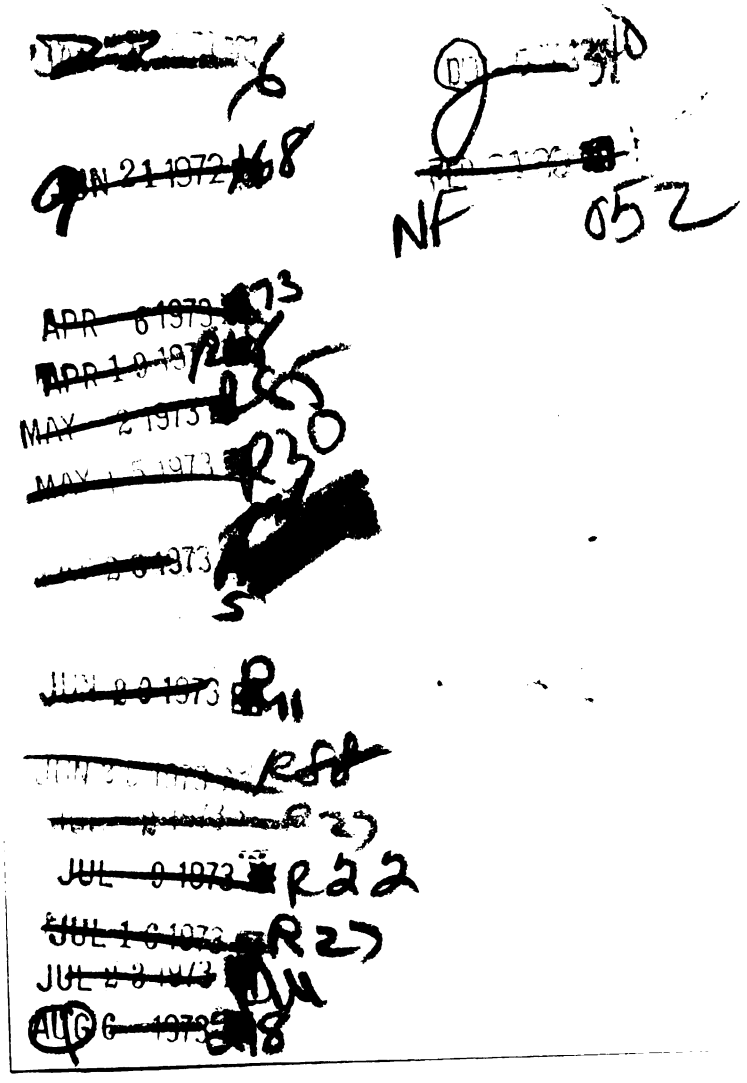

ABSTRACT

A COST-REVENUE COMPARISON BETWEEN
CONVENTIONAL SUBDIVISIONS AND
RESIDENTIAL PLANNED UNIT DEVELOPMENTS

by Calvin S. Schneider

Many central New Jersey communities are faced with a high rate of residential growth. Residential development traditionally has cost communities more than it has returned in taxes. Communities located in the path of regional residential development thrusts are experiencing spiraling tax rates. As a consequence, municipalities are increasing lot sizes and raising subdivision improvement standards in an attempt to stem the tide of growth. The result has been a wholesale trend to zoning for acreage lots. Acreage lots are creating a haphazard, low density development pattern which is seriously straining the effectiveness of municipal services. Inefficiencies stemming from attempts to service this development pattern are, in turn, perpetuating the spiraling tax rate.

The modified planned unit development concept is defined and offered as an alternative to acreage zoning by the thesis. The modified planned unit concept is based

on the precept that communities advocating acreage zoning with stringent subdivision improvement standards are unlikely to permit smaller lot sizes. The concept maintains gross density, but permits lot size reductions.

The conventional subdivision of 745 acres of land into one-acre lots serviced with streets would produce 641 lots. The subdivision's 641 one-family residences would have a population of 2,551 persons, requiring the following minimum facilities: (1) an 18 classroom elementary school for 500 students; (2) fire and rescue facilities; and (3) improved recreation areas. Based on the assumption that these facilities will cost a community $782,700, a bond levy of $1,004,450 will be required to cover principal and interest over fifteen years.

As an alternative, the modified planned unit concept would maintain density, but would permit the 641 lots to be reduced in size to one-third acre. The developer's savings, through lot reductions, averages $1,827 per lot. The developer is required to use part of these savings to pay for the three minimum facilities provided by the municipality under conventional standards. Minimum facility costs amount to $1,143 per lot, leaving $684 per lot ($438,000 total) for added profits and planned unit facilities for the 641 lot subdivision. Using $58,000 (five per cent of $1,827) for

an added profit incentive to the developer, $380,000 is left for added or optimum planned unit facilities. This $380,000 would permit the developer to build a fully improved private golf course and country club or improvements of comparable value as part of the planned unit subdivision. The planned unit subdivision offers the developer a clear financial advantage over the conventional subdivision and a more marketable product.

The planned unit subdivision offers Gardenside Township two major financial advantages: (1) the 641 lot planned unit subdivision would induce a lower community-wide tax rate ($0.17 per $100 equalized assessed value) than would the conventional subdivision; and (2) the conventional subdivision would necessitate municipal and school preemptive bond issues totaling $1,004,450. Under the planned unit alternative, the developer would provide these same capital improvements eliminating this bond issue. On an annual bonded debt repayment schedule, a community would need to budget $72,000 per year more for the conventional subdivision than would be necessary under the planned unit alternative.

This thesis demonstrates that the modified planned unit concept is a sound alternative to large lot zoning. Higher profits to the developer, short-run municipal tax

savings, no preemptive municipal bond issues and long-run property tax stabilization are benefits accruing through this alternative.

A COST-REVENUE COMPARISON BETWEEN CONVENTIONAL SUBDIVISIONS AND RESIDENTIAL PLANNED UNIT DEVELOPMENTS

By

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FOREWORD

Communities in central and north-central New Jersey are faced with the prospect of substantial residential development during the next two decades. Residential development has traditionally incurred service costs far in excess of its return in property taxes. New Jersey's State and local tax structure imposes the major burden of county, school, and municipal services on local property taxes. As a result the municipalities destined to become bedroom communities are already feeling the impact of new residential development in the form of substantially higher property taxes. Most of these municipalities have already taken steps to reduce this impact by increasing minimum residential lot sizes to one acre or more and setting abnormally high subdivision improvement standards. The intent of this action is to discourage subdivision development by legislating high subdivision improvement costs.

These actions are only partially effective, however, because when one municipality increases minimum lot size and subdivision standards, the surrounding communities follow suit in self protection. This chain reaction has led to a

wholesale trend to zoning for large residential lots one acre or larger in size. The result is that developers can no longer find land zones to permit one-half acre or smaller lots in those communities judged to be in the prime subdivision market area. The strength of the market in this north-central area prompts developers to continue subdividing even in communities requiring acreage lots.

Developers are using every technique possible to circumvent the high subdivision lot improvement standards imposed by communities in an effort to cut down on the cost of their lot and house packages. One proven cost-saving method is to strip major residential subdivisions along the existing roads which most nearly meet community street improvement standards. The challenge and response game being played by communities and developers creates a hodge-podge spread development pattern. This pattern is nonfunctional and greatly increases the cost of providing municipal services.

The wholesale trend to "large lot zoning" will create more problems than it will solve in the longrun. This thesis was prompted because of a genuine concern over the adverse effect this trend is having on the functional development of the north-central New Jersey region.

In reality, the tactics employed by New Jersey municipalities skirt the fundamental issue facing them -- the fact that the State and local tax structure does not adequately compensate those communities experiencing financially unbalanced development. State tax reform and development policy changes necessary to get at the heart of the problem are not politically obtainable at the present time. Municipal officials must, therefore, misuse available tools like zoning and subdivision ordinances as a substitute.

Political reality will undoubtedly force officials to continue the trend to larger lot sizes and more stringent subdivision improvement standards. Alternative solutions, however, are available to this form of fiscal zoning but they are virtually untried because of the uncertainties which cloud their feasibility.

This thesis offers the modified planned unit development concept as an example of such an alternative. This thesis does not offer the modified planned unit concept as a substitute for the fundamental tax reform and development policy changes needed, nor will this concept solve this statewide issue. It is offered as a technique to cope with major subdivisions in those communities which have already resorted

to acreage zoning but are still experiencing substantial residential growth.

The modified planned unit development concept is not totally new but has been used (or consideration has been given for its use) in various forms in several New Jersey municipalities. Mannington Township, Cherry Hill Township, Matawan Township, Marlboro Township, South Brunswick Township, Hillsborough Township, the City of Millville, and the Borough of Wanaque, represent a few of these municipalities.

The purpose of this thesis is to describe how the modified planned unit development concept works and to help clarify some of the misconceptions about feasibility. Feasibility will be discussed for both the developer and the community alike. This will be accomplished through the use of standards and development costs applicable equally to the developer and the community. Most studies attempt to show only one side of the feasibility picture. Both sides need to be understood by municipal officials if they are to approve of the modified planned unit development concept as an acceptable alternative to "large lot zoning."

Acknowledgements

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Respectfully acknowledged,

Calvin Sidney Schneider

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER I

THE NEW JERSEY ENVIRONMENT

Growth Pressure in New Jersey

The State of New Jersey like so many states along the Atlantic Seaboard has been caught in the throes of metropolitan growth. The northeastern portion of the State is being engulfed by an expanding New York Metropolitan Region. The southwestern portion of the State is being similarly engulfed by metropolitan Philadelphia. The central portion of the State, Trenton, the capital, is experiencing its own growth and completes the New York-Philadelphia urban corridor.

New Jersey's population grew from 4.2 million in 1940 to 4.8 million in 1950. In 1960, New Jersey's population reached 6.1 million persons, making it the most densely populated state in the country.[1] Much of this growth is occurring in the nine northeastern counties which are

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[1]Anthony J. Cantanese, The Residential Development of New Jersey--A Regional Approach (Trenton: Division of State and Regional Planning, New Jersey Department of Conservation and Economic Development, 1964), p. 1.

nine counties accounted for 69 per cent of the State's population increase during the 1940 decade and 66 per cent during the 1950 decade. The Regional Plan Association predicts that the population of the New York Metropolitan Region will increase by six million persons by 1985.[2] Nearly three million of this total should occur in New Jersey's portion of the Region.[3]

Paralleling New Jersey's population growth has been the increase in land costs. In northeastern and central New Jersey, industrial and commercial raw land sells for $10,000 to $15,000 per acre.[4] With utilities and other improvements prices can increase to $25,000. Unimproved residential land is marketed for well over $5,000 per acre.

New Jersey State Tax Policy

The greatest single deterrent to sound physical planning today in New Jersey is the State's tax structure. Over

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[2]The Regional Plan Association is a private organization dedicated to the orderly and rational development of the New York-New Jersey-Connecticut Metropolitan Region surrounding the Port of New York.

[3]Regional Plan Association, Spread City (RPA Bulletin 100; New York: Regional Plan Association, 1962), p. 34.

[4]Cantanese, op.cit., pp. 25-26.

the years, the State has turned its back on the many fiscal problems facing local municipalities. This burden has come about because both major political parties in the State have stood on a platform avowed against new taxes at the state level.[5] Although this position has finally been dropped, the financial philosophy still remains.

The principal source of revenue for municipalities in New Jersey is the local property tax. With increases in the value of land came substantial increases in taxes levied against this land. The average municipality in the State is forced to derive from 60 to 75 per cent of its total municipal, school, and county budget revenues from property taxes.[6] Many communities get 85 per cent or more of their revenues from this source.[7]

The impact of this tax policy on local planning and land development policies is summarized in the following

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[5] New Jersey State Tax Policy Commission, Tenth Report of the Commission on State Tax Policy--1963 (Trenton: State Tax Policy Commission, 1963), pp. 1-23.

[6] State Chamber of Commerce of New Jersey, The Local Property Tax in New Jersey in 1960, Part One--Where the Money Comes From, a report prepared by the Department of Government and Economic Research (Newark: State Chamber of Commerce, 1960), unpaged.

[7] Ibid.

statement taken from the 1963 annual report of the New Jersey State Tax Policy Commission:

> It is evident that the future development of the State will depend in a considerable measure upon the use of its land. If there is inadequate planning or inability to execute proper plans, the State, with its high population density and its corridor position between New York and the South and West, could become a crazy quilt of inefficient planning and zoning, with manufacturing, business, transportation, residences, public buildings, and parks placed in a mutually destructive hodge-podge.
>
> At the present time, much of the planning and zoning in New Jersey might be called "fiscal Zoning," that is, the result of municipal decisions on questions of land use regulation mostly with an eye to the attraction of nonresidential ratables, rather than to the ultimate aim of a better community and the more efficient use of total land resources. This sort of zoning is forced upon municipalities if they must raise a very high proportion of the funds required for necessary services, including schools, from the local property tax.
>
> It would seem imperative to make it possible for municipalities which hold the legal authority to decide the future use of land, to plan such use without undue pressure from the scramble for ratables. A better balanced distribution of the local-State tax burden, by shifting a larger share to the State Government (where it can be efficiently supported by nonproperty taxes) should help to attain this result.[8]

The fiscal problems experienced by the State of Michigan during the late 1950s received considerable criticism

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[8] New Jersey State Policy Commission, loc.cit.

from states such as New Jersey which boasted of having a much sounder fiscal base. An examination of several facts, however, sheds a slightly different light on the fiscal situation in New Jersey as a whole:[9]

1. New Jersey ranked seventh among the states in per capita personal income in 1960.

2. In 1961 New Jersey ranked 50th among the states in Per Capita State Taxes - an "achievement" the State boasted of. This favorable ranking, however, is achieved because in 1962 New Jersey also had the highest per capita municipal property taxes of any state in the United States.

3. In 1961 New Jersey ranked 50th in per capita State general expenditures for highways.

4. In 1960 New Jersey ranked 47th in per capita direct general expenditures of State-local governments for public welfare.

5. In 1961 New Jersey ranked 47th in per capita state expenditures for primary and secondary education. New Jersey also ranked 47th in per capita State expenditures for higher education in 1961.

New Jersey ranks low in each of the above categories giving the impression that each of these State functions are adequately developed. In reality, just the opposite is true. The actual reason for the low per capita expenditure is that these State programs have lagged far behind population growth. State education, highway, and recreation programs in particular

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[9] Ibid.

are so far behind present population needs that only a massive financial commitment in each can bring New Jersey up to the level of current needs.

Tax policy in the State of New Jersey has created a situation which is the opposite of the one which existed in Michigan. Local municipalities in Michigan are partially relieved by State aid from the heavy tax burdens of education and welfare. As a result the State of Michigan found itself in financial difficulties.[10] In New Jersey, the State Government is in a mediocre fiscal condition while nearly every one of its 568 local municipalities is in financial trouble. As a result, the people of New Jersey are not being provided with adequate local or State services.

New Jersey clearly needs a comprehensive fiscal re-evaluation and reform. The State Legislature, however, refuses to accept the challenge of an all-out solution to fiscal policy. Instead, it is approached on a peacemeal basis. In November, 1963, the Governor placed four issues before the electorate:

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[10]A concise statement of Michigan's 1959 financial crisis was set forth by Carolyn Stieber in her article "A Troubled Year in Michigan," Business Topics, Vol. 8, No. 1, Winter, 1960 (East Lansing: Bureau of Business and Economic Research), pp. 45-54.

1. Should the State provide an additional property tax exemption to people on old age pensions? It was passed.

2. Should the State provide an additional property tax exemption for veterans? It was passed.

3. Should the State permit local tax assessors to grant tax relief and a subsequent reduction in property taxes on farm land? It was passed.

4. The Governor asked for permission to issue a 750 million dollar bond to be repaid through excess turnpike revenues. Half of the bond would be spent on new highways and half on education facilities and other badly needed capital expenditures. The monies were to be spent over a five year period. The proposal was soundly defeated. In the opinion of most of the agencies who stood to receive benefits from this five year program, the bond represented a stop-gap approach to a much needed major fiscal overhaul. The question asked by these agencies was what would happen after the five years? This 750 million dollars is just a "drop in the bucket" compared to the present and future capital improvement needs in New Jersey.

While tax relief under the first three proposals was needed, the end result can only place a heavier tax burden on the remaining property owners. For example, many semi-rural communities derive 50 to 60 per cent or more of their property tax revenues from farm land.[11] If a 50 per cent tax relief (conservative need) is given to farmers, then this relief

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[11] State Chamber of Commerce of New Jersey, loc.cit.

must be made up by added taxes on urban residential, commercial, and industrial properties.[12] This situation merely intensifies the overall problem rather than offering a solution.

The Growth Paradox

A population growth of nearly three million persons (about 900,000 households) is expected in New Jersey's portion of the New York Metropolitan Region by 1985. Growth of this proportion under standard development techniques will bankrupt municipalities unless commercial and industrial facilities are attracted to offset residential costs.

Attracting industrial ratables is by no means an easy task. New Jersey's industrial development has traditionally funneled into the New York-Philadelphia growth corridor along established lines of communication.[13] Only recently has some industry begun to fan out from the corridor.

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[12]In 1963, New Jersey's farm real estate taxes reached a record high of $11.80 per acre--the highest of any state in the nation. The national average was $1.43 per acre. The Courier Post (Trenton), October 29, 1964.

[13]Alan W. Steiss and Anton Gross, The Impact of Population and Economic Growth on the Environment of New Jersey (Trenton: Division of State and Regional Planning, New Jersey Department of Conservation and Economic Development, 1965), pp. 65-68.

The problem facing most communities is simply that there is not enough industry to go around.

Residential growth, on the other hand, grew out from this corridor from the start because homeowners sought the tranquility of suburban and rural living. Consequently those municipalities receiving substantial residential growth are not getting industrial ratables to offset residential costs. The equalized tax rate in these communities has spiraled from $2.66 per $100 of equalized assessed property value in 1956 to over $3.00 in 1963.[14] To make matters worse, industry has carefully avoided communities with both high property taxes and a high growth potential.

Due to the existing imbalance in ratable distribution, the State is experiencing an unprecedented trend to large lot residential zoning in those communities which are confronted with population growth pressures. Residential lot sizes have been steadily increasing to one-half acre, one acre, two acres, and more.[15] A typical cry ringing from New Jersey's "semi-rural" communities is:

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[14] See Table 3; Chapter III. The equalized assessed property value and tax rate is based on 100 per cent market value. For the purposes of this study, all property value and tax rate figures were converted to 100 per cent market value figures as determined by State equalization procedures.

[15] Cantanese, op.cit., pp. 51-53.

> "We moved here three years ago from the city to get a little peace and quiet and to let our children grow up in the country. Now our school taxes are beginning to skyrocket because of the new subdivisions going in around us. Developers are exploiting our land because our land is zoned for one-quarter and one-half acre lots. Lets "upgrade" our land to one acre or larger and keep out this development -- we don't want it. Why should we pay for educating other people's children? Besides everyone knows that larger lots will mean more expensive houses which can help pay their own school costs."[16]

Faced with this line of reasoning and no other apparent alternative, municipal officials set larger lot sizes, generally in the acreage range, attempting to slow down residential growth.

The fallacy of this line of reasoning is self-evident Many of the communities under consideration are at or near the outer edge of the growth belt extending outward from New York City. When a community lies in the path of metropolitan growth, that community will develop regardless of lot size.[17]

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[16] Paraphrasing comments made by community residents at a public hearing on a zoning change in Marlboro Township, New Jersey, January 17, 1963.

[17] A documentary on the impact of metropolitan growth pressures on a local community was the subject matter of an entire master plan program for Marlboro Township, New Jersey in 1963-64. Herbert H. Smith Associates, Marlboro Township, Background for Planning--1964 (West Trenton, New Jersey: Herbert H. Smith Associates, 1964), pp. 1-82, and Herbert H. Smith Associates, Marlboro Township General Development Plan--1964, pp. 1-84.

Communities with minimum lot sizes of one acre are finding this out the hard way. Larger lot sizes may slow down residential development, but in the long run the community is still forced to build new schools and provide basic services for a heavy population influx.

Acreage lots do not always provide the standstill effect necessary to stop a spiraling tax rate. Increasing lot sizes from one-quarter acre to one acre, for example, does not decrease growth by the same proportion. There are three reasons supporting this statement:

1. Many of the municipalities confronted with growth problems are large rural communities located in central New Jersey. The acreage value of raw land in many of these communities ranges between $1,000 and $3,000 per acre. This cost is very low compared to the inflated value of undeveloped residential land in northeastern New Jersey which ranges between $3,000 to $10,000 per acre. Confronted with these two extremes in land value, small and large developers are now concentrating on the farm lands of central New Jersey.

2. The market has not forced land values upward at the same pace in central New Jersey as has occurred in northeastern New Jersey. The vast acreages of agricultural land and the interests of the farmer have contributed to maintaining this relatively low value. High taxes and increasing costs of farming in general have forced the farmer to consider selling his land when a developer offers an attractive price. If the farmer holds out for a higher figure, the developer simply solicits a neighbor who is willing to sell at the price offered. With hundreds of thousands of acres of farm land available, the

developer has the buying market going for him and the farmer at his mercy. To this extent, the farm segment of the community is working against attempts by municipal officials to restrict growth.

3. Central New Jersey is fast becoming the major growth area in the State. There is little doubt of the regional growth pressure thrust upon this area. Central New Jersey offers the greatest opportunity for suburban living without the complexities of the built-up urban metropolitan centers of Newark, Trenton, and Camden. Commuting by train or automobile to either Philadelphia or New York is readily possible from this equidistant vantage point. This area is a prime residential growth area which is ripe for development.

The impact of the above three factors has the effect of stimulating residential growth regardless of the lot size imposed to restrict growth.

In effect, both the large lot development policy and the small lot development policy perpetuate the municipality's spiraling tax rate. Both policies require substantial investments in new schools, new fire and police protection facilities, street improvements, and a variety of other municipal services and facilities. The only real difference between the two is that the amount of growth under a large lot policy may be fractionally less than that experienced with a small lot policy. This difference may be minimized because of the development of commercial activity which normally locates near high residential growth areas.

Herein lies the growth paradox confronting central New Jersey communities. Do they permit residential growth at an urban density or resort to zoning for large lots in an attempt to restrict growth? Regardless of which development policy a community adheres to, residential growth still occurs and taxes continue to rise.

The Resulting Trend

Most community officials, however, do not perceive the small lot - large lot battle as a paradox. Their perception is limited to their own municipality and its growth problems. Seldom do they focus in on the regional picture and review the alternatives. Even if they do, their attention focuses on communities like Bedminster or Far Hills which have five and ten acre minimum lot sizes respectively. Careful note is made of the low growth occurring in these communities with the conclusion--INCREASE LOT SIZES!

Conclusions of this nature have started a statewide avalanche toward acreage zoning. The following statistics extracted from a report prepared by the Division of State and Regional Planning provide a picture of the impact of the present zoning situation in 1960 (see Table 1).

In 1960 nearly 49 per cent of the land zoned for residential use had a minimum lot size of at least one-half

Table 1; Gross Residential Zoning Pattern in New Jersey--1960[a]

Minimum Lot Sizes	Lot Size Distribution in Square Feet	Acres of Residentially Zoned Land	Per cent of Total
Under 1/8 acre	0- 5,445	234,600	9.6%
1/8-1/4 acre	5,446-10,890	332,400	13.6%
1/4-1/2 acre	10,891-21,782	682,500	27.9%
1/2-3/4 acre	21,783-32,673	265,900	10.8%
3/4- 1 acre	32,674-43,560	505,500	20.6%
1 to 2 acres	43,561-87,210	263,300	10.7%
2 acres or more	87,211 or more	158,100	6.5%
Total Residentially Zoned Land		2,442,300	100.0%

[a]Source: Cantanese, op.cit., pp. 50-52.

acre.[18] One-half acre lots in New Jersey are considered to produce low density development.[19] It is ironic that the zoning in the most densely populated state in the nation reflects an anti-urban attitude by its people.

[18]This percentage understates the concept held by the public because many communities refer to a 20,000 square foot lot as one-half acre in common usage. This lot size would fall within the one-quarter to one-half acre category in Table 1.

[19]Cantanese, op.cit., p. 53.

