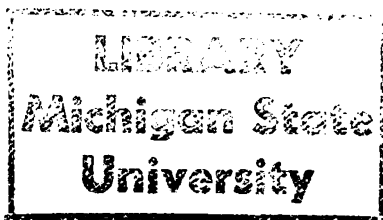




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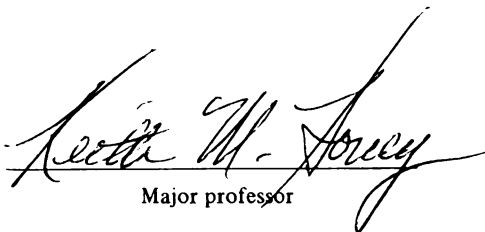
SOLAR ACCESS: A PROPOSAL AND LEGAL RAMIFICATIONS
IN THE STATE OF MICHIGAN
VIENNA TOWNSHIP: AN EXAMPLE

presented by

Carolyn E. Bennett

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of the requirements for

Masters degree in Urban Planning


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By

Carolyn E. Bennett

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ABSTRACT

SOLAR ACCESS: A PROPOSAL AND LEGAL RAMIFICATIONS IN THE STATE OF MICHIGAN VIENNA TOWNSHIP: AN EXAMPLE

By

Carolyn E. Bennett

The energy needs of America will not be met in the next twenty years at our present rate of consumption. Land use patterns and zoning which governs land use patterns affect energy consumption. Solar utilization offers an alternative to the present energy consumption attitudes of the American population.

Local governments can provide the changes needed to protect solar access through zoning or other types of legal regulations. This study examines one township, Vienna, in Michigan. Michigan presently has no state statutes which deal specifically with solar access. The comprehensive plan is examined as is the present zoning ordinance. Amendments are suggested to both which will accomplish the goal of solar access protection.

Implications for further study are suggested as well as limitations on various legal mechanisms in practice throughout the fifty states. The results of this study can provide a broader understanding of the needs of solar access legislation in Vienna Township. The study area can also serve as an example to the entire State of Michigan for solar access considerations.

ACKNOWLEDGMENTS

This writing is dedicated to my parents, Irene and Toomey Bennett, whose only wish and concern was that I further my education in any manner I thought appropriate. Thank you, Mom and Dad.

Irene Bennett

1918-1972

Toomey Bennett

1913-1982

My thanks also must be extended to the School of Urban Planning and Landscape Architecture, the staff of the Energy Administration Michigan Department of Commerce, and the Vienna Township Board of Trustees and Planning Commission. Help was given to me by two very kind friends, Bob Burns (editor) and Lori Noblet (typist), and a special feeling of gratitude must be extended to my sister, Mary Bennett, who had the confidence to believe in me and what I was doing.

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CHAPTER 1

Within the past decade, increased public concern has focused on the high cost of energy and the dwindling supplies of available non-renewable energy sources in the United States. With these concerns in mind, the recent curtailment of Michigan's Midland Nuclear Power Plant, and the prospect of 23 cents per kilowatt-hour charges for consumers of electricity, the energy crisis is back. But, did it really ever go away?

From 1974 to 1984, changes have occurred in the American public's attitudes and consumption habits. Gasoline, coal, oil, and wood have all increased in price as they diminish in availability, as a simple law of supply and demand has taken hold. A research task of the Energy Administration of the Michigan Department of Commerce, commissioned by Governor James Blanchard, is designed to explore alternative energy sources available to Michigan energy users. The focus of that research is on conservation techniques, as they are by far the most cost-effective and have become more widely used since the late 1970s.

However, the push for economic development and the creation of new jobs in the State of Michigan has taken precedence over exploration of energy alternatives to deal with decreasing supplies. Nonetheless, adequate energy

sources do, in fact, play an important role in the location decisions of manufacturing firms.

In addition, with the ever rising costs of energy and the ever dwindling sources of energy, the individual Michigan resident has two concerns: (1) the prospects for employment in a state facing dwindling energy resources and (2) the high cost of energy to maintain an accustomed quality of life.

