ANALYZING LANDUSE MANAGEMENT TECHNIQUES: AN INTEGRATIVE APPROACH FOR CONTROLLING THE CONVERSION OF AGRICULTURAL LAND

by

PAUL KEITH GREELEY

B. S., Kansas State University, 1980

A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF REGIONAL AND COMMUNITY PLANNING

Department of Regional and Community Planning

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1984

Approved by:

John W Keller
Major Professor

LD
2668
.R4
1984
G73
c. 2

A11202 620108

TABLE OF CONTENTS

Page

List of Appendices i

List of Illustrations ii

List of Tables iii

Chapter I. STATEMENT OF THE PROBLEM 1

1. A Serious Land Crisis 1

a. Back to the Land Movement 1

b. Agricultural Lands Location 1

c. Decisional Forces 3

d. Poor Farming Techniques 3

e. Conflict of Land Management 4

2. Purpose of the Report 5

3. Scope and Method of Study 5

4. Overview 5

5. The United States as a World Food Producer 6

6. Establishing United States Landuse Goals: An Historic Overview 11

7. Federal Governments Role in Land Conversion 13

8. Local Landuse Decisions 13

Chapter II. AGRICULTURAL LAND RETENTION TECHNIQUES 15

1. Developing a Problem Solving Process 15

2. Agricultural Land Retention Techniques 17

a. Land Regulatory 17

i. Zoning 17

ii. Critical Area Analysis 18

iii. Growth Management 20

iv. Agricultural Districting 22

v. Right-to-Farm 24

vi. Development Rights of Land 26

3. Tax Incentives as an Agricultural Land Retention Technique 30

CHAPTER III. AGRICULTURAL CONVERSION PROCESS 35

1. Agricultural Land Retention: A Closer Look 36

2. Agricultural Land Conversion 38

a. Social Implications 38

b. Economic Implications 39

c. Land Use Implications 40

d. Environmental Implications 40

e. Fiscal Implications 41

3. Identifying Prime Agricultural Land 41

a. Classification of Land 43

4. Land Evaluation and Site Assessment Rating System (LESA) 45

a. LESA: An Analytical Look 46

b. Predecessors to LESA 50

c. Location of Agricultural Land 52

d. Size of Tracts 53

e. Federal Governments Role in Agriculture Retention ... 53

5. LESA: Does Lack some Critical Concerns 56

CHAPTER IV. BRINGING IT ALL TOGETHER 60

1. Varying Degrees of Land Conversion 61

a. Rural 61

b. Addressing More Intensive Conversion Situations 62

c. Agricultural Land Retention in the Urban Realm 65

APPENDICES

		Page
A.	TYPICAL AGRICULTURAL DISTRICT ZONING DESIGNATION	68
B.	SOIL CAPABILITY RATING	71
C.	LAND EVALUATION AND SITE ASSESSMENT RATING FORMAT	72
D.	LOCAL EFFORTS TO RETAIN AGRICULTURAL LAND	76
E.	FORMULATING GOALS AND POLICY OBJECTIVES FOR A FARMLAND RETENTION PROGRAM	78
F.	CITIZEN PARTICIPATION	82
G.	INTERVIEW WITH A KANSAS FARM BUREAU OFFICIAL	85

LIST OF ILLUSTRATIONS

Page

1. FIGURE I-1, Unites States Map: Indicating the Great Plains Region 8

2. FIGURE I-2, Linear Projection of Population 10

   A. United States Toptal Population, 1800-2000.

   B. World Total Population, 0-2000.

3. FIGURE II-1, United States Map, differentiates various tax programs in effect by state. 32

LIST OF TABLES

Page

1. TABLE I-1, Shifts of Land to Urban Uses, 1967-1975 2

2. TABLE I-2, Agricultural Land Conversion to Urban, Built-up, Transportation and Water Uses, 1967-1975 9

3. TABLE II-1, States with Deferred Taxation Programs 32

CHAPTER I

STATEMENT OF THE PROBLEM

A SERIOUS LAND CRISIS

Back to the Land Movement.

A back to the land movement occurred in the period 1967-1975 (see TABLE I-1) which shows a significant shift of agricultural related land to urban uses (13.5 million acres). (NALS, 1981) Relative to this, large metropolitan areas have experienced a decline in population that reinforces this back to the land movement. Many families have chosen to move farther out into the rural area because large lots at lower costs per acre are available.

One of the major factors increasing the demand for agricultural land is an improving economic climate that encourages corporate relocation to the Midwest and Sunbelt areas, coupled with increasing family incomes and the desire for ex-urban living. Generally, once urban services and infrastructures are built, the ability of the area to sustain more growth increases, perpetuating the takeover of surrounding agricultural lands.

Agricultural Lands Location

The general location of land, soil type, water availability, and accessibility often increase overall land value. Where land is located

TABLE I-1

Shifts of land to urban uses (million acres) 1967-1975

Region	Cropland	Pasture/Range land
Northeast	.6	10.1
Southeast	.7	.7
Pacific	.6	.1
Lake States	.5	.2
TOTAL	2.4	11.1

next to a growing community its value as a development resource differs from its value as an agricultural resource. As a development resource, its value is largely monetary to the owner; as an agricultural resource its value is more socially beneficial as an important link in the food production sector, essential in the recharge of ground water, and visually as open space. (NALS, 1981)

Shortages of urban land with subsequent high costs have created a situation where land that is located near communities has more development value than agricultural value, causing a leapfrog effect where urban development passes over (leapfrog) high valued fringe land to the lower priced rural agricultural land. (NALS, 1981)

Decisional Forces

Competition for land to be used for other than agricultural purposes is the result of complex public and private decisions. Manufacturers decide to expand, relocate or reduce operations; developers choose where to locate new subdivisions and commercial areas, families decide to move or relocate locally. These decisions are all affected by established market centers, corporate transfer policy, land prices, and wages. The result of this decision-making process can be seen in the "back to the land movement" and industrial and corporate movements to the sunbelt areas.

Poor Farming Techniques

The misuse of land resources often expresses itself in farm poverty, low agricultural productivity, unemployment and a generally

unsatisfactory way of life. What happened in the "Dust Bowl Period" is likely to occur again. In the 1930's the cultivation of unstable lands and an ensueing drought devasted not only those marginal lands but adjacent lands throughout the Great Plains Region. In recent years, demands on United States agriculture have increased. Subsequently farmers have risen to this demand and have planted all available lands, stable and unstable alike. (NALS, 1981)

Farming techniques that conserve the soil, such as contour farming, crop alteration, and efficiency of irrigation are seldom used. The results could once again be typical of the times preceeding the 1930's. As pointed out in Schumacher in Small Is Beautiful, "Ignorance and greed have again and again destroyed the fertility of the soil to such an extent that whole civilizations have floundered... and where people imagined they could not afford to care for the soil and work with nature the resultant sickness of the soil invariably imparted sickness to all factors of the civilization."

Conflict of Land Management

Federal programs often contribute to the loss of agricultural land by providing financial support that leads to increased urbanized uses of land. Of the ninety programs identified in the National Agricultural Lands Study (NALS), as potential agricultural land consumers, not one of these federal programs provides technical or financial support to help communities protect or conserve agricultural land through local planning programs.[1] Overall, this has resulted in the continued depletion of the agricultural land base, jeopardizing a viable commodity production

sector and the livelihood of 1% of this country's population. (NALS, 1981)

PURPOSE OF THE REPORT

The statment of the problem identifies a dilemma: a) farmer utility and maintenance of agricultural land and, b) agricultural lands role in the urbanization of America. By identifying these concerns an attempt will be made to understand the reasons why these attitudes persist and develop a viable program to address production capability and farmland conversion vs. retention issues.

SCOPE AND METHOD

To evaluate land use management, to identify varying degrees of the problem, i.e., the conversion of agricultural land to urban uses in rural areas, in rural areas experiencing growth and, in metropolitan areas, and to appropriately apply landuse regulation, taxation and private incentive programs to conserve agricultural land.

OVERVIEW

My first intentions were to develop a specific set of guidelines to address the agricultural land conversion problem, something on the order of an agricultural impact assessment statement.

As I became involved with researching the problem, I found that degree is the major factor relating to the percentage of total agricultural land being converted in a specific area, and additionally that landowners and farmers as well as local officials must have the desire to conserve agricultural land.

My conclusions are:

1. Agricultural land conversion occurrs within three basic situations: rural, rural experiencing high growth, and metropolitan.
2. Various programs to address locally significant factors can be identified. In all three cases, what is required is a complementary blend of zoning, land regulation, taxation and private incentives, all working together to come to grips with the problem.
3. In the end a concerted effort to retain agricultural land may begin at the public level but to be successful it must extend into the private sector where landowners and farmers want to continue farming because farming is a profitable endeavor.

THE UNITED STATES AS A WORLD FOOD PRODUCER

The continental United States has a more opportune climate for agricultural production than any country in the world. The Great Plains (FIGURE I-1) stretching from the Rockies on the west to the Appalachians

on the east and the Gulf of Mexico on the south to the Canadian border on the north, encompasses the largest land area in the world having favorable climate, rainfall and soil type for the production of a wide variety of agricultural products.

The farmer of the Great Plains must orientate himself towards the maintenance and preservation of his natural environment. Therefore, man's management of the land should be directed toward three goals: 1) health, 2) beauty, and 3) permanence. Agriculture's part in addressing these goals is 1) to keep man in touch with living nature, 2) to humanize and ennoble man's wider habitat and 3) to bring forth food stuffs and other materials for a becoming lasting life. (Schumacher, 1975) These tasks constitute the necessary framework for dealing with the thoughts and concepts of land use, not only agricultural land use but residential, commercial, and industrial.

One of the major impediments to man's management of land is that agricultural land conversion in the Great Plains, and more specifically the North Central Region of the United States, amounted to over 500,000 acres per year since 1967 (see TABLE I-2). (NALS, 1981)

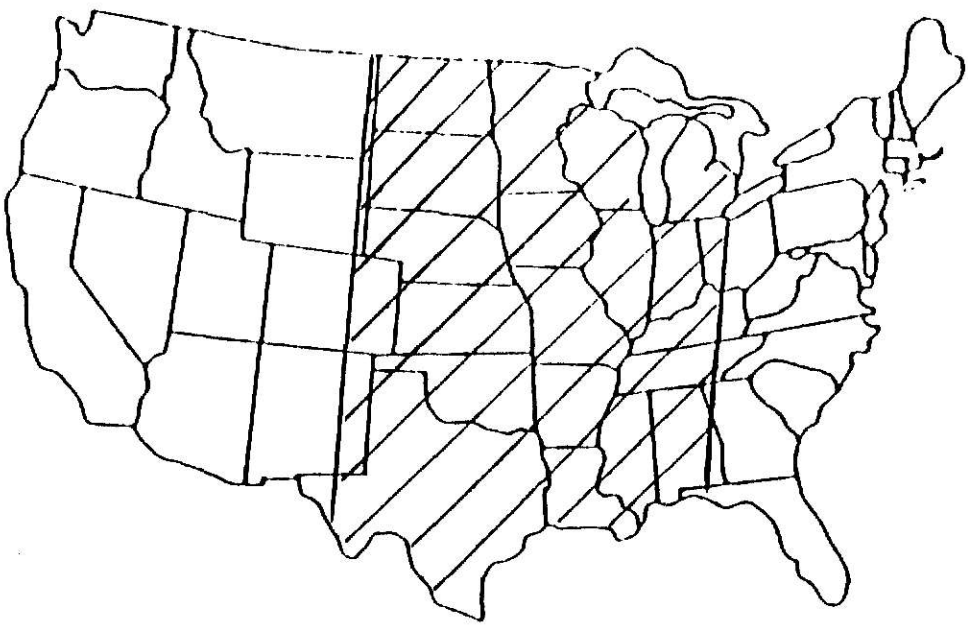
The importance of this region is more easily understood when considering the fact that forty percent of the total value of agricultural products sold in the United States comes from the North Central Region. (NALS, 1981)

At the national level, 3 million acres of farmland per year are converted to nonfarm use. An additional 3 million acres are lost to erosion or poor farming techniques that in many cases are brought on by the conversion process. (NALS, 1981) At this level of loss, there is a

very real problem in the ability of the agricultural sector to support population growth, overall increases in demand for United States agricultural products throughout the world will undoubtably change with present surpluses in agriculture changing to shortages, straining the entire food production sector. This projected increase in demand can be seen in FIGURE I-2, A which shows United States population increases of 50-75 million by the year 2000; and FIGURE I-2, B which shows world

FIGURE I-1

GREAT PLAINS REGION OF THE UNITED STATES



Source: NALS, 1981.