The analysis thus far indicates the zoning situation only to 1960. Many of the communities in New Jersey, especially those in the north-central seven county region, have continued to increase minimum lot sizes with the emphasis on one and two acre zoning.[20]

Concurrent with the widespread use of acreage zoning is the "up-grading" of subdivision ordinances to include more stringent standards and additional improvements. An emphasis has been placed on street curbing and municipal water and sanitary sewer systems, required by many communities for all major subdivisions with lot sizes up to and including one acre.[21] High minimum subdivision improvements coupled with rising raw land costs have caused the basic package price of the home in New Jersey to increase sharply.

The trend toward acreage zoning appears to be the result of public reaction against rising taxes, which has

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[20]The seven north-central counties include Hunterdon, Mercer, Middlesex, Monmouth, Morris, Passaic, and Somerset. Zoning trend information since 1960 was obtained from Herbert H. Smith Associates from 1962 to 1965.

[21]The New Jersey State Health Department, by policy, requires municipal type sewage treatment systems (including private package treatment plants) for all subdivisions with 50 or more lots regardless of lot size. Cherry Hill Township; Florham Park Borough; Coltsneck Township; Freehold Township; and East Hanover Township represent a few of the New Jersey communities imposing such stringent subdivision restrictions on one-acre lots.

in turn been manifested as a reaction against new residential growth. More stringent requirements in off-site subdivision improvements also appear to be a result of this same reaction.

For several years, officials of the New Jersey State Health Department have decried the widespread use of septic tanks in new residential subdivisions. Their crusade against septic tanks has finally been taken up by the major newspapers with profound effect.[22] Public reaction has led to the wholesale "up-grading" of off-site improvements for subdivisions throughout the State. Frequently communities have completely disregarded the relationship between lot sizes and minicipal improvement needs. In some instances this disregard has been intentional and used as an added lever to curtail new residential development.

The Resulting Problems

The impact of the trend to acreage zoning and stringent subdivision improvements coupled with the effects of the

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[22] An example of this crusade is reflected in an article which appeared in the December 10, 1964, edition of the Bernardsville News, titled "Health of Passaic River Threatened from Millington Dam to Pine Brook."

State's tax policy and high land costs are all having a staggering impact upon New Jersey's physical, economic, social, and political environment:

1. New Jersey's open space, scenic landscape and agricultural lands are being destroyed at an extremely rapid pace. Rather than preserving open space, zoning for large lots is merely using it up two and three times as fast. The Regional Plan Association predicts that if the present development trends continue, more land will have been converted to urban uses in the next 20 years than in the entire previous history of the region.[23]

2. Zoning for large lots and high land costs are slowly forcing small developers out of business. The smaller developer cannot afford to spend $3,000 an acre for new raw land, improve it and still compete with the large developer who has the financial backing to work on a smaller profit basis.[24] In order to be able to compete, the small developer is stripping his subdivision along existing State, county, and local roads so as to keep his total improvement costs to a minimum. This practice has encouraged scattered, haphazard, roadside strip development in New Jersey.

3. Blanket zoning for large lots and high raw land costs are forcing some developers to build higher priced housing in order to maintain an equitable relationship between land value, the cost of developing the land, and the value of the

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[23] Regional Plan Association, op.cit., p. 3.

[24] It was previously noted that raw land was selling for between $1,000 and $3,000 per acre in central New Jersey. The low end of the scale refers to 500 acre or larger tracts. Smaller tracts tend to be priced at the higher end of the cost scale.

dwelling structure. This pricing trend is having an inflationary effect upon the State's economy. Many persons are being forced to buy housing which is considerably above their income range. A developer's cost of buying and improving an acre lot is estimated at $7,970, including the developer's profit and overhead.[25] The maximum cost of developing the lot should be kept below 30 per cent of the total house and lot package. Even at 30 per cent the package cost would be approximately $26,600. According to current rule-of-thumb home costs to income standards, 78 per cent of New Jersey's 1960 population would be frozen out of the housing market under a zoning policy of one acre lots.[26]

4. Blanket zoning for large lots and high land costs have prompted other developers to cut corners in order to try to meet a slightly lower housing market. This in itself leads to a false economy which usually does not withstand the test of time.

5. Blanket zoning for large lots is destroying what little design ability subdivision developers have in New Jersey. Extremely high

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[25]This cost includes the following improvements: paved streets, concrete curbs, municipal type sewer and water systems, storm drains, street trees, complete lot grading and landscaping, utility installation hookups, concrete driveway and access walk, land costs, and the developer's profit and overhead (see Table 9 for cost breakdown).

[26]This figure is based on the judgment of housing experts who feel the average family can afford to spend 20 per cent of its annual income on mortgage interest, reduction of mortgage principal, and real estate taxes. "What Price Home Can You Afford?", Greater Princeton Home Buyers' Guide, October-November, 1963, p. 40. Theory is then applied to New Jersey's family incomes in 1960 obtained from the U.S. Census of Population.

raw land and land development costs have stereotyped developers' concepts on design. Traditional gridiron subdivision design is being advanced in order to obtain the greatest number of lots out of a given parcel of land.

6. The preservation of open space, the conservation of water resources, and the development of parks and playgrounds in the municipality is a need which is given lip service but cannot be implemented. Open space and outdoor recreation facilities are expensive extras which cannot be provided for in most municipal budgets because of the staggering impact that the costs of education and other necessary municipal services have upon the tax base.[27]

7. Blanket zoning for large lots has strained the effectiveness of all municipal services including fire and police protection, public transportation, street maintenance, schools, and school bus transportation. As a result local taxes for these services have increased at a very high rate.[28]

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[27] In fiscal 1963, all 568 New Jersey municipalities allocated less than two per cent of their total capital outlay expenditures on parks and playground facilities. New Jersey Division of Local Government, Twenty-Sixth Annual Report of the Division of Local Government (Trenton, New Jersey: Department of the Treasury, 1963), p. 568.

[28] In the New York Region, "Outer Ring municipalities experienced a much sharper rise in tax base during the fifties than did the rest of the region; but the expansion of Outer Ring budgets outdistanced the increase in tax base. Average Outer Ring tax rates rose by 80 per cent and taxes per resident by 159 per cent. Among Core communities the corresponding increases were 31 per cent and 70 per cent." Source of quote: Morris Beck, "Property Taxation and Urban Land Use in Northern New Jersey," Urban Land Institute Research Monograph 7 (Washington: Urban Land Institute, 1963), p. 41.

All of these factors are strongly affecting most New Jersey municipalities. Increased taxes levied by local schools, regional high schools, and counties are forcing local governing bodies to hold back on municipal services. As a result, many communities are forced to live with shabby municipal buildings, inadequate roads, and no municipal library, recreation, or other civic center facilities. All too often local municipalities are financially unable to provide for adequate police, fire, first aid, and educational facilities. Municipal sewer and water systems are often completely outside the realm of fiscal ability.[29]

The magnitude of these problems is growing. The longer New Jersey ignores fiscal reform, the more intense these problems become, and the greater the financial strain on local municipalities.

In Search of An Alternative

New Jersey can expect unprecedented growth during the next two decades. Local municipal finance problems will undoubtedly accelerate the current trend toward acreage zoning. The urbanizing characteristics of New Jersey's

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[29] See Table 3, page 38 (shows school, county, and municipal tax levy trend).

regional setting must be observed and planned for--not planned against. Someone must accept the responsibility of making certain that the State's present haphazard development pattern does not become the image for the future environment. State tax reform is not and cannot be the total answer to a sound future development pattern. Even with a better tax climate, the key to New Jersey's multi-dimensional problem rests with local municipalities.

Land development ordinances are implemented at the local municipal level. Communities with a high growth potential and high taxes, however, are ill equipped to properly deal with new growth, and many municipal officials do not fully understand the problems associated with growth. Their comprehension of the impact of new development is superficial, and consequently they establish superficial policies to deal with growth. Officials must recognize that if a community has a problem of high taxes, this problem has been partially fostered by existing physical development policies. An attempt to slow down growth by establishing a community wide acreage zoning policy is not the only alternative available. This is especially

true in communities destined to become urbanized and where the continued growth of acreage lots will accelerate an already spiraling tax rate.

Communities confronted with regional residential growth pressures and the reality of not being able to attract industry must actively seek an alternative growth policy. This alternative policy must incorporate five principles to be effective:

1. The development alternative must take into account present constraints such as existing lot sizes and work within this restrictive framework.

2. It must recognize that growth should occur at a practical suburban density.

3. Development must occur on as nearly a self-contained basis as possible over the short-run with a realistic view of eventually paying its own way.

4. The development alternative must be economically feasible and a profitable undertaking for the developer or developers. It should be fair and applicable to small scale as well as large scale developers.

5. The alternative must be attractive to the prospective homeowner.

These principles can only be achieved through advanced concepts and techniques of urban design. One approach which embodies the principles and techniques called for is the concept of the modified planned unit development. The tool

necessary to implement this concept is a permissive density control-planned unit development clause in municipal zoning and subdivision ordinances.

CHAPTER II

THE MODIFIED PLANNED UNIT DEVELOPMENT APPROACH -- AN ALTERNATIVE GROWTH POLICY

The planned unit development concept encompasses the self-contained residential neighborhood theory. The English new town would be the result if this concept were carried to its logical end. Included in the development would be a variety of residential dwelling unit types; neighborhood schools; parks and playgrounds; complete municipal utilities and services; various quasi-public uses; private uses such as shopping centers; and other amenities deemed necessary for good environmental living. The key to the planned unit concept rests with the integration of these many land-use activities into a well planned, closely knit neighborhood. The illustrations on the following two pages show the structure and elements of the planned unit concept.

Many planned unit ordinances require minimum land areas of several hundred acres. Fairfax County's (Virginia) Residential Planned Community Ordinance requires not less than 750 acres of land.[30] The purpose of Fairfax County's

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[30]William H. White, Cluster Development, American Conservation Association of New York (New York: Woodhaven Press Associates Corp., 1964), p. 113.

PLANNED UNIT DEVELOPMENT DESIGN

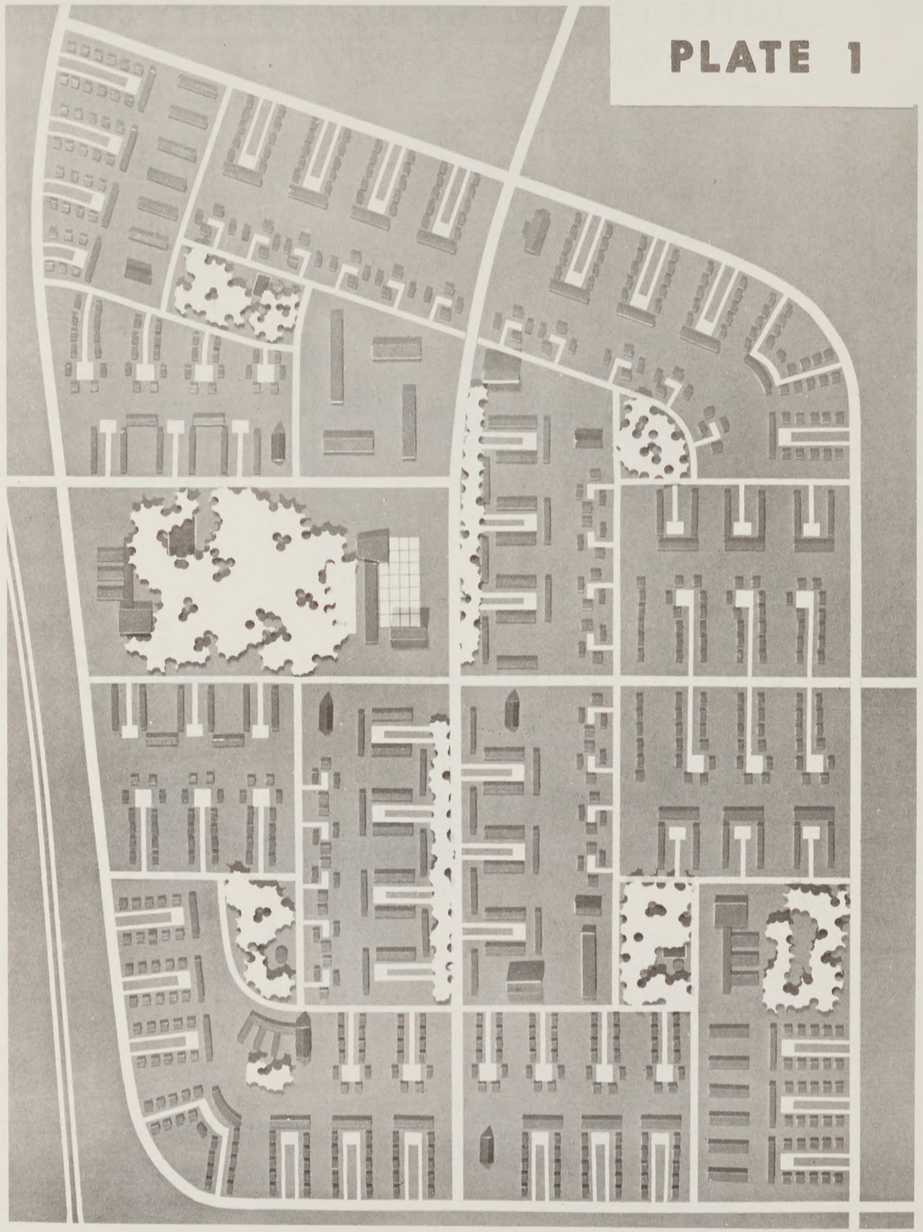


PLATE 1

ALTERNATIVE PLANNED UNIT DESIGN

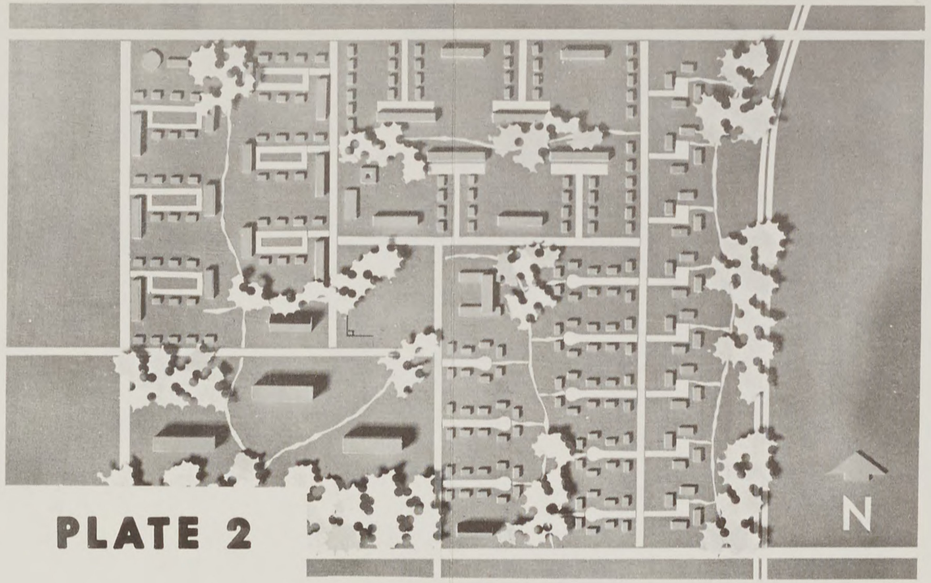
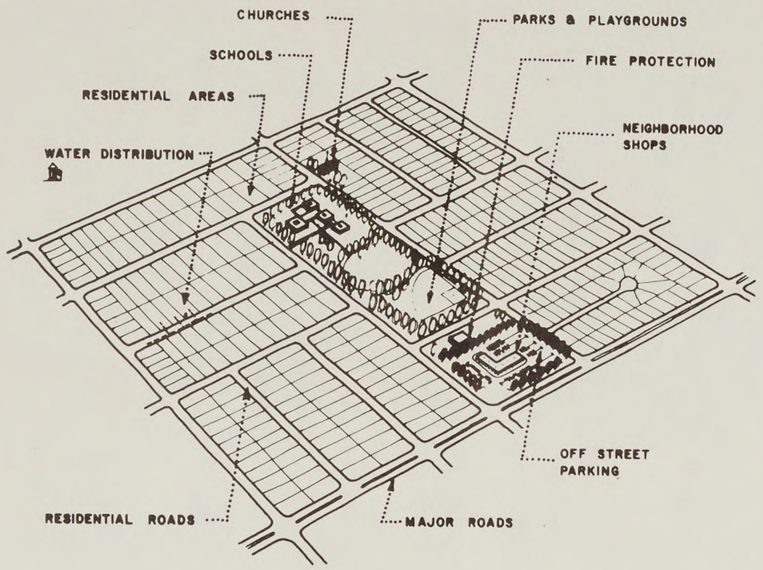


PLATE 2

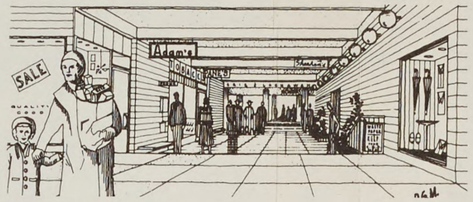
PLATE 3

THE PLANNED UNIT DEVELOPMENT THEORY

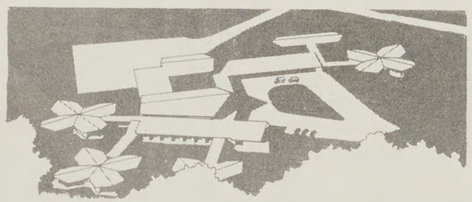
SELF CONTAINED NEIGHBORHOOD CONCEPT



SHOPPING



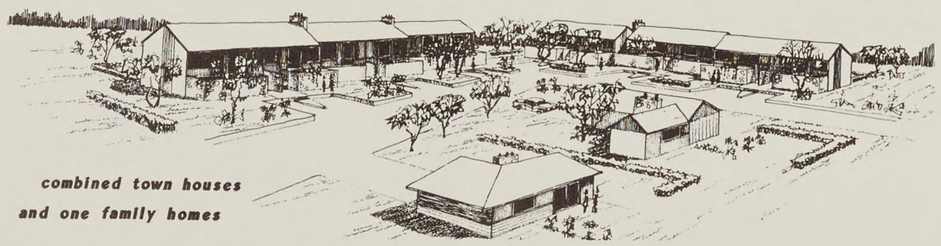
MUNICIPAL BUILDINGS



SCHOOLS

OPEN SPACE

DIVERSIFIED RESIDENTIAL LIVING ENVIRONMENT



combined town houses and one family homes

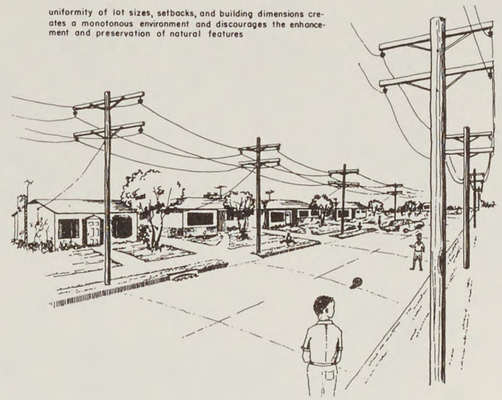
CLUSTER EFFECT THROUGH DENSITY CONTROL

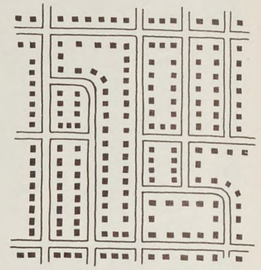
TYPICAL DEVELOPMENT

typical development is controlled by zoning restrictions uniformly applied to individual lots and dwelling units rather than overall restrictions for the total neighborhood

open space for each dwelling unit is provided on the individual lot creating fragmented open areas which are not useable for many activities

uniformity of lot sizes, setbacks, and building dimensions creates a monotonous environment and discourages the enhancement and preservation of natural features





neighborhood walkways and open space exist only within the street, which often becomes the playground

uniform lot sizes can be easily arranged in a pattern of rectilinear blocks and long straight streets with many four-way intersections, encouraging through traffic and excessive speed

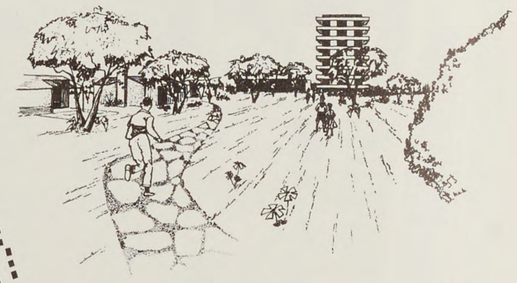
the costs of providing and maintaining municipal facilities and services is generally high, prohibiting expenditures for landscaping, recreation areas, and other amenities

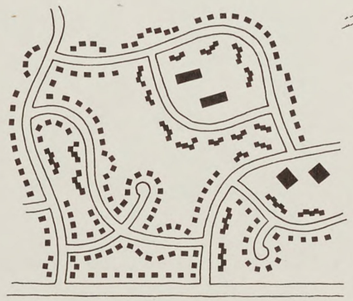
DENSITY CONTROL CONCEPT

density control zoning restricts the total number of dwelling units within a given area, but permits variable lot sizes

variable lot sizes permit the clustering of dwelling units and the retention of more useable open areas including the preservation of valuable natural features such as wooded areas and streams

a variety in lot size and site arrangement interwoven with common open areas creates a more interesting and pleasant environment



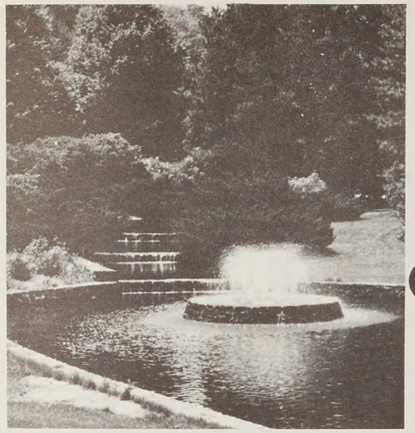


clustering of dwelling units reduces the cost of improvements and future maintenance and permits short, curvilinear streets which discourage through traffic and excessive speed

reduced costs of required improvements makes underground installation of utilities and development of common open areas economically feasible

common open areas provide safe and accessible recreation space and may include sites for schools, churches, and other community facilities

THE PLANNED UNIT CONCEPT MEANS BETTER LIVING AND STABLE TAXES

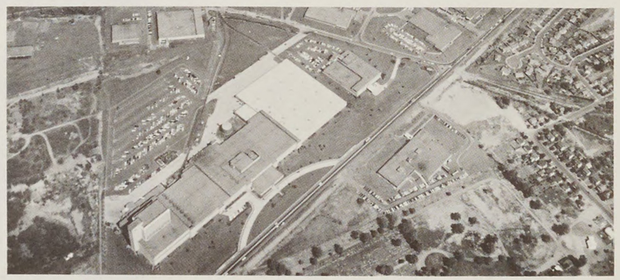


SCHOOLS

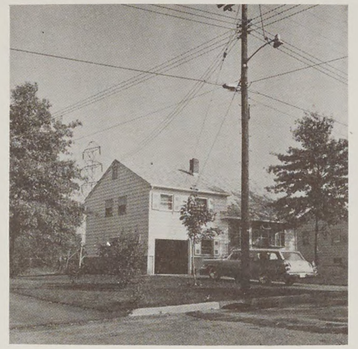
PARKS

FIRE

INDUSTRIAL PARKS



THE PLANNED UNIT CONCEPT MEANS A BETTER VISUAL IMAGE



THE NEED FOR UNDERGROUND UTILITIES

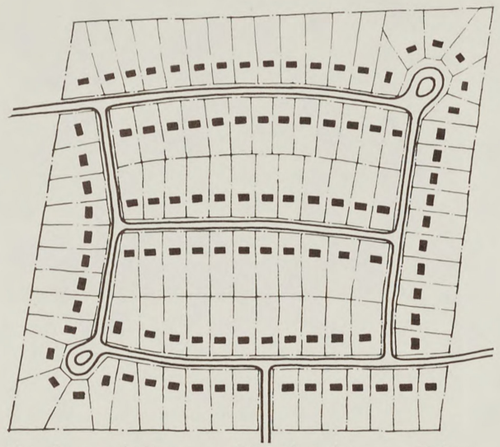
NATURAL STREAM RECREATION AREAS

PARKS AND PICNIC AREAS

AND CHURCHES OF ALL DENOMINATIONS

SUB-NEIGHBORHOOD SUBDIVISION DESIGN PRINCIPLES

FROM STANDARD DESIGN
TO CLUSTER DEVELOPMENT



The figure below applies the theory of the cluster concept to the above plot. Although basic, this design portrays the amenities of open space.

