Land Suitable for Urban Expansion in the New York Metropolitan Region

The Second in the Land Use Studies Reports

Bulletin 66

December 24, 1945
THE
REGIONAL PLAN
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This bulletin was prepared by C. Earl Morrow, Planning Director of the Association, under the supervision of the Association's Regional Committee, composed of representative professional, business and industrial leaders from all sections of the New York Metropolitan Region. Mr. Harold S. Osborne is Chairman of the Committee, which is listed in full on page 12.

This is the second report in the Land Use Studies. The first report, "Urban Expansion: Fifteen Years of Development in the New York Region," is Regional Plan Bulletin No. 63, published November 27, 1944.

An Inventory of Remaining Open Land as a Basis for Urban Expansion Policy

Expansion of urban development from the center of the region towards its periphery has been the outstanding change in the physical make-up of the New York metropolitan area in the past 15 years. As noted in Regional Plan Bulletin No. 63, the rate of population spread has been twice that of population growth. This marks the reaction from the old over-crowded conditions in the central part of our cities, to the attraction of new housing and the fact that improved transportation makes the outlying areas increasingly accessible and attractive. The justification of the increased transportation involved in this outward movement should be the realization of a permanent improvement in living conditions.

While much of the new development fulfills this requirement a large part of it has repeated the mistakes of the past and after the newness has worn off it will be little better than the older areas which were left. Unless a sound policy of land use is developed and implemented through the controls which municipalities can apply, such as zoning and subdivision regulations, the whole decentralizing movement can become a social and economic liability to the Region.

The Need for Facts

A rational community land-use policy must be based upon a thorough survey of the facts, including trends of past development and possibilities for new development. Not only must public officials be convinced that the plan has a sound basis but it must be presented in such a way that it appears reasonable to the public.

Some of the questions to be answered are: How much land is there available for development in the community? Is some of it unsuitable for urban home building? Will all of the adaptable land be needed for expansion in the near future? What density should such development have? What new public services such as schools, fire houses, water mains or sewers will be needed? Are there blighted areas in the community that can be rehabilitated? What new transportation will have to be supplied? What are the other future needs of the community that will require some of this land?

From these questions it is apparent that many phases of the community's make-up must be investigated. It is not difficult to see that such a study of land use should be part of a comprehensive plan.

Outside Influences

In the Commuter Area of the Region municipalities are not self-contained units but depend in many ways upon industrial and business centers outside their borders. Employment, shopping, recreation, education, fire protection, waste disposal and water are often supplied or supplemented from points outside. When the future needs of a single community are considered a much larger area than its own must thus be taken into account.

In some cases, such things as recreation, vocational and high schools, and fire protection can be determined on a county-wide basis. Other elements, on the other hand, such as employment, certain types of shopping, water supply, sanitation and transportation, require a broad
region study in order to find a sound answer. This is particularly true in estimating population distribution and its corollary, the amount of new land needed for population increase and movement.

In the same way that a business firm makes estimates of the total amount of probable business of its type and of the share of this total that it may reasonably hope to have, a community must realize its competitive position with respect to other communities of its kind and make plans that have some chance of fulfillment. Only by a regional study can this conception of its possibilities of development be derived. The purpose of this Bulletin is to present a broad inventory of land available for future development in the New York Metropolitan Region that will enable the counties and their component municipalities to draw conclusions as to possibilities of their own future development.

**MAJOR FINDINGS**

1) About one-fifth of the Commuter Area of the Region consists of land unsuitable for urban expansion because of its physical character.

2) About one-fifth of the Commuter Area is now in urban development including industry, business and residential districts.

3) About 1500 square miles of the Commuter Area is not yet built on and is suitable and available for urban expansion. This would house about 16½ million people in single-family homes.

4) Nearly one-third of the suitable land is within one mile of rail transportation; over one-third is between one and two miles; and nearly one-third is beyond two miles of rail transportation.

5) There is enough suitable land within 25 miles of the regional center and within one mile of transportation to house over 3 million people in single-family homes.

6) It is concluded that there is no justification from the point of view of available land for high densities in new development anywhere in the Region.

7) As large-scale redevelopment and other projects are constructed in the central areas, the need for new land in outlying areas will be reduced.

8) The lands best adapted to agriculture should be encouraged to remain in open development.

9) Counties and municipalities that have not already done so are urged to study land development on a local scale as a basis for applying local controls.

10) The controls now available to municipalities, consisting of zoning, building codes and particularly subdivision regulations can, to some extent, be effective in giving proper direction to expansion, but developers and investors are warned of the dangers of excess subdivisions.

