EXHIBIT N

ESTIMATED DEMAND FOR INDUSTRIAL PARK SPACE AT THE WOODLANDS

	Observed							Total Growth
	1970	1975	1980	1985	1990	1995	2000	1975-2000
SMSA Demand								
Total Employment	722,900	911,500	1,048,100	1,164,400	1,280,400	1,420,500	1,560,600	649,600
Industrial Park Users								
Percent of Total Employment	18.7	21.4	25.0	28.0	30.0	31.0	32.0	46.8%
Number	135,000	195,000	262,000	326,000	384,100	440,400	499,400	304,400
Industrial Park Requirements (Acres) (at 15 employees/acre)	9,000	13,000	17,500	21,700	25,600	29,400	33,300	
Incremental Demand (Acres)								
Total		4,000	4,500	4,200	3,900	3,800	3,900	20,300
Average Annual		800	900	840	780	760	780	812
Woodlands Capture								
Percent								
Probable			2.0	3.0	4.0	5.0	5.0	3.7%
Optimistic			3.0	5.0	6.0	6.0	6.0	5.1
Average Annual Acres								
Probable			18	25	31	38	39	755
Optimistic			27	42	47	46	47	1,045

(in terms of data retrieval) boundaries as census tracts which surround the community under evaluation; the identification of the market area requires knowledge of the market coupled with sound professional judgement.

A typical computational routine for convenience retail demand is outlined in Exhibit O. Upon identification of the convenience trade area the computational routines are straight forward in determining retail demand at any interval. The population of the trade area at a future time interval (usually available through local planning agencies) is added to he projected community population projection, which was computed in the residential demand study. The total trade area population is multiplied by the per capita sales coefficients (weighted average sales per capita) for various categoies establishments, e.g. "food," "eating and drinking," "other convenience," and "service station." This results in the total sales potential for the trade area for each convenience retail category. The sales potential is then divided by sales per space (sq.ft.) requirement to support project retail activity; this provides the total supportable space (sq.ft.) in the total convenience trade area. A capture rate can be multiplied by the total supportable space to estimate the demand in the community. The determination of per capita sales coefficients and the sales per sq. ft. requirements are extremely important. Most often these are assumed to be constant; and data to compute these coefficients can usually be ascertained through the census as well planning agencies, chambers of commerce, and research organizations. This general approach is also utilized to assess community or regional retail space demand. An example of a retail demand "work sheet" is included in Exhibit P and Exhibit Q.

CONVENIENCE RETAIL DEMAND

$$R_i = A_i + B_i + C_i + D_i$$

$$A_i = (F \ P_i \ f_i) / a$$

$$B_i = (E \ P_i \ e_i) / b$$

$$C_i = (O \ P_i \ o_i) / c$$

$$D_i = (G \ P_i \ g_i) / d$$

R_i = Project retail space demand (sq. ft.) at t=i.

A_i = Project retail "food" space demand at t=i.

B_i = Project retail "eating & drinking" space demand at t=i.

C_i = Project retail " other convenience" space demand at t=i.

D_i = Project retail "service station" space demand at t=i.

P_i = Convenience trade area population at t=i.

F = Per capita sales coeff. for "food."

E = Per capita sales coeff. for "eating & drinking."

O = Per capita sales coeff. for "other convenience."

G = Per capita sales coeff. for "service station."

f_i = Project capture rate for "food."

e_i = Project capture rate for "eating & drinking."

o_i = Project capture rate for "other convenience."

g_i = Project capture rate for "service station."

a b c d=Sales per sq. ft. requirement to support project retail activity.