Along with these two considerations, another consideration to the United States as a whole is the amount of energy we consume. As Americans we have become the greatest consumers of the world's energy wealth: even though U.S. citizens comprise only 4 percent of the world's population, we use 50 percent the world's total consumable¹ energy supplies.

It is impossible to overemphasize the crucial importance of energy resources. It might be said that energy is for the mechanical world what consciousness is for the human world. If energy fails, everything fails. The United States' dependency on energy to survive in the type of lifestyle we have become accustomed to is an important concern.

Our quality of life is defined as: the existence we have become accustomed to. Our quality of life can be significantly affected by the available energy alternatives: coal, wood, solar, nuclear. We as Americans have been significantly affected by the inexpensive use of the world's

resources to fuel our energy needs. Americans also strive to maintain our quality of life and to regain our independence from energy resources furnished by the rest of the world.

The main cause of the complacency--now gradually diminishing--about the future of fossil fuel energy supplies was undoubtedly the emergence of nuclear energy, which people felt had arrived "just in time."² This "just in time" attitude was adopted as a general rule by the American public as well as its government. In 1974, President Jimmy Carter began the process of formulating a plan to deal with the energy needs of our country. Citing statistics from the National Energy Plan, Barry Commoner notes that only 2 percent of the nation's energy needs were to be met by solar power by the year 1985.³ Commoner felt that the National Energy Plan was flawed in many respects and that the nation really has no energy policy to speak of. However, nuclear power was included in the National Energy Plan as a viable alternative to the energy resources now in use, even though construction of a nuclear power plant is an extremely expensive and highly regulated process. John Naisbitt stated: "While special interests, political partitions, and regional coalitions carved up the Carter administration's ill fated energy plan, the states and cities quietly took the initiative to analyze local needs, established energy policies, and even secured energy supplies."⁴

Among the many factors which have prevented the United States and Michigan from fully utilizing the solar energy resources available are certain regulations which deal with land use, specifically zoning and building codes, the latter of which until recently paid little or no attention to the needs of conservation as a means of dealing with the nation's energy crisis. Perhaps the most difficult problem faced today is the changing nature of the energy problem. These are of course generalities about the American public and its attitude toward the future. The fact, however, remains that humans have domain over the earth and are capable of its natural resource destruction.

Yet, in the human quest for understanding and technological innovation it has become apparent we must realize the limits of our existence. Our environment is crucial to our existence. The use of the sun's power to improve our energy status as well as a means of maintaining our quality of life is not a novel idea born of the recent energy crunch. Sun dials were used by ancient man to maintain his quality of life by tracking the sun on its march across the sky, allowing him to chart his day. The Pueblo Indians of the American Southwest fashioned shelters on the slopes of mountains which were shaded during the hottest part of the day when the sun was at its zenith. However, with the advent of the industrialized society and abundant and inexpensive sources of fuel, the necessity of viewing the natural environment, including the sun, was as

something to be conquered, rather than manipulated to its greatest advantage.

The technology of the past ten years has greatly facilitated the expansion of solar energy development. It is generally acknowledged that solar-powered hot water heaters are almost becoming commonplace throughout the United States. Individuals as well as industry are exploring and utilizing the tools available to build energy-conscious structures. At the local level, the availability of new and innovative building techniques, however, is sometimes blocked by zoning and subdivision regulation as well as building codes which do not adequately recognize energy considerations. Two recently published books have given planners new tools to consider in the creation of land use regulations, Site Planning for Solar Access: A Guidebook for Residential Developers and Site Planners and Protecting Solar Access for Residential Development: A Guidebook for Planning Officials.⁵ These two publications lend credibility to the concept that the use of the land can affect the amount of energy consumed to maintain our quality of life. Conservation of energy resources and building design, including revision of building codes and land use regulations, would begin the process of supporting energy conservation measures. Planners as a profession are most significantly involved in land use regulations and, therefore, it is a natural step to develop regulations that are energy conservative.

What, then, is the best mechanism to bring these energy conservation land use regulations into the public arena and what are the legal ramifications of these new energy regulations vis-a-vis other land use considerations, land costs, inner city decay, and environmental concerns? Solar access rights and the legal ramifications of the enactment of a zoning ordinance which guarantees solar access on the residential level compose the focus of this study.

