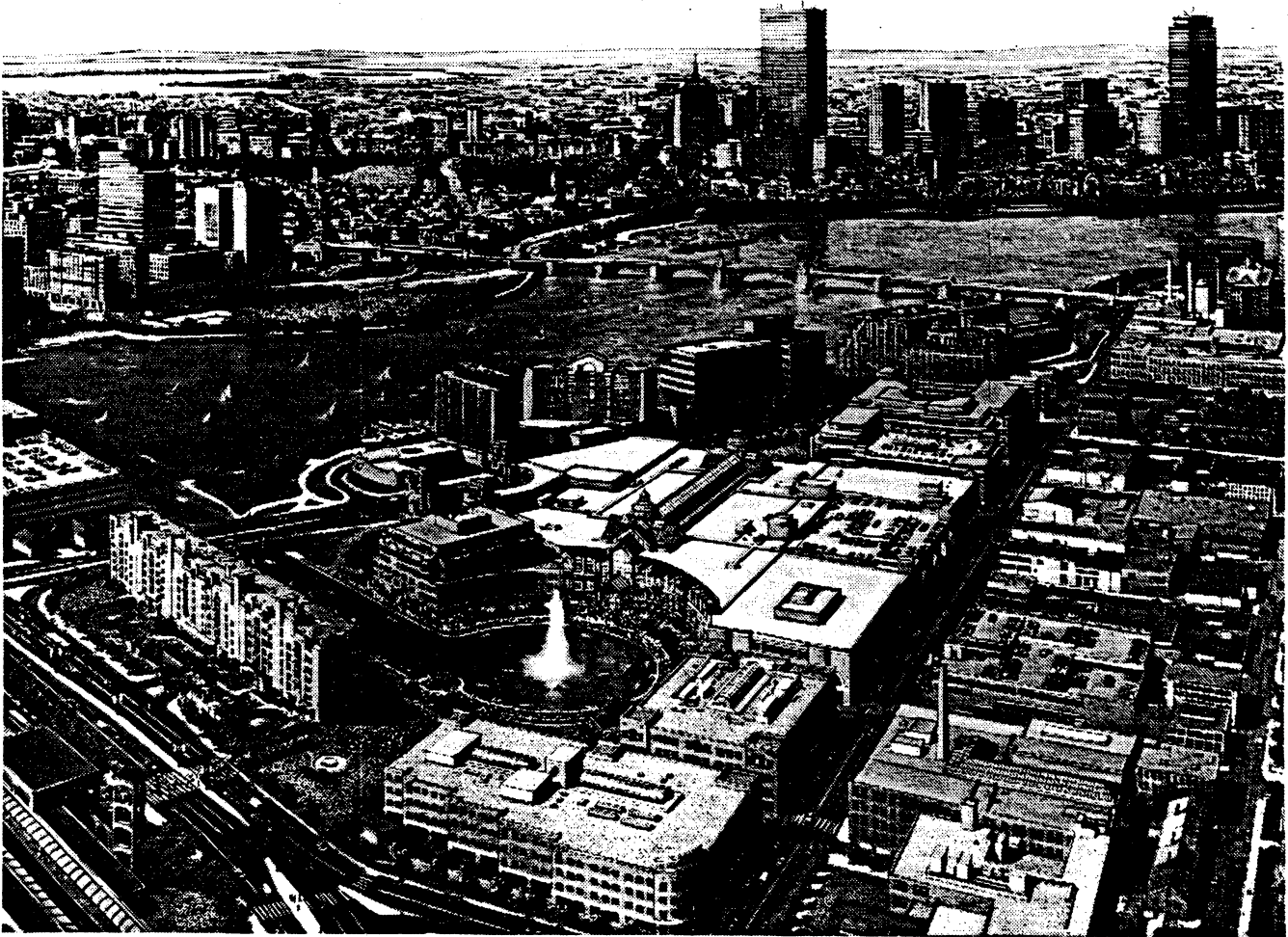
One of the most significant trends was the expanding effort to protect all existing residential neighborhoods in the city such that their physical fabric would be stabilized and existing housing stock preserved; new development was intended to be permitted only at prevailing densities. The early downzonings in several neighborhoods have been noted. Similar rezonings in more areas and with greater refinement continued throughout the 1980s. The first townhouse ordinance, in 1976, and subsequent refinements in 1979 and 1989 were adopted precisely to encourage small-scaled, new development compatible with existing neighborhood development patterns. The special authority sought by Cambridge and granted by the legislature in 1979 to control institutional uses was motivated by the same objective: prevention of wholesale disruption, if not destruction, of residential neighborhoods by the expansion of institutional uses into them. The Institutional Use Regulations amendment to the Zoning Ordinance, adopted in 1981, implemented the authorization granted in 1979. Adoption of the Demolition Ordinance in 1979 and of the Mid-Cambridge and Half Crown Conservation Districts in 1985 and 1984 respectively are elements of that same effort.

Commercial Densities Reduced

A second trend was the general reduction in the density of development allowed in the commercial and industrial areas of the city. As noted above, the reductions adopted in East Cambridge and Alewife were in furtherance of policy and urban design plans published by the City. Similar analyses would lead to reductions along northern Massachusetts Avenue and upper Cambridgeport and in Central Square in the 1980s. The process continued into the 1990s with an extensive study and rezoning in lower Cambridgeport, a second look at East Cambridge, and a look at the future of Alewife.



Residential construction activity was commonplace throughout the city in the 1980s.



The CambridgeSide Galleria at the heart of the Riverfront was reviewed extensively by the community over several years; the collaborative venture with the City is recognized as a national model for harmonizing good public and private design. In addition, the developer participated in the creation of Charles Park and helps maintain the public park system; the shuttle bus program helps alleviate traffic congestion; and significant jobs and taxes benefit the community.

Protecting the Public Interest

A third trend in the area of land use regulation was the continually expanding role of the public in reviewing and shaping private development in the city. With the establishment of a new planned unit development procedure in 1977 and the adoption of a parallel requirement for townhouse and multifamily housing about the same time, the City and its citizens have had an increasing opportunity to review and shape new development in Cambridge. That trend has accelerated and deepened throughout the decade with more and more development requiring special permit approval. Since issuing its first Planned Unit Development Special Permit in September of 1979, the Planning Board alone has considered a total of ninety-one applications for development approval, ranging in scale from the waiver of the sign limitation regulations on Alewife Brook Parkway to the request for approval of a 1,000,000 square foot retail, office, and housing mixed-use development in East Cambridge. Little more than a decade ago, each of those special permit projects could have been constructed without any public process and with little public or community opportunity to weigh the merits and demerits associated with the proposal, to secure necessary public benefits, and to reverse the course of a truly harmful scheme.

Toward a Sustainable Future Cambridge Growth Policy document

Update of Growth Policy History into the 1990s*

As the decade of the 1980s came to a close, a profound recession in the New England region brought new building in the city to a halt. The national savings and loan crisis and the local bank failures that resulted from it deepened the recession and made any commercial or housing construction unsecured by a prime tenant unbuildable. Numerous projects completed just as the market collapsed fell into bankruptcy. That was the fate of three of the housing developments along the waterfront in East Cambridge. Commercial projects that had received building approval near the end of the decade often failed to advance to actual construction; commercial construction in the widely varying environments of East Cambridge, Kendall Square, Harvard Square and Alewife was stymied. The statistics are dramatic. From 1980 to 1991, total commercial construction exceeded 9,000,000 square feet; first class office space coming on line in the 1992 to 1996 period totaled only 245,000 square feet.

Unlike the financial squeeze that plagued Cambridge during the lean years of the 1970's when the City's credit and its ability to provide services to its citizens was severely strained, the city was able to weather the recession of the new decade because of the reservoir of income represented by the building boom of the 1980s. While other Massachusetts communities were forced to retrench, Cambridge was able to maintain its level of services and continue to invest in the City's infrastructure with careful management of its financial resources. The City's relative financial stability was all the more remarkable given the retreat of the state and federal governments from large areas of support of local governance, most particularly in the area of support for affordable housing.

For a time, the issues of development and its impact on the residential communities of the city that had risen to the top of the local agenda in the 1980s, were less urgently debated. Change, however, is constant and a surprising, resurgent development climate began to be evident by the mid-1990s. That revived market was led by new housing construction, abetted in part in mid-decade by the phasing out of rent control in the city as a result of a state-wide voter initiative. The pattern of the late 1980s could be detected again in the mid-1990s. As the residential market intensified, new housing began to appear in very unresidential environments with conversion of old industrial buildings in still-industrial areas as in East Cambridge: the old TRW building on Binney Street and the Eastern Uniform building on O'Brien highway as two examples. Active industrial sites within residential neighborhoods were also newly appealing for housing conversion: the last non residential sites along the railroad tracks in Porter Square, the Portland Stoneware property in north Cambridge, and the building-out of the 96 unit project along Richdale Avenue that had lain fallow throughout the recession. In total, about 890 units of housing in major developments are now under construction or recently occupied throughout the city.

Speculative office construction had not resumed on a major scale in Cambridge, but as the tight office and research and development market continued, a revival of commercial construction was in the offing as the decade passed its mid point. Hotel and research and development activity was now actively under way, particularly at University Park and in Kendall Square, with nearly 1,000,000 square feet of commercial/R&D space recently completed or under construction in 1998. More than 500 hotel rooms were being added to the city inventory as well.

Accompanying the revived development activity was also a revival of the concerns that new development engender and that were prominently expressed by the community in the 1980s, traffic generation and the pace and amount of new development among them. The renewed attention to those concerns was vividly illustrated by the citizen sponsored citywide rezoning petition, under consideration by the city during the spring and summer of 1997, that proposed substantial changes in the height and floor area limits in almost all zoning districts in the city. Further, the petition proposed new provisions in the Zoning Ordinance dealing with district transitions, voluntary inclusionary housing, and new rules for open space in residential and commercial districts among other wide ranging changes. Only small elements of that petition were adopted by City Council, but the issues raised by it and a series of smaller, more geographically limited rezoning petitions filed and considered at mid decade, remain a subject of public debate, and with a consensus on how they should be addressed.

* Page 23 of the document

Major Construction in the Mid 1990's

I. Proposed: special permit (sp), variance (var), as-of-right/building permit (bp)

- *Third Street and Linsky Way* sp 1,300,000 sf R&D, hotel vacant site used for parking (Commonwealth Energy parcel)
- *2525 Massachusetts Avenue* sp 20 residential units demolition of existing commercial building (Just-A-Start)

**TOTAL: 1,300,000 sf non residential
20 residential units**

II. In Approval Process: special permit (sp), variance (var), as-of-right/building permit (bp)

- *331 Putnam Avenue* var 45,000 sf retail before BZA (Bread and Circus)

TOTAL: 45,000 sf non residential

III. Approved: special permit (sp), variance (var), as-of-right/building permit (bp)

- *0 Arrow Street* sp 51,000 sf office building vacant lot (Gunwyn Company)
- *630 Massachusetts Avenue* sp/var 47,000 sf retail/72 housing units 40,000 sf of existing commercial (Holmes Family Trust)
- *181 Harvey Street* sp 32 residential units demolition of existing industrial building (Cornerstone CoHousing).
- *187 O'Brien Highway* sp 121 hotel rooms vacant lot
- *778 Memorial Drive* bp 285,000 sf R&D some rehabilitation, demolition of R&D structures, new construction initial permits issued for rehabilitation and garage (Polaroid)

**TOTAL: 383,000 sf non residential
104 residential units
121 hotel rooms**

IV. Under Construction

- *Winthrop Square* **sp** 29,000 sf retail/12 housing units existing commercial demolished and reused
- *1008 Massachusetts Avenue* **bp** 67 housing units vacant lot used for parking
- *1380 Massachusetts Avenue* **sp** 38,000 sf office/retail partial demolition of 24,000 sf existing building (Cambridge Savings Bank)
- *180 Sidney Street* **bp** 140,000 sf R&D vacant lot (AS&E lot)
- *195 Binney Street* **sp/var** 189 housing units conversion of industrial building (Worthington Place)
- *169 O'Brien Highway* **sp/var** 104 housing units conversion of industrial building (Lechmere Residences)
- *2 Canal Park* **sp/var** 197,000 sf office vacant lot (Monitor Headquarters)
- *15 O'Brien Highway* **sp** 435 housing units demolition of industrial warehouse (Museum Towers)
- *177 Pemberton Street* **sp/var** 20 housing units demolition of industrial warehouses (Pemberton Place Condominiums)
- *Porter Square Shopping Center* **bp** 40,000 sf retail vacant lot (CVS store)
- *20 Sidney Street* **bp** 210 hotel rooms/40,000 sf retail vacant lot (University Park Hotel and Star Market)
- *350 Massachusetts Avenue* **bp** 80,000 sf office/retail vacant lot (Tofias Fleishman Headquarters at University Park)
- *45/75 Sidney Street* **bp** 260,000 R&D vacant lot (Millennium Headquarters)
- *253 Norfolk Street* **sp/var** 21 dwelling units conversion of industrial building
- *6 Cambridge Center* **bp** 221 hotel rooms vacant lot (Boston Properties)

TOTAL: **824,000 sf non residential**
 836 residential units
 431 hotel rooms

V. Recently Completed: special permit (sp), variance (var), as-of-right/building permit (bp)

- **258 O'Brien Highway** sp 112 hotel rooms vacant lot (Cambridge Inn)
- **331 Putnam Avenue** var 14,000 sf retail demolition of car dealership (Osco Drug)
- **15 O'Brien Highway** sp 160,000 sf office demolition of industrial warehouse (EF Headquarters)
- **129-205 Richdale Avenue** sp 43 dwelling units demolition of industrial building (Cambridge CoHousing)
- **11 Hurley Street** var 53,000 sf demolition of industrial building, renovation and new construction (Biopure headquarters)

**TOTAL: 227,000 sf non residential
43 residential units
112 hotel rooms**

GRAND TOTALS

In Process, Approved, Under Construction, Recently Completed

1,479,000 sf non residential
983 residential units
664 hotel rooms

Annotated List of Zoning Petitions Considered in the Past Four Years

1. Joseph, et al Petition: to amend Article 10.000 - Appeals, Variances and Special Permits.

Date:3/94

Purpose: to establish the Growth Policy document policy statements as standards for issuance of special permits and variances.