11) Municipalities that have zoning ordinances and building codes which were not formed or revised recently on a comprehensive basis should lose no time in bringing them up-to-date.

12) The most effective control over new development consists of subdivision regulations administered by an active planning board set up under state enabling planning legislation.
LAND PHYSICALLY UNSUITABLE FOR CLOSE URBAN DEVELOPMENT

The "Commuter Area," as defined, is roughly half of the total area of the Metropolitan Region. Figure 2 shows the whole Region while Figure 3 shows only the part of the Region regarded as the Commuter Area. Of a number of factors entering into the determination of the limits of the Commuter Area, the principal one is the fact that most commuters live within the area, in fact, 95 per cent of the total population of the Region is housed within it. One-third of the Commuter Area is now taken up by urban development and public or semi-public uses which preclude its availability for development in the future. Urban development, sometimes referred to as "close development," includes all land that is built upon with an average density of more than one dwelling per half acre. The remaining open land consists of about 1,900 square miles. Some of this is not suitable for close urban development by reason of its topography or natural drainage conditions.

Steep Slopes

Where the slope of the land is greater than 10 per cent, it is ordinarily uneconomical for the average suburban type of development unless it has special advantages. Streets, utilities and building foundations normally cost more on steep slopes.

From Figure 2 it will be seen that there are extensive areas not suitable for urban use within the Commuter Area because of the steepness of the slopes.

In New Jersey the lower counties are relatively free from slopes of over 10 per cent but in the upper counties of Somerset, Morris, Passaic and Bergen such areas are numerous. In Rockland County, New York, there are steep slopes in the Ramapo Mountains in the northwesterly part and along the Hudson River; in Westchester County they are extensive in the whole northern section and in the westerly part of the southern section. Steep topography in Fairfield County, Connecticut, is located toward the New York State line, away from the shore of Long Island Sound.

On Long Island there is very little land that is unsuitable for urban development by reason of its steepness.

Within the entire Commuter Area there is a total of 395 square miles of land having slopes of 10 per cent or more. This represents about 14 per cent of the total land area.

In view of the problems and difficulties attendant on the close development of areas of this kind it is suggested that they be assigned to such uses as public parks, private estates, forests, and also farms, for often a good farm consists of lowland for crops, rolling upland for pasture, and steep land for woods.

Marsh Land

Large areas of tidal flats appear in New Jersey along Raritan Bay, Raritan River, Arthur Kill, Newark Bay, and the lower Hackensack River, in the counties of Monmouth, Middlesex, Union, Essex, Hudson and Bergen.

Staten Island has considerable salt-water marsh land in its northwesterly part along Arthur Kill, and there are a few areas in The Bronx and along the northern shore of Queens. Most of the remaining salt marsh land appears along the south shore of Long Island in the boroughs of Brooklym and Queens and in Nassau County.

Large areas of marsh land have been reclaimed near the center of the Port of New York for commercial and industrial uses, including airports. Some of the reclaimed land is also used for recreational purposes.

Fresh-water marsh lands within the Commuter Area are spotted around in the outlying counties of New Jersey, principally in Monmouth, Middlesex, Morris and Essex Counties. The largest concentration appears in the two last-named counties, in the upper Passaic River Valley.

In both the fresh-water and salt marshes large sums of money are spent each year on mosquito control. Part of the economy of reclamation would be the saving in these annual expenditures.

Within the Commuter Area there is a total of 166 square miles of marsh land not suitable for residential expansion. Lakes cover about 19 square miles.

Ordinarily large tracts of swampy land, particularly tidal flats, are not adapted to residential use, since the costs of reclaiming plus the costs of building foundations are too much for an economic

1 For details see "Urban Expansion," Regional Plan Bulletin No. 63, Nov. 27, 1944. Golf courses have been added to the total of 1,913.1 square miles.
LAND USES -- 1945
NEW YORK COMMUTER AREA
REGIONAL PLAN ASSOCIATION, INC.
LAND SUITABLE FOR URBAN DEVELOPMENT

NEW YORK COMMUTER AREA

REGIONAL PLAN ASSOCIATION, INC.

Figure 4
development of residences. Reclaimed land is better adapted to commercial and recreational use.

Some of the fresh-water swamp areas could be reclaimed by drainage for agricultural purposes. Some of them could be made into water supply reservoirs.

**LAND ALREADY IN URBAN OR PERMANENT OPEN USE**

A complete picture of future urban development must include the possibilities of replacing existing development with new buildings. This has been happening largely by replacing single-family homes with apartment buildings. Increasing consideration is being given to the rehabilitation of blighted areas by large-scale new development. This report, however, is concerned only with an appraisal of the remaining open land.