EXHIBIT O

EXHIBIT P

POPULATION PROJECTIONS FOR RETAIL TRADE AREAS AT THE WOODLANDS

Convenience Center Trade Area	1970	1975	1980	1985	1990	1995	2000
On-Site							
Probable	-	1,300	19,100	37,000	59,500	88,200	120,500
Optimistic	-	1,300	25,100	50,000	79,500	115,600	154,000
Remainder of Tract 902	5,192	11,200	14,000	20,000	25,000	30,000	30,000
Total							
Probable	5,192	12,500	33,100	57,000	84,500	118,200	150,500
Optimistic	5,192	12,500	39,100	70,000	104,500	145,600	184,000
Community Center Trade Area							
Tract 902							
Probable	5,192	12,500	33,100	57,000	84,500	118,200	150,500
Optimistic	5,192	12,500	39,100	70,000	104,500	145,000	184,000
Tract 901	5,891	10,000	15,700	15,900	17,200	26,100	30,300
905	1,500	1,800	2,600	3,600	4,900	6,000	12,800
906	8,593	10,500	15,100	19,800	21,000	23,000	24,000
907	7,654	10,500	11,900	13,000	14,000	15,000	16,000
909	1,284	1,500	1,600	1,700	2,300	2,400	2,500
910	3,840	5,000	5,800	6,100	6,400	6,700	7,100
554	435	500	1,100	1,500	1,800	2,800	4,600
555	941	4,400	8,700	16,000	18,400	20,300	22,100
556	1,731	6,600	15,100	24,000	29,500	32,200	34,900
557	460	1,100	5,400	10,000	12,900	16,600	20,200
558	2,508	3,300	5,400	10,000	18,400	23,000	27,600
559	2,173	5,500	10,800	18,000	29,500	32,200	26,800
Total							
Probable	42,562	73,200	132,300	196,600	260,800	324,500	389,400
Optimistic	42,562	73,200	138,300	209,600	280,800	351,900	422,900

EXHIBIT Q

ESTIMATED SUPPORT FOR RETAIL SPACE AT THE WOODLANDS
1975-2000

		Probable						Optimistic					
		1975	1980	1985	1990	1995	2000	1975	1980	1985	1990	1995	2000
opulation													
Convenience Trade Area		12,500	33,100	57,000	84,500	118,200	150,500	12,500	39,100	70,000	104,500	145,600	184,000
Community Trade Area		73,200	132,300	196,600	260,800	524,500	389,400	73,200	138,300	209,600	280,800	351,900	422,900
ales Potential (in thousands)	**Per Capita Sales**												
Convenience Goods	$1,034	$ 12,925	$ 34,225	$ 58,938	$ 87,373	$122,218	$155,617	$ 12,925	$ 40,429	$ 72,380	$108,053	$150,550	$190,25[illegible]
Shoppers Goods	$ 852	62,366	112,720	167,503	[illegible],202	276,474	331,768	62,366	117,832	178,579	239,242	299,819	360,310
n-Site Sales (Capture)													
Convenience Goods		5,170 (40)	15,401 (45)	29,469 (50)	48,055 (55)	73,531 (60)	93,370 (60)	6,462 (50)	22,236 (55)	43,428 (60)	70,234 (65)	105,385 (70)	133,179 (70)
Shoppers Goods		$ 6,237 (10)	$ 22,544 (20)	$ 50,251 (30)	$ 77,771 (35)	$110,590 (40)	$132,700 (40)	$ 9,355 (15)	$ 29,458 (25)	$ 71,432 (40)	$107,659 (45)	$149,909 (50)	$180,155 (50)
ace Supportable On-Site (n square feet)	**Sales per Square Foot**												
Convenience Goods	$ 120	43,100	128,300	245,600	400,500	611,100	778,100	53,800	185,300	361,900	585,300	878,200	1,109,800
Shoppers Goods	$ 100	62,400	225,400	502,500	777,700	1,105,900	1,327,000	93,600	294,600	714,300	1,076,600	1,499,000	1,801,600
Total Retail		105,500	352,700	748,100	1,178,200	1,717,000	2,165,100	147,900	479,900	1,076,200	1,661,900	2,377,200	2,911,400

Numerous theoretical bases (various formulations of the Gravity Model) exists to assist the analyst in determining the capture rate of the community; discussion of these concepts is beyond the scope of this paper. However, similar to the capture rate determintion in the other models, knowledge of the market and its variables (locational advantages and disadvantages, socio-economic structure of the trade area, community amenities, accessibility, development costs, etc.) is essential to providing accurate demand projections.

