

REPORT NO. 2  
ECONOMIC & HOUSING PROJECTIONS  
CITY OF DOVER

August, 1987

Prepared for: City of Dover Planning Dept.

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1480



## INTRODUCTION

The purpose of this interim report is to provide a series of baseline projections of regional and local employment, housing and population. These projections are used to assess Dover's potential industrial, office, retail and residential development. The assumptions used in the projections are subject to modification based on new information developed during the course of the study.

This report provides a series of projections based on the following steps:

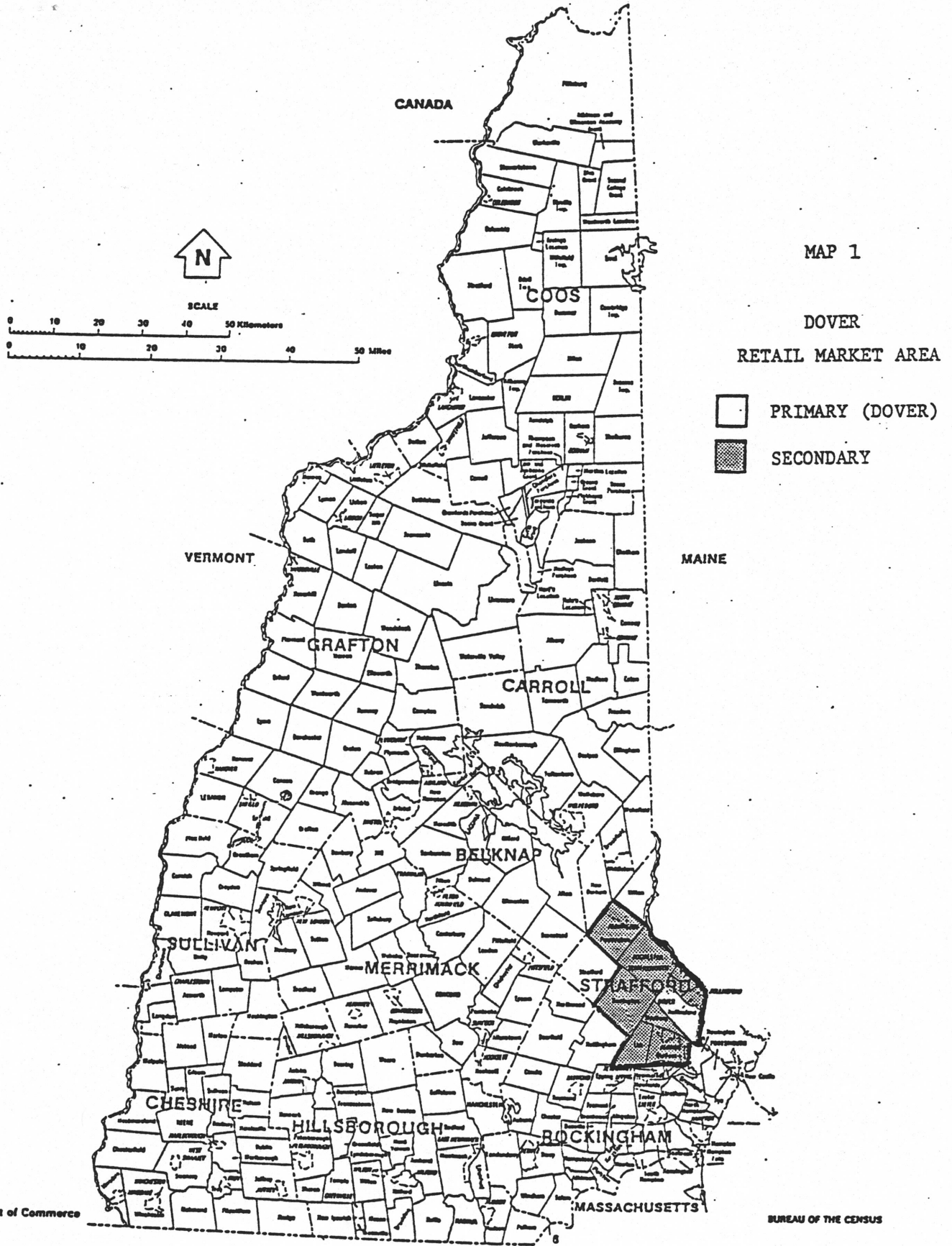
- 1) Project regional and market area employment growth by industry based on statewide projections and regional shares of growth which reflect the region's competitive strengths in particular industries;
- 2) Estimate local employment for the city of Dover based on its expected shares of market area employment growth, by industry;
- 3) Utilize the local employment projections to provide an estimate of land consumption in the city of Dover for industrial and office uses;
- 4) Project market area population based on anticipated employment growth and assuming a continuation of commuter trends;
- 5) Based on the area population projections and demographic trends in average household size, estimate household growth for the Seacoast market;
- 6) Project the proportion of household growth in home ownership versus rental tenure, based on demographic shifts in age groups;
- 7) Estimate total housing needs based on providing an adequate number of housing units for household growth, to an adequate reserve of vacant units to, and for the replacement of housing units lost by conversion, demolition, fire and other causes;
- 8) Calibrate the regional housing projection model to the actual change in housing units (1980 to 1987) for the market area;
- 9) Estimate conservative and aggressive shares of ownership and rental growth for the city of Dover; calibrate the model to reflect the city's recent share of ownership and rental activity;
- 10) Project the city of Dover population based on the high and low growth scenarios in housing and based on the



expected mix of housing units; and

- 11) Utilize the projections of regional and local population to determine supportable local retail activity, and estimates of per capita income to determine supportable local retail activity.

These projections assume regional population and housing growth to be primarily a function of employment growth within the Seacoast area. Note that Dover's future population is projected based on its share of regional housing activity and the mix of housing types in the city.



U.S. Department of Commerce

BUREAU OF THE CENSUS



TABLE 1.

