Farmland and Open Space Preservation in Michigan: An Empirical Analysis

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Over the past thirty years, all fifty states have enacted legislation aimed at preserving land for agricultural or open space use. Most of this legislative activity took place in the 1970's. Recently passed legislation seems directed at strengthening existing law, possibly in response to shortcomings found while implementing earlier farmland and open space preservation legislation. It is appropriate today, when most states have had five to ten years of experience administering their statutes, to stand back and examine that experience and to ask how well these reforms are achieving their original objectives. Accordingly, this Note examines participation in a program established by one of these 1970's statutes—Michigan's Farmland and Open Space Preservation Act (P.A. 116). This Note examines how participation in P.A. 116 relates to pressure to develop land as

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All figures and appendices for this Note appear on pages 1163-97.

1. This Note discusses the different forms that these legislative initiatives have taken. Appendix I summarizes the major characteristics of these statutes and appendix II provides statutory citations.

In 1956, Maryland became the first state to pass legislation directed at preserving farmland and open space. Its statute provided preferential property tax treatment to farmland. Most states that enacted farmland and open space legislation did so in the 1970's and are now well along in implementing their new measures. While states continue to pass new laws aimed at preserving farmland and open space, the number of such statutes passed each year declined sharply during the 1980's. See appendix I.

2. See infra note 42 and accompanying text.


Every state statute contains a slightly different definition of "farmland" and "open space." In this Note, farmland will refer to land actively used for crop or forage production, pasture, or vacant land within a farm. Open space refers to land that is not devel-
measured by indices of urbanization and discusses what this information implies about the effectiveness of Michigan’s approach to farmland preservation. The information and discussion presented in this Note will hopefully raise additional questions about Michigan’s program and will spark interest in a more extensive examination of the way that this and other states’ farmland and open space initiatives are functioning.

In 1973, a task force appointed by Michigan Governor William Milliken issued a report examining farmland and open space preservation strategies implemented by other states. In drafting P.A. 116, the Michigan legislature incorporated a number of the innovative changes recommended by the task force. Because Michigan’s legislation was drafted with the intent of avoiding problems encountered by other states with their farmland and open space preservation programs, information about P.A. 116’s effectiveness will be of interest not only to Michigan, but also to other states concerned with effective farmland and open space preservation.

Part I of this Note describes the political and economic conditions that gave rise to the farmland and open space preservation enactments. It presents a brief political history of the support for this body of legislation, and summarizes the economic arguments raised both for and against these preservation efforts. Part II describes the principal types of state farmland and open space preservation programs enacted during the past thirty years. Finally, Part III presents an empirical analysis of P.A. 116.

I. THE POLITICAL AND ECONOMIC BASIS OF SUPPORT FOR FARMLAND AND OPEN SPACE LEGISLATION

Farmland and open space preservation legislation has gained a diverse base of political support in the years since Maryland passed the first statute addressing the issue in 1956. This sec-

tion discusses the growth of that support both by describing the historical context in which P.A. 116 and other farmland and open space preservation statutes were passed and by presenting the arguments raised in favor of and against such legislation.

A. The History of Political Support

The constituency for farmland and open space preservation has broadened considerably over the last three decades. During this period, changing support for land preservation traced changes in important economic and social concerns. As urban renewal, environmental quality, world population and food supply, and energy conservation each, in turn, gained national attention, measures such as Michigan's P.A. 116 found new supporters. Concerned individuals viewed farmland and open space preservation as one way to address these problems.

Although much of the effort to preserve farmland and open space has been state-initiated, all levels of government have been involved. Federal participation increased markedly during the 1970's. Even then, however, the federal government limited its efforts to developing information on land use, designing educational programs about the national importance of farmland, and avoiding federal administrative interference with state efforts to preserve farmland and open space.

In the past five

6. See Raup, An Agricultural Critique of the National Agricultural Lands Study, 58 LAND & ECON. 260 (1982) (discussing political factors that led to the National Agricultural Lands Study (NALS), which was undertaken in 1979 by the United States Department of Agriculture and the President’s Council on Environmental Quality to assess the extent and impact of conversion of United States’ agricultural land to urban use).

7. In 1975, the U.S. Department of Agriculture’s (USDA) Committee on Land Use sponsored a seminar on farmland retention. The participants recommended that the USDA advocate retaining the “maximum possible base for the production of food, fiber and timber products, and minimize actions that [would] diminish the nation’s capacity to produce these essential commodities.” U.S. DEP’T OF AGRICULTURE, RECOMMENDATIONS ON PRIME LANDS 17 (1975). Then-Secretary of Agriculture Earl Butz followed many of the seminar’s recommendations when he issued a farmlands protection policy in June 1976. Office of the Secretary, U.S. Dep’t of Agriculture, Secretary’s Memorandum No. 1827, Supp. 1, Statement of Prime Farmland, Range, and Forest Land (June 21, 1976) (copy on file with U. Mich. J.L. Ref.). Under this policy, the USDA and the U.S. Environmental Protection Agency urged other federal agencies to avoid actions that would take prime farmland out of production unnecessarily. Id.

In 1979, recognizing the need for better information to implement these directives, then-Secretary of Agriculture Bob Bergland and Charles Warren, chairman of the President’s Council on Environmental Quality, initiated the 18-month National Agricultural Lands Study. In addition to providing information on the impact of conversions of farmland to non-agricultural use, the NALS developed policy recommendations that formed the basis for federal legislation.

During the late 1970’s, many attempts were made to pass federal legislation aimed at preserving farmland. Finally, in December 1981, the Farmland Protection Policy Act,
years, the focus of federal farm policy has shifted from resource issues to the current farm credit crisis. Federal interest in farm-

Pub. L. No. 97-98, 95 Stat. 1341 (1982) (codified at 7 U.S.C. §§ 4201-4209 (1982)) (the Act), became law. This statute seeks to “minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses in cases in which other national interests do not override the importance of the protection of farmland nor otherwise outweigh the benefits of maintaining farmland resources.” 7 U.S.C. § 4201(b) (1982). The Act requires that federal actions be compatible with state and local farmland preservation policies. Id. § 4202(b). It directs the USDA to design and implement a nationwide educational program on the national importance of farmland, to establish a depository for information on farmland policy, and to issue rules implementing the Act’s directives for federal agencies. Id. §§ 4202, 4205. On July 5, 1984, the USDA Soil Conservation Service issued rules setting out criteria for federal agencies to use in identifying and considering the effects of federal programs on the conversion of farmland. See 7 C.F.R. pt. 658 (1985).

The 1981 Act did not create express or implied legal grounds for challenging a federal action that may endanger farmland. 7 U.S.C. § 4209. Moreover, the Act provided no financial assistance for state and local governmental efforts to preserve farmland. The Food Security Act of 1985 amended the 1981 Act to provide a limited cause of action for challenging federal actions endangering farmlands. Pub. L. No. 99-198, § 1255(b), 99 Stat. 1354, 1518 (1985). The amendment allows legal action, but only if approved by the state’s governor. Id. The 1985 amendments also require the Secretary of Agriculture to report annually to Congress on national progress in farmland preservation. Id. § 1255(a), 99 Stat. at 1518.


Agriculture’s intensive demands on natural resources were a key feature of the decade [1970's]. More cropland, soil erosion, fertilizer, chemicals, environmental loadings, irrigation water and energy were required, and no declines were in sight. At the same time, the demands by others for some of these same resources
land preservation continues, but has not gained momentum. Despite attempts to pass national land use planning legislation in the 1970's, direct land use control and, therefore, farmland and open space preservation programs remain an area of state and local prerogative.

Many local governments are directly involved in farmland and open space preservation. They have employed several different techniques in their efforts to protect these resources. Many have taken the traditional approach of purchasing parkland to preserve open space. Others have adopted more innovative measures, such as purchasing development rights or establishing systems of transferable development rights. While local actions increased. Nearly a million cropland acres were being lost each year to non-farm uses such as highways and residential developments. An urban to rural migration was occurring even though the farm population shrunk, putting additional non-farm demands on farmland. . . .

Resource scarcity is indicated by rising real prices, and prices for many natural resources jumped sharply during the decade. . . .

. . . [D]uring the early 1980s, world agricultural production increased faster than population growth. In the U.S. and throughout the world, technologies and resources induced by the scarcities of the 1970s were pouring out agricultural products. World grain inventories reached record levels as supplies were abundant and global economic stagnation restrained demand. World agricultural prices sank.

. . . By 1983, farm demand for natural resources had fallen sharply.

. . .

Farm real estate values plunged in many states. Between February 1981 and April 1983, farm real estate prices dropped 24 percent in Ohio and Indiana, 19 percent in Illinois and Iowa, and 15 percent in Minnesota and Nebraska. . . .

. . .

[In the 1980s,] concerns over agricultural surpluses, low farm prices and economic survival of many American farms and agribusinesses displaced concerns about the stewardship of the nation's natural resources, agricultural productivity and the concentration of control over farming on the agricultural policy agenda.

Yet, fundamental problems persist in the natural resources-food equation.

9. The Food Security Act of 1985 increased congressional oversight of USDA farmland preservation policies and strengthened enforcement by providing a limited cause of action to challenge federal acts that interfere with state farmland preservation programs. See supra note 7. The 1985 amendments do not, however, contemplate increased federal support for farmland preservation. Id.

10. See, e.g., ENVIRONMENTAL POLICY DIV., CONGRESSIONAL RESEARCH SERV., LIBRARY OF CONGRESS, 93D CONG., 1ST SESS., NATIONAL LAND USE POLICY LEGISLATION, 93D CONG., AN ANALYSIS OF LEGISLATIVE PROPOSALS AND STATE LAWS (Comm. Print 1973).

11. See NATIONAL AGRICULTURAL LANDS STUDY, CASE STUDIES ON STATE AND LOCAL PROGRAMS TO PROTECT FARMLAND (1981) [hereinafter cited as CASE STUDIES].

12. See id.; see also W. FLETCHER & C. LITTLE, THE AMERICAN CROPLAND CRISIS 24-26 (1982) (discussing innovative farmland and open space preservation efforts in the Minneapolis/St. Paul area); Dunford, Saving Farmland, the King County Program, 36 J. Soil & WATER CONSERVATION 19 (1981) (discussing King County, Washington's program to purchase development rights of farmland, adopted as a response to the perceived inadequacy of county agricultural zoning and Washington's Open Space Tax Act); Walker,
have been innovative and, in many cases, very effective, they have not had the broad systematic impact that state efforts have had.

State governments have by far played the most active and significant role in farmland and open space preservation. A few states have adopted approaches such as state-wide land use planning, agricultural districting, and open space easement purchasing programs. Hawaii, for example, has incorporated farmland preservation into its comprehensive efforts to plan the use of its limited land resources. New York was one of the first states that tried to preserve farmland by allowing farmers to form agricultural districts. New Jersey recently enacted an extensive program approving the purchase of development easements. The principal approach taken by states to preserve farmland and open space, however, has been to assess these lands at current-use value rather than market value for property tax purposes. Often, adoption of preferential assessment statutes has required the amendment of state constitutions that contained some form of tax uniformity clauses. Apparently, it


13. See infra text accompanying notes 128-49.

14. See infra note 129.

15. See infra notes 136-45 and accompanying text.

16. See infra notes 147-49.

17. For a list of these states, see appendix I. Current-use value assessment reflects land's value as it is currently used. Market value assessment uniformly reflects land's value in its most intensive, reasonably potential use. Most states determine this value by looking at the use and sales prices of surrounding properties. On the urban fringe, market value assessment for agricultural and open space land is generally higher than its current-use value assessment because market value assessment reflects land's value for residential and commercial use. Statutes applying market value assessment generally assess all classes of land uniformly. Current-use value statutes generally abandon uniform assessment methods by dividing land into categories and assessing each category differently. Some categories—most commonly commercial and residential use—are assessed at market value. Others—like farmland, open space, or forestland—are assessed at current-use value. This Note will refer to current-use valuation as "preferential assessment."

18. For a discussion of the difference between preferential and differential assessment, see infra text accompanying notes 86-87.

19. The subject of uniformity and equality in taxation stands as the touchstone to the question of whether or not taxation may be used for policy-making, or regulatory purposes, as distinct from its more fundamental use by government for the raising of public revenues. In this sense, it represents the embodiment of what is usually referred to as tax "neutrality" in economic circles, with all of its related issues. Taken literally, where this particular constraint has been imposed by law, it means that everything must be taxed in the same way. With it, fiscal incentives and disincentives could not really exist, and no policies could be implemented through taxation except, of course, the singular policy of uniformity and equality.
Farmland Preservation

has been easier politically to amend state constitutions and provide tax incentives for farmland and open space preservation than to find support for other measures—such as exclusive agricultural use zoning or purchasing development rights—that impinge more heavily on traditional concepts of property rights.20


“[I]n creating new tax structures or rearranging old tax structures legislatures must operate within state constitution [sic] limitations. One of the more important of these state constitutional limitations upon the taxing power will be found in that collection of provisions generally referred to as ‘uniformity’ clauses.” 1 W. Newhouse, supra, at 6-7.

[Between 1945 and 1960 there] was an enormous burst of governmental activity by state and local government . . . stimulated by increased social responsibility and a concomitant demand for more revenue . . . . At the same time there was an explosion of population and rapid growth of urban areas, which created widespread concern reflected in an increased amount of land use planning, a process which, inter alia, uses taxation as a means of implementing such planning in order to preserve agricultural and other open spaces . . . .

[During the post-World War II period] an increased number of states adopted in form or in substance a . . . [property] clause, literally permitting classification of property; special provisions authorizing separate treatment of intangible property; and specific provisions for “use” valuation of specified classes of property, usually agricultural property.

2 W. Newhouse, supra, at 1759-60 (In his two volume treatise, Professor Newhouse presents a very readable historical analysis of the impact of state constitutional uniformity limitations on state revenue structures.).

Professor Newhouse found that state constitutions employ 12 basic types of uniformity clauses:

 I Every person ought to contribute his proportion of public taxes for the support of government, according to his actual worth in real or personal property.
 II Every member of society has a right to be protected in the enjoyment of life, liberty and property, and therefore is bound to contribute his [proportion towards/share of] the expenses of that protection.
 III The legislature may impose proportional and reasonable assessments, rates and taxes upon all persons or estates within the state.
 IV [All] land shall be taxed equal [and uniform].
 V [All] property shall be taxed in proportion to its value.
 VI [All] property shall be taxed according to its value.
 VII No one species of property from which a tax may be collected shall be taxed higher than any other species of property of the same value.
 VIII Taxation shall be equal and uniform.
 IX The rule of taxation [for property] shall be uniform.
 X The legislature shall provide by law for a uniform and equal rate of assessment and taxation.
 XI Taxes shall be uniform upon the same class of subjects.
 XII Taxes shall be uniform upon the same class of property.

Since the late 1950’s, many states have amended constitutional uniformity provisions or adopted new provisions to allow for differential assessment of agricultural or open space land. See appendix III.

