

List of Figures

Figure 1	University housing modular bathroom assembly.....	11
Figure 2	Modular penthouse being lifted into position atop an existing building.....	11
Figure 3	Smartwrap building exhibit at Cooper-Hewitt.....	12
Figure 4	Computers per million square feet by office submarket	15
Figure 5	Computers per million square feet by office submarket	15
Figure 6	Estimates of PC ownership, Web access and shopping by North American households	26
Figure 7	General model of the actors in a traditionally designed building	50
Figure 8	Design/build model	51
Figure 9	Network Analysis of the Limited Group based on 2000 - 2001 New Jersey data	57
Figure 10	Network analysis of contractors working in public sector	59
Figure 11	Estimates of millions of commercial buildings and billions of square feet of floor space, 1979 to 1999.....	64
Figure 12	Number of buildings constructed by year.....	65
Figure 13	Ownership of commercial buildings in numbers	66
Figure 14	Nongovernment ownership of commercial buildings as percent of square feet.....	66
Figure 15	Ownership and square footage of buildings in the commercial sector	67
Figure 16	Government ownership of commercial buildings in millions of square feet.....	67
Figure 17	Value of industrial, commercial, and office buildings	68
Figure 18	Growth of real estate services and commercial construction 1947-1999.....	69
Figure 19	Value of new construction, remodeling and repair in the commercial building market	70
Figure 20	New construction and renovations, alterations, and additions in California from 1965 to 2000	71
Figure 21	Expenditures for private nonresidential buildings in millions of dollars by building size for selected years.....	71
Figure 22	Value of improvements by census region.....	72
Figure 23	Number of commercial buildings by type of activity (in thousands).....	73
Figure 24	Total floor space of commercial buildings by activity type	73
Figure 25	Historical energy consumption in the commercial building market 1949-2000	74
Figure 26	1995 commercial building end-use splits	75
Figure 27	Energy intensity of buildings in commercial building sub-markets	76
Figure 28	Energy intensity by sub-market in three time periods.....	77
Figure 29	Sub-markets by floor space and energy intensity	78
Figure 30	Number and ownership of office buildings in the United States	81
Figure 31	Ownership and occupancy in the office sub-market of the commercial building market (12 billion square feet	82
Figure 32	Percent of office building stock by year built.....	82
Figure 33	Percent of office buildings by age and ownership	83

Figure 34	Percent of buildings by size category and ownership	84
Figure 35	Percent of office building ownership by number of floors.....	84
Figure 36	Percent of ownership of office buildings and the presence of other tenants	85
Figure 37	Classes of office buildings by urban or suburban location.....	88
Figure 38	Net absorption by office building class and location	89
Figure 39	The net absorption and construction of office space.....	90
Figure 40	End-use intensities in office buildings	92
Figure 41	Types of Heating Equipment Installed in the Office Sub-Sector	93
Figure 42	Types of cooling equipment installed in the office sub-sector	93
Figure 43	Types of lighting equipment installed in the office sub-market	94
Figure 44	Location of establishments as a percent of total buildings (1.29 million establishments) in the retail and service market	97
Figure 45	Distribution of floor space in retail and service markets (12.7 billion square feet).....	98
Figure 46	Growth in the number of malls and gross leasable square feet	105
Figure 47	Trends in leasable square feet and annual sales.....	106
Figure 48	Breakout of revenues by category for the top 100 retailers.....	110
Figure 49	Comparison of average square footage between existing and new retail stores	118
Figure 50	Timeline to complete new construction in the retail sub-market.....	119
Figure 51	The average number of years before stores are remodeled by type.....	120
Figure 52	The average cost per square foot to erect a building shell.....	121
Figure 53	End-use intensities in the retail sector	122
Figure 54	Heating equipment in other retail stores.....	123
Figure 55	Heating equipment in enclosed and strip malls	123
Figure 56	Air conditioning equipment in the retail stores sub-market	124
Figure 57	Air conditioning equipment in enclosed and strip malls	124
Figure 58	Lighting equipment installed in the other retail sub-market.....	125
Figure 59	Lighting in the enclosed and strip malls sub-market.....	125
Figure 60	Organization of the food sales and services sub-market	130
Figure 61	The changing structure of the food sales and services sub-market (number of establishments).....	131
Figure 62	Trends in the number of food sales and services firms	132
Figure 63	Composition of wholesalers in the market	134
Figure 64	Relative sizes of merchant wholesaler categories.....	135
Figure 65	Types of wholesale establishments	135
Figure 66	Top 15 broad line wholesale grocers in the United States	136
Figure 67	Wholesale club revenues in billions of dollars 1995 - 2000.....	137
Figure 68	Restaurant industry real sales growth, 1971 – 2004.....	138
Figure 69	Year 2004 commercial food services sales by type of establishment	139
Figure 70	Year 2000 noncommercial food services sales by type of organization	140
Figure 71	End-use energy intensities in the food services segment	148
Figure 72	Types of heating equipment installed in the food services sub-market	149
Figure 73	Types of cooling equipment Installed in the food services sub-market	150
Figure 74	Types of lighting installed in the food services sub-market.....	151