TABLE I-2

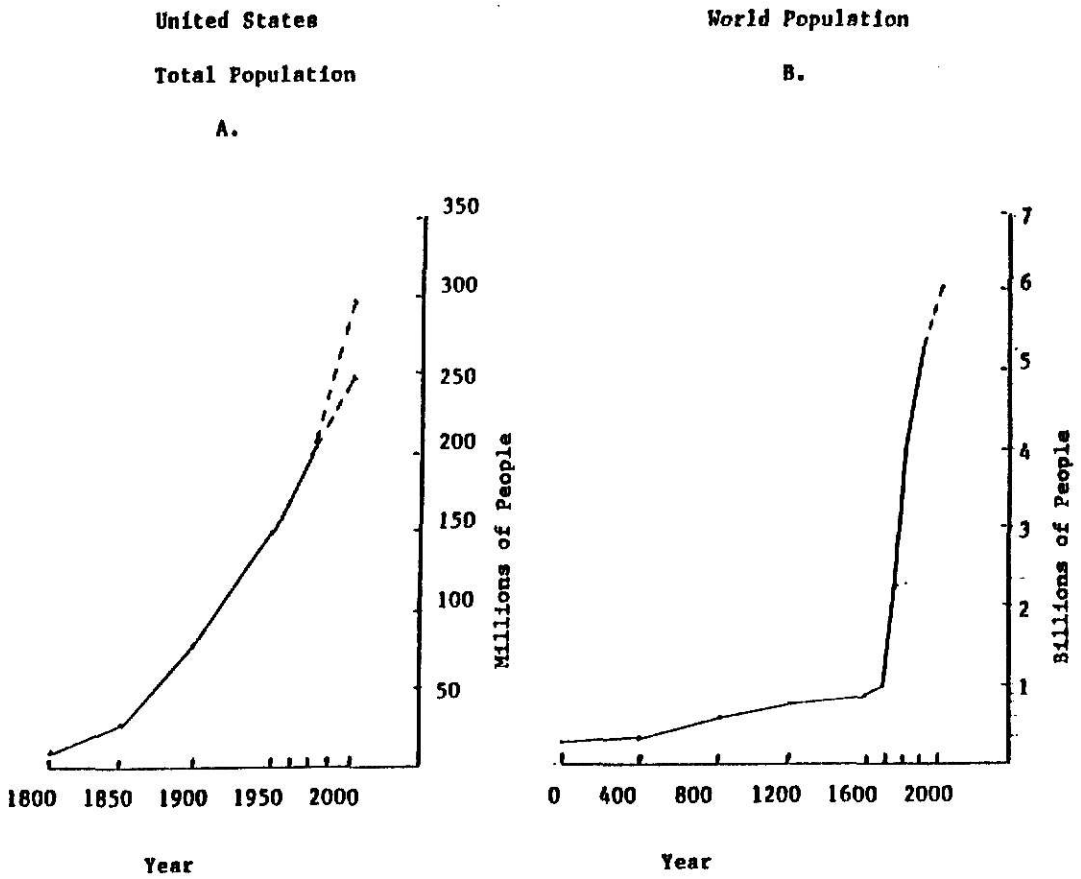
Agricultural land conversion to urban, built-up , transportation and water uses, 1967-1975. (million acres)

CENCUS REGIONS	CROPLAND	PASTURE RANGE	FOREST LAND	OTHER FARM USES	TOTAL
NORTH CENTRAL REGION	1.6	0.8	0.7	2.1	5.2

Source: NALS, Final Report 1981, pp. 18

FIGURE I-2 A and B

LINEAR PROJECTION (POPULATION)



Source: Robert Lemire, Creative Land Development, Houghton Mifflin Co., Boston, 1979, pp. 2.

population increases of three quarters of a billion persons in the same time frame. (Lemire, 1979)

One must conclude that with the increases in population growth increases in demand for land with development potential will occur. At the same time increases in the demand for agricultural products are expected to rise, a confrontation will occur between land for development and land for agriculture. Landowners and land developers must therefore be responsible to ensure a harmonic, compatible relationship between the two potential conflicting land uses. (Erwin, 1974)

ESTABLISHING UNITED STATES LAND USE GOALS: A HISTORICAL REVIEW

Developing a framework and program for the protection of agricultural land is not new. Dr. D. W. Farrell, a noted writer on land utilization first talked of the creation of a National Land Use Planning Committee in 1933 and the need to formulate a national land use policy. Some of his original work can be seen in planning policy programs in use today:

1. Farmlands are to be used for those immediately involved in its operation and not as factories or mines.
2. Regional and national interests should be considered regarding public domain and reclamation.
3. Public welfare should take precedence over individual wishes: safety, welfare, and disease control.
4. Jeffersonian individualism should be modified.

5. Control of credit should relate to requirements of good land management. (D.W. Farrell, #537)

Dr. Farrell saw the importance of land use planning beyond the individual scale, where the actions of one could affect many, both positively and negatively. His discussions on regional planning at regional agricultural conferences were therefore directed at those audiences. The advantages that Dr. Farrell saw in regional land use planning were:

1. To bring together representatives of all sections of the region. With presentation of issues for all to hear and understand.
2. To create a saner and more practical attitude by farmers and the general public in their use of land.
3. To generate enthusiasm for conservation of land resources.
4. To recognize the individual land users relation to conservation: erosion, and weed and pest control.

Dr. Farrell's concern for land utilization occurred about fifty years ago. This concern in an era of plenty shows the foresight he had in land use issues, addressing many of the same issues of compatability and efficiency of use that we are addressing today. Farrell's work in soil conservation and land management set a precedent for governmental agencies presently involved in such programs. It is important that varying conservation techniques and management policies have been experimented with since the 1930's. With over fifty years elapsed, the applicability of such efforts have been seen and duplicated many times. Recognition must also be directed to those individuals who were involved

with bringing to reality Farrell's concerns: farmers, ranchers, WPA workers, soil scientists and state and federal entities supporting and financing such projects. (Dr. Farrell, #537)

FEDERAL GOVERNMENTS ROLE IN LAND CONVERSION

At the national level there have been many federally initiated land use development programs that have directly and indirectly contributed to agricultural land conversions. Federal Public Works projects have increased the urbanized use of land, causing fragmenting and isolating of land in transportation corridors, water reservoirs, and capital improvements projects. The types of assistance that these programs provide can be grouped under five broad categories: economic, capital improvement, housing, natural resource development, and environmental protection. Several notorious examples of this are the Federal Interstate Highway System that acquired and developed over one million acres of rural land, and the Army Corp of Engineers and Bureau of Reclamation that have covered over ten million acres of land with water reservoirs, recreation areas or other intensive, permanent uses of the land.

LOCAL LAND USE DECISIONS

Leadership and responsibility for well planned land development should take place at the local level. G.P. Wibberly, in his book, stated that "any modern community is faced with problems of competing

claims for the use of certain parts of its land surface". If the use of the land were socially rather than physically determined it would be rare for any particular use to be completely rejected. Therefore, the best use of land is a relative rather than absolute problem and we must accept that this best possible use can and will change from one generation to the next. The range and priority of uses that society wants satisfied from its physical environment at any particular point in time will be the deciding force in the change of land use.

Wibberly also discussed a school of thought originating in England, "Onus of Proof", where the use and users of the land in its existing state have a prior claim and that any proposed new use should prove that the community will benefit if the land in question is passed over to those new users. It must be stated that many land conversions that occur today have implications beyond the local level. When these implications are understood the locality can be expected to make better decisions about land use.

(Footnote reference from pg. 4)

[1]Federal Public Works programs that have directly contributed to the loss of farmland are:

1. Federal Interstate Highway system (1 million acres), other highways (20 million).
2. Army Corp of Engineers & Bureau of Reclamation, reservoirs and water impoundments (10 million acres).
3. Federal Aviation Administration, airports (35,000 acres).
4. Environmental Protection Agency, sewage treatment plant extensions.
5. Energy development, stripmining (4 million acres), 1 electrical generating plant (13,000 acres).

Source: National Association of Counties Research Foundation, Disappearing Farmlands, A Citizens Guide To Agricultural Land Preservation, 2nd. Edition, August 1980, Page 7.

CHAPTER II

AGRICULTURAL LAND RETENTION TECHNIQUES

In some states programs have existed since the 1960's that are being used to retain agricultural lands. (NALS, 1981) At the national level, concern has come only recently as evidenced by the National Agricultural Lands Study published in 1981.

The most important agricultural land retention programs are land regulation, taxation, and private incentives. Land regulation techniques take the form of zoning, agricultural districting, growth management, critical area identification, and development rights programs. Taxation has been through preferential assessment, deferred taxation, and restrictive agreements. Private interests in this area have had the least use but can become feasible through donations, trusts, or private funds purchasing development rights, or outright purchase of agricultural lands.

DEVELOPING A PROBLEM SOLVING PROCESS

A five phase approach was selected to facilitate the problem solving process involved in organizing the necessary goals and objectives of such a program:

1. Clarity of Purpose- Clarity of the specific purpose addressed is vital for an understanding of what is to

be done, i.e., containing urban sprawl or maximizing production for export.

2. Means appropriate to the end- When the ends have been clearly defined, selection of specific mechanisms that will be most effective in achieving the desired ends can be made. Some techniques are more effective in protecting the overall amount of prime agricultural lands, while others may be more effective in preserving specific threatened locations.
3. Equitable distribution of costs and benefits- Distribution of costs and benefits will differ under each program, just as those individuals or governments who pay for them will differ.
4. Minimum controls consistent with effective performance- Most citizens are by nature suspicious of governmental control. Preferences are for local controls of a voluntary nature rather than state imposed restrictions. However, it should be noted that the mechanisms must be sufficient to achieve the desired purposes; with stronger measures than initially preferred becoming necessary.
5. Administrative flexibility- Any program adopted should be flexible and capable of responding to different degrees of pressure in order to protect prime agricultural land, while not squandering attention or controls on less valuable land. A state program must have statewide standards and guidelines so that the conversion is addressed in its broadest content. (Lemire, 1979)

After the goals and objectives have been addressed and administrative and implementation processes have been organized, the agricultural land retention programs should be analyzed.

AGRICULTURAL LAND RETENTION TECHNIQUES

Land Regulatory

Land regulatory techniques designed to retain agricultural land should begin with zoning. Zoning's intent is to 1) protect and promote the public health, safety, and general welfare, 2) secure safety from fire, explosion, noxious fumes, and other hazards, 3) avoid undue crowding of land, persons, or buildings, 4) encourage the most appropriate use of land throughout the district and foster a rational relationship between people, land, and buildings, 5) coordinate patterns of use, and 6) preserve the natural environment.

Zoning

Zoning, in the broadest sense, affects physical development and proposals for development. In its application, a zoning ordinance is often a complex and lengthy process. Participation and organization are the keys to the process of writing and enforcing a zoning ordinance. Specific objectives of the zoning ordinance can be outlined as follows:

1. Prevent scattered, haphazard suburban growth.
2. Guide orderly change.
3. Avoid restricting or hampering agricultural activities.
4. Prevent unfair shifting of public construction costs to the farmer/taxpayer.
5. Prevent rural areas from becoming dumping grounds for land uses not wanted elsewhere.
6. Keep productive farming areas in agriculture.
7. Reserve more fertile soils for farming.

8. Protect the economic base of local agricultural services, marketing firms, and industries.

Because zoning ordinances are generally lengthy and complex, only one subsection of the ordinance that relates to agricultural land retention will be discussed. Agricultural Zoning (A1), a typical zoning ordinance that relates to an agricultural area would begin by establishing a reference (A1) and defining the permitted activities allowed in the zone. Appendix A is an example of an agricultural zoning ordinance in use in Pottawatomie County, Kansas. By physically classifying agriculture, the ordinance can recognize this activity within its boundaries. If retaining agricultural land is desired through zoning, administrators of the ordinance have a legal technique to make farmland conversions more difficult.

Public officials are given the task of determining if farmland conversion requests will affect the health, safety, or welfare of all parties involved. The ability of officials to justify administrative decisions based on zoning concepts may have legal ramifications. Court decisions involving nuisance suits and right-to-farm suits will set a precedent and give the official a broader base of operation to utilize zoning as an agricultural land conserving tool.

Critical Area Analysis

Critical area analysis is simply stated as an evaluation procedure using a consistent set of factors to determine the significance or criticality of this issue in relation to the whole or desired ends. For example, a critical area analysis approach to determine prime

agricultural land would use the following factors to determine prime or non-prime farmlands:

1. The Soil Conservation Services, Soil Capability Rating (see Appendix B).
2. Any available soil productivity rating system.
3. Climatical considerations.
4. Flooding potential.
5. Distance to market.

This process is beginning to look like the Land Evaluation and Site Assessment procedure discussed later in this text.

Critical area analysis is a legislative approach designed to preserve lands of state or regional importance, agricultural lands, wildlife areas, and unstable lands. The approach can be described as follows:

1. It is a straight forward method of influencing the rate, timing, and spatial distribution of farmland conversion.
2. Its economic feasibility is not impaired by the burden of excessive compensation on the public purse.
3. It provides for an element of state influence in rural land use management that doesn't erode local authority.
4. It is limited to highly productive farmland.
5. It advocates infilling and the use of undeveloped land in prior platted and zoned areas.
6. It substitutes marginal agricultural land for development. (Gustafson, 1981)

Critical area analysis should contain documentation of the public purpose, specifying the conditions so that it remains consistent with the public interest to preserve prime farmlands.

Critical area analysis is by nature a single purpose program that is easier to implement politically but less likely to be successful than its more complex counterparts. Joining it with zoning, capital improvements scheduling, and agricultural districting may ensure success. These actions should reflect community development need where public choice is encouraged within the framework of the comprehensive plan.

