Part One:
The Planning Process
The Planning Framework

Farmland preservation is an issue which is integral to every planning concern in Dane County. In fact, public interest in urban growth and its effect on agriculture were largely responsible for the development of the County Land Use Plan in the early 1970's.

That plan recognizes that preservation of farmland is the other side of planned growth, and its policies form the framework for this as well as other RPC plans.

The Dane County Land Use Plan established the basic goals for growth and development, and broadly defined three plan elements -- urban service areas, where new growth will be guided; environmental corridors, in which sensitive resources will be protected; and agricultural preservation areas, where the most productive farmland will be preserved.

That plan also called for a cooperative process by which towns, villages and cities would prepare individual plans, adding detail and local perspective to the generalized county policies and maps.

While these local plans address a range of land use issues, the county plan included a specific policy "to prepare and adopt jointly with the affected towns, the delineation of those agricultural lands to be preserved."

The cumulative result of this town-by-town effort is the Dane County Farmland Preservation Plan.

County and Town Roles

The farmland planning process was coordinated by the Regional Planning Commission, with financial assistance from the Wisconsin Department of Agriculture, Trade and Consumer Protection and Department of Development.

In addition to the policy framework provided by the County Land Use Plan, the Regional Planning Commission and County Agriculture and Zoning Committee adopted a set of standards for the preparation and review of town plans (see Appendix 1). These standards provide continuity between plans and assure that they meet the criteria set forth in the State Farmland Preservation Act. To facilitate subsequent implementation of the plans, the County Zoning Ordinance was amended to require that town plans be used as the basis for making zoning amendments.
Most towns prepared their own plans, with assistance from RPC staff. This process allowed for maximum local input and citizen participation, and the plans reflect the variety of development pressures, attitudes and land ownership patterns among and within the towns. Each town's desire to control its own future provided a strong incentive to prepare plans, particularly when coupled with a county commitment to local efforts.

Individual town plans were prepared under the guidance of a five to seven member planning committee appointed by the town board. Each committee represents a cross-section of town interests, from long-term farmers to residents of new subdivisions, whose common concern is to help guide the town's development. The committees met at least monthly over the year or more that each plan was in progress, reviewing data, identifying farmland preservation and urban growth areas, and developing the policies which make up the land use plan.

The planning committees tapped the ideas of other town residents through opinion surveys and informal meetings, and usually sponsored several public hearings on the plan they drafted. At the end of the process, each committee presented its recommended plan for adoption by the Town Board.

After town adoption the plans were adopted by the Regional Planning Commission, reviewed and recommended by the County Agriculture and Zoning Committee, and finally adopted by the County Board.

The county farmland plan is a compilation of all prepared town plans, and in that sense has been adopted piece by piece over the past three years. County adoption of the assembled plans, within the context of countywide policies, pulls the pieces together and constitutes formal adoption of a farmland plan under the meaning of the State Farmland Preservation Act.

The State Farmland Preservation Program

Although Dane County has been concerned with preservation of valuable farmland for many years, the passage of the State Farmland Preservation Act in 1977 provided a major stimulus for local governments and individual farmers.

The purpose of the law is to help counties that want to preserve farmland through planning and zoning, and to provide tax relief to farmers who participate in the program. To accomplish that purpose, the law provides grants and guidelines for planning, standards for zoning ordinances, and tax credits for farmers.
Farmers can qualify for tax credits in either of two ways: (1) their land is zoned for exclusive agricultural use; or (2) they sign a contract agreeing not to develop their land for a specific time. There are two stages to the program; the first stage runs until 1982, and the second stage begins in 1982 or before, depending on action of the local governments.

In the first five years, 1977-1982, any farmer in the state can qualify for tax credits by voluntarily signing a contract; the farmer agrees not to develop his land and in exchange is eligible for state income tax credits.

The second way to qualify for tax credits is through local exclusive agricultural zoning. Exclusive agricultural zoning ordinances must provide that farmland cannot be developed, and no residences can be built unless occupied by the farmer, his parents or children. When a farmer’s land is zoned exclusive agriculture, no individual contract is required. Instead, the farmer files a zoning certificate each year with his income tax return.