A brief explanation of alternatives to solar power also lends credibility to this solution to the energy problem. What of the environmental concern posed by non-use of solar power as a primary energy source? Carl Sagan indicates the atmosphere of the earth is growing denser due to the fact that humans are now burning more fossil fuels, and suggests that "If the present CO₂ injection into the atmosphere continued over a few centuries the warming (of the earth's atmosphere) would be greater than from all other causes over the last 100,000 years." To counteract this trend, Sagan emphasizes the importance of alternative energy sources.

The following is a list of Michigan's energy use-imports: natural gas, 81.7 percent; petroleum, 19.6 percent; and coal, 100 percent. These traditional energy sources make Michigan heavily dependent on imported fuel.

An explanation of what can be done to combat the problems which occur from our present energy use and alternatives available to that use must be explored. The long term effects of our present course will be felt for

generations. What role does Michigan, and specifically Vienna Township, a growing suburban community in Genesee County, play in the energy path America has chosen? How can urban planning and its role in land-use regulation foster energy conservation in a significant way?

This study attempts to distinguish the real problem of dwindling fossil fuel supplies. And at what point do local communities begin to realize their responsibility in energy conservation? Construction of several homes throughout Vienna Township which utilize solar orientation and apparatus as a means of heating suddenly bring the focus of energy conservation and land use regulation into focus. Currently, the State of Michigan has no legislation that deals with solar access other than that allowing for tax credits. Additionally, no Michigan municipality has adopted any regulations which make solar access a priority. Numerous studies have been done both at the state and federal levels and several models have been proposed; however, no significant action has been taken. A number of court cases and state laws have evolved throughout the past decade which lend credibility to the prospect of local legislation dealing with the issue of solar access. Results of a survey of the 50 states completed by the author in the fall of 1984 indicate that of the 30 responding, 24 state energy offices reported some form of state or local legislation dealing with solar access. These findings are supported by an earlier survey conducted by the American

Planning Association in 1979.

Local zoning regulations often have prevented the most efficient land use when considering solar access. Solar access and the legal ramifications of an ordinance adopted by a single community within a state with no state laws addressing the solar access issue are explored in this study.

The focus of this chapter has been the "window on the world" exploring the need for legislation dealing with the solar access issues and the real crisis of energy availability. Chapter II reviews legal case studies and legislation available. Chapter III focuses on the case study area, Vienna Township, and the changes which could be made in its land use regulations to give legal standing to an energy goal. Land use types and current use as well as projected growth and comprehensive planning also are examined. Chapter IV deals with the changes which could be made in the zoning ordinance to accommodate the goal of energy efficient land use. Chapter V summarizes the findings of the previous chapters and also provides conclusions and implications for further study.

Although the study area is limited in scale and is not intended to be an all inclusive solution to the problem of the energy crisis, it will certainly begin the process. Transportation systems will not be included in this study although they are a major contributor to energy use. Residential units will be the focus of the study and

commercial structures will not be included. Many communities have taken it upon themselves to begin the process of energy-wise land use. Vienna Township in Michigan will be given the opportunity to CHANGE ITS ENERGY DIRECTION.

Footnotes - Chapter I

¹
E.F. Schumacher, Economics as If People Mattered: Small is Beautiful (New York: Harper & Row, 1970), p. 123.

²
Barry Commoner, The Politics of Energy (New York: Alfred Knopf, 1979), pp. 10-25.

³
Ibid. p. 73.

⁴
John Naisbitt, Megatrends (New York: Warner, 1982), p. 127.

⁵
Duncan Erley and Martin Jaffe, Site Planning for Solar Access (Chicago: American Planning Association, 1979).

⁶
Carl Sagan, "The Warming of the World" Parade Magazine, February 3, 1985, pp. 9-12.

⁷
Statement by Tom Stanton, Director Energy Clearinghouse, Michigan Department of Commerce, Lansing, MI, February 1985.