Action taken: **failed**

2. Richards Petition; to rezone a lot from Residence B to Business A.

Date:6/94

Purpose: to make the zoning designation of Stop and Shop parking lot consistent with current use.

Action taken: **failed**

3. City Council Petition: to amend the membership of the Board of Zoning Appeal.

Date:11/94

Purpose: to increase the number of associate members by 2.

Action taken: **passed**

4. O'Hara, et al Petition: to rezone a portion of the Youville Hospital campus to Residence C-1 from the existing Residence C-2.

Date:12/94

Purpose: to provide a buffer between the hospital and the adjacent low density neighborhood.

Action taken: **passed, but amended to Residence C-2B**

5. Planning Board Petition: Neighborhood Preservation Interim Planning Overlay District Petition.

Date:2/95

Purpose: limit development in Residence C-1 districts, Business A districts, and limit conversion of residential units to commercial uses in all districts for an interim period after the loss of rent control.

Action taken: **failed**

6. Milmo, et al Petition: to rezone a portion of a lot from the existing Business A-1 to Residence B.

Date:4/95

Purpose: to limit extent of development on affected lots at 202 Appleton Street.

Action taken: **failed**

7. City Council Petition: to amend the zoning ordinance regarding massage establishment regulations.

Date:5/95

Purpose: to permit legitimate massage therapy activities to occur more generally throughout the city.

Action taken: **failed, and refiled**

8. Casler, et al Petition: to amend the zoning ordinance regarding Townhouse Regulations.

Date:8/95

Purpose: to limit development of additional units on lots to preserve backyards in Residence B districts.

Action taken: **failed, Council refiled amended version**

9. City Council Petition: to amend the zoning ordinance regarding massage establishment regulations.

Date:10/95

Purpose: to permit legitimate massage therapy activities to occur more generally throughout the city.

Action taken: **passed**

10. City Council Petition: to amend the Townhouse Regulations.

Date:10/95

Purpose: to reduce the number of units and gross floor area permitted in Residence B districts.

Action taken: **passed**

11. Bromfield/Volpe, et al Petition: to amend the zoning ordinance and zoning map to create a buffer zone in the area of the PUD/IC districts.

Date:5/96

Purpose: to provide an open space buffer between development at the W. R. Grace site and abutting parks and the residential neighborhood.

Action taken: **failed, refiled as Quinlan/Bromfield**

12. Rowe, et al Petition: to rezone lots from Residence B and C-2 to Residence A-2. ng map in the area of 33-39 Linnaean Street, from Residence C-2 to Residence B and Residence A-2.

Date:6/96

Purpose: to reduce the amount of development permitted on 33-39 Linnaean Street and bring its zoning into conformance with its existing developed character.

Action taken: **failed**

13. Lohnes, et al Petition: to rezone lots on Green Street from Business B-1 to Residence C-1.

Date:6/96

Purpose: to provide a buffer between high density development on Massachusetts Avenue (particularly at 1008 Massachusetts Avenue) and the Riverside neighborhood.

Action taken: **passed**

14. Planning Board Petition: technical amendments to the zoning ordinance.

Date:7/96

Purpose: to redefine gross floor area, establish provisions for modifying approved townhouses, make modifications to the Residence C-2B district, and to harmonize various sections related to incentive zoning requirements.

Action taken: **passed**

15. Quinlan/Bromfield, et al Petition: to amend the zoning ordinance and zoning map by creating an open space protection buffer in the area of the Industry C/PUD IC districts.

Date:8/96

Purpose: to provide an open space buffer between development at the W. R. Grace site and abutting parks and the residential neighborhood.

Action taken: **failed**

16. City Council Petition: to create a Temporary Building Moratorium to 11/1/97 in the Industry C/PUD IC district.

Date:1/97

Purpose: to limit development in the affected districts while planning efforts are undertaken to develop alternate, permanent regulations for the IC districts.

Action taken: **passed**

17. Carter, et al Petition: to amend the zoning map on Massachusetts Avenue at Hancock Street in the Riverside Neighborhood from Business B-1 to Residence C-2 and to amend the zoning ordinance in Article 5.000 - Development Standards for Business Districts, as well as Article 6.000 - Schedule of Parking and Loading Requirements.

Date:2/97

Purpose: to limit development in the affected districts along Mid Massachusetts Avenue in Riverside and Mid Cambridge.

Action taken: **failed**

18. Nogic, et al Petition to create a Temporary Building Moratorium to February 1, 1998 in the Industry C/PUD IC district.

Date:2/97

Purpose: to limit development in the affected districts while planning efforts are undertaken to develop alternate, permanent regulations for the IC districts.

Action taken: **passed**

19. Carter, et al II, Petition to amend the zoning map on Massachusetts Avenue at Hancock Street in the Riverside Neighborhood from Business B-1 and to Residence C-2B as well as to amend the zoning ordinance in Article 5.000 - Development Standards for the Business B-2 District, and Article 6.000.

Date:4/97

Purpose: to limit development in the affected districts along Mid Massachusetts Avenue in Riverside and Mid Cambridge.

Action taken: **failed**

20. Planning Board Petition: to amend the zoning ordinance regarding telecommunication towers and regulating at-grade parking below occupied floors of buildings.

Date: 4/97

Purpose: to institute a special permit process for approval of telecommunication towers; to require special permit review for developments locating parking in conspicuous ground floor locations.

Action taken: **Telecommunications controls passed; parking review requirements failed**

21. Planning Board Petition: to amend the zoning map in the area of Harvard Street between Prospect and Ellery, from Residence C-3 and C-2 to Residence C-2A, C-2B and C-1.

Date: 4/97

Purpose: to reduce development potential on developed lots along Harvard Street already developed to high densities.

Action taken: **passed**

22. Pitkin, et al Petition: reduction in FAR and heights in most districts in the city; additional regulations with regard to open space requirements, inclusionary housing and incentive zoning, notice requirements.

Date: 7/97

Purpose: to reduce development potential throughout the city.

Action taken: **limited portions recommended by the Planning Board were passed**

23. Planning Board Petition: to amend the zoning ordinance and the zoning map by creating the Mid Massachusetts Avenue Overlay District.

Date: 10/97

Purpose: to reduce development potential and permitted heights in the Mid Massachusetts Avenue area bordering Riverside and Mid Cambridge.

Action taken: **failed**

24. Planning Board Petition: to amend the zoning ordinance regarding the Hotel and Motel Uses in Residence C-3 and C-2 districts.

Date: 7/97

Purpose: to require special permits for hotel uses in these districts to prevent their location in neighborhood locations.

Action taken: **passed**

25. City Council Petition: to amend the zoning map on North Mass Avenue from Business C-1 to Business A-2.

Date: 10/97

Purpose: to rezone lots in response to a court directive.

Action taken: **failed**

26. Planning Board Petition to amend the zoning ordinance to delete the open space bonus which grants additional floor area to lots adjacent to wide public streets and open spaces.

Date: 10/97

Purpose: to eliminate a provision that has resulted in excess density on lots near public parks, among other locations.

Action taken: **passed**

27. Carroll, et al Petition: to rezone certain lots from Industry B and Industry A to Office 1 map in the eastern part of Neighborhood Four.

Date: 12/97

Purpose: to reduce the permitted density of development in a transition area between Kendall Square and Neighborhood 4.

Action taken: **failed**

28. City Council Petition: to create a moratorium on new construction and installation of additional accessory parking spaces in Residence A-1, A-2, B, C, and C-1 districts.

Date: 12/97

Purpose: to place a moratorium on backyard construction and parking spaces until permanent recommendations can be developed.

Action taken: **passed**

29. City Council Petition: to create a new Incentive Zoning and Inclusionary Housing Provisions section in the zoning ordinance.

Date: 12/97

Purpose: to require the inclusion of affordable housing in larger housing developments city wide..

Action taken: **passed**

30. City Council Petition: to increase the membership of the Board of Zoning Appeal by increasing the Associate Members 10.

Date: 1/98

Purpose: to facilitate processing of the Board of Zoning Appeal case load by adding additional associate members.

Action taken: **placed on filed, to be refiled**

31. Urena, et al Petition: to amend the Cambridgeport Revitalization Development District, Section 15.33 - Building Height Limitation.

Date: 1/98

Purpose: to provide additional height transitions between housing development along Brookline Street and office development along Sidney Street, in University Park.

Action taken: **failed**

32. Baker, et al Petition: to amend Section 11.54.5 from the Harvard Square Overlay District.

Date: 12/97

Purpose: to eliminate the provision that allows the waiver of yard requirements by special permit.

Action taken: **pending**

33. Anderson, et al Petition: to rezone portions of Mid Massachusetts Avenue and reduction permitted densities in most residence C districts.

Date: 3/98

Purpose: to reduce density of development permitted in Mid Massachusetts Avenue and reduce permitted as of right densities in residence C districts that are subject to the provisions of the recently adopted inclusionary housing regulations.

Action taken: **pending**

34. Gregory, et al Petition: to rezone certain lots from Industry B and Industry A to Office 1 map in the eastern part of Neighborhood Four.

Date: 3/98

Purpose: to reduce the permitted density of development in a transition area between Kendall Square and Neighborhood 4.

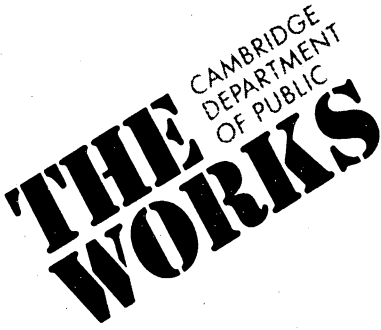
Action taken: **pending**

35. City Council Petition: to amend the zoning map on North Mass Avenue from Business C-1 to Business A-2.


Date: 3/98

Purpose: to rezone lots in response to a court directive.

Action taken: **pending**



To: Beth Rubenstein
Deputy Director

From:  Steve L. White
Deputy Commissioner

Date: March 25, 1998

Re: **Storm and Sanitary Review Process for New Developments**

Ralph E. Dunphy
Commissioner

147 Hampshire Street
Cambridge, MA 02139
617-349-4800
TDD 617-349-4805

This is a brief synopsis of the Department of Public Works process for reviewing proposed development in the City vis-à-vis the City's storm and sanitary systems. The following list is presented in descending order of importance and in approximate chronological order.

1. Location.
2. Development type and size.
3. Underground utilities and facilities
4. The Building Permit.
5. Special Regulatory Agency Permits, (DEP Sewer Extension Permits, MWRA Discharge Permits, MWRA oil water separator permits, EPA dewatering Exclusion Permits, MWRA Dewatering permits).
6. Constructibility.
7. DPW permits (Excavation and sewer and storm connection permits).
8. Community and service disruption during construction.
9. (9) Service maintenance (Parking lot catchbasins, oil water separators etc.)

Once the Department is informed of the proposed location for a development we consider the capacity and maintenance issues as they exist in both the storm and sewer lines in the immediate vicinity of the development. This involves consideration of pipe sizes, slopes, and pipe and culvert structural condition. It also involves consideration of whether there are sediment deposition or grease build up problems in the area.

If satisfied that the pipes in the immediate vicinity are not adversely impacted by the development then consideration is given to the downstream effects and whether or not there may be concerns there from a similar perspective.

If required and if the opportunity presents itself and if time allows we will place or cause the developer to place flow meters at critical locations and measure existing flows so as to obtain a better understanding of the existing use and the available capacity in a given pipe. Obviously the more advance notice we have concerning a project, the better.



After examining the pipe network in the area and assuming there is available capacity then the development itself is considered in greater detail. Information is required with regard to the type of development, be it residential, commercial, industrial or retail. The size of the development, and the full build out plans, be they preliminary or not for the area as a whole.

Underground parking lots or facilities that require pumps to discharge waste water or storm water can impact the public system in a dramatic way in that they usually discharge to the sanitary system which is usually considerably smaller than the storm system. Pumps usually generate instantaneous flows many orders of magnitude greater than gravity systems to the public main.

When we are satisfied that capacity or maintenance is not an issue, consideration is then given as to the City and other regulatory agency permit requirements. The impact of such should not be understated as they can cause considerable delays (sewer extension permits involve a public notification period).