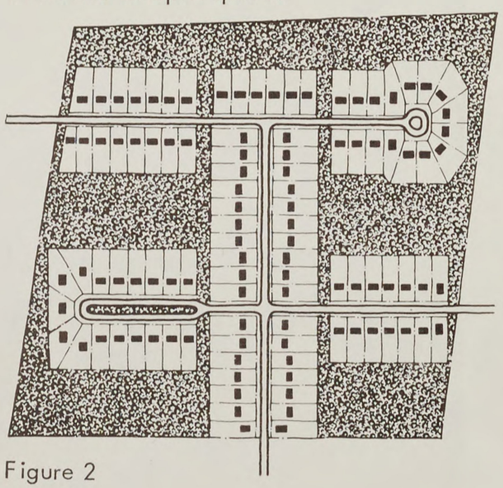
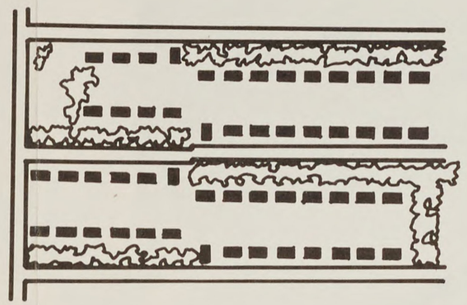


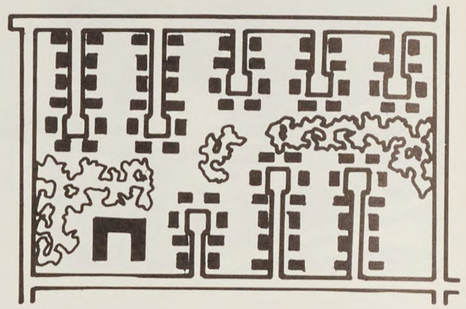
Figure 2

The Planned Unit Development Concept provides the maximum flexability in the design of subdivisions.

Modification of the Gridiron Subdivision

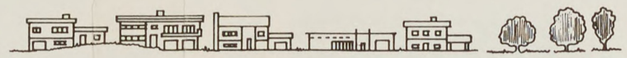


Combining the cul-de-sac with the Super-block Concept to promote a better and safer living environment.



Open space advantages of higher density housing types under the Density Control Concept.

One-family homes

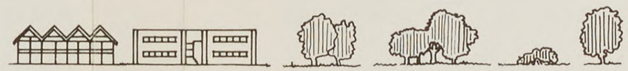


FRONT, SIDE AND REAR YARD AREAS USE THE MAJOR PORTION OF POTENTIAL OPEN SPACE

Two-family homes & Patio houses

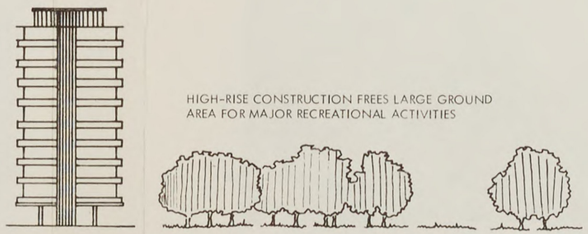
USEABLE OPEN SPACE AREA IS CREATED BY REDUCING AND COMBINING FRONT AND SIDE YARD AREAS

Town houses & Garden apartments

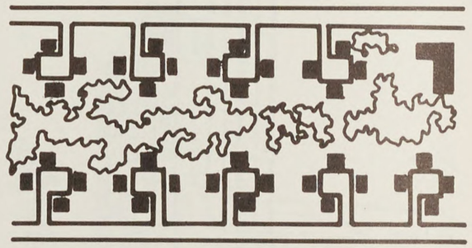


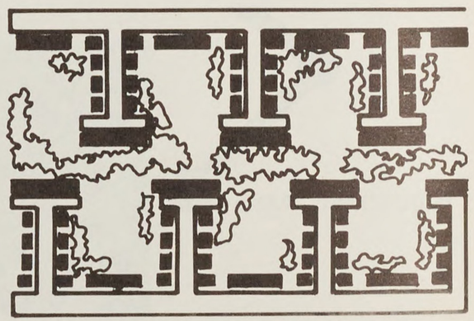
GROUPING OF SEVERAL DWELLINGS UNDER ONE ROOF FREES LARGE AREAS FOR USEABLE OPEN SPACE

Tower apartments



HIGH-RISE CONSTRUCTION FREES LARGE GROUND AREA FOR MAJOR RECREATIONAL ACTIVITIES





ordinance, however, is to induce large scale developments. Obtaining large communities is not always the objective of planned unit ordinances. The planned unit ordinance in St. Louis County, Missouri, as an example, requires a minimum tract area of only twenty acres.[31] If the developer is permitted to put money into a municipal development fund rather than actually to build schools and other required planned unit improvements, the size of the planned unit development can easily be less than one hundred acres. It would be preferable to set a minimum limit of 50 lots with the tract size varying depending on the conventional zoned lot size requirements. Fifty lots appears to be a practical number because the New Jersey Department of Health requires that developers provide municipal type sanitary sewer systems in all major subdivisions with fifty lots or more. A community permitting planned unit developments on tracts less than one hundred acres should have a fairly detailed master plan and follow it closely when relating smaller projects to it.

The "Modified" Planned Unit Development Approach

The "modified" planned unit approach differs from the traditional planned unit concept only in its application

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[31] White, op.cit., p. 116.

to New Jersey's environment. Chapter I amplified on a wholesale trend toward acreage zoning under way in the State. This entrenched attitude favoring acreage zoning cannot be discounted, and yet New Jersey communities cannot afford the long-range financial implications of such a development policy. One answer is to preserve the reality of acreage zoning, but modify its application.

The modified planned unit concept is based on five principles: (1) recognition of the present trend in zoning policy and use of this trend as the basis for density standards; (2) lot size reductions; (3) clustering or grouping of residential lots; (4) density control; and (5) enlarging the required off-site improvements for residential subdivisions to include schools, parks and recreation facilities, fire protection facilities, and sites for other municipal, quasi-public and private uses.

In its simplest form the modified planned unit approach permits a reduction of an initial lot size by a specified percentage or amount. The lots, once reduced in size, are clustered or grouped together in a preplanned design. In this way: (1) the number of dwelling units permitted under the initial lot size does not change; and (2) the land left over as a result of decreased lot sizes

is devoted to private or public use. The first condition is usually associated with density control, a phrase traceable to some of the early work of Edward M. Bassett.[32] Strictly speaking, density control limits the number of dwelling units per net or gross acre of land.[33] The remaining land, as noted in the second condition, is improved for non-residential purposes as part of the developer's off-site improvement requirements and might be used for schools, parks, fire stations, other public and quasi-public uses, private uses, or simply unused open space.

The extent and distribution of the required additional off-site improvements is a function of lot size reduction and the total size of the subdivision. The cost of the additional off-site improvements (schools, fire stations, and parks) would be borne by the developer and paid for out of the cost differential he realizes because of the smaller lot

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[32]Henry Horowitz, "Bassett on Density Zoning," Zoning Digest (Vol. 15; Chicago: American Society of Planning Officials, 1963), pp. 193-199.

[33]In this context, net density includes only the lot area encompassed by the individual residential lot or lots in a particular subdivision. Gross density includes the lot area and the street area serving the individual lot as well as any additional land areas devoted to other uses. Gross density will refer to the number of residential lots which can be developed within a tract of land irrespective of lot size.

sizes (see Chart A). A detailed analysis of these costs is dealt with in Chapter IV.

The modified planned unit approach represents a financially viable development alternative in those New Jersey communities using acreage lots as a means to ward off residential growth.

Advantages of the Modified Planned Unit Concept

The modified planned unit approach offers four basic advantages as an effective alternative to acreage zoning.

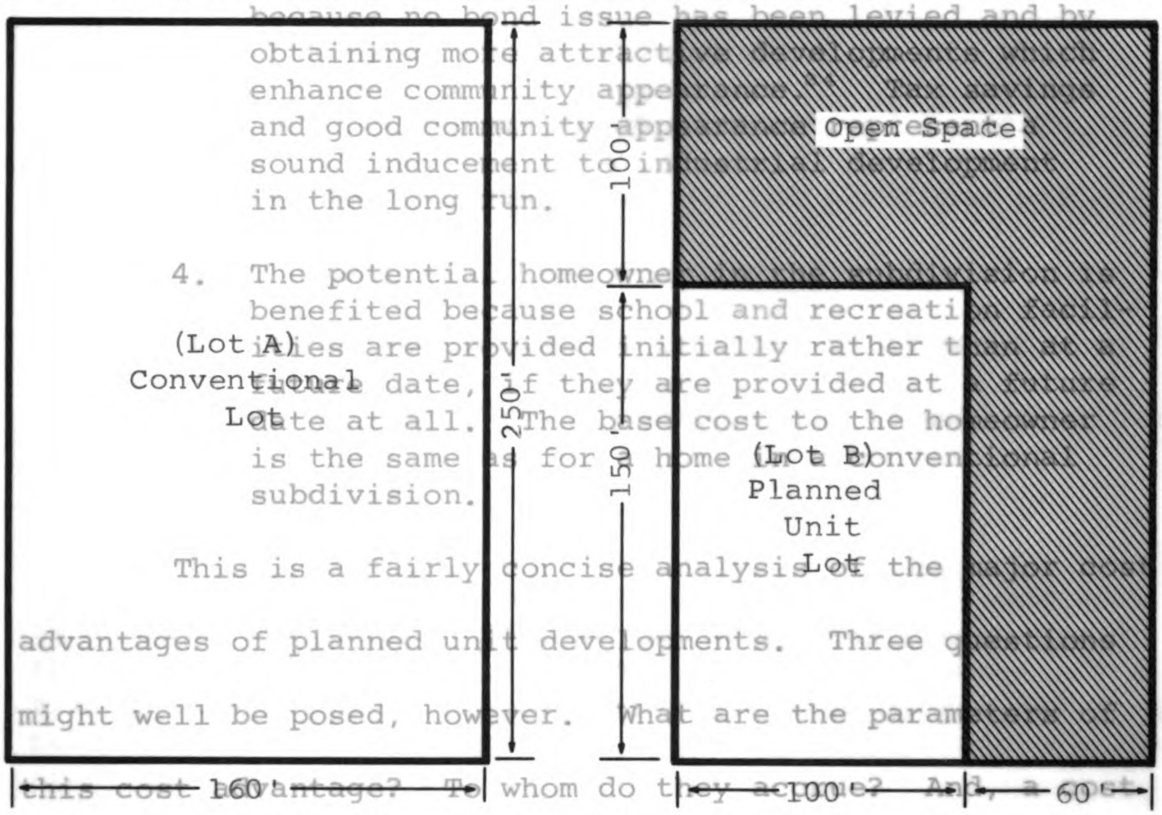
1. It recognizes present zoning constraints and works within this restrictive framework by maintaining total density while reducing lot sizes. Communities which have already committed themselves to large lots as a means of slowing down residential growth will not look favorably on a measure which appears to circumvent their original intent by permitting a reduction in lot sizes. Maintaining the same number of lots through density control, however, provides an effective counter argument.

2. It serves the interests of the developer by providing a more marketable product without increasing his overall costs. The community permits a reduction in lot sizes (frontage and depth) which substantially reduces the developer's on-site and off-site improvement costs. The developer uses the savings to supply additional off-site capital improvements including schools, parks, and open space. The added off-site improvements enhance the salability of the homes in the development at no cost to the developer.

Chart A

Figure 1[a] Standard Minimum Lot Size Required By Zoning

Figure 2[b] Lot Size Reduction Through Density Control Principle



advantage in comparison to what?

Conventional Subdivision

Developer's Costs/Lot[b]	Lot A	Lot B
1. Off-Site Subdivision Improvements	$4,000	$2,858
2. On-Site Subdivision Improvements	1,790	1,105
3. Land Costs	2,180	2,180
Total Lot Costs	$7,970	$6,143
Cost Differential		$1,827

[a] Lots are not drawn to scale.

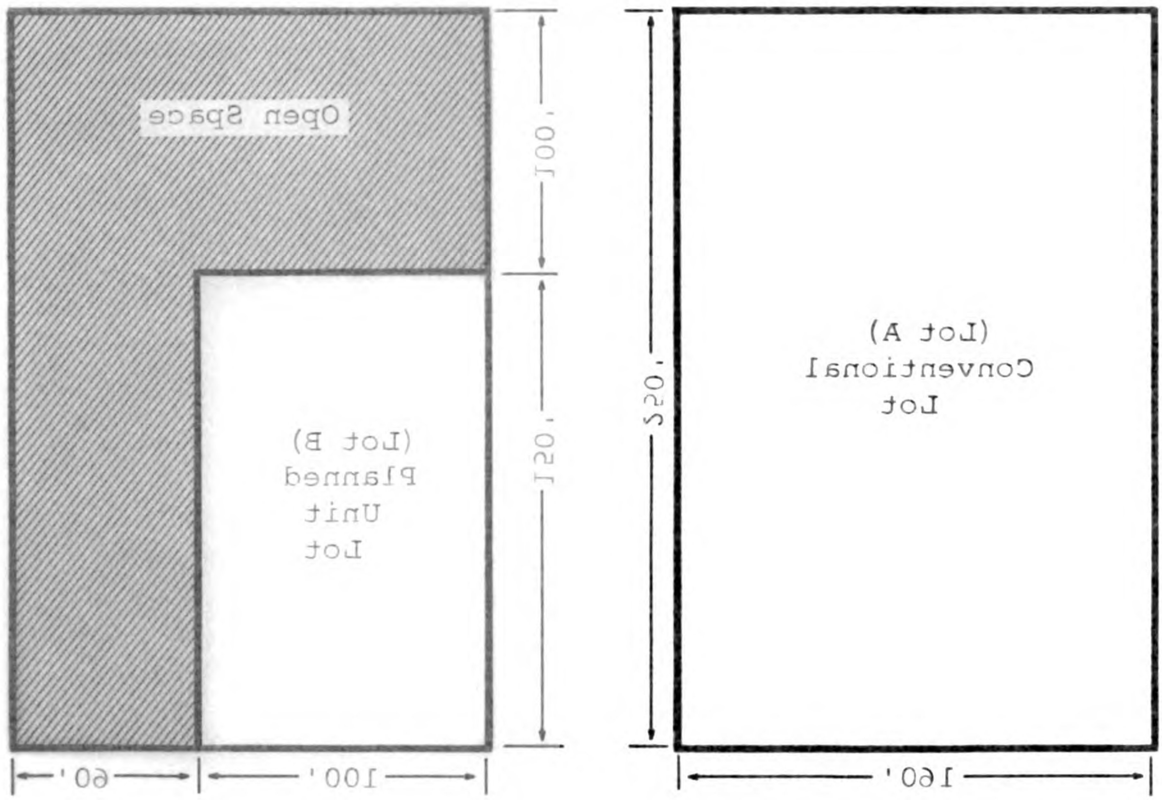
[b] Source: Table 9.

[34] White, op.cit., pp. 16-20.

Chart A

Figure 1[a]
Standard Minimum Lot
Size Required By Zoning

Figure 2[b]
Lot Size Reduction Through
Density Control Principle



Conventional Subdivision Developer's Costs/Lot[b]	Lot A	Lot B
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3. Land Costs	2,180	2,180
Total Lot Costs	$7,970	$6,143
Cost Differential	$1,827	

[a]Lots are not drawn to scale.
[b]Source: Table 9.

3. The community is benefited from the installation of the capital improvements which would normally be provided for through bond issues. The community realizes benefits from a net savings in taxes in the short run because no bond issue has been levied and by obtaining more attractive developments which enhance community appearance.[34] Tax savings and good community appearance represent a sound inducement to industrial development in the long run.

4. The potential homeowner in the subdivision is benefited because school and recreation facilities are provided initially rather than at a future date, if they are provided at a future date at all. The base cost to the homeowner is the same as for a home in a conventional subdivision.

This is a fairly concise analysis of the major cost advantages of planned unit developments. Three questions might well be posed, however. What are the parameters of this cost advantage? To whom do they accrue? And, a cost advantage in comparison to what?

Let's consider the last question first. In order to establish a comparative framework, the costs and benefits derived from developing a planned unit subdivision need to be compared against the costs and benefits derived from developing a conventional subdivision of the same size. This total comparative analysis must be developed in context

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[34] White, op.cit., pp. 16-20.

with conditions existing in New Jersey today. To accomplish this objective, a community model will be constructed and used as a measuring device to test the costs of the planned unit and conventional subdivisions against.

The parameters, or range of costs and benefits, will be considered from two viewpoints -- the developer and the community.[35] Chapters IV and V discuss the planned unit concept in detail and establish the cost relationships of planned unit and conventional subdivisions to the developer and the community.

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[35]The benefits accruing to the potential homeowner is a third viewpoint. Most of the published literature on the planned unit is aimed at the potential homeowner. The bibliography in this thesis provides a list of several such publications. This study will not, therefore, devote much space to this subject.

CHAPTER III

THE COMMUNITY TEST MODEL

A comparative financial analysis between conventional residential development and the modified planned unit approach must satisfy the interests of the community, the developer, and the potential home buyer. One way to make such a comparison is to construct a community model which can be used as an instrument to test the two developments.

It did not appear advisable or necessary to take a specific community as a case study because of the possible problem of obtaining information. In addition, statements made in the study when applied to a specific community may have implied meanings which were not intended and which may have been offensive to a local community. A case study may also impose restrictive social, political, financial, or physical relationship constraints on the study which would limit its purpose. Statewide statistical totals were, therefore, ratioed down to a meaningful municipal scale to obtain most of the regional statistics.[36]

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[36] In most instances this ratioing involved only the dropping of the last three digits from statewide figures.

The Profile of the Community Test Model

The model community is typical of semi-rural communities located in central New Jersey and confronted with residential growth pressures. For ease of discussion it will be referred to as the Township of Gardenside.[37]

Gardenside Township is nearly square in shape and has a land area of twenty-five square miles. The topography has a gently to moderate rolling character with winding streams and a liberal amount of wooded area, providing a pleasant break from the predominant agricultural scene.

Gardenside Township's population has increased from 2,500 in 1950 to 5,626 in 1960. It was estimated to be 6,426 in 1963.[38] The Township's pre-1950 population lives primarily in one-family farm and rural non-farm dwelling units although there are three small urban concentrations composed of pre-1940 residences. Since 1950, several new residential subdivisions of moderate size have been built at random locations. New commercial establishments have

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[37]Local municipalities in New Jersey are legally called cities, boroughs, townships, or villages.

[38]New Jersey's Department of Conservation and Economic Development estimated the State's population in 1963 at 6,426,780. (Source: See Table 30) The 1950 and 1960 figures for Gardenside are hypothetical to illustrate a high growth characteristic.

been created along the major highways. A few small industries are located in the community and provide some relief from mounting property taxes.

Local property taxes in Gardenside Township provide the principal source of revenue for the municipality, the county, and the public school system. In fiscal 1963, these three forms of government budgeted total expenditures of $1,365,234, of which $1,035,596 (75.9 per cent) was obtained from local property taxes.[39] The expenditures are broken down by operational, capital outlay, and debt service in Table 2.

The net county equalized value on which all property taxes are levied in Gardenside Township totaled $34,429,756 in 1963. This property tax base yielded an equalized tax rate of $3.01 per $100 of true market property value. In spite of relatively high property taxes, the Township offers very little in the way of municipal services. The Township has experienced radical increases in school and county taxes during the past thirteen year period. In an attempt to hold down the total tax rate, the governing body has kept municipal purpose spending to a bare minimum (see Table 3).

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[39] The discussion on taxes will be limited to the aggregate local property tax for all local municipalities in New Jersey. State taxes will not be considered.

Table 2; Total Budget and Tax Levy Expenditures for Municipal Purpose, County Purpose, and School Purpose in Gardenside Township for 1963[a]

Form of Government and Expenditure Type	1963 Budget Expenditure	Percent of Sub-total	1963 Property Tax Levy	Percentage Tax Levy is of Budget	Equalized Tax Rate[b]	Property Tax Levy[c]
						Per Capita
Municipal:	$ 494,459	100.0%	$ 317,214	64.2%	$0.92	$ 49.35
a) Operational	404,468	81.8%	259,164	64.2%	(NA)	40.32
b) Capital outlay	58,346	11.8%	37,748	64.2%	(NA)	5.87
c) Debt service	31,645	6.4%	20,302	64.2%	(NA)	3.16
						Per Student
Public School:	$ 630,545	100.0%	$ 532,270	84.4%	$1.55	$458.85
a) Operational	567,548	90.0%	479,043	84.4%	(NA)	412.97
b) Capital outlay	11,300	1.8%	9,581	84.4%	(NA)	8.35
c) Debt service	51,697	8.2%	43,646	84.4%	(NA)	37.53
						Per Capita
County Government:	$ 240,230	100.0%	$ 186,112	77.5%	$0.54	$ 28.95
Total Expenditures:	$1,365,234	(NA)	$1,035,596	75.9%	$3.01/100	(NA)

[a]New Jersey Division of Taxation, Annual Report for the Year, 1963, (Trenton: Department of the Treasury, 1964), all figures represent state totals less (000). This publication is the source for Gardenside Township's financial data.

[b]State net equalized assessed property value for all municipalities totaled $34,429,756,000 in 1963. Equalized assessed value represents fair market value as determined by the State Division of Local Property Taxes.

[c]State population of 6,426,780 for 1963 estimated by Research and Statistics Section, New Jersey Department of Conservation and Economic Development, April 1961. Students in Average Daily Enrollment (ADE) in New Jersey for 1963 was 1,160,001. School enrollment obtained from 1962-1963 Annual Report of the New Jersey Department of Education.

Table 3; Gardenside Township Property Tax Levy Trend by Purpose, 1950-1963[a]

Tax Levy Purpose	1950 Tax Levy[b]	1963 Tax Levy	1950-1963 Change
Municipal	$151,025	$ 317,214	110%
School	148,875	532,270	258%
County	68,791	186,112	171%
	$368,691	$1,035,596	182%

[a]Annual reports of the New Jersey Division of Taxation in the Department of the Treasury for the years 1950 and 1963.
[b]1950 dollars are converted to 1963 dollars.

Gardenside Township has minimal police and fire protection services for its twenty-five square mile area. The Township has no municipal sewer or water facilities. Administrative functions are held at the local school. A sizable amount of the municipal purpose tax levy is spent on maintaining the local road system. The only outdoor recreation facilities available are at the school playground.

Gardenside belongs to a regional high school district along with five of its neighboring communities. Currently, 311 students from Gardenside attend the regional high school

in grades nine through twelve.[40] The Township's local school district has a kindergarten-through-eight system with an enrollment of 849 students.[41] Their single school has two kindergarten rooms plus twenty-five regular classrooms. The school is at its maximum capacity with slightly over 30 students per classroom. Ten new classrooms were added to the existing school in 1960 to reach its present capacity.

Municipal finance has become a bewildering juggling act for the governing body of Gardenside Township. The citizens are demanding additional services on the one hand, and screaming about high taxes on the other. Solving this dilemma is nearly impossible in an agricultural community like Gardenside Township where chances for industrial development are limited.

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[40]New Jersey had students in average daily attendance in the kindergarten through the eighth grade and students in grades nine through twelve during the 1963-1964 school year. Data source: New Jersey Department of Education, Division of Business and Finance, Thirteenth Annual Report of the Commissioner of Education for the 1963-64 School Year. (Trenton: Department of Education, 1964).

[41]The kindergarten through the eighth grade elementary school system and the ninth through the twelfth high school system was chosen because they are the predominant educational systems used in New Jersey today.

The results of a spiraling tax rate are indicated by this notice in the Township Weekly Gazette:

FOR SALE: 745 Acre Farm -- Owner Will Sacrifice.

Several months later, Gardenside Township's problems appeared to be solved -- or so people thought. Splashed across the front page of the Township Weekly Gazette was the news:

GARDENSIDE TO GET NEW EXPRESSWAY AND INTERCHANGE

> The State Highway Department announced that a new interstate highway will cross the southern half of Gardenside Township and connect with the present 485 Expressway. Mayor Jones called it a great day for the Township. "I predict," he continued, "this will solve our financial problems by bringing in new industry." The State Highway Commissioner added that the construction on the new highway is expected to begin in about five or six years -- depending on when the money to do the engineering and to let the contracts will be available.

Conspiciously missing from the same newspaper edition, however, was the six months old ad which read:

FOR SALE: 745 Acre Farm -- Owner Will Sacrifice.