STATE AND REGIONAL EMPLOYMENT GROWTH

	EMPLOYMENT PROJECTION			EMPLOYMENT STATE OF NH 1965	CHANGE IN EMPLOYMENT 1965-1995	STAFF/ ROCK. CITY SHARE OF GROWTH	STAFF/ ROCKINGHAM GROWTH 1965-1995	STAFFORD/ROCKINGHAM EMPLOYMENT		CHANGE
	ANNUAL AVERAGE GROWTH(1)	STATE OF NH 1995	1995					1965	1995	
MANUFACTURING		120010	3.7%	164362	44352	14.3%	6341	25564	31925	24.6%
DURABLE GOODS		77165	4.6%	114015	36850	14.5%	5346	15545	20891	34.4%
Primary & Fabric. Metals		10676	3.9%	14840	4164	20.0%	633	2218	3051	37.5%
Machinery Exc. Electrical		26436	6.3%	43091	16655	14.8%	2489	4914	7363	50.2%
Electrical Products/Instruments		28224	4.6%	41772	13548	11.0%	1485	5532	7417	25.0%
Other Durables		11629	2.1%	14313	2684	22.5%	580	2461	3041	22.6%
NON-DURABLE GOODS		42645	1.6%	50347	7502	13.3%	595	10039	11034	9.9%
Textile & Apparel		6600	.7%	7082	462	-30.0%	-139	450	311	-30.8%
Paper & Allied/Publishing/Print		14705	2.0%	17646	2941	33.2%	976	2001	2977	48.6%
Leather & Leather Goods		4350	-2.4%	3306	-1044	65.0%	-887	1650	1003	-47.0%
Rubber & Plastics		9284	2.5%	11876	2692	35.0%	942	4253	5155	22.2%
Other Non-Durables		7906	3.1%	10357	2451	4.2%	102	1445	1547	7.1%
NON-MANUFACTURING		270407	3.3%	360312	89905	28.7%	25758	76712	96470	36.4%
TRANS., COMM., UTILITIES		15640	2.1%	18924	3284	65.0%	2135	5212	7347	41.0%
TRADE		110324	3.6%	152247	41923	30.7%	12877	32335	45212	39.6%
FINANCE, INS. AND REAL ESTATE		25023	4.3%	35783	10760	27.3%	2937	5649	6566	52.0%
SERVICES		89181	3.5%	120408	31217	23.2%	7246	18858	26144	38.3%
OTHER		30228	.9%	32950	2721	20.7%	563	8618	9181	6.5%
GOVERNMENT		56907	2.1%	69086	12179	38.4%	4680	24722	29402	18.9%
FEDERAL		7583	1.1%	8417	834	85.0%	709	7455	8144	9.5%
STATE/LOCAL		49324	2.3%	60669	11345	35.0%	3971	17267	21258	23.0%
TOTAL EMPLOYMENT		447324	3.3%	593760	146436	25.1%	36778	121018	157796	30.4%



TABLE 2.  
PROJECTION OF MARKET AREA EMPLOYMENT  
(METRO AREA)

PORTSMOUTH-DOVER-ROCHESTER MSA (NH PORTION)

INDUSTRY CATEGORY	1980	1985	Estimated Avg. Annual Growth Rate	1995	Change in Employment 1980-85	1985-95	Average 1980-85	Annual 1985-95
MANUFACTURING	20567	17549	2.4%	21734	-3018	4185	-604	418
DURABLE GOODS	----	10155	3.4%	13608	---	3453	---	345
NON-DURABLE GOODS	----	7394	1.0%	8126	---	732	---	73
NON-MANUFACTURING	31297	40650	4.6%	58315	8753	18265	1751	1826
TRANS., COMM., UTILITIES	----	2072	4.1%	2922	---	850	---	85
TRADE	----	20438	4.0%	28572	---	8134	---	813
FINANCE, INS. AND REAL ESTATE	----	4520	9.5%	8814	---	4294	---	429
SERVICES & OTHER	----	13020	3.8%	18007	---	4987	---	499
GOVERNMENT	11500	12874	2.1%	15559	1374	2685	275	268
FEDERAL	1650	2045	1.0%	2239	---	194	---	19
STATE/LOCAL	9850	10829	2.3%	13320	---	2491	---	249
TOTAL EMPLOYMENT	63364	70473	2.3%	95607	7109	25134	1422	2513



TABLE 3.

CITY EMPLOYMENT  
PROJECTION 1

(CONTINUATION OF RECENT TRENDS)

SCENARIO 1	CITY OF DOVER EMPLOYMENT PAST AND PROJECTED		1980-85		1985-1995		Change in Employment 1980-85	1985-95	Average 1980-85	Annual 1985-95
	1980	1985	Share Of Metro Change	Projected Share						
INDUSTRY CATEGORY	1980	1985	Share Of Metro Change	Projected Share	Change in Employment 1980-85	1985-95	Average 1980-85	Annual 1985-95		
MANUFACTURING	3904	3870	1.1%	18.3%	-34	764	-7	76		
DURABLE GOODS	----	----	----	20.0%	----	691	----	69		
NON-DURABLE GOODS	----	----	----	10.0%	----	73	----	7		
NON-MANUFACTURING	4928	6925	22.8%	32.6%	1997	5962	399	596		
TRANS., COMM., UTILITIES	175	522	----	35.0%	347	297	69	30		
TRADE	2807	3325	----	20.0%	518	1627	104	163		
FINANCE, INS. AND REAL ESTATE	420	480	----	65.0%	60	2791	12	279		
SERVICES & OTHER	1526	2598	----	25.0%	1072	1247	214	125		
GOVERNMENT	2617	2823	15.0%	15.0%	206	40	41	4		
FEDERAL	335	376	----	15.0%	41	3	8	0		
STATE/LOCAL	2282	2447	----	15.0%	165	37	33	4		
TOTAL EMPLOYMENT	11449	13618	30.5%	26.9%	2169	6766	434	677		



TABLE 4.  
CITY EMPLOYMENT  
PROJECTION 2  
(INCREASED SHARE OF METRO EMPLOYMENT GROWTH)

SCENARIO 2	INDUSTRY CATEGORY	1980	1985	1980-85		1985-1995		Change in Employment 1980-85	1985-95	Average 1980-85	Annual 1985-95
				Share Of Metro Change	Projected Share	1980-85	1985-95				
	MANUFACTURING	3904	3870	1.1%	23.3%	-34	973	-7	97		
	DURABLE GOODS	----	----	----	25.0%	----	863	----	86		
	NON-DURABLE GOODS	----	----	----	15.0%	----	110	----	11		
	NON-MANUFACTURING	4928	6925	22.8%	40.0%	1997	7305	399	730		
	TRANS., COMM., UTILITIES	175	522	----	40.0%	347	340	69	34		
	TRADE	2807	3325	----	25.0%	518	2034	104	203		
	FINANCE, INS. AND REAL ESTATE	420	480	----	80.0%	60	3435	12	344		
	SERVICES & OTHER	1526	2598	----	30.0%	1072	1496	214	150		
	GOVERNMENT	2617	2823	15.0%	20.0%	206	54	41	5		
	FEDERAL	335	376	----	20.0%	41	4	8	0		
	STATE/LOCAL	2282	2447	----	20.0%	165	50	33	5		
	TOTAL EMPLOYMENT	11449	13618	30.5%	33.1%	2169	8331	434	833		



POPULATION AND HOUSING GROWTH

Table 5 illustrates recent and projected regional growth in employment, population, households and total housing stock. This model has been calibrated to account for the approximately 10,500 units added by permits issued in the 1980 to 1986 calendar years. By this model, we estimate that The Metro Area total housing stock will grow by nearly 16,000 units over the next eight years, or roughly 2,000 units per year.

Significant shifts occurring within the housing market indicate that:

- 1) The average number of persons per household is declining, but at a slower rate than it did in the 1970s;
- 2) Demographically, growth by age group will place more households within the age and income categories most strongly oriented toward home ownership versus rental tenure. This suggests an increasing development emphasis on ownership housing products, especially single family dwellings; and
- 3) Due to demographics and to the Tax Reform Act of 1986, overall production of rental housing is likely to decline as a share of overall activity.