The weaknesses of critical area analysis is that it must work in conjunction with other land regulatory programs to be effective. As a single resource planning program it has not been able to reflect concerns for both conservation and development. An example of this is when lands that have statewide importance are not recognized as important from the local point of view. Where local economies may suffer when those important lands are preserved instead of developed. Their economies suffer by having to turn away land consumptive enterprises in order to follow a local and statewide agricultural preservation plan. (Gustafson, 1981)

Growth Management

A more indepth farmland retention effort can be developed by utilizing assorted growth management techniques. Techniques of growth management have long been ingrained in the basic operational structure of local and county government capital improvements scheduling. By looking closely at the management of the physical improvements schedule,

transportation, sewer and water, and utilities, both the direct and indirect characteristics of growth can be addressed. (NALS, 1981) The objectives of a growth management approach can be outlined as follows:

1. The need to consider the entire system of land use and development when farmland is considered.
2. The need to plan extensions of capital improvements, water, sewer, and transportation.
3. The need for coordination at all levels of government by monitering investment policies and growth patterns in both public and private sectors.
4. The need to establish local land conservancies which give public agency responsibility for protecting agricultural land resources. (NALS, 1981)

Farmland is most likely to be converted when growth is uncontrolled. A complimentary blend of land use controls and public capital improvement/revenue spending programs can provide the growth management strategy necessary in a highly competitive land development marketplace.

Uncontrolled growth usually occurs where local and county jurisdictions overlap, requiring the organization of a regionally cooperative growth management scheme, to reduce public expenditures, provide for growth and reduce the impact of conversion on economically viable agricultural lands. (NALS, 1981)

The main function of any type of growth management is to link local or county capital improvement programs to an idealized development pattern that promotes:

1. Public services and facilities that include transportation, and water and sewer services that maximize efficiency of construction and operation.
2. Infilling and redevelopment of areas where services are already provided.
3. Protection of unique and environmentally sensitive areas.
4. Preserve and enhance agricultural land and its function. (NALS, 1981)

By integrating farmland retention within this program, a justifiable technique to control growth through a capital improvement schedule can be maintained. The benefits of such an approach include reduced public expenditures and utilization of existing serviced areas. Some drawbacks are the inability of local governments to support their actions through the capital improvements schedule and the inability of localities to compensate landowners, developers, and citizens who suffer financial loss as a result of a reduction in growth.

Agricultural Districting

A weak farm economy and an increasing trend to develop agricultural land necessitates the need for an agricultural districting program. Beginning with California in 1965 and ending with Minnesota in 1980, six states have enacted laws based on the districting concept. (NALS, 1981) Agricultural districting is an incentive program that differs from other farmland retention techniques because of the unique combination of taxation, zoning, and strength in numbers (districts) directed toward the ultimate goal of retaining farmland. The district approach creates a minimum size area allowing farming as the only activity. The intent

is to keep farming desirable, practical and certainly profitable. The following is a partial listing of the attributes of an agricultural districting program:

1. Voluntary enrollment entitles the landowner to a property tax assessment on the basis of agricultural use instead of fair market value.

   Development pressure that drive up the fair market value of farmlands are depressed thus keeping operating costs, property taxes and land rental rates lower.

2. Legal enforcement of farm nuisance suits are reduced or eliminated to agricultural district members.

   Backed by their right-to-farm the farmer can continue normal farm practices without threat of legal injunction.

3. Redirect public expenditures to promote non-farm development in other farm areas.

   Capital improvements are not extended into agricultural districts thereby reducing many incentives for development to move into the district.

4. Alternate areas should be explored before converting farmland.

   By redirecting development towards infilling, increasing densities of development and utilizing marginal agricultural lands the demand for growth can still be met.

5. Public improvements that do not benefit the agricultural district are not assessed to the area.

   Farmer/taxpayers in the district are not assessed for service improvements that have been constructed as part of the growth process.

6. Soil and water conservation and management practices can be instigated.

   Sound farmland management reinforces land use and agriculture.

7. Study the impacts of proposed districting to adjacent buffer areas.

   Buffer zones that allow an adequate transition from districts to adjacent buffer areas can be created in the form of open space, recreational areas and transportation corridors.

8. Enact state cooperation and compensation that encourages local agricultural districting. (NALS, 1981)

The benefits of the districting approach are 1) preserving viable farmlands, 2) reinforcing farming as part of the local economy and, 3) reduction of public service costs when land is developed less intensively. The major drawbacks are 1) less contractor new development activity, 2) loss of land consumtive industry and commerce and, 3) loss of employment and revenue generating opportunities.

The implications of the districting program are unclear; there are so many participants involved that cooperation and coordination are the keys to program success. Farmers must cooperate voluntarily, officials and developers must rethink and redirect their expansionistic ways, and both groups must realize that unchecked growth is not always better.

Right-to-Farm

Right-to-farm legislation is used to protect farmers against legal action by their neighbors and local governments arising from nuisances created by normal farm practices. So many farmers have called upon their legislators for protection of this type that to date some seventeen states have adopted "right-to-farm" legislation. (NALS, 1981)

Right-to-farm legislation eliminates the power of local government to enact many types of nuisance ordinances within agricultural districts. Normal farm practices are not to be restricted unless they directly endanger public health or safety. (NALS, 1981)

Right-to-farm legislation works within an abnormal set of regulations. The interpretation and enforcement of the act must proceed cautiously, taking care not to undully restrict subdivisions, partitioning of land and individual lot sizes. On the other hand new farm practices and extensions of structures that do have the potential for nuisance claims must be restricted. What this has done is to place the burden of proof on the farm operation; farms wishing to change or expand must prove that their operations will not cause nuisance to surrounding non-farm uses. The use of the common law of nuisance creates even more burdens to the farmer because of degree and range: At what level is the nuisance occurring and does it have greater aerial implication, i.e., is it a private or public nuisance? Determining whether a private or public nuisance is occurring is of utmost importance because a more appropriate approach toward remedying the nuisance can be developed. The degree and range of the nuisance can be determined by considering the following:

1. Does the utility outweigh the harm caused?
2. What is the nature of the surrounding conditions?
3. In what manner are the activities conducted?
4. Can the activity be reduced?
5. Will this reduction create more harm to either party?
6. What is the priority of use of the area?

Private nuisances involve restricting the use of the land with recourse against someone who interferes with this right. Public nuisance involves illegal actions which cause injury to the public. (NALS, 1981)

By a principal of first in time, first in rights, right-to-farm legislation provides that the courts can not declare a farming operation a nuisance if it finds the following:

1. If the agricultural activities are presenting no nuisance at their beginning.
2. Nuisance claims can only be justified if conditions have changed in the area where the farm is located.
3. The agricultural activity has been functioning a year or more before the nuisance claim.
4. Negligence or misconduct is not the reason for the nuisance suit.
5. Water pollution or flooding are not part of the suit. (NALS, 1981)

The effectiveness of the various right-to-farm programs is yet to be determined. Only through careful monitoring and input from farmers, citizens, and local and state governments will right-to-farm programs develop the kind of protection that farmers are demanding. (NALS, 1981)

Development Rights of Land

All land, whether it is flat, hilly or swampy has a development factor associated with it. Therefore a specific parcel can maintain that it has the same factor for development as any other similar tract. The development rights program calculates the lands development factor

and identifies the development rights on lands that the program deems to preserve. The development rights can then be forever preserved through either purchase aquisition or purchase and retirement. The landowner is compensated for his lands development value in the form of tax incentives or the direct sale or transfer of the development rights.

1. Transfer of Development Rights (TDR)

TDR takes the land's density potential and transfers it to another target area, allowing an increase in density. The effort must be complimented by flexibility within the lot coverage provisions of the local zoning ordinance. Additionally, the service infrastructure must be designed to absorb added construction. In most cases land development is more easily handled within the built-up area of a community, reducing the need for more cost outlays to administer and service undeveloped areas. Annexation is an example of communities acquiring land that subsequently requires tremendous financial input to plat, develop, and provide appropriate community services such as adequate roads, schools, police, fire, and emergency services.

An alternative to the public aquisition of development rights is a cooperation program between government and private landowners designed to utilize development rights in designated areas. This can appear in two forms, transfer of development rights from designated agricultural preservation areas or donation of development rights in return for tax concessions. The first involves local government participation, the second the Internal Revenue Code and its interpretations. (NALS, 1981)

Unlike a purchase of development rights program (PDR), where rights are purchased and then retired, transfer of development rights (TDR)

involves the shifting of these rights to a designated sending area. Development is redirected rather than supressed. In both cases agricultural land owners can profit on their land's development potential without really changing the lands use. Ideally this would keep land owners and developers happy and agricultural land in agricultural use.

However, several concerns arise: Will farmers cooperate? How will the program be administered and funded? Evidently some additional controls are necesary to ensure the success of such a program. The success of this program may be based on the following:

1. Involuntary cooperation by all landowners in the designated district.
2. Identifying multiple private/public funding mechanisms to purchase development rights.
3. Comprehensive planning to achieve desired land use patterns.
4. Local ordinances encouraging the use of development rights program participation by both buyers and sellers alike. These might include density districts, nuisance protection, and minimal property taxes. (NALS, 1981)

2. Purchase of Development Rights (PDR)

One of the stronger farmland preservation techniques that directly purchases development interests in land is purchase of development rights (PDR). Originally utilized as a program to acquire easement rights for conservation of fragile or unstable lands, scenic or service easements, more recently it has been used as an agricultural land preservation tool. It was first used by the National Parks Service over fifty years ago to purchase conservation easements.[1]

Where the conservation of agricutural lands is concerned, a less-than-fee concept or easement aquisition program can be applied. Less-than-fee is simply defined as having less than full ownership (use) of the land. Land use activities and the unregulated use of land is a misnomer and landowners would be wise to encourage the utilization of the less-than-fee concept. The landowner surrenders his development rights to the administering body in return for monetary or other concessions. (NALS, 1981)

PDR administrative bodies are organized for specific objectives. Their aim is to identify local agriculturally significant parcels that are most suited to their objectives. When the parcels have been identified, and the landowners cooperation to sell the development rights is secured, then community development is forever restricted. (NALS, 1981)

Cost is a major factor when purchasing development rights; officials must be aware of the expense involved to purchase development rights. The cost can be spread by identifying specific parcels of regional importance with high probability of conversion. The legislature can then earmark funds to finance PDR program target areas, thereby setting a limitation on the number of acres qualifying in relation to the budget.[2]

The benefit of the PDR is that it can work separately from other land regulatory techniques. Once the restriction is placed on the deed those factors are binding even if zoning, growth management or other regulatory techniques change.

TAX INCENTIVES AS AN AGRICULTURAL LAND RETENTION TECHNIQUE

The most common technique used in retaining agricultural lands is tax assessment. By the mid 1970s nearly three quarters of the states had instituted some form of tax assessment program as an incentive to maintain agricultural lands in the production of food, feed and fiber (see Figure II-1). There are three basic forms of tax assessment techniques that can be used to retain agricultural land; preferential assessment, deferred taxation, and restrictive agreements.

Preferential assessment addresses a critical need of the rural community. This need arises from the ripening of farmland under speculative pressure. Open land suited for development, especially those key parcels located at the metropolitan fringe, is taxed at its potential value rather than its current use-value. This often forces the farm owner to move the land to a higher use schedule, i.e., community development. When preferential assessment is used, the land is taxed according to it's current use (crop production) rather than its potential development value. In theory this results in a considerable savings to the land owner and provides an incentive for retaining the land in production (Miner, 1974).

One of the main drawbacks is that this program has no power to block land development after a preferential assessment has been made. An agricultural land owner is still free to sell for development purposes after receiving tax breaks for many years. Some states have tax recapture clauses when a change in use occurs. (Miner 1974)

Deferred taxation is somewhat similiar to preferential assessment except that it has a built-in penalty clause when a change in use

occurs. To qualify for deferred taxation, lands must have been devoted to agricultural use for no less than two years preceding the tax year that the deferrment will occur. If a change in use occurs, a roll-back tax equal to the amount of the tax saved during the current year and two preceding years is assessed against the owner. Some deferred taxation programs also have provisions for interest charges on the deferred taxes (See Table II-1).

One benefit of deferred taxation is that the community will receive roll-back tax revenues when they are most needed to provide the additional public services to the newly developing area. (Miner, 1974) A drawback to deferred taxation is the inability to keep land in its deferred use when developers offer the landowner large monetary gain. Gain that prevails over the retention effort and the penalities for withdrawal.