⁸
American Planning Association, Planning Advisory Service Report #352, (Chicago: 1979).

CHAPTER II

Introduction

The state of solar law has changed during the past decade, as land-use controls have changed to accommodate new technologies. One major form of control--the exercise of zoning--has greatly influenced ways in which solar technology has affected and has been affected by location and siting decisions. During the 1970s much material was written regarding solar access and the best way to protect the solar users.

For this thesis, land use regulations and different theories of law on how best to protect solar users were examined. Land use regulations which take into account solar access is a complicated issue, not easily solved. Initially, this chapter will examine zoning powers to determine the extent of Zoning as a means of land use control. Second, literature will be reviewed to arrive at the specific Needs of Solar Access. Finally, a category of the literature will be identified which defines types of Legal Mechanisms to deal with solar access. This review will also examine recent state and local regulations, as well as pertinent case law, related to solar access.

Zoning

"The general goals of zoning ordinances, like those of building codes, are to protect the health, safety, and general welfare of the community." Zoning traditionally was developed to "regulate the use of private land."¹ This was the first effort on the part of the public to regulate, in a comprehensive fashion, all private land. During the 1920s many states adapted the Standard State Zoning Enabling Act (fashioned after the model ordinance developed by the U.S. Department of Commerce). This enabling legislation on the part of each state was essential, as

Municipalities enjoy no such authority except as it may be delegated to them by the states either through express provisions in the state constitutions or through adoption of legislation that "enables" municipalities to regulate the use of private land through zoning.²

The Village of Euclid v. Ambler Realty Co. is the landmark case in which zoning was found to be a valid exercise of the police power. Even though the U.S. Supreme Court held that zoning was valid in principle this did not settle the question of a particular regulation as applied to a specific piece of property was valid.

In 1928, seven years after the passage of the Standard Enabling Act, the U.S. Department of Commerce issued a Standard City Planning Enabling Act, which was adopted by³ the Michigan Legislature.

Section 3 of the Standard State Zoning Enabling Act of 1928 provided that the zoning ordinance is to be prepared "in accordance with a comprehensive plan." The connection

between planning and zoning is usually an uncertain relationship. An attempt to clarify the relationship between planning and zoning was enunciated by the Oregon Supreme Court:

Although we are aware of the analytical distinction between zoning and planning, it is clear that under our statutes the plan adopted by the planning commission and the zoning ordinances enacted by the county governing body are closely related: both are intended to be parts of a single integrated procedure for land use control. The plan embodies policy determinations and guiding principles; the zoning ordinances provide the detailed means of giving effect to those principles.⁴

The planning concern in integrating the comprehensive plan with zoning considerations is essential for the discussion of solar access. As mentioned in Chapter 1, a great deal of emphasis in the energy crisis revolves around our future energy needs. What can we as Americans look forward to in the next one hundred years? As professional planners we are planning for the future. To make the world a better place, the comprehensive plan, along with the zoning tools available or some other legal mechanism, can begin the process of land use regulation that is energy efficient. United States case law evolves as cases are tried, and as this body of law emerges, so will the options available to control land use in an energy efficient manner. As legal mechanisms are implemented and challenged, so the body of law dealing with solar access develops.

Needs of Solar Access. The single most important issue raised by solar energy systems is guaranteed access to light

for solar energy collectors. "Situating a building to have a south orientation and good sun exposure can reduce heating costs by about 10 percent regardless of what other solar or conservative techniques are applied."⁵

Sounds simple: just allow all structures to face south and heating costs will be reduced. Even with a slight variation of up to 30 degrees from true south a collector can receive up to 90 percent of the sun's daily radiation. As 85 percent of the sun's energy is available between 9:00 a.m. and 3:00 p.m. this period of the day represents the critical hours of solar access. Two distinct problems appear to emerge: (1) solar access rights, and (2) siting. Each of these problems is examined below.