*has this already peaked?*  
*will S.F. D. become rental units?*

Table 6 illustrates our estimate of Dover's share of housing activity for the 1980 to 1987 period and for 1987 to 1995. Based on our analysis of regional growth patterns, Dover appears to have been absorbing approximately 15 percent of overall housing activity. While Dover has had a strong orientation toward rental housing, it has more recently shown a stronger market potential for home ownership and condominium units.

For the projection period of the next eight years (Table 6) assuming the recent trends in its share of regional growth, the city would need to accommodate approximately 2,400 additional housing units over the next eight years, or an average annual absorption of approximately 300 households annually. This table assumes that trends of the recent past would continue, with approximately 60 percent of ownership units in single family detached housing, and a 40 percent condominium share.

*are we talking about fair share here?*

Table 7 illustrates a higher growth scenario for Dover, based on a continued 20 percent share of rental housing growth, but a significant increase in the city's capture of home ownership units, accompanied by a shift toward a higher proportion of condominium ownership at 60 percent (rather than the 40 percent) within the city assumed in Table 6.

*what would cause this to occur?*

Assuming Dover captured 25 percent of the overall ownership market and 20 percent of the rental market, the city would need to accommodate nearly 4,000 housing units over the next eight years, or approximately 500 per year.

Dover currently has over 3,000 units of housing in accepted, approved or proposed developments. Approximately 3/4 of these units are in single family attached (condominium) units and 25 percent in single family

TABLE 5.  
GROWTH IN MARKET AREA POPULATION,  
HOUSEHOLDS AND HOUSING STOCK

file: dovfufr

*why is this so  
 diff. from table 1.*

	PORTSMOUTH DOVER ROCHESTER MSA (NH PORTION)				GROWTH IN HOUSING NEED	
	1980	1985	1987	1995	1980-87	1987-95
EMPLOYMENT	63364	70500	76000	<u>95600</u>	12636	19600
POPULATION	148927	159400	169900	200000	20973	30100
Persons/Job	2.35	2.26	2.24	2.09		
HOUSEHOLDS	52600	56929	61558	76923	8958	15365
Persons Per Household	2.83	2.80	2.76	2.60		
Homeowner %	61.0%	61.5%	62.0%	64.0%	63.7%	71.4%
Renter %	39.0%	38.5%	38.0%	36.0%	36.3%	28.6%
Homeowners	32095	35011	38166	49231	6071	11065
Vacancy Reserve	321	700	763	985		
Replacement	—	210	229	295		
Total Ownership Stock	32416	35921	39158	50511	6742	11353
Renters	20504	21918	23392	27692	2888	4300
Vacancy Reserve	410	1096	1170	1385		
Replacement	—	175	187	222		
Total Rental Stock	20914	23189	24749	29298	3835	4550
Total Housing Need	53330	59110	63907	79809	10577	15902



TABLE 6.

DOVER HOUSING AND POPULATION GROWTH  
PROJECTION 1

CITY OF DOVER HOUSING GROWTH: SCENARIO 1 RECENT TRENDS IN CAPTURE RATE & HOUSING MIX

	Share Of Growth		Growth		Share Of Growth		Growth	
	1980	1980-87	1987	1980-87	1987-95	1995	1987-95	
Homeowner Units	4470	13.0%	5346	876	13.0%	6822	1476	
Single Family Detached	3505		4031	526		4916	885	<del>111</del>
Condominium & 2+ Family	965		1533	568		2123	590	74
Rental Units	4260	20.0%	5027	767	20.0%	5937	910	114
Total Year-Round Units	8730	15.5%	10373	1643	15.0%	12759	2386	

CITY OF DOVER POPULATION GROWTH

	1980	1987	1995	Change in Population	
				1980-87	1987-95
Persons Per Household					
Owner Occupied	3.00	2.90	2.82		
Renter Occupied	2.18	2.15	2.15		
Total	2.67	2.59	2.49		
Population In Occupied Units					
Owner	13286	15040	18662	1754	3622
Renter	8615	10484	12381	1869	1898
Other	476	555	675	79	120
Total Population	22377	26078	31718	3701	5640

*are these OSP?*

TABLE 7.

DOVER HOUSING AND POPULATION GROWTH  
PROJECTION 2

CITY OF DOVER HOUSING GROWTH: SCENARIO 2 INCREASED SHARE OF REGIONAL HOUSING ACTIVITY

	Share Of Growth		Growth		Share Of Growth		Growth	
	1980	1980-87	1987	1980-87	1987-95	1995	1987-95	
Homeowner Units	4470	13.0%	5346	876	25.0%	8185	2838	
Single Family Detached	3505		4031	526		5166	1135	
Condominium & 2+ Family	965		1533	568		3236	1703	
Rental Units	4260	20.0%	5027	767	20.0%	5937	910	
Total Year-Round Units	8730	15.5%	10373	1643	23.6%	14122	3748	
CITY OF DOVER POPULATION GROWTH	1980	1987	1995					
Persons Per Household								
Owner Occupied	3.00	2.90	2.82					
Renter Occupied	2.18	2.15	2.15					
Total	2.67	2.59	2.52					
				Change in Population				
				1980-87	1987-95			
Population In Occupied Units								
Owner	13286	15040	22388	1754	7349			
Renter	8615	10484	12381	1869	1898			
Other	476	555	756	79	201			
Total Population	22377	26078	35525	3701	9447			



detached housing and subdivision lots. The amount of multi-family approved and proposed units is negligible at the present time.

It must be recognized that housing tenure will not strictly follow inventory type in the housing market. That is, renters may occupy a significant share of single family, and condominium attached units. Garden-style condominiums, on the other hand, provide an opportunity for home ownership tenure in multi-family dwellings.

If the overall market shifts toward a demand for a single family detached product, and should an over-supply of condominium units in the Seacoast market emerge, actual absorption of households in Dover may not reflect the mix of units currently proposed to the city. If demand is high for single family detached homes on scattered sites throughout the city, single family units may be absorbed first, and in a decentralized pattern. If the market remains strong for condominium housing, a more concentrated pattern of development with somewhat lower population implications would emerge.

*this is what we need an answer to*

The population projections for Dover are based on the estimated number of persons per household in occupied units estimated separately for owner and rental tenure. In Tables 6 and 7, the range of year-round housing growth in Dover is anticipated to be in a range of 300 to 500 units per year (growth potential), while the range in population growth under the two assumptions is approximately 700 to 1,200 persons per year.

Dover's 1995 population, as projected by this model, would be in a range of 32,000 to 36,000 persons. These population assumptions have been incorporated into the retail projections which follow in the next section.

## RETAIL PROJECTIONS

Our analysis of retail sales trends, set forth in our prior report, revealed that between 1972 and 1982 Dover lost a significant share of the region's total retail sales, primarily because of a declining share of shoppers' goods (items typically purchased in department stores) sales, as performance in the convenience goods categories were more consistent with its past performance and its role in the regional economy.

This report expands that prior analysis by estimating current retail sales and projecting future retail sales under two assumptions. Projections are detailed for shoppers' goods and convenience goods type merchandise and are estimated on a more general basis for "other retail" categories. It is important that two concepts be clearly understood:

Retail Sales. This is the amount of merchandise sold in the city of Dover; and

Expenditure Potential. This is the amount of merchandise purchased by residents of Dover and the secondary market area.