Figure 75	Types of refrigeration equipment in the food services sub-market.....	151
Figure 76	Establishments in the food sales sub-market	152
Figure 77	Historical sales for selected supermarkets.....	162
Figure 78	Average square footage of supermarkets.....	165
Figure 79	Energy end-uses in the food services sub-market.....	166
Figure 80	Types of heating equipment in food sales establishments.....	166
Figure 81	Types of refrigeration in the food sales sub-market.....	167
Figure 82	Lodging market structure.....	176
Figure 83	Number of properties and rooms by location	179
Figure 84	Cumulative percentage of total rooms in the U.S. and for U.S. lodging chains (40) that are in the top 50 international lodging chains	180
Figure 85	Top 10 lodging companies by revenues	184
Figure 86	Percentage of rooms operated by chains, chain affiliated independents, and independent operators.....	185
Figure 87	Price segment for properties owned by chain affiliated and independent operators.....	186
Figure 88	Location of chain affiliated and independent operators	186
Figure 89	A comparison of the size of properties owned by independents and chain affiliated independents.....	187
Figure 90	New construction and conversions in the lodging sector 1987 - 1998.....	188
Figure 91	Energy intensities in the lodging sub-market	189
Figure 92	Breakdown of the cost of utilities for the average hotel room.....	190
Figure 93	Type of heating equipment in the lodging sub-market.....	190
Figure 94	Types of cooling equipment in the lodging sub-market.....	191
Figure 95	Types of lighting equipment in the lodging sub-market	192
Figure 96	Healthcare market structure of inpatient services	197
Figure 97	Health care market structure in outpatient services	201
Figure 98	Percent of job vacancies in healthcare industry by type.....	208
Figure 99	End-use energy intensities in the healthcare sub-market	209
Figure 100	Types of heating equipment in outpatient facilities	210
Figure 101	Types of heating equipment in inpatient facilities	211
Figure 102	Types of cooling equipment in the inpatient facilities	212
Figure 103	Types of lighting in inpatient facilities.....	213
Figure 104	Types of lighting in outpatient facilities.....	213
Figure 105	Types of refrigeration equipment in inpatient facilities	214
Figure 106	Percent of square footage belonging to the top 50 players (810.7 million square feet) and top three players by warehouse sub-market.....	217
Figure 107	Energy end-use intensities in the warehouse sub-market.....	222
Figure 108	Types of heating equipment used in the warehouse sub-market	223
Figure 109	Types of cooling equipment installed in the warehouse sub-market	224
Figure 110	Types of lighting equipment in the warehouse sub-market.....	224
Figure 111	Number of schools in the United States from 1975-2000	229
Figure 112	Enrollment projections for students in public and private schools	230
Figure 113	100 largest school districts in the U.S. ranked by enrollment 2001-2002...	231

Figure 114	Percent of all public schools and instructional rooms having Internet access, and the ratio of students to computers Fall 1994 to Fall 2000	235
Figure 115	Median design size (number of students) for new schools.....	238
Figure 116	Median building costs for public schools	239
Figure 117	Construction values for schools for selected years in billions of dollars	239
Figure 118	Percent and number of post-secondary institutions by type of institution and degree granting status.....	241
Figure 119	Enrollment in degree-granting institutions, with alternative projections: Fall 1986 to Fall 2011	242
Figure 120	End-use energy intensities in the education segment.....	249
Figure 121	Means and ranges for 179 educational institutions by Carnegie classification	251
Figure 122	Types of heating equipment installed in the educational sub-market	253
Figure 123	Buildings accounting for percentage of floor space with type of heating equipment	254
Figure 124	Types of cooling equipment installed in the educational sub-market.....	255
Figure 125	Buildings with percentage of floor space by type of cooling equipment....	255
Figure 126	Types of lighting equipment installed in the educational sub-market	256
Figure 127	Buildings with percentage of floor space by type of lighting equipment....	257
Figure 128	Buildings with percentage of floor space by the presence of efficient technology.....	258