PROJECTION APPROACHES:

FREE STANDING NEW TOWNS (NEW CITIES): A CASE STUDY

Free-standing new towns, or new cities are inherently different from satellite new towns; free-standing new towns are independent, culturally and economically, of existing cities. The basis of these new cities is primarily economic ctivity (resource exploitation) or special functions, such as government. The commonality in all free-standing new towns is that an economic base must exist for growth and development.

In planning the new city, the timing and scheduling of town infrastructure, community facilities, and all other components are essential for successful development; moreover, financial palnning is a direct function of these variables. Thus, development projection and scheduling are imperative.

Projecting community demand for free standing new towns is genereally far more reliable than for satellite new towns; this is not due to projection techniques per se, but due to the nature of free-standing new towns. First, the basic employment growth necessary to support the economic activities of the new town is generally scheduled or predictable. Second, all population generated by the basic economic activities resides in the new town; capture rates, which are the most tenous projection component of satellite new town, is not an uncertainty. Third, the developer "controls" the structure and timing of all community development components, and does not compete with developments in the surrounding region of the new town.

In the past, economic base theory has been extremely useful for evaluating or estimating the impact of expanding or new industry in a given region. It has often served as the foundation for estimates of future demand essential to the work of physical, public service, private enterprise, economic, and other planners; it can provide valuable insights into the nature of a regional economy through interareal and intertemporal comparisons. The heart of economic base theory is the proposition that the rate and direction of growth of a region is determined by its function as an exporter to the rest of the world (outside of the region under evaluation). Sales to the rest of the world may be in form of goods and and services that flow out of the region, and they comprise the "basic sector." Numerous supporting activities are necessary to service workers and their families in basic industries and the basic industries themselves. Supporting activities, such as trade and personal services comprise the "non-basic" sector. Both sectors are related to the exogenous demand (of the basic economic activities): the basic sector directly and the non-basic sector indirectly, through the basic sector. As the basic sector expands, due to increased exongenous demand for production, goods and services of the region, an expansion in the supporting activities of the non-basic sector is generated.