Before 1982, farmers may receive tax credits by either method. However, county planning and zoning increases the amount of tax credits available. With an individual contract only, a farmer receives fifty percent of the tax credit for which he qualifies. If his county and town have adopted exclusive agricultural zoning, he receives 70 percent of the potential credit. If the county adopts both zoning and a farmland preservation plan, he receives the full tax credit.

After 1982, farmers in urban counties, like Dane, can receive tax credits only through planning and zoning. Under the program, agricultural preservation plans (Ag Plans) are similar to the land use plans which have been in effect in many counties for a long time, though they are focused on preserving farmland. The plan must be based on background studies of the county’s agriculture, natural resources and population growth. It must contain a "program of specific public actions designed to preserve agricultural lands and guide urban growth." This program must include a description of methods to protect identified agricultural preservation areas; a plan for the expansion and financing of public facilities; procedures to control on-site waste disposal system; and a program to protect sensitive environmental areas.

Dane County adopted exclusive agriculture zoning in May, 1978 and subsequently 22 towns approved the zoning for their area. In addition, over the past four years, 32 towns prepared and adopted local land use plans which were subsequently adopted by the Regional Planning Commission and Dane County.

Farmland preservation is clearly a cooperative job -- the result of actions by the state, counties, towns and each farmer. And, just as clearly, it requires a balancing of diverse and often competing interests in the use of land. This plan provides the forum in which the balance is struck, and the policies by which future decisions will be measured.
Natural Features

Dane County encompasses about 1,230 square miles in the southern central part of Wisconsin. It is an area of geographic contrasts, reflected in the variety of topography, drainage patterns and soils.

Physiography

The Rock River basin drains three fourths of the water sources of Dane County, including the Yahara River and its four lakes, and the Sugar River. This slightly rolling plain of low hills interspersed with wetlands covers the eastern two-thirds of the county, and its soils and topography were shaped by the last glaciers of the Pleistocene, which moved across the region from 18,000 to 20,000 years ago.

The county's eastern edge is characterized by "drumlin-marsh" topography -- high, whaleback shaped hills rising and falling in a parallel series among interconnected wetlands. In addition to creating the drumlins, the glacier deposited a sheet of debris generally 25 to 100 feet deep. The glacial deposits provide few springs or seeps, so stream flow is sluggish and very dependent on overland runoff.

Moving west, the drumlins give way to ground and recessional moraine, piles of unstratified silt, sand and gravel deposited by the glacier as it halted or retreated. The prairie area north of Madison is a good example of gentle rolling moraine, with broad, rounded hills and generally well drained soils.

The terminal moraine, marking the westernmost advance of the last glaciation, runs on a line from the Town of Roxbury in the northwest to the Town of Oregon in the southcentral part of the county. The moraine is generally a drainage divide where the headwaters of many streams in the Yahara, Sugar and Wisconsin River systems are located.

The western third of the county beyond the terminal moraine is unglaciated. Known as the "driftless area" (due to the absence of glacial drift), it is characterized by steep valleys and ridges drained by fast flowing spring-fed streams. The sharp contours of the valleys, shallow soils and surface bedrock form a marked contrast to eastern Dane County, a contrast reflected in agriculture and other land use.

The driftless area is drained largely by the Wisconsin and Sugar Rivers. The Wisconsin River basin is characterized by
steep, high-walled valleys, with deep alluvial deposits of sand and gravel along valley floors. The Sugar River drains the area south of Military Ridge (on which Highway 18-151 runs), and its topography is similar to the Wisconsin basin, though ridge tops are broader and more rounded.

Soils

Dane County's physiographic contrasts are reflected in varying soil types and agriculture potential. The eastern, glaciated portion is covered with rich, sandy looms underlain by glacial till or outwash material. A large percentage of these soils are classified as prime farmland or farmland of statewide importance according to national Soil Conservation Service standards. In the northcentral and northeastern towns, prime farmland soils make up more than 90% of the land area.

Soils of the driftless area are generally silt looms, with bedrock less than 40 inches below the surface. The narrow valley bottoms are characterized by deep alluvial soils, and the area's limited amount of prime farmland are found there. The steep slopes are usually wooded or in pasture.