Once the building permit is issued consideration is then given to the construction process and the permit issues that this involves, such as construction dewatering, and temporary service connections. The dewatering permit will involve either the MWRA or the EPA depending on the location and this can also cause some time delays.

Finally our permit process will involve required commitments from the developer concerning the maintenance of some of his on-site storm or sanitary facilities such as grease traps, catch basins and oil and water separators.

New Stormwater Management regulations will obviously effect our review procedures, however it would be merely speculative to articulate such at this time. Once we have a better understanding of the EPA impressions of our draft plans we will share them with you. If you have any questions concerning the above please contact me at (617) 349-4845.

cc: Ralph Dunphy, DPW Commissioner
Ann Daughaday, City Engineer.
Owen O'Riordan, Sewer Division Supervisor



Cambridge Historical Commission

831 Massachusetts Avenue, Cambridge, Massachusetts 02139. Telephone 617/349-4683
 Fax 617/349-6165, TTY 617/349-6112, E-mail HistComm@ci.Cambridge.ma.us



William B. King, *Chair*, Allison M. Crump, *Vice Chair*, Charles M. Sullivan, *Executive Director*
 M. Wyllis Bibbins, Suzanne R. Green, Helen F. Moulton, Robert G. Neiley, Jo M. Solet, *Members*
 Jennifer Jones, Anthony C. Platt, *Alternates*

Cambridge, Massachusetts

Historic Preservation Fact Sheet

Description

Cambridge is a city of 6.2 square miles separated from Boston by the Charles River. Traditionally a highly diverse community, Cambridge has in recent decades become dominated by educational institutions and high-tech research and development activities. Cambridge's current population of 92,000 has begun to increase slightly after declining from its historic high of 121,000 in 1950. Cambridge is one of the most densely settled cities in the country.

Brief History

Cambridge was settled in 1630 as the capital of Massachusetts Bay Colony. The original village near present Harvard Square was the earliest grid-plan settlement in English North America. The seat of government was relocated to Boston in 1634, but in 1636 Harvard College, the second college to be founded in the American colonies, was established on a one-acre site just north of the village.

By the time of the Revolution Cambridge had a population of about 1,500. Most were of Puritan descent, but a small minority were wealthy merchants who in the 1720s began to assemble estates along the Charles River. Seven houses and the Anglican church built by these families between 1727 and 1767 all survive, and give Brattle Street the nickname Tory Row. This social division contributed significantly to the town's architectural heritage, but also provided a flash-point of the American Revolution.

In the early 19th century three new villages developed in the town. Cambridgeport grew along the highways leading to the Boston bridge, and soon captured the town hall. East Cambridge was a speculative venture whose promoters induced the county commissioners to relocate the courthouse and jail there from Harvard Square. North Cambridge grew around the town's railroad station. Old Cambridge, with Harvard Square at its center, retained the College, the Common, and its prestige. The villages were united under a single city government in 1846.

In the last half of the 19th century the villages were subsumed by a great wave of suburban development emanating from Boston.

Continual improvements in public transportation, from the establishment of one of the country's first horsecar lines in 1856 to the opening of the Cambridge subway in 1912, made Cambridge completely urbanized by 1930.

In the first half of the 20th century Cambridge became the third most industrialized city in Massachusetts, with many major firms in the foundry, furniture, metal working, rubber and confectionery industries. The Massachusetts Institute of Technology moved from Boston to Cambridge in 1916, and after World War II began to spawn the high-tech industries that have made Cambridge a nationally-renowned research center.

After a precipitous drop in population and the loss of most of its traditional industrial base in mid-century, Cambridge found itself subject to new trends in the 1960s. While the overall population was dropping, the influx of students competing for low-cost apartments brought great pressure to bear on working class households. This trend was countered by strict rent control laws from 1972 to 1995 and also by amendments to state zoning legislation that curbed institutional expansion. Real estate pressures continued to rise; residential land values increased 30% in 1985 alone, while commercial construction boomed in Harvard Square and on the periphery of the city throughout the eighties. After a lull, development pressures resumed and are now felt throughout the city.

Historic Preservation in Cambridge

The Cambridge Historical Commission was established in 1963 to advise the city on historic preservation, to protect the city's Revolutionary War sites, and to publish a survey of Cambridge architecture. An inventory of all 13,000 Cambridge buildings was completed by 1975, and The MIT Press published the Survey of Architectural History in Cambridge in five neighborhood volumes between 1964 and 1977. The Commission continues to research and publish books on the history of Cambridge, and is involved in all aspects of historic preservation in the city.

The Commission consists of seven members and three alternates appointed by the City Manager, an Executive Director, and a permanent staff of three specialists in historic preservation and architectural history.

Historic Preservation Tools

A. Historic Districts

The Old Cambridge Historic District was established in 1964 under state enabling legislation. Initially, four districts protected Cambridge Common and the widely scattered Tory mansions along Brattle Street. In recognition of the uniformly high quality of Brattle Street architecture, the four districts were combined in 1975 and extended in 1986. The district now

includes about 220 buildings and extends from Harvard Yard to Fresh Pond Parkway. An additional expansion is currently proposed to protect the surroundings of Arsenal Square.

The Old Cambridge Historic District contains many buildings of national importance, and regulation is strict. No demolition, new construction, or publicly visible alterations, including changes in paint color, may take place without Commission review and approval. Because of high land values and restrictive zoning, there has been little pressure for demolition or construction of infill housing; most applications deal with minor alterations or additions.

The Fort Washington Historic District was established in 1981 to protect a Revolutionary War fort in Cambridgeport.

B. Neighborhood Conservation Districts

In 1981, a desire for more flexibility than allowed by state historic district legislation led the City Council to adopt an ordinance setting procedures for designation and administration of neighborhood conservation districts and landmarks. A neighborhood conservation district (NCD) operates with an autonomous commission, appointed by the City Manager, under procedures tailored to local conditions and needs. Demolition and new construction are closely regulated, while review of alterations may be limited in certain ways and may not be binding on the applicant. Paint color is not subject to review. NCD commissions are staffed by the Cambridge Historical Commission.

The Half Crown NCD Commission was established in 1984 in a small neighborhood immediately west of Harvard Square. The district has succeeded in controlling intense development pressure that threatened wholesale demolition.

The Mid Cambridge NCD Commission administers a district of over 2,000 buildings and has been in operation since 1985. This neighborhood was subject to infill development by townhouses, which were encouraged by density bonuses under zoning. Alterations to buildings listed on the National Register of Historic Places are subject to binding review; alterations to other structures may be subject to non-binding review.

C. Landmarks and Preservation Restrictions

Individual buildings may be designated as landmarks under a local ordinance adopted in 1981. In general, any construction, demolition, or publicly visible exterior alteration of a landmark will be subject to review and approval by the Historical Commission. However, designation orders are often tailored to the particular circumstances of a property, and may allow certain projects to be carried out as of right. Seventeen properties are currently designated as landmarks.

Preservation restrictions, or easements, are a protective measure that results from a voluntary transfer of property rights from an owner to the Historical Commission. Easements, like landmark designations, are individually drafted to meet the Commission's preservation objectives for each property, but usually have the same effect as a landmark designation. The Commission currently holds 29 preservation restrictions.

D. Demolition Review

An ordinance requiring Commission review of demolition permit applications for buildings over fifty years old was enacted in 1979. If the Executive Director finds that a fifty-year-old building is "significant" because of its architecture or history, the Commission will hold a hearing to determine whether it is also "preferably preserved." A preferably-preserved significant building cannot be demolished until six months have elapsed since the hearing, nor after that period until the proponent has received all other permits necessary for the project to proceed.

E. National Register of Historic Places

The National Register of Historic Places is a list of individual buildings, sites, structures, and districts that are important in American history, culture, architecture, or archaeology. It is a Federal designation that is administered through the Secretary of the Interior by the Massachusetts Historical Commission. The National Register and its companion, the Massachusetts Register of Historic Places, provide recognition of the importance of the designated properties, eligibility for state restoration funding and Federal tax credits, and limited protection from the adverse effects of Federally funded or permitted projects.

The Cambridge Historical Commission uses the National Register as a city-wide historic preservation plan. About 2,500 properties in Cambridge are currently on the National and Massachusetts Registers, comprising 186 individual properties and 38 districts in all sections of the city. Relatively few National Register properties are locally protected, but all are automatically subjected to close scrutiny in demolition review proceedings and may be candidates for local preservation designation.

The National Register is also incorporated into the Cambridge Zoning Ordinance through the Harvard Square and Central Square Overlay Zones, which provide incentives for preservation of "contributing" buildings in the corresponding National Register districts. Harvard University now reviews with the Commission all alterations to National Register buildings.

F. Other Historic Preservation Tools

Other tools employed by the Commission include a Community Development Block Grant-funded program that subsidizes exterior rehabilitation of homes of low- and moderate income property owners; paint color consulting; and technical assistance to homeowners, developers, and other public agencies. The Commission's publication program has continued with A Photographic History of Cambridge in 1984, Maintaining Your Old House in Cambridge in 1986, and a completely new edition of East Cambridge in 1988; a new edition of Old Cambridge is in preparation.

Cambridge Historical Commission
831 Massachusetts Avenue
Cambridge, Mass. 02139
(617) 349-4683
March 23, 1998

Philip B. Herr & Associates

447 CENTRE STREET, NEWTON CORNER, MASSACHUSETTS 02158
TELEPHONE 617-969-1805 FACSIMILE 617-332-9499 EMAIL PHerr@COMPUSERVE.COM

RELATING DEVELOPMENT AND TRAFFIC

Cambridge Community Development Department
July 14, 1997

The following outlines a range of mechanisms used by local governments to manage the relationship between development and traffic, beginning with the simplest, down-zoning, and ending with Florida's complex and sweeping provisions.

DOWN-ZONING BASIC USE AND BULK CONTROLS

The most basic way in which communities control development's additions to street traffic is through limiting the location of various uses and limiting the intensity of use which is allowed, such as through controlling the ratio of floor area to lot area (FAR). Historically, considerations other than traffic have been the basis for those choices, but in recent years traffic concerns have motivated many communities to revise district locations where various uses are allowed and, more commonly, to tighten bulk controls. Such actions are commonly referred to as "down-zoning."

Massachusetts Examples

Most prominently, Boston has gone through a series of area rezonings over the past decade, including Downtown, resulting in significantly lower FARs than before and, in some cases, constraints on where retailing and other high trip-generators are permitted¹.

Other Examples

In Los Angeles, a citizen-driven revision a few years ago cut allowed FARs in half across the City, with limited CBD exceptions. The change was, in theory, huge, but in practice proved to be more limited. The wide use of "development agreements" which under California law result in long-term zoning freezes for many projects, especially large ones, meant that most near-term development was unaffected. Many other major cities across the United States have similarly down-zoned in recent years.

Evaluation

Directly lowering allowable bulk and limiting allowable uses is straightforward, clear, and simple to administer. However, the more extensive the down-zoning, the more problematic the traffic consequences. Down-zoning a single lot will, indeed, reduce potential traffic from that

¹ See, for example, *Downtown Zoning: A Plan to Manage Growth*, Boston Redevelopment Authority, April, 1987.

lot. If an entire region down-zones, development bulk is simply further spread out, not reduced. Unless that results in the region being made so economically unattractive that development is driven away, the ultimate impact of down-zoning at that scale would be to increase rather than reduce vehicle miles of travel, increasing congestion and air quality impacts. Down-zoning City-wide is intermediate between site rezoning and regional rezoning. It might reduce the number of vehicle trips beginning or ending within the City, but it almost certainly would increase the regional total of daily miles traveled.

Down-zoning encourages more intensive use of allowed floor space. For example, where limits on floor area in relation to lot area (FAR) are more constraining than limits on floor area per dwelling unit, the market response is likely to be smaller dwelling units as a means of making financially optimum use of space. If market demand is strong relative to allowed FAR, low-intensity users of floor area, such as most manufacturing, are less likely to compete successfully than are high-intensity users, such as office space. On the other hand, bulk and use limits have no inherent capacity to encourage more efficient use of transportation, which is a benefit of some of the other management options described later.

Relevance to Cambridge

Down-zoning allowable bulk is the basic traffic mitigation approach of the CRGM petition. Massachusetts has no development agreement legislation, so the "freeze" effect experienced in Los Angeles would apply here only if it were to be made part of the rezoning legislation through City choice.

MANDATED TRAFFIC REDUCTION EFFORTS

In many forms, communities now require that new development make efforts to reduce auto traffic generation below that which would otherwise be expected. Perhaps most common are general criteria found in zoning special permit standards, requiring demand management or similar trip reduction efforts. In some cases, standards for such reduction are set, such as a specified percentage reduction below the number of vehicle trips otherwise expected.

Massachusetts Examples

Boston has for many years mandated Transportation Access Plans as part of the submittals for approval of large development proposals (exceeding 50,000 square feet). The Cape Cod Commission, for all projects within its regulatory jurisdiction, requires that vehicle trip reduction efforts aim for a 20% reduction in trip generation². Burlington and other suburban communities have similar standards.