Criteria for Evaluation of Solar Access Laws

To minimize conflicts in solar access rights and to maximize the potential "capture" of solar energy, Gail Hayes developed the following criteria:

- (1) Maximize protection from shadows during the hours of high insolation to reasonably located active type collectors for new structures.
- (2) Maximize protection of a similar nature to passive systems in new developments.
- (3) Maximize protection to property owners retrofitting their homes with cost-effective solar devices in established neighborhoods where the use is in accord with existing zoning and where due process has been given.
- (4) Deny protection in retrofitting cases where the burden that would be imposed on a complaining neighbor clearly outweighs the potential benefit to the owner of a solar building.

- (5) Have a built-in flexibility to adapt to the availability of new technologies.
- (6) Minimize the administrative expense to the structure's developer, builder, and owner and enforcing jurisdiction.
- (7) Minimize delay.
- (8) Arbitrate differences between neighboring landowners to reduce the likelihood of litigation between neighbors.
- (9) Allow private, alternative agreements among adjacent property owners.
- (10) Be politically acceptable.
- (11) Provide for all types of property zones.
- (12) Include standards for zoning boards telling them which variances or special uses should be allowed.⁶

This list of criteria for evaluation was also proposed in a shortened version in Solar Law by Sandy F. Kraemer. Michigan can provide an acceptable framework for solar utilization, both active and passive in nature. Local governments are thought to be the best director of energy conservation, but some zoning ordinances actually have prevented the best possible siting of solar collectors due to height limitations as well as setback requirements. Susan E. Mason indicated that an examination of local ordinances is an important ingredient in the building of a community energy perspective.⁷ Ms. Mason analyzed the City of Ann Arbor's zoning ordinance and proposed changes that would promote more energy efficient land use as well as transportation schemes. Although transportation schemes were not included in the literature review in this thesis, they

do play an important role in energy use, as Americans have a love affair with the automobile!

Legal Mechanisms

Several legal mechanisms are available to protect solar access rights. Many have existed for some time, however, a number of theories emerged during the energy crisis. Among the oldest in England was the "Ancient Lights Doctrine," which grants property owners a limited amount of indirect sunlight if that light has been flowing through the windows⁸ without interruption for a given number of years. Over a period of years, English law permitted property owners to acquire a prescriptive easement (a right to use another's property which is not inconsistent with the owner's rights and which is acquired by a use, open and notorious,⁹ adverse and continuous for the statutory period, to continued unobstructed access. It was originally adopted in the United States, and then dropped from case law consideration, as American courts did not adopt the legal treaties. Japan also has a legal doctrine in regard to sunlight. Japan views sunlight as a treasure for its amenities and access to sunshine is protected by law. In 1976, Japan's Building Standard Law was revised to provide¹⁰ solar guidelines to local governments in Japan.

Solar access may affect land uses. The "due process" clause of the U.S. Constitution--that which declares that no person shall be deprived of property without due process of law--sets the bounds within which solar access regulation is

to operate. Gail Hayes indicated it is doubtful that a health purpose by itself will support a solar access law, but laws and regulations promoting general welfare of the community are specifically authorized by most zoning enabling acts.¹¹ Ms. Hayes indicates courts are likely to consider the degree to which the state and local government have formally committed their police power authority to the general welfare goal of encouraging solar energy systems. To implement that commitment, the purpose and authority sections of a Comprehensive Plan should be expanded to specify that solar access protection is a public purpose. The public purpose section would then lend legal support for solar access zoning.

Solar access rights established by city ordinance were challenged in Miami in Fountain Hotel Corporation v. Forty-Five Twenty Five, Inc.¹² In this landmark case, the court ruled that the Eden Roc Hotel could not prevent the Fountainbleau from adding awnings where it blocked the sun from reaching Eden roc's swimming pool. On the other hand, prescriptive easements created by the Ancient Lights Doctrine were not upheld in the United States courts and confusion continues to exist as to the legal validity or right to create light easements.

Another type of legal mechanism is the negative easement. An easement is an interest in land which is in the possession of another party but gives the owner of the interest a limited use or enjoyment of the land. The land

benefitting from the easement is described as the dominant estate and the land restricted by the easement the servient estate. Thus, being an interest in land, it involves the burdens and protections of traditional real property. It also involves title.¹³ The dominant estate must be able to exercise a veto power over the servient estate and keep the servient estate owner from utilizing the dominant owner's property in such a manner as to create a shadow on the servient owner's collector. Thus, solar easements are negative in nature. The modern trend in judicial interpretation is to make easements in gross a valuable interest in land and alienable, heritable, and assignable. An easement connection to land is better than a connection to a person.