As a whole, Dane County leads the state in concentration of soils suitable for farming. The U.S. Soil Conservation Service classified soils according to their limitations and suitability for agricultural production. Class I soils are deep and well-drained, and have few limitations that restrict their use. Class II soils have some limitations that reduce the choice of plants or require moderate and easily applied conservation practices. Class III soils have more severe limitations, which may be overcome by more intensive conservation practices.

As the table below indicates, nearly 80 percent of Dane County's cropland soils are in the top three soil groupings, and 61 percent are in Classes 1, 2e and 3e combined (the soils whose limitations are most easily overcome).

Class 1 soils alone make up 7.1 percent of Dane County's cropland, compared to 3.2 percent for the state as a whole. Even more telling is the fact that almost 10 percent of Wisconsin's Class 1 soils can be found in Dane County.
<table>
<thead>
<tr>
<th>Soil Class</th>
<th>Dane County</th>
<th>% Total</th>
<th>Wisconsin</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>38,201</td>
<td>7.1</td>
<td>392,083</td>
<td>3.2</td>
</tr>
<tr>
<td>II-e</td>
<td>189,792</td>
<td>35.4</td>
<td>3,478,098</td>
<td>28.4</td>
</tr>
<tr>
<td>II-w</td>
<td>82,623</td>
<td>15.4</td>
<td>2,320,003</td>
<td>19.0</td>
</tr>
<tr>
<td>III-e</td>
<td>99,544</td>
<td>18.6</td>
<td>2,044,174</td>
<td>16.7</td>
</tr>
<tr>
<td>III-w</td>
<td>16,009</td>
<td>3.0</td>
<td>331,242</td>
<td>2.7</td>
</tr>
<tr>
<td>Subtotal</td>
<td>426,569</td>
<td>79.5</td>
<td>6,565,600</td>
<td>52.0</td>
</tr>
<tr>
<td>IV-VIII</td>
<td>109,878</td>
<td>20.5</td>
<td>3,663,218</td>
<td>30.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>536,447</td>
<td>100.0</td>
<td>12,228,818</td>
<td>100.0</td>
</tr>
</tbody>
</table>

e: major limitation is erosion potential.
W: major limitation is water on or in the soil.


As mentioned earlier, the Soil Conservation Service also classifies soils as Prime Farmland, Unique Farmland, Farmland of State Importance, and Farmland of Local Importance. Under this scheme, which considers a variety of soil characteristics, the soil capability Classes I and II generally fall in the Prime Farmland category, and many of Class III soils are considered Farmland of Statewide Importance. While precise acreage figures are unavailable for Dane County, maps prepared as part of each town plan reveal that Prime and Statewide Important lands predominate, except in the hilly western towns.
Socioeconomic Features

Dane County contains the state's second largest city and is home to 323,545 people, but most of its land remains devoted to agriculture.

In 1970, agriculture and undeveloped land accounted for 86 percent of the county's land area. The next largest land use was streets, roads and utilities, using 4.4 percent, and residential land, using 3.8 percent. All other types, including water, comprise less than 6 percent of the total.

Results of a 1980 land use inventory are not yet complete, but it's unlikely that, on a countywide basis, there has been a large change in the amount of agricultural land. However, a number of local and regional development trends are significant for farmland preservation planning.

Population

Dane County's population grew by 30.7 percent in the 1960's, reflecting a decade of expanding state government and university enrollment. The City of Madison grew even more than the county as a whole, rising from 57 percent of the county in 1960 to 59 percent in 1970.

The 1970's have been quite different. Dane County grew by only 11.5 percent, from 290,272 to 323,545 people. More significantly, the Cities of Madison, Monona and the Villages of Shorewood and Maple Bluff all lost population.

Nevertheless, Dane County's rate of growth was nearly double the state's, and Dane ranked second to Waukesha County in the number of new inhabitants gained from 1970 to 1980. The real story of population change in the 1970's is not the slowdown, but the redistribution.

Dane County's growth is now occurring in towns, villages and small cities. Figure 1 shows that towns, with a collective population of 56,642 persons in 1970, grew 31.6 percent in the last decade, for a total of 74,545 inhabitants. The fastest growing towns were Fitchburg and Burke, with population increases of 155 percent and 70 percent respectively.