20. Agricultural communities have traditionally resisted any form of governmental imposition of land use controls. See Bultena, Hoiberg, Albrecht & Nowak, Land Use Planning: A Study of Farm and City Perspectives, 37 J. SOIL & WATER CONSERVATION 341 (1982); Bultena, Nowak, Hoiberg & Albrecht, Farmers’ Attitudes Toward Land Use
In 1956, Maryland became the first state to pass a preferential assessment statute designed to preserve farmland and open space. Since then, forty-six other states have passed similar legislation. Support for the preferential assessment of farmland originally came from farm groups seeking property tax relief in the 1950's. These groups believed that market value assessment of farmland placed excessive and unfair property tax burdens on farms near urban areas. They recognized that as urban development encroaches upon a tract of farmland, the land's market value assessment may also collide with anti-exclusionary zoning doctrines. For general discussions of this issue, see S. Redfield, Vanishing Farmland 55-67 (1984); Keene, Agricultural Land Preservation: Legal and Constitutional Issues, 15 Gonz. L. Rev. 621, 652 (1980).

Most of the initial support for use-value assessment in the 1950's came from farm groups. Farmers generally had enjoyed a "golden age" of property taxation during the war years when their property taxes were low relative to their rising incomes. This situation changed markedly after the war as taxes began to rise on a per acre basis, as a percentage of property value, and as a percentage of net farm income. With this trend, rural land owners in most areas became tax-conscious. But the problem was most acute near the growing cities where rural owners were often caught in a tax squeeze of rising assessment levels and increasing millage rates.

Tax levies rose 10-, 20-, and 50-fold within a few years in many cases. With this prospect, owners were often happy to sell their lands, particularly when offered good prices. Many owners, however, wanted to continue farming. Use-value assessment was recommended both near the cities and farther away as a reasonable means for protecting the interests and securing tax justice for these owners. R. Barlowe & T. Alter, Use-Value Assessment of Farm and Open Space Lands 15 (Agricultural Experiment Station, Michigan State University, Research Report No. 308, Sept. 1976), reprinted in D. Mandelker & R. Cunningham, Planning and Control of Land Development 1273, 1278-79 (1979). For a well-written and insightful article on the various equities involved in one state's development of property tax policy from 1920 through 1967, see Roberts, The Taxation of Farm Land in Oregon, 4 Willamette L.J. 431, 433 (1967). Roberts was an Assistant Attorney General of Oregon and Chief Counsel of Oregon's State Tax Commission. He describes how farm support for differential assessment in Oregon arose during the agricultural depression of the 1920's and continued through the late 1960's, when he wrote the article.

Individuals, knowledgeable in the intricacies of ad valorem taxation, consider Oregon's current laws and administration as among the best in the nation. At the same time, many Oregon farmers feel that they are the victims of unjust taxation and that their plight is not generally understood or sympathetically viewed. At the time of this writing, there has been talk of a tax revolt in certain farm quarters.
value increases, reflecting its potential value for non-agricultural use. As the farm’s market value increases, so does its property tax assessment under a strict uniform market value assessment regime. Millage rates also increase with urban development to provide for more schools, roads, and sewer systems. Farmers pay an inequitable share of the total tax burden in urban fringe areas because a farm’s acreage and value is excessively high in relation to the amount of services consumed by the farm family. Although the sale of farmland for residential and commercial development in urban fringe areas provides many farmers with windfalls, others who desire to continue farming find that increased property taxes force them to leave farming prematurely. The increased costs of holding their land make it difficult or impossible for farmers on the urban fringe to compete in the market place. 25

In the 1960’s, current-use value assessment gained support from advocates of urban planning and renewal. These groups focused on the problems presented by urban “sprawl” rather than on the inequitable burden that market value assessment imposes on farmers. Farmers and advocates of urban planning found common ground in their concern that high property taxes might force farmers to sell land prematurely for development, thus adding to urban “sprawl.” Urban planning advocates hoped that current-use value assessment would slow urban expansion and help achieve more orderly urban development. 26 Additional political pressure from advocates of urban planning led several states to pass differential assessment legislation in the 1960’s. 27

Events of the 1970’s brought added political support for legislation to control the conversion of farmland and other open space land to urban uses. First, throughout the decade, the rise of the environmental movement brought with it increased pressure to preserve open space. 28 Second, in 1972 and 1973, a serious shortage developed in world grain stocks. 29 This crisis, to-

25. Id. at 442.
26. See C. LITTLE, CHALLENGE OF THE LAND 71-73 (1968); Raup, supra note 6, at 260.
27. Eight states passed differential assessment statutes in the 1960’s. See appendix I.
29. The world food situation in 1973 is more difficult than at any time since the years immediately following the devastation of the second world war... Cereal stocks have dropped to the lowest level for 20 years. In the new situation of worldwide shortage, changes are occurring with extraordinary rapidity. Prices are rocketing, and the world’s biggest agricultural exporter has had to introduce export allocations for certain products.

Boerma, Foreward to Food and Agriculture Organization of the U.N. The State of
gether with sobering projections of rapid growth in world population, raised concern about the adequacy of world land resources to meet present and future world demand for food and fiber. Third, world oil prices increased in the wake of the first oil embargo in 1973. Fuel and farm chemical prices rose accordingly. Increases in petroleum costs added to the interest in preserving prime farmlands. Because of their natural fertility and good tilth and drainage, prime farmlands can produce equivalent yields with lower energy and chemical inputs than can poorer quality land. Finally, in 1972, the Soviet Union entered the world grain market as a major purchaser. The United States perceived an opportunity to balance its increasing oil imports by dramatically increasing its grain exports to the Soviet

FOOD AND AGRICULTURE 1973 at vii (1973); see also Schiff, Land and Food: Dilemmas in Protecting the Resource Base, 34 J. SOIL & WATER CONSERVATION 54 (1979).

30. "The food crisis, coupled with the growing realization of the staggering dimensions of the world population explosion, has greatly intensified the importance of global and, particularly, American food-growing capacity." Schiff, supra note 29, at 55; see also Raup, supra note 6, at 261 ("National concerns focused on the environment had provided the impetus for the land use planning efforts of the 1960s and early 1970s. After 1972-73, these concerns acquired an added focus on fears of a world food shortage.").

31. See Fertilizer Supply, Demand, and Prices: Hearings Before the Subcomm. on Agricultural Credit and Rural Electrification of the Senate Comm. on Agriculture and Forestry, 93d Cong., 2d Sess. 236-44 (1974); Farm Fuel Situation: Hearings Before the Subcomm. on Agricultural Credit and Rural Electrification of the Senate Comm. on Agriculture and Forestry, 93d Cong., 2d Sess. 45 (1974); Energy Requirements for Food and Fiber: Hearings Before the Subcomm. on Department Operations, Investigations and Oversight of the House Comm. on Agriculture, 94th Cong., 1st Sess. 1-5 (1975).


Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, forage, fiber, and oilseed crops. . . . The soil qualities, growing season, and moisture supply are those needed for a well managed soil to produce sustained high yields.

In general, prime farmland receives an adequate and dependable moisture supply from precipitation or irrigation. The temperature and growing season are favorable. The level of acidity or alkalinity and content of salts and sodium are acceptable. Prime farmland has few or no rocks. It is permeable to water and air and is not excessively erodible or saturated with water for long periods. It is not frequently flooded during the growing season.


To take advantage of this opportunity, the United States Department of Agriculture (USDA) urged farmers to plant all available acreage. In concert, these events led to heightened concern over the loss of United States farmland and investigation into methods that would enable the nation to better meet present and future world demand for agricultural products. Consequently, between 1972 and 1980, twenty-five states passed farmland and open space preservation statutes.

The agricultural economy has changed significantly since the 1970’s. Today, grain gluts world markets. In the United States, farmland prices have plummeted indicating an acute overabundance of agricultural products and, therefore, land in agricultural production. Opponents of farmland preservation might argue that this downturn in agricultural demand for land demonstrates that there is no need to preserve farmland. In fact, these opponents might maintain that taking land out of agricultural production should be encouraged. An alternative approach views these events in the context of an equally severe grain shortage a short decade ago. To be certain, these events show the ability of world agricultural production resources to respond to increased demand for grain, but they also illustrate an historical instability in world grain markets and the importance of maintaining sufficient flexibility in the amount of domestic cropland available to respond to future shortages. It can be argued that because future demand is uncertain and the land conversion process virtually irreversible, farmland preservation is required to maintain that flexibility.

Perhaps for the above reasons, farmland and open space preservation continues to receive support. In this decade, several states have adopted statutes strengthening their farmland pres-

37. See Appendix I.
39. See Forster & Henderson, supra note 8.
ervation programs. Between 1980 and 1982, for example, thirty-six states passed statutes limiting nuisance actions against farm operations.

B. Perceptions of the Economics of Land Conversion

Despite widespread adoption of farmland and open space preservation legislation, there remains considerable controversy over whether the loss of agricultural and open space lands is really a problem. Some economists consider the post-World War II pattern of urban growth and land conversion in the United States both economically efficient and generally desired by society. Others argue that there is simply no shortage of agricultural land resources in the United States. Farmland losses, they argue, are more than offset by increased yields gained through technological advances. Nevertheless, many other economists, joined by many legislators, believe that urban expansion is proceeding in an inefficient manner.

Those who advocate government intervention to change the pattern of urban expansion are concerned that market failures occur in the valuation and transfer of farmland and open space to urban use. As a result, society develops more land than it ac-

42. In 1980, Minnesota enacted a procedure for farmers and city governments to establish farmland preserves in metropolitan areas. In 1984, it passed enabling legislation for exclusive agricultural zoning that also mandated county planning for agricultural land preservation. Three states have established agricultural districting programs in the 1980's: Pennsylvania in 1981, Iowa in 1982, and Ohio in 1982. In 1981, Iowa also passed an enabling provision for exclusive agricultural zoning. For citations, see appendix II.

43. Most of these statutes expressly state that this cause of action is limited for the purpose of retaining land in agricultural production. For citations, see appendix II.

44. Obis & Pines, Discontinuous Urban Development and Economic Efficiency, 51 LAND ECON. 224 (1975) (leapfrog development may be socially desirable because it leaves space for future commercial and denser residential development near the urban center). But see Spaulding & Heady, Future Use of Agricultural Land for Nonagricultural Purposes, 32 J. SOIL & WATER CONSERVATION 88, 90-91 (1977) (leapfrog and strip development may lead to idling more farmland than required for housing and commercial needs).

45. E.g., Gibson, supra note 33, at 272; see also Luttrell, Reexamining the "Shrinking" Farmland Crisis, in THE VANISHING FARMLAND CRISIS 31 (J. Baden ed. 1984). Luttrell believes that there is no crisis in farmland availability. He argues that the market has shown no indication that farmland is scarce. For example, commodity prices have not increased significantly—as they would if food were scarce. Id. at 43. But see Forster & Henderson, supra note 8, at 6 (statistics show increased demand for agricultural commodities and a concomitant rise in farmland prices in the 1970's).

46. The remainder of this section presents the arguments these individuals raise in support of their contention that commonly found patterns of urban expansion in the United States are inefficient.
tually needs or wants. Three market failures are apparent: (1) the failure of the market to account for external costs and benefits, primarily because of the “public” nature of goods provided by farmland and open space; (2) the failure of the market to reflect accurately current demand for land resources and the products of those resources; and (3) the failure of the market to accommodate uncertainty in future demand for land resources.

1. **Externalities**—Advocates of agricultural and open space land preservation have often expressed concern that land market transactions fail to take into account sizable external costs and benefits. This concern arises in part because land used as open space has many of the characteristics of a public good—a good characterized by joint consumption. The market underproduces open space because no single party can capture its full aesthetic benefit and therefore no individual is willing to pay for all of the benefits that the land produces. Similarly, when a party develops a parcel of land, other parties who were using the land as open space lose the benefit of that use. The developer, however, is not required to compensate them for their loss. As a

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47. **Externalities exist whenever some person, say X, makes a decision about how to use resources without taking full account of the effects of the decision. X ignores some of the effects—some of the costs or benefits that would result from a particular activity, for example—because they fall on others. They are “external” to X, hence the label externalities. As a consequence of externalities, resources tend to be misused or “misallocated,” which is to say used in one way when another would make society as a whole better off.**


48. **Collective (public) goods have two fundamental characteristics: (1) it is impossible to exclude consumers who do not pay for the good in question, and (2) one consumer can consume the good without reducing the quantity that is available for other consumers. ... Market failure occurs because the cost of extending the consumption of the good to yet another person is zero; and at zero price, no entrepreneur would be willing to invest in supplying the good.**

Gardner, *The Market Allocation of Land to Agriculture*, in *The Vanishing Farmland Crisis*, supra note 45, at 17, 23 (footnote omitted).

49. **Even critics of farmland and open space preservation admit that the market fails to provide the socially optimal level of open space. See, e.g., Gardner, supra note 48, at 27. Although Gardner’s thesis is that the market does an adequate job of allocating land resources, he notes that:**

Market failure is most apparent in the creation of open space and environmental amenities. The enjoyment of a waving field of grain, a shady walnut orchard, a green pasture with mares and foals, or a hillside vineyard obviously meets the criteria of a collective good and offers external benefits. ... In principle, the market will not provide the optimal quantity of these amenities, and there may be some justification for social action to remedy this market failure.

*Id. at 25.*
result, the cost of developing the land does not reflect the loss of the benefit derived from the land as open space.

Developers have also been able to externalize the costs of land development by taking advantage of public subsidization of certain development costs. To the extent a tract's price does not fully reflect the additional cost of extending utilities to it, the cost of developing that land is subsidized and more land will be developed than is socially optimal. Tax structures used to pay for utilities can also subsidize development. Finally, there is wide agreement that heavy federal subsidization of road systems has a similar effect.

Land development may externalize environmental costs that are less visible, but equally real. Conditions that make land prime for agricultural use also make it prime for development. It is flat, well-drained, vacant, and usually has an extensive system of market roads already in place. Although the United States has an abundance of prime agricultural land, the quantity is finite. Much of it lies within commuting distance of major urban centers. Development of these prime farmlands may produce environmental costs external to the decision to develop them. Experience shows that agriculture, a low intensity land use, cannot compete against more intensive urban uses for land. As urban development consumes prime agricultural land, agricultural production may be forced onto hillier land or land otherwise less suited for agricultural use. Cultivation of such marginal quality farmland produces more soil erosion, and pollutes water with

50. See Raup, supra note 34, at 372-74; see also id. at 372 ("[Our] urban structure did not 'just happen.' . . . It is a consequence of policies that have directed and subsidized large-scale investments over a long period of time."). Dr. Raup discusses how our systems of financing highways, housing, and the extension of utilities into new areas, as well as federal income tax provisions, act to subsidize and encourage low density development.

51. See, e.g., Fischel, Urban Development and Agricultural Land Markets, in The Vanishing Farmland Crisis, supra note 45, at 79, 88.


53. Interview with Dr. Raleigh Barlowe, Professor of Economics, Dep't of Agricultural Economics, Michigan State University, in East Lansing, Michigan (Dec. 7, 1984).


more sediment; pesticides, and fertilizers, than does cultivation of prime farmland. Urban consumption of prime farmland may force agricultural production onto poorer land during periods when demand for agricultural products increases. The resulting costs of increased soil erosion and water pollution are not included in the price that the developer pays for land. To this extent, the developer undervalues the land and develops more of it than is efficient.

Conversion of farmland obviously affects individual farmers. Incremental losses of farmland may also have a significant impact on the agriculture industry as a whole. Incremental farmland loss can be a particularly insidious problem in areas that produce specialty crops, such as fruit, that require special processing. As farmland is driven out of production, the cost of maintaining a support industry for processing must be shared by the remaining agricultural producers. The cost per unit of production thus increases for these producers. The market has no mechanism for confronting the developer with this additional cost that he imposes on the remaining producers.