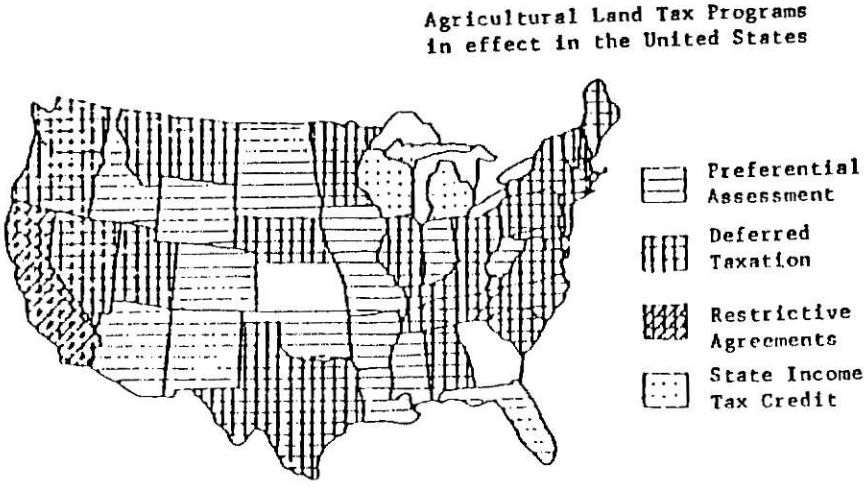
The last technique, restrictive agreements, is the most desirable for long term agricultural retention. In such a program the landowner agrees to restrict the use of the land for a specific number of years. Tax concessions are then in order, usually through local taxation programs, i.e., property or personal. Typically, landuse is restricted for ten years with a provision for several years notice if a use change is desired. These agreements occur in one of several forms:

1. Participating communities designate agricultural preserves within their jurisdictions. Property owners then voluntarily contract with the local government surrendering development rights in exchange for use-value assessment.
2. Participation is organized by landowners. When an area of five hundred contiguous acres or more is formed the landowners then

THIS BOOK CONTAINS NUMEROUS PAGES WITH DIAGRAMS THAT ARE CROOKED COMPARED TO THE REST OF THE INFORMATION ON THE PAGE.

THIS IS AS RECEIVED FROM CUSTOMER.

FIGURE II-1



Source: NALS, 1981.

TABLE II-1

STATES WITH DEFERRED TAXATION PROGRAMS

State		Rollback Period	Interest Rate	State		Rollback Period	Interest Rate
Alabama	(1978)	3	-	New York	(1971)	5	-
Alaska	(1967)	7	8%	North Carolina	(1973)	3	9%
Connecticut	(1963)	a	-	Ohio	(1974)	4	-
Hawaii 1	(1961)	-	10%	Oregon	(1963)	10	6%
Hawaii 2	(1973)	10	6,10%	Pennsylvania 1	(1966)	5	5%
Illinois	(1970)	3	5%	Pennsylvania 2	(1974)	7	5%
Kentucky	(1976)	2	-	Rhode Island	(1968)	a	-
Maine	(1971)	a	-	South Carolina	(1975)	5	-
Maryland	(1956)	a	-	Tennessee	(1976)	7	6%
Massachusetts	(1973)	4	a	Texas	(1966)	5	7%
Minnesota	(1967)	3	-	Utah	(1969)	5	-
Montana	(1973)	4	-	Vermont 1	(1969)	3	-
Nebraska	(1974)	5	6%	Vermont 2	(1971)	a	-
Nevada	(1975)	7	6%	Virginia	(1971)	5	6%
New Hampshire	(1972)	a	-	Washington	(1970)	7	10%
New Jersey	(1964)	2	-				

Source: NALS, 1981.

> submit an application to the appropriate legislative body. After review, public forum and certification, the district is officially registered. The farmers then receive reduced rates of taxation of their land throughout the certification period. Participation also ensures relief from nuisance regulations, protection from urban encroachment and governmental eminent domain procedures. (Miner, 1974)

At the local level, agricultural lands kept in that district will provide open space, locally produced farm products and support to the local farm enterprizes. At the larger agricultural districting scale, the open space provides for ground water recharge, wildlife refuge and support of farm related enterprize and industry at the regional level.

If restrictive agreements are not implemented simultaneously by both farmers and public officials, the outcome will be less than desirable, allowing leapfrog development, conflicting uses and little open space, compounding the problems that the program was designed to address. (Miner, 1974) This points out the need for local/county agricultural preserves that compliment the comprehensive plan for future land use and development.

The original intent of tax assessment programs was to reduce the real property tax burden placed on landowners. In actuality the owner is often less concerned with taxes as he is with demographic considerations. High land offering prices and changing neighborhood conditions effect his decision to continue farming or sell for development. Therefore, techniques that address these farmer concerns, as well as taxation, should be considered in order to retain agricultural land. (NALS 1981)

---

[1]Scenic easements were purchased by the National Parks Service in the 1930s along the Blue Ridge Parkway in Virginia and North Carolina and along the Natchez Trace Parkway in Mississippi, Alabama and Tennessee. (NALS, 1981)

[2]Suffolk County, New York, in 1974 developed a program to purchase easements on "optimum farmland" and adjacent parcels . . . funding of $21 million was approved by the county legislature in 1976 for sixty parcels constituting a two-phase approach for aquisition. (NALS, 1981)

CHAPTER III

AGRICULTURAL CONVERSION PROCESS

An important question should now be asked; have the farmland retention techniques and programs been successful? Property tax reduction techniques are designed to give financial relief to farmers, not to retain farmland. Land regulatory techniques have not always had the legal backing or administrative consistency. Private land retention techniques do not have major financial support or public acceptance. Generally, the capability of these farmland retention techniques should be questioned, in many cases they have been utilized only for lack of a better method. Up to this point administrators have worked within traditional boundaries manipulating retention programs that are only marginally successful. In California, for example, taxation incentives and more specifically use-value assessment under the California Land Conservation Act of 1965 has proven to be an inadequate land management tool. The programs inability to be effective was due to:

1. Voluntary program involvement
2. The time interval for the program contracts were too short
3. Insufficient incentives for the urban fringe
4. Non-participation due to the probability of development on the remaining land. (Gustafson, 1975)

Some combination of techniques would be the most manageable approach to retaining agricultural land. At the county or local level, a

comprehensive plan should be developed in conjunction with a growth management plan which will identify community or county goals, in terms of long range physical development. Infrastructure development as a part of the capital improvement schedule, is relevant to the objectives of the plan, where extensions of water and sewer, roads and utilities are planned in five, ten or twenty year increments. Through the extensions of basic services, local officials have control over physical growth, the amount of growth and the direction or location it occurs. Control over the physical development can be attained through the integration of the comprehensive plan and the capital improvements schedule, more commonly known as growth management. The legality of these actions has been upheld in the courts, as interpreted in Golden vs. Planning Board of Ramapo.[1]

AGRICULTURAL LAND RETENTION: A CLOSER LOOK

A typical farmland retention strategy would be designed to:

1. Combine any of the aforementioned land regulation, tax incentive or private approaches most appropriate to retain farmland.
2. Determine the social, economic, land use, environmental and fiscal impacts of farmland conversion.
3. Develop a process to identify those farmlands that are prime.

A generalized farmland retention strategy should develop on the concept of an agricultural impact/assessment process. The most logical approach being to formalize such an effort after the National Environmental Protection Acts' (NEPA) Environmental Impact Statement (EIS) which requires a detailed environmental assessment of any federal project that will have environmental significance. An agricultural assessment

process, although more general, should go several steps further to analyze the socio-economic impacts of conversion and identifying and classifying prime agricultural land, unlike the EIS which does not consider these factors. By taking the EIS's approach the agricultural assessment process will capitalize upon the mistakes that NEPA experienced in dealing with the writing of the EIS. The EIS is set out in five basic, yet surprisingly broad concepts: Section 102c of the EIS requires that the following concerns be addressed:

1. Determine the environmental impact of the proposed action.
2. Determine the adverse environmental effect which cannot be avoided should the proposal be implemented.
3. Determine the alternatives to the proposed action.
4. Determine the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.
5. Determine any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. (Mandelker, 1979)

In theory these five steps seem relatively simple, in reality they are complex. Preparation of an EIS is a thankless subject to those who have experienced the length of preparation time, technicalities and litigation connected with the writing of the document. A good example of this is the writing of the Alaskan pipeline EIS which took several years to complete and weighed over fifty pounds in published form. An agricultural impact statement should resemble the EIS in format and accomplishments and not in length or complexity, addressing every aspect of a jurisdictions social, economic, political and land use trends, including growth trends,

environmental, historic and other unique features. Of these, social change may be the most difficult to measure, when large scale development is imposing some unwanted or undesirable change.

Conversion of agricultural land disrupts a community's land use and causes economic base conflicts, increased traffic generation and fiscal change. Physical conflicts are numerous as well: 1) odors, dust, spraying and machinery noise that inflict nuisances on adjacent residential development; 2) electric and natural gas supplies that require high voltage power lines and gas extensions; 3) inadequacy of road systems that were designed for farm travel that must now handle heavier traffic loads; 4) fire, police, and health care facilities not equipped to handle the added demand. Aligning and planning for the impact of conversion upon these services is important because reducing, eliminating, or altering services is undesirable and costly.

AGRICULTURAL LAND CONVERSION

A procedure to assess the impacts of farmland conversion on surrounding areas should be comprehensive yet simple. Comprehensive means that every aspect of the existing activities are addressed, simple so that laypersons and officials can follow through the assessment process to determine the positive or negative effects. For these reasons a simple checklist type format may be the best way to organize the procedure. The assessment process can then be divided into several sub-catergories.

Social Implications

Determine the degree of community social disruption that farmland conversion will have:

1. Effects only those areas immediately adjacent.
2. Effects on a greater scale than the immediately adjacent area but less than fifty percent of the total.
3. Effects beyond the minority into the majority of the population, more than fifty percent.

Social disruption can be more easily recorded if the following issues are considered:

1. Traditional agrarian activities are not allowed.
2. Urban phenomenon forced upon residents.
3. Longer waiting lines at retail marketing operations.
4. Longer periods spent in automobile travel.
5. Measurable visual pollution i.e., trash, debris, build-up.
6. Measurable sonic pollution i.e., autos, pets, neighbors.
7. Measurable decreases in privacy, serenity.

Some may argue that social change is not always undesirable and that farmland conversion can have positive implications. Potential does exist for residents to experience a diversity of new friends, neighbors and wider ranges of lifestyles, values, and material things.

Economic Implications

Determine the degree of community economic disruption that farmland conversion will have by considering:

1. The demand for urban consumer related retailing service increases.
2. The demand for farmer related retailing service decreases.
3. The number of farm related jobs lost to the community.
4. The number of acres lost as income generators.

5. The degree of traditional agrarian activities lost or disallowed i.e., truck farming, home food production, self sufficiency.

Some arguments show that economic growth is necessary to ensure the continuance of a community by the provision of jobs to reduce out-migration at the expense of agricultural land.

Land Use Implications

Determine the degree of land use conflicts that will occur when agricultural land is converted by considering:

1. Land changed to non-agricultural use that historically has been agriculture.
2. Prime farmland changed to less desirable, less viable use.
3. Incompatibility of adjacent residential and agricultural activities: noise, smell, and safety.
4. Self generation of conversion once the initial conversion is allowed.
5. Land needed for public services to the converted area: transportation networks, recreational, utility easements.
6. Flood plain restrictions.
7. Smaller farm parcels that are less efficient.
8. Soil productivity.

Environmental Implications

Determine the environmental impacts that conversion will cause:

1. Is water available to meet increased demands?
2. Will draw down effect the water table?
3. Will incrased demands for water reduce that available for agriculture?

4. Will build-up increase runoff and silting considerations?
5. Are solid and liquid waste disposal sites available? Are they adequate? What effects on ground water? What amounts generated? What specific visual, fiscal, and physical impacts can be determined?

Fiscal Implications

Determine the degree of fiscal change that farmland conversion will have by considering:

1. Taxation increases to cover the cost of additional students.
2. Taxation increases to cover the cost of capital improvements.
3. Tax increases to landowners due to parcelization and reassessment.

IDENTIFYING PRIME AGRICULTURAL LAND

In 1944 one of the first rating systems for soil was developed by the University of Saskatchewan as part of the soil survey of southern Saskatchewan. A similar soil rating technique in use in the Midwest today is the "Corn Suitability Rating System Program" in use in Black Hawk County Iowa, for prime agricultural land retention. It involves identification and mapping of soil types within an area, compiling information which contains soil characteristics, yield predictions, erosion factors and the suitability of soil for various uses, including building sites development and septic system disposal. (Black Hawk County, 1975)

The Corn Suitability Rating System rates soil on a scale of 5 to 100. The rating reflects the chemical and physical properties of the soil in

relation to that soil's productivity of commonly grown crops such as soybeans and corn. Soil and climatological conditions are the dominant factors that effect the soils yield potential. Frequency of use is determined by the growing season length and slope gradient. Other factors also effect the potential yield and frequency of use and influence the CSRS rating. This provides for a relative ranking in comparison to all other mapped soils in the study area. (Black Hawk County, 1975).

Fortunately for anyone conducting such a study, the United States Department of Soil Conservation has all but completed up-to-date soil surveys for most counties in the United States. These surveys are conducted at the county level allowing research to be made accurately for even smaller study area that may occur around growing communities.[2]

An adequate management level factor was also determined in the Iowa study. Conditions specifying an improved rating were: 1) natural conditions have not been supplemented, 2) artificial drainage has been provided where required, 3) soils on lower landscapes are not subject to frequent damaging floods, and 4) no land leveling or terracing has been done.

Conditions indicating an improved rating include: 1) poorly drained soil that requires artificial drainage, 2) soils that have not been drained or are subject to frequent flooding.

As mentioned earlier, the rating system ranges from 5 to 100, 5 being for soils with severe soil limitations, 100 for soils that are located in areas of most favorable climate conditions, have high yield potential and can be continously used for row crop production with limited erosion. As a rule the geographic center of a particular soil survey study area is where the specific rating is taken. (Black Hawk County, 1975).