**Built-Up Area**

About one-fifth\(^1\) of the total land in the Commuter Area is already built up with commercial and residential construction, comprising a total of 608 square miles. Of this 556 square miles are residential, including local business centers; and 52 square miles are commercial, including the downtown business area of Manhattan.

By comparing Figure 2 with Figure 3 the influence of the geography of the area on distribution of urban land may be traced. To the south, in New Jersey development has concentrated along the shores of the Atlantic Ocean, Raritan Bay and Raritan River. West of New York City large voids appear, consisting of the Hackensack and Newark Meadows. West of these meadowslands development has expanded outward to the barrier of the Watchung Mountains beyond which it has proceeded through the gaps in the mountains along transportation lines.

To the northwest, development reaches out along rail lines in Passaic, Bergen and Rockland Counties. In Westchester the southerly part is solidly built up, with one arm extending along the shore of the Hudson River and another along the shore of the Long Island Sound into Connecticut. On Long Island the urban pattern has expanded almost solidly through Queens and the western part of Nassau County, beyond which it forks, clinging to the north and south shores of the Island with a decided preference for the more level lands of the south shore.

With four-fifths of the Commuter Area still not built upon, it would appear that there is no shortage of land for future expansion. Some of this unbuilt land, however, is occupied by permanent open types of use.

**Permanent Open Areas**

There are 207 square miles of public open lands in the Commuter Area which are not likely to become available for expansion. These are made up of parks, water supply property and public institutions.

\(^1\) For details see Table I of Regional Plan Bulletin No. 63.
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<td>147.6</td>
<td>161.5</td>
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<td>1,497.9</td>
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</table>

There are also about 83 square miles of semi-public lands which are not likely to become available for development, occupied principally by cemeteries and large institutions.

**AVAILABLE UNDEVELOPED LAND**

After subtracting the built-up land and the permanent open spaces, about 1,960 square miles remain. The percentages of the total land in the various uses are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Square Miles</th>
<th>Per cent</th>
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<td>Urban residential</td>
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<tr>
<td>Commercial</td>
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<tr>
<td>Public open area</td>
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<td>Semi-public open area</td>
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<td>Remaining land</td>
<td>1,959.9</td>
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<tr>
<td><strong>Total</strong></td>
<td>2,858.8</td>
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</tbody>
</table>

This means that over two-thirds of the Commuter Area is available for expansion so far as present usage is concerned.

Deducting the areas of steep slope, lakes and swamp land not already used, there is left 1,498 square miles available and suitable for urban expansion. Figure 4 shows the distribution of this remaining land. Beyond the central core of existing development land suitable for urban expansion reaches out in every direction except to the north, near the Hudson River, principally in the westerly part of Westchester County, where there is a scarcity.

Table I gives the breakdown by counties of open land suitable for expansion. About 47 per cent of the total is in New York State, 45 per cent in New Jersey and 8 per cent in Connecticut. There is none in Manhattan and only 58.5 square miles or 4 per cent in New York City. Suffolk, Westchester and Nassau have nearly the same amounts available. Bergen, Middlesex, Morris and Monmouth have each more than 100 square miles.

**Distances from Center of Region**

Distance from the center of New York City is an index of several regional factors important in expanding development. Table II records the amount of suitable land in the various counties within five mile rings from City Hall, Manhattan.

Within the first five-mile area only 3.6 square miles are available, three-fourths of which are in Hudson County. Between five and ten miles there are about 27 square miles principally in Brooklyn, Queens and Bergen County. In the 10- to 15-mile zone Bergen County, Queens Borough, Union and Richmond have most of the 79 square miles available. In the 15- to 20-mile zone Nassau, Bergen, Essex and Union lead. Summing up the amount of available land within 20 miles of the center it is found that there are over 300 square miles which would house 2,340,000 people at a density of 174 persons per gross acre (single family homes on 60 foot lots.)

Of this total of 300 square miles, however, only 25 square miles are in Queens
and 9 square miles are in Westchester County, where the rate of population growth has been most rapid. The 210 square miles of land suitable for urban expansion in New Jersey within 20 miles from the center of New York, and the 22 square miles of land in Richmond within this 20-mile circuit may well be in excess of needs for future residential growth, while land scarcities may develop in Westchester County and in Long Island near suburban railroad stations.

This leads to the conclusion that so far as space alone is concerned there will not be an immediate need for expanding farther than the 20-mile circle. Of course, other factors must be considered, such as the character of the districts represented by these available areas. If there were any means of keeping some of them as open belts or wedges in the overall pattern there would be some justification for developing areas farther out.