56. It is difficult to quantify the effect of soil erosion on air and water quality, but there is a relationship. Runoff from farmland carries sediment, pesticides and nutrients, all of which are considered pollutants when found in excess. Sediment can reduce the lifetime of lakes and increase dredging costs. Excessive nutrients can lead to eutrophication of water bodies; excessive pesticides can be harmful to fish and wildlife. Air quality can be diminished similarly by excessive amounts of dust. . . .

There is more research with respect to the effect of soil erosion on future productivity. This has shown that a relationship exists between soil erosion and reduced yields on many soils. Batie & Libby, Soil and the Future, in Resources, Food and the Future, supra note 8, at 26; see also National Agricultural Lands Study, Interim Report Number Four, Soil Degradation: Effects on Agricultural Productivity 8-31 (1980); Gibson, supra note 33, at 273; Schmude, A Perspective on Prime Farmland, 32 J. Soil & Water Conservation 240 (1977). But see Nelson, Agricultural Zoning: A Private Alternative, in The Vanishing Farmland Crisis, supra note 45, at 113, 134 (arguing that the opportunity costs of not developing this land are high and that the economic gain from development could be applied to conservation measures on poorer land).


58. Collins, supra note 7, at 182 ("[A]t the national level, individual losses appear small, but the cumulative effect can adversely impact domestic and international production.") (quoting then-Secretary of Agriculture Earl Butz).

59. See Soil Conservation Soc'y of Am., supra note 41, at 3.
Few disagree that land markets experience distortions created by various externalities.\(^{60}\) Opponents of farmland and open space preservation argue that these distortions are not significant enough to outweigh the beneficial efficiency of market allocation of land.\(^{61}\) They argue that no market is perfect and that externalities exist in almost any human activity. The real issue, they contend, is the seriousness and extent of the distortion that particular externalities cause.\(^{62}\) In this sense then, the decision whether to take market-correcting actions is a political one, dependent upon society’s perception of the seriousness of market imperfections and its willingness to reallocate rights and benefits through legislative measures that internalize these costs.

2. **Response of the market to current demand**—Market decisions to develop farmland and open space may not respond accurately to the demand for undeveloped property. Accordingly, advocates of farmland and open space preservation fear that more agricultural land is drawn out of agriculture than urban and commercial uses actually demand. Many economists and planners maintain that “far more land is affected by the possibility of development than can ever be used.”\(^{63}\)

Studies indicate that farmland owners near the urban fringe are often overly-optimistic about the price that their land will bring for development and the length of time that it will take for their land’s development potential to ripen.\(^{64}\) If a farmer expects to sell his land soon, he may not make sufficient investments in maintenance and improvements to protect his farm’s competitive position.\(^{65}\) When the land’s development potential does not ripen as soon as the farmer had expected, he may be forced to sell because his disinvestment has rendered crop production an

\(^{60}\) See supra note 49.

\(^{61}\) See Crosson, The Issues, in The Vanishing Farmland Crisis, supra note 45, at 1, 9-14.

\(^{62}\) See Luttrell, supra note 45, at 42.

\(^{63}\) See Libby, supra note 34, at 1144; see also Barrows & Chicoine, Land for Agriculture, in Resources, Food and the Future, supra note 8, at 12, 15.


\(^{65}\) Some economists argue that this response is beneficial because it prevents farmers from investing in capital improvements such as new barns, fences, and terraces that could never be realized. This argument, however, does not dismiss fears that maintenance investments that would pay off for farmers—before their land is ripe for development—are neglected because of farmers’ overoptimism about the amount of gain to be realized from and the timing of their land’s development. See Fischel, supra note 51, at 91.
unprofitable land use. Farmers in this situation may leave their land idle or sell it sooner and at a lower price than they would have had they protected their competitive position by making maintenance investments. As a result, a great deal of land is pulled out of agricultural production before there is a demand for it in the development market.

Urbanization may also encourage the idling of farmland before it is ripe for development by eroding the local agricultural economy and creating an environment that is not conducive to commercial agriculture. A minimum volume of agricultural production is needed to maintain the service businesses, such as elevator operators, farm chemical suppliers, and mechanics, upon which farmers depend. If service suppliers are forced out of business or are forced to relocate due to decreased agricultural activity in the area, remaining farmers are forced to travel further for needed services, thus increasing their production costs. Increased road congestion and previously unencountered complaints from new suburban neighbors about noise and odor create certain less tangible costs by making farm operations more hazardous and unpleasant. These increased costs, together with the atmosphere of uncertainty over the continued viability of farming in the area, pressure many farmers to idle their land before it is ripe for development.

66. Id.
67. See Barrows & Chicoine, supra note 63, at 15; Berry & Plaut, supra note 55, at 162; Libby, supra note 34, at 1144.
68. See Lapping, supra note 20, at 125.
69. See Berry & Plaut, supra note 55, at 162. But see Fischel, supra note 51, at 91:

Finally, there is the problem that nonfarming rural residents create for farmers. One argument is that agglomeration economies in agricultural production may be lost when the number of farms in an area declines. The local dealer in farm equipment may go out of business, and farmers may have to trade with someone farther away; or the costs of milk collection may increase when dairy farms become more dispersed. These are reasonable concerns, but it is unreasonable to assume that nonfarm development is a significant cause of such problems. Even very low-density development in an area with a viable agricultural sector takes up only a small amount of existing farmland.

Many states have tried to alleviate problems caused by development near farming operations by passing laws limiting the nuisance liability of farm operations. See generally Hand, Right to Farm Laws: Breaking New Ground in the Preservation of Farmland, 45 U. Pri'r. L. REV. 289 (1984). See also appendices I & II.

70. As scattered development occurs ... the farmland owner finds it more difficult and expensive to carry on normal farming operations. ... [L]and prices and property tax assessments rise, local public service expenditures increase, and tax rates ... may rise. ... [T]he presence of non-farmers in the area may entail unwitting or wilful damage to crops, harassment of livestock by dogs, or interference with tractors and other farm equipment on the roads by increased traffic. It may also result in complaints from the new urban neighbors about dust, noise,
3. **The market's ability to deal with an uncertain future—** Much of the support for farmland preservation that was generated during the 1970's came in reaction to worldwide grain shortages. Today there is a glut in world grain markets.\(^{71}\) Although this glut is a recent phenomenon, it reflects the historical instability of grain markets.\(^{72}\) Just as there was a shortage in world grain stocks twelve years ago, other shortages, and surpluses, are likely in the future. Conservationists argue that farmland preservation is required to maintain the flexibility needed to respond to future changes in demand.\(^{73}\)

The reversibility of market decisions plays an essential role in determining the market's ability to respond adequately to future changes in demand. Proponents of agricultural and open space land preservation are concerned about the land market's ability to deal adequately with an uncertain future. Conservationists argue that once land is converted out of agricultural production, institutional barriers and the physical nature of soil resources make it unlikely, if not impossible, for land to be converted back

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and smells resulting from normal farming operations, especially those involving the application of pesticides, herbicides, and fertilizers.

Many farmers can adapt to such annoyances, but some prefer to sell. As they do, and as non-farmers become a significant proportion of the population, the balance of political power will shift. Private complaints may be translated into local ordinances which restrict normal farming practices. The remaining farmers—and they usually still own most of the land—may become convinced that the area is inevitably changing. This “impermanence syndrome” leads to a reduction in ongoing investment in land improvements and farm structures and increases the inevitability of the end of agriculture.

As farmers sell out, their land is often not developed immediately. Frequently, it is purchased by investors who hold it awaiting the right conditions for development. Often the land is rented to other farmers who continue to farm it. Often, too, it lies idle and reverts to second growth. It has been estimated that for every acre developed another acre is idled. Nearly one-fourth of all undeveloped land in the urban fringes of Atlanta, Boston, and Buffalo has no current use.

**GUIDEBOOK, supra note 36, at 34-35 (footnotes omitted). But see Fischel, supra note 51, at 91-92 (footnote omitted):**

More likely causes of the decline in farming in some areas are changes in technology and in prices that are received and paid by farmers. It is possible, of course, that traffic or vandalism from nearby development may accelerate the decline, but it is also possible that rural development by nonfarmers may be of benefit to farmers. . . . [N]onfarm development may provide part-time jobs for families whose farm operations are marginal, thereby enabling them to continue farming. Likewise, local farm markets may become more viable when consumers locate nearby.

\(^{71}\) See supra note 38 and accompanying text.

\(^{72}\) See generally D. BIGMAN, supra note 40, at 6-8 (discussing both domestic and international agricultural markets and price). See also Batie & Libby, supra note 56, at 28; Gardner, supra note 48, at 21.

\(^{73}\) See Soil Conservation Soc'y of Am., supra note 41, at 4-5.
into agricultural production.\textsuperscript{74} Because agricultural land conversion is virtually irreversible, and because agriculture is generally a very low intensity land use that will always lose out to more intensive uses in market competition for land,\textsuperscript{75} public intervention is required to make the farmland conversion process more conservative.\textsuperscript{76} At least two signs indicate that the United States may need more farmland in the future than it does now. First, world population will likely increase dramatically over the next fifty years and technological advances alone may not be sufficient to keep production apace with demand for food and fiber.\textsuperscript{77} Second, increases in productivity over the past thirty years have been gained by replacing low energy, land-extensive practices such as crop-rotations, with high energy, land-intensive practices and inputs such as fertilizers, pesticides, and herbicides.\textsuperscript{78} Un-

\textsuperscript{74.} See Harriss, \textit{Free Market Allocation of Land Resources}, in \textit{The Farm and the City}, supra note 33, at 123, 129-30; see also Brown, supra note 57, at 146-47; Healy, \textit{Landscape and Landowner: Issues of Land Tenure in Rural America}, in \textit{The Farm and the City}, supra note 33, at 90, 100-03; Gibson, supra note 33, at 274.

\textsuperscript{75.} See Woodruff & Frink, \textit{Introduction to The Farm and the City}, supra note 33, at 1, 4-5.


\textsuperscript{77.} See Frink & Horsfall, \textit{The Farm Problem}, in \textit{The Farm and the City}, supra note 33, at 73. In this short essay, Dr. Frink, vice director of the Connecticut Agricultural Experiment Station, and Dr. Horsfall, director emeritus of the Station, trace the history of scientific agriculture in the United States, noting breakthroughs that contributed to quantum increases in yields over the past 50 years. They conclude that technological advances in agricultural production are approaching the limit of their capacity to increase yields per acre. Agricultural scientists and economists found in the mid-1970's that the rise in agricultural productivity was showing signs of slowing. Although Dr. Frink and Dr. Horsfall conclude by wondering whether Malthus might have been correct—that in the end, population growth is controlled by crises in food supply—they express hope that new avenues of biological research might stave off a Malthusian crisis for yet another period of years. See also Jorling, \textit{Protecting Land Resources for Food and Living}, 33 J. Soil & Water Conservation 213, 214 (1978).

\textsuperscript{78.} [Several historians divide] the nation's agricultural history into four periods according to the major sources of technological change: 1) the American Revolution to the Civil War, involving hand power; 2) the Civil War to World War I, involving horsepower; 3) from World War I to World War II, involving more mechanical power; and 4) from World War II to the present, involving the addition of science power.

The first three covered the period of increasing use of land and labor in farming. The fourth period witnessed increasing use of intensive farming methods, declining use of land and labor in relation to new technology, capital investments embodying new technology, and more intensive use of some resources such as irrigation water, fossil-fuel energy, and chemical and mineral fertilizers.

\ldots

New technology has changed the use of land, water, energy and other natural resources. The shift to widespread use of automobiles, trucks and power field machinery in farming operations has greatly increased the use of petroleum-based fuels while at the same time reduced the land required to produce feed for
certainty about the future availability and cost of energy re-
ources, especially petroleum, raises the possibility that the
United States may be forced to return one day to more land-
extensive agricultural practices. 79

Some economists believe that conservationists are wrong
about the irreversibility of farmland conversion. They contend
that if agricultural commodity prices rise high enough, land will
be converted out of urban and commercial uses back into agri-
culture. 80 Those who believe that agricultural technology will
keep pace with demand for agricultural commodities simply do
not worry about the irreversibility of farmland conversion. 81
Other economists simply dismiss conservationist concerns about
future uncertainties, contending that the market is the best
mechanism that exists to deal with uncertainty. 82

the horses and mules that were replaced.
Guither & Frederick, Technology, Natural Resources and the Changing Structure of
Agriculture, in RESOURCES, FOOD AND THE FUTURE, supra note 8, at 50, 50-51; see also
Doering, Energy and Critical Minerals for Agriculture, in RESOURCES, FOOD AND THE
FUTURE, supra note 8, at 41, 41:

From 1950 through 1960 there [was] a constant ordering that encouraged the
increased use of fertilizer, gasoline and farm machinery to save labor and farmland. The order shifts in the period 1970 through 1980. The new ordering reflects
price signals to begin using labor, machinery and fertilizer to save—or increase
the productivity of—farmland and gasoline.
See tables 1 & 2, infra p. 1127.

79. See Gibson, supra note 33, at 273.
80. See, e.g., Fischel, supra note 51, at 84 (footnote omitted):
It would be expensive, but not impossible, to raze houses and then to convert
suburban tracts to commercial agricultural land. A more benign view is to regard
suburban housing tracts on former cropland as a conversion from one agricultur-
al use to another. The structures and pavements take up only a fraction of the
total area; the rest is in lawns, ornamental shrubs, shade and fruit trees, and
flower and vegetable gardens. Without being too whimsical, the suburban back-
yard can be seen as a marvelously decentralized method of hedging against high
food prices.

But cf. Barrows & Chicoine, supra note 63, at 18 (“In addressing this concern for farm-
land, it must first be asked at what food prices the issue should be discussed. Obviously,
if food prices are high enough it will become economical to incur the great costs neces-
sary to farm even the most inhospitable lands.” (emphasis in original)).

81. See, e.g., Croison, supra note 61, at 8 (arguing that land-saving technology will
continue to more than compensate for loss of land from agricultural production). But see
Barrows & Chicoine, supra note 63, at 18:
A third important event is an apparent reduction in the growth of agricultural
productivity in the 1970s. The application of technological advances such as hy-
brid seeds and chemical fertilizer has increased output per acre and reduced the
relative importance of land in meeting food and fiber demands. A slowdown in
these advances would place additional pressure on the nation’s supply of agricul-
tural land.