Soon there were rumors around the Township that several farms had been sold recently and speculation that they had been sold to residential developers.

The rumors were confirmed at the monthly planning board meeting when a developer presented a subdivision sketch plat for 641 lots on a 745 acre farm site. The subdivision was well designed and appeared to meet all of the requirements of the Township, including the minimum one acre (40,000 square feet) lot size. The developer said he had already applied to the Township Utilities Authority for a franchise to provide sewer and water facilities to the area. According to him the municipal sewer and water systems were to be built so the facilities could be expanded to eventually serve the entire southeast section of the community -- all in accordance with the Township Authority's sewer and water plan.

After considerable discussion about the subdivision, the planning board classified the proposed sketch plat as a major subdivision, thereby authorizing the subdivider to proceed with a preliminary plat.

A month later the planning board was greeted with eleven minor subdivision plats, the preliminary plat on the 745 acre subdivision, plus major subdivision sketch plats from three other developers totalling some 1,555 acres. The secretary of the planning board summed the situation up nicely in the meeting agenda with the following tabulated data:

Type and Number of Subdivisions	Land Acreage	Subdivided Lots	Requested Action
Minor Subdivisions			
Total Number: 11	35	28	Final Approval
Major Subdivisions			
1. Subdivision A	745	641	Preliminary Approval
2. Subdivision B	77	66	Sketch Plat Approval
3. Subdivision C	1,430	1,230	Sketch Plat Approval
4. Subdivision D	48	41	Sketch Plat Approval
Total Major	2,300	1,978	
Total Major and Minor Subdivisions	2,335	2,006	

The fact that the community was faced with over 2,000 new one-family homes became the topic of considerable discussion during the meeting.

When the meeting was adjourned the Chairman called for a special executive meeting of the planning board members. The atmosphere at the "closed door" meeting was one of concern and uncertainty. It was recognized that the community had to grow to survive. But how much and how fast was a question. Two thousand new homes would surely impose nearly twice that number of new public school children on an already

overburdened school system.[42] Should the board recommend increasing lot sizes from one acre to two acres? Although this would cut down the proposed number of lots by one-half, what other problems would arise?[43] The planning board officials faced a dilemma without an understanding of the alternatives available to them.

Gardenside clearly has three major courses of action:

1. It can maintain its present zoning and subdivision standards and let the 2,000 units develop as submitted.

2. It can amend the zoning ordinance to increase lot sizes along with a variable to include or exclude the 2,000 lots under consideration. Including the 2,000 lots would undoubtedly lead to a legal suit which the community may or may not want to undertake.

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[42]It is erroneously believed throughout New Jersey that new one-family residences have a student multiplying factor impact of two or three on the local school system. Because some households have two or three children, this gets translated into an expected average number of public school aged children per residence.

[43]The New Jersey Superior Court has ruled that if a community increases lot sizes through rezoning, that subdivisions not having final approval may be required to conform to the increased lot size standard provided the change does not create undue hardship on the developer. Undue hardship has been interpreted to mean undue redesign and reengineering. Source: "Virginia Construction Company v. Fairman et al. Princeton Township," 39 N.J. 61, New Jersey Superior Court Reports, No. 4, January 25, 1963 (Trenton: Soney and Sage Company, 1963).

3. It can amend the zoning and subdivision ordinances to include a planned unit provision. The planned unit provision would give the developers the option of designing the 2,000 lots under conventional standards or under a density controlled lot reduction and clustering plan.

Alternative one will be compared and analyzed from a cost-revenue point of view with alternative three. Since alternative two has the effect of only changing the number of lots involved, it will be omitted from consideration.

A fiscal policy evaluation of the planned unit alternative must include three important elements--the community's position, the position of the homeowners, and the position of the developer. The following two chapters will concentrate on summarizing the relative position of these three factions in relation to a cost-revenue framework. Prior to this undertaking, however, a common set of standards applicable to the conventional-planned unit option under alternative three must be established.

Standards for the Cost-Revenue Analysis

In analyzing the cost-revenue picture for conventional and planned unit developments, a practical and measurable common unit size is necessary for comparison. A neighborhood

unit large enough to justify a public elementary school is convenient and applicable.[44]

The Neighborhood Unit

The New Jersey Department of Education used the following elementary and high school unit standards:[45]

1. Elementary schools, grades kindergarten through eight:

   a) Optimum School Plant -- 18 classrooms with even distribution of two classrooms per grade or 500 students.
   b) Minimum School Site Size -- Ten acres plus one acre per 100 students, or 15 acres.[46]

2. High schools, grades nine through 12:

   a) Optimum School Plant -- 1500 students.
   b) Minimum School Site Size -- 30 acres plus one acre per 100 students or 45 acres.

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[44]The neighborhood unit subdivision (based on the enrollment for an elementary school) is used only as a convenient size for comparing a planned unit subdivision and a conventional subdivision with the same number of lots. This use should not be interpreted to mean that this is a desirable minimum or maximum size for a planned unit development.

[45]New Jersey State Board of Education, Guide for Schoolhouse Planning and Construction (Trenton: Board of Education, 1964).

[46]Interview with Dr. Spier, New Jersey Department of Education, September 22, 1964. Dr. Spier indicated in an interview conducted by Stuart Brown of Herbert H. Smith Associates, that the school plant size for K-8 schools will be raised from the present minimum of five acres to ten acres plus one acre for each 100 students of maximum capacity.

With the optimum size of the neighborhood public elementary school established, the remaining components to be determined, including population and housing units, are a function of related family characteristics.

Population and School Children

Although this study is geared for use on a statewide basis, using Gardenside Township to represent statewide statistics, it would be impractical to accept an average statewide population and student-per-household figure.[47] The standards should instead reflect the household characteristics of new one-family residential development. An average figure would reflect a wide range of housing types, ages, and household characteristics. The chance of an accurate numerical prediction of population and school students based on statewide data would be very small.

Willingboro Township, New Jersey, has been chosen to statistically represent the household characteristics for one-family detached dwelling units likely to develop in Gardenside Township. In 1960, Levittown Township, later changed to

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[47]According to the 1960 U.S. Census of Population, New Jersey had an average population per household figure of 3.36 and an average total student per household figure of .73.

Willingboro Township, represented as pure a statistical entity as possible for evaluating population characteristics in new one-family dwellings in New Jersey. The Township grew from approximately 90 households in 1950 to 3,262 households in 1960, nearly all of which are directly attributed to the strictly one-family development of Levitt and Sons Incorporated.[48] Levittown Township's average household size characteristics per occupied dwelling in 1960 were as follows:[49]

1. Population Per Occupied Household — 3.98 Persons
2. K-8 Students Per Occupied Household — 0.78 Students
3. 9-12 Students Per Occupied Household — 0.12 Students

Students-per-household figures include both public and private school students. School superintendents in an increasingly larger number of New Jersey communities no longer expect private school systems to assume part of the responsibility for education. Many of the private school

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[48]William Levitt, Sr., purchased or took option on all of the remaining vacant land in Willingboro Township prior to beginning development of what was to become Levittown, New Jersey. In 1964, the people of Levittown changed the name of the Township by referendum back to its original name of Willingboro.

[49]U.S. Bureau of the Census, U.S. Census of Population and Housing: 1960 Census Tracts--Philadelphia, Pa.-N.J., Final Report PHC(1)-116 (Washington: U.S. Government Printing Office, 1960).

systems are finding it impossible to expand facilities in concert with demand. Consequently the public school systems are having to assume a greater percentage of the overall demand. The total number of students expected from new one-family residential development will therefore be used as a basis for determining public school plant needs in this study.

Based on the preceding standard of 0.78 elementary students per average occupied household, it will require 641 new one-family dwellings to produce 500 elementary students. Six hundred and forty-one dwelling units can also be expected to add 2,551 persons to the Township's population and 77 high school students at full development.

Major Off-Site Improvements for Conventional and Planned Unit Developments

Gardenside Township represents many semi-rural New Jersey communities destined to become urbanized during the next three decades. Municipalities faced with this situation have the responsibility for making certain their land development ordinances reflect urban needs. The Township's 40,000 square foot lot will be used as the conventional lot size and density base for developing the planned unit alternative concept in this study. The advisability of using

an acre lot to reflect urban needs is justifiably questionable. The fact remains that a substantial trend toward acreage zoning has occurred in New Jersey and cannot be overlooked. It is this trend which has helped to prompt the need for the planned unit alternative.

Table 4 compares the type of municipal improvements which would be required of a 641 lot conventional subdivision with 40,000 square foot lots and a planned unit subdivision with lot sizes of less than 40,000 square feet. Off-site improvements one through nine are considered minimum for all urban subdivisions. The latter five off-site improvements represent what might be considered ideal minimum off-site improvements required for a planned unit alternative. The added planned unit improvements listed are not necessarily based on a priority system--a system established by the community showing which added planned unit improvements it will require and in what sequence.[50] Basically, however, those capital improvements which are in greatest demand and

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[50] Fundamentally the listing of planned unit off-site improvements in a legal document such as a subdivision or a zoning ordinance should be done with great care. If they are so listed, a flexibility clause should be included to provide the planning agency the degree of freedom necessary to construct a meaningful and pleasing environment. A good discussion on this concept can be found in the following source: Gordon Whitnall, "Planned Unit Development," Southwest Legal Foundation--Institute on Planning and Zoning, Vol. 6 (New York: Matthew Bender & Company, 1966), pp. 51-72.

Table 4; Major Off-Site Improvements Required of Conventional and Planned Unit Subdivisions in Gardenside Township

Required Off-Site Improvements	Conventional Subdivision[a]	Planned Unit Subdivisions[b]
1. Paved streets	X	X
2. Curb and gutters	X	X
3. Sidewalks	(NR)[c]	X
4. Street shade trees	X	X
5. Storm drainage system	X	X
6. Municipal sanitary sewers	X	X
7. Municipal water	X	X
8. Fire hydrants	X	X
9. Water and sewer treatment plants	X	X
10. Open space		X
11. Improved recreation sites		X
12. School sites, buildings, and equipment		X
13. Fire station sites, buildings, and equipment		X
14. Sites for other public and quasi-public uses		X

[a] 40,000 sq.ft. lots
[b] Less than 40,000 sq.ft. lots
[c] Not required

which pose the greatest drain on the municipality's tax base should come first. Items ten through fourteen represent the major capital improvements which are the most expensive for communities to provide. The capability of a required improve-

ment to serve the proposed subdivision must also play a role in establishing this priority system.

Generally, the most needed capital improvement in New Jersey is schools. The next priority would be fire protection and improved recreation facilities. The reason fire equipment holds a high priority is obvious. Not only is fire equipment a direct safety need, but the future residents of the subdivision and the community can receive benefits from potentially lower fire insurance premiums. Improved recreation facilities are also important if the future residents of the subdivision are going to benefit from the open space left over from clustering. The pressures on a municipality's budget in New Jersey are such that recreation facilities are near the bottom of the capital improvements list when they are to be financed through municipal taxes.[51]

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[51]A case in point took place in Middletown Township, which is one of five municipalities developed as part of the unincorporated area of Levittown, Pennsylvania. Levitt provided recreation areas but no facilities. The community intended to provide facilities at a later date. Ten years and a mature community later, these recreation areas are still void of improved recreation facilities--much to the disgust of most residents.

Minimum Planned Unit Facility Cost Standards

A common set of cost standards must be devised for the minimum planned unit facilities in order to properly evaluate the base cost differential between conventional and planned unit developments. These cost standards should be applicable to the community and the developer alike. Under conventional development standards, the community provides and pays for the cost of schools, improved recreation areas, and fire protection facilities. Under the planned unit alternative, the developer provides, or at least pays for, these three facilities.

Two of the five minimum planned unit improvements (namely open space and sites for other public and quasi-public uses) have been omitted from consideration at this time. Under conventional development conditions, pure open space is not applicable and sites for other public uses probably would not be considered due to costs. Quasi-public facilities would be privately financed. Under planned unit conditions, land costs for added facilities are absorbed by the developer at little or no cost to him.[52]

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[52]This aspect of land costs to the developer will be covered in greater detail in Chapter IV.

The cost of land and the cost of constructing facilities will be developed separately for schools, recreation areas, and fire protection facilities. Although land costs to the developer under the planned unit alternative are still negligible, land costs to the community under conventional development are an important cost variable.

School Facilities

Gardenside Township belongs to a regional high school system to which it is legally required to continue as a participant under New Jersey law.[53] Construction of a high school facility becomes a multi-community decision. Regional high school facilities will not, therefore, be considered in this study.

As stated previously in this chapter, 641 new single-family dwelling units will potentially add 500 new elementary school aged children to the Township school system. Five hundred elementary students require an 18 classroom elementary school.

Assuming the cost of the new school would be constant, whether built by the developer or the community, the 18

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[53]New Jersey, Revised Statutes (1940), 18:8-1 through 22. Regional High Schools.

classroom school would cost approximately $35,000 per classroom, or $630,000.[54] Minimum state requirements for a school site call for at least 15 acres of land.[55] At $1,500 per acre, land costs for the school would amount to $22,500 in Gardenside Township. Under conventional standards the community would have to absorb school land costs. The developer would provide the land under the planned unit alternative at no cost to the community.

A summary of school costs to the community and the developer under conventional and planned unit standards is shown in Table 5.

Fire Protection Facilities

Fire protection facilities necessary to meet the needs of the 641 unit subdivision will not require a complete

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[54]In November 1963, Neptune Township, New Jersey, opened a new 24 classroom school which included a cafeteria-library, an all-purpose room (gymnasium), administrative offices, and four specialty rooms. The total cost of construction, fees and equipment amounted to $718,000 for an average cost of nearly $30,000 per classroom. A call to the school superintendent, however, indicated that additional full equipment costs raised the $30,000 per classroom figure to nearly $35,000 per classroom. Source: Asbury Park Press, November 14, 1963.

[55]Ten acres base size, plus one acre per 100 students--a total of 15 acres.

Table 5; Summary of School Cost Allocations
Under the Conventional and the Planned Unit Alternatives
For a 641 Lot Subdivision in Gardenside Township

Type of Costs	Conventional Development		Planned Unit Development	
	Community	Developer	Community	Developer
School	$630,000	-$0-	-$0-	$630,000
Land	22,500	-$0-	-$0-	0
Total	$652,500	-$0-	-$0-	$630,000

facility. It is estimated that a 641 unit subdivision's fair share would be 31 per cent of the cost of a complete facility (see Table 29). A fully equipped two bay, two rig station with two 750 gallon-per-minute pumpers and a first aid rescue truck would cost approximately $74,800. In accordance with the standards established by the National Board of Fire Underwriters, the 641 unit subdivision's share of the cost of a new facility in Gardenside Township would amount to 31 per cent, or $23,200.

The estimated minimum land area needed for the fire station site is one acre, with two acres regarded as the optimum. Land costs, at $1,500 per acre, would range between $1,500 and $3,000. The $3,000 figure will be used for this study.

Table 6; Summary of Emergency Fire Equipment Cost Allocations Under the Conventional and the Planned Unit Alternatives For a 641 Lot Subdivision in Gardenside Township

Type of Costs	Conventional Development		Planned Unit Development	
	Community	Developer	Community	Developer
Fire Station	$23,200	-$0-	-$0-	$23,200
Land	3,000	-$0-	-$0-	0
Total	$26,200	-$0-	-$0-	$23,200

A summary of fire and rescue protection facility costs to the community and the developer under conventional and planned unit standards is shown in Table 6.

Recreation Facilities

The New Jersey standard for improved recreation space is one acre per 100 population.[56] Since the proposed new 641 unit subdivision will increase the community's population

[56]On September 21, 1964, Morristown, New Jersey, hosted a one day National Conference on Parks. Don Stansfield, of the New Jersey Division of State and Regional Planning, indicated that the Division had accepted a recreation standard of ten acres per 1,000 population to serve as a basis for planning in New Jersey.

by 2,551 persons, 26 acres of improved intensive recreation space are needed. Deducting ten acres for the school playground leaves a total of 16 acres of required improved recreation space. The cost of developing land for intensive recreation uses is estimated at $5,000 per acre, or $80,000.[57]

Initial land costs at $1,500 per acre, amounts to $24,000. A summary of intensive recreation facility costs to the community and the developer under conventional and planned unit standards is shown in Table 7.

Table 7; Summary of Recreation Facility Cost Allocations Under the Conventional and the Planned Unit Alternatives For a 641 Lot Subdivision in Gardenside Township

Type of Costs	Conventional Development		Planned Unit Development	
	Community	Developer	Community	Developer
Recreation	$ 80,000	-$0-	-$0-	$ 80,000
Land	24,000	-$0-	-$0-	0
Total	$104,000	-$0-	-$0-	$ 80,000

[57]Cost Source: Inter-County Regional Planning Commission, "Growth Guide for the Denver Region," Master Plan Report Number 4 (Denver: Inter-County Regional Planning Commission, 1958), p. 26. This cost includes only fairly inexpensive outdoor recreation game and court areas.

In summary, school, fire protection and recreation facilities necessary to adequately serve a 641 dwelling unit subdivision would cost the community $782,700 under conventional zoning procedures. The same facilities under the planned unit alternative would cost the community absolutely nothing in that they would be paid for by the developer.

CHAPTER IV

A COST-REVENUE ANALYSIS FOR THE DEVELOPER

Nearly all zoning ordinances which permit clustering and planned unit development modifications give the developer the choice between cluster or planned unit development and conventional development. The underlying premise is that cluster and planned unit alternatives are economically attractive to the developer, otherwise he would not participate. Participation, therefore, is a function of incentives. These incentives must be financial in nature before most developers can be expected to seriously consider this alternative.

Assumptions and Principles

Two basic development conditions are imposed at the outset which need to be kept in mind throughout this chapter. The first condition is that a study of the modified planned unit concept must recognize the trend to acreage zoning by an increasing number of New Jersey communities. The second condition requires recognition of the trend to more stringent off-site improvements in one acre lot subdivisions. The citizens and public officials of Gardenside Township, like

many north-central New Jersey communities, currently impose these stringent standards on new residential subdivisions, and they are not likely to rescind this policy once it has been adopted. Thus, the assumption is that the developer will be faced with minimum lot sizes of nearly one acre (40,000 square feet) and high subdivision improvement standards. It is assumed, however, that Gardenside Township now has a modified planned unit option clause in its zoning ordinance.

The planned unit option clause gives the developer two alternatives: (1) he can build a subdivision under conventional standards on 40,000 square foot lots and meet the Township's stringent off-site subdivision improvement standards; or (2) he can build under the planned unit option provided he agrees to meet all of the requirements in the option clause. The developer is permitted to reduce lot sizes to not less than 15,000 square feet (with minimum lot frontages of 100 feet) provided the number of residential lots under the option does not exceed the number permitted under the conventional lot size standards.

The following planned unit conditions and principles should be imposed on the developer:

1. Planned unit projects should be limited to subdivisions with 50 lots or more in size.

2. The on-site and off-site improvement standards for planned unit subdivisions should not exceed the standards required for conventional subdivisions with one acre lots except for the possible provision of sidewalks.

3. The land left over as a result of lot reductions and lot clustering should be used for public, semi-public and private non-residential purposes. The amount of land acreage devoted to non-residential purposes would depend upon the size of the subdivision and the extent of lot reduction.

4. The developer should be required to provide certain minimum planned unit improvements to serve the subdivision. The municipal governing body and planning board should establish policy on the type, amount and cost of these minimum improvements and all other planned unit improvements required by the community. Guidelines should be established in the zoning and subdivision ordinances which govern the flexibility limits of this policy.

5. The design and construction standards for each required planned unit improvement should be established by the proper regulating agency in the community (as an example, school facility standards should be set or agreed upon by the school board). Each of these agencies should be brought into the subdivision's review process and play a role in helping to determine the final design of the planned unit subdivision. The subdivision ordinance should provide a special set of administrative review procedures for planned unit developments to augment this review process.

6. It should be made clear that the developer pays for all required planned unit improvements out of the potential savings (this represents only paper savings) he would receive as a result of lot size reductions. The cost of all required planned unit improvements to the developer should not exceed the potential savings he would receive through lot size reductions. Theoretically, the cost of a planned unit subdivision with the required planned unit improvements should not exceed the cost of a conventional subdivision with 40,000 square foot lots.

7. The size of the subdivision should govern whether the municipality would require a developer to build a specific planned unit improvement, such as a school, or give the community a specified dollar amount which is earmarked for school buildings. (This matter will be discussed later on in this chapter.)

8. Certain facilities, such as schools and their land areas, should be turned over to the community as public facilities. Recreation facilities which serve the subdivision could be publicly or privately owned. Public and private ownership matters should be finalized at the preliminary plat stage of the subdivision administrative review procedure.

9. The potential homeowner's cost is theoretically the same for the conventional lot as for the planned unit lot. Although the planned unit lot is smaller, the potential homeowner has the advantages of the planned unit improvements not readily available in a conventional subdivision. Because the lot is smaller, the question of equitable value to the homeowner is still present. To partially resolve this value question, it is the responsibility of the municipal officials to require that the developer provide planned unit improvements equal in value to the potential savings he receives from lot size reductions.

10. When lot sizes are reduced under planned unit standards, the value of the non-residential land does not decrease but is transferred to the planned unit improvements which occupy the land. The value of the planned unit improvements which directly serve the subdivision enhance and maintain the value of the residential lots because of the close physical relationship between the two. This value transfer is normally thought of as a convenience to the potential homeowner. While convenience is difficult to calculate in dollars and cents, it is known that the convenience of planned unit type services does have a direct economic effect on the market system.

If the developer feels the planned unit standards and improvements required by the community are too restrictive, he may still build using the conventional subdivision standards. The developer is not obligated to exercise the planned unit option. The alternatives are, however, mutually exclusive.

Based on the assumption that a developer has 745 acres of land in Gardenside Township, he now has basically two alternatives--he can build under conventional standards or planned unit subdivision standards. His decision will ultimately be based on many factors including personal preferences, political pressures, land suitability, marketability and financial gain. Only the financial gain and marketability factors permit documentation in this study.

The other factors will be considered, but in varying degrees of depth.

Objective and Approach

The objective of this chapter is to determine the financial feasibility of the planned unit development concept for the developer. This feasibility will compare a conventional subdivision and a planned unit subdivision of the same size. The intent is to show the direct and indirect financial benefits a developer can expect to receive from each. The deciding test of feasibility for the developer will be twofold: (1) which subdivision is more economical for the developer; and (2) which subdivision produces the better product in terms of marketability.

Several steps are essential to determine the feasibility:

1. The feasibility of the modified planned unit development is based on lot size reductions. It is necessary, therefore, to determine the costs of improving various lot sizes and assess the differential costs (or potential savings) to the developer. Six model lots were chosen for this analysis, ranging in size from 10,000 to 40,000 square feet.

2. The second step establishes a set of minimum planned unit improvements including an estimate of their cost per lot.

3. A comparison is then made between the per lot cost of the minimum planned unit improvements and the incremental savings a developer receives from reducing lot sizes from 40,000 square feet to 10,000 square feet.

4. Within the 10,000 to 40,000 square foot lot size range, two major lot reduction packages are not only feasible but provide an attractive inducement to the developer. The first reflects the developer's savings stemming from a lot reduction from 20,000 square feet to 10,000 square feet. It will be shown that the lot improvement costs (savings to the developer) differential between these two lot sizes is sufficient to offset the minimum planned unit costs per lot plus a small but attractive added incentive profit to the developer. This 20,000 to 10,000 square foot lot reduction relationship will be termed the "low incentive package" to the developer. The second lot reduction relationship involves a lot reduction from 40,000 square feet to 15,000 square feet. It will be shown that the lot improvement savings to the developer are sufficient not only to offset the minimum planned unit improvement costs, but also to include additional or optimum planned unit improvements of a major magnitude plus an attractive profit incentive. This 40,000 to 15,000 square foot lot reduction relationship will be termed the "high incentive package" to the developer.

5. The last step involves a discussion of added developer incentives through land re-utilization as well as general issues important to the developer.

The next two sections in this chapter establish the feasibility of the modified planned unit concept based on a developer's potential savings through lot reductions.