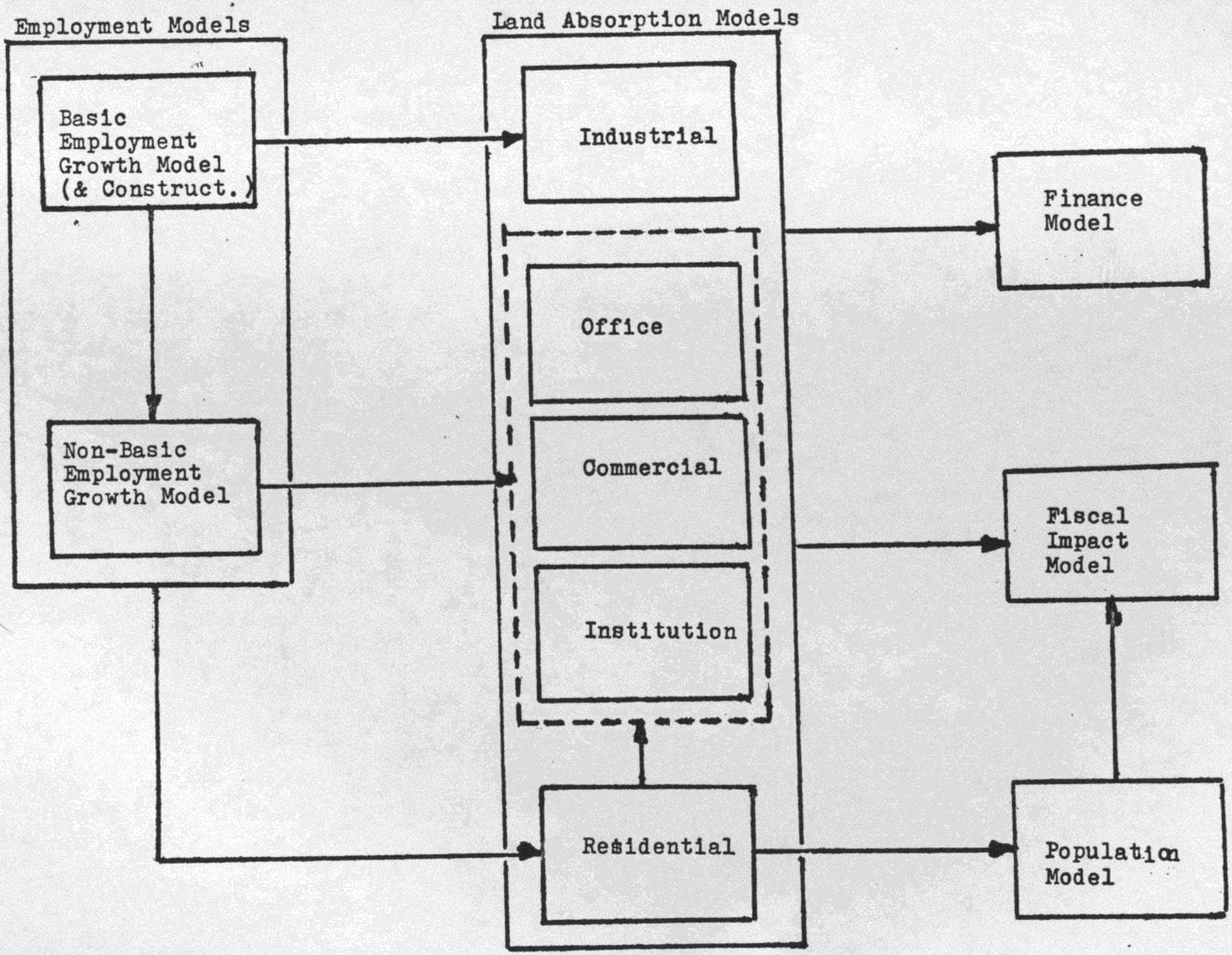
All economic activity can be classified as basic or non-basic in the economic base theory. Thus, basic employment equals total employment. The ratio of basic employment to non-basic employment is called the "base ratio." For example, if in a particular region, for every basic worker there are two non-basic workers, the base ratio would be 1:1; then, for every new job in the basic sector, two new jobs will be created in the supporting activities of the non-basic sector. If the base ratio is 1:2, the "base multiplier" is three; when basic employment increases by one, a total of three new jobs, including both basic and non-basic, will be created.

On the surface, the steps involved in an economic base study appear relatively simple. First, a unit of measure is chosen; this is usually employment, although others, such as income, may be utilized. The use of employment has the advantage of facilitating conversion of the results of an economic base study into population or household terms by means of a "normative conversion ratio" (such as average number of dependents per worker); this is extremely important in projecting the various community demand components for a new town.

Through the economic base method, total number of workers can be calculated; basic employment growth can be utilized to calculate non-basic employment growth. Using normative conversion ratios, population, housing demand, industrial land demand, retail space demand, office space demand, and institutional space demand can be derived. Residential demand is a direct function of total number of workers; population can also be computed as a function of total workers. Industrial space demand is directly related to basic employment growth. Office and commercial growth is dependent on the community population, and more specifically, on the non-basic employment growth. Institutional space (schools, safety, community facilities) demand is directly related to community population. For free-standing new towns, no leakages" are assumed; in other words, the community captures 100% of all growths. Thus the most important factors in the projection algorithms are the basic multipliers and the conversion ratios, both of which can be more reliably estimated than capture rates. (See Exhibit R.)

PROJECTION TECHNIQUE

Resource New Towns



CASE STUDY

In 1980, an Energy New Towns program proposal was developed by the U.S. Department of Housing and Urban Development (NCDC). The proposal outlined a process for committing Federal assistance to the developers of energy new towns at locations designated by states to support the housing and community needs of new shale oil mining and extraction facilities. The program proposal was designed to produce several energy new towns as prototypes of other needed new communities in the oil shale region in the western states of the United States.