82. A recent study by the Council for Agricultural Science and Technology
stresses major uncertainties about such factors as the future conversion of farm-
Table 1: Prices Paid for Selected Farm Inputs in the United States, Index: 1950 = 100

<table>
<thead>
<tr>
<th>Year</th>
<th>Farm Wages</th>
<th>Machinery</th>
<th>Farmland</th>
<th>Fertilizer</th>
<th>Gasoline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>1955</td>
<td>121</td>
<td>113</td>
<td>131</td>
<td>108</td>
<td>112</td>
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<tr>
<td>1960</td>
<td>148</td>
<td>138</td>
<td>171</td>
<td>106</td>
<td>119</td>
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<tr>
<td>1965</td>
<td>171</td>
<td>154</td>
<td>214</td>
<td>106</td>
<td>123</td>
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<tr>
<td>1970</td>
<td>155</td>
<td>191</td>
<td>294</td>
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<tr>
<td>1975</td>
<td>382</td>
<td>323</td>
<td>539</td>
<td>224</td>
<td>204</td>
</tr>
<tr>
<td>1980</td>
<td>565</td>
<td>525</td>
<td>1,004</td>
<td>255</td>
<td>450</td>
</tr>
</tbody>
</table>

Table 2: Rates of Change in Prices Paid for Selected Farm Inputs in the United States

<table>
<thead>
<tr>
<th>Years</th>
<th>Farm Wages</th>
<th>Farm Machinery</th>
<th>Farmland</th>
<th>Fertilizer</th>
<th>Gasoline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950-60</td>
<td>+48%</td>
<td>+38%</td>
<td>+71%</td>
<td>+6</td>
<td>+19%</td>
</tr>
<tr>
<td>1960-70</td>
<td>+72%</td>
<td>+38%</td>
<td>+72%</td>
<td>-15%</td>
<td>+13%</td>
</tr>
<tr>
<td>1970-80</td>
<td>+122%</td>
<td>+175%</td>
<td>+214%</td>
<td>+183%</td>
<td>+233%</td>
</tr>
</tbody>
</table>


Proponents of farmland and open space preservation legislation argue that public action is justified because market decisions fail to take into account the benefits of open space, the environmental costs of farmland conversion, and the impact of incremental farmland loss on local specialty industries. Furthermore, undue optimism about the likelihood of development idles much farmland before it is ripe for development. The unpredictability of future demand for agricultural production argues for conservative decisions about whether to develop land. Opponents of farmland and open space preservation argue that market decisions about land allocation are far more efficient than public ones. The distortions that may exist are minor in comparison to the overall efficiency of the market. While future demand for agricultural products is uncertain, so are changes in agricultural technology; with increased demand prompting technological improvements, opponents are willing to place their bets on technology. All of these arguments fit within a larger policy debate that involves reconciling many conflicting desires of society. As consumers, we desire low food prices, yet the cost of low food prices may eventually be scarcer, more expensive housing. We desire mobility and the amenity of open spaces, yet are uneasy with suburban “sprawl.” In part, these conflicts are being worked out in our legislative arenas, often with conflicting results; we subsidize highways, the extension of utility lines, and single family housing units, while at the same time pass farmland and open space preservation laws. The following section discusses the means by which state legislatures have addressed one set of those desires—the desire to retain land in agricultural and open space use.

Pasour, Lessons from the Economic Calculation Debate, in The Vanishing Farmland Crisis, supra note 45, at 99, 106 (footnote omitted).
II. STATE FARM LAND AND OPEN SPACE PRESERVATION PROGRAMS

In 1956, Maryland enacted the first statute intended to preserve farmland. 83 Since then, forty-seven other states have passed farmland and open space preservation legislation. 84 Although each statute is unique, they can be classified into four basic categories: (1) differential assessment, (2) circuit-breaker arrangements, (3) districting or zoning, and (4) public acquisition of development rights. These classifications reflect two basic approaches to controlling land use: an incentive system, reflected in the first two categories, and direct public control, reflected in the latter two categories. This Part briefly describes the four basic types of farmland and open space preservation statutes. 85

A. Preferential Assessment Programs

Differential assessment statutes classify real property and dictate different property tax treatment for each class of property. 86 Where the tax treatment of a specific class of land provides an incentive to keep that land in its current use, the statute can be deemed to provide "preferential assessment." Prior to passing statutes granting preferential assessment, most states assessed land for property taxation purposes at market value, which reflected the land's "highest and best," or most intensive use. 87 These states sought to value land at the price that a willing buyer with knowledge of the land's most potentially intensive

84. See appendices I & II.
85. For a more thorough survey of state farmland and open space preservation programs, see Guidebook, supra note 36; Coughlin, Berry & Plaut, Differential Assessment of Real Property as an Incentive to Open Space Preservation and Farmland Retention, 31 Nat'l Tax J. 165 (1978); Duncan, Toward a Theory of Broad-Based Planning for the Preservation of Agricultural Land, 24 Nat. Resources J. 61 (1984); Dunford, A Survey of Property Tax Relief Programs for the Retention of Agricultural and Open Space Lands, 15 Gonz. L. Rev. 675 (1980); Keene, supra note 20.
86. Most state constitutions formerly provided that property taxes had to be applied uniformly. Keene, supra note 20, at 657-58. Some states that have enacted differential assessment statutes have also had to amend their constitutions to modify uniform taxation provisions. See supra note 19 and accompanying text.
87. Dunford, supra note 85, at 677.
use would pay a willing seller with similar knowledge. Under preferential assessment laws, eligible land is often classified according to its current use and preferentially assessed at its value in that use.

All preferential assessment statutes have two features in common: a provision defining the classes of land eligible for preferential treatment through current-use value assessment, and a provision that either prescribes a method of valuation or directs a state officer to promulgate one. Additional provisions distinguish three types of preferential assessment statutes: (1) pure preferential assessment of eligible land, (2) deferred taxation, and (3) voluntary restrictive agreements.

88. See, e.g., Ala. Code § 40-7-15 (1985). Under this method of valuation, the assessed value of land is often based on recent sales of nearby property with similar characteristics. If a farm is next to a residential subdivision, its value will reflect its potential for similar development. Agricultural and open space lands near urban areas thus have higher tax assessments than do more remote lands that are put to the same use.


90. All states include farmland as an eligible class of land. Many states also include other classes of land such as open space, forest, and recreational lands. See appendices I & II; see also Dunford, supra note 85, at 680. Dunford notes that:

Within and between eligible land classes there are many differences from state to state in criteria which must be met in order for landowners to receive tax relief. These eligibility criteria have been enacted in most states in an attempt to implicitly exclude speculators and other nonfarmers from receiving tax benefits. These criteria include the specification of minimum lot sizes, prior use requirements, productivity requirements on the land, farm income requirements on the landowner, minimum length of tenure within the family, and planning or zoning for eligible use.

Id. (footnotes omitted).


92. For alternative schemes of classifying differential assessment statutes, see Economic Research Serv., U.S. Dep’t of Agriculture, State Programs for the Differential Assessment of Farm and Open Space Land (1974) (Agricultural Economic Report
1. Pure Preferential Assessment Programs—Under a pure preferential assessment statute, eligible land is assessed at the preferred current-use value. Ineligible land is assessed at market value. If the owner of eligible land begins to put it in an ineligible use, the land is simply assessed at market value from that time forward. The state imposes no penalty on the landowner for changing the land’s use. Thus, pure preferential assessment acts are effective in preserving farmland and open space only to the extent that landowners’ tax savings influence their decisions to keep the land in an eligible use. Eighteen states have adopted pure preferential assessment legislation.

2. Deferred Taxation Programs—In addition to assessing eligible land at current-use value, deferred taxation programs require that the landowner pay back some or all of the property tax relief gained through preferential assessment if he converts his land to an ineligible use. This deferred, or rollback, tax is usually computed on the basis of the tax savings that the landowner gained from current-use value assessment over market value assessment for a statutorily defined number of years. Some states impose additional penalties in the form of interest or conveyance taxes on the sale of land into an ineligible use.
The objectives of rollback provisions are to recapture some of the government revenue lost in granting preferred tax status to farmland and open space, and to provide further incentives for landowners to keep their land in agricultural and open space uses. The majority of states adopting preferential assessment have coupled it with some sort of rollback tax. 99

3. Voluntary Restrictive Agreements—Restrictive agreement programs generally provide for preferential assessment and for some penalty or rollback tax. They go farther, however, by requiring an eligible landowner to agree not to convert his land to an ineligible use for a specified term of years. 100 In return, the taxing unit agrees to assess the landowner's property at current-use value during that period. Most of these statutes provide for contract provisions imposing penalties in addition to the rollback tax if a landowner breaches his contract by prematurely converting his land into an ineligible use. 101 All restrictive agreement programs provide for at least partial recapture of the landowner's tax benefit upon the natural termination of the contract. 99

99. Of the 45 state preferential assessment statutes, 25 contain a rollback tax provision. See appendix I.

100. California has the oldest preferential assessment statutes with voluntary restrictive agreements. Cal. Gov't Code §§ 51200-51295 (Deering 1974 & Supp. 1985) (passed in 1965 and revised in the wake of Proposition 13 in 1978). Under the California Land Conservation Act, id., a city or county may enter contracts with eligible landowners who limit their land use to agricultural purposes. Id. § 51240. Contracts must run for at least 10 years, during which time the participant cannot convert his land to an ineligible use. The state renews the contract automatically each year unless the landowner gives written notice that he does not wish to renew. Id. § 51244. Upon non-renewal, assessment is gradually shifted to market value over the remaining nine-year life of the contract according to a statutorily prescribed schedule. A contract can be cancelled only if the landowner petitions the city or county for a release and the local government finds cancellation to be in the public interest. Id. §§ 51281-51282. California's program has been more widely studied than any other. For an analysis of California's program, see Carman, California Landowners' Adoption of a Use-Value Assessment Program, 53 Land Econ. 275 (1977); Gustafson & Wallace, Differential Assessment as Land Use Policy: The California Case, 41 J. Am. Inst. Planners 37 (1975); Hansen & Schwartz, Landowner Behavior at the Rural-Urban Fringe in Response to Preferential Property Taxation, 51 Land Econ. 341 (1975); Hansen & Schwartz, supra note 64; Schwartz, Hansen & Foin, Landowner Benefits from Use-Value Assessment Under the California Land Conservation Act, 58 Am. J. Agric. Econ. 170 (1976); Schwartz, Hansen & Foin, Preferential Taxation and the Control of Urban Sprawl: An Analysis of the California Land Conservation Act, 2 J. Envtl. Econ. & Mgmt. 120 (1975).

Although Michigan also has a restrictive covenant provision, Mich. Comp. Laws §§ 554.701-719 (1979), the State uses a circuit-breaker rebate rather than preferential assessment to provide financial incentives. See infra notes 109-27 and accompanying text.

101. For example, California imposes a cancellation fee equal to 12.5% of the fair market value of the land. Cal. Gov't Code § 51283(b) (Deering Supp. 1986). See appendix I for other examples.
tract. Although these programs generally restrict land use for a longer period of time than deferred tax programs, studies indicate that only landowners who are confident that their land cannot be developed during the contract period actually enter into these contracts in significant numbers. There are presently four states that have enacted restrictive agreement programs.

B. Circuit-Breaker Arrangements

Only Michigan and Wisconsin have adopted circuit-breaker arrangements to grant tax relief to farmers and preserve farmland and open space. These circuit-breaker provisions provide complete relief from property tax burdens that exceed a specified percentage of an eligible landowner’s income. If an eligible landowner’s property tax bill exceeds this ceiling, the state refunds the excess.

The circuit-breaker, like preferential assessment, employs tax relief as an incentive for landowners to keep their land in a desired use. By substituting a circuit-breaker for current-use value assessment, a state may adopt a variety of programs parallel to the three types of preferential assessment programs: (1) a pure circuit-breaker program, (2) a deferred taxation program, or (3) a restrictive agreement program.

The principal difference between preferential assessment and circuit-breaker arrangements lies in the distribution of the program’s financial burden. Under preferential assessment programs, tax relief directly results in lower property tax revenues. This burden falls on the taxing district in which the participating land is located. The taxing district must respond either by

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102. For statutes with other kinds of penalties, see appendix I.
103. See Carman, supra note 100; see also Hansen & Schwartz, supra note 64. For an evaluation of Michigan’s circuit-breaker/restrictive agreement program, see infra notes 165-204 and accompanying text.
104. Three states—California, Michigan, and Wisconsin—require farmers to enter into voluntary restrictive agreements to gain eligibility for tax relief. In Hawaii, restrictive agreements are optional. Land must be in an agricultural district to be eligible for tax relief, but farmers may enter restrictive agreements to avoid rollback taxes that are imposed in the event that their lands are redistricted to non-agricultural uses. See appendices I & II.
107. See Dunford & Marousek, Sub-County Property Tax Shifts Attributable to Use-Value Assessments on Farmland, 57 Land Econ. 221 (1981); Pogue, The Incidence of Property Tax Relief via State Aid to Local Governments, 59 Land Econ. 420 (1983).
reducing expenditures or by increasing the property tax burdens of both participating and ineligible property owners. Under a circuit-breaker program, however, the state pays the costs of the program, spreading the cost to all state taxpayers. To the extent that areas outside of the local taxing district reap benefits from a successful open space and farmland preservation program,\textsuperscript{108} circuit-breaker programs provide greater equity by placing the cost of these benefits more directly on those who receive them.

A second difference between circuit-breaker and preferential assessment programs is the degree of control that the state legislature has over the level of financial incentives provided. Under preferential assessment programs, tax relief is limited to the tax assessed on the development value of the land. Under a circuit-breaker arrangement, the only ceiling on tax relief is the individual’s total state income tax bill. As a result, the legislature can provide a much larger tax break under a circuit-breaker system, thus providing greater incentive to maintain the land’s current value.

In 1974, Michigan became the first state to adopt a farmland and open space preservation statute that used the circuit-breaker approach. The Michigan Farmland and Open Space Preservation Act (P.A. 116)\textsuperscript{109} provides eligible owners of farmland with circuit-breaker tax relief in return for a written restrictive agreement that lasts at least ten years. Under the restrictive agreement, the landowner agrees to limit development on the contracted land to uses consistent with farm operations.\textsuperscript{110} He further agrees not to sell an interest in the land that would substantially hinder the farm operation.\textsuperscript{111} In return, the

\textsuperscript{108} The state as a whole may gain from maintaining economic vitality in its agricultural sector and from avoiding increased road construction and maintenance costs to accommodate further "urban sprawl."
\textsuperscript{110} \textit{Id.} § 554.704.
\textsuperscript{111} \textit{Mich. Comp. Laws Ann.} § 554.705(7) (West Supp. 1986) provides:

\begin{quote}
[A] farmland development rights agreement . . . shall include the following provisions:
\begin{enumerate}
  \item A structure shall not be built on the land except for use consistent with farm operations or lines for utility transmission or distribution purposes or with the approval of the local governing body and the state land use agency.
  \item Land improvements shall not be made except for use consistent with farm operations or with the approval of the local governing body and the state land use agency.
  \item Any interest in the land shall not be sold except a scenic, access, or utility easement which does not substantially hinder farm operations.
  \item Public access shall not be permitted on the land unless agreed to by the owner.
  \item Any other condition and restriction on the land as agreed to by the parties
\end{enumerate}
\end{quote}
landowner receives a tax credit and an exemption from special assessments for nonfarm improvements.

In several respects, P.A. 116 deals with open space differently than it does farmland. Owners of eligible open space cannot enter a contract with the State government. Rather, to receive tax relief, they must apply to the local governing body for permission to sell an open space development rights easement to the State. Property under such an easement is assessed at current-use value rather than market value, and any improvement on the property must first be approved by both the local government and the State land use agency. The State government reimburses the local governing body for lost tax revenues. Both the farmland preservation agreements and the open space development rights easement must be approved by both the State and local governments. At the State level, approval of farmland agreements is through agency action, but purchases of open space easements must be approved by the State legislature through a concurrent resolution. Differences in approval processes may in part explain the great disparity be-

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112. The owner of farmland covered by a development rights agreement...[shall be] eligible to file a return as an individual...for a credit against [his/her] state income tax liability for the amount by which the property taxes on the land...restricted by such development rights agreement exceeds 7% of [his/her] household income...