To the extent that sales are greater than the expenditure potential, on an overall basis sales are flowing into the city. If the expenditure potential is greater than sales, sales are flowing out of the city.

Dover's merchants compete in an extremely competitive environment. Newington's merchants offer an extensive array of merchandise in very convenient (if conventional) shopping centers. Downtown Portsmouth merchants provide a wide variety of specialized merchandise in an especially strong concentration of quality restaurants. Finally, metropolitan Boston's extensive array of retailing is within striking distance of the Dover market.

It is because of this competitive context that Dover's retailers are not garnering their full share of resident expenditure potentials. A significant, and growing outflow of retail sales (especially shoppers' goods sales) expenditure potential is occurring. Our estimates have been calibrated to coincide with the Census of Retail Trade, the most accurate indicator of retail sales in New Hampshire. Our analysis indicates that with respect to shoppers' goods type merchandise:

Dover continues to function as a satellite shoppers' goods center. In 1982, its shoppers' goods sales of \$27 million were greater than the shoppers' goods expenditures of city residents.

Its role as a shoppers' goods center, however, is very weak when the market potentials offered by its surrounding communities (the secondary market area) are considered.

On an overall basis, our estimates indicate that Dover's shoppers' goods merchants are capturing only 40 percent of the city's residents' shoppers' goods expenditures, and only 15 percent of the shoppers' goods expenditures of its surrounding communities.

250 - 300,000 18 21



Our analysis indicates that the city's shoppers' goods merchants market capture has declined precipitously since 1980. Our estimates indicate that in 1980 the city's shoppers' goods merchants were capturing 65 percent of the city's residents' shoppers' goods expenditures. By 1985, this capture rate declined to 40 percent, primarily in response to the opening of the Fox Run Mall in Newington.

Because convenience goods sales tend to stick closer to shoppers' residences, and because the city has experienced a significant increase of slightly over 70,000 square feet in new grocery store space since 1982, a different situation exists with respect to convenience goods. Our estimates indicate that:

The city is currently capturing about 85 percent of the resident convenience goods expenditure potential and 30 percent of the potential in its secondary market.

Its capture rate of both city and secondary market expenditure potentials has increased since 1982, primarily as a result of the substantial growth in the inventory of space.

Our analysis of future activity indicates that there is adequate growth within Dover and its surrounding communities to support a significant increase in the amount of retail space located in the city during the next 10 years. What is not so clear is whether or not that space will choose to locate in Dover or whether it will gravitate toward other communities (as has occurred for shoppers' goods space in the recent past).

We have prepared two scenarios for shoppers' goods and convenience goods projections, which are summarized in Tables 8 through 12 on the following pages. Major assumptions structuring these scenarios are:

Lower Growth Scenario. The city's 1995 population will be 32,000, its capture rates will remain at 1985 levels, and the amount of inflow sales (sales to residents of communities outside the primary and secondary market area) will remain at 1985 levels through the year 1995.

Higher Growth Scenario. The city's 1995 population will be 36,000, its capture rate of shoppers' goods sales expenditure of both primary and secondary market area residents will reverse past trends and will increase, and its attraction of inflow sales will increase.

In both scenarios, we have projected future income growth at a real (apart from inflation) rate of 1.5 percent per year.

Under the Lower Growth Scenario, Dover would add just under 330,000 square feet of new retail space during the projection period. Under the Higher Growth Scenario, the city would add 500,000 square feet of new retail space. While this range is considerable, we believe it is an appropriate

reflection of Dover's opportunities. Much of the difference in the projection lies within the shoppers' goods category. The Higher Growth Scenario effectively assumes that Dover will consciously direct its efforts to regain its former role as a strong shoppers' goods center by strengthening its downtown and actively encouraging the development of at least one major (200,000 square feet or more) shopping center during the next decade. It is our view that market conditions are right for Dover to realize such an opportunity provided an appropriate site can be identified in subsequent phases of this analysis.

Our first phase report, which analyzed retail trends, pointed out a sharp decline in Dover's regional retail role, in the face of its continuing strong performance in the region's housing and employment markets. These projections reveal that there is adequate market support for Dover to regain some of its market share during the next decade.



TABLE 8.

DOVER SHOPPERS GOODS TRENDS AND PROJECTIONS  
LOWER GROWTH SCENARIO

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## PERSONAL INCOME

	1980	1982	1985	1995
Population				
Primary Market	22,377	22,833	23,517	32,000
Secondary Market	59,451	61,171	63,750	76,520
Total	81,828	84,004	87,267	108,520
Per Capita Income				
Primary Market	\$7,445	\$8,815	\$11,275	\$13,085
Secondary Market	\$6,942	\$8,074	\$10,267	\$11,915
Total	\$7,080	\$8,275	\$10,539	\$12,260
Total Personal Income(\$000)				
Primary Market	\$166,597	\$201,273	\$265,154	\$418,723
Secondary Market	\$412,709	\$493,895	\$654,521	\$911,757
Total	\$579,306	\$695,168	\$919,675	\$1,330,480

## MARKET SALES POTENTIAL

	10.00%	10.00%	10.00%	10.00%
Percent of Income	10.00%	10.00%	10.00%	10.00%
Expenditures (\$000)				
Primary Market	\$16,660	\$20,127	\$26,515	\$41,872
Secondary Market	\$41,271	\$49,389	\$65,452	\$91,176
Total	\$57,931	\$69,517	\$91,968	\$133,048

## DOVER SALES POTENTIAL

Capture Rates				
Primary Market	65.00%	55.00%	40.00%	40.00%
Secondary Market	28.00%	21.34%	15.00%	15.00%
Sales to Area Residents				
Primary Market(\$000)	\$10,829	\$11,070	\$10,606	\$16,749
Secondary Market(\$000)	\$11,556	\$10,540	\$9,818	\$13,676
Total (\$000)	\$22,385	\$21,610	\$20,424	\$30,425
Inflow Sales				
Percent of Sales	20.00%	20.00%	15.00%	15.00%
Dollars (\$000)	\$5,596	\$5,402	\$3,604	\$5,369
Total Sales	\$27,981	\$27,012	\$24,028	\$35,794

## SUPPORTABLE SQUARE FEET

Required Sales per Square Foot	\$100	\$110	\$125	\$125
Supportable Square Feet	279,803	245,565	192,226	286,356



TABLE 9.