Local conditions will affect the definition of prime agricultural land. In Iowa, the definition of prime soils was having a CSR of 60 or above, yielding 110 bushels of corn per acre average. In Black Hawk County the determination is built on the premise of corn and soybean production as locally important economic factors. The same soil types and classification would not necessarily be prime elsewhere.

Identification of prime agricultural land must be locally determined. The overall land use patterns determination and implementation for an effective prime agricultural land retention program must be locally instigated as well. (Black Hawk County, 1975).

Classification of Land

Three major considerations are involved when defining prime agricultural land: 1) what should be considered prime? 2) how much land will a prime definition include? and 3) where is it located? The ability to see the relationships between soils with different capability ratings, and the ratio of energy inputs to energy outputs or economic costs to economic gains will help identify land which should be considered prime. A map showing location and quantity of farmland with a model projection of available space for agriculture as well as urbanization will show how much land should be retained. At the final stage a thorough study of soil and geographic conditions to identify prime soils in relation to the definition is required.

Several land classification systems in use in California are relevant here. The Land Capability Classification (LCC) system is an interpretive classification system. Through the use of soil and climatological data, delineated soil areas are placed in groups with similiar management

options and problems. Twelve criteria are considered in this system: 1) soil depth, 2) surface layer texture, 3) permeability, 4) drainage class, 5) available water holding capacity, 6) slope, 7) erosion hazard, 8) flooding hazard, 9) salinity, 10) toxic substance content, 11) frost free season, and 12) climatic indices. Depending on limitation and risks of soil damage, soils are then placed in one of eight categories developed by the Soil Conservation Service, see Appendix B. (Reganold and Singer, 1971)

The second land classification system in use in California is the Storie Index Rating (SIR) which uses productivity data from a number of California soils taken during the 1920s and 1930s. Its technique is to take four rated factors then multiply to equal the SIR of the soil. Factor A is a profile factor where soil is rated on degree of development, for example, a deep well-drained soil on central valley alluvium would score 100; similiar soils on claypan of hard pan would receive lower scores. Factor B rates surface texture. Factor C rates slope and Factor D is made up of several factors: 1) salinity, 2) drainage, 3) alkali, 4) fertility, 5) acidity, 6) erosion and 7) microrelief. A soil's SIR total may range between 0 and 100. (Reganold and Singer, 1971)

The third land classification system in use is the United State's Department of Agriculture's Land Inventory and Monitoring System (I&M). Prime agricultural land is identified if the following conditions exist:

1. Adequate moisture supply.
2. Warm enough temperature regime and adequate growing season.
3. Ph between 4.5 and 8.4 within the root zone.
4. Stable watertable sufficient for crop growth during growing season.

5. Exchangeable sodium percentage of less than 15 and conductivity of a saturation extract of less than 4 micromhos per centimeter within the root zone.
6. Flooding that occurs less than every two years.
7. Percent of slope less than 2.0 and soil erodibility factor of K.
8. Permeability of at least 0.15 centimeters per hour in the top 50 centimeters.
9. Surface layer with less than 10% rock fragments no coarser than 7.6 centimeters. (Reganold and Singer, 1971)

LAND EVALUATION AND SITE ASSESSMENT RATING SYSTEM (LESA)

The LESA rating format was developed on the premise that there is a definable set of causes and effects operating in agricultural land conversion situations and that the physical environment is responsible for the economics of conversion. Generally, the physical aspects are related to and effected by the following:

1. Type and degree of agriculture in the area, including size of farm and extent of agricultural support facilities.
2. Type of land use regulations in effect, i.e., comprehensive planning, right-to-farm and agricultural districting.
3. Nature and degree of nonagricultural activity in the area, distance to market, distance to central sewer and water facilities and transportation facilities.
4. Types of soil in the area, prime agricultural land associations, non-prime associations and non-stable (marginal) soil associations.

The LESA system utilizes a seventeen part rating system to determine the feasibility of converting farmland to a different use schedule. The main criteria of LESA focuses upon surrounding land uses, comprehensive planning, capital improvements scheduling and existing infrastructure. Appendix C contains the typical seventeen part LESA rating format. The format is based on a 0 to 10 rating scale, 0 being the least suited for agriculture and 10 being the most suited for agriculture.

LESA: An Analytical Look

LESA has the capability to determine if all factors for development are present. The final conversion decision is aided by a comprehensive LESA analysis and should not be influenced by one or two seemingly important factors. This section will look at the individual parts of LESA and how they are used to evaluate conversion.

Soils (1 and 2)

Historically the location of land has been more important in relation to urban development than its capacity to produce agricultural products. Only in the last several decades has the production capabilities of land really been scrutinized and classified. Now that the Soil Conservation Service (SCS) has nearly completed its nation wide soil classification system, land use regulators have gained the data necessary to identify prime agricultural land vs. non-prime land. By implementing the SCS system into an agricultural retention program, land regulation efforts have been considerably strengthened. It is unfortunate that prime agricultural land is usually prime development land because it is flat, well drained, free of obstruction and takes a minimal effort to subdivide and plat. When prime agricultural land is located on an urban fringe it is even more likely to be converted. The LESA rating format will indicate conversion of land in the urban fringe when less rural and more urban conditions are present. On the other hand in rural areas LESA is less likely to indicate conversion.

Percent of Area in Agriculture (3)

By calculating the percentage of land devoted to agriculture within X miles, LESA can easily show if the area is largely agriculture, mixed or urban. It is unlikely that LESA would recommend that a tract stay in agriculture if the area is largely engaged in some other use.

Land Adjacent to the Site (4 and 16)

This step is more specific than step #3 above by determining the adjacent use of land as affecting conversion. If any of the adjacent sides of a tract are in non-agricultural use the trend towards this use has

begun. LESA, upon considering other factors, may indicate that it is best to allow this tract to be changed to non-agricultural uses.

Size of Farm (5)

Economic farm operation is directly related to size of farm. Tracts of 50-100 acres can easily be farmed to generate second incomes. It is unlikely that farms of this size in simple cultivation are main income generators; intensive 50-100 acre animal husbandry operations i.e., feedlots, breeding operations, are exceptions to this rule. If tracts of this size have adjacent urban attributes, LESA may indicate that conversion is feasible. Large tracts of over 100 acres would be more viable farm operations and with or without urban influences, should be kept in agriculture.

Agricultural Support Systems (6)

By looking at the type of support systems in the area LESA can assess the ability of agriculture as a self sustaining unit; farmer cooperatives, grain elevators, implement sales/service. The interaction of agriculture and its support activities are directly related, when agriculture ceases to exist so do the support services. Closed agri-businesses are directly impacted by urbanization and a declining agricultural base.

Land use Regulations (7)

Landowner and area wide concerns for land use regulations to preserve farmland can take the form of zoning, agricultural districting or growth management. When land use regulations are already in effect and a particular tract and its adjacent area are already zoned non-agricultural,

LESA will rate the area in transition and indicate that conversion is feasible.

Alternatives or Less Productive Sites Available (8)

By utilizing the soil surveys and visually analyzing surrounding areas, less productive lands may be found that for the time being could fill the need for development. Realistically, if the area becomes more urban by selecting alternative adjacent sites, the prime agricultural land will eventually be converted as well.

Additional Urban Land Needs (9 and 11)

Projected urban area requirements may necessitate the taking of not only adjacent fringe land but also rural agricultural lands. LESA will most likely reflect this fact in its effort to preserve the rurally located operation rather than the urban one.

Comprehensive Plan (10)

By integrating the protection of prime farmland within the official comprehensive plan, elected officials have legal backing when organizing urban growth boundaries and identifying preservation districts. LESA identifies this as a viable preservation approach and this is reflected in the ratings when lands are identified for conversion.

Investment in Urban Development and Infrastructure (12, 13 and 14)

LESA rating will reflect the trend of urbanization by examining the level of development investment that has occurred. For example, the extent and size to which the physical plant i.e., sewer/water, roads, etc., has

been designed and built can directly reflect the anticipation or supression of growth that an area has considered.

Environmental Factors (17)

If the area is prone to flooding or has important wildlife characteristics or historic significance LESA will most likely recognize it as not compatible with urban uses. Urban uses can be major strains on the land and any adjacent fragile or important land can be inadvertently and forever damaged or lost. LESA recognizes agriculture as a compatible activity relative to wetlands, and historic or wildlife areas.

Predecessors to LESA

Several important programs set the groundwork for the LESA approach. Maryland in 1956 became the first state to enact use value assessment to lower the tax burden on farmers by property tax reductions. In the next decade additional resolutions were passed to address the farmland conversion problem in Maryland and interest in agricultural issues remained high. The only objection came from farmers and farm groups who feared loss of equity in their land when development was restricted. In March of 1973 the Maryland Secretary of Agriculture was directed by a Joint Senate Resolution (No. 43) "to undertake a comprehensive study of the ways and means to preserve agricultural land in Maryland and prepare a long range plan and recommendations deemed appropriate for such preservations...". (NALS, Case Studies of State and Local Programs to Preserve Agri. Land, 1981) By order of the Secretary of Agriculture a committee was formed comprising a broad spectrum of interests to undertake such a study. After several revisions the committee submitted a final

report to the Secretary of Agriculture in August of 1974. Their recommendations were to:

1. Keep the Maryland Farmland Assessment Law in its present form.
2. Adjust federal and state estate tax laws to allow use valuation of farmland.
3. Organize and submit legislation to allow the voluntary formation of agricultural districts and purchase of easement rights.
4. Identify agricultural acreage amounts to be preserved.
5. Request planning and zoning bodies to recognize the importance of proper planning for non-agricultural development as a technique to preserve farmland.

Oregon in the 1960's enacted tax incentive methods similar to Maryland's. Later in the 1970's a "Land Use Policy Action Group" was formed to study statewide planning issues and formulate protection for rural land. In 1974 a subcommittee to the Land Use Policy Group developed 14 goals and guidelines to address various problems the state was experiencing. Of these goals, agricultural land, urbanization, housing and public facility and service questions are important here (Goal 3, 14, 10, 11 respectively). The committee took the position that all Class I-VI soils not already committed to non-farm use by physical development are to be zoned Exclusive Farm Use (EFU). The definition of agriculture was extended to include lands suitable for farm use such as grazing and adjacent lands in other soil classes necessary to permit adjacent farm operations. The EFU provided for non-farm uses if the applicant could show that the land was unsuitable for agriculture. (NALS, Case Studies... 1981)

Many of the goals and objectives identified by these states' fact finding committees can be seen in the basic approach and organization of

LESA. The administrators of LESA were fortunate to begin their studies at a time when various state programs had been in affect long enough to show both their good and bad points. Another area that LESA has capitalized on in its format is the location of agricultural land and the size of agricultural operations.

Location of Agricultural Land

In the past most retention programs have not been able to attune themselves to varying agricultural situations. For example in Virginia a recent economic study showed an urban corridor area located in proximity to an area where cash crops were produced. A conflict would occur because all but 4 of Virginia's 23 counties, with 40% or more of Class I or II type land capabilities, were located within this urban corridor. Additional problems were foreseen because Virginia's agricultural districting program is voluntary, therefore development pressures may encourage landowners to abstain from being included in an agricultural district due to expected monetary gain.

By utilizing a LESA format, location, agricultural productivity, and urban phenomenon are closely scrutinized. At the very least LESA should help administrators to recognize the trade-offs necessary to keep agriculture part of the local and state economy.

Size of Tracts

The size of viable agricultural operations will differ from region to region and from state to state. Several counties have utilized this concept to preserve agriculture. For example, in Weld County, Colorado, each legal lot is entitled to a single family residence in the agricultural district. An amendment to the Zoning Resolution has set a minimum lot size to discourage speculative and hobby farmer type situations. The 1975 resolution required that in order to obtain a residential building permit, a legal deed was required entailing at least 80 acres of irrigated land or 160 acres of dryland.

By implementing large lot regulation to control parcel splitting, Weld County has attempted to reduce the possibility for the small acreage ranchette syndrome to occur. Under the County's Official Subdivision Regulations "non-productive agricultural lands may be developed for higher or more productive uses, in so far as such uses are compatible with surrounding agricultural uses." (NALS, Case Studies... 1981) This exception is called a 'recorded exemption' and is restricted to one division of a parcel, and to land that has not been split within the last 5 years.

Federal Governments Role in Agriculture Retention

The federal government's role in the farmland retention movement has increased considerably since the passage of the Farmland Protection Policy Act of 1981. The LESA system, an outgrowth of FPPA, was developed to provide a calculated and consistent approach to land development vs. land retention concerns.

Agricultural land evaluation is the process of rating soils of a given area and placing them into groups ranging from the best to the poorest suited for agriculture. The data is obtained from soil conservation service soil surveys which include a comprehensive listing of mapped and compiled soil information for any given area. Most soil types found in the United States can be placed in one of eight capability categories. The top of the scale begins with soils that are most suited for agriculture, with few or no limitations (Classes I-III). The middle of the scale represents soils that have some agricultural restrictions, slope, water availability, soil type (Classes VI-VI). Class VII-VIII is positioned at the bottom of the scale and are soils that are not suited for agriculture, see Appendix B.