113. A city, village, township, county, or other governmental agency may not impose special assessments for sanitary sewers, water, lights, or nonfarm drainage on land for which a development rights agreement or easement has been recorded except as to a dwelling or a nonfarm structure located on the land unless the assessments were imposed prior to the recording of the development rights agreement or easement.

Id. § 554.709.

114. Owners of land who desire to enter a farmland development rights agreement or to convey an open space development rights easement apply directly to their local government for approval. The local governing body has the power to approve or reject the landowner's proposal. The local governing body then forwards the approved applications to the Michigan Department of Natural Resources, which has final approval power. Id. §§ 554.706-707.

115. Id. § 554.706(3); see also H.B. 4244, 77th Leg. (Mich. 1974) (Analysis Section) [hereinafter cited as Analysis].


117. Id. § 554.706(2)(e). Because the local government loses no revenues under the farmland circuit-breaker arrangement, there is no need for the State to reimburse it as with the easement purchase/current-use value assessment.

118. Id.
tween the number of open space easements and farmland agreements in the State.\textsuperscript{118}

In some respects, however, P.A. 116 treats agricultural and open space land similarly. The Michigan statute forbids local governing bodies to impose special assessments on both farmland under preservation agreements and open space land under development rights easements.\textsuperscript{120} P.A. 116 also treats the termination of farmland and open space agreements similarly. Upon the natural termination of either an agreement or an easement, a lien arises against the property for the total amount of tax relief received during the last seven years.\textsuperscript{121} The landowner must pay the lien when she sells the land or converts it to a use prohibited by the former agreement or easement;\textsuperscript{122} however, no interest or penalty accrues on the lien.\textsuperscript{123} Both the farmland agreements and the open space development rights easements can be terminated early if the landowner, with approval of the local governing body and the State land use agency, determines that development of the land is in the public interest.\textsuperscript{124} When an arrangement is terminated early, a lien equal to the total tax benefit received is placed on the property.\textsuperscript{125} The State charges an interest penalty of six percent compounded from the date that the benefit was first received.\textsuperscript{126} If a participating landowner converts land under an agreement or easement to an ineligible use without governmental approval, the State may seek to enjoin him and impose a civil penalty for actual damages.\textsuperscript{127}

\textbf{C. Agricultural Zoning and Districting}

Zoning is a familiar method of land use control in urban areas. In contrast, it has been one of the least favored tools for rural land use control.\textsuperscript{128} Only Hawaii has instituted statewide agricul-

\begin{itemize}
\item \textsuperscript{119} Telephone interview with Dennis Hall, Michigan Department of Natural Resources (Feb. 9, 1987) (stating that there are significantly more farmland agreements than open space easements in Michigan).
\item \textsuperscript{120} \textit{Mich. Comp. Laws} § 554.709 (1979).
\item \textsuperscript{121} \textit{Id.} §§ 554.712(7), 554.713(7).
\item \textsuperscript{122} \textit{Id.} §§ 554.712(5), 554.713(5).
\item \textsuperscript{123} \textit{Id.} §§ 554.712(7), 554.713(7).
\item \textsuperscript{124} \textit{Id.} §§ 554.712(2)(a), 554.713(2)(a).
\item \textsuperscript{125} \textit{Id.} §§ 554.712(4), 554.713(4).
\item \textsuperscript{126} \textit{Id.}
\item \textsuperscript{127} These damages may not exceed two times the value of the land at the time the agreement or easement was approved. \textit{Id.} § 554.715.
\item \textsuperscript{128} See supra note 20; see also Kartez, \textit{A Zoning Administrator's View of Farmland Zoning}, 35 J. Soil & Water Conservation 265 (1980) (discussing how specific
tural zoning. Some state governments have recognized farmland preservation as a permissible basis for zoning under their zoning enabling provisions. Some local governing bodies have adopted exclusive agricultural zoning under more general zoning authorizations.\textsuperscript{131}

Traditionally, land zoned for farming is seen as a reserve of land awaiting development. In Hawaii, and in those localities that have adopted exclusive agricultural zoning, agriculture is viewed as a competing use of land, on a par with residential and industrial uses. Agricultural zoning in these areas severely restricts permissible land use by requiring large minimum lot sizes and by prohibiting certain types of government action such as the extension of water and sewer lines, the installation of storm sewers, and the construction of roads.\textsuperscript{132}

A second method by which state police power has been used
to preserve farmland is through the creation of agricultural districts. Agricultural districts are designed to maintain blocks of farmland large enough to support needed agricultural service industries, and to maintain a dominant farm voting block capable of advancing issues of priority to the farming community, such as appropriations for farm-to-market roads and ordinances limiting nuisance actions against farm activities. Since California passed the first farmland and open space preservation statute with an agricultural districting provision in 1965, eleven states have enacted similar provisions.

New York is noted for having one of the most successful agricultural districting programs in the nation. The statute provides two methods for forming an agricultural district. Under the first method, farmers must initiate the organization and formation of a district. A group of farmers must collectively own at least 500 acres of land before they can apply for permission to form a district. In addition, before farmer-initiated districts can be formed, they must be approved at the county level through a process similar to rezoning and at the state level by the State Agricultural Resources Commission, the Secretary of State, and the State Commissioner of Environmental Conservation. Under a second, rarely used method, the Commissioner of Environmental Conservation may create an agricultural district. These districts must contain at least 2000 acres of mostly "unique and irreplaceable" agricultural land. The land's use in agriculture must be consistent with New York’s state land use


Most states with agricultural districting provisions specify a minimum acreage requirement for establishing an agricultural district. In California, for example, the minimum district size is 100 acres. CAL. GOV'T CODE § 51230 (Deering 1974 & Supp. 1986). In New York, the minimum is 500 acres. N.Y. AGRIC. & MKTS. LAW § 303 (McKinney 1972 & Supp. 1986).

134. Local ordinances protecting farm operations from nuisance suits are no longer needed in the 46 states that have adopted legislation limiting these causes of action. See appendices I & II; see also Hanna, "Right to Farm" Statutes—The Newest Tool in Agricultural Land Preservation, 10 FLA. ST. U.L. REV. 415 (1982) (discussing basic provisions of these laws and variations between states).

135. These states are Hawaii, Illinois, Iowa, Maine, Minnesota, New Jersey, New York, Ohio, Oregon, Pennsylvania, and Wisconsin. See appendices I & II.

136. See generally Duncan, supra note 85, at 98-99 ("[A]s of May, 1982, 449 districts, containing 7,115,830 acres, or 71 percent of the state’s farmland, had been established." (footnotes omitted)).


138. Id. § 303.

139. Id. § 304.
plan. Commissioner-initiated districts must also pass review in a public hearing and by state agencies.

Any landowner in an agricultural district can obtain agricultural-use value assessment for his land, subject to a five-year rollback tax on conversion to a nonagricultural use. Local governments cannot pass ordinances that would "unreasonably restrict or regulate farm buildings or farming practices" within the district. The power of both state and local governments to exercise eminent domain within the district is also limited. Finally, the New York statute limits the extension of power, water, and sewer lines in agricultural districts.

D. Public Acquisition of Development Rights

Twenty-three states have programs that either appropriate money to buy development rights from owners of farmland or open space, or authorize local governments to acquire them through purchase or gift. Under these statutes, the value of the right to develop land for nonagricultural or non-open space use is usually measured as the difference between the value of the property in its current agricultural or open space use, and its value in a potential residential, commercial, or industrial use. In acquiring a development right, the state or local government acquires the right to exclude all others, even the original owner, from developing the land. In practice, however, statutes approving governmental acquisition of development rights have seldom been fully implemented, apparently due to the high cost of such programs.

140. Id. § 304.1.
141. Id. §§ 304.2-.4.
142. Id. § 305.1.
143. Id. § 305.2.
144. Id. § 305.4.
145. Id. § 305.5.
146. These states are Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Kentucky, Maine, Maryland, Massachusetts, Michigan, Missouri, Montana, New Hampshire, New Jersey, New York, Pennsylvania, Tennessee, Virginia, Washington, West Virginia, and Wisconsin. See appendices I & II.
148. See Keene, supra note 133, at 140. Because actual ownership of the development rights of agricultural and open space lands is a legally enforceable property right, it is the most restrictive and certain control that the state or local government can have over rural land use.
149. Many statutes do not provide for appropriation of funds for purchase of development rights. A few are even limited to authorizing the acceptance of gifts of easements by the state or local government. One commentator has complained: "Maryland's legisla-
E. Combining Techniques: Wisconsin's Farmland and Open Space Preservation Program

Most farmland and open space preservation statutes rely principally on one of the techniques already discussed: differential assessment, circuit-breaker arrangements, districting or zoning, or public acquisition of development rights. These methods may, however, be used in combination. Wisconsin's Farmland Preservation Act\(^{150}\) (the Act) is one of the newest, most innovative examples of how methods can be combined. The Act combines circuit-breaker tax relief and a rollback tax penalty with eligibility requirements that include zoning, planning, and voluntary agreements. In concert, these techniques encourage individuals to pressure township and county governments to implement zoning that protects farmlands.\(^{161}\)

A unique aspect of the Act is its recognition of the difference in land use problems encountered in urban and more remote rural counties. The Act treats the two types of counties distinctly. The tax relief that a landowner receives depends upon whether his land is located in an urban or rural county, and on that county's individual farmland preservation policy.

In urban counties,\(^{162}\) a tract of land must be zoned for exclusive agricultural use by the county, city, or village in which the land is located before its owner becomes eligible for tax relief in the form of an income tax credit.\(^{153}\) The statute sets out minimum standards for exclusive agricultural zoning ordinances.

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151. By granting a larger income tax credit to landowners whose land is subject to county agricultural zoning than is available for land subject to similar township land use controls, the Act encourages local political support for zoning on a county-by-county basis.

152. Wis. Stat. § 91.11(3) (1983-1984) (counties with a population density of 100 or more persons per square mile).

153. Id. § 71.09(11)(b)(3)(a), (e).
These standards must be met for a landowner to be eligible for an income tax credit.\footnote{154} A landowner can receive a larger tax credit if the county also adopts a farmland preservation plan.\footnote{155} The statute sets out the minimum standards for farmland preservation plans that must be met for a landowner to receive the larger tax credit.\footnote{156} Land

154. \textit{Id.} \S 91.75 provides in part:

A zoning ordinance shall be deemed an "exclusive agricultural use ordinance" if it includes those jurisdictional, organizational or enforcement provisions necessary for its proper administration, if the land in exclusive agricultural use districts is limited to agricultural use and is identified as an agricultural preservation area under any agricultural preservation plans adopted under subch. IV and if the regulations on the use of agricultural lands in such districts meet the following standards which, except for sub. (4), are minimum standards:

1. Except as provided under subs. (2) and (6), the minimum parcel size to establish a residence or a farm operation is 35 acres.
2. The only residences allowed as permitted uses are those to be occupied by a person who, or a family at least one member of which, earns a substantial part of his or her livelihood from farm operations on the parcel, or is a parent or child of the operator of the farm. Preexisting residences located in areas subject to zoning under this section which do not conform to this paragraph may be continued in residential use.
3. No structure or improvement may be built on the land unless consistent with agricultural uses.
4. Special exceptions and conditional uses are limited to those agricultural-related, religious, other utility, institutional or governmental uses which do not conflict with agricultural use and are found to be necessary in light of the alternative locations available for such uses.
5. For purposes of farm consolidation and if permitted by local regulation, farm residences or structures which existed prior to the adoption of the ordinance may be separated from a larger farm parcel.

155. \textit{Id.} \S 71.09(11)(b)(d). All but two counties in Wisconsin have adopted farmland preservation plans. Telephone interview with David Fodroczi, Agricultural Resource Management Division, Wisconsin Department of Agriculture (Mar. 6, 1986).

156. \textit{Id.} \S 91.55 (content of plans) provides:

1. County agricultural preservation plans shall include:
   a. Statements of policy regarding preservation of agricultural lands, urban growth, the provision of public facilities and the protection of significant natural resource, open space, scenic, historic or architectural areas.
   b. Maps identifying agricultural areas to be preserved, areas of special environmental, natural resource or open space significance and, if any, transition areas. Transition areas shall be areas in predominantly agricultural use which the plan identifies for future development. Any agricultural preservation areas mapped must be a minimum of 100 acres. Any transition areas mapped must be a minimum of 35 acres. In mapping agricultural preservation areas, the maps identifying preliminary agricultural preservation areas prepared under s. 91.05 (preliminary agricultural areas delineation) shall be considered if the map is provided to the county at least 12 months prior to adoption of the agricultural preservation plan.
   c. The maps may include areas other than those mapped under s. 91.05. Areas mapped under s. 91.05 may be excluded from the county maps upon a finding that one or more of the following conditions exist:
   a. Existing or planned activities adjacent to the identified agricultural area
owners in urban counties cannot become eligible simply by enter­
ing into a farmland preservation agreement. The county must
have passed an exclusive agricultural zoning ordinance.157

In rural counties, farmland owners can become eligible for an
income tax credit simply by entering into a farmland preserva­
tion agreement with the State. The county need not have passed
an exclusive agricultural zoning ordinance. The county, however,
must have adopted a farmland preservation plan designating the
farm, whose owner seeks tax relief, as part of a preservation
area.158 A farmland owner is eligible for tax relief without enter­
ing an agricultural preservation agreement in those counties or
townships that have adopted exclusive agricultural zoning.159
Farmland owners in counties that have adopted both county­
wide zoning and an agricultural preservation plan receive the
maximum tax credit.160

In those rural counties and townships in which exclusive agri­
cultural zoning has not been adopted and landowners are eligi­
ble for tax relief on the basis of having entered into an agricul­
tural preservation agreement with the State, the landowner may
be enjoined—through an action brought by either the State or
local government—from changing the use of her land to an ineli­
gible use, and may be subject to a civil penalty for actual dam­
ages.161 Land eligible for tax relief based on exclusive agricul­
tural zoning that is rezoned from agricultural to non-agricultural
use is subject to a lien equal to the amount of tax credits paid on
the rezoned land.162 Lands under farmland preservation agree­
ments or exclusively zoned for agricultural use are exempt from
special assessments.163

157. Id. § 91.11(3); see also id. § 71.09(11)(b)(3).
158. Id. § 91.11(1)-(2).
159. Id. § 71.09(11)(b)(3)(e).
160. Id. § 71.09(11)(b)(3)(a).
161. Id. § 91.21. As under Michigan's statute, which served, in part, as a model for
the Wisconsin statute, the civil penalty is limited to "double the value of the land as
established at the time the application for the agreement was approved." Id.; see supra
note 127.
163. A city, village, town, county or other governmental agency may not impose spe-
Farmland and open space preservation statutes vary in complexity and in the strength of their enforcement provisions. While states were apparently no more inclined to pass a particular kind of statute in 1965 than in 1985, there are clear regional preferences for one type of statute over another. Deferred taxation statutes predominate in west coast states and states east of the Mississippi River. From the Rocky Mountains to the Mississippi River, states have predominantly favored pure preferential assessment statutes. Agricultural zoning is concentrated in the west coast states (notably Oregon), the upper Midwest, and Maryland and adjacent parts of Pennsylvania, Virginia, and New Jersey; no southeastern or southwestern state has authorized exclusive agricultural zoning. Purchase and transfer of development rights programs are concentrated almost exclusively in northeastern states.164

The principal differences between the various types of farmland and open space preservation statutes are the degree to which they restrict landowner’s use of their land and the degree to which they redistribute property tax burdens. The clear pattern of regional variation, rather than variation over time, suggests that population density, land use at the time of passage, distribution of urban areas, and local attitudes towards land use restrictions—as opposed to observation of other states’ experiences—were the key factors in determining the type of farmland and open space preservation legislation that a particular state adopted. Nevertheless, states that do have a serious commitment to farmland and open space preservation have much to gain by evaluating their own programs in light of other states’ experiences with land preservation programs.