DOVER SHOPPERS GOODS TRENDS AND PROJECTIONS  
HIGHER GROWTH SCENARIO

Disk: RUSSAT  
File: dovshop1

PERSONAL INCOME

	1980	1982	1985	1995
Population				
Primary Market	22,377	22,833	23,517	36,000
Secondary Market	59,451	61,171	63,750	76,520
Total	81,828	84,004	87,267	112,520
Per Capita Income				
Primary Market	\$7,445	\$8,815	\$11,275	\$13,085
Secondary Market	\$6,942	\$8,074	\$10,267	\$11,915
Total	\$7,080	\$8,275	\$10,539	\$12,290
Total Personal Income(\$000)				
Primary Market	\$166,597	\$201,273	\$265,154	\$471,064
Secondary Market	\$412,709	\$493,895	\$654,521	\$911,757
Total	\$579,306	\$695,168	\$919,675	\$1,382,820

MARKET SALES POTENTIAL

	10.00%	10.00%	10.00%	10.00%
Percent of Income	10.00%	10.00%	10.00%	10.00%
Expenditures (\$000)				
Primary Market	\$16,660	\$20,127	\$26,515	\$47,106
Secondary Market	\$41,271	\$49,389	\$65,452	\$91,176
Total	\$57,931	\$69,517	\$91,968	\$138,282

DOVER SALES POTENTIAL

Capture Rates				
Primary Market	65.00%	55.00%	40.00%	45.00%
Secondary Market	28.00%	21.34%	15.00%	20.00%
Sales to Area Residents				
Primary Market(\$000)	\$10,829	\$11,070	\$10,606	\$21,198
Secondary Market(\$000)	\$11,556	\$10,540	\$9,818	\$18,235
Total (\$000)	\$22,385	\$21,610	\$20,424	\$39,433
Inflow Sales				
Percent of Sales	20.00%	20.00%	15.00%	20.00%
Dollars (\$000)	\$5,596	\$5,402	\$3,604	\$9,858
Total Sales	\$27,981	\$27,012	\$24,028	\$49,291

SUPPORTABLE SQUARE FEET

Required Sales per Square Foot	\$100	\$110	\$125	\$125
Supportable Square Feet	279,308	245,565	192,225	394,330

TABLE 10.

DOVER CONVENIENCE GOODS TRENDS AND PROJECTIONS  
LOWER GROWTH SCENARIO

8/19/1987

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File:dovconvl

## PERSONAL INCOME

	1980	1982	1985	1995
Population				
Primary Market	22,377	22,833	23,517	32,000
Secondary Market	59,451	61,171	63,750	76,520
Total	81,828	84,004	87,267	108,520
Per Capita Income				
Primary Market	\$7,445	\$8,315	\$11,275	\$13,085
Secondary Market	\$6,342	\$8,074	\$10,267	\$11,915
Total	\$7,080	\$8,275	\$10,539	\$12,260
Total Personal Income(\$000)				
Primary Market	\$166,597	\$201,273	\$265,154	\$418,723
Secondary Market	\$412,709	\$493,895	\$654,521	\$911,757
Total	\$579,306	\$695,168	\$919,675	\$1,330,480

## MARKET SALES POTENTIAL

	17.00%	17.00%	17.00%	17.00%
Percent of Income				
Expenditures (\$000)				
Primary Market	\$28,321	\$34,216	\$45,076	\$71,183
Secondary Market	\$70,161	\$83,962	\$111,269	\$154,999
Total	\$98,482	\$118,178	\$156,345	\$226,182

## DOVER SALES POTENTIAL

Capture Rates				
Primary Market	80.00%	80.00%	85.00%	85.00%
Secondary Market	20.00%	22.10%	30.00%	30.00%
Sales to Area Residents				
Primary Market(\$000)	\$22,657	\$27,373	\$38,315	\$60,505
Secondary Market(\$000)	\$14,032	\$18,556	\$33,381	\$46,500
Total (\$000)	\$36,689	\$45,929	\$71,695	\$107,005
Inflow Sales				
Percent of Sales	10.00%	10.00%	15.00%	15.00%
Dollars (\$000)	\$4,077	\$5,103	\$12,652	\$18,883
Total Sales	\$40,766	\$51,032	\$84,347	\$125,888

## SUPPORTABLE SQUARE FEET

Required Sales per Square Foot	\$200	\$210	\$225	\$225
Supportable Square Feet	203,829	243,009	374,878	559,504



TABLE 11.

DOVER CONVENIENCE GOODS TRENDS AND PROJECTIONS  
HIGHER GROWTH SCENARIO  
8/19/1987

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**PERSONAL INCOME**

---

	1980	1982	1985	1995
Population				
Primary Market	22,377	22,833	23,517	36,000
Secondary Market	59,151	61,171	63,750	76,520
<b>Total</b>	<b>81,828</b>	<b>84,004</b>	<b>87,267</b>	<b>112,520</b>
Per Capita Income				
Primary Market	\$7,445	\$8,815	\$11,275	\$13,085
Secondary Market	\$6,942	\$8,074	\$10,267	\$11,915
<b>Total</b>	<b>\$7,080</b>	<b>\$8,275</b>	<b>\$10,539</b>	<b>\$12,290</b>
Total Personal Income(\$000)				
Primary Market	\$166,597	\$201,273	\$265,154	\$471,064
Secondary Market	\$412,709	\$493,895	\$654,521	\$911,757
<b>Total</b>	<b>\$579,306</b>	<b>\$695,168</b>	<b>\$919,675</b>	<b>\$1,382,820</b>

---

**MARKET SALES POTENTIAL**

---

Percent of Income	17.00%	17.00%	17.00%	17.00%
Expenditures (\$000)				
Primary Market	\$28,321	\$34,216	\$45,076	\$80,081
Secondary Market	\$70,161	\$83,362	\$111,269	\$154,999
<b>Total</b>	<b>\$98,482</b>	<b>\$118,178</b>	<b>\$156,345</b>	<b>\$235,079</b>

---

**DOVER SALES POTENTIAL**

---

Capture Rates				
Primary Market	80.00%	80.00%	85.00%	85.00%
Secondary Market	20.00%	22.10%	30.00%	30.00%
Sales to Area Residents				
Primary Market(\$000)	\$22,657	\$27,373	\$38,315	\$68,069
Secondary Market(\$000)	\$11,032	\$18,556	\$33,381	\$46,500
<b>Total (\$000)</b>	<b>\$36,689</b>	<b>\$45,929</b>	<b>\$71,695</b>	<b>\$114,568</b>
Inflow Sales				
Percent of Sales	10.00%	10.00%	15.00%	15.00%
Dollars (\$000)	\$4,077	\$5,103	\$12,652	\$20,218
<b>Total Sales</b>	<b>\$40,766</b>	<b>\$51,032</b>	<b>\$84,347</b>	<b>\$134,786</b>

---

**SUPPORTABLE SQUARE FEET**

---

Required Sales per Square Foot	\$200	\$210	\$225	\$225
Supportable Square Feet	203,823	243,009	374,878	599,050



## LAND ABSORPTION

Table 12 summarizes the various components of projected development by type of land use. No assumptions are made in this table regarding the potential absorption of space within existing structures. Dover's principal constraint in industrial growth has been an absence of available appropriately zoned land served by public utilities. Table 12 is based on the previously explained assumptions about Dover's potential capture of employment and housing growth without specific assumptions of current land availability.