The LESA approach is comprehensive in that the site or area in question is assessed as to its agricultural viability. Site assessment considers the following in relation to the use of land:

1. Relative value without improvements
2. Drainage
3. Irrigation
4. Erosion control
5. Water management
6. Flood protection
7. Elevation
8. Climate

Land evaluation determines the viability of land use by considering:

1. Percent of area in agriculture
2. Land use adjacent to site
3. Size of farm

4. Agriculture support systems
5. Landuse regulations
6. Nonfarm land available
7. Need for additional urban uses
8. Compatible with comprehensive plan
9. Distance to urban area
10. Municipal water and sanitary systems available
11. Municipal transportation
12. Investments for urban developments
13. Environmental factors and
14. Compatibility with surrounding uses

Guidelines established under the Farmland Protection Policy Act make it mandatory that the system operate at a level where it can be used to allow input from local groups, landowners, developers, state and local planners and governing officials. LESA was designed to be used as a tool to aid the decision making process but was never intended to be used as the sole criteria for final decisions. The system utilized national and state farmland protection policies that are defensible, consistently applied, flexible to differences, and based on existing knowledge. Fortunately, LESA is not overly restrictive in its intentions. Prime farmland may be converted if it meets all the criteria for conversion under its rating system. It is not the intent of LESA to totally restrict community growth for the sake of agriculture. Through LESA's rating format, opportunities are always present to capitalize on industrial and commercial developments.

LESA DOES LACK SOME CRITICAL CONCERNS

Considering the complete range of events and long range outcomes of farmland conversion several areas have been left unattended:

Financial

Beginning with the financial aspects of development, it must be remembered that farms receive very little service benefit for their tax dollar. On the other hand rural residential developments require much more public service dollars than their tax dollars compensate. Concerns that are directly related to the financial aspect of development are:

1. Extensions to urban infrastructures, i.e., roads, sewer/water and other basic utilities.
2. Increases in other essential urban services, i.e., police, fire, mail, and recreation.
3. Enlargement of the educational system.

It is becoming increasing obvious that land development financially affects landowners and consumers in the same manner through the property and sales tax structures. Concerned citizens should request a comprehensive overview of all public expenditures to control tax increases. The governing body should react to this concern by placing a freeze on major wage and budget increases, create and maintain growth management procedures, and phase all capital improvement projects over 15-20 year periods. Interestingly enough, officials are beginning to appreciate mechanisms to control the development of land. They have found that controlling expenditures can influence how and where land is developed. By controlling the capital improvements budget, extensions of service facilities is unlikely to occur and developers will have no

alternative but to look for other sites that are presently serviced. This should have the cumulative effect of suppressing the demand for agricultural land.

Social

A second weakness of LESA is the social implication of farmland conversion. Small town lifestyles, values and norms differ from growing or big city social attributes. Small town citizens should have the rights to choose if growth is desired because change is certain to come with conversion. If choice of this type is not possible then at least citizen participation in the land planning process should be encouraged. Out of participation comes public awareness and a role in what direction the area is taking.

Economic and Monetary

A third area that LESA does not address is how development affects the monetary and economic structure of a region. With land conversions come more building sites and occupiable structures, more economic enterprises and more employment opportunities, and increased value of existing properties and more demand and higher prices for consumer items. With conversion also comes more competition in all economic sectors and thus the likelihood of some business failures. Building more structures, on the other hand may result in a saturation of the real estate market if demand does not meet the new supply, thereby causing the devaluation of property. In sum, LESA must be refined to address the important monetary structure of the physical and economic environment of an area.

Summary

Utilizing the LESA format as an addition to traditional land regulation techniques to retain farmland can be effective. Although the LESA format does not have legal, regulatory, or compensatory ability, it does have mitigating effects when applied in the land conversion realm. Just as the EIS was enacted to preempt the blind imposition of federal projects that may have environmental significance, so should the LESA system be imposed on land use decisions that have greater abstract effects to the area. In both cases, EIS and LESA, the only lacking analysis is in the social, economic, and monetary concerns of an area. By modifying LESA these concerns will more rationally approach the impacts of agricultural land conversion.

---

[1]Golden vs. Planning Board of Ramapo: A policy that conformed to the comprehensive plan and was supplemental to the capital budget, identifying the location and sequence of additional capital improvements over twelve years following the budget (life of the capital budget), where the two plans covering eighteen years detailed the capital improvements projected for maximum development and conformed to specifications in the master plan, official map, and drainage plan. The Court found that the implementation of sequential development and timed growth provides for a balanced cohesive community dedicated to the efficient utilization of land. The restrictions are in conformance with the comprehensive plan and the actions of the Planning Board were upheld. Source: Mandelker, 1979.

[2]Land capability and soil classification consists of eight categories of land capability to which any particular soil may be associated with. Soil type, slope, water, and weather are the constraints to a particular soil and its related capability. The eight classes are:

1. Class I, virtually no limitation on cultivation.
2. Class II, some limitations.
3. Class III, severe limitations.
4. Class IV, very severe limitations.
5. Class V-VII, generally not suited for cultivation but more appropriate for pasture, range, woodland, wildlife, and recreation. May be suited for specialty crops, fruit trees or ornamental plants.
6. Class VIII, restricted for recreation, wildlife, watersheds or aesthetic use. Source: Reganold and Singer, 1971

[3]Maryland Secretary of Agriculture appointed a committee consisting of citizens, farmers, and representatives from the following: Maryland State Senate and House of Representatives, Office of Governor, State Department of Natural Resources, Assessments and Taxation, Agriculture, State Planning Economic Development, University of Maryland, USDA, SCS, and Farm Bureau. Source: NALS, Case Studies... 1981

CHAPTER IV

BRINGING IT ALL TOGETHER

Traditional land retention programs have been unable to reduce the conversion of over 500,000 acres per year of prime agricultural land to urban uses. Not every agricultural land retention attempt has failed; those operating in Oregon, Wisconsin and in the New England region have achieved many of the desired ends. Those programs that have been successful were locally instigated, designed, and implemented. (See Appendix D) They utilized advisory councils composed of local citizens, farmers, landowners, and developers. Each required the rational integration of tax incentives or outright payments, land regulation and capital improvement planning. They espoused the benefits of logical growth patterns, but made it clear that controlled growth might mean less job opportunities and a general depression of those sectors of the economy related to growth.

Logical (controlled) growth patterns can be identified by utilizing a rating system that ranks all aspects of development. Such an approach identifies the following growth concerns:

1. Flexibility of zoning districts and building patterns (types).
2. Infilling of development on vacant in-city or suburban lots.
3. Rehabilitating tenements, warehouses or manufacturing sites.

4. Urban renewal type techniques that may provide in-city building sites.

VARYING DEGREES OF LAND CONVERSION

Varying degrees of agricultural land conversion do occur, for example, rural, rural experiencing growth, and urban. In relation to these situations varying approaches to address the problem also exist. As the complexity of land use decisions increases so should the complexity of the technique to identify and control desirable vs. undesirable land uses and land developments.

Rural

In a largely rural farm oriented area, a simple land registration program will identify and direct land use decisions. By zoning the area agricultural and linking it to enforceable subdivision regulations and comprehensive planning, a retention effort can ensure adequate protection for agricultural lands. A typical set of subdivision regulations works in conjunction with the issuance of building permits and the comprehensive plan. This type of regulation recognizes when a nonfarm trend is taking place in an agricultural area. After a predetermined number of nonfarm permits have been issued for a particular area no more permits will be issued until the area has been rezoned and platted. If that new zone designation does not comply with the comprehensive plan, it may be disallowed on this point alone. In most cases rural officials have

shown a tendency to reject rural development on the basis of expected increased cost, urban encroachments and conflict of activities. The governing body's decisions are affected by the following:

1. Inability of developers to finance necessary basic imporvements, i.e., roads, sewer/water, schools, and open space.
2. Inability of expected budgets to support growth requirements or to take over where the developers left off.
3. Ability to receive majority support for their decisions because of a largely agrarian constituency.
4. Deterioration of agrarian ethic.
5. Misuse of valuable lands.

Addressing More Intensive Conversion Situations

As more complex land use activities occur it will often be necessary to employ more sophisticated regulation techniques. This second level retention effort may be needed in an area experiencing recent development such as resource extraction, recreation development, or urban expansion. In this situation traditional zoning, subdivision regulations, and comprehensive planning may not be sufficient to retain prime agricultural lands. Because of the variety of land types found in a newly developing region, it would be wise to utilize the LESA (see Appendix C) format to ensure the best use of land. By adopting this process local officials can be responsive to their agricultural heritage. However, they will often find that besides utilizing traditional techniques to retain

farmland they must also use techniques to keep farming profitable. This can be achieved by using tax incentives and organizing agricultural districts. Tax incentives can help lower the property tax that farmers pay and hopefully encourage farmers to invest more in farm operations. Agricultural districts can reduce urban encroachment thus helping to eliminate nuisance suits from urban penetration. Districting can provide strength and stability to the farm and farm support industries. Purchasing of development rights is another technique to aid the farmland preservation effort, if funds can be generated to support such an undertaking. The farmer receives a monetary boost by receiving financial retribution by selling the development rights to his land. This can allow the farmer to continue operating instead of succumbing to urban, financial, or economic pressure.

Program Organization

A rural area experiencing intensive growth must act quickly in order to control unwanted or undesired patterns of development. Landowners are usually acutely aware of land use regulations and some may attempt to undermine the growth control effort by beginning conversions in the interim before legally effective barriers have been set up. In the past interim controls have taken the form of interim zoning ordinances, moratoriums on service extensions, moratoriums on building permits, and rezoning hearings. The validity of this type action was upheld in Golden, Colorado, where the court ruled that moratoriums on growth control are legal when

used in conjunction with a comprehensive plan and a definite time table for conversion.

Landowners who disagree with moratoriums on development will be less likely to give into the development process when farming is kept profitable. This is ensured by local officials identifying and promoting existing state and local programs that help to keep farming as a money making endeavor. Fortunately, many governing bodies already have the tools to ensure a controlled land development pattern by more stringently enforcing the existing zoning ordinance, and disallowing nonagricultural uses in agricultural zones.

Local staff efforts should compliment the first two phases of this approach. Through governing body directives the staff should begin researching and writing a comprehensive plan dealing with preferences for growth, conservation and service extensions over 10-15 year increments. When compiling the land use information the staff can also begin to identify large contiguous agricultural tracts that could be organized into districts. This would set the stage for the fourth part of the program when the governing body begins the public meeting process for writing and adopting the necessary ordinances, (see Appendix E). By the attendence of citizens and landowners alike, officials can assume that new ideas will be injected to the ordinance writing process. Landowners will also have the opportunity to voluntarily form agricultural districts protecting farmer interests and operations, as well as preserving agriculture, agricultural related business, and the overall agrarian ethic.

The end result of the four stage process should be the ratification of a suitable zoning ordinance, subdivision regulations, and the agricultural districting ordinance. By having the comprehensive plan as the official local or county map, the governing body now has the policy (comprehensive plan) and the statutory power (zoning ordinance, subdivision regulation and agricultural districting) to instigate agricultural land retention directives. With this in effect local officials have the power to reject or accept any land conversion request that may jeopardize or compliment the intent of the farmland retention program.

Agricultural Land Retention in the Urban Realm

LESA must be called upon to identify those lands that are ripe for development vs. those that are prime farmland and should stay as such. At this stage traditional zoning and subdivision regulations cannot be expected to prevent development as they have in rural areas. In the urban spectrum the chain of events that lead to conversion are more complex and complicated than what may occur elsewhere:

1. Developers are willing to adequately finance residential and commercial developments.
2. Elected officials are more responsive to urban electorate, urban development and associated tax revenue increases.
3. Infrastructure has been extended and has the capacity to service new development.
4. Agriculture is in the minority and is represented as such.

5. The overall physical landscape has taken on an urban character with only isolated agriculture and even fewer farmer support facilities.

It may be necessary to reconsider the use of agricultural retention programs at all in the urban environment. By utilizing the LESA format, requisite land use and locational tradeoffs are more clearly indicated, LESA identifies urban fringe farmland that should be sacrificed to the development process to preserve similar rural agricultural land. LESA encourages the concentration of development and discourages leapfrog and isolated development, assuming there are sufficient and efficient farmlands elsewhere to fill the void. A confrontation has surfaced where urban expansion is the only real enemy to agricultural land and that agricultural land can rarely compete in the urban sector. Historically small towns and urban areas were formed to provide the services that agriculture required. Agricultural mechanization now provides the farmer with onsite grain processing, farm equipment repair and service, anywhere within a large region. The multiple small town, urban service center is no longer viable, and the roles have changed. Agricultural operations exist now to serve the urban area which no longer has the self-sustaining ability small town counterparts once had. Very little concern is reflected in the fact that without agriculture we are without life sustaining food, feed, and fiber.

By modifying traditional land regulation techniques and rewriting the evaluation and assessment procedure to address many environmental factors, land conversion becomes less an imposition and more a naturally occuring event. In the urban fringe area the

conversion issue must be preempted by an evaluation and assessment process. By evaluating all the effects that conversion has on social, economic, political and monetary policy, the governing body can be better prepared to act upon land conversion requests. The implication of the conversion process can be outlined as follows:

Social implications when converting agricultural land to a more intensive use are:

1. Quality of life and standard of living.
2. Leisure time, free time, and recreational activities.
3. Lifestyles, habits, values, and experiences.

Economic implications when converting agricultural land:

1. Employment opportunities, building trade industry, banking industry.
2. Residential housing choice, i.e., single family, multi-family, low income, senior citizen, handicapped.
3. Commercial activity, i.e., commercial rental sites, commercial establishments, commercial competition.
4. Economic opportunities.