Other Examples

Mandated vehicle trip reduction requirements are fairly common. We have not researched out-

² See appended material from the Cape Cod Commission *Regional Policy Plan*, 1996, Minimum Performance Standard 4.1.2.1.

of-state examples.

Evaluation

In contrast to bulk limitations, mandated trip-reduction can really reduce traffic, not simply spread it out. Indirect benefits include the support that these efforts provide for sustaining effective public transportation by increasing demand and, sometimes, providing subsidies to public transportation. The extent of feasible trip reduction varies among locations and uses, with the Cape Cod Commission's 20% standard being on the high end of expectations for most uses and most locations. Trip-reduction efforts are difficult to achieve for small uses, and carry substantial administrative burdens for both public administration and private compliance.

Where a standard reduction is not specified, substantial administrative discretion and resulting uncertainty is created. Where a standard is specified, its land use impacts are likely to be complex and difficult to predict. If uniformly enforced, the rule would encourage those uses, such as back office operations, and locations, such as transit station vicinities, where trip reduction efforts are most feasible.

Anecdotal evidence suggests that the difficulty of implementing vehicle trip reduction mandates has made their effectiveness very uneven. Their administrative complexity is well-demonstrated. So, too, is their ability in many cases to achieve very significant reductions in traffic impacts.

Relevance to Cambridge

Cambridge has applied such mandates in a number of special circumstances under its current zoning. A draft Ordinance (recently dated 6/23/87) is now under consideration which would extend the set of cases to which the mandate would apply. It would require the submittal and administrative approval of traffic management plans, but does not specify mandated reductions.

PAY AND GO IMPACT FEES

A growing number of communities are using impact fees as part of their regulatory system in order to shift the burden of infrastructure expansion needed to meet demands of new development. Developers are required to pay a fee determined to be sufficient to offset the public costs of street or transit improvements to serve the demand being created by the development. For administrative simplicity, the fees are often normalized based upon the number of square feet of floor area, number of employees, or number of dwelling units in the development. In some cases the fee is more project-specific, based upon exactly what streets are impacted, the number of project-related trips which are anticipated, and the project's proportionate share of the costs of increasing capacity of those streets.

Massachusetts Examples

Section 9 of the Massachusetts Zoning Act, Chapter 40A, MGL, authorizes special permits requiring "amenities" such as traffic or pedestrian improvements in return for authorizing

increases in permissible density. Framingham was perhaps the earliest to use that provision extensively to oblige developer traffic mitigations. The practice is now widespread.

Other Examples

Outside of Massachusetts, impact fee requirements are commonplace. New Hampshire, whose statutes and courts support such measures, has many communities with extensive reliance on such fee systems, typically tailored to and calibrated for specific highway corridors, making fees sensitive to location, but only broadly sensitive to use.

Evaluation

Impact fees have become a widely accepted part of the cost of doing development. Retailing, for example, commonly pays from \$5 to \$10 per square foot of floor area in fees or construction to mitigate traffic impacts. Potential for impact fee usage by municipalities in Massachusetts is limited to cases under special permit or where other special circumstances apply. Administration of impact fees, once thought to be forbiddingly complex, has become almost routine.

Many object to reliance on such fees because they are insensitive to the non-pecuniary impacts of traffic, effectively "legitimizing" traffic-inducing development so long as it pays to widen (read "destroy") servicing streets. In its simplest form (a flat fee based on floor area but insensitive to use or location), such fee systems may prove counter-productive. They may encourage traffic-heavy development to locate without regard to the difficulties of serving that location, since their developers are assured that in return for the uniform fee requirement there is a public obligation to provide for traffic adequacy, regardless of location-related difficulty.

Finally, there is concern that despite court rulings, the fees may not result in the needed improvements actually being made in time to mitigate initial or even later problems, since the fees are commonly pooled with other traffic fees for actual construction efforts.

Relevance to Cambridge

Extensive use of this device is not being advocated by CRGM, or City Administration, or any other party to our knowledge.

NO DEGRADATION RULE

This regulatory approach essentially leaves the means of managing traffic impacts up to the developer, but requires that auto congestion be no worse given the project than it would have been without it. That may be accomplished through any combination of bulk limitations, demand management efforts, or street reconstruction, usually at the developer's choice.

Massachusetts Examples

Many development projects are subject to MEPA review and mitigation efforts if impacting

State highways. A July, 1989 Guideline for such projects, endorsed by both EOEA and EOTC required that "Any future year performance degradation under the build scenario should be shown to be fully mitigated: delay and v/c ratios should be no worse than under the no-build scenario."³ To our knowledge, that MEPA rule has never been rescinded, but neither is it strictly enforced under the current administration.

We know of no other equally explicit reliance on such a "no degradation" rule in this State or elsewhere.

Evaluation

Simple "don't make it worse" rules have seductive facial simplicity, but have complex and not consistently positive impacts. First, these rules are administratively demanding on both applicants and reviewers, to such an extent that they are reasonable only for relatively large projects, such as those that meet the thresholds for MEPA applicability.

Second, they would powerfully direct development to locations where meeting that rule would be relatively undemanding. In some contexts, that means relatively lightly-developed areas where street widening is a simple and inexpensive response to traffic demands. In urban areas, "relatively undemanding" might mean the locations best served by transit.

Relevance to Cambridge

MEPA has limited applicability for traffic in Cambridge, so the EOEA/EOTC agreement is of small relevance, regardless of how firmly it is administered. Neither CRGM nor the City Administration is proposing such a rule.

SITE ADEQUATELY SERVICED RULE

This approach, which takes many forms from simple to sophisticated, requires that in order to be developed, a site must be adequately served by, among other things, transportation. The rule doesn't simply accept not making traffic worse. It requires that if traffic conditions are already substandard, development is allowed only if improvements are made by someone. Further, in some systems, if the proposed project will not degrade traffic service below acceptable standards, no mitigation is required, even if the project somewhat reduces service levels.

Massachusetts Examples

A growing number of Massachusetts communities include in their controls a performance requirement that some stated traffic level of service must be maintained on streets serving major development projects. For example, the Cape Cod Commission allows development subject to its jurisdiction only if at the driveways traffic level of service C (or D in certain designated areas)

³ Paragraph F.1 in "Guidelines for EIR/EIS Traffic Impact Assessment", Massachusetts Executive Office of Environmental Affairs and Executive Office of Transportation and Construction, July, 1989.

will be maintained⁴. Two Massachusetts towns have adopted a variant on this approach, in effect establishing a set of maximum trip-generation rates per thousand square feet of lot area, dependent upon the category of street servicing the site⁵.

Other Examples

"Adequate public facilities" (APF) ordinances have been widely used for managing development in relation to traffic. Montgomery County, Maryland, has one of the longest-standing and best-documented examples of such a system, backed by a large and skilled County staff for administration. Appended are an article⁶ and a book extract⁷ describing that system. A PAS Report by Mark White evaluates extensive experience in Florida and Maryland with similar ordinances⁸.

Evaluation

The APF approach combines market pressures with regulatory ones in seeking better outcomes. By making improvements a developer obligation, and keying requirements to established levels of service, development is encouraged to seek out locations where adequate service can be provided at lowest cost, rather than simply relying on the public sector to, in effect, subsidize development at high service cost locations. The disadvantage of this approach in many contexts is that low service cost locations may be exactly where development is not wanted. The approach encourages sub-optimization for traffic mitigation costs, overshadowing non-pecuniary costs of traffic and other land use considerations.

In some contexts, however, that problem may be relatively unimportant, especially if this rule is supplemented with limitations upon acceptable mitigations. Then its benefits stand out, importantly including the provision of powerful incentives for the developer to find effective access alternatives to the single-occupant automobile, whose servicing is hugely expensive.

Relevance to Cambridge

Herr Associates has outlined a regulatory approach that would apply this principle to Cambridge, intended as a possible reconciliation of the jobs/traffic paradox⁹

⁴ See appended materials from the Cape Cod Commission *Regional Policy Plan*, 1996, Minimum Performance Standard 4.1.1.6.

⁵ See Needham Zoning Bylaw Section 4.4.2 (e), appended.

⁶ Malcom D. Rivkin, "Can Transportation Management Reduce Traffic in the Suburbs?", *Urban Land*, November, 1988, pages 18-22, appended.

⁷ Arthur C. Nelson and James B. Duncan, *Growth management Principles & Practices*, APA Planners Press, Chicago, 1995. Page 101.

⁸ S. Mark White, *Adequate Public Facilities Ordinances and Transportation Management*, APA Planning Advisory Service Report #465, 1996.

⁹ See Herr Associates, "Zoning for Traffic," draft prepared for the Cambridge Community Development Department, June 18, 1997.

COMMUNITY ADEQUATELY SERVICED

This approach requires that before additional development may be allowed, the community-wide level of traffic service must be adequate, not just the service in the vicinity of the proposed development, recognizing the diffuse distribution of impacts and cumulative consequences.

Massachusetts Examples

No community in Massachusetts has adopted exactly this approach. In 1988 Provincetown adopted a complex growth control regulation under which the amount of development allowed annually may be subject to sharp restriction based upon adequacy of, among other things, town-wide transportation service (Article VI: New Development Permit Allocation System)

Other Examples

Florida's growth management legislation imposes exactly this rule. Appended is a book extract¹⁰ describing that system, which has been widely debated among planners.

Evaluation

The public benefits of such a community-level adequacy approach are obvious, but the problems revealed in Florida have been severe. Aside from the huge administrative burden of this "concurrency" approach, there is concern that the communities best able to provide the mandated adequacy of traffic service are often those communities whose appropriateness for major new development is poorest, with sprawl as the result which is being inadvertently encouraged.

Relevance to Cambridge

There are no proposals we are aware of for such an approach in Cambridge. A moratorium on some or all categories of development would amount to an *ad hoc* effort of this kind.

CAMBRIDGE\DEV-TRAF

¹⁰ Nelson & Duncan, *op cit.*, pages 96-98.

CODE OF CAPE COD COMMISSION REGULATIONS OF GENERAL APPLICATION

CHAPTER B - Regional Policy Plan for Barnstable County

Goals and Policies

4.1 Transportation

4.1.1 Goal: To establish and maintain a multimodal transportation system on Cape Cod for present and future year-round and seasonal needs which is safe, convenient, accessible, effective, economical and consistent with the Cape's historic, scenic and natural resources, and land use development and growth management policy.

Minimum Performance Standards:

4.1.1.1 Developments of Regional Impact (DRIs) shall mitigate all year-round and summer transportation impacts created by such development at all regional intersections and on all regional road links where the project traffic is expected to add 25 new vehicle trips or more during the project's typical peak hour. For road links and intersections within certified growth/activity centers, this threshold is increased to 50 trips or more during the project's typical peak hour. Traffic operations at all locations meeting or exceeding these thresholds shall be made no worse as a result of the development, based on the performance indicators stated in Minimum Performance Standard 4.1.1.4.

**Code of Cape Cod Commission Regulations of General Application
Chapter B - Regional Policy Plan for Barnstable County**

4.1.1.2 The regional road system for Cape Cod shall include all roads with a functional classification higher than local roads, as adopted by the Cape Cod Metropolitan Planning Organization. Increases in traffic volumes on the regional road system, above the thresholds established in Minimum Performance Standard 4.1.1.1, shall be considered to have significant regional impacts. The functional classification of highways may be amended from time to time by the Cape Cod Metropolitan Planning Organization. The functional classification of highways, as adopted by the Cape Cod Metropolitan Planning Organization, is adopted as an official part of the Regional Policy Plan. The map entitled "Functional Classification of Cape Cod Highways" dated September 5, 1996, shows the classification of Cape Cod roads as of that date.

4.1.1.3 For the purposes of determining impacted locations and measuring traffic impacts, a 20% reduction in project traffic shall be included in such determination when Minimum Performance Standard 4.1.2.1 is met.

4.1.1.4 Transportation impacts shall be identified and the adequacy of mitigation shall be evaluated using performance indicators such as level-of-service, intersection delay, volume to capacity ratio and other measures as defined in the Highway Capacity Manual. The Cape Cod Commission Guidelines for Traffic Impact Assessment, Technical Bulletin 96-003 shall be followed.

4.1.1.5 Regardless of project size or traffic generation, measured sight distances at access/egress locations with public ways for all Developments of Regional Impact shall, at a minimum, meet Massachusetts Highway Department (MHD) and American Association of State Highway Transportation Officials (AASHTO) standards for safe stopping sight distance.

4.1.1.6 Regardless of project size or traffic generation, access/egress onto public ways shall follow accepted access management practices, guidelines and policies. All new driveways on the regional road system for Developments of Regional Impact shall operate at Level-of-Service C (or Level-of-Service D in certified growth/activity centers) or better as defined in the Highway Capacity Manual, based on the appropriate design hour traffic volume as described in Minimum Performance Standard 4.1.1.9.

4.1.1.7 Regardless of project size or traffic generation, there shall be no degradation in public safety as a result of a Development of Regional Impact.

4.1.1.8 Transportation mitigation measures required by Developments of Regional Impact to meet Minimum Performance Standards shall be consistent with community character and shall not degrade historic, scenic or natural resources.