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164. See appendix 1.

Id. § 91.15. Compare id. with MICH. COMP. LAWS § 554.709 (1979). See supra note 113.
III. AN EMPirical ANALYSIS OF MICHIGAN’S FARMLAND AND OPEN SPACE PRESERVATION PROGRAM

The range of published studies that examine the administration of farmland and open space preservation programs is fairly limited. Most of these studies describe statutory schemes rather than evaluate their performance. A few provide theoretical critiques of statutory programs. Although a number of other studies provide helpful simulations of the effect of various statutes on landowners’ financial situations, only a limited number examine the actual implementation of farmland and open space preservation statutes.

This Part first discusses past empirical studies of farmland and open space preservation statutes, both as a context for the present study and as a source of evaluative criteria. It then describes the data sources and procedures used in this study, describes the study's findings, and, finally, discusses possible interpretations of these findings and policy implications for programs similar to Michigan's.

A. Empirical Studies to Date

In 1975, Hansen and Schwartz published a study of the response of landowners in counties surrounding Sacramento to


166. E.g., Ohls & Pines, supra note 44; Pasour, "Open Space Preservation in Developing Areas: An Alternative Policy": Comment, 51 LAND ECON. 382 (1975); Wolfram, supra note 54.

167. See, e.g., Chicoine, Sonka & Doty, The Effects of Farm Property Tax Relief Programs on Farm Financial Conditions, 58 LAND ECON. 516 (1982) (estimating the effect of use-value assessment and circuit-breaker programs on the financial conditions of farm operators and nonfarm landlords by simulating the financial performance of an Illinois grain farm over a 10-year period); Lockner & Kim, Circuit-Breakers on Farm-Property-Tax Overload: A Case Study, 26 NAT'L TAX J. 233 (1973) (estimating the impact of two alternative circuit-breaker programs on South Dakota farm property taxes); White, Miller & Logan, Comparison of Property Tax Circuit-Breakers Applied to Farmers and Homeowners, 52 LAND ECON. 355 (1976) (comparing the impact of various circuit-breaker programs on Georgia homeowners and farmers).

California’s Land Conservation Act.\textsuperscript{169} Their objective was to shed light on the effectiveness of California’s program in slowing urban sprawl. Hansen and Schwartz defined success as providing adequate incentives to induce enrollment in the program by landowners in areas of high development potential. They examined participation data from the California Resources Department, conducted in-depth interviews of participating and nonparticipating landowners in Sacramento County, and conducted a mail survey of landowners in Yolo and Sacramento Counties. Hansen and Schwartz considered several factors that they believed might influence participation: tax savings, proximity to Sacramento, and the landowner’s principal source of income and principal place of residence. The study compared landowners’ expectations about the development of their land with expected development schedules for land parcels based on projected growth in the Sacramento area. Hansen and Schwartz concluded that while landowners were overly optimistic about how soon their land would be ripe for development, and would enroll at higher rates if they were more realistic about their land’s development potential, the scattered nature of enrollment at Sacramento’s urban fringe made the program ineffective at slowing urban sprawl. They recommended more comprehensive land use planning and stronger regulation by local governments to slow land conversion.\textsuperscript{170}

In 1981, Furuseth published a study of Oregon’s farmland protection program using county-level data from the 1978 Census of Agriculture.\textsuperscript{171} Furuseth’s study addressed the question of whether Oregon’s program could be regarded as a success from a land use perspective. Furuseth defined success in terms of change in the number of acres of farmland, change in the number of farms and farm operators, and indicators of vigor in the farm economy, such as level of capital investment and age of farm operators. An increase in the number of farm operators and in the value of capital investments, and a young farm population led Furuseth to conclude that Oregon’s agriculture industry was in good health. In addition, he found that with the exception of counties in southwestern Oregon, the rate of farmland idling in areas undergoing rapid population growth had decreased since the implementation of Oregon’s farmland protec-

\textsuperscript{169} Hansen & Schwartz, \textit{supra} note 100.
\textsuperscript{170} Id. at 351.
\textsuperscript{171} Furuseth, \textit{Update, supra} note 129.
tion program in 1974. Furuseth concluded that Oregon's program of mandatory planning and exclusive agricultural zoning was successful in meeting its land use objectives.

In 1981, Gardner and Frazier published a study of Michigan's P.A. 116 that analyzed enrollment data from 1979—the fifth year of the Act's operation—to determine whether the Act was fulfilling its land use objectives. Gardner and Frazier used two evaluative criteria: (1) enrollment in areas of projected growth, and (2) quality of enrolled land for agriculture. They found that most enrolled acreage was located in rural areas where there was little threat of development and that enrolled land varied greatly in quality. The authors concluded that tax incentives alone were not sufficient to preserve farmland in Michigan, but might be useful in conjunction with other preservation techniques such as mandatory local planning and zoning or agricultural districting.

B. Evaluative Criteria

An appropriate basis for evaluating a program is to examine whether it has fulfilled its original objectives. Statements of legislative purpose generally provide a source of evaluative criteria. Michigan's P.A. 116, however, contains no such statement of purpose. Its title and legislative history indicate that it was, in part, intended to slow conversion of farmland to urban uses. Because Oregon's and California's statutes have similar purposes, Furuseth's and Hansen and Schwartz's criteria can provide helpful guidance. Furuseth used a direct measure of change in farmland acreage before and after passage of the Oregon act. This measure is somewhat limited because there is no way of knowing what factors caused the change in farmland acreage. This farmland may have been developed for nonfarm uses, but it may also have been marginal farmland that was reverted to less intensive uses. However, change in farmland acreage does give some indication of whether the movement of farmland into nonfarm uses is slowing. Accordingly, this study will look at location of enrollment in relation to change in farmland acreage at a county level as one indicator of P.A. 116's effectiveness.

The California and Michigan studies both used participation in areas under development pressure as evaluative criteria;
Gardner and Frazier looked at enrollment in areas of projected growth, and Hansen and Schwartz looked at enrollment in areas of high development pressure. Hansen and Schwartz criticized the use of proximity to urban areas as an evaluative criterion because "[b]y reducing the supply of developable land close to the urban area, leapfrog development may actually be encouraged. Unless increased enrollment near urban areas is accompanied by measures to prevent the development of cheaper, more distant lands, the benefits of such increases in enrollment will be illusory."174 Intuitively, however, proximity to urban areas makes sense as a significant factor in development pressure. Several studies indicate that it is a dominant factor in the determination of land prices in urban fringe areas.176 Therefore, this study uses travel time to urban centers as a measure of development pressure and analyzes the location of enrollment as related to this measure.

Gardner and Frazier measured the success of Michigan's program by its ability to attract enrollment of high quality farmland. This criterion makes sense in light of legislative history that states P.A. 116 was passed to help preserve Michigan's agricultural production capacity.176 This study compares the location of enrollment at the township level to the location of prime and unique farmland in Michigan. Although Gardner and Frazier studied enrollment in P.A. 116 only five years ago, there is a need to reevaluate Michigan's performance. Participation in P.A. 116 has grown rapidly since Gardner and Frazier conducted their study based on 1979 enrollment. Participation grew by fifty percent each year until 1983, so that by 1985, 3,470,766 acres and 39,347 contracts were enrolled, as compared to 1,226,348 acres and 5957 contracts in 1978.177 Because of this large change in enrollment over the past eight years, a new study is needed to update Gardner and Frazier's earlier work.

C. Data Sources and Procedure

Information on enrollment in P.A. 116 was obtained from the Farmland and Open Space Preservation Division of Land Resource Programs at the Michigan Department of Natural Re-

174. Hansen & Schwartz, supra note 100, at 351.
175. See Chicoine, Farmland Values at the Urban Fringe: An Analysis of Sale Prices, 57 LAND ECON. 353 (1981); see also Hushak, supra note 64.
176. Analysis, supra note 115.
177. See infra text accompanying and preceding note 178.
sources. The data reflects enrollment as of January 1985. Information on travel time was obtained with the assistance of Transportation Planning at the Michigan Department of Transportation. Enrollment figures for 1978, a generalized map of prime and unique farmland in Michigan (see figure 15), and the area of townships in the southern half of the lower peninsula were obtained from an unpublished master's thesis by Donald N. Frazier. County level statistics on land areas, population, and agricultural activity were drawn from the 1980 United States Census.

This study examines enrollment in P.A. 116 at three levels. First, it compares county level data describing Michigan counties with P.A. 116 enrollment to gain an overview of the program's statewide activity. Second, it looks at township level data to determine whether enrollment is occurring in areas with potential for urban development and in areas with prime and unique farmland. Finally, case studies of six counties were conducted both to check the accuracy of the township level categorizations of development pressure against actual observations and to provide more detailed illustrations of how the program is functioning.

In Michigan counties, it is common to find one corner of the county under considerable development pressure while the opposite corner—thirty or more miles away—feels little impact. Consequently, this study analyzes enrollment in relation to development pressure at a township level. Several studies of land markets indicate that a major factor in determining the demand for land near urban areas is the distance of a parcel to the urban area. A study by Hushak of actual land transactions around Columbus, Ohio, found that proximity both to a major city, such as Columbus, as well as to minor surrounding towns, contribute

178. D. Frazier, Locational Analysis of Participants in Michigan's Farmland and Open Space Preservation Program 89-130 (1979) (unpublished master's thesis, available at the Department of Resource Development, Michigan State University, East Lansing, Michigan). Although the U.S. Soil Conservation Service has completed county level maps of prime and unique farmlands in Michigan, Frazier's generalized map is used because of the difficulty of constructing a statewide map from the county maps or devising either a township or county level estimate of acres of prime and unique farmland.


180. See, e.g., Chicoine, supra note 175; Hushak, supra note 64 (finding that access to urban public services such as sewers also had a major impact on demand for rural land).
significantly to the demand for land lying between the two.\textsuperscript{181} In accordance with these findings, this study uses travel time from the center of townships containing land eligible for P.A. 116 to the center of urban areas as an indicator of development pressure.

An index of development pressure was constructed for each township in Michigan's lower peninsula by calculating the sum of the reciprocals of the travel time between that township and each of thirty-one urban destination centers in the lower peninsula.\textsuperscript{182} Urban destination centers include all lower peninsula cities with a population greater than 25,000 or that have been designated as important regional commercial centers. By using the sum of the reciprocals it is possible to take into account the impact of multiple destinations on demand for land that Hushak observed in his Ohio study, while discounting the influence of distant urban centers.

The township portion of the analysis is limited to Michigan's lower peninsula. While the upper peninsula experiences some development pressure from recreational development as well as from the growth of its cities and towns, the level of development pressure is generally low compared to the lower peninsula. In addition, the high proportion of state and national forestland in the upper peninsula sharply limits the amount of land eligible for enrollment in P.A. 116.\textsuperscript{184} For these reasons, and because of the difficulty involved in integrating upper peninsula and lower peninsula urban destination centers, township level analysis excludes the upper peninsula.

This study is also unable to examine P.A. 116 enrollment in areas of demand for land to be used for recreational and second home development due to a lack of data. A drive around Michi-

\textsuperscript{181} Hushak, supra note 64, at 119 (demand is inversely related to distance from urban areas, and smaller surrounding towns have less effect on demand than the major urban center); see also Chicoine, supra note 175, at 357 (distance to secondary towns has a significant but lesser effect on land prices than distance to primary urban centers).

\textsuperscript{182} For each township, $I = \sum_{n=1}^{31} \frac{1}{t_n}$, where $I =$ the development pressure index; $n =$ each of the 31 urban destination centers; and $t =$ the travel time from the center of the township to the center of each of the 31 urban destination centers.

\textsuperscript{183} See Rand McNally, Commercial Atlas & Marketing Guide 95 (116th ed. 1985). The study uses the following cities as urban destination centers: Petosky; Traverse City; Alpena; Muskegon; Holland; Grand Rapids; Benton Harbor; Niles; Kalamazoo; Battle Creek; Lansing; Adrian; Jackson; Owosso; Saginaw; Bay City; Midland; Flint; Port Huron; Ann Arbor; Ypsilanti; Monroe; the Interstate 275 corridor in Wayne County; Troy; Southfield; Birmingham; Detroit; Dearborn; South Bend, Ind.; Elkhart, Ind.; and Toledo, Ohio.

gan's shoreline and interior lakes quickly reveals that this demand is causing a great deal of land development. Recreational and second home development has a significant impact on agriculture in Michigan's western fruit-producing region. It would be useful to know how successful P.A. 116 has been in attracting enrollment in these areas.

D. A Spatial Analysis of P.A. 116 Enrollment

By January 1985, P.A. 116 had attracted participation to the level of 39,347 contracts enrolling 3,740,766 acres of farmland. Most of this enrollment lies in the southern half of Michigan's lower peninsula (see figures 1 and 2). This same area supports almost all of Michigan's farming activities. North of a line that runs between Saginaw and Muskegon Counties, both the soils and growing season are less conducive to agricultural production. Although low enrollment north of this line may be attributable to climate and to the land's physical characteristics, it is more clearly related to the high proportion of state and national forestland in the northern part of the State.

P.A. 116 enrollment is highest in Huron (293,930 acres), Sanilac (220,170 acres), and Lenawee (205,780 acres) Counties. Kalkaska and Crawford Counties have an extremely high proportion of public lands and have no P.A. 116 enrollment. Of counties with enrollment, Gogebic (142 acres) and Houghton (317 acres) Counties in the upper peninsula have the lowest enrollment in the State. The lowest enrollment in the southern half of the lower peninsula occurs in Wayne (2226 acres), Oakland (6668 acres), and Macomb (8241 acres) Counties. While these last three counties are also the State's most highly urbanized counties, they all contain areas of productive agricultural land.

Comparing county enrollment figures with information about county land use provides some initial indications of the effectiveness of P.A. 116 in attracting enrollment in developing areas. One would hope to see high enrollment in areas where land is being converted out of farming and where there are an increased number of households—indicating increased demand for housing.

186. See Atlas of Michigan, supra note 184, at 147.
187. Id.
188. The 1980 Census of Population reported that 98.4% of Wayne County's population, 94.8% of Macomb County's population, and 89.5% of Oakland County's population were urban. Census—Number of Inhabitants, supra note 179, at 24-9.
and services. P.A. 116 performed poorly in Lapeer, Oakland, Kent, Jackson, and Berrien Counties where farmland loss was high, but attracted between 30.8% and 54.6% of the farmland in Washtenaw, Van Buren, Ottawa, Shiawasee, and Saginaw Counties where farmland loss was also high (compare figures 3 and 4). In general, counties with large increases in the number of households did not attract as high an enrollment as counties with little increase (compare figures 3 and 5).