A Comparison of Development Costs of Six Model Lots of Varying Size in Conventional Subdivisions

It has been stated that the feasibility of the modified planned unit development concept is based on the savings the developer receives as a result of permitted lot reductions. A study was undertaken to determine the approximate costs of fully improving various sized lots for one-family detached dwelling units. The study reflects lot improvement costs and conditions generally prevalent in central New Jersey and they are directly applicable to Gardenside Township. The framework of this study is patterned after the one reported in the Urban Land Institute's Technical Bulletin Number 32, titled "The Effects of Large Lot Size on Residential Development."[58] Six model lot sizes were chosen with an approximate 3:5 frontage-to-depth ratio. The lot size, approximate frontage and depth dimensions, and gross densities of the model lots are shown in Table 8.[59] As a basis for comparison, the analysis includes one 40,000 square foot lot with septic tank and well and one with a municipal sewer and water system.

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[58]Urban Land Institute, The Effects of Large Lot Size on Residential Development, Technical Bulletin No. 32 (Washington: Urban Land Institute, 1958).

[59]A detailed explanation of how the model lot sizes were chosen and how the gross densities were obtained is shown in Appendix A.

Table 8; Lot Size and Density Characteristics of Five Conventional Subdivision Model Lots[a]

Minimum Lot Area in Square Feet	Minimum Lot Frontage in Feet	Approximate Lot Depth in Feet	Average Gross Density of Lots per Acre
10,000	80	125	3.16
15,000	100	150	2.16
20,000	120	170	1.65
30,000	140	215	1.13
40,000	160	250	0.86

[a]Source: Appendix A.

Table 9 summarizes the results of an analysis on lot improvement costs for each of the model lot sizes. A detailed analysis of how each of the improvement cost estimates were obtained is included in Appendix B.

The difference in lot area, and more importantly lot frontage, makes a substantial difference in improvement costs. Table 10 shows the incremental increase in site development costs and total costs to the developer for each of the larger lot sizes using the 10,000 square foot lot as a base.

The information supplied in Table 9 and Table 10 shows the developer's differential costs for improving each of the various model lots and their potential selling price. As an

Table 9; Summary of Lot Improvement Costs For Each Model Lot in a Conventional Subdivision

Improvement Facilities	Model Lot # 1 10,000 sq.ft. Costs/Lot	Model Lot # 2 15,000 sq.ft. Costs/Lot	Model Lot # 3 20,000 sq.ft. Costs/Lot	Model Lot # 4 30,000 sq.ft. Costs/Lot	Model Lot # 5 40,000 sq.ft. Costs/Lot	Model Lot # 6 40,000 sq.ft. Costs/Lot
I. Off-Site Costs:						
A. Street	$ 492	$ 615	$ 738	$ 861	$ 984	$ 984
B. Concrete curbs	150	190	230	270	310	310
C. Sidewalks	142	182	222	(none)	(none)	(none)
D. Sanitary sewers	500	605	720	845	985	(none)
E. Water mains	132	165	198	231	264	(none)
F. Water plant	350	350	350	350	350	(none)
G. Storm drains	200	250	300	350	400	400
H. Street trees	20	25	30	35	40	40
I. Contingencies	397	476	558	588	667	347
Total	$2,383	$2,858	$3,346	$3,530	$4,000	$2,081
II. On-Site Costs:						
J. Utility installation	$ 150	$ 150	$ 150	$ 150	$ 150	$ 150
K. Grading and landscaping	525	690	850	1,110	1,375	1,375
L. Concrete driveway	227	227	227	227	227	227
M. Access walk	38	38	38	38	38	38
N. Well and septic tank	(0)	(0)	(0)	(0)	(0)	1,000
Total	$ 940	$1,105	$1,265	$1,525	$1,790	$2,790
III. Total Off-Site and On-Site Improvements	$3,323	$3,963	$4,611	$5,055	$5,790	$4,871
IV. Land Costs, Profit, and Overhead						
O. Land costs	$ 475	$ 694	$ 909	$1,327	$1,744	$1,744
P. Profit and overhead	119	174	227	332	436	436
Total	$ 594	$ 868	$1,136	$1,659	$2,180	$2,180
V. Total Development Costs Per Lot; Items I through IV	$3,917	$4,831	$5,747	$6,714	$7,970	$7,051

Source: Tables 23 through 28.

Table 10; Comparison of Differential in Development Costs of Model Lots by Lot Size[a]

Model Lot Sizes	On-Site and Off-Site Lot Improvement Costs Only		Total Lot Selling Price--Improvements and Land	
	Total Per Unit	Differential from Model Lot # 1	Total Per Unit	Differential from Model Lot # 1
10,000	$3,323	$ 0	$3,917	$ 0
15,000	3,963	640	4,831	914
20,000	4,611	1,288	5,747	1,830
30,000	5,055	1,732	6,714	2,797
40,000[b]	5,790	2,467	7,970	4,053
40,000[c]	4,871	1,548	7,051	3,134

[a]Source: Table 9.
[b]Municipal type sewer and water system.
[c]Well and septic tank.

example, Table 10 indicates that a developer can buy, improve, and sell a 10,000 square foot lot for $4,053 less than a 40,000 square foot lot with comparable full improvements.

Minimum Planned Unit Improvement Costs--A Beginning Framework

Certain constraints are normally imposed by the community in planned unit ordinances. These constraints are in the form of the minimum improvements and standards a community will accept before it will sanction an ordinance permitting the planned unit alternative.

A reasonable list of minimum off-site improvements has already been established in Table 4. These include:

1. General open space.
2. Intensively improved outdoor recreation areas.
3. School sites, buildings, and equipment.
4. Fire station sites, buildings, and equipment.
5. Sites for other private, public and quasi-public uses.

The developer's cost of providing schools, fire stations, and improvements to recreation areas under the modified planned unit alternative is the cost which he must be compensated for by lot reduction savings. The developer's cost for these three facilities was established in Chapter III. Table 11 summarizes these costs and establishes a developer's cost per lot for each of the minimum planned unit off-site improvements for a 641 unit subdivision.[60]

The Relationship of Costs to Revenues

At this point the cost-revenue relationship begins to take form for the developer. Assuming the minimum planned unit off-site improvements the community will settle for

[60]Minimum planned unit improvements in this context again refers to the hypothetical minimum level of improvements a community would accept from a developer under the planned unit alternative.

Table 11; Total and Per Lot Costs to the Developer For Minimum Planned Unit Off-site Improvements For a 641 Lot Planned Unit Subdivision[a]

Added Off-site Improvements	Developer's Total Cost	Developer's Cost/Lot
School building and equipment	$630,000	$ 983
Fire station, building, and equipment	23,200	36
Improvements to recreation sites	80,000	124
Total costs	$733,200	$1,143

[a]Source: Tables 5, 6, and 7.

will cost the developer $1,143 per lot, then the community should consider lot reductions which will provide the developer with a credit equal to $1,143 per lot plus a three to five per cent incentive factor.

If we assume that the minimum lot size reduction should be based on a five-foot frontage interval, a gross rule-of-thumb reduction factor is fairly easy to determine.[61] Table 12 summarizes the range of lot size reductions necessary and practical for conventionally zoned 40,000, 30,000, and

[61]Implementation through zoning would require lot frontage intervals of not less than five feet to be practical.

Table 12; Approximate Minimum Lot Size Reduction Requirements For 40,000, 30,000, and 20,000 Square Foot Lots to Determine Feasible Lot Size Reduction Standards

Conventional Zoning Lot Size Before Reduction		Planned Unit Lot Size After Reduction		Gross Lot Size Reduction	Developer's Minimum Planned Unit Improvement	Developer's Net Savings Incentive Per Lot	
Area	Frontage	Area	Frontage[a]	Savings/Lot	Costs/Lot	Amount	Per Cent
20,000	120	12,500[b]	90	$ 968	$1,143	- $175	-18.1
20,000	120	11,250[b]	85	$1,128	$1,143	- $ 15	- 0.1
20,000	120	10,000	80	$1,288	$1,143	$145	11.3
30,000	140	15,000	100	$1,092	$1,143	- $ 51	- 4.7
30,000	140	13,750[b]	95	$1,252	$1,143	$109	8.7
30,000	140	12,500[b]	90	$1,412	$1,143	$269	19.1
40,000	160	20,000	120	$1,179	$1,143	$ 36	3.1
40,000	160	18,750[b]	115	$1,341	$1,143	$198	14.8
40,000	160	17,500[b]	110	$1,503	$1,143	$360	24.0
40,000	160	16,250[b]	105	$1,665	$1,143	$522	31.4
40,000	160	15,000	100	$1,827	$1,143	$684	37.4

[a]Lot size reductions were limited to five-foot intervals. The savings per lot is based on average interpolations between the five basic lot cost analysis found in Appendix A.

[b]Areas represent approximate interpolations only.

Source: Table 9.

20,000 square foot lots to achieve savings of $1,143 per lot or more. The purpose of bringing in the 30,000 and 20,000 square foot lot sizes is to reemphasize the fact that the planned unit concept is applicable to conventional subdivisions with lot sizes under one acre in size. Primary study emphasis, however, will still be with the one-acre lot.

Establishing Low and High Incentive Packages to the Developer and the Community

It is desirable to establish the outside parameters of the range of incentives and benefits under the planned unit alternative available to the developer and the community. The "Developer's Savings Incentive Per Lot" column in Table 12 helps establish these parameters. The largest lot reduction for the 20,000 square foot lot considered practical would be down to approximately one-quarter acre or 10,000 square feet.[62] A reduction of this magnitude would produce an 11 per cent savings incentive to the developer.

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[62]Reducing lot frontages from 120 feet to 80 feet poses the question of whether the value of the lot can be maintained even with the advantages of a central school, intensive recreation areas and open space. The developer would still have to charge $5,520 per lot, even with an 80 foot frontage, to recoup his costs of providing the planned unit facilities. Good subdivision design and the practical integration of open space can achieve this objective as in the case of Radburn, New Jersey--even with 80 foot lot frontages or less.

Similarly, the largest practical reduction of the 30,000 square foot lot would produce a 19 per cent savings incentive to the developer and the largest reduction of the 40,000 square foot lot would produce a 37 per cent savings incentive.

The principal intent of the planned unit concept is to benefit the potential homeowners in the planned unit subdivision. Planned unit improvements are paid for by savings made possible by lot size reductions.

Developer Administrative Payment Inducements and an Optimum Improvement Base

Ideally, the developer should receive from three to five per cent of the differential lot development cost savings derived as a result of lot reductions. This potential savings should be allotted to the developer for two reasons: (1) the detailed cost accounting and net savings estimation can never be totally accurate due to unforeseen circumstances; and (2) the developer may be saddled with slightly higher administrative costs in a planned unit development due to an intensive site plan review and approval process and expected additional subdivision site plan and design requirements. Five per cent will be used in this study. This percentage figure should be set by the community based

on the administrative review process established in the subdivision ordinance. This five per cent can be considered as a potential administrative incentive savings in that it is not normally provided under conventional subdivision procedures.

The gross potential average lot savings resulting from reducing 20,000 square foot lots to 10,000 square feet is $1,288 per lot. Five per cent of $1,288 represents a potential administrative incentive savings to the developer of $64 per lot. The remaining $1,224 would be used for planned unit improvements. Deducting the $1,143 for the five minimum planned unit improvements from the $1,224 leaves $81 per lot for optimum planned unit improvements. The potential savings resulting from reducing 40,000 square foot lots to $15,000 square feet is $1,827 per lot. The developer's five per cent administrative incentive savings amounts to $91 per lot. This leaves $1,736 for planned unit improvements. If the $1,143 minimum planned unit improvement costs are deducted from the $1,736, the $593 per lot remaining can be used for optimum planned unit improvements. Table 13 summarizes this procedure.

A premise was previously established that the developer's incentive for providing planned unit off-site

Table 13; Summary Translation of Potential Low and High Incentive Package Savings to the Developer into Optimum Planned Unit Improvements

Procedural Steps	Low Incentive Package Lot Reduction From 20,000 sq.ft. to 10,000 sq.ft.	High Incentive Package Lot Reduction From 40,000 sq.ft. to 15,000 sq.ft.
Differential in lot costs	$1,288/lot	$1,827/lot
Deduct five per cent for developer's administrative savings incentive	- 64/lot	91/lot
Deduction for five minimum planned unit improvement costs	- 1,143/lot	- 1,143/lot
Amount left over for optimum planned unit improvements	$ 81/lot	$ 593/lot

improvements should be based on financial return. Assuming all lot reduction relationships are practical, it is economically axiomatic that the 20,000 to 10,000 square foot lot reduction package represents the low incentive range because it produces the smallest potential administrative savings return to the developer. (An average savings of $64 per lot has been established.) On the same basis, the 40,000 to 15,000 square foot package represents the high end of the incentive range because it produces the greatest potential administrative return to the developer (an average savings of $91 per lot).

Similarly, the above incentive functions also represent the low and high range of incentives to the community. If the community required additional off-site improvements over and above the five established as the base minimum, only $81 per lot would be available from the low incentive package while $593 per lot would be available from the high incentive package. These additional off-site requirements can be termed "optimum" planned unit improvements.

Applying the dollar values summarized in Table 13 to the 641 lot model subdivision provides a basis for deriving possible dollar amount incentives to both the developer and the community. The developer's incentive savings of

$64 per lot under the low incentive package would amount to a net cash figure of $41,000. The high incentive package savings of $91 per lot would amount to a net cash savings in excess of $58,000. The low and high incentive package dollar amounts to be applied to optimum planned unit improvements for the subdivision are much more dramatic. The $81 per lot low incentive package would net the community about $51,900 for optimum subdivision improvements while the high incentive package would net approximately $380,000.

The $51,900 available to the community from the low incentive package would pay for the remaining 69 per cent cost ($51,600) of the fire station and equipment.[63] This amount could also be applied to a neighborhood community center or some form of additional outdoor recreation facilities such as a swimming pool. The allocation of $380,000 for optimum planned unit improvements, however, exposes a completely different dimension to the picture.

Optimum Improvements and Available Land

The feasibility of requiring optimum planned unit improvements over and above the five minimum improvements depends on the availability of land after lot reduction.

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[63] See fire station improvement costs on page 56.

Table 14 summarizes the amount of land made available after lot reduction for both the low and high incentive packages, using the 641 lot model subdivision as a guidepost.

The low incentive lot reduction package provides approximately 152 acres of land for additional optimum improvements and general open space. The high incentive package provides 412 acres of land, or approximately 55 per cent of the original 745 acre site.

Matching Optimum Improvement Dollars With Available Land

In the case of low incentive package, it is probable that the 152 acres left for optimum planned unit improvements could be used for a small neighborhood shopping center, added public or privately owned recreation space, various quasi-public uses including churches, or other public uses such as a high school site. Perhaps a private school site would also be applicable. The remaining land could be used for evolving a better functional subdivision design through the use of pure open space. As indicated previously, the $51,900 available in the low incentive package for optimum improvements is minimal, but sufficient to build a complete fire station. This $51,900 would also provide improvements for ten additional acres of intensively developed recreation space, if that were the desired alternative.

Table 14; The Availability of Land After Lot Reductions
For the Low and High Incentive Packages Using
A 641 Lot Subdivision as the Acreage Base

Land Utilization Activities	Lot Reduction From 20,000 sq.ft. to 10,000 sq.ft.	Lot Reduction From 40,000 sq.ft. to 15,000 sq.ft.
1. Residential land and street acreage		
a) Conventional subdivision	388 acres	745 acres
b) Planned unit subdivision clustered	203 acres	300 acres
c) Available land after lot reductions	185 acres	445 acres
2. Minimum planned unit land requirements		
a) Elementary school site	15 acres	15 acres
b) Fire station site	2 acres	2 acres
c) Intensively improved recreation sites	16 acres	16 acres
d) Total added acreage requirements	33 acres	33 acres
3. Remaining land available for open space and other optimum non-residential uses	152 acres	412 acres

The high incentive package presents a unique and imaginative challenge. On the one hand, a sizable sum of money totaling $380,000 is available to develop optimum planned unit improvements. On the other hand, there is almost an unlimited amount of land to do it with--412 acres.

The private country club golf course is a high prestige use in conjunction with residential development in today's contemporary society. Country clubs are good inducements to the potential home buyer and represent, therefore, an attractive marketing device for the developer. A golf course provides an attractive, unobstructed use of land and it is a form of recreation which is growing by leaps and bounds in the United States today. Complementing the marketability of the golf course idea is the critical shortage of golf course facilities in New Jersey today.[64]

It is estimated that developing a first-rate 18-hole professional golf course would require an optimum

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[64]Stuart I. Turner, Golf Courses in New Jersey--Open Space Monograph (Trenton: New Jersey Department of Conservation and Economic Development, Division of State and Regional Planning, 1964), p. 9.

land area of approximately 200 acres.[65] With 412 acres of land available from the high incentive lot package, the utilization of 200 acres for a golf course presents no problem. The cost of developing a golf course with a country club atmosphere, excluding raw land costs, is estimated at approximately $376,000--or about the remainder of the optimum planned unit improvement dollars available under the high incentive package. Cost estimates are shown in Table 15.[66]

It is important to re-emphasize that land can be treated as a free object under the planned unit alternative. The cost of the land for the golf course has already been

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[65]The 200-acre figure was chosen because it approximates the 217-acre of the Braidburn Golf Course in Florham Park, New Jersey. Braidburn is an exclusive and highly rated private country club course. The value of the course based on 100 per cent market value is: (1) land $543,100; (2) buildings $167,900; (3) total value $711,000. Source: 1964 assessment records of the Borough of Florham Park.

[66]The construction cost of the course was estimated by a general rule-of-thumb standard of $10,000 per hole or $180,000. This figure falls in the higher end of the cost scale of $75,000 to $225,000 estimated by the National Golf Foundation. See National Golf Foundation, "Planning and Building the Golf Course," Planning Information for Private Golf Clubs, (Chicago: National Golf Foundation, undated), p. 11. The construction costs of the clubhouse and the swim club were estimated from the value of the Braidburn clubhouse and swim club which was $167,900 in 1964. Architect fees are standard. The total estimated value of the hypothetical course of $676,000 breaks down to $3,380 per acre which is extremely close to the $3,280 per acre value of the Braidburn Golf Course.

Table 15; Estimated Construction Costs
of An Eighteen-Hole Golf Course

Type of Construction	Construction Costs
1. Golf course construction (@ $10,000/hole)	$180,000
2. Clubhouse and swimclub construction	175,000
Subtotal	$355,000
3. Architect fees (six per cent)	21,000
Total Improvement Costs	$376,000
4. 200 acres of land (@ $1500/acre)	300,000
a) Total value	$676,000
b) Value/acre	$ 3,380

paid for by the developer when he purchased the 745 acres of land. It was made available because of lot reductions and clustering. Raw land costs should not, therefore, be charged against the cost of developing the golf course.[67] The value of the golf course land does not disappear, however, particularly in the event the course is maintained in taxable private ownership.

[67] This land cost (as pointed out in the assumptions) will be paid for by the potential residential lot owners when purchased from the developer. The developer cannot be expected to give it away.

The decision of whether the golf course would be a private course or a public course should be left to the planning board in consultation with the governing body. If it is to be left as a private golf course, deed restrictions should be instituted at the preliminary plat stage assuring the community that the course will stay in an ownership which is subject to property taxes or that the course will revert to a public golf course under community ownership. This type of stipulation protects the property tax base of the community by assuring it of revenues from one source or another.

With the above conditions in mind, if a developer were given the alternative of developing 641 one-family dwelling units under a conventional subdivision scheme with one-acre lots (160-foot lot frontages) or the planned unit scheme with one-third acre lots (100-foot lot frontages), it appears reasonable that the developer would seriously consider the market attractiveness and the financial benefits of the planned unit alternative. Table 16 summarizes the average lot costs of developing a conventional and a planned unit subdivision in Gardenside Township. Table 16 illustrates that the cost and potential selling price of the average lot in both the conventional subdivision and

Table 16; Summary of a Developer's Improvement Costs and Potential Selling Price for an Average Lot in a Conventional and a Planned Unit Subdivision in Gardenside Township

Subdivision Improvements and Costs	Conventional Subdivision	Planned Unit Subdivision
Gross subdivision tract size	745 acres	745 acres
Minimum lot size	40,000 sq.ft.	15,000 sq.ft.
Number of lots permitted	641 lots	641 lots
Land Purchasing Costs		
a) Total costs	$1,117,500	$1,117,500
b) Average costs per lot	$ 1,744	$ 1,744
c) Average profit and overhead costs per lot	$ 436	$ 436
d) Total costs per lot	$ 2,180	$ 2,180
Subdivision Improvement Costs		
a) Average off-site costs per lot	$ 4,000	$ 2,858
b) Average on-site costs per lot	$ 1,790	$ 1,105
c) Total average site costs per lot	$ 5,790	$ 3,963
Planned Unit Improvement Costs		
a) Average costs of required improvements per lot	(none)	$ 1,143
b) Average incentive and administrative costs per lot	(none)	$ 91
c) Average costs of optimum improvements per lot	(none)	$ 593
d) Total planned unit costs per lot	(none)	$ 1,827
Total Average Selling Price Per Lot	$ 7,970	$ 7,970

the planned unit subdivision would be the same or approximately the same. Ultimately the prospective homeowner pays the same price for the conventional lot as the planned unit lot. Any value disparity would be partially if not entirely offset by the availability and the convenient closeness of the planned unit improvement facilities.[68] These planned unit improvements would be an integral part of the subdivision design--not separate from it.

Possible Incentives Through Land Reutilization

The prospects of marketing his lots faster is not the sum total of the possible incentives to the developer. Other incentives are related to the use of the land left as a result of lot reductions and clustering.

Ideally, some of this acreage would be reserved for other public and quasi-public uses such as a community center, governmental functions, and churches. Within reasonable acreage limits, the land for these uses would be donated by the developer. Areas set aside for uses such as

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[68] While this is a broad and sweeping statement, the fact remains that the test of feasibility is at the market place. Existing planned unit subdivision lots have sold extremely well all over the United States and especially in New Jersey.

a shopping center and other profit-oriented private activities should be retained and sold by the developer. This resale capability provides an added incentive to the developer to consider the planned unit alternative.

Obviously the greater the amount of land left to the developer for his own re-utilization, the higher the inducement to him to consider the planned unit approach. If the land is left in the developer's hands for private activity resale purposes, the developer can realize a net windfall from the profits of selling land in excess of $1,500 per acre.[69] The development of the country club golf course at theoretically no cost to the developer (the country club could be operated by the developer) is a good example of a second incentive through land re-utilization.

It is not suggested that the developer be given complete freedom of selling the remaining land for those

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[69]Once the planned unit subdivision is under construction, the value of the land left over as a result of lot reductions would increase substantially as a direct result of the improvements around it. Commercial land would easily sell for $3,000 to $5,000 per acre. When the developer sells this land, he should be required to return $1,500 per acre to the property owners. This land theoretically belonged to the potential homeowners in the first place and it represents part of the value of their lots although it is an intangible paper value. The method of return could be through a dividend procedure spelled out in deed restrictions.

uses spelled out in the plat at an exorbitant profit.[70] Some constraints such as profit margins and timing might well be considered in the negotiations between the community and the developer under the planned unit approach.[71] An alternative is to hold the excess land or parts of it in ownership by a homeowners' association for use or resale. The range of uses or the specific use of the excess land would theoretically be established by the planned unit subdivision site plan.

A third incentive includes increasing the gross residential density standard under the planned unit approach to allow one of three alternatives: (1) to permit additional one-family residences only; (2) to permit a range of multiple-family type residences; or (3) a combination of the first two.[72]

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[70]It is assumed that the utilization of the land noted on the plat is binding on the developer and the community. If a particular approved non-residential use proves not to be practical, the developer should have the alternative of renegotiating with the community and the suggested change in use subjected to a public hearing.

[71]The community should be protected by making certain the developer moves ahead with plans for developing the land if there is a demonstrated profitable market for the planned unit use to which the land is to be used.

[72]These alternatives would probably not be acceptable by many communities, however.

An example might be in order by using the first alternative. The density of the high incentive planned unit package is 0.86 one-family dwelling units per gross acre of land. This gross density standard permits 641 one-third acre lots in a 745 acre tract of land. If the gross density were increased from 0.86 to 1.00, the developer could increase the number of lots from 641 to 745, or 104 more residential lots. It must be remembered that the developer can sell the additional 104 home packages for the same price as the first 641 units. The developer's benefits, therefore, become threefold: (1) he receives back the total gross land value of $2,180 per lot, or $226,720; (2) he receives the five per cent unit alternative incentive of $91 per lot, or $9,464; and (3) he also receives the five to ten per cent profit on the residential structures which should exceed $1,000 per house for a minimum total of $104,000.