4.1.1.9 In recognition of the seasonal change in Cape Cod traffic, road widening, intersection widening and signalization is warranted as mitigation for a Development of Regional Impact only if the improvement will have substantial benefit to the transportation system throughout most of the year. The Cape Cod Commission shall determine the appropriate design hour traffic volume. Peak summer traffic impacts shall be mitigated through strategies in Minimum Performance Standard 4.1.1.10, sections a. through c.

4.1.1.10 Permissible mitigation strategies for Developments of Regional Impact shall be as follows, and must also be consistent with Minimum Performance Standards 4.1.1.8 and 4.1.1.9 as well as local and regional transportation plans:

**Code of Cape Cod Commission Regulations of General Application
Chapter B - Regional Policy Plan for Barnstable County**

- a. Travel Demand Management strategies including the development and use of transit, park & ride lots, bicycle facilities, pedestrian facilities, car/van pooling, and employee incentive programs that reduce automobile trips.
- b. Transportation Systems Management strategies that preserve the capacity of existing facilities and increase the efficiency of existing facilities. These strategies include shift change schedules to reduce impacts of peak hour site traffic, the application of real-time information-based technologies, signage, changes to pavement markings, signal timing optimization and coordination of existing traffic signals, turn restrictions, changes in traffic patterns, and limited removal of obstructions to provide safe sight distances.
- c. Access Management strategies such as curb cut consolidation, joint access, connections between adjacent parcels, and conflict point reduction.
- d. Road widening, intersection widening and new traffic signalization, as stipulated in Minimum Performance Standard 4.1.1.11.

4.1.1.11 The widening of public ways or intersections or new traffic signalization shall be allowed as mitigation for a Development of Regional Impact only if all of the following conditions are met:

- The road widening, intersection widening or new signalization is necessary to mitigate year-round increases in travel demand resulting from the Development of Regional Impact. Solely peak season travel demands shall not be mitigated by road widening, intersection widening or new traffic signalization, and
- The road widening, intersection widening or new traffic signalization is not within local or regional historic districts, on any road designated by a government agency as a Scenic Road or Scenic/Historic Byway because of the historic, scenic or natural resources of the area, and
- Alternatives to road widening, intersection widening and traffic signalization, as described in Minimum Performance Standard 4.1.1.10, sections a. through c., have been considered and are determined to be inadequate to mitigate impacts, and
- The road widening, intersection widening or new traffic signalization is consistent with community character and will not have an adverse impact on historic, scenic or natural resources.

4.1.1.12 Necessary transportation improvements shall occur concurrently with the project development. A payment of funds commensurate with project impacts may be allowed if the Commission, the Town in which the project is proposed or the appropriate state transportation agency agrees to accept responsibility for the advancement of the project. Such payment shall be determined based on the Cape Cod Commission's fair-share guidelines and an appropriate escrow agreement shall be required.

4.1.1.13 Existing transportation rights-of-way shall be preserved for transportation uses.

4.1.1.14 Developments of Regional Impact shall provide adequate parking. Where compatible uses are within close proximity, the Commission shall encourage shared parking to minimize pavement coverage.

**Code of Cape Cod Commission Regulations of General Application
Chapter B - Regional Policy Plan for Barnstable County**

4.1.1.15 To support successful travel demand strategies and to reduce the environmental and aesthetic impacts of large paved areas, parking facilities created for Developments of Regional Impact shall be limited to the needs identified in a Commission approved traffic study or the requirements of local communities, whichever is greater.

4.1.1.16 Adjacent commercial uses shall share access points and provide connections between parcels so as to minimize curb cuts, driveways, and vehicular turning maneuvers, where appropriate. A credit for reduced travel demand on the adjacent road system shall be granted for shared driveways or connections between parcels, as described in the Traffic Impact Assessment guidelines.

4.1.1.17 Internal site circulation and access/egress shall be designed to minimize impacts on the adjacent road system.

Other Development Review Policies

4.1.1.18 New development and redevelopment should minimize adverse traffic impacts on residential neighborhoods.

4.1.1.19 New development and redevelopment should not increase traffic on road links or through intersections with existing safety deficiencies such as inadequate sight distance or adverse grades.

4.1.1.20 At locations where the thresholds of Minimum Performance Standard 4.1.1.1 are reached or exceeded but the increase is less than 50 peak hour trips, Developments of Regional Impact may make a payment of \$100 per peak hour trip per intersection and per road link to comply with Minimum Performance Standard 4.1.1.1.

4.1.1.21 Roadway access for new development and redevelopment should be consistent with the functional classification of the road. Where possible, driveways should gain access to collector and arterial streets via the local street system.

4.1.1.22 Transportation improvements and proposed transportation mitigation should be consistent with the Americans with Disabilities Act, the Clean Air Act Amendments of 1990, the Intermodal Surface Transportation Efficiency Act of 1991, and the Cape Cod Metropolitan Planning Organization's most recent Long Range Transportation Plan.

4.1.1.23 The capacity of Route 6 should not be increased by constructing additional travel lanes. On sections of Route 6 with full controlled access, ramp improvements and systems management techniques may be appropriate to improve traffic flow and safety. On sections of Route 6 providing local access, access management and systems management techniques should be utilized to improve traffic flow and safety.

4.1.1.24 Road and intersection widening should include the undergrounding of overhead utilities and the removal of utility poles and associated structures, where appropriate.

4.1.2 Goal: To decrease dependence on private automobiles, address demonstrated public needs for convenient, accessible, economical alternatives to private automobiles, and promote energy efficiency and reduced pollution by developing and integrating alternate modes (e.g., rail, bus, ferry, air, bicycle and pedestrian) into the transportation system and by promoting substitutes for transportation such as telecommunications.

Minimum Performance Standards

4.1.2.1 All Developments of Regional Impact shall implement strategies to reduce daily automobile trips to and from the development on a year-round basis. Average daily automobile trips to and from Developments of Regional Impact shall be reduced by 20% from average traffic generation for that land use. Methods may include water and land-based transit, carpooling and bicycle/pedestrian accessibility improvements and appropriate telecommunications strategies.

4.1.2.2 To partially or entirely satisfy the requirements of Minimum Performance Standard 4.1.2.1, a development may make a monetary commitment to public transportation and/or alternatives to automobile transportation. The amount of such commitment shall be based upon (i) the development's proportional share of the cost of a strategy identified to meet Minimum Performance Standard 4.1.2.1 or (ii) the cost of providing year-round public transportation, the expected vehicle miles travelled by automobiles (or passenger car equivalents) travelling to and from the site and the expected term of the project, a minimum of 20 years. Credit shall be allowed for any in-kind strategies that partially reduce automobile traffic to and from the site. The monetary commitment shall be placed in a satisfactory escrow agreement and used to support alternatives to automobile travel on Cape Cod.

4.1.2.3 Road or intersection widening shall provide for safe bicycle and pedestrian travel and accessibility, where appropriate.

4.1.2.4 Developments of Regional Impact shall provide bus turn-outs, park and ride facilities, and related facilities that link different modes of travel in the transportation system, where appropriate.

4.1.2.5 Bicycling and walking shall be encouraged as an alternative to automobile trips. Where appropriate, historic footpaths shall be maintained and safe bicycle and walking links shall be created to establish an interconnected regional transportation system. Where appropriate, bikeways and footpath connections between commercial, residential neighborhoods and between compatible uses shall be provided to create a safe alternative to travel on major roads.

Other Development Review Policies

4.1.2.6 Bus, ferry, water taxi, air and rail modes of public transportation should be encouraged not only as alternatives to automobile trips but also to improve mobility for non-drivers, those preferring not to drive, and those without access to a car. To serve both residents and visitors better, transit service frequency should be increased and the routes expanded.

4.1.2.7 The Cape's current airport capacity should be maintained as a vital economic and transportation resource. A buffer area should be maintained around regional and local airports to ensure future development in the buffer is consistent with the airport operations, and development outside the buffer is protected from noise, fumes and loss of life or property. An Eastern New England Regional Airport, however, should not be permitted on Cape Cod due to environmental sensitivity of the area and the very limited transportation infrastructure.

4.1.2.8 Developments of Regional Impact should make provisions for or contribute to the development of information based technologies in the region that encourage travelers to use the most environmentally sound and efficient means and times of travel.

**Code of Cape Cod Commission Regulations of General Application
Chapter B - Regional Policy Plan for Barnstable County**

4.1.2.9 To relieve canal area traffic in particular, and Cape Cod traffic in general, visitors to the Cape and Islands should be encouraged to travel to the Cape by public transportation rather than by car whenever possible.

4.1.2.10 Rail and marine freight shipment to and from the Cape should be encouraged as an alternative to freight transport by truck across the Bourne and Sagamore Bridges.

4.1.3 Goal: To support transportation solutions which preserve and enhance Cape Cod's character by considering the interrelationship between land use and transportation.

Minimum Performance Standards

4.1.3.1 Mixed use development that minimizes dependence on the automobile shall be encouraged.

Other Development Review Policies

4.1.3.2 Developments of Regional Impact may increase allowed traffic generation under Minimum Performance Standard 4.1.1.1 by the dedication of vacant developable land within the project's study area in excess of open space requirements under the RPP, and the placement of that land in a permanent conservation trust. The allowed increase in traffic shall be determined based on expected potential traffic generation from that parcel.

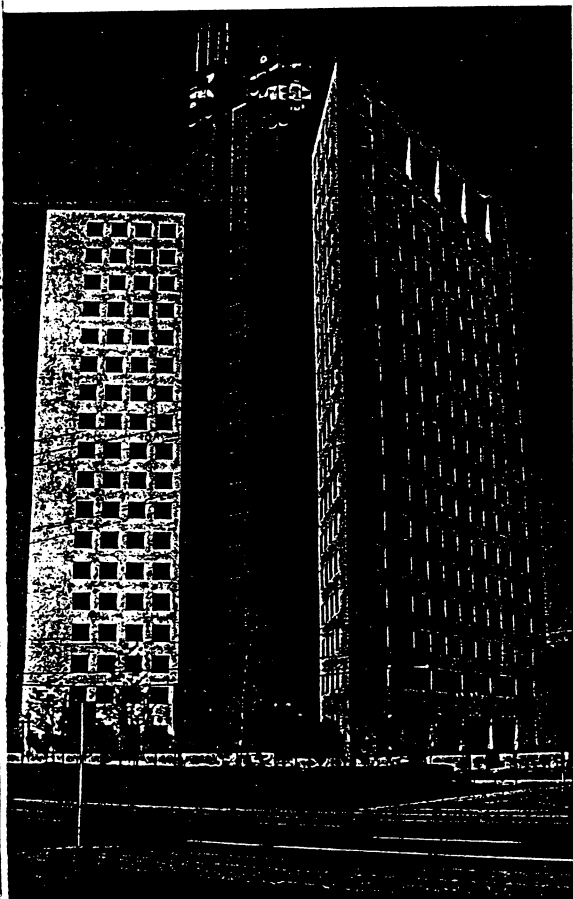
NEEDHAM ZONING BYLAW SECTION 4.4.2

"(e) In the Avery Square Business, Hillside Avenue Business, and Local Business-1 districts, the amount of floor area shall be further limited such that the resulting trip generation from non-residential uses on an average weekday would add to the street system (excluding pass-by but not diverted trips) not more than ten vehicle trips per day per 1,000 square feet of site area in the Hillside Avenue District, or 15 trips per day per 1,000 square feet of site area in the Avery Square Business or Local Business-1 districts, with estimates based upon the ITE Trip Generation Manual, 5th edition, or an alternative technical source determined by the Town Planning Director to be equally or more applicable. Regardless of trip generation rates, however, the floor area ratio shall neither exceed 0.70 nor be obliged to be reduced below 0.35."

Can Transportation Management Reduce Traffic in the Suburbs?

Ask the Nuclear Regulatory Commission.

Malcolm D. Rivkin



Only 42 percent of the employees at One White Flint North, NRC's new headquarters building, normally drive to work alone.

Can transportation management really work in the suburbs? Can programs devised by major employers markedly change commuting patterns, reduce peak-hour vehicle trips, and make public transportation a better alternative?

Suburbs increasingly dominate economic development in America, but suburban jurisdictions generally lack good public transportation and the money to build adequate roads. According to a recent study on commuting patterns by the Eno Foundation for Transportation (See *Urban Land*, October 1987), some 67 percent of all new jobs are being created in the suburbs, but the number of people who commute by transit today is less than in 1960. Interest in employer-based transportation management as a solution to increasing traffic problems has grown, but with few success stories to demonstrate its effectiveness, that interest is based more on faith than on performance.

Enter one resounding success story. The employer: the U.S. Nuclear Regulatory Commission (NRC). The facts: in early 1988,

NRC relocated 1,400 of its 2,450 staff members to the first building of its yet-to-be completed headquarters complex 12 miles from downtown Washington, D.C., in fast-growing Montgomery County, Maryland. Prior to the move, NRC operated out of eight facilities in various parts of the county and the District of Columbia.

According to an April 1986 NRC survey of its staff, 54 percent drove to work alone most of the time. About 25 percent of the staff normally carpooled and less than 11 percent used public transit. The modest transit use was particularly striking since all eight of the offices were within walking distance of stations serving Metro-rail, the Washington area's subway system.