Future uses other than residential, such as parks and reservations, water supply, industry, highways and parkways, institutions, and airports, will absorb some of the available land. The larger areas of the first three of these uses will be for the most part on unsuitable land. Tentative studies indicate the possible need of about 50 additional airfields within the area, which would absorb about 15 square miles. These and some of the freeways, parkways and institutions would require land suitable for urban development.

The 1,500 square miles of suitable land in the whole Commuter Area would house about 165 million people in single-family homes. Present expectation is that the ultimate increase in population will not be more than a small fraction of this amount. Estimates made in 1941 forecast a probable increase of 2,900,000 for the Region by 1970. The population increase of about 35 million people between 1925 and 1940, plus the expansion due to decentralization, absorbed less than one-eighth of the land suitable for development as of 1925. Clearly there is a surplus of available land in the Commuter Area.

Figure 5 shows the agricultural value of the soils of the Region. It is considered a sound policy to organize land controls so that they will encourage the retention of the best agricultural soils in open types of development.

With a multifold surplus available the


### TABLE III

PROXIMITY TO RAILROAD STATIONS AND RAPID TRANSIT OF LAND SUITABLE FOR URBAN DEVELOPMENT BY 5-MILE RINGS (Square Miles)

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<th>One to two miles</th>
<th>Over two miles</th>
<th>Total</th>
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<td>1.9</td>
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<tr>
<td>over 45</td>
<td>1.2</td>
<td>3.6</td>
<td>26.4</td>
<td>31.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>477.4</td>
<td>539.5</td>
<td>480.9</td>
<td>1,497.8</td>
</tr>
</tbody>
</table>

Problem is to grade the land according to its desirability as a part of an efficient pattern of development. As noted in Regional Plan Bulletin No. 63, 90 per cent of the area closely developed between 1925 and 1940 is within one mile of railroad stations or rapid transit lines.

### Neatness to Rail Transportation

One measure of the suitability of land for urban expansion is its neatness to existing rail transportation. This is probably not a good long-term measure, because new transportation routes will be developed as needed. It is reasonable that the densities at which the land is developed would vary roughly with the distance from transportation.

A measurement was made of the suitable lands in each of the five-mile rings and according to whether it is within one mile, between one and two miles, or more than two miles, from railroad stations or rapid transit lines. A summary of the results is presented in Table III. About 32 per cent of the total of nearly 1,500 square miles is within one mile of rail transportation. This amount of land, representing 477.4 square miles, is sufficient to house over 5,300,000 people in single-family homes. Certainly there would appear to be no need for high densities, even in areas near rail transportation.

Between one and two miles of transportation there are about 540 square miles; beyond two miles an additional 481 square miles.

Within the first five miles of the regional center there are available only 1.7 square miles of suitable land within a mile of transportation. The amount rises in each successive ring up to the 20- to 25-mile ring, where there are 133 square miles. Within 25 miles of the center there are 291 square miles within one mile of transportation. This would house over 3,240,000 people in single-family homes.

There is a tendency to assume that because the bus and private car have made accessible many areas away from developed centers that these areas are therefore ripe for close urban development. However, while the land may be less costly to start with, by the time all the public services are supplied, such as water supply, sewers, schools, fire protection, and policing, the home owner usually finds himself no better off financially than he would have been if he had located on a site nearer to an existing center. He may also find that the extra time, energy and cost of getting to work and getting the household shopping done is a considerable burden.

The principal permanent gain for the home owner in locating in outlying districts would result from the establishment of an open type of development on large lots. In most cases such a type of development would also be a gain to the community. It is therefore suggested that the municipalities having a substantial acreage of outlying open area consider zoning it for lots of a half-acre or more. If the land is not physically suitable for small-lot development there is all the more reason for the large-lot zoning. This applies to
CONCLUSIONS

The quantitative measurement of land available for urban expansion presented above should prove helpful to the locality in appraising its relation to the Region, but is not a substitute for a local study of land uses. A local study must be made so as to incorporate some of the other important factors of development, such as the existence of public utilities, land values and local public needs of the future; it is necessary to reach a sound basis for the application of the local controls of zoning, subdivision regulation, building code and the planning of public services.

With the beginnings of a wave of new subdivisions there is great danger of an excess of development disastrous to the locality. For an example and a warning, investors and developers have only to look back to the 1920's, when a boom in development left a broken trail of unused streets, lots and utilities, of half developed areas, of foreclosed plots, of blighted areas spoiled for any other use, but waiting in vain for people and homes.

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