Fourth class cities followed the towns in growth rate, posting a 28.1 percent increase over 1970 figures. Villages grew by 25.1 percent.

The result of this growth is that Madison's share of county population has dropped from 59.2 to 52.8 percent, and the towns' share has correspondingly risen from 19.5 to 23 percent.
Even more dramatic than the population shifts is a demographic change seen nationwide -- declining household size. As Figure 2 shows, the persons per dwelling unit in Dane County dropped from approximately 3.16 in 1970 to 2.58 in 1980.
This change has far reaching social, economic and environmental implications. Among the most important is that residential development is growing at a much faster rate than population; a population increase in the 1980's requires on the average, 22 percent more dwelling units and land to build them on than the same population in 1970. It's instructive that the City of Madison, which lost inhabitants, gained nearly 13,000 dwelling units in the last ten years.

Therefore, though the population is growing slower, it's distribution is widening, and the pressure to convert land to urban uses is increasing rather than subsiding.

FIGURE 2

PERSONS PER DWELLING UNIT
1970-1980

YEAR (NO DATA 1971-1974)
Residential Development

As suggested above, residential growth has been strong in Dane County. In fact, the county gained more housing in the 1970's (33,833 units) than in the "booming" 1960's (25,235 units).

The trends in location and type of housing have shifted throughout the decade. A large share of units were built in towns in the early and mid-1970's; in both 1971 and 1976, the percentage of residential construction in unincorporated areas exceeded that in Madison. During the intervening years, generally times of economic downturn, development was more concentrated in cities and villages. Such has been the general trend in the last three years.

A similar trend is seen in the concentration of development within areas planned for public services, such as sewer and water (urban service areas). As Figure 3 indicates, the percent of units built in unsewered areas rose to 24 percent in 1976, then began to drop. Undoubtedly, economic conditions are partially responsible for that reversal, but local planning programs were also getting underway at the same time.

FIGURE 3

[Diagram showing new unsewered units as a percent of all units built and unsewered non-farm units as a percent of all non-farm units]
Multi-family unit construction dominated the scene in the early decade, but continually declined from its high point in 1971, when almost 67 percent of the units built were apartments. By 1977, the distribution was reversed: single family housing made up 67 percent of that year's residential construction.

Since then, however, single family housing development has dropped markedly, while apartment construction remains stable. Predictions are risky, but economic and social trends point to continued multifamily development, which allows greater densities and less land consumption than single family housing.

**Economic Development**

Population and residential development are closely related to employment and other economic development trends in Dane County.

The rapid growth rate which occurred during the 1960's was largely due to expansion in the university and state government, and in the private business which serve these agencies and their employees. Both the state and university now have policies to limit their growth.

From 1970 to 1980, employment in government agencies, including the university, increased 29 percent, compared to almost 80 percent in the previous decade. Employment in this sector dropped from 36.9 percent of all nonfarm employment to 33.8 percent.

Employment in wholesale and retail trade, services other than government, and manufacturing has continued to grow at rates comparable to those of the 1960's. Finance/insurance/real estate shows the strongest growth. Though it's a small sector of the economy, with 7.5 percent of 1980 county nonfarm employment, it's work force has doubled since 1970.

Contract construction and transportation, communication and utilities are declining industries. Construction, in particular, shrunk from a 5.3 percent share of 1970 employment to 3.9 percent in 1980.

Current DCRPC forecasts of future employment and population reflect the modest growth rates of the last decade. Employment is forecasted to grow from 171,000 in 1980 to 220,000 in the year 2,000, an increase of 29 percent. This growth rate is higher than that forecasted for population - an increase of 24 percent, to a county population of 400,000 in 2,000. Employment is expected to grow faster than population because women and young and elderly people are joining the labor force, and the average family size is decreasing.
As in 1980 the majority of the county's people are expected to live and work in the Madison urban area (including the cities and villages, and nine towns adjacent to Madison). However, as the last decade's experience shows, both population and employment will likely be more widespread than was once forecast.