These three benefits total to over $340,000 in added profits for the developer. The potential homeowners in the subdivision should receive back the land value (less overhead and profit) in the form of lower lot costs or additional planned unit improvements. The actual gross land required for the additional 104 one-third acre

lots (including streets) amounts to 48 acres. This is still well within the 412 acres left as a result of the original reduction of lots for the 641 lot subdivision.

The Large vs. the Small Developer

The financial feasibility of the planned unit development in this study has been based on a hypothetical 641 dwelling unit subdivision. The land involved ranged from 388 acres for the one-half acre low incentive package to 745 acres for the one acre high incentive package. Two central questions are apparent in retrospect:

1. How many developers in New Jersey have the capability to develop at a scale of 200 to 1,000 one-family dwellings or more in one operation?

2. Can the small developer of 25 to 100 homes utilize and receive the benefits of the planned unit alternative?

The question of whether there are enough large developers in New Jersey to undertake large planned unit programs is analogous to asking the new car dealer whether there are enough automobiles to serve New Jersey's population--"if there are not enough now, we will import more."

A review of the membership of the New Jersey Home Builders Association indicated that a large number of their

members were capable of developing at a scale of 200 units or more per year.[73] In conjunction with this capability, the federal government has gone on record as supporting the large scale planned unit concept in the 1965 Housing Act.[74]

Providing for the needs of the small developer in connection with the planned unit alternative is not a simple matter. A strong argument can be made that the small developer is being discriminated against by effectively blocking his participation in planned unit developments. The following phrase taken from the Residential Planned Community Ordinance in Fairfax County, Virginia, illustrates this point:

> The RPC District (Residential Planned Community) is intended to permit in accordance with the master plan the development of planned satellite communities containing not less than 750 contiguous acres under one ownership or control in those areas of the County provided with sanitary sewers, sewage disposal facilities, adequate highway access, and public water supply. Within such planned communities, the location of all residential, commercial, industrial, and governmental uses, school sites, parks, playgrounds, recreation areas, parking areas, and other open spaces shall be controlled in such a manner as to permit a variety of housing accommodations and land uses in orderly relationship to one another. Such planned communities, when approved,

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[73]Interview with Robert Schmertz, Robilt Homes, Incorporated, January 1963.

[74]U.S. Public Law 89-117, Article 10 (Mortgage Insurance for Land Development).

> shall constitute a part of the master plan for the County as a whole, and the preliminary consideration of such planned communities by the Planning Commission shall be based on recognition of this requirement.[75]

The large developer is offered attractive incentives, including additional profits, which are denied the smaller developer. It is felt that this situation deserves some consideration by everyone involved.

A strong case can be built for large acreage requirements before the planned unit alternative can be initiated. The purpose of the planned unit approach is to develop a functionally planned subdivision which is not practical under conventional techniques. Achieving an ideally planned, functional relationship between schools, housing, and open space is difficult if it has to be accomplished 25 acres at a time. New Jersey's present environment is proof-positive at this point. Large acreage "case building" of this nature, however, does not resolve the small developer's problem.

In many communities throughout the United States some of the small home builders' problems are being solved by the large land developer. The large land developer purchases the

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[75] White, op.cit., p. 113.

land, installs the improvements and sells lots individually to people wishing to build their own homes or in blocks to small housing builders. In this situation the land developer takes advantage of the planned unit financial benefits. The small housing developer receives the secondary benefits of building homes in a desirable planned unit environment. An example of this approach is the 525 acre planned unit Maurice River Development program in Millville, New Jersey.[76]

Another alternative for the small developer would be the establishment of a cooperative by several small developers banding together to develop a large tract. This could be done in different ways with varying degrees of success. As an example, the developer's cooperative might only include the land development phases of the project. Each developer would share in the costs and the benefits from the land development aspects of the planned unit alternative. Each developer could be responsible for building and selling his own homes.

A third possibility would be a joint agreement between a small and a large developer whereby the small

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[76]Herbert H. Smith Associates, Millville Master Plan Proposals (West Trenton: Herbert H. Smith Associates, 1965), p. 51.

developer would ride into the planned unit concept on the coattail of the large developer. This agreement could be between the two developers or it could be between the two developers and the community. In the latter case, the small developer would contract with the community for his share of the improvements. The agreement between the large and the small developer would be one of assuring a functional subdivision design.

The above small developer alternatives are sketchy in form and may not represent the full range of possibilities available. These examples, however, point up the complexities of the problem and the need for intensive investigation. Such a topic should be the subject matter of a separate research project.

Cash Contributions in Lieu of Improvements

One of the key problems facing both the developer and the community involves the actual development of the planned unit improvements. What happens when a subdivider's fair share only requires part of a planned unit improvement? For example, how do you build one-half of an elementary school or, in the case of the 641 lot planned unit subdivision, 31 per cent of a fire station?

This planned unit facility improvement problem affects the large and the small developer alike. It has a greater impact on the small developer because he gets involved more frequently with fractional shares of an improvement. In addition, the small developer is less equipped to get nonresidential subdivision facilities built.

Basically, planned unit off-site improvements can be handled similarly to standard subdivision improvement requirements. The subdivision ordinance can spell out planned unit improvement standards, conditions and procedures. The community should establish the design specifications for the planned unit facilities. The developer could have the option of building the facility himself, subcontracting it, or letting the community do the contracting under municipal procedures.[77] The subdivision ordinance should specify the alternatives and the procedures under each.[78]

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[77] In many instances it would be more profitable for the community to build the school structure. This way federal and state school construction aid could undoubtedly be obtained.

[78] Planned unit improvements could be bonded as typically required for most subdivision off-site improvements.

When a developer is responsible for only a fractional share of a required improvement, the community could set up a special earmarked development fund and receive a cash contribution from the developer for his fair share. At the present time a New Jersey lower court has judged cash contributions to be illegal.[79] This issue needs to be reconsidered by the Superior Court where the decision might be reversed from a conceptual point of view.[80]

The cash development fund approach appears to serve the interests of the community and the developer the best by allowing maximum financing flexibility over time while insuring that facilities will be built. The funds could be deposited in a bank to receive interest which would combat inflationary and normal cost increases. This approach would require constitutional changes to implement, however.

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[79] "Midtown Properties Incorporated v. Madison Township," 68 N.J.-Superior Court-197, New Jersey Superior Court Reports, No. 28, July 14, 1961 (Trenton: Soney and Sage Company, 1961).

[80] The issue may be resolved if New Jersey Senate Bill No. 321, introduced April 4, 1966, by Senator Bigley is passed. This bill authorizes local communities to provide planned unit residential developments in their zoning ordinances including any subdivision improvement requirements deemed necessary to carry out the intent of the ordinance.

Conclusions

Two overriding conclusions can be reached regarding the developer's possible participation in the planned unit alternative:

1. The modified planned unit development concept is economically feasible for the developer. Two limitations prevail, however: (a) the cost of planned unit improvements should not override the savings the developer receives from lot size reductions; (b) lot sizes are not reduced so drastically as to undercut the value of the lot for selling purposes.

2. The additional off-site improvements, including schools, recreation facilities, and open space found in the planned unit alternative package, provide an attractive marketing advantage to the developer. It must be emphasized that the planned unit alternative will undoubtedly cost the developer almost as much as the conventional subdivision. The planned unit improvements, however, provide for a more salable market package.

Chapter I set forth a number of problems resulting from development trends in New Jersey today. Those directly related to developers need to be discussed prior to leaving this chapter.

The statement was made in paragraph two on page 17 that large lot zoning coupled with high land and development costs was forcing developers out of business. The planned unit development will not provide direct relief for this situation. It does provide a sound alternative for

the small builder and developer. The small builder can take advantage of large planned unit land development projects by purchasing lots as he needs them. This eliminates the entire problem of land purchasing and development for the small home builder. The small developer-builder on the other hand can frequently ride the coattail of a large planned unit developer and receive many of the scale benefits of the large developer.

Paragraph five on page 18 considers the problems of the resulting costs from large lot zoning increasing the costs of the house package so drastically that the developer tends to cut corners in the quality of workmanship and materials to stay within the selling market. The planned unit subdivision may not cost the developer any less to build, but the marketability advantages of the added improvements often provide a house-lot package which is competitively superior even though priced the same or higher than surrounding subdivisions. This relationship tends to decrease cost-cutting techniques. This point was emphasized by William H. White in his book, Cluster Development.[81]

Paragraph six on page 19 sets forth the effect of large lot zoning stereotyping subdivision design. Subdivision

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[81] White, op.cit., pp. 28-32.

design is one major area where the planned unit development can break the shackles of stereotype. According to White:

> Those developers who have the imagination to try a new approach are those most likely to be the developers with the best eye for house design. Cluster developments, as a consequence, tend to be better developments than the competition in a host of details as well as in overall concept.[82]

The real feasibility of the planned unit approach is demonstrated by the willingness of many New Jersey developers to venture into the construction of planned unit subdivisions, neighborhoods, and even communities.

William Levitt and Sons, Incorporated, have built two planned unit projects in New Jersey. The first is a planned unit community which is still under development. It encompasses all of Willingboro Township (7.15 square miles). The second is a 1,700 one-family unit neighborhood located in Matawan Township, New Jersey. Levitt is building schools, recreation facilities, community centers, fire stations, and shopping centers--all as an integral part of the design of these two developments.

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[82] Ibid., p. 12.

Levitt's Matawan project was based on the lot reduction-density control concept as are two other current planned unit projects under way in the State. The first is the $65 million Twin Rivers planned unit development project located in East Windsor Township (central New Jersey).[83] This 453-acre site is being planned for 3,000 housing units with provisions for schools, parks, and shopping facilities. A second project is a $50 million self-contained community in Ringwood which is located in mountainous northern New Jersey.[84] This 900-acre site will include schools, parks, shopping facilities, and an industrial park. The site is designed for 500 one-family and town house units which will sell for an average of $20,000 each.

In 1963, the people of Marlboro Township turned down what would have been the apex of planned unit developments in New Jersey. Robilt Incorporated of Lakewood, New Jersey, proposed a $124 million, 1,500-acre project, provided minimum lot sizes could be reduced to 10,000 square feet or less.[85] The minimum permitted lot size at that time was 20,000 square

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[83] Trentonian, August 13, 1964.

[84] The (Ringwood, New Jersey) Record, October 20, 1964, p. 4.

[85] Thomas J. Michalski, A Planned Community in Marlboro (New Brunswick: Livingston Press, 1962).

feet. This proposal would have included a wide range of living units as well as schools; parks and open space; fire stations; a golf course; churches and other semi-public uses; a large regional shopping center; neighborhood shopping facilities; and a municipal town civic center which would also have hospital facilities. The development would have ultimately encompassed some 6,680 dwelling units, approximately half of which would have been multiple family.

It is clear from the projects which have been built or are being built in New Jersey, that the planned unit concept is a financially sound investment for the developer. Otherwise these projects would not be under consideration or in the building stage.

CHAPTER V

A COST-REVENUE ANALYSIS FOR THE COMMUNITY

The municipality's stake in the planned unit development concept adds an important second side to the cost-revenue picture. Experience has shown that municipal officials in New Jersey have been extremely leery of the planned unit concept.[86] This stems from two areas of concern: (1) fear that the existence of permissive planned unit provisions in the zoning ordinance is, in itself, an unwanted attraction to the developers and (2) fear that the planned unit subdivision brings with it an unwanted population increase.

Municipal officials understand very little about the planned unit subdivision's cost-revenue impact on the community. What they do know has been provided by the developers pushing for planned unit zoning amendments. This information is distrusted because of its source. An independent objective study has been needed to at least inform community officials of the potential role of the planned unit concept as an alternative in the scheme of development.

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[86] Ibid.

Objective and Approach

Planned unit developments can be fiscally sound investments for municipalities as can be shown by comparing the costs and revenues to the community of conventional and planned unit subdivisions of comparable size. The test of fiscal soundness will be fourfold: (1) which subdivision produces the lower net cost to the community at full development--assuming comparable housing value; (2) the effect of each of the two subdivisions on the community's equalized tax rate; (3) which subdivision best demonstrates the ability to remain financially self-sustaining; and (4) which subdivision has the greater long-range stabilizing influence on the community.

The 641 lot subdivision proposed for the hypothetical community of Gardenside will be used as the analytical tool for determining fiscal soundness. Chapter IV discussed the developer's cost-profit picture from the context of a low incentive package (20,000 square foot lots reduced to 10,000 square feet) and a high incentive package (40,000 square foot lots reduced to 15,000 square feet). The municipal cost-revenue analysis is developed along the same guideline.

An important procedural approach must be established at this time. The first 21 pages of this chapter will be directed at comparing conventional development with the low incentive planned unit lot reduction package described on page 77. The last 11 pages, beginning with page 124, will focus on the high incentive planned unit package. The basic financial property tax advantages of the low and the high incentive packages are considered to be the same to the community when only the minimum planned unit facilities are considered. The high incentive planned unit package goes much further in community benefits through the addition of optimum planned unit facilities. Tax and other financial benefits of the high incentive package can be considered as additives to the low incentive planned unit package base.

The Impact on Property Taxes

It was explained in Chapter III that municipal property taxes are the principal source of revenue for the municipality (municipal purpose), the county (county purpose), and the public school system (school purpose). The public school system includes the local elementary school

district and the high school, or the regional high school district if the community belongs to one. The budgets of each of these three governmental agencies are again subdivided into three categories--operational expenditures, capital outlay expenditures, and debt service expenditures. It is these three subcategories which are more important for our purposes.

Tax Levy Operational Expenditures

Operational expenditures are those costs necessary to keep the three forms of government in operation on a year-to-year basis. They include such costs as rent, wages and salaries, supplies, and various contingency items.

The amount of operational costs expended is predominately related to the population served. In the case of the public school system, the population relationship is translated to school students.

As population increases, operational expenditures can be expected to increase at relatively the same proportional rate. This assumes the community is willing to expand and extend its services to the new population at the same level as the existing population. It is assumed here that the community will increase and extend existing services to the

proposed 641 lot subdivision at the present level as expressed in current per capita or per student property tax levy costs.[87] Operational tax levy costs for both the conventional subdivision and the planned unit subdivision will be based on this assumption.

Tax Levy Capital Outlay Expenditures

Capital outlay expenditures represent cash payments by government for relatively inexpensive capital improvement facilities on an annual basis. Frequently major capital outlay expenditures pay for equipping major debt service capital improvements such as schools. Capital outlay property tax costs will not be analyzed separately for the conventional and the planned unit subdivision alternatives. These costs have already been included in the construction and facility costs by the developer under the planned unit approach. They are also included in the community's bonded debt amount under the conventional approach.

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[87]This study is purposely holding per capita expenditures constant although it is recognized that they are changing each year, generally upward. This fluxuation does not necessarily affect our analysis because our major concern is comparing conventional with planned unit subdivisions and not validating per capita cost figures. In this comparison per capita operational costs for both are the same. If the per capita projection figure is incorrect, it will be off by an equal amount for both alternatives.

Before skipping over capital outlay expenditures an important point must be made. Annual capital outlay costs can become very troublesome to a community during periods when these funds are being used to equip bonded new major facilities such as schools. Although funds for equipping a school are normally spread over two or three fiscal budget years, the dollar amount is still substantial and has a noticeable effect on the community's tax load.

The usual effect in communities without a capital improvements sinking fund is a sudden two or three year capital outlay surge followed by a low spending levelling off period -- then another surge when another school comes along. This study purposely shifts the capital outlay burden to the developer under the planned unit alternative preventing this fluxuation by eliminating equipment costs to the community altogether.

Tax Levy Debt Service Expenditures

Debt service expenditures include payments for major capital improvements by governmental units through the issuance of bonds over a specified amortization period. Payments are normally made annually or semi-annually and include a specified payment amount on interest and loan principal for each year.

Debt service costs represent one of the most important elements in the community's cost-revenue picture. A basic advantage of the planned unit alternative to the community is the supplying of major capital improvements by the developer. These costs are normally paid for by debt service under conventional subdivision techniques by the public sector.

Bonded debt will not be analyzed on a per capita or per student basis in this study. It will be assumed that the developer will provide all basic capital improvements under the planned unit alternative and the community has the responsibility of providing all basic capital improvements under the conventional development scheme. Bond issue estimates will be made and used as the basis of determining the debt service effect the 641 unit conventional subdivision will have on Gardenside Township's property taxes.

Fixed and Variable Municipal Costs

One additional refinement must be made prior to developing the cost-revenue picture. A delineation must be made between fixed municipal costs and variable municipal costs as used in this study. Fixed municipal costs are those which would affect conventional and planned unit subdivisions of comparable size by an equal amount measured in

per capita or per student cost terms. Variable municipal costs are those which would not be affected equally by the conventional and the planned unit subdivisions in terms of community taxes. In most cases they may not be applied to the planned unit alternative at all. Variable costs, in effect, will represent the gross comparative financial difference between conventional and planned unit subdivisions. Table 17 indicates which expenditures, by purpose, will be treated as fixed or variable costs. The basic advantage of planned unit developments to the municipality is that the developer pays for expensive major capital improvements normally provided by the community through bond issues. This represents a variable cost because the community assumes no debt, yet facilities are provided.

Planned unit improvements must be of direct benefit to the planned unit subdivision and the community in order to justify them to a developer. This would tend to rule out county oriented facilities and regional high school facilities which are not located in the community.[88] County taxes will therefore be treated on a straight per capita fixed cost basis and regional high school taxes on a straight

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[88]Regional high school facilities could be considered if they are located in the community.

per student fixed cost basis. Table 17 expresses this relationship and emphasizes the fact that new debt service costs will not be incurred for municipal and elementary school purposes under the planned unit alternative. These major capital improvement costs will be picked up by the developer.

Variable Costs -- The Comparative Financial Difference Between Planned Unit and Conventional Development

Chapter IV established a variety of planned unit improvement alternatives. Some of these improvements are basic to community needs and others, such as a golf course, can be considered as important nonessentials. That is, given a tight financial situation, a community would rationally consider providing schools, fire protection, and general playground recreation areas before developing a golf course. These priority facilities are more closely aligned with the fundamental purposes of local government -- providing for the health, safety, welfare, and education of its population.

For the purposes of this comparative analysis, three priority off-site improvements have already been established -- schools, fire and rescue protection facilities, and intensive recreation facilities. These three improvements will be provided by the community for conventional development over the short range future when demand materializes. The developer

Table 17; Categorization of Fixed and Variable Municipal Costs by Purpose, Using Gardenside Township's 1963 Property Tax as a Base[a]

Tax Purpose	Fixed Costs		Variable Costs	
	Amount	Per Unit	Amount	Per Unit
Municipal Purpose:				
a) Operational	$259,164	$ 40.32	(NA)	(NA)
b) Capital outlay[b]	37,748	5.87	(NA)	(NA)
c) Debt service	(NA)	(NA)	$20,302	$ 3.16
County Purpose:	$186,112	$ 28.95	(NA)	(NA)
School Purpose -- Elementary School:				
a) Operational	$350,612	$412.97		
b) Capital outlay[b]	7,089	8.35		
c) Debt service	(NA)	(NA)	$31,863	$37.53
School Purpose -- Regional High School:	$142,706	$458.85	(NA)	(NA)

Present population: 6,426
Present elementary students: 849
Present high school students: 311

[a]Source: Table 2.

[b]These costs will be treated as fixed costs but will be eliminated from consideration for projection purposes. It will be assumed that these capital outlay expenditures will be included as equipment in the municipal bond issues for conventional development and provided by the developer under planned unit development.

will provide these same facilities as required minimum off-site improvements under the low incentive planned unit package alternative.

The cost of these three minimum capital improvements was established in Chapter II. This cost is summarized in Table 18.

An expenditure of $782,700 would require that the community consider debt financing. Local municipal government will be responsible for levying bonds for the fire station and the recreation facilities.[89] These two improvements would cost municipal government approximately $130,200. The local public school district would have the responsibility for financing a $652,500 elementary school.

A municipal general obligation bond issued at four per cent interest rate over ten years on a principal of $130,200 would yield a simple interest total of approximately $26,000.[90] The total amount of the general obligation bond, including principal and interest, would be approximately

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[89]While it is not practical to issue bonds to build part of a fire station, it is possible to determine a subdivision's fair share of a fully financed fire station when one is built.

[90]Some communities use a general rule-of-thumb amortization period of 10 years for principal amounts (less interest) of less than $250,000, 15 years for a principal amount between $250,000 and $750,000 and 20 years for principal amounts exceeding $750,000. The actual amortization period actually used depends on the community's financial position, prevailing interest rates, and allowable appreciation write-off for insurance and financing purposes. Voter approval of all bond issues is also necessary.

Table 18; Summary of Minimum
Capital Improvement Costs to Service a
641 Unit Conventional Subdivision in Gardenside Township

Priority Planned Unit Improvements	Raw Land Costs	Buildings and Full Equipment	Total Land and Facilities
Elementary school	$22,500	$630,000	$652,500
Fire station (part)	3,000	23,200	26,200
Recreation areas	24,000	80,000	104,000
Total	$49,500	$733,200	$782,700

$156,200. This $156,200 represents the total minimum fair share of bonded debt for fire protection and recreation facilities imposed on municipal government as a result of the 641 lot conventional subdivision.

The Township school board would be required to obtain voter approval and then levy a general obligation bond for the cost of the school facility, land and equipment. A general obligation bond issued at four per cent for 15 years on a principal of $652,500 would yield a total simple interest of approximately $195,750. The total amount of the bond issue, including principal and interest would be $848,250.

A new 641 lot conventional subdivision would impose a total added debt of $1,004,450 on the community of Gardenside Township.

The planned unit alternative would provide the same capital improvements at no cost to the community--a gross debt savings of over one million dollars over the next 15 year period. The community's total budgeted debt payments would average $72,170 less per year during the next ten years and $56,556 less during years 11 through 15 under the planned unit alternative.[91] This comparative difference alone appears to be a substantial advantage to the community favoring the planned unit subdivision.

This debt service advantage would apply to all planned unit subdivisions providing the developer supplied school, fire protection, and recreation facilities to serve his subdivision. It would apply equally to the low incentive and the high incentive planned unit lot reduction packages discussed earlier.

The conventional subdivision reduces the Township's bonding power capacity by $1,004,450, thereby preempting its use for other purposes. New Jersey statutes limit a community's debt to 6.5 per cent of the equalized valuations

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[91]The $848,250 school bond debt average payment is $56,556 per year for 15 years. The $156,200 municipal bond debt average payment is $15,620 per year for ten years. During the first ten years the average school and municipal payments combined equal $72,170 per year. After the tenth year the municipal bond is relieved leaving a total school average annual debt payment of $56,556 per year.

of taxable real property averaged over the last three preceding years.[92] Gardenside Township's present net debt is $624,896 (5.1 per cent). The Township's bonded debt limit, including the taxable property from the 641 unit subdivision, would be approximately $1,300,000.[93] The addition of $1,004,450 would increase the existing debt to $1,629,340 or 8.1 per cent (see Table 19).[94] This debt would exceed the statutory limitations. The planned unit approach does not reduce the community's bonding power capacity because no debt is incurred by the community. Equally important is the fact that under the planned unit development approach the community could use this one million dollars for other capital improvements which could place the community in a better competitive position to induce new industry.

Planned unit developments prove advantageous when land purchasing problems for capital improvements develop. Under the conventional subdivision approach the community

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[92]Municipal limitations: N.J.S.A. 40A: 2-6 and 42; School limitations: N.J.S.A. 18: 5-84 and 88 (i).

[93]See Table 21, for equalized tax base. In 1963, the bonded debt limitations were based on 46 per cent of the average assessed evaluation.

[94]New Jersey Division of Local Government, Twenty-Sixth Annual Report--1963 (Trenton: Department of the Treasury, 1964).