Monetary implications when converting agricultural land:

1. Local, regional, state, and national representation.
2. Political representation directly effects state and federal funding/benefits.

Environmental implications when converting agricultural land:

1. Sensitive area, open space, groundwater recharge, wildlife, flooding, erosion, silting, runoff.
2. Preservation of sensitive and significant areas.

APPENDIX A

TYPICAL AGRICULTURAL DISTRICT ZONING DESIGNATION

AGRICULTURAL

Section One Agricultural Zoning District (A1 Zone)

Permitted Uses in Zone A1:

Exclusive Farm Use - The utilization of a designated tract of land (10-40 acres) for obtaining a profit by raising, harvesting, and selling crops or by husbandry of livestock, poultry, etc., or by any combination thereof. Feedlots and livestock sales yards are exclusive farm uses that may entail the use of that land for disposal of their product by marketing.

Single Family Uses - Allowed when used in conjunction with a single farming enterprise. A mobile home is allowed so long as it is occupied by a family related by blood, marriage, or person(s) employed by the farm. They must have individual water and sewerage facilities and must not be used as rental income.

Accessory Structures - Barns, silos, storage bins, or utility sheds that are used in conjuction with the farming enterprises.

Railroad Trackage or Official Public Use -

Note: Many times districts will allow the addition of churches, public or private schools and utility easements; it becomes evident that any non-farm intrusion may be the "foot in the door" concept that allows additional development to occur.

VARIANCES

Variances may be applied for through the Board of Zoning Appeals (BZA). Granting of variances will take the following into

consideration: 1) are the conditions unique to the property? 2) is the purpose of the variation not based exclusively on the desire to increase the value or income potential of the property? 3) will granting of the variance be detrimental to the public welfare or injurious to other property in the vicinity? 4) will granting of the variance impair adequate supply of light and air, increase congestion, endanger public safety or health? The administering body may impose restrictions, conditions and safeguards upon the variance as to apply to standards set forth in the agricultural zoning ordinance.

Definition of Board of Zoning Appeals

1. Public meetings to decide appeals where it is alleged there is an error in order, requirement or determination by the Zoning Administrator.
2. To hear and pass upon application for variances, conditional uses and special extensions.
3. All decisions and findings of the BZA shall be final and subject to judicial review.

Source:

Zoning Ordinance for Pottawatomie County, Kansas. February 1, 1974.

CONDITIONAL USES PERMITTED IN ZONE A1

Section Two

A conditional use, sometimes called a special permit, must be approved by the Board of Zoning Appeals (BZA).

I. A proposed conditional use must:

1. Comply with applicable regulations of lot size, bulk requirements and performance standards.
2. Promote welfare and convenience of the public.
3. Not devalue other property in the immediate vicinity.
4. Must not dominate neighborhood property in accordance with the applicable zoning district designation.
5. The BZA may impose conditions, safeguards and restrictions upon the location of the conditional use as necessary to comply with standards set out in the ordinances.

II. Conditional Uses that may Occur:

1. Single family modular homes used in conjunction with the single farming enterprise.
2. One mobile home as an accessory farm use.
3. Cemetery
4. Grange Hall
5. Rodeo Stadium
6. Governmental structure or land use, picnic area, rural fire station.
7. Radio or television transmitter tower.

III. Non-conforming Use

Any non-conforming use, building or structure that exists lawfully at the time of adoption of the agricultural zoning ordinance will be subject to its regulations.

No structural alterations or repairs which increase the bulk of the building will be allowed.

Any non-conforming use that has been idle for more than one year either by destruction or closure will not be restarted.

APPENDIX B

SOIL CAPABILITY RATING - Used in Identifying Prime Agricultural Land.

Class I - Soils have few limitations that restrict their use.

Class II - Soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Class III - Soils have severe limitations that reduce the choice of plants or requires special conservation practices, or both.

Class IV - Soils have very severe limitations that reduce the choice of plants or that require careful management, or both.

Class V - Soils are not likely to erode but have other limitations that limit their use and are impractical to remove.

Class VI - Soils have severe limitations and are generally unsuited for agriculture.

Class VII - Soils have very severe limitations that make them unsuited for cultivation.

Class VIII - Soils and landforms have limitations that nearly preclude their use for commercial crop production.

(From: NALS, 1981)

APPENDIX C

A TYPICAL LESA RATING FORMAT:

1. & 2. Type of soil, 0 to 100.

This rating factor comes directly from the list of soil surveys and evaluations compiled by the local SCS offices (see Appendix B). The soil that is found in the rating area has a production indicator and soil potential rating from 0 to 100; this rating in effect spans the range from nonagricultural land to prime agricultural land.

3. Percent of Area in Agriculture within one mile (Weight 1-10)

10 - 95 percent of area in agriculture

-- 50 percent of area in agriculture

0 - 10 percent of area in agriculture

4. Land in Agriculture Adjacent to Site (Weight 1-10)

10 - all sides of site in agriculture

-- - one side of site adjacent to nonagricultural land

-- - two sides of site adjacent to nonagricultural land

-- - three sides of site adjacent to nonagricultural land

0 - the site is surrounded by nonagricultural land

5. Size of Site or Farm (Based on needed size unit to permit feasible farm operation) (Weight 1-10)

10 - 100 acres or more

-- - 75-99 acres

-- - 50-74 acres

-- - 40-49 acres

-- - 30-39 acres

-- - 20-29 acres

-- - 10-19 acres

0 - less than 10 acres

6. Agricultural Support System/Services

10 - support system present

-- - some limitation on support system

0 - severe limitation on support system

7. Land Use Regulations (Weight 1-10)

10 - site and all surrounding sides zoned agricultural (right-to-farm zone or agricultural district)

-- - site zoned nonagricultural or 1 side nonagricultural

-- - site and 1 side nonagricultural or site agricultural and 3 sides nonagricultural

-- - site and 2 sides nonagricultural or site agricultural and all sides nonagricultural

-- - site and 3 sides nonagricultural

0 - site and all sides nonagricultural

8. Availability of Nonfarmland or Less Productive Land as Alternative Site Within Area of Consideration (Weight 1-10)

10 - large amounts available

-- - medium amount available

0 - not available

9. Need for Additional Urban Land (Weight 1-10)

10. Compatibility with Comprehensive Plan (Weight 1-10)

10 - yes

0 - No

11. Distance to City or Urban Built-up Area (Weight 1-10)

10 - more than 2 miles

-- - 1 1/2 miles

-- - 1 mile

-- - 1/2 mile

-- - 1/4 mile

0 - adjacent

12. Central Water Distribution System with Available Capacity (Weight 1-10)

10 - no water with 1/4 mile

-- - water within 500 feet

0 - water at site

13. Central Sanitary Sewerage with Available Capacity (Weight 1-10)

10 - no sewerage line within 1/4 mile

-- - sewerage line within 500 feet

0 - sewerage line adjacent to site

14. Investment for Urban Development (Weight 1-10)

10 - none

-- - medium

0 - high

15. Transportation (Weight 1-10)

10 - no public transportation available to site

-- - limited bus transportation

0 - adequate bus transportation

16. Compatibility of Proposed Use with Surrounding Use (Weight 1-10)

10 - not compatible

-- - somewhat compatible

0 - compatible

17. Environment Factors (flood plains, wetlands, historical areas, open space, vegetation) (Weight 1-10)

10 - compatibility with ag. land use, not proposed use

0 - compatibility with proposed use

APPENDIX D

LOCAL EFFORTS TO RETAIN AGRICULTURAL LAND

A process at the local level to help protect threatened agricultural land resources while releasing land needed for development could proceed in the following manner:

1. Identify and map all undeveloped land showing topographic as well as man-made features. Such a map may already exist as the community's master or comprehensive plan.
2. Overlay maps of the following should include:
   a. Property lines and zoning districts.
   b. Present and future proposed utility, sewer, water and roadway extensions.
   c. Lands of conservational interest, wetlands, aquifers, farmlands, forestlands, wildlife areas, special vistas and trail connectors or any area that is part of the natural system or enhances the natural system.
3. At this point a file should exist that contains:
   a. Each parcel identified of conservational interest.
   b. Development potential and appraised dollar value of parcel.
   c. Estimate of net dollar value after capital gains tax.
   d. Estate tax implications as disposition option to owner.
   e. Response time in relation to possibility of conversion.
   f. Summation of the data, cropland, aquifer, etc., acreage totals, number of individual parcels, dollar value, probable rate of loss of important features if nothing is done.

4. Identify the special development needs of the community so that the process of protecting natural features can be integrated. This could be determined by a questionaire.
5. Determine what amount of the community and state budget would be reasonable for the protection of natural systems. Identify essential municipal priorities and spending patterns.
6. Estimate the value of undeveloped land, residential, commercial or public; full and fair dollar value and make available to owners. State and federal monetary support programs should be identified where relevant.
7. Call a public meeting to show what is proposed to be done to undeveloped land. Public consensus on what should be done to shape communities' future land use.
8. It is important to keep abreast of conversion no matter what stage the total program is at. Devoting time and resources to individual conversions will help understand what may happen in the future (feedback cycle). Broad community participation is not a necessary attribute of the individual conversion., what is necessary is awareness and common sense in the early stages.

From: Creative Land Development, Robert A. Lemire, 1979

APPENDIX E

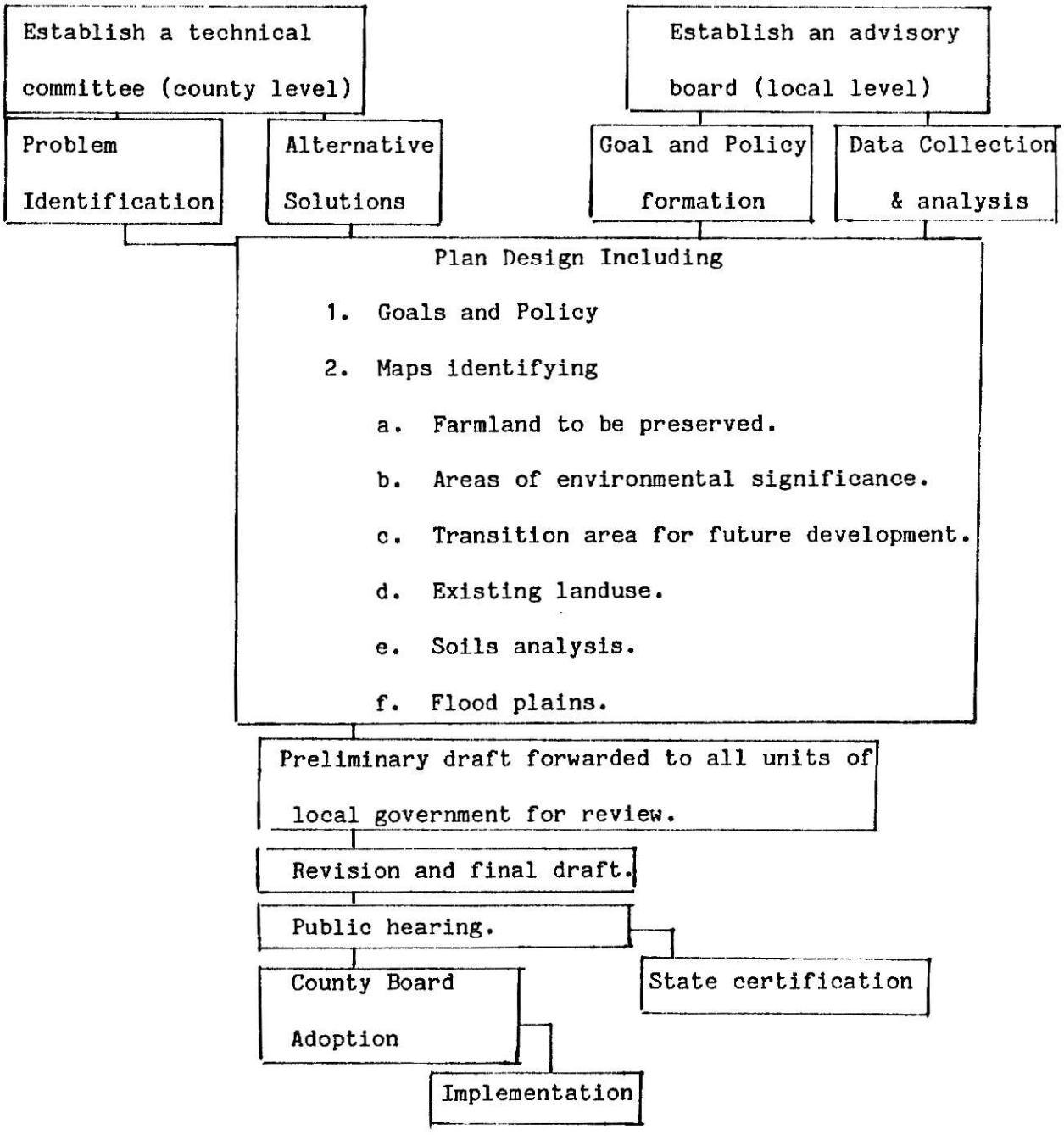
FORMULATING GOALS AND POLICY OBJECTIVES FOR A FARMLAND RETENTION PROGRAM

The goals identified in any retention program should be sensitive to existing and anticipated local conditions, trends and values. Satisfactory acceptance by public officials and citizens should be encouraged in the planning process, i.e., citizen participation taking the form of advisory committees or task forces. Subsequent to this will be the policy writing process that will reflect the desired goals and identifies desired ends of the plan preparation process, see table 1.