In delineating a financial feasibility and planning scenario, an actual development project located in Rio Blanco County, Colorado was identified as a case study-model. The project was sized to accommodate a community to support a 50,000 BBL/day oil shale mining and retorting operation. The community was envisioned to house approximately 14,000 people on 1,4000 acres.

A complete development scenario was simulated through the economic base method. However, some modifications were made to the algorithms described above; this was primarily due to the availability of certain normative conversion ratios developed by the U.S. Dept. of Energy in their research of resource new town developments. (See Exhibit S and Exhibit T). A typical employment schedule for a 50,000 BBL/day oil shale extraction operation was used as the basic sector employment (construction for the operation was also included in this sector). Non-basic sector employment, or "spin-off"

PROJECTION TECHNIQUE

RESOURCE NEW TOWNS

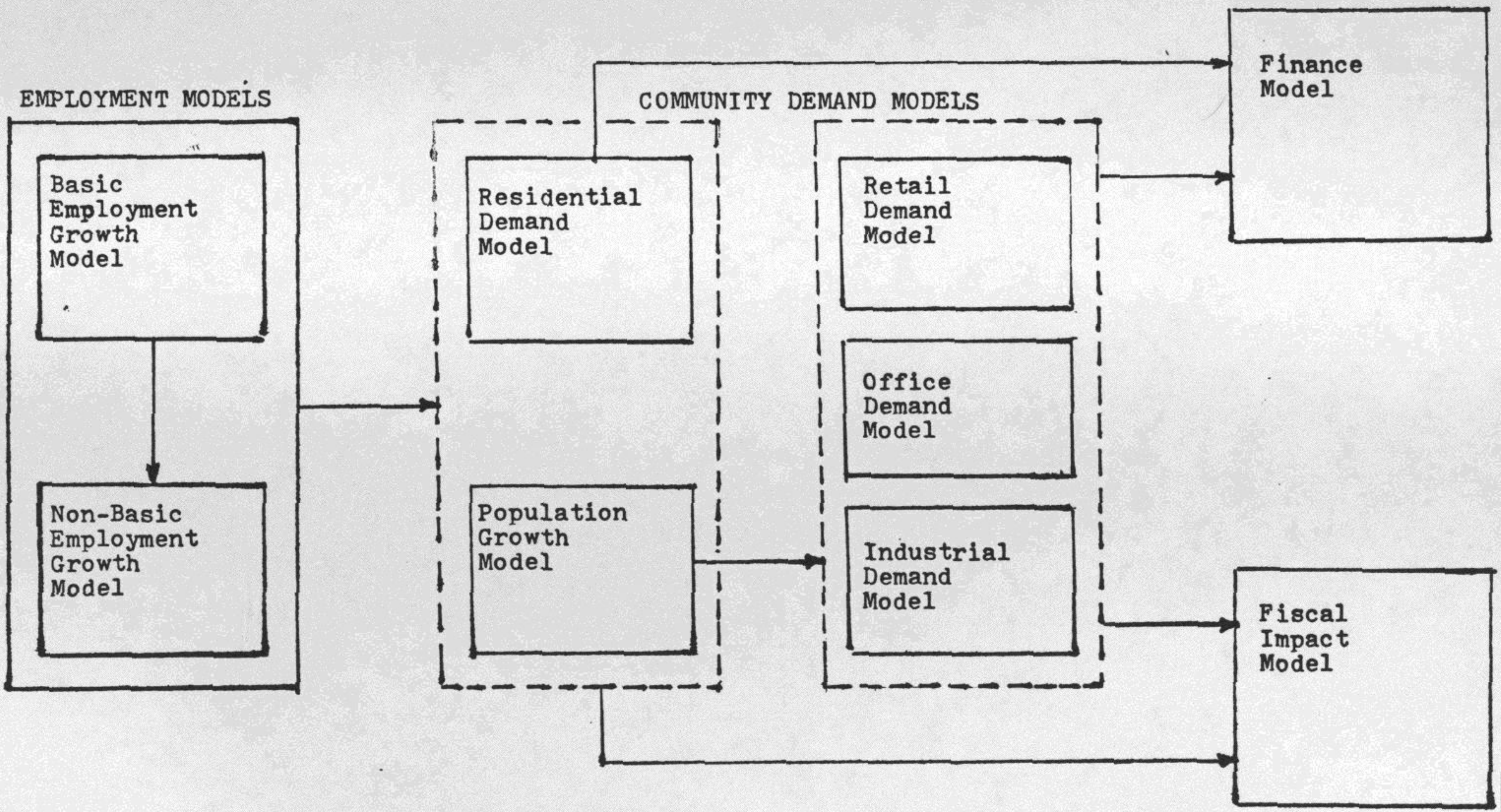


EXHIBIT S

RESOURCE NEW TOWNS

WORK FORCE MODEL

$$W_i = B_i + N_i$$

$$B_i = (B_o)_i + (B_c)_i$$

$$N_i = (N_o)_i + (N_c)_i$$

RESIDENTIAL DEMAND MODEL

$H_i = S_i + R_i$ and $H_i = W_i$

from Work Force Model:

$(B_o)_i = s_o(B_o)_i + f_o(B_o)_i$ and $s_o+f_o=1$

$(B_c)_i = s_c(B_c)_i + f_c(B_c)_i$ $s_c+f_c=1$

$(N_o)_i = n_o(N_o)_i + m_o(N_o)_i$ $n_o+m_o=1$

$(N_c)_i = n_c(N_c)_i + m_c(N_c)_i$ $n_c+m_c=1$

$$S_i = v\ (\ f_c(B_c)_i + f_o(B_o)_i + m_c(N_c)_i + m_o(N_o)_i\ ) - (1-w)R_i$$

$$R_i = w\ (\ s_c(B_c)_i + s_o(B_o)_i + n_c(N_c)_i + n_o(N_o)_i) - (1-v)S_i$$

W_i = Total Work Force

B_i = Basic Employment Work Force

N_i = Non-basic Employment Work Force

$(B_o)_i$ = Basic employment w/o construction

$(B_c)_i$ = Construction employment (basic operation suppo

$(N_o)_i$ = Non-basic employment (spin-off from operation)

$(N_c)_i$ = Non-basic employment (spin-off from constructi

H_i = Total housing demand

$n_c\ n_o\ s_c\ s_o$ = "single" member households coeff. for non-basic and basic employment worker