Table 19; Impact of 641 Lot Conventional and Planned Unit Subdivisions on Existing and Potential Capital Debt Structure in Gardenside Township

A. Existing Capital Debt

1. Net Debt Statement	$ 624,896
2. Average Assessed Valuation	$12,314,913
3. Per Cent Existing Net Debt of Average Assessed Real Property	5.1 Per Cent

B. Capital Debt Impact of 641 Lot Subdivisions

Type of Capital Improvement	Conventional Subdivision	Planned Unit Subdivision
1. Added School Debt	$ 848,250	$ 0
2. Added Municipal Debt	$ 156,200	$ 0
3. Total Added Debt Impact	$ 1,004,450	$ 0

C. Total Potential Net Debt Impact of 641 Lot Subdivisions

	Conventional Subdivision	Planned Unit Subdivision
1. Potential New Average Assessed Property Value		
a) Existing	$12,314,913	$12,314,913
b) 641 Lot Residential Subdivisions[a]	$ 7,695,846	$ 7,695,846
c) Total Assessed Property Value	$20,010,759	$20,010,759
2. Potential New Capital Debt	$ 1,629,340	$ 624,896
3. Per Cent Capital Debt is of Average Assessed Property Value	8.1 Per Cent	3.1 Per Cent

[a]The 1963 average assessed property figure was 46 per cent of the equalized assessed property value. Forty-six per cent of the expected $16,730,100 market value of the 641 lot subdivisions was used to obtain the $7,695,846 assessed value figure.

must obtain land separately for schools, fire stations, and recreation areas. Municipal officials often find it difficult to obtain sites for such uses. Four variables affect this situation:

1. Land Costs -- When it is learned that a site is under consideration for a public facility, the price of land is frequently inflated by a factor of two or three. Condemnation proceedings usually lead to political suicide in a non-city New Jersey environment.

2. Site Location -- Frequently the community is forced to find a public facility site outside the confines of the subdivision or area it directly serves. This frequently happens in the case of elementary schools. Instead of being located in the center of the service area it is located at the edge requiring additional expenditures for school buses. Extra costs are also incurred because the community must extend utilities to the poorly located school.

3. Site Acceptance -- Rarely is it possible to get general acceptance on the location of a school, a fire station, or a playground if there are residents located next to the proposed site. People normally do not want to live next to noise areas, particularly if their tenure precedes the use in question.

4. Voter Bond Approval -- Frequently school sites, especially high school sites, are purchased by a separate special bond issue so that the building architect bids can be related to the site. At least this is the argument extended to the people. In reality, site costs coupled with building costs in the same bond issue often make the total package appear to be outrageously high. Finance psychology has not made much difference in recent years, however, as bond

> issues are being voted down regularly anyway. Taxpayers are rebelling against rising taxes. Voting against bond issues is a means of voicing this rebellion.

These four variables cause many professionals, especially public school administrators, to give up in disgust. These variables do not have a chance to create a negative effect in the planned unit alternative. Schools, fire stations, playgrounds, and other public and quasi-public facilities are designed as an integral part of the subdivision. Potential homeowners are made aware of where these facilities are located prior to buying their homes. The above four variables demonstrate the significant difference in the fundamental philosophies between the preplanned approach, typical of planned unit subdivisions, and the traditional reacting-to-a-demand approach which is typical of conventional subdivision development.

Fixed Cost Analysis -- And The Comparative Impact of Conventional And Planned Unit Subdivisions on Property Taxes

The comparison between the conventional and the low incentive planned unit subdivisions thus far has centered around the potential savings in debt service costs to the community. Analyzing the impact that these two development

alternatives will have on the community's property taxes and tax rate is a second comparative measure.

Table 20 summarizes the fixed municipal tax levy costs to be applied to both the conventional and the planned unit subdivision. Four basic assumptions were used in constructing this table:

1. The community, the county, and the school system will expand and extend services at the current prevailing per capita or per student property tax levy rate.

2. The current ratio between property tax and non-property tax revenues to offset budget costs will continue.

3. Current per capita and per student property tax levy costs will remain constant.

4. The community will continue to have very little control over county and regional high school property taxes. County taxes will be increased by an amount equal to the present per capita tax levy cost times the added population expected of the conventional or planned unit subdivision. The same relationship will hold true for regional high school tax levy increases, except it will be based on new students.

Fixed cost data from Table 20 can now be combined with the variable cost data to compare the impact each type of development would have on Gardenside Township. For convenience, this comparison will again be summarized in table form. Prior to developing the table, however, a special

Table 20; Summary of Fixed Property Tax Levy Costs to be Applied Equally to Conventional and Planned Unit Development Subdivisions[a]

Tax Levy Purpose	Current Property Tax Levy	Added Property Tax Levy	Estimated Total Tax Levy
Municipal Purpose:			
Population served	6,426	2,551	8,977
Operational tax levy	$259,164	$102,856	$ 362,020
Per Capita tax levy	$40.32	$40.32	$40.32
County Purpose:			
Population served	6,426	2,551	8,977
Total tax levy	$186,112	$ 73,851	$ 259,963
Per capita tax levy	$28.95	$28.95	$28.95
Elementary School Purpose:			
Students served	849	500	1,349
Operational tax levy	$350,612	$406,500	$ 757,112
Per student tax levy	$412.97	$412.97	$412.97
High School Purpose:			
Students served	311	77	388
Total tax levy	$142,706	$ 35,331	$ 178,037
Per student tax levy	$458.85	$458.85	$458.85
Total Fixed Cost	$938,594	$618,538	$1,557,132

[a]Source: Table 2.

note on the annual allocation of bonded debt payments (variable costs) is necessary to explain how these amounts are derived for municipal and elementary school purposes.

School districts receive special earmarked funds from the federal government and the state for debt service. This amount accounted for approximately 15.6 per cent of the 1962-63 fiscal year school debt service. The remaining 84.4 per cent came from local property taxes. It is assumed that some revenue ratio will hold true over time. The annual elementary school district bonded debt payment will therefore reflect only that portion paid by property taxes -- or 84.4 per cent. Dividing the estimated $848,250 school bond issue by the 15 year amortization period provides an average repayment schedule of $56,556 annually. Of this total, $47,733 (84.4 per cent) is expected to be paid for by property taxes.

These special federal and state funds are not available to municipal government for local municipal purpose bond issues. The same amount of nonproperty tax revenues would therefore be available whether the community has a local municipal purpose debt or not. Because of this relationship, the total municipal purpose debt service

costs for the conventional subdivision will be charged against property taxes.

Table 21 summarizes the property tax impact of a 641 unit conventional subdivision in Gardenside Township and then compares it with a planned unit subdivision (low incentive package) of the same size and providing the same minimum off-site improvements. These minimum off-site improvements include a fully equipped 18 classroom elementary school, one-third of the cost of a fully equipped fire station, and 16 acres of intensively improved recreation space.

A new conventional subdivision having 641 one-family dwellings would increase the Township's property tax levy by an approximate average of $681,891 per year for the next ten years. The planned unit alternative (low incentive package) of the same size and providing the same improvements would increase the Township's property tax levy by only $618,538 per year for the next ten years. This represents a net property tax levy difference of $63,353 per year favoring the planned unit alternative.

Gardenside's total new tax levy after the full development impact of the 641 unit conventional subdivision would amount to approximately $1,717,487. The planned unit subdivision (low incentive package) would require a total new

Table 21; Property Tax Levy Cost Summary Comparing Impact of Conventional 641 Unit Subdivision With A Planned Unit Subdivision Providing the Same Minimum Added Off-site Improvements

	Current Tax Levy on 6,426 Population		Added Tax Levy on 2,551 Population		Total New Tax Levy on 8,977 Population	
	Cost Per Unit	Costs	Conventional	Planned Unit	Conventional	Planned Unit
Municipal Total:	$ 49.35	$ 317,214	$ 118,476	$ 102,856	$ 435,690	$ 420,070
a) Operational	40.32	259,164	102,856	102,856	362,020	362,020
b) Capital outlay	5.87	37,748	omitted	omitted	37,748	37,748
c) Debt service	3.16	20,302	15,620	($0)	35,922	20,302
County Total	$ 28.95	$ 186,112	$ 73,851	$ 73,851	$ 259,963	$ 259,963
Elementary School Total:	$458.85	$ 389,564	$ 454,233	$ 406,500	$ 843,797	$ 796,064
a) Operational	412.97	350,612	406,500	406,500	757,112	757,112
b) Capital outlay	8.35	7,089	omitted	omitted	7,089	7,089
c) Debt service	37.53	31,863	47,733	($0)	79,596	31,863
Regional High School Total:	$458.85	$ 142,706	$ 35,331	$ 35,331	$ 178,037	$ 178,037
Total Tax Levy All Purposes	n.a.	$ 1,035,596	$ 681,891	$ 618,538	$ 1,717,487	$ 1,654,134
Equalized Property Tax Base	n.a.	$34,429,756	$16,730,100	$16,730,100	$51,159,856	$51,159,856
Equalized Tax Rate		$3.01/$100			$3.36/$100	$3.23/$100

tax levy of $1,654,134. Assuming the conventional and the planned unit subdivision increases the community's taxable base by an equal amount, or $16,730,100, the conventional subdivision would increase Gardenside Township's equalized tax rate from $3.01/$100.00 assessed to $3.36/$100.00 assessed.[95] The planned unit alternative would increase the tax rate to only $3.23/$100.00 assessed. This represents a tax rate differential of $0.13/$100.00 assessed in favor of the low incentive planned unit development alternative.

Added Property Tax and Financial Benefits of the High Incentive Planned Unit Package

The several benefits already attributed to the planned unit low incentive package also apply to the high incentive

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[95]The taxable property increase of $16,730,100 is based on an average one-family dwelling unit value of $26,100, multiplied by 641 units. The average dwelling value was derived by assuming that land and improvement costs constitute 25 per cent of the total home and lot package selling price. The low incentive lot reduction package is centered around a 20,000 square foot lot valued at $5,520 (see Table 9, page 68). The home and lot package selling price would therefore be approximately $22,100. The high incentive package, which is directly applicable to Gardenside Township was centered around a 40,000 square foot lot valued at $7,534. This home and lot package selling price would be $30,100. In order to compare the planned unit low incentive and high incentive packages in terms of tax rate, a uniform home and lot package selling price must be established for both. To do this a median dollar figure between the $22,100 and the $30,100 was established which accounts for the $26,100 housing value amount. Property taxes are theoretically based on true market value. It is therefore assumed that the property tax value is also $26,100.

package. The principal advantage of the high incentive package to the community is the availability of extra dollars through lot reduction to provide additional private improvements which will add to the taxable base.

Available land is an abundant commodity of the high incentive planned unit package. In Chapter IV, consideration was given to the development of a golf course. It was pointed out then that the planning board and the governing body had the prime responsibility of deciding if the course was to be public or private. Conceptionally, it appears the course should remain private, otherwise the community may be upsetting the financial equilibrium of the lot reduction function.[96]

Developing the golf course as a private taxable country club would add approximately $676,000 to Gardenside's property tax base. This figure would increase the property tax base from $51,159,856 to $51,836,156. The private golf course would produce nearly $21,600 annually in property tax revenues.[97] The community's tax rate would

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[96] This may or may not be true. In any event it could be part of the subject matter of an entire thesis on Public vs. Private Facilities in the Planned Unit Concept.

[97] The $21,600 is obtained by multiplying the taxable value of the private country club golf course ($676,000) by the $3.19/$100.00 tax rate.

be decreased from $3.23/$100.00 assessed to $3.19/$100.00 assessed under the high incentive planned unit alternative. It is doubtful that a public course could consistently net $21,600 in profit for the community every year. If it did, the course would be so heavily used by golfers living outside the community that it would be of little use to any of the community's golfers.

The golf course had reduced the available land in the high incentive planned unit package to approximately 212 acres. This still leaves a sizeable amount of land for other land use activities. Conceivably, five to eight acres could be used for a new neighborhood shopping center. Another 100 acres could be used for a small industrial research park. The combination of a large golf course subdivision and an aesthetically pleasing living environment has proven quite successful in attracting research oriented industries.[98] A neighborhood shopping center would add one-half to one million dollars to the community's taxable base. An industrial

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[98]As an example in the 900 PUD planned for Ringwood, New Jersey, land acreage was set aside for an industrial park. The developer had received several commitments by industrial managers to locate in the park upon completion. Source: The (Ringwood, New Jersey) Record, October 20, 1965, p. 4.

district would potentially add several million dollars to the taxable base.

Land could be appropriately planned for and set aside for a future regional high school thereby saving the community a 45-acre land acquisition problem and cost in the future. Forty-five acres of land at the present going rate of $1,500 per acre would save the community a minimum of $67,500. If the community had to purchase this land independently, this price could be easily increased by a factor of three or four in the near future as land values increase in the community.

In effect, for every $170,000 incremental increase in private investment in the planned unit subdivision, the community stands to have its total effective tax rate reduced by $0.01/$100.00 assessed value.[99] For every $170,000 savings in existing or future land acquisition, the community effectively keeps the tax rate from increasing by $0.01/$100.00 assessed value. This immediate (short range) and potential (long range) tax savings to the total community demonstrates that the modified planned unit concept can serve as an effective

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[99]This $170,000 was derived by dividing the value of the golf course ($676,300) by the $0.04/$100.00 assessed tax rate reduction.

tool to help stabilize and even reduce a community's tax burden. In this context, the modified planned unit development subdivision emerges as a clear and positive alternative to conventional subdivisions and conventional acreage zoning.

Conclusions

The objective of this chapter is to prove the fiscal soundness of the planned unit development for the municipality. This objective must be evaluated within the context of "degree" and "time-span."

The degree of fiscal soundness must be evaluated in terms of net payoff to the community. Chapters IV and V deal with low and high incentive planned unit packages. A developer building a low incentive package provides the community with only the minimum planned unit improvements determined to be acceptable by the community -- the subdivision's share of school, fire protection, and improved recreation facilities.

The high incentive package goes much further than the minimum requirements by providing optimum planned unit improvements. Generally speaking, these added high incentive planned unit improvements make the developer more money, provide the community with a greater tax return, and create a better living environment for the potential homeowner.

The determination of which package is feasible depends on the lot reduction. A general premise is -- the greater the lot reduction from a given lot size, the greater the savings in lot development costs, therefore the greater the dollar amount available for additional planned unit improvements. Three conditions could prevail which would tend to limit a proposed planned unit subdivision to the low incentive package return situation:

1. The low incentive package return to the developer and the community would prevail when the initial minimum zoned lot size was not large enough to permit a substantial reduction without completely destroying the value of the individual lot.

2. The low incentive package return would prevail where communities were restrictive in their lot reductions to the point where only the low incentive package was feasible.

3. The low incentive package return would conceivably prevail where the developer decided that he wanted to provide only the minimum planned unit improvements.

Immediate and Short Range Benefits

The immediate and short range benefits of a 641 lot planned unit subdivision over a conventional subdivision of comparable size are substantial:

1. The low incentive planned unit subdivision package would have the immediate effect of costing a community approximately $1,000,000

less in bonded debt over a 15 year period. This assumes the community would provide the same minimum capital improvements for the conventional subdivision as the developer is providing for the planned unit subdivision. On an annual bonded debt repayment schedule, the conventional subdivision would require that the community budget be approximately $72,000 per year more during the first ten years and about $57,000 per year more during the next five years.

2. The conventional subdivision would require a higher community wide tax rate equal to $0.13 per $100.00 of total equalized assessed property than would a low incentive planned unit subdivision of equal size. This assumes that the acreage value of the one-family dwelling units for both the conventional and the planned unit subdivisions were the same.

3. The high incentive planned unit subdivision package offers added tax benefits over and above those offered by the low incentive package. The example in this chapter provided for the development of a private 18-hole golf course and country club. The tax return provided by the private country club and golf course would have the effect of potentially lowering the tax rate of the entire community by an additional $0.04 per $100.00 of equalized assessed value. This four cents can then be added to the 13 cents from the low incentive package. The end result would be that the effective tax rate impact on a total community would potentially be $0.17 less per $100.00 of equalized total property value for the high incentive planned unit package alternative than for a conventional subdivision of the same size.

The potential tax reduction incentives provided the community by the high and low incentive planned unit

developments represent a sound fiscal alternative for municipal public decision makers. Equally important, however, is the savings in bonded debt capacity offered by the planned unit alternative. The $1,000,000 in bonded debt savings could actually be applied to some major capital improvement facility, thereby improving the community's comparative location advantage for industrial development. In effect, the $1,000,000 savings in bonded debt capacity offered by the planned unit subdivision provides the possibility of a complete new range of alternative fiscal decisions normally preempted by conventional development bonded debt costs to the community.

Long Range Benefits

The long range benefits accruing to the community as a result of a public policy decision to promote modified planned unit developments offer perhaps the most important conceptual advantage to the community. The economic development of a community is frequently bogged down due to the lack of the proper stimuli to initiate positive change. A public policy decision to accept the modified planned unit concept as a developmental tool can lead to change and provide astronomical benefits to a community. Such was the case

in one New Jersey municipality where such a decision would have led to a several million dollar long range development program. Five major developers had purchased or optioned over 5,000 acres of land in Marlboro Township, New Jersey, for planned unit developments in late 1962 and early 1963 anticipating a favorable policy decision permitting planned unit developments under the modified lot reduction principle. Each of the developers involved had made public commitments to the Township to fully cooperate in a completely planned development program governed by a detailed but flexible comprehensive master plan. In effect, the right decision would have led to a several thousand acre new town much larger in scale and scope than any other presently underway in New Jersey today.

The scale of interest generated by industrialists in the Marlboro new town was unprecedented for a New Jersey community. The environmental advantages of planned unit developments to industry cannot be emphasized strongly enough.

The commitments to locate in the industrial park section of the Ringwood, New Jersey, planned unit development is another example of the interest displayed by industry in the planned unit concept. The community benefits

from industrial development through tax ratables and new jobs. Jobs produce the demand for additional housing and commercial development, which in turn lead to added tax ratables and more jobs. The self perpetuating development cycle is thus put into motion. Frequently, it takes something of the magnitude of a planned unit development to get the cycle started.

Marlboro's decision, however, was against the planned unit development concept thereby negating the economic benefits which could have resulted.

Aside from the above examples, several other basic long range benefits need to be considered. In Chapter I, it was noted that New Jersey's open space was being used at an extremely high rate due to large lot zoning. In addition, it noted that there was a critical shortage of functional recreation space because rising land costs make the purchase of such lands prohibitive.

The modified planned unit development helps to relieve both of these problems. In the 641 lot subdivision example used in the preceding chapters, 745 acres of land were required under the conventional lot size clause in the zoning ordinance. Under the planned unit alternative the 745 acres of land encompasses not only

the 641 residential lots, but an 18-hole golf course, land for schools and other public and semi-public uses, intensively developed recreation areas and open space. Under conventional development these additional uses would have to be provided outside the 745 acres requiring an additional 233 acres of land at a minimum. In this instance, the planned unit development reduces by 233 acres the amount of land required to provide other uses to serve the subdivision. The planned unit development also solves the community's problem of financing intensive recreation areas by having the developer provide these facilities at no cost to the community.

Many communities are having extreme difficulty in providing services to a residential development pattern which is spread out all over the community. This pattern is straining the effectiveness of municipal services including fire and police protection, public transportation, street maintenance, schools and school bus transportation, garbage collection, sewer and water facilities, and electric, gas and telephone utility systems.

The planned unit development concept can relieve some of the excessive cost strain on future facilities. As an example, the modified planned unit development advocated

the neighborhood school located in a central open space area. Children can walk to school eliminating the need for bus transportation. Greater compactness under the modified planned unit concept can provide the densities necessary to make public or private bus transportation feasible. A centrally located fire station can effectively lower fire insurance costs. There would be a long run savings in average annual per capita street maintenance costs because the linear frontage of streets under the modified planned unit development is less than the conventional subdivision.

Savings of the above nature can lead to substantial long run savings in maintenance and service costs. It is this type of short range and long range economic benefits which make the modified planned unit concept a far superior alternative to conventional large lot subdivisions.

APPENDICES

APPENDIX A

MODEL LOT SIZES AND DENSITY STANDARDS

The model lot sizes were developed with six major factors in mind:

1. It was determined that a one acre, one-family dwelling unit would be used as the upper limit of the model lots because it represented the major problem discussed in this study -- the trend to zoning for acreage lots.

2. An actual minimum lot size of 40,000 square feet was chosen for two reasons: (1) it is a round, even number; (2) it has been used successfully in several communities familiar to the author. A 160-foot frontage was chosen because it was the minimum frontage required or under consideration in three New Jersey communities which had or contemplated acre lots with municipal sewer and water requirements. (Cherry Hill Township; Freehold Township; and Marlboro Township)

3. In view of the fact that lot frontages are most important in determining lot development costs, a series of lot frontages less than 160 feet was deemed desirable to compare lot development costs against. Five lot sizes with twenty-foot frontage intervals were chosen for three reasons: (1) five lots seemed to be a manageable number of lot sizes to develop costs for; (2) twenty-foot intervals worked out nicely in relation to a series of lot sizes with round figures--40,000, 30,000, 20,000, 15,000, 10,000; (3) the twenty-foot intervals appeared practical and ten-foot interval costs could easily be interpolated as the median point between a twenty-foot interval. Actually six model lots were used. Two 40,000 square foot lots were developed, one with a septic tank and well and the second with municipal type sewer and water facilities.

4. The lot depth of each of the six model lots was based on two factors: (1) the approximate depth required to meet the requirements of the two constants--lot area and lot frontage; (2) a ratio of 3:5 frontage to depth was maintained as nearly as possible which corresponded to a ratio used in a study published by the Urban Land Institute.[100]

5. The following model lot sizes are the result of these findings:

Model Lot Area	Lot Frontage	Lot Depth
1. 40,000 sq.ft.	160 feet	250 feet
2. 30,000 sq.ft.	140 feet	215 feet
3. 20,000 sq.ft.	120 feet	170 feet
4. 15,000 sq.ft.	100 feet	150 feet
5. 10,000 sq.ft.	80 feet	125 feet

6. Lot density information was needed for density control application. Nearly all planned unit zoning provisions in effect or proposed in New Jersey dealt with gross density standards which included lot areas, road areas, and excess land used both efficiently and inefficiently during the normal course of subdividing. Of the several subdivision plats of varying lot sizes reviewed and checked, the average lot size and road area exceeded the minimum lot size and road area by fifteen per cent.

Gross Density Computations

Gross density is considered to include the lot area and the street area which directly serves the lot. The following procedure was used to determine gross density computations:

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[100] Urban Land Institute, op.cit., p. 15.

1. A review was made of several subdivisions with varying minimum sized lots. By dividing the total tract area by the number of subdivided lots in each of the subdivisions, it was found that the average lot and street areas exceeded the minimum by an average of about fifteen per cent. This appeared to hold true for the lot and the street areas alike.

2. After determining the minimum size of each model lot, fifteen per cent of the minimum lot area was determined and then added to the minimum lot size to obtain an average lot size.

3. The minimum street area to serve the lot was obtained by multiplying the minimum lot frontage by one-half of the street right-of-way width (25 feet). The excess street area was obtained by obtaining fifteen per cent of the street area needed to serve the minimum lot size. The fifteen per cent street area includes intersections and extra street areas developed as a result of inefficient subdividing.

The following gross density figures were developed for each of the model lot sizes listed under paragraph five. In each case the street frontage reflects one-half of a 50-foot street right-of-way or that part of the street right-of-way that services each lot for access purposes.

1. 40,000 square foot One-Family Lot (160' by 250')

a)	40,000 sq.ft.	Minimum lot size
b)	6,000 sq.ft.	15 per cent oversized lot area
c)	46,000 sq.ft.	Average lot size
d)	4,000 sq.ft.	Street area (160' by 25')
e)	600 sq.ft.	15 per cent excess street area
f)	50,600 sq.ft.	Total gross lot and street area
g)	43,560 sq.ft.	Standard acre of land
h)	50,600 sq.ft.	Lot size divider
i)	0.86 lots/acre	Average gross density.

2. 30,000 square foot One-Family Lot (140' by 215')

a)	30,000 sq.ft.	Minimum lot size
b)	4,500 sq.ft.	15 per cent oversized lot area
c)	34,500 sq.ft.	Average lot size
d)	3,500 sq.ft.	Street area (140' by 25')
e)	525 sq.ft.	15 per cent excess street area
f)	38,525 sq.ft.	Total gross lot and street area
g)	43,560 sq.ft.	Standard acre of land
h)	38,525 sq.ft.	Lot size divider
i)	1.13 lots/acre	Average gross density

3. 20,000 square foot One-Family Lot (120' by 170')

a)	20,000 sq.ft.	Minimum lot size
b)	3,000 sq.ft.	15 per cent oversized lot area
c)	23,000 sq.ft.	Average lot size
d)	3,000 sq.ft.	Street area (120' by 25')
e)	450 sq.ft.	15 per cent excess street area
f)	26,450 sq.ft.	Total gross lot and street area
g)	43,560 sq.ft.	Standard acre of land
h)	26,450 sq.ft.	Lot size divider
i)	1.65 lots/acre	Average gross density.