In June 1988, four months after the headquarters move, an NRC survey of staff at One White Flint North, the new headquarters building, found that only 42 percent of the employees normally drove to work alone. Public transit was the normal commuting mode for 28 percent of the workers, and 27 percent were carpooling. Moreover, according to traffic

monitoring at the building, most of those who drove alone or car-pooled were at work before the start of the morning peak hour (7:30–8:30) and most were leaving either before or after the 4:45–5:45 afternoon peak.

NRC's traffic suppression program was working so well that the building's morning peak-hour trip generation was only two-thirds the level that Montgomery County planners had anticipated, and its afternoon trip generation was less than half that expected.

The Principles

NRC's trip mitigation success has been extraordinary, and the unusual circumstances attendant to the program will not be available everywhere, but the NRC experience does demonstrate the following principles:

- A large employer can establish economic disincentives to driving alone, in conjunction with economic and service incentives to use other means of transportation, that do have a chance to reduce car trips significantly.
- Public transportation has to be reasonably related to the journey to work and reasonably cost/time competitive with driving alone.
- Local government has many cards to play in the transportation management process. It must sit at the table with the employer.
- An effective, sustainable transportation management program (TMP) takes a lot of planning and hard work. Institutions as well as individuals may need to adapt their behavior and ways of doing business. Employers must approach the development of TMPs with the same seriousness and resource commitment as any major management decision.

History

Montgomery County's development review process triggered

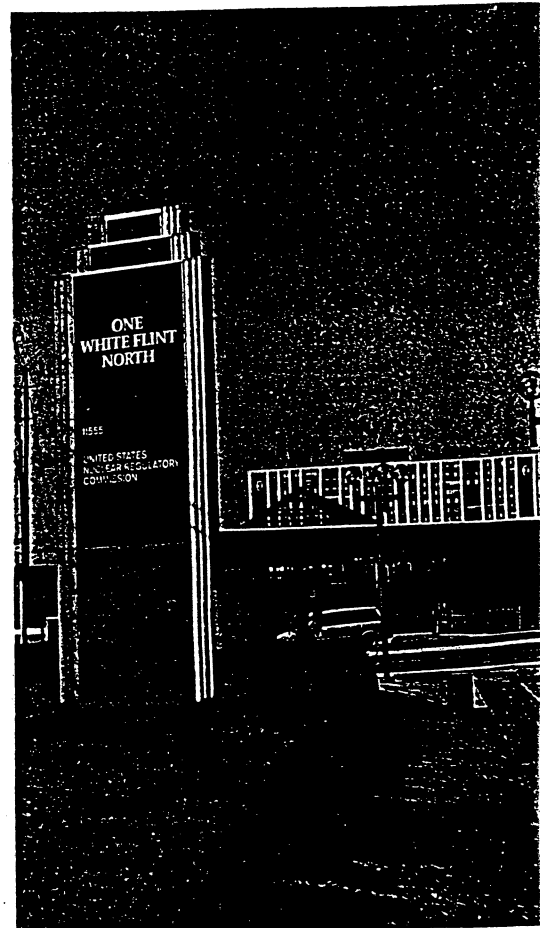
NRC's entry into transportation management.

To begin at the beginning: when looking for a consolidation site for the NRC, the U.S. General Services Administration (GSA) was attracted to the White Flint North site for two reasons. Over 60 percent of NRC's staff already lived in Montgomery County, a 500-square-mile jurisdiction bordering the District of Columbia. And the site itself adjoined a Metrorail station, which was also a transfer point for feeder buses.

GSA purchased the 310,000-square-foot One White Flint North building from its developer (White Flint North Limited Partnership) when it was still under construction. Needing more space for NRC's total consolidation, GSA executed a lease for a planned second building, which would remain under the developer's ownership. As a privately owned office building, the planned facility required Montgomery County approvals under normal development review procedures.

Construction initially depended on county approval of a revised development plan for the site. (The original plan called for a hotel and conference center.) If the revised plan were approved, the developer still could not proceed before demonstrating that occupancy would not overburden Montgomery County's traffic capacity under the county's adequate public facilities requirements. The amount of traffic generated by NRC's headquarters would be the principal factor in winning support for the new development. Rockville Pike, which adjoins the site, was already inundated with commuter traffic, and the county's ordinances established strict trip generation limits for White Flint North.

Things did not look good for the project after NRC, in conjunction with the developer, made its April 1986 survey of employee commuting patterns. Despite the presence of Metrorail next door,



The NRC headquarters building is located across the street from a Metrorail (subway) station that is also served by Metrobus and Ride-On buses, making it easy for employees to commute via public transit.

most staff members said they intended to drive to the new complex. NRC had no reason to doubt these intentions, given the current high level of staffers' automobile use. Once all the travel preferences were calculated, and estimated trip generation figures computed, it was clear that peak-hour trip generation from the first building alone would far exceed the county's limit of 465 trips for the building. Completing NRC's consolidation with a second building would mean exceeding the 640-trip limit assigned to the entire 13-acre site in the approved development plan.

Thus, GSA and its developer partner were faced with the certainty that under these circumstances Montgomery County would not approve a revised de-

velopment plan permitting NRC consolidation at White Flint North.

A Transportation Management Program Evolves

Necessity breeds invention. For the federal government, improving NRC's efficiency through consolidation was a critical objective, and both the government and the developer were committed to working within the county's regulatory framework.

Although the survey results were unfavorable, the first building was not scheduled to be occupied for 18 months, and completion of the full complex was years away. Those involved still had time to persuade staff members to change their intended commuting patterns and thus make consolidation possible. Work began on a transportation management plan. A study team was assembled involving top man-

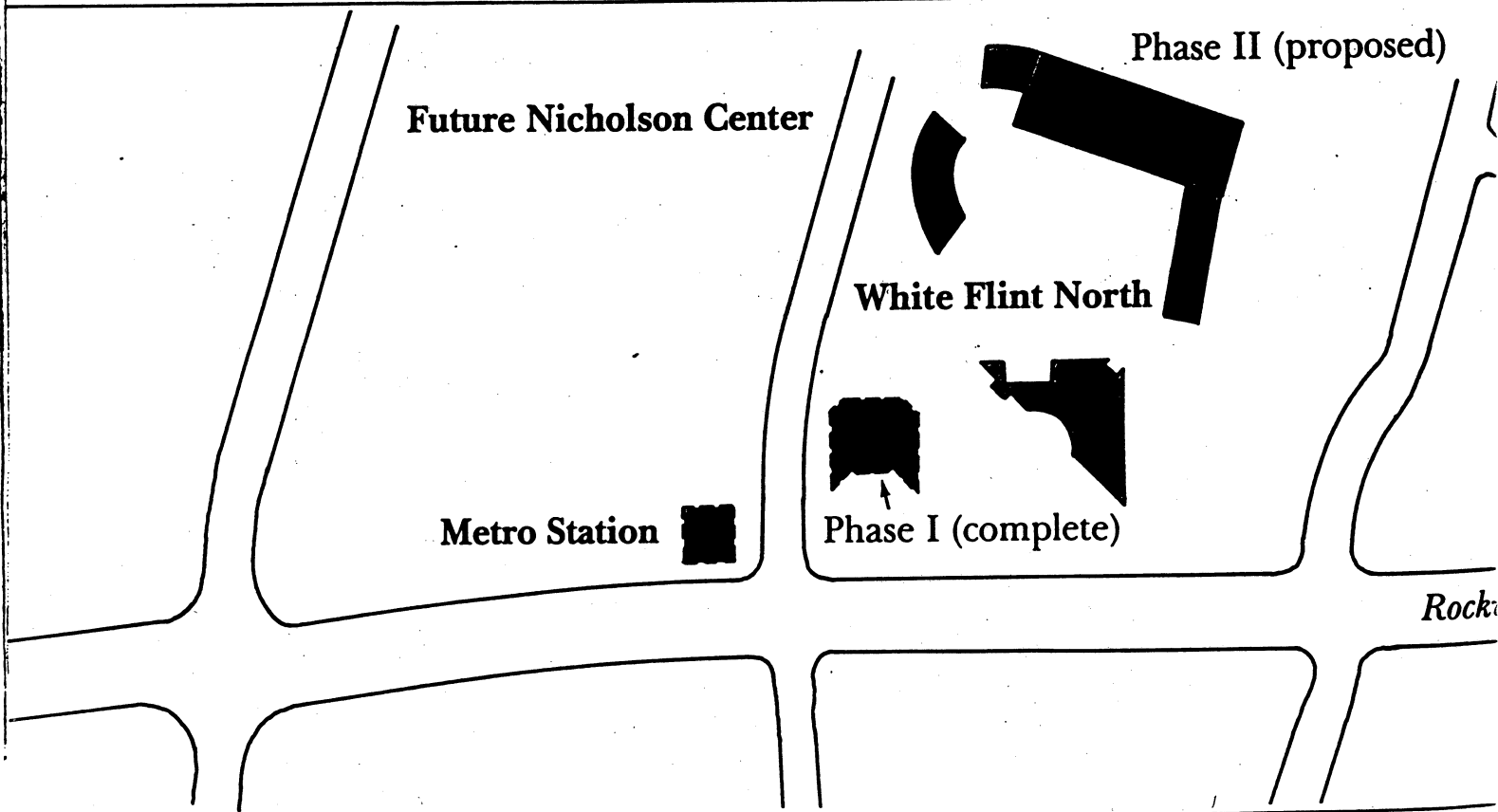
agement at GSA and NRC, the developer and its attorneys, survey research experts, and traffic and planning consultants. NRC's employees' union was consulted, and Montgomery County's Department of Transportation was approached for assistance. Meetings with county planning staff confirmed the study team's perception that its effort would be viewed by the county with skepticism.

Nonetheless, formulation of a TMP proceeded. The issue of charging for parking was examined: what amount would be reasonable, yet still serve as a disincentive to drive? Residential distribution of employees was analyzed in detail to determine what transit options could be made available. The cost of transit was considered: could its reduction through some form of subsidy convince drivers to switch to transit? Particular attention focused on the agency's work hours: if they were shifted, would staff travel take place out of peak periods?

Different options were tested out on agency staff through another survey, which drew an extraordinarily high employee response. The idea that NRC might make it difficult to drive to and park at the new facility distressed many employees. NRC responded that it would do everything possible to establish reasonable alternatives to the solo car commute. Driving to work alone would cost; other alternatives might be more attractive.

With the help of the Montgomery County Department of Transportation, the transportation management program was established and put into effect when occupancy of the first building began in early 1988. It consists of the following elements:

Fee Parking. All parking space formally available to NRC staff is being charged at market rates: \$60 per month at the 365-space in-building garage, and \$30 per month at an employees' lot some blocks away.



Transit Discounts. Montgomery County, to encourage use of the transit system, offers a matching fare discount to employers in its jurisdiction that provide subsidies for staff travel. Since the federal government is legally constrained from providing such subsidies, the county's transportation director, Robert McGarry, agreed to make the county's discount available without a matching subsidy. This discount amounts to a 20 to 25 percent fare reduction for NRC employees. NRC purchases discounted fare cards, flash passes, and bus tokens from the county and sells them to staff at a central location in the building. NRC also dispenses information on transit routings and schedules.

The Washington area Metro system's fares are among the highest in the nation. Many staff members had been reluctant to use Metrorail, Metrobus, and the county's own Ride-On system because of high fares, especially since they expected free parking on site. Fully one-third of the

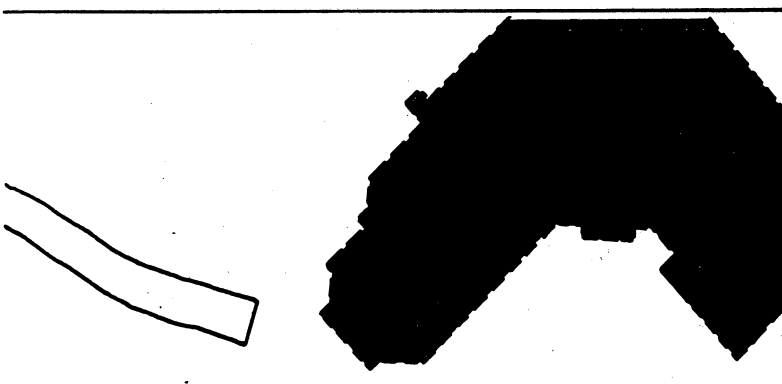
1988 survey respondents who use transit say they do so strictly because of the county's fare subsidy.

Carpools. Carpools of two or more riders are guaranteed space in the building's garage, but receive no discount. NRC's transportation office offers a matching service for carpools.