$m_c\ m_o\ f_c\ f_o$ = "family" type households coeff. for non-basic and basic employment worker

S_i = Total housing demand for **ownership housing.**

R_i = Total housing demand for rental housing

v = proportion of workers in "family" type househol in ownership housing.

w = proportion of workers in "single" type househol in rental housing.

employment, was derived through the application of base ratios and multipliers. The residential demand was calculated by assessing the total work force and disaggregrating the work force into "single" or "family" type household. The housing demand was further disaggregated into "ownership" and "rental;" the types of housing demand by the workers were then projected. The community population was also directly computed from worker employment projections. In projecting the other community demand components (retail, office, industrial, institutional), the population growth projection was utilized; this was primarily due to the conveniently available conversion ratios determined in energy development research by the U.S. Department of Energy. Obviously, this approach is not as conceptually rigorous as deriving industrial demand from basic sector growth, office and retail demand from non-basic sector growth, and institutional demand from population growth. However, correlation between population and community demand is strong enough to justify this approach.

A computer model was developed which would facilitate sensitivity analysis. (The computer output is shown in Exhibit U and V). The model, using the outlined algorithm as described above, delineates the work force, household composition, residential demand by housing types, community population, institutional space demand (schools, churches, community facilities, etc.), commercial space demand, office space demand, and industrial space demand. All community demand projections were based on the basic sector development schedule coupled with base multipliers and conversion ratios.

The community demand components were then incorporated into the financial models for feasibility and planning analysis.