Solar easements can be described as appurtenant or running with the land or of that character of interest and should be described in such a way as to make them appendant to specific dominant and servient properties. Conveyance is the safest and most common method of creating an easement, with all the formalities attendant to conveyance of real property. Easements for light and air can be created by grant, conveyance, or reservation. They can also be created for particular buildings.

Two types of legislation relating to solar easements have been proposed:

- (1) That requiring solar easements to be in writing and be subject to the same conveyancing and recording requirements as other easements; generally requiring of



angles, terms and conditions of the grant (including conditions under which it will be terminated), and any compensation to be paid. A clause stating that the act is necessary for the public peace, health, and safety is generally included. (Colorado's Solar Easement Statute is of this type and is discussed later in the legislation section.)

- (2) The granting of some type of easement for sunlight to the owner of a building which uses solar energy for heating or cooling.¹⁴

The advantage to this type of legal mechanism is that it is shaped to fit individual sites and system requirements. No public expenditures, red tape, or permission are required. It is also more flexible than restrictive covenants. The disadvantages include its voluntary nature and that collector owners could choose not to involve attorneys in the process. In addition, the cost of purchasing a solar easement may reduce the cost-effectiveness of solar energy, as it may cost considerable amounts in attorney fees.

Solar easements will remain difficult to describe legally because of the relationship of the sun to the earth. Shadow variables include land, slope, terrain, solar orientation latitude, time of day, and height of potential obstructions. Problems with this type of legal mechanisms include highly technical information included in the solar easement.

However, certain requirements for solar easements have been suggested by Hayes, which would include:

- (1) angles at which the solar easement extends over restricted property;

- (2) any terms or conditions that specify the length of the grant or make provisions for its termination;
- (3) any provisions for compensating the owner of the property benefitting from solar easements in the event of interference with the use of the easements; and
- (4) any provisions for compensating the owner of the property burdened by the solar easement from maintenance of the easement.¹⁵

Another approach used is the use of the Common Law Doctrine of "private nuisance." Nuisance, as loosely defined, pertains to an act by another if it involves a substantial and recurring invasion of one's interests in land.¹⁶ This would involve shadows as nuisance on collectors.

A public nuisance is defined in law, as that activity which interferes with the rights of the community at large. Experts agree in stating they doubt that existing nuisance law would solve the solar access problem, as courts seldom call a particular use of property a "nuisance" if the legislature, through zoning laws, specifically authorizes that use. For example, municipalities could simply declare shadows falling on solar collectors to be a public nuisance. Casting of a shadow as a public nuisance rests in the police power: sic eter tuo ut alienum non laedas (so use your own¹⁷ that you do not injure that of another). Two positive aspects of this type of legal mechanism are that no legislation is required and the balancing of interests and choices occurs.

Problems, however, do exist with the nuisance approach. A public nuisance is a crime against the state--the state

must sue; and in a private nuisance the individual must sue. Lawsuits are necessary in each case; owners of restrictive property may truly deserve compensation, but none would be available in public nuisance. In addition, injunctive relief may not be available in many jurisdictions. No security would be available until after installation of the collector. Another problem exists in that access protection may not be integrated with the comprehensive plan: it could inflict restrictions on random properties, thus the resolution of conflicts could be extremely burdensome on all parties.

The trespass doctrine is dismissed as a viable legal control mechanism, as an invasion of the landowner's exclusive possession of property is required. This is an illogical analogy.

Prior appropriation doctrine with an analogy to water law has not yet been explored. This water law analogy might only be applicable in western states of the United States as a legal means of solar access rights. The appropriate doctrine has not been used in the East. Sunlight, like water, is an important energy resource that is public in nature. This "first in time first in right" doctrine seems a poor way to protect solar access, as among the most obvious problems are the questions of beneficial use usually associated with the prior appropriation doctrine and the fact that case by case decisions would be made. The riparian doctrine of water law used in the Eastern United States

again would not be an appropriate means of protecting solar access rights.¹⁸ The riparin doctrine states first in time, first in right, which would be akin to solar access rights as they exist today.