For the purpose of initial projections, land consumption for housing was estimated at an average gross density of 1.5 units per acre for detached single family, 3 units per acre for condominiums, and 6 units per acre for rental housing. According to an inventory of developed land from the 1970 Master Plan and an inventory developed by the City Planning Department in March of 1987, the actual gross land consumption for residential development has been much higher than these averages. The change in developed residential acreage since 1970 has been approximately 5,500 acres according to these sources. During the period represented, approximately 3,200 units were developed, or approximately 1.7 acres per unit added. Overall, single family detached development consumed an average of 4 acres per unit gross land area, while multi-family consumed about .3 acres per unit.

For manufacturing space, we assumed an average of 500 square feet per employee projected, and a land coverage ratio of 20 percent. Office space was estimated at 250 square feet per office employee, and at a 20 percent land coverage ratio. The finance and insurance office category was adjusted, based on the Liberty Mutual proposal, to an average of 300 square feet per employee and a 10 percent coverage ratio.

It should be noted that certain types of development, in securing space for future expansion or to present a certain image, will wish to control far more land than is physically needed to support the development at hand. As such, the actual land consumption for particular uses may vary significantly from these projections.

Overall, the acreage which might be involved in the absorption of growth as projected in models in this report suggest a demand on land for between 1,200 and 1,800 acres in the city of Dover over the next eight years. Approximately 75 to 80 percent of the land consumption in this scenario would be for residential growth, while 20 to 25 percent of the acreage acquired would be in non-residential categories of industrial, office and retail development.





SINGLE FAMILY HOME SALES REPORTED IN MULTIPLE LISTING SERVICES

First 6 Months 1987

*20% Down  
40I  
150I*

*38,500 ac  
40,000  
50,000  
60,000  
80,000  
80,000  
80,000+*

*49,180.32*

*20% Down  
50 Interest  
150 Taxes  
10% Interest*

*54,000*

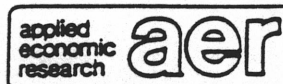
Price Range	CITY OF DOVER		METRO AREA		Dover Share Single Family Sales Activity
	Number	Percent	Number	Percent	
Under \$100,000	27	27.3%	189	27.1%	14.3%
\$100,000-\$125,000	32	32.3%	145	20.8%	22.1%
\$125,000-\$150,000	16	16.2%	128	18.3%	12.5%
\$150,000-\$200,000	12	12.1%	139	19.9%	8.6%
\$200,000 and Over	12	12.1%	97	13.9%	12.4%
Total	99	100.0%	698	100.0%	14.2%
Average Price	---	\$135,024	---	\$140,918	---
Median Price	---	\$120,000	---	\$126,200	---

SALES OF NEW CONDOMINIUM UNITS

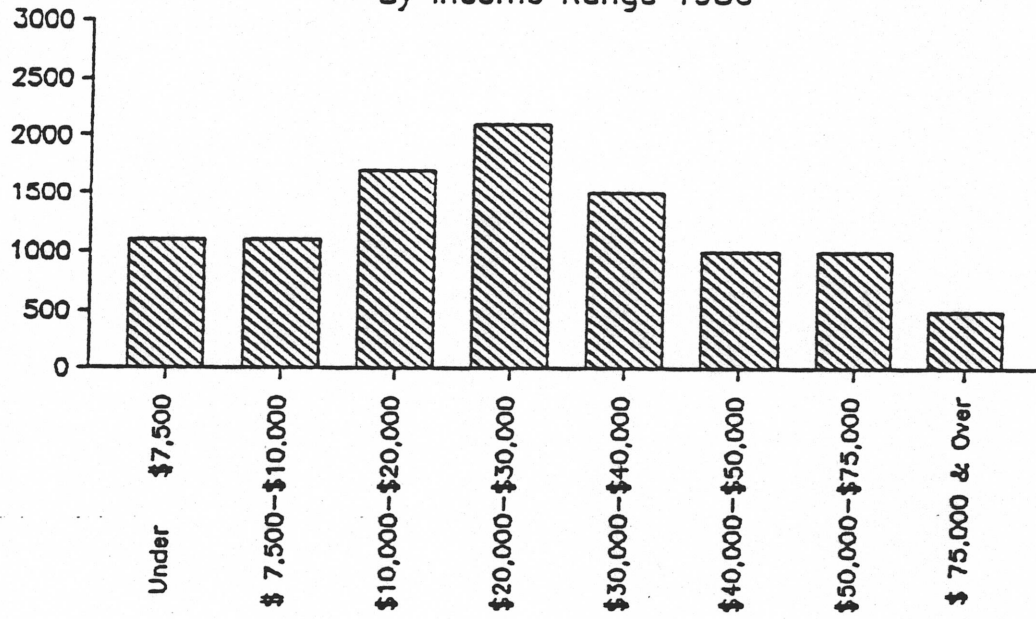
January 1986 Through June 1987

Price Range	CITY OF DOVER		METRO AREA		Dover Share New Condominium Sales Activity
	Number	Percent	Number	Percent	
Under \$75,000	72	47.1%	397	29.1%	18.1%
\$75,000-\$100,000	69	45.1%	580	42.6%	11.9%
\$100,000-\$125,000	4	2.6%	150	11.0%	2.7%
\$125,000-\$150,000	3	2.0%	72	5.3%	4.2%
\$150,000-\$200,000	3	2.0%	97	7.1%	3.1%
\$200,000 and Over	2	1.3%	66	4.8%	3.0%
Total	153	100.0%	1362	100.0%	11.2%
Estimated Median Price	---	\$80,000	---	\$117,000	---

Source of Condominium Sales Data: AER, Inc. compilation of original sales from developer to buyer extracted from Real Data, Inc. listings of property transfers recorded by County