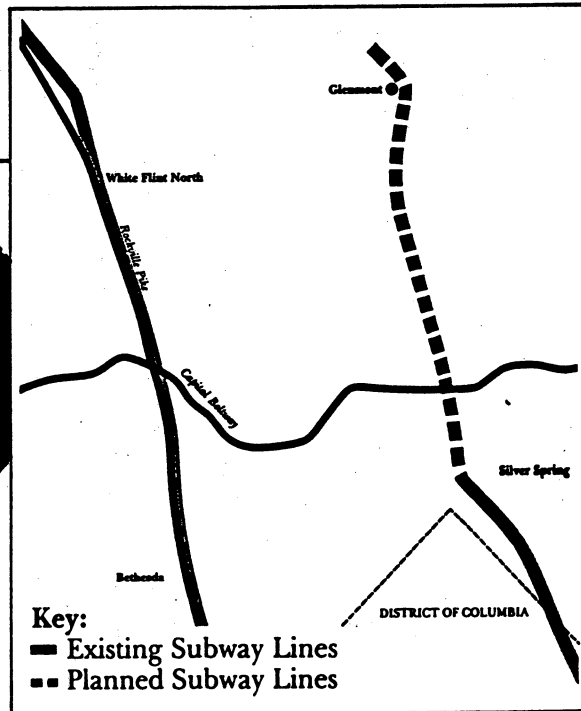
Early Work Hours. The NRC's standard working hours are now 7:30 to 4:15 (changed from 8:15 to 5:00) and further flexible arrangements permit many employees to start and leave even earlier during the working day. The change in work times is in accordance with employee preferences. It represents a major breakthrough—the first time the federal government has altered an agency's work-hour schedule in response to a local jurisdiction's traffic problems.

Nearby Parking Restrictions. Cars violating the parking restrictions in posted areas near the building are readily ticketed and towed, giving the restrictions teeth. In addition, the developer obtained agreement from owners of nearby shopping centers to tow illegal all-day parkers.

Beyond these current initiatives, the developer has made an unusual proffer to subsidize an east-west commuter shuttle—a new element in the county's public transportation system. Daily traffic between the eastern part of Montgomery County and job centers near NRC is one of the county's heaviest commuter flows. Some 14,000 people take this route, which lacks effective public transportation services. In spring 1989, the county will open a large park-and-ride lot at a key junction



White Flint Mall



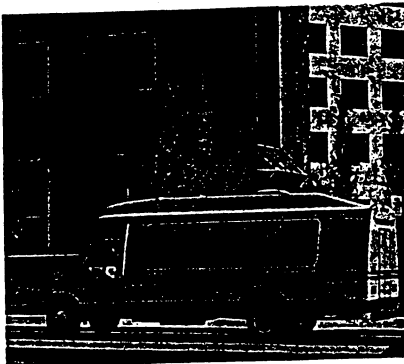
Pike

on the Georgia Avenue corridor. White Flint North's developer will directly subsidize shuttle bus service between that location and the White Flint Metrorail Station and other employee destinations in the area. An initial feasibility study indicated dramatic ridership potential. Trip reduction will be credited to NRC, further minimizing the traffic impact of its move to the suburbs.

The Regulatory Results

The transportation management program and the commitments by the developer and the government to sustain it led the Montgomery County Planning Board to approve unanimously in April 1988 a revised development plan for the site. The revised plan includes a second 364,000-square-foot building for NRC (containing ground-floor retail space) and, in line with the county's objective of intensifying residential development around Metro stations, 200 apartment units. In July 1988, the county council followed suit. Both bodies indicated their go-aheads rested on the strength of the TMP, and cautioned that results would be monitored and that ultimate approval of subdivision and building construction will depend totally on NRC's ability to sustain a minimal traffic impact. The employee survey and trip monitoring are the first measurement of results.

Although successful, the transportation management program is not without problems. The parking fees are not a complete deterrent to solo drivers. Many will pay the price, and other parking options exist for those willing to accept some inconvenience. Less than 40 percent of the employees who drive alone to NRC park in the assigned market-rate spaces. Some use the substantial amount of free legal on-street parking in the general vicinity, and others take advantage of a free, practically empty commuter parking lot a quarter-mile away, main-



Shuttle buses provided by the developer of White Flint Mall carry 3,000 persons a week the one-quarter mile between One White Flint North and the shopping center. Many NRC employees take the shuttle to the mall on their lunch hours (they receive a 10 percent discount at the food court there).

tained by the state of Maryland. Those willing to walk can thus avoid parking fees. (In contrast, almost 70 percent of those who carpool park in the building's garage. Although the fee is the same, carpool occupants can split it. The advantages of cost-sharing and the space incentive are obviously attracting carpools.)

The carpool matching services also need to be improved. Most poolers continue to make their arrangements informally, and many drive-alones say they would consider pooling if they could be effectively matched.

The survey returns make it clear that many of the drive-alones will not or cannot switch under any circumstances. For supervisors and top-level professionals, irregular working hours may be the reason. Other solo drivers have after-work commitments, need to transport children to and from school, or live in distant and dispersed locations. For these people, driving alone may be the only viable option. And there are some who just like to drive, despite the traffic.

NRC and White Flint North Limited Partnership continue to improve and refine the TMP. They intend to include a daycare center for employees' children in the second building. They are trying to form cooperative carpooling arrangements with other em-

ployers in the vicinity. And they continue to work on putting the east-west shuttle into action. Still in its early stages, the program thus far has been extraordinarily effective. Contrast its transit use results—28 percent of NRC's employees use public transit—with the recent finding by a county-commissioned study that less than 5 percent of all employees in the North Bethesda area (where White Flint North is located) commute by public transportation.

The Lessons

Large numbers of commuting Americans will always drive alone, especially if they work in the suburbs. But, as NRC's TMP demonstrates, Americans can be induced to moderate their love affair with automobiles during the workday. This particular TMP may not work everywhere, but it affords some lessons that do have wide relevance for suburban America:

- People will think twice about driving alone if they face a cost penalty and if carpooling and transit are made reasonably competitive in cost and convenience.
- A local government's regulatory structure can play a key role in engineering effective efforts at trip reduction.
- Creative solutions to the traffic impasse can be found if developer, employer, and government are willing to sit at the table together and treat the problem with the seriousness it merits.

The question, as you remember, is: can transportation management really work in the suburbs? The answer from this one case is yes—but only on the basis of deep and sustained commitment. ■

Malcolm D. Rivkin is a principal of Rivkin Associates, Inc., of Bethesda, Maryland. As consultant to the developer, the firm coordinated planning and evaluation of the TMP for White Flint North.

Facility Planning, Adequacy and Timing

OVERVIEW

The regulation of land use and other development activities in the United States began in the early part of the twentieth century. Early efforts came primarily in the form of comprehensive planning and zoning controls; for nearly fifty years, the entire American land-use control experience revolved around those basic tools. Zoning and subdivision regulations did not, however, offer communities the ability to answer fundamental growth management questions—such as whether public facility capacities existed to absorb additional development and, if so, where that capacity existed within the community.

Clarkstown, New York, began to explore answers to those complex growth management and facility adequacy questions fairly early in the history of land-use regulation. The Clarkstown system, adopted in the early 1950s, imposed a requirement calling for basic public facilities to be in place before a development could be approved. The community's system was the model for the better-known system adopted by neighboring Ramapo nearly two decades later. Concerns about the adequacy of off-site public facilities increased greatly in the early 1970s for two

unrelated reasons. First, new federal water-quality laws resulted in the establishment of moratoria on the issuance of building permits in areas with overloaded treatment plants. Second, the impacts of rapid growth in some areas led to citizen uprisings against overcrowded schools, congested roadways, and other limitations on public services (Kelly 1993).

Not surprisingly, elected officials' interest in ensuring adequate provision of facilities and services stems as much from their keen understanding of the harsh political costs of allowing service levels to drop below locally acceptable levels as it does from a concern for public health, safety, and welfare. Few issues evoke the kinds of public outcry that accompany growth-induced traffic congestion and overburdened facilities. In some communities, such as Livermore, California, and Boulder, Colorado, growth limitations were adopted through citizen initiatives. In others, citizen concern prompted officials to adopt growth controls.

While the physical effects of growth most often dominate the headlines, the fiscal impacts of growth are equally important. Without adequate road, water, wastewater, and stormwater drainage systems, private devel-

opment would be virtually impossible. Thus, most modern growth management programs must include policies designed to ensure the provision of adequate public facilities, as well as developer participation in funding the costs of new and expanded facilities needed to serve the new development. These techniques have obvious ties to sound growth management policy, and, in many cases, they represent the only possible means of accommodating new growth and development in an atmosphere of limited fiscal resources.

CATEGORIES OF SYSTEMS

Growth management systems vary in the degree of emphasis placed on the provision of adequate facilities. Local growth management programs in Florida, for example, rely more heavily on adequate public facility availability standards ("concurrency") than do programs in Oregon, where urban growth boundaries play a larger role. Growth management systems that emphasize public facility adequacy can be grouped into several categories: adequate public facilities standards, growth phasing systems, rate-of-growth systems, and carrying capacity systems. All attempt to balance the timing and amount of development with the capacity or willingness of a community to accommodate it.

Adequate public facilities standards require that, in addition to meeting applicable zoning and subdivision standards, new development demonstrate that facilities and services will be available to serve the project at the time that it comes on-line. Growth phasing systems are an attempt to address some of the shortcomings of performance-based adequate public facilities systems. Unlike adequate public facility requirements that are administered on a project-by-project basis,

growth phasing systems limit the amount of new development that can be approved over a certain period of time, typically one year. Rate-of-growth systems typically have annual development caps similar to growth phasing systems, but are less closely linked to public facility constraints. Finally, carrying capacity systems attempt to identify the upper capacity limits of the natural and built environment of a defined geographic area. These latter three techniques may be more properly characterized as "growth controls," since growth is limited or capped; growth management is more properly characterized as "growth accommodating." Nonetheless, these growth control techniques are important elements of an overall planning strategy for communities that have unique environmental limits or facility-capacity limits.

Adequate Public Facility Standards

Adequate public facilities standards require that, in addition to meeting applicable zoning and subdivision standards, new development demonstrate that facilities and services will be available to serve the project at the time that it comes on-line. Florida has adopted such a standard as state law and calls it concurrency management because it generally requires that needed facilities be available concurrently with impacts of the development.

Adequate public facilities controls are in one sense self-administering. A community adopts a level-of-service standard for each type of facility, and applications are denied if the service demands of a project cannot be accommodated at the adopted service level by existing or planned facilities. In practice, however, adequate public facilities systems are not nearly as simple as they might seem. If planned facilities are included in the capac-



Figure 7-1. Urban growth management programs attempt to provide adequate public facilities and services commensurate with development needs in a timely manner and in areas suitable for development. Here, urban expansion is facilitated by the installation of a regional wastewater trunk.

ity analysis, the timing of completion of those facilities must be related to the build-out of the project. On the demand side, development approvals must be tracked to estimate already committed capacity. Nonetheless, these are technical tasks and, once established, such systems can be administered with only periodic or perfunctory policy review, as in Broward County's highly automated traffic concurrency management system.

Known by a variety of names, concurrency and adequate public facility requirements are formal mechanisms used to enforce one of the most fundamental tenets of land-use planning—that development should not be permitted where it can not be adequately accommodated by critical public facilities and services. While land development regulations have historically been used as a means of ensuring that residents and end users of a development project can be adequately served

by community facilities, adequate public facility regulations go further, by ensuring that new development will not cause unacceptable reductions in service for existing area residents.

Due to the need for reliable data and the amount of monitoring required for the administration of adequate public facilities regulations, past efforts have generated limited service-level evaluation and enforcement programs. Recent innovations suggest, however, that adequate public facility programs and service-level maintenance requirements are becoming increasingly more common.

Florida. Under the provisions of Florida's concurrency doctrine, as set forth in its Local Government Comprehensive Planning and Land Development Regulation Act (chapter 163 of the Florida Statutes), cities and counties must adopt "adequate facilities" regulations requiring that all future development be served by infrastructure operating at or above adopted levels of service. According to the provisions of the act and its accompanying administrative rules (Florida Administrative Code chapters 9J-5 and 9J-24), no new development can be permitted unless it is first determined that public facilities are in place at the time they are needed to accommodate new development. Local governments are also prohibited from issuing development permits that would result "in a reduction in the level of services for the affected public facilities below the level of services provided in the comprehensive plan of the local government."

According to the Florida act, local governments may not issue development permits unless adequate public facilities for roads, water, wastewater, drainage, solid waste, parks, and, in more heavily urbanized areas, mass transit are available concurrent with the

impacts of new development. The Florida Administrative Code sets forth the circumstances under which development permits may be issued:

- Adequate facilities are in place when development permit is issued.
- Adequate facilities are under construction when development permit is issued.
- Adequate facilities will be in place when development impact occurs, or adequate facilities are guaranteed in a development agreement.

State rules also allow transportation improvements called for in the five-year capital improvements program to be included in determining facility adequacy, if it can be demonstrated that the improvements will be available within three years of development permit issuance. (However, this requirement can be waived under special conditions.) For parks and recreation facilities, an additional one-year lag is permitted between the time of permit issuance and facility availability.

Florida's concurrency program has generated considerable controversy. A 1987 study indicated that the state needed to invest \$53 billion in infrastructure improvements by the year 2000, but legislative actions, such as a \$3 billion, five-year transportation appropriation in 1990, are falling far short of capital needs. While the system is not inherently growth limiting, the failure of the state government to adequately fund improvements to the state roadway network has led to de facto development moratoria in some urban areas. Critics point out that the concurrency requirements, coupled with inadequate state funding for infrastructure, are encouraging development in rural and exurban areas where excess road capacity exists, contrary to state goals discouraging urban sprawl.