The eventual outcome of the process will be a farmland retention program that has been written by farmers as well as planners. It is farmers who best understand and can identify, needs and trends in agriculture. By encouraging farmer participation, the planning process has ensured that a program with workable goals has been created. The following goals and objectives were taken from the Jefferson County, Wisconsin, Agricultural Preservation Plan. These concepts generally outline the concerns of any program and as such are relevant to review:

Table 1

Farmland Retention Planning Process



Goal 1

Discourage further scattering of residential growth into unincorporated areas. Encourage infilling within existing communities.

Policy

1. To direct future rural residential development into existing platted subdivision.
2. To discourage scattered developments and urban expansion without preventing rural agricultural development.
3. To direct and provide for future residential, commercial, and industrial development into areas that have the urban service capacity to support them now and in the future.
4. To provide for the proper balance of land use activities to meet present and future needs.
5. To provide for social, physical, and economic compatability and cooperation locally as well as regionally.

Goal 2

Retain lands determined to be most suitable for agricultural production.

Policy

1. To identify prime farmland and subsequent protection of them as seen by the advisory committee.
2. To disallow any non-agricultural developments on land identified as prime farmland
3. To protect the farmland tax base from speculation or exploitation.
4. To reinforce the family farm structure as a basic productive unit and foundation of the rural community.

5. To reinforce conservation practices already in use.

6. To reduce urban/rural conflict that may jeopardize farm operation.

Goal 3

Create and sustain citizen input into a local farmland retention plan.

Policy

1. To schedule on a consistent and timely format public hearings and advisory meetings during the process of writing the plan.

Goal 4

Maintain recreational areas, open space and historic areas.

Policy

1. To retain areas along rivers, streams and lakes in their natural state.

2. To retain areas that have historic significance.

3. To retain areas that have potential for future recreational use.

Source: Jefferson County Agricultural Preservation Plan. Jefferson County Planning Department, Jefferson, Wisconsin. September, 1978.

APPENDIX F

CITIZEN PARTICIPATION

Public involvement in government sponsored programs has only recently been required. The extent of this activity is still uneven and perhaps non-existent in other local, county or state activities and programs. In the past when citizen participation did occur it usually was beyond the planning stages where it was most needed. This resulted in dissatisfaction, delays, disruption and disallusionment on the part of the citizen and public servant alike.

The most basic objective of a program is to allow the public an avenue for protection of their rights and interests within the decision making process. Three criteria are involved in assessing the effectiveness of a participatory program: accessibility, fairness, and responsivity. Accessibility refers to the ease with which affected citizens can involve themselves in the decision making process. Fairness refers to the equity of consideration given to the competing claims of affected individuals. Responsivity refers to decision maker recognition of majority interests and their subsequent preferences and directives typifying those interests.

Another major step in the citizen participation process is one of negotiation. Accomodation rather than confrontation can span the gap between opposing forces, especially in land use, where proponents of environmental protection oppose those in favor of environmental degradation in light of economic growth. Three qualities are necessary once negotiation has been entered: sensitivity, toughness, and technical skill. Crucial to the negotiation process is sensitivity;

each participant must be flexible to their opponents position. Public decision makers as representatives of the broader public interest must balance the conflicting views but still realize that these positions represent components of the total public opinion. Toughness is usually in oversupply and can only be tamed through a broadening of communication and compromise toward other contrasting positions. Expertise in a wide variety of fields should be employed by citizens, public agencies and private concerns alike. Generating alternatives and assessing the effects will ensure the integrity of project design during the negotiation stage. Bargaining techniques in land development should contain flexibility and adaption. In the future an integrated comprehensive standard in the project development process may anticipate and react to all public and private concerns.

One technique for encouraging involvement and still drawing useful conclusions from any interaction is the application of the Nominal Group Process. At a meeting the citizens are divided into small groups where they are instructed to work individually and silently compiling a list of the problems on the issue at hand. A recorder then lists one problem per person until their lists are exhausted. Each person then votes on the five most important problems they foresee. Once tabulated these results are added into the whole. The acting agency now has a list of concerns compiled by the citizens that it can use in its policy setting process.

When a community is allowed to actively participate in this fashion their involvement is personally seen and felt. Participation, awareness of the issues and contributions to possible solutions will increase as well as understanding of the implications of alternative solutions. (Urban Land Institute, 1978).

The agricultural community is unique in that there is much interdependence of the economic structure. Interaction occur between farmers and implement dealers, feed dealers and Coop members, farm bureau personnel and ag. extension agents, soil conservationists, farm brokers and members of the Grange. It is important to illicit the active participation of the whole farm community to ensure the success of the preservation program.

In Walsworth County, Wisconsin, the farmland retention process began with the formation of a committee composed of representatives from the most visible farm agencies: the Grange, the Farm Bureau, and the Pure Milk Association. This committee met for two years on a regular basis talking about what they were to do, James Johnson, Planning Director said "We couldn't have done it without them." The Ad Hoc committee approach provided a common sense solution to technical problems. The formation of these citizen advisory groups are essential in gathering and maintaining support for the program in addition to interpreting to their peers the confusing language planners have been known to use.

Source: Saving farms and farmland: A community guide, Planning Advisory Service, ASPI, William Toner, #333 pp5.

APPENDIX G

INTERVIEW WITH A FARM BUREAU OFFICIAL

Identifying the land use concerns of agricultural producers, without conducting a lengthy process of individual interviews with farmers and ranchers was achieved through the local Kansas Farm Bureau. The Farm Bureau is seen as a legitimate representative who will speak out for farmers as well as working with other farm groups and organizations in pursuit of objectives designed to advance the interests of all those concerned.

In a formal interview with John Blythe, Kansas Farm Bureau Assistant Director for Public Affairs and lobbyist to the legislature in Topeka, I was able to clarify the issues of use-value assessment and prime agricultural land retention techniques as viewed by Kansas farmers and ranchers.

"Taxation policy is the reason farmers are pushed out of agriculture. It is the aim of my (Mr. Blythe) efforts in Topeka to affect the consistency of legislation. Reappraisal would cause a tax burden on farmers but with use-value as a major determinate equity of taxation would be possible." Mr. Blythe went on to say that other factors needed to be considered when taxing a parcel of land besides its present use: income generated, soil productivity, distance to market, freight rates, and earning capacity. Mr. Blythe stated that "All properties valued under use-value should have a common capitalization rate based on economics, interest rate, and money market factors. When reappraisal takes place all counties should apply the newly determined property values at the same time because until now various classes of property have been treated differently."

The Farm Bureau's stand on preserving agricultural operations and land use planning were interpreted through a Resolutions 1982 publication by the Farm Bureau and through conversation with Mr. Blythe. "Land use planning must recognize the private ownership is the cornerstone upon which this country was built. Land use planning should provide for the utilization of land resources and the environment in a manner that will preserve and protect these resources to meet the needs of the people. We (Farm Bureau) oppose legislation which would authorize or permit federal agencies to direct management decisions in the field of land utilization. Those who own or operate the land should have the major responsibility for its development. We urge farmers to become involved in planning and development of zoning ordinances at the local, county level to prevent undesirable land use patterns. We favor voluntary land use authorities formed for specific periods of time."

The Farm Bureau's feelings on preserving agricultural land is, "Residential development, and growth and expansion of cities often produces pressures to closedown or curtail agricultural operations. We believe persons engaged in agricultural activities whose property is annexed by the city should not be prevented from continuing in such agricultural pursuits. On the other hand if a farmer requests a zoning change but the commission rejects it, unless the farmer can show reasonable cause for conversion, the Farm Bureau will side with the commission's decision.

In Summary

The need for action is necessary because once the wrong kind of development has occurred the damage is difficult to correct.

Saving this vital resource is a matter of private stewardship along with state and local responsibility. Unfortunately our national strategies fail to take into account the local decision-making nature of the land conversion process. Issues such as the way by which settlement patterns can be balanced with long-term food, water and energy resources have not been defined. It must be considered that potential exists for the preparation of a future time when population may have to retreat to pre-industrial numbers because of reduced facilities of support.

If there is no action as a national body then action can occur as individuals. Communities can begin to identify and protect renewable resources, to reverse growing dependence on distant sources for day to day sustenance. Protection of prime agricultural lands at the local level will allow the ability to regain independence and the orderly shift toward a more self-sufficient way of life.

REFERENCES

1. United States Department of Agriculture and Council on Environmental Quality. National Agricultural Lands Study-Final Report 1981.
2. United States Department of Agriculture and Council on Environmental Quality, Case Studies of State and Local Programs to Preserve Agricultural Land. 1981.
3. E. F. Schumacher. Small Is Beautiful. New York: Harper and Row. 1975.
4. Robert A. Lemire. Creative Land Development: Bridge to the Future. Boston: Houghton Mifflin. 1979.
5. D. W. Farrell. Personal File #537. Kansas State University Farrell Library Special Collections.
6. G. P. Wibberly. Agriculture and Urban Growth. Michael Joseph Ltd. 1959.
7. Gregory C. Gustafson and L. T. Wallace. Differential Assessment as Land use Policy: The California Case. AIP Joural. November 1975.
8. Pierre Croson. Cropland Crisis, Resources for the Future. 1980.
9. John Blythe. Kansas Farm Bureau Official. 1980.
10. Daniel R. Mandelker and Roger A. Cunningham. Planning and Control of Land Development. The Bobbs-Merrill Company, Inc. 1979.
11. John P. Reganold and Michael J. Singer. Defining Prime Farmland by Three Classification Systems. Journal of Soil and Water Conservation. July/August 1971.
12. Pottawatomie County, Kansas. Zoning Ordinance 1981.
13. Urban Land Institute. Management and Control of Growth, Volume IV, 1978.

BIBLIOGRAPHY

1. United States Department of Agriculture and Council on Environmental Quality. Zoning to Protect Farming- A Citizens' Guidebook. 1981.

2. Nathaniel S. Shaler. Man and the Earth. The University Press. 1905.

3. Barry Commoner. The Closing Circle. Alfred A. Knopf, Inc. 1971.

4. Eric P. Eckholm. Losing Ground. W.W. Norton & Company, Inc. 1976.

5. Dennis L. Meadows. Alternative to Growth. Ballinger Publishing Company. 1977.

6. Wendell Berry. The Unsettling of America. 3rd. edition. San Francisco: Sierra Club Books. 1978.

7. Garrett Hardin and John Baden. Managing the Commons. W.H. Freeman and Company. 1977.

8. William I. Goodman and Eric C. Freund. Principles and Practices of Urban Planning. International City Managers Association. 1968.

9. Kate L. Turbian. A Manual for Writers of Term Papers, Thesis, and Dissertations. The University of Chicago Press. 1973.

10. Jefferson County Planning Department. Jefferson County Agricultural Preservation Plan. Jefferson County, Wisconsin. September. 1978.

11. Archibald Woodruff. The Farm and The City. Prentice-Hall. 1980.

ANALYZING LANDUSE MANAGEMENT TECHNIQUES: AN INTEGRATIVE APPROACH FOR CONTROLLING THE CONVERSION OF AGRICULTURAL LAND

by

PAUL KEITH GREELEY

B. S., Kansas State University, 1980

AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF REGIONAL AND COMMUNITY PLANNING

Department of Regional and Community Planning

KANSAS STATE UNIVERSITY
Manhattan, Kansas

1984

In the last two decades agricultural land in the United States has been disappearing at an alarming rate; it is estimated that 6 million acres per year are being converted to urban uses, or rendered useless or less productive. The dilemma created is that every year the United States role as a major food exporter is threatened because of a declining agricultural resource base. To continue to meet this role as a world food producer United States agricultural producers and landowners must recognize that the following will occur:

1. A higher intensity of use of both prime and marginal agricultural lands - which means higher costs of production.
2. Redirected domestic food supplies and surpluses to an ever increasing export market - which means more competition and higher costs in the domestic marketplace.
3. Public and privately instigated agricultural protection programs -which means more farmer support programs and less agricultural land conversion program support.

Varying processes to address the reduction of agricultural land have been utilized. These programs differ in general intent and participation. At the federal level involvement has come only recently with the passage of the Farmland Protection Policy Act of 1981 (FPPA). An out-growth of the FPPA is the Land Evaluation and Site Assessment System (LESA) which provides for a more calculated and consistent approach to land development vs. agricultural land retention concerns. At the state level techniques are used that vary from tax incentives to land regulatory techniques that retain agricultural land. Involvement at the local level and state level allows a very real influence on conversion vs. retention issues. It is here that consistent, across-the-board agricultural land retention actions

an get a handle on the declining agricultural land base. At the national evel the federal government can defuse large scale land converting rograms, whereas unrelated state and local programs must individually olve their problems and recognize their role in a nationwide agricultural rotection effort.

By realizing that varying levels of government exist, i.e., rural local/county), rural ezperiencing growth (metropolitan/county), and etropolitan; the agricultural land retention action can be organized with he most appropriate land regulatory, taxation and private land protection echniques.