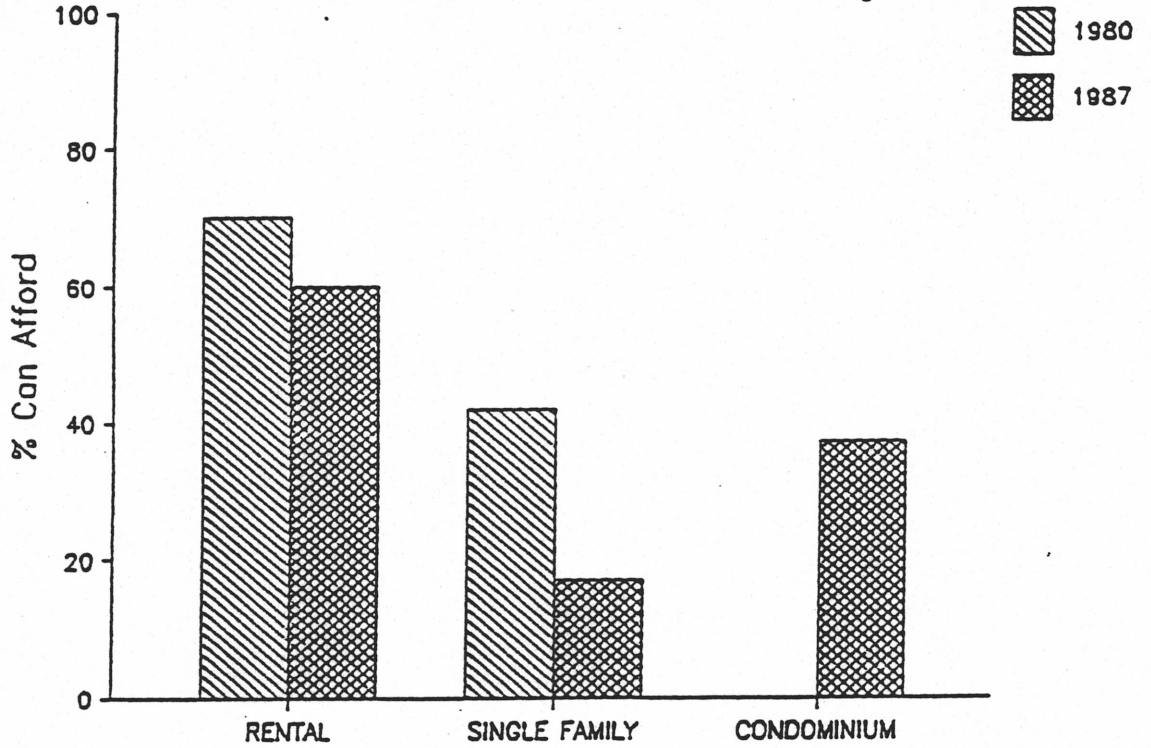


# Estimated Distribution of Households By Income Range 1986



City of Dover

# PERCENT OF DOVER HOUSEHOLDS Who Can Afford Median Cost Housing





## STAFFORD REGIONAL PLANNING COMMISSION EMPLOYER SURVEY

FEBRUARY 1965

FEBRUARY 1965

LOCATIONAL DECISION CRITERIA: RELATIVE IMPORTANCE	CRITICAL	SIGNIFICANT- TO-AVERAGE	MINIMAL VALUE	NO RESPONSE	TOTAL RESPONSES
MAJOR HIGHWAY LOCATION	18	12	5	0	35
AVAIL CONTRACT TRUCKING	15	13	7	0	35
SCHEDULED RAIL SERVICE	1	2	26	6	29
SCHEDULED AIR FREIGHT	8	15	10	2	33
SCHEDULED AIR PASS SERVICE	4	16	12	3	32
AVAIL OCEAN SHIPPING	4	7	21	3	32
INDUSTRIAL SEWAGE DISPOSAL	7	13	8	7	28
INDUSTRIAL WATER SUPPLY	11	14	5	5	30
SOLID WASTE DISPOSAL	7	10	7	3	32
OTHER UTILITIES	2	5	4	24	11
OTHER COMMUNITY SERVICES	2	4	4	25	10

LOCATIONAL DECISION  
CRITERIA: RELATIVE IMPORTANCE

CRITICAL

SIGNIFICANT-  
TO-AVERAGEMINIMAL  
VALUENO  
RESPONSETOTAL  
RESPONSES

LOCATIONAL DECISION CRITERIA: RELATIVE IMPORTANCE	CRITICAL	SIGNIFICANT- TO-AVERAGE	MINIMAL VALUE	TOTAL
MAJOR HIGHWAY LOCATION	51.4%	34.3%	14.3%	100.0%
AVAIL CONTRACT TRUCKING	42.9%	37.1%	20.0%	100.0%
SCHEDULED RAIL SERVICE	3.4%	6.9%	89.7%	100.0%
SCHEDULED AIR FREIGHT	24.2%	45.5%	30.3%	100.0%
SCHEDULED AIR PASS SERVICE	12.5%	50.0%	37.5%	100.0%
AVAIL OCEAN SHIPPING	12.5%	21.9%	65.6%	100.0%
INDUSTRIAL SEWAGE DISPOSAL	25.0%	46.4%	28.6%	100.0%
INDUSTRIAL WATER SUPPLY	36.7%	46.7%	16.7%	100.0%
SOLID WASTE DISPOSAL	21.9%	56.3%	21.8%	100.0%
OTHER UTILITIES	18.2%	45.5%	36.4%	100.0%
OTHER COMMUNITY SERVICES	20.0%	40.0%	40.0%	100.0%

## STAFFORD REGIONAL PLANNING COMMISSION EMPLOYER SURVEY

FEBRUARY 1965

FEBRUARY 1965

LOCATIONAL DECISION CURRENT CONDITIONS	SATISFIED	NEEDS IMPROVEMENT	NOT SATISFIED	NOT APPLICABLE	TOTAL RESPONSES
MAJOR HIGHWAY LOCATION	31	3	0	0	34
AVAIL CONTRACT TRUCKING	29	3	1	1	34
SCHEDULED RAIL SERVICE	20	2	2	10	34
SCHEDULED AIR FREIGHT	24	6	2	1	33
SCHEDULED AIR PASS SERVICE	25	3	3	2	33
AVAIL OCEAN SHIPPING	26	0	1	7	34
INDUSTRIAL SEWAGE DISPOSAL	25	2	2	2	31
INDUSTRIAL WATER SUPPLY	24	3	2	2	31
SOLID WASTE DISPOSAL	24	4	2	1	31
OTHER UTILITIES	18	0	1	7	26
OTHER COMMUNITY SERVICES	17	1	0	6	24

LOCATIONAL DECISION  
CURRENT CONDITIONS

SATISFIED

NEEDS  
IMPROVEMENTNOT  
SATISFIEDNOT  
APPLICABLETOTAL  
RESPONSESNOT  
APPLICABLETOTAL  
RESPONSES

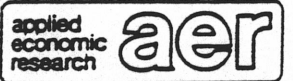
LOCATIONAL DECISION CURRENT CONDITIONS	SATISFIED	NEEDS IMPROVEMENT	NOT SATISFIED	NOT APPLICABLE	TOTAL RESPONSES
MAJOR HIGHWAY LOCATION	91.2%	8.8%	.0%	.0%	100
AVAIL CONTRACT TRUCKING	85.3%	8.8%	2.9%	2.5%	100
SCHEDULED RAIL SERVICE	59.0%	5.9%	5.9%	29.4%	100
SCHEDULED AIR FREIGHT	72.7%	18.2%	6.1%	3.0%	100
SCHEDULED AIR PASS SERVICE	75.8%	9.1%	9.1%	6.1%	100
AVAIL OCEAN SHIPPING	76.5%	.0%	2.9%	20.6%	100
INDUSTRIAL SEWAGE DISPOSAL	80.6%	6.5%	6.5%	6.5%	100
INDUSTRIAL WATER SUPPLY	77.4%	9.7%	6.5%	6.5%	100
SOLID WASTE DISPOSAL	77.4%	12.9%	6.5%	3.2%	100
OTHER UTILITIES	69.2%	.0%	3.8%	26.9%	100
OTHER COMMUNITY SERVICES	70.8%	4.2%	.0%	25.0%	100