Restrictive covenants can work either for solar access rights or against them. These legal mechanisms involve deed restrictions. This type of legal mechanism might be the best used on new tracts of land. It is worth noting that it is critical that these covenants be written in clear, precise language, otherwise defendants could successfully argue that they were ill-informed and deprived of their right to due process. The purchaser must always have notice of the obligations. However, this technique is of little help to established neighborhoods or industrial land.

The transfer of development rights (TDRs) approach might also be a legal technique useful in the securing of solar access rights. This legal mechanism allows the development rights of any lot governed by zoning laws that specify height, densities and setbacks, etc., to be transferred or sold to other lots. What is "sold" is not air rights but the right to build. Restricted property owners would be able to sell any development rights they could not use.

The most famous case involving this type of mechanism¹⁹ is Penn Central v. City of New York, which involved the transfer of certain development rights from New York's Penn Central Station. This same principle might be applied to

solar access rights as well. This would seem a very complicated mechanism for dealing with the solar access issue, as technical details of solar access are extremely difficult to describe.

Eminent domain might also be used as a tool for solar access rights control. This would involve the power of the sovereign (municipality) to take private property, with just compensation, for public use or public benefit without an owner's consent. This very effective government tool is the strongest form of land use control. The government actually acquires, rather than merely regulates private property. Thus, a potential "taking" issue is avoided. A "taking" occurs when a government has used police power to regulate land, but the regulation is so stringent that no reasonable beneficial use of the land remains. When only a few properties are suitable for solar retrofit, police power regulations such as zoning might be successfully challenged by landowners who would not benefit from the regulation but who would have to bear the burden of it.²⁰

This technique would be used instead of zoning, as a municipality could condemn solar access easements, compensate restricted landowners for them, and then assess collector owners for the value of them although this doctrine may be too extreme to apply to solar access.

The final category of literature reviewed was that of the individual State and local legislation. Figure 1 shows the results of a survey conducted by the author during

1984. Fifty state energy offices were included in the survey, as well as the District of Columbia.²¹ Thirty-two state energy offices responded to the following two questions: (1) Does your state have any type of solar access legislation? and (2) Do any of the municipalities within your state have any legislation dealing with solar access? Nine state energy offices stated that neither the state nor any municipality has solar access legislation. However, twenty-four state energy offices answered in the affirmative to are to the survey questions.

It is widely known that the state of Michigan has no legislation at the state level dealing with solar access nor do any of its municipalities. Recently, a report was issued on the subdivision regulations in the state of Michigan which are under revision; however, no mention was made of energy efficient land use.²² Subdivision regulations deal exclusively with new developments. In residential development already in existence subdivision regulations would enhance solar energy use.

Figure 1

State Energy Response Survey

<u>State</u>	<u>State Statute</u>	<u>Local Ordinance</u>	<u>Comprehensive Energy Study</u>	<u>Subdivision Regulations</u>
Iowa	X			
North Dakota	X			
New Mexico - Albuquerque		X		
New Jersey	X	X		X
Missouri	X			
Tennessee	X			
Virginia	X	X		
Alabama (Tuscaloosa)				X
Colorado	X	X	X	
Georgia	X			
Indiana		X		
Idaho	X	X	X	
Nebraska (Lincoln)		X		

Figure 1 (continued)

State	State Statute	Local Ordinance	Comprehensive Energy Study	Subdivision Regulations
Kentucky	X			
Minnesota	X	X		
Montana		X		
New York		X	X	
Oregon	X	X	X	
Washington	X	X	X	
Florida (Access - not easements)	X	X	X	
Wisconsin	X	X	X	X
Connecticut			X	
California	X	X	X	X
Maryland		X		

Figure 1 (continued)

Key

- *State Statute - State law which authorizes local community adoption of solar easements.
- *Local Ordinance - Local municipality has enacted solar access zoning ordinance with or without specific state legislation dealing with solar access.
- *Comprehensive Energy Study - Study conducted by the state examining state energy needs.
- *Subdivision Regulations - Adopted by local unit of government dealing with new residential structures and solar access

FOOTNOTES - CHAPTER II

¹
Fredric Strom, ed. 1982 Zoning And Planning Law Handbook (New York: Clark Boardman Co., 1982), p. 391.