A regression analysis was run on enrollment figures and census data representing factors that were expected to affect P.A. 116 enrollment. Four variables—the number of farms in a county in 1982, the percent of county land in farms in 1982, the average value of land and buildings per farm by county in 1982, and the number of households that derived more than seventy-five percent of their household income from farm activities in 1980—were highly predictive of the percent of county farmland enrolled in P.A. 116. These factors help explain the county-level distribution of P.A. 116 enrollment (compare figure 3 with figures 6, 7, 8, and 9).

Among the most interesting of these factors is the influence of high on-farm income on enrollment. P.A. 116 provides for a property tax credit equal to the amount by which property taxes on enrolled land and buildings exceeds seven percent of the owner's household income. Gardner and Frazier criticized the use of household rather than on-farm income as not providing adequate incentive to farm owners with significant off-farm in-

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189. The following variables were regressed against the percent of total county land committed to P.A. 116: (1) number of farms in a county in 1982, (2) percent of county land in farms in 1982, (3) value of land and buildings per farm by county in 1982, (4) value of land and buildings per farm by county in 1978, (5) value of land and buildings per acre by county in 1982, (6) value of land and buildings per acre by county in 1978, (7) 1980 county population, (8) 1980 county population density per square mile, (9) percent change in county population from 1970-1980, (10) percent change in county population from 1960-1980, (11) percent change in the number of households by county from 1970-1980, (12) mean household income for farm households in 1980, (13) mean on-farm income for farm households in 1980, (14) number of farm households that derived less than 25% of their household income from on-farm self employment in 1980, (15) number of farm households that derived 25-50% of household income from on-farm self employment in 1980, (16) number of farm households that derived 50-75% of household income from on-farm self employment in 1980, and (17) number of farm households that derived more than 75% of household income from on-farm self employment in 1980.

190. \%C = -2.4296 + (-0.00093027)(N) + 0.37258(P) + 0.0000085027(V) + 0.064056(I), where \%C = percent of county farmland committed to P.A. 116, N = number of farms per county in 1982, P = percent of total county area in farmland in 1982, V = value of land and buildings per farm for each county in 1982, and I = number of farm households with greater than 75% of their household income derived from on-farm self employment. R-squared = 0.80585; standard error = 7.4935.
come to enroll their land.\textsuperscript{191} High proportions of off-farm income are more likely to exist on farms near urban areas where more off-farm employment is available. Gardner and Frazier's fears seem to be substantiated. This analysis indicates that the program is most attractive to farmers who derive a high percentage of their income from on-farm activities in counties with predominantly agricultural economies. It does not indicate that high enrollment is being attained in counties with high land development pressure. The township analysis that follows will examine this question in greater detail.

P.A. 116's effectiveness as a land use tool depends on the location of enrolled acres. County level data is not detailed enough to provide useful information about the location of enrollment in relation to developing areas. Figure 10 maps an index of urban development pressure by township based on travel time from each township to thirty-one urban destination centers. The higher the index value, the greater the development pressure. Urban destination centers are either cities with populations greater than 25,000 or that are important regional commercial centers. In the Detroit area, five outlying suburbs were chosen as urban destination centers to represent the Detroit metropolitan area because they are major destinations for people commuting to work. Although each of these five centers is a significant commercial or industrial center, there may be a danger that the number of centers chosen to represent the Detroit area overwhelms the impact of other urban destination centers on the index value. The map of indexes, however, generally corresponds to the map of actual urban growth in figure 11, indicating that the index provides at least a rough measure of potential urbanization pressure. Furthermore, the high number of urban destination centers in the Detroit area may indicate the relative size and influence of the Detroit area on state economic activity and land development. The accuracy of the index is examined further in case studies below.

The bands representing development pressure levels in the 25-40 range running east and west through the second and fourth tiers of counties from the State's southern border correspond to areas of expected growth along the Interstate corridors together with peripheral growth of Kalamazoo, Battle Creek, Jackson, Lansing, Grand Rapids, and Muskegon (see figure 10). The band of similar levels from Detroit northwest to Saginaw corresponds

\textsuperscript{191} Gardner & Frazier, \textit{supra} note 168, at 346.
to present and expected development of Flint and Saginaw along Interstate 75 and U.S. 23.

Figure 12 maps out total acres enrolled in P.A. 116 as of January 1985 at a township level. The analysis of township enrollment shown in table 3 demonstrates that enrollment generally increases until the development pressure index reaches about 30 and then drops off sharply:

<table>
<thead>
<tr>
<th>Index</th>
<th>Number</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>190</td>
<td>433.13</td>
</tr>
<tr>
<td>15 to 20</td>
<td>346</td>
<td>2007.80</td>
</tr>
<tr>
<td>20 to 25</td>
<td>252</td>
<td>4397.90</td>
</tr>
<tr>
<td>25 to 30</td>
<td>218</td>
<td>4964.70</td>
</tr>
<tr>
<td>30 to 40</td>
<td>201</td>
<td>3758.70</td>
</tr>
<tr>
<td>&gt;40</td>
<td>30</td>
<td>590.10</td>
</tr>
</tbody>
</table>

Note: A one-way analysis of variance comparing the means defining these strata allow one to reject the null hypothesis that there is no difference ($F_{11,1231} = 52.588$, significance = 0.0000).

<table>
<thead>
<tr>
<th>Index</th>
<th>Number</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;15</td>
<td>190</td>
<td>4.46</td>
</tr>
<tr>
<td>15 to 20</td>
<td>346</td>
<td>21.10</td>
</tr>
<tr>
<td>20 to 25</td>
<td>252</td>
<td>45.61</td>
</tr>
<tr>
<td>25 to 30</td>
<td>218</td>
<td>52.01</td>
</tr>
<tr>
<td>30 to 40</td>
<td>201</td>
<td>40.65</td>
</tr>
<tr>
<td>&gt;40</td>
<td>30</td>
<td>6.47</td>
</tr>
</tbody>
</table>

$F_{11,1231} = 40.794$, significance = 0.0000
The cross tabulation in table 4 shows a similar pattern. While total acres enrolled by township is a useful measure for statistical analysis, the percent of total acres of township land enrolled in P.A. 116 provides a more readable visual pattern (see figure 13). Three areas of high enrollment stand out in figure 13: the “thumb” area of eastern Michigan, which has very low development pressure values; the area southwest of Saginaw, which has moderate development pressure values; and the southern tier of counties, which has moderate to high development pressure values.

The difficult issue in evaluating P.A. 116’s performance is determining where the program must attract enrollment to be successful. To be successful, the program should not attract enrollment in some areas. There is a core of townships surrounding urban centers that are either already urbanized or whose development is so imminent that it would be impossible to attract enrollment of the land. Enrollment of this land may not be desirable because contiguous development could occur. Townships with index values greater than 40 are clearly in this category. Enrollment in these townships is low (compare figures 10 and 13). At the other extreme there are townships so far removed from development pressure that from a land use perspective their enrollment in the program is superfluous. Index values up to 20 are clearly in this category. With the exception of Huron and Sanilac Counties in Michigan’s “thumb,” which have some of the highest enrollment levels in the State, enrollment is also low in townships with index values up to 20 (compare figures 10 and 13). Townships with index values from 20-25 also fall outside the influence of major southern Michigan cities (see figure 10). Enrollment in these townships ranges from none to the

192. Total township area figures are not available for the entire State, so it was not possible to normalize enrollment figures by finding the percent of township land enrolled. An analysis of variance on mean numbers of contracts and acres and the tests of independence on the two-way cross tabulation from which table 3 was derived indicate that these relationships have a high statistical significance and, as such, provide at least a strong indication of trends.

193. Values for counties north of the arrow in figure 13 are estimates based on the mean township size in Calhoun County. For this reason, statistical analysis was not run on the percent of total township acres enrolled.
Table 4
Counts and Column Percentages from a Two-way Table Showing the Relationship Between Development Pressure and the Number of Contracts Per Township

<table>
<thead>
<tr>
<th>Development Pressure Index</th>
<th>&lt;15</th>
<th>15-20</th>
<th>20-25</th>
<th>25-30</th>
<th>30-40</th>
<th>&gt;40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Contracts Per Townships</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>116</td>
<td>118</td>
<td>22</td>
<td>8</td>
<td>15</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>(61.1)</td>
<td>(34.1)</td>
<td>(8.7)</td>
<td>(3.7)</td>
<td>(7.5)</td>
<td>(36.7)</td>
</tr>
<tr>
<td>1-10</td>
<td>56</td>
<td>116</td>
<td>35</td>
<td>28</td>
<td>43</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>(29.5)</td>
<td>(33.5)</td>
<td>(13.9)</td>
<td>(12.8)</td>
<td>(21.4)</td>
<td>(46.7)</td>
</tr>
<tr>
<td>10-50</td>
<td>15</td>
<td>65</td>
<td>117</td>
<td>96</td>
<td>82</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>(7.9)</td>
<td>(18.8)</td>
<td>(46.4)</td>
<td>(44.0)</td>
<td>(40.8)</td>
<td>(16.7)</td>
</tr>
<tr>
<td>50-100</td>
<td>1</td>
<td>19</td>
<td>54</td>
<td>59</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(0.5)</td>
<td>(5.5)</td>
<td>(21.4)</td>
<td>(27.1)</td>
<td>(19.9)</td>
<td></td>
</tr>
<tr>
<td>&gt;100</td>
<td>2</td>
<td>28</td>
<td>24</td>
<td>27</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>(1.1)</td>
<td>(8.1)</td>
<td>(9.5)</td>
<td>(12.4)</td>
<td>(10.4)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>190</td>
<td>346</td>
<td>252</td>
<td>218</td>
<td>201</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>(100.1)</td>
<td>(100.0)</td>
<td>(99.9)</td>
<td>(100.0)</td>
<td>(100.0)</td>
<td>(100.1)</td>
</tr>
</tbody>
</table>

Note: Numbers in parentheses indicate the percentage of all townships in the development pressure index range that have the indicated number of contracts. Percentages total greater or less than 100 due to rounding.
highest in the State, although it could generally be described as moderate.194

The issue is thus narrowed to determining where, between the development pressure index values of 25 and 40, one would hope to see enrollment crest to provide farmland and open space preservation protection. This Note cannot resolve the issue because it is, in essence, a political and economic one, but it can provide a few observations that might be helpful. In western Michigan, townships with index values from 25-30 include those in the Interstate 96 corridor—an area likely to experience growth—as well as areas to either side of both the Interstate 94 and Interstate 96 corridors. Assuming that development in the Interstate corridors is desirable, those townships with index values between 25 and 30 may create an appropriate outer boundary for this development—six miles from the Interstate. In southeastern Michigan, index values from 25-30 are less predictive of actual development pressure. There, an index value between 30 and 40 probably marks the boundary between areas where development is imminent and areas where it may be desirable to slow land conversion. Acreage enrollment in townships with index values between 25 and 30 is mixed. Enrollment is low to the northeast of Detroit, where some growth is occurring, although the major thrust of Detroit area growth is to the northwest. Enrollment is low to moderate along the Interstate 96 corridor. It is highest to the south of Interstate 94 and southwest of Saginaw, where there is little development pressure. Acreage enrollment in townships with index values between 30 and 40 increases as one moves away from the Detroit area (see figure 14). Township level statistical analysis also shows that enrollment increases as development pressure increases—up to a certain point. If that cutoff point is located in areas where there is high development pressure, then this pattern is characteristic of a successful program. Figure 14 suggests that enrollment is not being attracted in urban fringe areas where it might slow land development. The picture is not clear, however, and will be further examined in case studies below.

Township level analysis reveals a closer relationship between enrollment and land quality than between enrollment and development pressure. Gardner and Frazier contend that high enrollment of prime and unique agricultural land is another requisite

194. While enrollment in townships with index values under 25 may be superfluous from a land use perspective, it may be justified on the basis of property tax relief.
of a successful farmland preservation program. P.A. 116's legislative history states that maintaining Michigan's agricultural production capacity is a primary purpose of the program that the Act established. To meet this goal, the program must attract enrollment of highly productive land. A comparison of figures 13 and 15 reveals that enrollment in P.A. 116 is highly related to land quality. Although it was not possible to analyze this relationship numerically, these maps suggest that P.A. 116 is very successful at attracting prime and unique farmlands.

Case studies were conducted for Saginaw, Washtenaw, and Shiawassee Counties in eastern Michigan, for Kent and Kalamazoo Counties in southwestern Michigan, and for Grand Traverse County in northwestern Michigan (see figures 16A to 16F). These counties were chosen because, with the exception of Grand Traverse, they contain index values between 25 and 40 and have clear gradations of values spreading out from an urban destination center. These characteristics make it possible to check the accuracy of index values and to determine whether there is a consistent range of index values that identifies urban fringe land. Grand Traverse County was chosen because it represents a unique and important agricultural production area in the State, far removed from major urban centers.

In these case studies, county planning officials or county equalization officials were telephoned and asked to identify townships in which development is occurring and townships that are isolated from development. These responses were compared with this study's development pressure index values to assess the reliability of the index values. County officials were also asked to describe the pattern of P.A. 116 enrollment in their counties and to comment on what they perceived as reasons for this pattern.

196. See Analysis, supra note 115.

Although personal interviews cannot be tested for statistical significance, the consis-
The first question that the case studies address is whether the development pressure index used in this study is reliable. The county maps in figures 16A to 16F include index values, numbers of P.A. 116 contracts in the township, and, where given, county official's assessments of development pressure. Several generalizations can be drawn from these maps about the development pressure index in the case studies. In southern counties, the index appears to identify accurately townships with high development pressure, but errs on the side of overinclusion. This is near urban areas in their counties suggests that their responses reliably reflect the statewide trend.

198. In Washtenaw County, development is reported to be strongest in Scio, Ann Arbor, Superior, Pittsfield, and Ypsilanti Townships. Salem Township in the northeast corner of the county is also reported to be developing fairly rapidly. The two western tiers of townships are reported to have little development pressure. Washtenaw County Interview, supra note 197.

Shiawasee County has three sources of development pressure: Owosso, the county seat; Lansing, in the adjacent county to the southwest; and Flint to the east. Development in the townships reflects the influence of these urban centers. Perry and Woodhull Townships in the southwest corner of the county are the fastest growing. Perry Township had 57 housing starts between 1980 and 1984; Woodhull had 77. In contrast, Venice Township had only nine. Bennington, Shiawasee, and Caledonia Townships near Owosso are also being developed. In the past, Flint had a more significant influence on Shiawasee County development than it does today. Vernon Township, for example, which was once developing rapidly, had only 24 housing starts between 1980 and 1984. Housing development spilling over from Lansing is mostly subdivision development; housing development from Flint is large lot development. Burns Township is beginning to feel development pressure spilling over from the Detroit area as residents increasingly commute to Howell in Livingston County. Shiawasee County Interview, supra note 197.

Although Saginaw County as a whole has slowed economically since the 1980's, a moderate level of development is reported in Saginaw and Kochville Townships. Thomas and Bridgeport Townships also have some development activity. Birch Run Township has scattered housing development for commuters to Flint. The southwest corner of the county is removed from almost all development pressure. Saginaw County Interview, supra note 197.

In Kalamazoo County, Oshtemo and Comstock Townships are reported to be the principal townships with residential and commercial development. Wakeshma, Climax, and Brady Townships are reported to have little or no land development. Kalamazoo County Interviews, supra note 197.

Kentwood and Cascade Townships in Kent County are areas of tremendous growth in commercial, industrial, and home development. The southern tier of townships in Kent County has extensive scattered residential development, but there is little development activity in Kent's northern two tiers of townships. Kent County Interview, supra note 197.