LOCATIONAL DECISION  
CURRENT CONDITIONS

SATISFIED

NEEDS  
IMPROVEMENTNOT  
SATISFIEDNOT  
APPLICABLETOTAL  
RESPONSESNOT  
APPLICABLETOTAL  
RESPONSES

TABULATION OF SURVEY RAW DATA BY APPLIED ECONOMIC RESEARCH, INC. AUGUST 1967

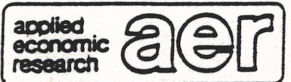




DETAILED INVENTORY OF MAJOR DEVELOPABLE LOTS  
CITY OF DOVER

ZONE	FIRST QUARTILE (Most Developable)			SECOND QUARTILE			THIRD QUARTILE			FOURTH QUARTILE (Least Developable)			TOTAL SAMPLE	
	TOTAL ACRES	NUMBER OF LOTS	AVERAGE ACREAGE	TOTAL ACRES	NUMBER OF LOTS	AVERAGE ACREAGE	TOTAL ACRES	NUMBER OF LOTS	AVERAGE ACREAGE	TOTAL ACRES	NUMBER OF LOTS	AVERAGE ACREAGE		
B-3	96	2	48	20	1	20	NA	NA	NA	NA	NA	NA	116	3
I-1	159	3	53	28	2	14	95	2	47	156	5	31	437	12
I-2	43	2	21	58	1	58	37	1	37	NA	NA	NA	109	4
0	NA	NA	NA	12	1	12	NA	NA	NA	NA	NA	NA	12	1
R-12	281	10	28	150	6	25	116	3	39	NA	NA	NA	548	19
R-20	376	10	40	129	5	26	169	6	28	15	1	15	709	22
R-40	1,119	25	45	1,904	42	45	1,538	51	30	2,177	58	38	6,739	176
RH-10	76	3	25	NA	NA	NA	18	1	18	NA	NA	NA	94	4
RH-12	155	7	22	14	1	14	248	4	62	NA	NA	NA	417	12
RH-20	146	6	24	37	1	37	NA	NA	NA	NA	NA	NA	182	7
RH-8	15	1	15	18	1	18	NA	NA	NA	NA	NA	NA	33	2
TOTAL	2,485	69	36	2,341	61	38	2,222	68	33	2,348	64	37	9,396	262

† Includes Lots of 500,000 Sqft or more (+- 12 Acres and Over)  
Source : Applied Economic Research analysis of City of Dover raw data from "Developable Land Rating System"  
Compiled in Spring, 1987. A total of 900 Developable lots were rated, above table is for selected  
lots only of 500,000 square ft or more (262).





COMMUTER ORIENTATION

Total Worked In:	Tract Number						Total
	811	812	813	814	815	816	
DOVER	535	402	986	313	1115	894	4245
PORTSMOUTH	299	288	342	169	145	245	1488
DURHAM	187	70	141	35	156	91	680
KITTERY	122	76	119	77	120	99	613
NEWINGTON	61	102	11	14	76	62	326
ROCHESTER	36	37	33	27	79	103	315
OTHER	456	297	401	130	594	295	2173
TOTAL REPORTED	1696	1272	2033	765	2285	1789	9840

PERCENT DISTRIBUTION

Total Worked In:	Tract Number						Total
	811	812	813	814	815	816	
DOVER	31.5%	31.6%	48.5%	40.9%	48.8%	50.0%	43.1%
PORTSMOUTH	17.6%	22.6%	16.8%	22.1%	6.3%	13.7%	15.1%
DURHAM	11.0%	5.5%	6.9%	4.6%	6.8%	5.1%	6.9%
KITTERY	7.2%	6.0%	5.9%	10.1%	5.3%	5.5%	6.2%
NEWINGTON	3.6%	8.0%	.5%	1.8%	3.3%	3.5%	3.3%
ROCHESTER	2.1%	2.9%	1.6%	3.5%	3.5%	5.8%	3.2%
OTHER	26.9%	23.3%	19.7%	17.0%	26.0%	16.5%	22.1%
TOTAL REPORTED	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%



1980 COMMUTER PATTERNS: CITY OF DOVER  
Principal Work/Residence Destinations

	Number	Percent		Number	Percent
WORK IN DOVER	9481	100.0%	LIVE IN DOVER	9698	100.0%
Live In:			Work In:		
Dover	4245	44.8%	Dover	4245	43.8%
Commute In From:			Commute Out To:		
Rochester	1221	12.9%	Portsmouth	1488	15.3%
Somersworth	928	9.8%	Durham	680	7.0%
Rollinsford	327	3.4%	Somersworth	624	6.4%
Barrington	311	3.3%	Kittery	613	6.3%
Berwick, ME.	260	2.7%	Newington	326	3.4%
Durham	217	2.3%	Rochester	315	3.2%
S. Berwick, ME.	207	2.2%	Seabrook	126	1.3%
Portsmouth	185	2.0%	Hampton	100	1.0%
N. Berwick, ME.	137	1.4%	Berwick	82	.8%
Lebanon, ME.	101	1.1%	Other	1099	11.3%
Other	1342	14.2%			
Total Commute In:	5236	55.2%	Total Commute Out:	5453	56.2%

Source: New Hampshire Department of Employment Security, 1985  
(Detailed Tabulations of 1980 Census Data)



## EMPLOYMENT PROJECTIONS

AER's projection of regional employment (Tables 1 and 2) relied on a number of sources including the New Hampshire Department of Employment Security and a detailed analysis of employment trends by industry as reported in County Business Patterns for the Strafford-Rockingham County region. In the years 1977 - 1982, the two-county area absorbed 37 percent of the state's total employment change. During the 1982 - 1985 period, however, its share was only 17 percent. The region has had consistently strong performance in the non-manufacturing employment groups, but has had weak performance in non-durable goods manufacturing industries, which include the declining textile and leather industries.

In the 1977 - 1982 period, the two-county region had strong performance in overall manufacturing growth, representing 40 percent of the state's net change in manufacturing employment. During the 1982 - 1985 period, however, manufacturing employment declined although statewide manufacturing employment increased. The AER projections reflect recovery in total manufacturing employment as growth in "new line" industries offsets employment losses from the "old line" industries such as textile and leather. The overall share of state employment growth for the projection period is 25 percent (Strafford-Rockingham Counties combined).

Projections for the Portsmouth-Dover-Rochester MSA and Dover incorporate assumptions of a substantial increase in the finance, insurance and real estate employment categories, accelerated by the Liberty Mutual office park proposed for Dover. Both the high and low scenarios for the city reflect the assumption that approximately 2,000 jobs will be added by this development over the next eight years.

Tables 3 and 4 illustrate low to high projections of employment growth for the city of Dover. Table 3 reflects a continuation of recent trends, with the assumption that a positive shift in regional manufacturing employment will take place, and that Dover's historic relative strength in manufacturing will allow it to share in a modest but healthy capture rate of new development. In Table 4, a more aggressive scenario is illustrated utilizing capture rates approximately 25 percent higher than Dover's historic shares of growth by industry group.

*why was this rate chosen?*

Total employment for Dover is therefore expected to grow at a rate of approximately 700 to 800 jobs per year based on the two scenarios. During the 1980 - 1985 period, the average annual growth in Dover employment was 430 per year. The two projections reflect a range in Dover's share of employment growth within the metropolitan area of 27 to 33 percent.

*this is Dover's potential share based on action taken by the City!?*