In 1970, approximately 86 percent of the county's jobs were in the Madison area. That proportion is now forecasted to drop to 84 percent. For a historical perspective on that prediction, consider that, of nearly 2,900 manufacturing jobs created in the last ten years, only 11.7 percent were located in the City of Madison.

The Implications for Farmland Planning

Dane County's socio-economic trends point to continued urban growth and demand for developable land. The more than 75,000 additional people which may reside here in the next twenty years will require nearly 30,000 additional dwelling units, and a significant increase in development which provides job opportunities for them.

In the recent past, most growth has occurred outside the City of Madison -- in unincorporated areas or, increasingly, in outlying small cities and villages. Even if central Madison redevelopment efforts reverse the city's population decline, the diminishing profile of state and university employment could point to a still larger role for small communities in the county's economic picture.

These development trends have potentially positive as well as negative implications for the protection of agricultural land.

The threat of dispersed development is the loss of highly productive land, which is usually as well suited for building houses as for growing crops. The eastern two-thirds of the county, where the best farmland is concentrated, is particularly vulnerable. On the other hand, growth in small communities is a boom to the county's agricultural economy, because farmers depend on the markets and services they provide. In addition, increasing higher density, multifamily residential construction helps us move towards development patterns which conserve farmland.

The challenge of farmland planning is to stimulate growth where it is beneficial, and discourage it where it directly or indirectly consumes agricultural land or conflicts with agricultural activity.

1 1980 Regional Trends, Dane County, Wisconsin, Dane County Regional Planning Commission, May, 1981.
Agricultural Features

Despite the trends toward urbanization, Dane County remains one of the major agricultural counties in the state as well as the nation.

The county ranks first in Wisconsin in alfalfa and corn for grain production, and second in milk production, and consistently ranks among the nation's top 25 counties in general agricultural products. Dane also produces significant amounts of tobacco, corn for silage, wheat, vegetables for processing, hogs, chickens, sheep and calves.¹

According to the 1978 Census of Agriculture, farms occupied 80 percent of the county land area. Of the farmland, 80 percent was in cropland, 10 percent in woodland or woodland pasture, and 10 percent in all other uses. Due to topography and soils, cash cropping is concentrated in the eastern portion of the county, while dairy and livestock operations are more common in western, driftless areas.

Countywide the pressures of urbanization and changes in the farm market have affected the use of agricultural land in Dane County. "Higher investment and labor requirements have combined with other factors in a trend of farmers leaving dairying and devoting more land to raising corn as a cash crop." Land which was once planted with oats or hay is now planted with corn. Pasture land has been decreased and many beef cattle are now raised in confined feeding operations.

Such trends are clear in the cattle and dairy herd stations shown below. Cattle numbers have shown a steady rise until 1978 while dairy herds and milk cow numbers have decreased. Over this 25-year period, there has been a drop of over 3,000 dairy herds. At the same time, the average size of dairy herds has more than doubled. These trends have meant a greater concentration of livestock with attendant problems of barnyard and feedlot runoff.

FIGURE 4

DAVE COUNTY CATTLE STATISTICS, 1950-1978

<table>
<thead>
<tr>
<th>Year</th>
<th>All Cattle and Calves</th>
<th>Milk Cows</th>
<th>Dairy Herds</th>
<th>Average Dairy Herd Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>146,000</td>
<td>86,000</td>
<td>4,758</td>
<td>18.1</td>
</tr>
<tr>
<td>1955</td>
<td>165,100</td>
<td>91,300</td>
<td>4,350</td>
<td>21.0</td>
</tr>
<tr>
<td>1960</td>
<td>168,800</td>
<td>86,900</td>
<td>3,450</td>
<td>25.2</td>
</tr>
<tr>
<td>1965</td>
<td>170,000</td>
<td>79,000</td>
<td>2,724</td>
<td>29.0</td>
</tr>
<tr>
<td>1970</td>
<td>168,000</td>
<td>69,300</td>
<td>1,714</td>
<td>40.4</td>
</tr>
<tr>
<td>1975</td>
<td>175,900</td>
<td>65,800</td>
<td>1,453</td>
<td>45.1</td>
</tr>
<tr>
<td>1978</td>
<td>155,400</td>
<td>64,800</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. From Wisconsin Statistical Reporting Service.
3. Extrapolated from statewide statistics.