Development in Grand Traverse County is centered around Traverse City in East Bay, Garfield, Acme, and Peninsula Townships. The greatest growth is occurring from recreation-related development in Acme Township. Between 1982 and 1986, the equalized value of property increased by 10.64% in Traverse City proper, by 19.53% in East Bay Township, by 15.9% in Garfield Township, by 13.8% in Peninsula Township, by 18.09% in Long Lake Township, and by 50.34% in Acme Township. Grand Traverse County Interview, supra note 197.
likely due to the fact that the index treats land equidistant from cities as being under equal development pressure. In actuality, however, growth around a city, as in Kalamazoo and Grand Rapids, often favors one direction over another. This tendency may have the effect—in the township level analysis of enrollment in relation to development pressure—of overestimating the amount of enrollment in areas with higher development pressure. In northern counties, it is difficult to distinguish townships with relatively higher development pressure from those with less. This may be due, in part, to the impact on the development pressure index of the larger number of urban destination centers in the southern half of the State, but it is also indicative of a generally lower level of development in the northern part of the State.

The second question that the case studies address is whether it is possible to pinpoint a range of index values that identify townships where development is occurring. Because this would be particularly useful for townships in southeastern Michigan where development is often not associated with peripheral growth of a single urban center, index values in southeastern counties were examined. Index values for townships reported to have high development pressure vary within a defined range: 47.0, 44.7, 43.3, and 48.0 in Washtenaw County; 33.9 and 34.8 in Shiawasee County; and 39.5 and 37.0 in Saginaw County. These values do not seem to indicate any better estimate than was previously observed on the development pressure map (figure 10)—that southeastern urban expansion is occurring in townships that have values somewhere in the 30-40 range.199

Finally, the case studies attempt to gain some sense of how local observers interpret enrollment patterns. With the exception of Grand Traverse County, county officials consistently reported that two factors are key in attracting high enrollment: lack of development pressure and high quality farmland. Thus, in Kalamazoo County, for example, enrollment is low in northern townships despite low development pressure. This low enrollment is attributed to the poor quality of the land in these townships for farming. The southern tier of townships reportedly experiences similar development pressure, but has far higher enrollment. The difference is attributed to the land's high productivity in agriculture.200 Similar patterns are reported in

199. See supra text following note 194.
200. Kalamazoo County Interviews, supra note 197.
other counties. In Grand Traverse County, enrollment is high in Peninsula Township despite potentially high demand for residential building sites. Cherry production in the township is an atypically intensive agricultural use. This is reflected in high agricultural land values. Good cherry-growing land in the township sells for around $4000 per acre, about the same price as residential sites. Many Peninsula Township farmers are concerned about conflicts that may arise between residents and farmers over insecticide spraying if residential development occurs. Farmers have used P.A. 116 enrollment as one means of protecting themselves from such development-related conflicts.

In conclusion, a few generalizations can be drawn from this study's county, township, and case analyses that may be helpful in policy planning in Michigan and other states. All three levels of analysis produced evidence that P.A. 116 is most successful at attracting economically strong farms and high quality farmland. In the regression analysis run at the county level, the four variables found predictive of high enrollment indicate that P.A. 116 is most successful in counties with strong agricultural economies. The visual comparison of township level enrollment with the location of Michigan's prime farmlands, as well as county officials' comments, also indicates that enrollment in P.A. 116 is higher where there is prime agricultural land.

As discussed earlier, most policy analysts find that attracting high quality agricultural land and helping maintain strong local agricultural economies are essential elements of a successful farmland and open space preservation program. The location of that land is also vital, however, to measuring the program's suc-

201. In Washtenaw County, for example, enrollment is high in Bridgewater, Saline, and York Townships, which contain the county's best farmland. The western tier of townships have land less well-suited to agriculture but also have little development pressure. Enrollment is fairly low in these townships. Washtenaw County Interview, supra note 197.

Saginaw County does not seem to follow this generalization as closely. The downturn in Saginaw County's economy during this decade—three major manufacturing plants have closed since 1980—may in part explain this. Thus, enrollment is fairly high in Kochville Township, where there is also a high potential for commercial development. Enrollment is also high, however, in Albee Township, where there is little development pressure—as would be expected from other counties' experiences. County officials consider the low enrollment in southwestern Saginaw County, where development pressure is almost nonexistent, to be due to the unsuitability of the land for farming and the relatively high proportion of state-owned land in the area. County officials believe that the fairly high enrollment in Frankenmuth Township, despite moderate development pressure, is due to the land's high suitability for farming and township farmers' strong commitment to farming. Saginaw County Interview, supra note 197.

202. Grand Traverse County Interview, supra note 197.

203. See supra text accompanying note 190.
cess. While this study has not been able to draw an absolutely clear picture of where growth is occurring in Michigan, the township level comparison of enrollment with development pressure index values and, more clearly, observations by county officials, indicate that P.A. 116 is not successful at attracting enrollment in areas under development pressure. Because the fundamental difference between P.A. 116, a circuit-breaker program, and the deferred taxation programs adopted by most states is the distribution of the cost of funding the program, states with deferred taxation programs can expect to see a similar pattern of enrollment.

One means of altering this enrollment pattern would be to adjust the tax incentives provided by a program to make enrollment more attractive to those individuals with land likely to be developed within the contract period. This could be accomplished by increasing tax savings or, in states with formulas like Michigan’s, by basing the tax benefit on on-farm income rather than household income. The most obvious, and significant, observation that can be made from this study suggests that this would be a costly approach. Both county and township level enrollment data show that a very large proportion of the State’s enrollment is in areas that presently have very light development pressure and that are unlikely to come under higher pressure within the contract period. Figure 17 verifies that a great deal of the cost of P.A. 116 goes to paying for enrollment in areas, such as Michigan’s “thumb,” that are not developing—where there is little likelihood that farmland and open space would be developed even in the absence of tax incentives. Michigan’s tax incentive approach does not target state funds at developing areas where the program must attract enrollment to be successful. Consequently, the return from Michigan’s investment, measured in farmland and open space actually protected from development, is likely low. Other states with comparable tax incentive programs may well be having similar experiences.

**CONCLUSION**

Changes in United States agricultural markets make farmland preservation a less salient issue than it was ten or fifteen years ago. Yet farmland loss continues, both nationally and interna-

204. Mich. Comp. Laws § 554.710 (1979); see supra notes 105-27 and accompanying text.
tionally. Although grain markets are currently depressed, they may not be so in the future. As population grows, demand for foodstuffs should continue to grow. If farmland preservation was a legitimate concern a decade ago, it remains so today, despite short term price signals to the contrary.

This study examined the effectiveness of Michigan’s Farmland and Open Space Preservation Act in preserving farmland. The results indicate that the Act, establishing a circuit-breaker property tax program designed to preserve farmland and open space, is successful at attracting enrollment of high quality farmland. The results also indicate, however, that the Act is not successful at attracting enrollment of farmland near urban areas. This suggests that P.A. 116 would primarily be useful in slowing the conversion of farmland in areas that have strong agricultural economies and that are removed from urban centers. Development may occasionally occur in such areas, but heavy development normally occurs closer to urban areas. It is difficult, therefore, to say that P.A. 116 has been successful at slowing the conversion of Michigan farmlands and open space.

—Sandra A. Hoffmann
* = urban destination center

Michigan Counties
*No P.A. 116 data available.

**Figure 1**

County Enrollment in P.A. 116 by Number of Contracts (Jan. 1985)
*No P.A. 116 data available.

**Figure 2**

County Enrollment in P.A. 116 by Acres (Jan. 1985)

**Figure 3**

Percent of County Farmland Enrolled in P.A. 116 (Jan. 1985)
*No P.A. 116 data available for Keweenaw County. In the other counties marked with an asterisk, there was either no change or an increase in acres farmed.

Figure 4

Land Removed from Farming 1978-1982, by County
*No P.A. 116 data available.

**Figure 5**

Increase in Number of Households from 1970-1980, by County
Figure 6

Number of Farms, by County (1982)

*No P.A. 116 data available.
Percent of County Land in Farms (1982)

*No P.A. 116 data available.

Figure 7

Percent of County Land in Farms (1982)
*No P.A. 116 data available.

**Figure 8**

Average Value of Land and Buildings Per Farm, by County (1982)
Figure 9

Number of Households Deriving Greater than 75% of Household Income From On-Farm Self-Employment, by County (1982)

*No P.A. 116 data available.*
Figure 10

Development Pressure Index Values, by Township (1985)

**Figure 11**

Trends in Urbanization
Figure 12

Township Enrollment in P.A. 116, by Acres (Jan. 1985)
Note: Townships below the arrow are based on actual township land area. Townships above the arrow are based on estimated township land area.

**Figure 13**
P.A. 116 Enrollment as a Percent of Total Township Land Area (Jan. 1985)
Figure 14

Percent of Total Township Acres Committed to P.A. 116 in Townships with Development Pressure Index Values Between 30 and 40 (Jan. 1985)
Note: No generalized information for counties above the arrow was available.

Source: Frazier, Locational Analysis of Participants in Michigan's Farmland and Open Space Preservation Program (1979) (Michigan State University Master's Thesis).

Figure 15
Areas of Prime and Unique Farmland (Jan. 1979)
Figure 16

Case Studies for:

- Grand Traverse County (Figure 16A)
- Kalamazoo County (Figure 16B)
- Kent County (Figure 16C)
- Saginaw County (Figure 16D)
- Shiawassee County (Figure 16E)
- Washtenaw County (Figure 16F)

Key to figures 16A to 16F:

I = Development Pressure Index
C = Number of P.A. 116 Contracts
D = Development Pressure Reported by County Officials
Figure 16A
Grand Traverse County
### Figure 16B

Kalamazoo County

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**Figure 16C**

Kent County
### Figure 16D

Saginaw County

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**Figure 16F**

Washtenaw County

Figure 17

1983 Farmland Preservation (P.A. 116) Credits
### APPENDIX I
Provisions of State Farmland and Open Space Preservation Laws (March 1986)*

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<th>Year first statute passed</th>
<th>Current Eligible use</th>
<th>Other Eligibility Requirements</th>
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* Adapted from R. Barlowe and T. Alter, supra note 23, at 5 (table 1). For the statutory citations, see appendix II. All data for this appendix are derived from the actual state codes. Some state codes did not provide the year that their first farmland and open space preservation law was passed.

** A statute was passed in 1969, but it was declared unconstitutional in 1979.

*** A restrictive agreement exists to avoid a rollback tax when land is redistricted.

**NOTE:** An "X" appearing on this chart indicates that the state has the type of provision listed in the heading. All other letters are abbreviations indicating the following: A (agriculture), H/S (historic/scenic), O (open space), P (planning), PDR (purchase of development rights), St/P (statewide land use planning), T (timber), Z (zoning).
### APPENDIX I (continued)

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APPENDIX I (continued)

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</table>

**** The rollback tax was repealed in 1981.

NOTE: An "X" appearing on this chart indicates that the state has the type of provision listed in the heading. All other letters are abbreviations indicating the following: A (agriculture), H/S (historic/scenic), O (open space), P (planning), PDR (purchase of development rights), St/P (statewide land use planning), T (timber), Z (zoning).
**APPENDIX I (continued)**

<table>
<thead>
<tr>
<th>State</th>
<th>Constitutional authorization</th>
<th>Year first statute passed</th>
<th>Other Eligibility Requirements</th>
<th>Tax Deferral Arrangements</th>
<th>DIRECT PUBLIC CONTROL</th>
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<tr>
<td></td>
<td>Current Eligible Uses (A O T)</td>
<td>Restrictive agreement</td>
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<td>Rollback period (yr.)</td>
<td>Interest charge</td>
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<td>South Dakota</td>
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<td>1974</td>
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<td>1992</td>
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<td>Wisconsin</td>
<td>1974 1977</td>
<td>X X X X</td>
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<td>Wyoming</td>
<td>1973</td>
<td>X</td>
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**NOTE:** An "X" appearing on this chart indicates that the state has the type of provision listed in the heading. All other letters are abbreviations indicating the following: A (agriculture), H/S (historic/scenic), O (open space), P (planning), PDR (purchase of development rights), S/L (statewide land use planning), T (timber), Z (zoning).
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<thead>
<tr>
<th>State</th>
<th>Tax Assessment</th>
<th>Easement</th>
<th>Districting</th>
<th>Zoning</th>
<th>Nuisance</th>
<th>Other</th>
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</thead>
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* The second date appearing after a statutory provision is the date of passage.
### APPENDIX II* (continued)

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<th>Other</th>
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<th>State</th>
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<th>Easement</th>
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<th>Nuisance</th>
<th>Other</th>
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* The second date appearing after a statutory provision is the date of passage.
### APPENDIX II* (continued)

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* The second date appearing after a statutory provision is the date of passage.
## APPENDIX D (continued)

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<td>42-04 (1986)</td>
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<td>OH</td>
<td>§ 5713.30-.99 (Page Supp. 1985)</td>
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<td>OK</td>
<td>§ 308.740-.790 to 321.795 (1985)</td>
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<td>PA</td>
<td>§ 5490.1-1.13 (Purdon Supp. 1985)</td>
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<td>SC</td>
<td>§ 46-45-10 to 50 (Law Co-op Supp. 1985)</td>
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<td>SD</td>
<td>§ 48-31 to 33.1 (1982)</td>
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<th>Other</th>
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<tr>
<td>TEx. CONST.</td>
<td>art. VIII, §§ 1-d, 1-e (1978)</td>
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## APPENDIX III

State Constitution Uniformity Provisions

<table>
<thead>
<tr>
<th>State</th>
<th>Provision</th>
<th>Year Adopted</th>
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<tbody>
<tr>
<td>Ala. Const.</td>
<td>art. XI, § 217, Amend. 373</td>
<td>(1978)</td>
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<tr>
<td>Cal. Const.</td>
<td>art. XIII, § 1, 8</td>
<td>(1974)</td>
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<td>Fla. Const.</td>
<td>art. VII, § 4</td>
<td>(1968)</td>
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<td>Ga. Const.</td>
<td>art. VII, § 1, para. 3</td>
<td>(1983)</td>
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<td>Ky. Const.</td>
<td>$ 172A</td>
<td>(1969)</td>
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<tr>
<td>Me. Const.</td>
<td>art. IX, § 8</td>
<td>(1970)</td>
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<tr>
<td>Md. Const.</td>
<td>Declaration of Rights, art. 43</td>
<td>(1960)</td>
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<td>Mass. Const.</td>
<td>§ 245</td>
<td>(1972)</td>
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<td>Nev. Const.</td>
<td>art. VIII, § 1</td>
<td>(1972)</td>
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<td>N.H. Const.</td>
<td>art. X, § 1</td>
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<td>N.J. Const.</td>
<td>pt. 2, art. 5-B</td>
<td>(1968)</td>
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<td>N.M. Const.</td>
<td>art. VIII, § 1, para. 1</td>
<td>(1963)</td>
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<td>N.C. Const.</td>
<td>art. VIII, § 1</td>
<td>(1971)</td>
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<td>Ohio Const.</td>
<td>art. II, § 36</td>
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<td>Okla. Const.</td>
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<td>art. XIII, § 3</td>
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<td>art. VII, § 2</td>
<td>(1968)</td>
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