Broward County, Florida. Broward County has had adequate public facility (APF) regulations in place since 1981. Under the terms of the county's original program, development projects were required to demonstrate the adequacy of seventeen types of facilities. The original APF regulations amounted to a pay-and-play system under which permits were granted if the development paid impact fees or otherwise shouldered a proportionate share of the cost of system improvements needed to accommodate the development.

Broward County established its present concurrency management system in 1989 in response to the 1985 Local Government Comprehensive Planning and Land Development Regulation Act. Since the county's own APF system had been in place for ten years, compliance with the act simply required a few modifications to the existing system. The county land development code requires that an application for development approval comply with at least ten APF requirements. These include adequacy of regional roadway network, adequacy of major road rights-of-way, access to major and collector roads, surface water management, potable water supply, wastewater treatment, solid waste collection and disposal, regional and local parks, school sites and buildings, and fire and police protection. Inadequate roadways have historically posed the greatest practical constraint to new development in the county.

Under the Broward approach, applications for new development must satisfy two required determinations relating to the adequacy of regional roadways. First, they must meet concurrency standards within compact deferral areas (restricted trafficsheds that feed nearby overcapacity roadway links). Second, they must meet adequacy requirements (fee

assessments) for all overcapacity systemwide roadways that will be affected by the proposed development. This essentially means that if a proposed development is located within one mile of an overcapacity roadway, it will not be approved until capacity is restored. If, on the other hand, it is not located near an overcapacity roadway, it may be permitted as long as an impact fee is paid to improve any overcapacity roadways that will be affected by the proposed development.

Traffic concurrency is measured by comparing the capacity of each roadway link on the regional network to the sum of current traffic on the road and projected traffic from approved but unbuilt development. If this total demand exceeds capacity, the roadway link is considered overcapacity, and a compact deferral area (CDA) is created. A CDA is an area extending for one mile on either side of an overcapacity roadway link, and for one-half mile beyond the end of the link. Within each CDA, no development permit can be issued for a project unless it is exempt from concurrency review. Moreover, a development permit will not be issued if a proposed development itself would create a CDA around the development site.

Development permits can be issued within a CDA only if it can be shown that (1) the project will not place any more traffic on the overcapacity roadway link creating the CDA; (2) the roadway link is not actually overcapacity (this requires a traffic engineering study); or (3) the property is vested. Projects that do not meet the criteria for permit issuance within a CDA have two options. They can wait until the overcapacity roadway link is improved or budgeted for improvement in the county's five-year capital improvements program, or they can propose and fund im-

provements to the county's transportation system that will mitigate the transportation impacts (on the overcapacity roadway link) associated with the proposed development. If mitigation is demonstrated prior to approval of the development, it is called a development agreement. If the application is denied, the subsequent study and mitigation proposal is called an action plan.

Broward County's traffic concurrency system introduces some degree of uncertainty into the development review process, because the status of roadway links changes frequently. Since a concurrency determination is not made until a final plat application is filed (at least six weeks after initiation of the platting process), new CDAs may be created during the plat review process that will affect the ultimate concurrency determination. The county publishes a monthly CDA map, but it is often out of date soon after its release. The maps provide a sharp illustration of the degree of the county's traffic problems. The April 1, 1994, map, for example, shows the majority of the county covered with CDAs. Roughly one-quarter of the area of the county not located within a CDA is in previously approved developments of regional impact, which are large-scale developments approved under state guidelines and exempt from traffic concurrency requirements. The Broward County approach is illustrated in Figure 7-2.

Transportation Demand Management. A variant of the adequate public facilities concept is transportation demand management (TDM), which is designed to increase the use of public transit, carpooling, bicycling, walking, and other modes of transportation that reduce single-occupant automobile commuting. TDM also encourages off-peak commuting and telecommuting. As a growth manage-

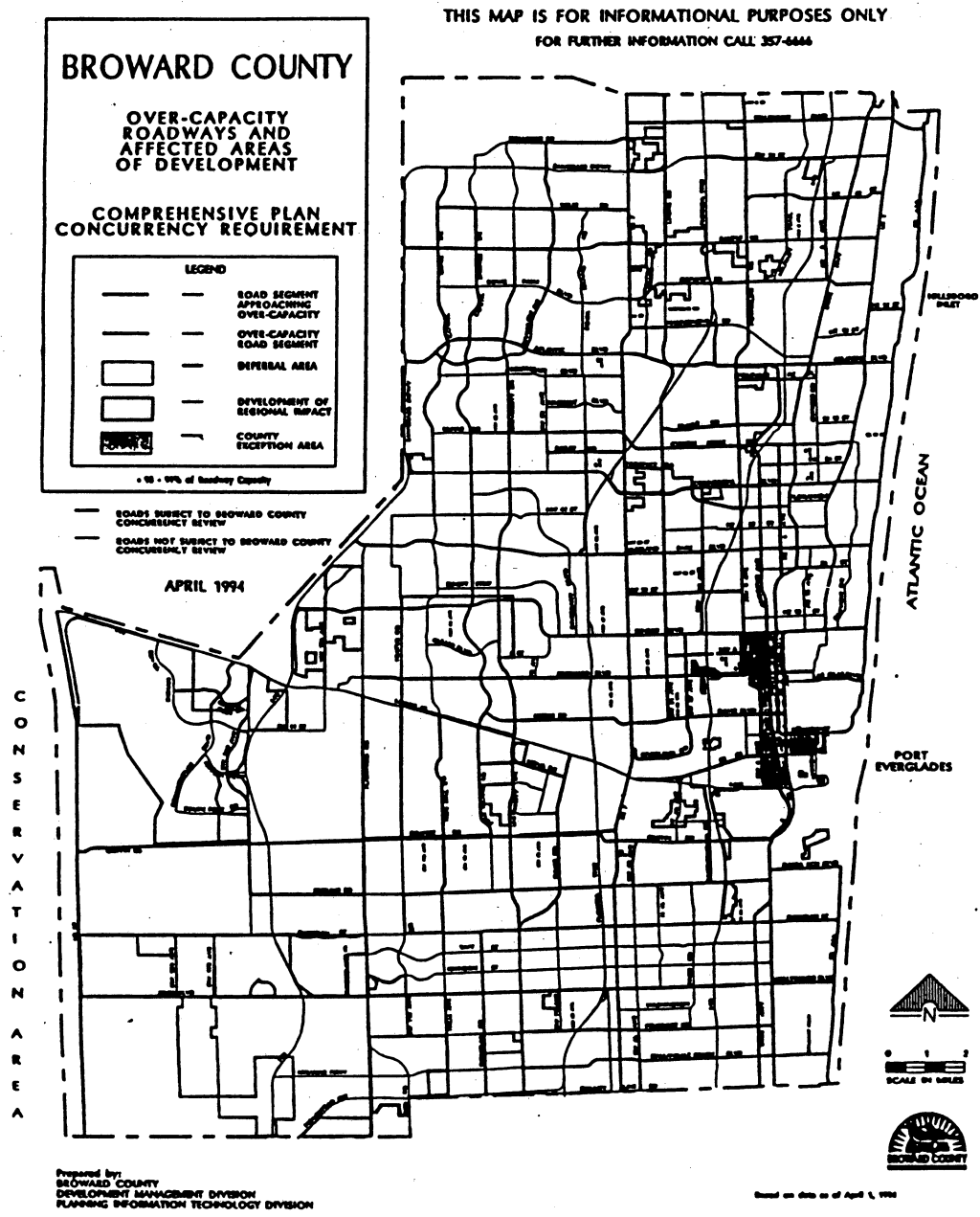


Figure 7-2. Broward County, Florida, over-capacity roadways and affected areas of development. Source: Prepared by Broward County Development Management Division, Planning Information Technology Division.

ment tool, it increases the effective capacity of existing road networks, improves the economics of public transit, and facilitates higher intensity development in urban nodes and corridors. Some TDM strategies are reviewed below (Ferguson 1990).

Bellevue, Washington. Bellevue requires most developments outside the central business district (CBD) and all developments inside the CBD employing more than 150 people to engage in TDM incentives such as coordinating carpooling, giving preferential parking to carpools, paying employees for not using single-occupant vehicles, and providing guaranteed ride-home programs. The city hopes to increase the share of public transit and carpooling to 18 percent of all commute trips.

Minnetonka, Minnesota. Minnetonka requires TDM of developments exceeding 25,000 square feet or more than two peak-hour trips per 1,000 square feet. Based on a traffic impact study, the development must mitigate traffic impacts requiring new roadway capacity.

Pleasanton, California. Pleasanton hopes to reduce peak-hour traffic by at least 45 percent by the mid-1990s. All new and existing employers are required to reduce peak-hour traffic proportionately. Failure to make progress or meet requirements in good faith can result in a \$250-per-day fine.

Growth Phasing

Growth-phasing systems are an attempt to address some of the shortcomings of performance-based adequate public facilities systems. Unlike adequate public facility requirements that are administered on a project-by-project basis, growth-phasing systems limit the amount of new development that can be approved over a certain period of time, typically one year.

Performance-based controls on public facilities work well with facilities such as arterial roadways, interceptor wastewater lines, and schools that serve particular regions and for which capacity must be measured in relationship to proximate demand. Through the addition of turning lanes, classroom additions, and other enhancements, these types of facilities can usually be expanded incrementally to serve new development. Some facilities, however, such as water and wastewater treatment plants and major commuter highways, serve entire communities and require large capital investments and long-term horizons to expand. Using such facilities as the basis for computation, some communities adopt growth-phasing systems designed to spread remaining capacity over the time period between the present and the probable date of facility expansion.

The capacity of a community to absorb growth is a measure that requires continual updating. The opening of a new mass-transit station, for example, may generate an increase in transit ridership and, thereby, an increase in surrounding highway capacity. The construction of new modules at water and wastewater treatment plants can dramatically increase the capacity of those facilities, as well. At the same time, the demand side of the capacity equation must be periodically reevaluated in light of new data. Dwelling units built in the 1980s did not contain as many people as the 1980 census might have suggested, and, consequently, water demand for such households was typically lower than anticipated. On the other hand, as the number of workers per household increased, peak-hour trips per dwelling unit in many areas increased significantly. For these and other reasons, the factors used to measure compliance with growth-phasing controls

must be updated and reevaluated on a regular basis, even though the basic level of service standards by which conformance is measured remain unchanged.

Montgomery County, Maryland. Montgomery County uses a sophisticated and rather complex system to manage growth. The system includes an effective agricultural land preservation program, a coordinated set of functional and area master plans, and a sophisticated system of land development regulations. While recognizing the multifaceted nature of the existing program, the description here is limited to that part of the total system that deals with the capacity of public facilities to serve growth. Montgomery County's adequate public facilities ordinance (APFO) was added to the subdivision ordinance in 1973. Section 50-35(k) of the Montgomery County subdivision ordinance states:

A preliminary plan of subdivision must not be approved unless the Planning Board determines that public facilities will be adequate to support and service the area of the proposed subdivision. . . . Public facilities and services to be examined for adequacy will include roads and public transportation facilities, sewerage and water service, schools, police stations, firehouses, and health clinics.

In recent years, the APFO has been implemented by a growth-phasing system. In 1986, the county council passed legislation requiring the planning board to prepare an annual growth policy (AGP) to be used as a guide in the board's implementation of the APFO. The AGP is adopted by the county council, on the recommendation of the planning board and county executive, before the beginning of each fiscal year. Among other things, the AGP must include

- current level of service conditions for major public facilities;
- an estimate of the service demands resulting from unbuilt but approved subdivisions (pipeline development); and
- recommended growth capacity (residential and employment) ceilings for each policy area, based on alternative scenarios of future public facility growth.

The AGP has become one of the county's real planning implementation workhorses. Besides relating the staging ceilings to factors closely tied to adequate public facilities, such as the capital improvements program and policies for promoting mass transit, the AGP has also been used as a tool to achieve land-use objectives outlined in sector plans, as well as jobs-housing balance and affordable housing goals. The focus of the AGP is the adoption of staging ceilings limiting the amount of new development that may be approved in each of twenty-two policy areas during the year. The amount of new development activity in new subdivisions is separated into two categories: residential, based on the number of dwelling units; and nonresidential, based on the number of jobs. This distinction allows the county to use the AGP as a tool to help achieve desired jobs-housing balance objectives. The council is also considering additional policy areas around some Metrorail stations. The major focus of the AGP has been on transportation facilities, although in some areas of the county, school capacities may be the primary constraint to growth. In other areas, staging ceilings may be set by the more restrictive limits included in adopted sector plans. For each policy area, one of six average roadway level-of-service (LOS) standards is adopted, based on availability of mass transit.



CITY OF CAMBRIDGE
CAMBRIDGE, MASSACHUSETTS 02139

TEL 349-4300
FAX 349-4307



10.

EXECUTIVE DEPARTMENT
ROBERT W. HEALY
City Manager

RICHARD C. ROSSI
Deputy City Manager

March 30, 1998

To The Honorable, The City Council:

Please find attached a response to Calendar Item No. 1, of March 2, 1998, regarding information on development in general.

Very truly yours,

Robert W. Healy
City Manager

RWH/mec
Attachment

Consent Agenda #10

S-220

Relative to Calendar Item No. 1
of March 2, 1998, regarding
information on development in
general.

In City Council March 30, 1998

Referred to

~~hearing scheduled for~~

7:00 pm.