4. 15,000 square foot One-Family Lot (100' by 150')

a)	15,000 sq.ft.	Minimum lot size
b)	2,250 sq.ft.	15 per cent oversized lot area
c)	17,250 sq.ft.	Average lot size
d)	2,500 sq.ft.	Street area (100' by 25')
e)	375 sq.ft.	15 per cent excess street area
f)	20,125 sq.ft.	Total gross lot and street area
g)	43,560 sq.ft.	Standard acre of land
h)	20,125 sq.ft.	Lot size divider
i)	2.16 lots/acre	Average gross density.

5. 10,000 square foot One-Family Lot (80' by 125')

a)	10,000 sq.ft.	Minimum lot size
b)	1,500 sq.ft.	15 per cent oversized lot area
c)	11,500 sq.ft.	Average lot size
d)	2,000 sq.ft.	Street area (80' by 25')

5. 10,000 square foot One-Family Lot (80' by 125') (continued)

e)	300 sq.ft.	15 per cent excess street area
f)	13,800 sq.ft.	Total gross lot and street area
g)	43,560 sq.ft.	Standard acre of land
h)	13,800 sq.ft.	Lot size divider
i)	3.16 lots/acre	Average gross density

APPENDIX B

COST ANALYSIS FOR DEVELOPING THE SIX MODEL LOTS

The purpose of Appendix B is to establish the approximate development costs of each of the six model lots outlined in Appendix A. Seven controlling and situational factors were imposed as conditions on this analysis:

1. The development standards for the six model lots are to be uniform and will reflect the trend toward more stringent subdivision standards in New Jersey.

2. Three major groups of costs were considered--off-site improvement costs, on-site improvement costs, and initial land costs. Off-site costs are those subdivision improvements which are not physically part of the private lot but fall within the street right-of-way. On-site costs are for improvements to the private lot which make the lot more salable. Land costs represent the initial cost of the land plus overhead and profit.

3. Cost figures were obtained primarily from a housing developer and an engineering firm located in New Jersey. Cost estimates not provided by these two sources were obtained from miscellaneous published sources and so noted.

4. It is recognized that some of the improvement costs may be high and others low depending on individual situations as they exist in New Jersey. This factor is minimized, however, because this study applies the same initial cost figure to each of the six model lots.

5. The cost figures used in this study reflect subdivisions of one hundred lots or more in size to take advantage of the economics of scale.

Cost figures include profit and standard overhead factors of engineering, selling, and carrying costs.

6. Improvements such as telephone lines, electrical lines, street lights, fire alarms, and gas lines were not considered in the lot development costs. The policy on the installation of public utilities varies but is normally paid for eventually by the utility company and the homeowner. The subdivider or developer frequently pays for the initial installation in New Jersey and is reimbursed by the utility companies as homes are occupied. Residential structure costs are also omitted because they are not directly applicable to the value of this study.

7. This cost analysis in general used the conditions and procedures outlined and developed as a part of a study reported by the Urban Land Institute in their Technical Bulletin No. 32.

8. Each model lot would be part of a major subdivision laid out in a curvilinear street design. Each model subdivision would be located in the outer suburban fringe in the path of urban expansion. All lots will therefore require complete on-site and off-site subdivision improvements.

The following site costs and standards were constructed with the above conditions and situations in mind. Site standards are patterned after those recommended to Cherry Hill Township, New Jersey, in 1965.[101] Tables 23 through 28 apply these costs and site standards to each of the six model lots.

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[101] Herbert H. Smith Associates, Recommended Comprehensive Revision of Cherry Hill Township Subdivision Ordinance (West Trenton: Herbert H. Smith Associates, 1965), pp. 1-20.

OFF-SITE COSTS AND STANDARDS

A. Street - Including clearing, excavating, grading, and roadway construction, assuming a 50-foot right-of-way and a 28-foot cartway of bituminous concrete on gravel base. A lot is served by one-half of a road and costs will be allocated accordingly.

1) Base Cost - $4.00/sq.yd. or $0.44/sq.ft.[102]
2) $0.44/sq.ft. x 28 ft. wide cartway = $12.30/ linear foot of paved cartway.
3) 1/2 of cartway to serve each lot = $6.15/linear foot.

B. Concrete Curbs - One side of street. Curbs are extended the full width of a lot except in driveway. Two extra feet of curb is allowed on each side of driveway for minded curb cuts. The length of the curb is therefore five feet less than lot width to account for nine foot driveway.

1) Base Cost - $2.00/linear foot on one side of street.[103]

C. Sidewalks - Concrete sidewalks on each side of street, standard width four feet, thickness four inches. This does not include nine-foot driveway-sidewalk area.

1) Base Cost - $4.75/sq.yd.[104] This is approximately $2.00/linear foot (rounded).
2) Sidewalks were not required beyond the 20,000 sq.ft. lot size.

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[102] Interview with Alexander Poett, Engineer with Levitt & Sons, Incorporated, Levittown, New Jersey, September, 1962.

[103] Ibid.

[104] Interview with Leonard Grimes, Engineer with Albert C. Jones Associates, Mt. Holly, New Jersey, October, 1962.

D. Sanitary Sewer System

1) Sanitary Sewer Street Laterals - including manholes and appurtenances. Size ten inch.

(a) Base price - $5.00/linear foot.[105]
(b) Sanitary sewer laterals serve both sides of a street. One-half of $5.00 = $2.50/linear foot costs/lot.

2) Sewage Treatment Plant - including all facilities and major trunk lines.

(a) Base price - $300/one-family dwelling unit.[106]

3) Lot size cost variation factor - A sanitary sewage facility layout is based upon a gravity flow system. Two costs are therefore involved. The first is the additional cost of the length of the laterals and trunk lines at extra depths and the increased need for pumping equipment. For example, a lateral collecting sewage from ten lots with a 160 foot frontage would have to be twice as deep as its termination point at the trunk line as would be necessary with ten lots with an 80 foot frontage--assuming the same rate of fall. After researching this particular cost problem, no sources could be found which provide an adequate answer in dollars and cents from a developer's point of view. The following procedure was used, therefore, to compensate for the cost of extra depth and pumping equipment for wider lots. (1) The cost of the lateral and the treatment plant were lumped into one expense because it is felt that wider lots placed an added cost problem for the entire system rather than part of it; (2) One-half of the extra cost of laterals along lot frontages amounts to $50/lot for every 20-foot

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[105] Alexander Poett, ibid.

[106] Ibid.

increment; (3) Using 10,000 square foot lots as a base (80 foot frontage), the front foot cost was increased by ten per cent for each incremental increase in lot size--or for every 20 feet.[107]

4) The following table summarizes the estimated cost per lot of supplying a complete sanitary sewer system for the six model lot sizes.

Table 22; Summary of Sanitary Sewer Treatment Plant, Trunk Line and Lateral Facility Costs for the Six Model Subdivision Lots[a]

Lot Frontage in Feet	Base Cost per Lot	Added Lateral Costs	New Base Cost	10% Cost Factor	Total Cost per Lot
80	$500	--	--	--	$500
100	500	$50	$550	$55	605
120	605	50	655	65	720
140	720	50	770	75	845
160	845	50	895	90	985

[a]One of the acre lots (160 frontage) required only a septic tank.

E. Water Mains - Including valves, hydrants and fittings--size eight inch.

1) Base cost - $3.25/linear foot.[108]
2) One water main serves both sides of street. One-half of $3.25 = $1.65/linear foot/lot.

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[107]The ten per cent figure was derived by briefly reviewing the engineering estimates on installation costs of sewage facilities in several subdivisions of varying lot sizes in New Jersey. These subdivisions were in different communities located in different regions in the State, however, so that no valid average conclusions could be drawn.

[108]Alexander Poett, ibid.

F. Water Treatment Plant - Including all facilities and equipment. Plant costs are based on a minimum of 1,000 dwelling units and lot sizes 10,000 square feet or less in size.

1) Base cost - $350/one-family dwelling unit.[109]
2) It was determined that wider lot widths may create added costs of the nature outlined in D-3 under sanitary facilities. This extra cost, however, would be a fraction of a sewage system because a water system is under pressure. Added costs to maintain pressure would be covered under item I, the 20 per cent contingency factor.

G. Storm Drainage - Includes manholes, catch basins, culverts, and installation. Size 18 inch.

1) Base cost - $5.00/linear foot.[110]
2) Storm drainage system serves both sides of street - One-half of $5.00 = $2.50/linear foot/lot.
3) Storm drainage installation costs are based on lot sizes of 10,000 square feet or less. It was determined that increased lot sizes would increase storm drainage installation and equipment costs similar to the increased costs for a sanitary sewer system under item D-3. It is expected that the installation costs would be minimal, however, because the storm drainage system would be located in the same trench with the sanitary sewer system--the extra costs for which have already been accounted for. It is expected that any additional storm drainage facility costs would be covered under the 20 per cent contingency factor in item I.

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[109] Ibid.

[110] Ibid.

H. Street Shade Trees - Includes cost of tree and labor for planting. Trees would be located approximately 40 feet apart.

1) Base cost - $10/tree.[111]

I. Contingency Costs - The following statement regarding contingency costs was abstracted from the Urban Land Institute Technical Bulletin No. 32. "In practice, plats inevitably include corner lots, irregularly shaped lots, unusable parcels, or lands required for public use, all of which result in additional street length beyond that abutting the average lot. Such inefficiencies of layout might cause off-site costs per lot to rise substantially above those of the idealized plat . . . . The factor of 20 per cent [was] used to correct the unit off-site costs . . . [due to] inefficiencies of layout."[112] Contingency costs in this thesis will coincide with the 20 per cent used in the Urban Land Institute study.

ON-SITE IMPROVEMENT COSTS

A contingency cost item for on-site costs was not included because on-site costs, except for lot grading and landscaping, are not subject to major variations due to subdividing inefficiencies.

J. Utility Installation Costs to Dwelling Unit

1) Water and Sewer Connection Costs - The cost of sewer and water connection fees will not be included because the developer is installing the entire sewer and water systems. He would not logically charge himself installation fees.

2) Water and sewer line from street lateral to house-- Sewer line and water line connections from the house

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[111]Leonard Grimes, ibid.

[112]Urban Land Institute, ibid.

to the center of the street was assumed for average length purposes--distance was assumed to be 50 feet. Cost of sewer line - $1.75 per linear foot or $87.50 per lot. Cost of water line - $1.25 per linear foot or $62.50 per lot. The combined cost is $150.00 per lot.[113]

K. Lot Grading and Landscaping

1) Base cost -

Lot Sizes		Costs per Lot	
		1957[114]	1963[115]
a)	10,000 sq.ft.	$ 480	$ 525
b)	15,000 sq.ft.	(not available)	$ 690
c)	20,000 sq.ft.	$ 780	$ 850
d)	30,000 sq.ft.	(not available)	$1,110
e)	40,000 sq.ft.	$1,260	$1,375

2) Lot grading and landscaping costs include the seeding costs for the street planting strip between the curb and sidewalks.

L. Concrete Driveway - Nine foot wide, six inch thick, concrete drive from the curb line to the 25 foot setback line where the house and garage are located (36 feet total distance) is set as the standard for the driveway. It is assumed that setback is standard on all model lot sizes.

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[113]Urban Land Institute, op.cit., p. 13. This cost was verified as still valid by Leonard Grimes of Albert C. Jones Associates.

[114]Robert Coughlin and Walter Isard, Municipal Costs and Revenues - Resulting from Community Growth (Wellesley, Massachusetts: Chandler-Davis Publishing Company, 1957), p. 75.

[115]All 1957 costs were updated to 1963. Lot grading and landscaping costs for the 15,000 and 30,000 square foot lots were obtained by using the approximate median cost point between those lot costs which were known.

1) Base cost - $6.25/square yard or approximately $0.70 per square foot.[116]
2) Driveway amounts to 324 square feet at a cost of $0.70/square foot or $227.00 per driveway.

M. Concrete Access Walk - Concrete access walk three feet wide and four inches thick from sidewalk to front door of house. Distance assumed to be 25 feet in length.

1) Base cost - $4.75/per square yard or approximately $0.50 per square foot.[117]
2) Access walk amounts to 75 square feet at a cost of $0.50 per square foot or approximately $38.00 per access walk.

N. Well and Septic Tank - The well and septic tank costs were added to compare lots without a municipal type sewer and water system installed.

1) Base cost - No definitive sources could be found which could provide an estimated cost of a well and a septic tank to serve a residence. It was therefore assumed that one well and septic tank per one-family dwelling unit would cost an estimated $1,000. This cost was discussed with several engineers who felt the cost to be approximately correct for a large housing development.
2) Total costs for a well and septic tank installed and connected to the house is assumed to be $1,000 per dwelling unit.

LAND COSTS, PROFIT AND OVERHEAD

O. Land Costs - Land costs represent the costs of purchasing tracts of land in excess of 100 acres in the primarily agricultural counties of central New Jersey.

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[116]Leonard Grimes, ibid.

[117]Ibid.

1) Base cost - $1,500 per acre.[118]

P. Profit and Overhead - Including engineering and sales and carrying costs to the developer and subdivider.

1) Base cost - 25 per cent of land costs.[119]

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[118]Discussion with project planners with Herbert H. Smith Associates, 1962-1964.

[119]Urban Land Institute, op.cit., p. 13.

Table23; Application of Costs and Standards to the 10,000 Square Foot Model Lot # One

(80 ft. frontage x 125 ft. depth--
gross density 3.16 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 80 ft.)	$ 492
B. Concrete curbs	($2.00/ft. x 75 ft.)	150
C. Sidewalks	($2.00/ft. x 71 ft.)	142
D. Sanitary sewers	(.... Unit Cost ...)	500
E. Water mains	($1.65/ft. x 80 ft.)	132
F. Water plant	(.... Unit Cost ...)	350
G. Storm drains	($2.50/ft. x 80 ft.)	200
H. Street trees	($10/tree x 2.0 trees)	20
I. Contengencies	(20% of Items A - H)	397
Total Off-Site Improvement Costs		$2,383

II. On-Site Improvement Costs	Costs/Lot
J. Utility installation (... Unit Cost ...)	$ 150
K. Grading and landscaping (Unit Cost ...)	525
L. Concrete driveway (.... Unit Cost ...)	227
M. Concrete access walk (... Unit Cost ...)	38
N. Well and septic tank (... Unit Cost ...)	(0)
Total On-Site Improvement Costs	$ 940

III. Total Off-Site and On-Site Improvement Costs	$3,323

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$ 475
P. Profit and overhead (25% of Unit Cost)	119
Total Land Costs, Profit, and Overhead	$ 594

V. Total Development Costs Per Lot	$3,917

Table 24; Application of Costs and Standards to the 15,000 Square Foot Model Lot # Two

(100 ft. frontage x 150 ft. depth--
gross density 2.16 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 100 ft.)	$ 615
B. Concrete curbs	($2.00/ft. x 95 ft.)	190
C. Sidewalks	($2.00/ft. x 91 ft.)	182
D. Sanitary sewers	(.... Unit Cost ....)	605
E. Water mains	($1.65/ft. x 100 ft.)	165
F. Water plant	(.... Unit Cost ....)	350
G. Storm drains	($2.50/ft. x 100 ft.)	250
H. Street trees	($10/tree x 2.5 trees)	25
I. Contengencies	(20% of Items A - H)	476
Total Off-Site Improvement Costs		$2,858

II. On-Site Improvement Costs		Costs/Lot
J. Utility installation	(... Unit Cost ....)	$ 150
K. Grading and landscaping	(Unit Cost ....)	690
L. Concrete driveway	(.... Unit Cost ....)	227
M. Concrete access walk	(... Unit Cost ....)	38
N. Well and septic tank	(... Unit Cost ....)	(0)
Total On-Site Improvement Costs		$1,105

III. Total Off-Site and On-Site Improvement Costs	$3,963

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$ 694
P. Profit and overhead (25% of Unit Cost)	174
Total Land Costs, Profit, and Overhead	$ 868

V. Total Development Costs Per Lot	$4,831

Table 25; Application of Costs and Standards to the 20,000 Square Foot Model Lot # Three

(120 ft. frontage x 170 ft. depth--
gross density 1.65 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 120 ft.)	$ 738
B. Concrete curbs	($2.00/ft. x 115 ft.)	230
C. Sidewalks	($2.00/ft. x 111 ft.)	222
D. Sanitary sewers	(.... Unit Cost ....)	720
E. Water mains	($1.65/ft. x 120 ft.)	198
F. Water plant	(.... Unit Cost ....)	350
G. Storm drains	($2.50/ft. x 120 ft.)	300
H. Street trees	($10/tree x 3.0 trees)	30
I. Contengencies	(20% of Items A - H)	558
Total Off-Site Improvement Costs		$3,346

II. On-Site Improvement Costs		Costs/Lot
J. Utility installation	(... Unit Cost ....)	$ 150
K. Grading and landscaping	(Unit Cost ....)	850
L. Concrete driveway	(.... Unit Cost ....)	227
M. Concrete access walk	(... Unit Cost ....)	38
N. Well and septic tank	(... Unit Cost ....)	(0)
Total On-Site Improvement Costs		$1,265

III. Total Off-Site and On-Site Improvement Costs	$4,611

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$ 909
P. Profit and overhead (25% of Unit Cost)	227
Total Land Costs, Profit, and Overhead	$1,136

V. Total Development Costs Per Lot	$5,747

Table 26; Application of Costs and Standards to the 30,000 Square Foot Model Lot # Four

(140 ft. frontage x 215 ft. depth--
gross density 1.13 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 140 ft.)	$ 861
B. Concrete curbs	($2.00/ft. x 135 ft.)	270
C. Sidewalks	($2.00/ft. x (none) ft.)	(none)
D. Sanitary sewers	(.... Unit Cost ....)	845
E. Water mains	($1.65/ft. x 140 ft.)	231
F. Water plant	(.... Unit Cost ....)	350
G. Storm drains	($2.50/ft. x 140 ft.)	350
H. Street trees	($10/tree x 3.5 trees)	35
I. Contengencies	(20% of Items A - H)	588
Total Off-Site Improvement Costs		$3,530

II. On-Site Improvement Costs	Costs/Lot
J. Utility installation (... Unit Cost ....)	$ 150
K. Grading and landscaping (Unit Cost ....)	1,110
L. Concrete driveway (.... Unit Cost ....)	227
M. Concrete access walk (... Unit Cost ....)	38
N. Well and septic tank (... Unit Cost ....)	(0)
Total On-Site Improvement Costs	$1,525

III. Total Off-Site and On-Site Improvement Costs	$5,055

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$1,327
P. Profit and overhead (25% of Unit Cost)	332
Total Land Costs, Profit, and Overhead	$1,659

V. Total Development Costs Per Lot	$6,714

Table 27; Application of Costs and Standards to the 40,000 Square Foot Model Lot # Five

(160 ft. frontage x 250 ft. depth--
gross density 0.86 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 160 ft.)	$ 984
B. Concrete curbs	($2.00/ft. x 155 ft.)	310
C. Sidewalks	($2.00/ft. x (none) ft.)	(none)
D. Sanitary sewers	(.... Unit Cost ....)	985
E. Water mains	($1.65/ft. x 160 ft.)	264
F. Water plant	(.... Unit Cost ....)	350
G. Storm drains	($2.50/ft. x 160 ft.)	400
H. Street trees	($10/tree x 4.0 trees)	40
I. Contengencies	(20% of Items A - H)	667
Total Off-Site Improvement Costs		$4,000

II. On-Site Improvement Costs	Costs/Lot
J. Utility installation (... Unit Cost ....)	$ 150
K. Grading and landscaping (Unit Cost ....)	1,375
L. Concrete driveway (.... Unit Cost ....)	227
M. Concrete access walk (... Unit Cost ....)	38
N. Wall and septic tank (... Unit Cost ....)	(0)
Total On-Site Improvement Costs	$1,790

III. Total Off-Site and On-Site Improvement Costs	$5,790

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$1,744
P. Profit and overhead (25% of Unit Cost)	436
Total Land Costs, Profit, and Overhead	$2,180

V. Total Development Costs Per Lot	$7,970

Table 28; Application of Costs and Standards to the 40,000 Square Foot Model Lot # Six Well and Septic Tank

(160 ft. frontage x 250 ft. depth--
gross density 0.86 lots/acre)

I. Off-Site Improvement Costs		Costs/Lot
A. Street	($6.15/ft. x 160 ft.)	$ 984
B. Concrete curbs	($2.00/ft. x 155 ft.)	310
C. Sidewalks	($2.00/ft. x (none) ft.)	(none)
D. Sanitary sewers	(Unit Cost .... (none).)	(none)
E. Water mains	($1.65/ft. x (none) ft.)	(none)
F. Water plant	(Unit Cost .... (none).)	(none)
G. Storm drains	($2.50/ft. x 160 ft.)	400
H. Street trees	($10/tree x 4.0 trees)	40
I. Contengencies	(20% of Items A - H)	347
Total Off-Site Improvement Costs		$2,081

II. On-Site Improvement Costs	Costs/Lot
J. Utility installation (... Unit Cost ....)	$ 150
K. Grading and landscaping (Unit Cost ....)	1,375
L. Concrete driveway (.... Unit Cost ....)	227
M. Concrete access walk (... Unit Cost ....)	38
N. Well and septic tank (... Unit Cost ....)	1,000
Total On-Site Improvement Costs	$2,790

III. Total Off-Site and On-Site Improvement Costs	$4,871

IV. Land Costs, Profit, and Overhead	Costs/Lot
O. Land costs (Unit Costs--Land & Street Area)	$1,744
P. Profit and overhead (25% of Unit Cost)	436
Total Land Costs, Profit, and Overhead	$2,180

V. Total Development Costs Per Lot	$7,051

Table 29; Methodology for Determining Fire Protection Facility Costs for a 641 Lot Planned Unit Subdivision

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1. Present Community (Population 6,426)

Formula for fire stations:

0.85 Station + (population in (000) x 0.12)[a]
0.85 Station + (6,426 x 0.12)
0.85 Station + 0.77 = 1.62 stations.

2. Community With Added 641 Dwellings (2,551 Population + 6,426 or 8,977)

Formula for fire stations:

0.85 Station + (population in (000) x 0.12)
0.85 Station + (8,977 x 0.12)
0.85 Station + 1.08 = 1.93 stations

3. Share for 641 Unit Subdivision

1.93 stations
- 1.62 stations

0.31 stations or 31 per cent of total station cost.

4. Fire Station Building

a)	75 feet x 50 feet = 3,750 square feet	
b)	3,750 square feet simple frame building at $10.00 cost per square foot =	$37,500[b]
c)	Equipment	5,000[c]

5. Emergency Trucks

a)	Two 750 GPM pumpers at $14,000 each	$28,000[d]
b)	One first aid ambulance and rescue truck	4,300[e]

Table 29; Methodology for Determining Fire Protection Facility Costs for a 641 Lot Planned Unit Subdivision

(continued)

6.	Total Costs of Building, Equipment, and Trucks	$74,800
	a) Total cost of fire station and equipment	$74,800
	b) Percentage share by 641 unit subdivision	31%
	c) Cost share by 641 unit subdivision	$23,188 (rounded $23,200)

[a]National Board of Fire Underwriters, Standard Schedule for Grading Cities and Towns of the United States (New York: N.B.O.F.U., 1956), p. 46.

[b]Cost estimated from similar facility built by the Borough of Florham Park, New Jersey, in 1964. Source: Telephone interview with Borough Clerk, July 24, 1964.

[c]Ibid.

[d]Cost obtained from the City of Millville, New Jersey. In 1964, the city purchased a 750 gallon per minute pumper (1965 Dodge 700 chassis and a LaFrance body) at a cost of $13,996 ($14,000 rounded). Source: Interview with Conrad Waltman, Millville City Clerk, November 11, 1964.

[e]Cost obtained from similar facility purchased by the Tri-Boro areas of Butler, Bloomingdale and Kinnelon, New Jersey in 1963. Source: Wanaque Borough News, March 14, 1963.

Table 30; Population and Public School A.D.E. Student Figures For The State of New Jersey, 1950-1963

Year	Population	Students in ADE
1950	4,835,329[a]	
1960	6,066,782[a]	
1963	6,426,780[c]	
1965	6,666,790[b]	
1949-50		625,582[d]
1959-60		1,014,870[d]
1962-63		1,160,001[d]

[a]U.S. Census of Population.

[b]Estimate made by Research and Statistics Section, New Jersey Department of Conservation and Economic Development, April 1961.

[c]Interpolation made by author.

[d]Annual Report of the Commission of Education

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