EXHIBIT U

ENERGY NEW TOWN: DEMAND PROJECTION

	DEVELOPMENT YEAR 0	1	2	3	4	5
WORK FORCE:						
OPERATION-TOTAL	0	0	100	292	631	1488
FAMILY	0	0	85	248	536	1265
SINGLE	0	0	15	44	95	223
OPER.SPIN-TOTAL	0	0	250	730	1578	3720
FAMILY	0	0	100	292	631	1488
SINGLE	0	0	100	292	631	1488
LOCAL	0	0	50	146	316	744
CONSTRUCT-TOTAL	0	489	831	1200	966	732
FAMILY	0	293	499	720	580	439
SINGLE	0	196	332	480	386	293
CONS.SPIN-TOTAL	0	293	499	720	580	439
FAMILY	0	117	199	288	232	176
SINGLE	0	117	199	288	232	176
LOCAL	0	59	100	144	116	88
TOTAL WORK FORCE (LOCAL EXCLUDED)	0	724	1530	2652	3323	5547
TOTAL HOUSEHOLDS (CUMUL)	0	724	1530	2652	3323	5547
SINGLE HH	0	313	647	1104	1344	2180
FAMILY HH	0	411	883	1548	1979	3368
RESIDENTIAL DEMAND (CUMUL)						
SFD	0	0	258	667	912	1482
PH	0	0	163	422	576	936
TH	0	0	182	472	645	1048
MFA	0	48	107	272	371	603
MH	0	675	819	819	819	819
TOTAL	0	723	1529	2652	3323	4888
RESIDENTIL DEMAND (ANNUAL)						
SFD	0	0	258	409	245	570
PH	0	0	163	259	154	360
TH	0	0	182	290	173	403
MFA	0	48	59	165	99	232
MH	0	675	144	0	0	0
TOTAL	0	723	806	1123	671	1565
PROJ. POPULATION (CUMULATIVE)		1749	3735	6522	8271	13969

EXHIBIT V

ENERGY NEW TOWN: DEMAND PROJECTION

	DEVELOPMENT YEAR 0	1	2	3	4	5
PROJ. POPULATION	0	1749	3735	6522	8271	13969
INSTITUTIONAL:						
SCHOOL:						
STUDENT POPUL.	0	494	1055	1842	2337	3946
PRIMARY	0	371	791	1382	1752	2960
SECONDARY	0	124	264	461	584	987
PRIMARY (CUMUL)	0	1	1	2	2	3
PRIMARY (ANN.)	0	1	0	1	0	1
SECONDARY(CUMUL)	0	0	0	0	0	1
SECONDARY(ANN.)	0	0	0	0	0	1
LAND (ACRES)						
(ANNUAL)	0	7	0	7	0	39
(CUMUL)	0	7	7	14	14	53
CHURCH:						
CHURCH POPUL.	0	1049	2241	3913	4963	8381
CHURCH (CUM)	0	1	1	2	3	4
LAND (ACRES)						
(ANNUAL)	0	3	0	3	0	6
(CUMUL)	0	3	3	6	6	12
LIBRARY (ANN. ACR)	0	0	0	2	0	0
HEALTH (ANN. ACR)	0	2	0	0	0	0
FIRE (ANN. ACR)	0	0	0	2	0	0
POLICE (ANN. ACR)	0	0	0	4	0	0
COMM.CTR(ANN. ACR)	0	0	0	4	0	0
COMMERCIAL:						
RETAIL (ANN.ACR)	0	0	0	0	29	0
CONVEN (ANN.ACR)	0	2	4	5	3	10
TOTAL (ANN.ACR)	0	2	4	5	32	10
TOTAL (CUM.ACR)	0	2	6	11	43	53
OFFICE:						
LAND (ANN.ACRE)	0	4	4	2	7	0
LAND (CUM.ACRE)	0	4	8	10	17	17
INDUSTRIAL:						
LAND (ANN. ACRE)	0	6	6	9	6	19
LAND (CUM. ACRE)	0	6	12	21	27	46