Statistics on the total amount of land in farms are variable, because definitions of what constitutes a farm have changed over the years. In addition, while some land is taken out of production, other previously nonagricultural land is brought into pasture or cropland use.

FIGURE 5

DAVE COUNTY FARM SIZE AND LAND IN FARMS

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<tbody>
<tr>
<td>Under 10</td>
<td>261</td>
<td>169</td>
<td>144</td>
<td>182</td>
</tr>
<tr>
<td>10-49</td>
<td>542</td>
<td>499</td>
<td>431</td>
<td>471</td>
</tr>
<tr>
<td>50-179</td>
<td>1,239</td>
<td>1,507</td>
<td>1,891</td>
<td>2,287</td>
</tr>
<tr>
<td>180-499</td>
<td>1,046</td>
<td>1,096</td>
<td>1,141</td>
<td>1,238</td>
</tr>
<tr>
<td>500-999</td>
<td>158</td>
<td>118</td>
<td>84</td>
<td>61</td>
</tr>
<tr>
<td>1,000-1,999</td>
<td>34</td>
<td>24</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>2,000 and over</td>
<td>6</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Total No. of Farms</td>
<td>3,490</td>
<td>3,557</td>
<td>3,706</td>
<td>4,251</td>
</tr>
<tr>
<td>Ave. Farm Size</td>
<td>175</td>
<td>175</td>
<td>164</td>
<td>154</td>
</tr>
<tr>
<td>Land in Farms (1,000' acres)</td>
<td>614</td>
<td>617</td>
<td>607</td>
<td>654</td>
</tr>
</tbody>
</table>

2. Data reflects 1978 farm definition.

As Figure 5 shows, the total farmland acreage reported by the periodic Census of Agriculture has fluctuated in the last fifteen years. It dropped from approximately 654,000 acres in 1964 to 607,000 in 1969, then, using the same farm definition, rose to 622,000 acres in 1974. A more restrictive definition of farms instituted in 1975 (places from which $1,000 or more of agricultural products were sold during the census year) yields a lower total acreage figure, but nevertheless an increase from the 1969 result. In general, the county lost about 30,000 net acres of farmland between 1964 and 1978, though in recent years land taken out of production has been roughly balanced with that brought in.

While the data on farm acreage are ambiguous, trends in number of farms and farm size are unmistakable. The total number of farms in Dane County has consistently declined since the early 1960's, regardless of the definitions used. In 1964, there were 4,251 farms, which dropped to 3,490 in 1978 using the same definition -- a loss of 761 farms. At the same time, the remaining farms have grown in size, from an average of 154 acres in 1964 to 179 acres in 1978.

The farm size data also shows that both very large and small, hobby-type farms are growing in number. In 1978, there were nearly three times as many farms over 500 acres as existed in 1964. Farms of the most common size -- 50 to 179 acres -- have dropped from 54 percent of all farms in 1964 to 38 percent in 1978. Such statistics clearly indicate that the small family farm is under increasing pressure from both urbanization and economic factors.

Agricultural Economy

Agriculture directly contributes about 4 percent of Dane County's employment, and indirectly forms a vital component of the county's economy.

The county has more farm workers than any other county in the state -- 10,904 hired laborers plus 3,286 farm owners and operators, according to the 1978 Census of Agriculture. Further, agriculture is related to other county industries and has a great impact on nonfarm county employment.

In 1977, food processing and nonelectrical machinery, both agriculturally-related, accounted for one-third of the county's manufacturing jobs. The county is also the home of nine agricultural equipment and building manufacturers, who employ over 1,700 workers. Over 20 percent of county wholesaling is agriculturally based; more than 100 agriculturally-related wholesalers provide nearly 1,400 jobs. In addition, farming is the focus of many other businesses, including retail trade, insurance, research, education and numerous service establishments.
At the local level, farming's economic importance is even greater. Villages and cities throughout the county are inter-dependent with their surrounding agriculture areas. Farmers are important consumers for the communities, which in turn are crucial market centers for farmers. The long term interests of both rural and urban residents are served by maintaining the vitality of Dane County's agriculture.