²
Frank S. So, Israel Stollman, Frank Beal, and David S. Arnold, eds., The Practice of Local Government Planning (Washington, D.C.: International City Management Association, 1979), p. 416

³
Lecture by Keith Honey, Professor Urban Planning, Michigan State University, East Lansing, MI, April 5, 1983.

⁴
Fasano v. Bd. Citys Commr's, 264 OR 574, 507, P 2d, 23(1973).

⁵
Alan S. Miller, Gail Hayes, Grant P. Thompson, Solar Access and Land Use: State of the Law (Washington, D.C.: Environmental Law Institute, 1977), p. 11.

⁶
Ibid.

⁷
Susan E. Mason, "Report to the Department of Commerce/Energy Administration . . . Local Ordinances as Barriers to Energy Conservation . . ." (Ann Arbor, MI, August, 1980 p. 38) (Mimeographed).

⁸
Sandy Kraemer, Solar Law (Colorado Springs: Shepard's Inc., 1978), p. 230.

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Alan S. Miller, Gail Hayes, Grant P. Thompson, Solar Access and Land Use: State of the Law (Washington, D.C.: Environmental Law Institute, 1977), p. 6.

¹⁰
Letter from Schun Hagiwara, Architect, July 1983.

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Fredric Strom, ed. 1983 Zoning and Planning Law Handbook (New York: Clark Boardman Co., 1983), p. 31.

¹²
Fountain Hotel Corporation v. Forty-Five Twenty-Five, Inc. 114 SO 2d, 357, 181, Fla. Supp. 74 (1959).

¹³
Robert Anderson ed., American Law of Zoning (2nd ed.; Rochester, N.Y.: The Lawyers Co-operative Publishing Co., 1968), p. 555.

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Carolyn Bennett, State Energy Response Survey (East Lansing, MI, 1984).

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CHAPTER III

Introduction

Vienna Township, Michigan, located twelve miles north of Flint and thirty-five miles south of Saginaw, was selected as a representative community within the State of Michigan for the purposes of this study. The township is experiencing significant population growth; from 1970 and 1980, Vienna Township doubled in size. A detailed description of the township follows, along with an examination of the comprehensive plan.

The author has been a life-long resident of the community and served as Downtown Authority Director for the City of Clio, which lies at the center of the township. The City of Clio is an independent entity within Vienna Township, however, and will not be included in the study.

Natural Features

Most of Vienna Township lies within the Flint River watershed and groundwater is the principal source of water for domestic use. The township is relatively flat and lacks extreme topographic relief, as its land slopes gently to the northwest. Due to the gentle slope of the land within most of the township, it places little restriction on development. However, soil and slope characteristics in

nearly one-third of the township do severely limit development potential. Figure 2 displays these natural feature limitations to development.

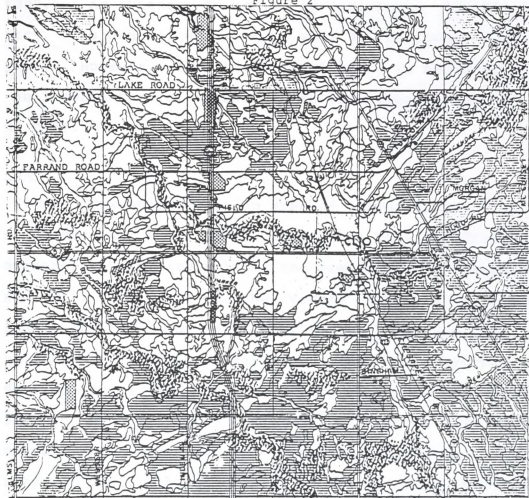
Climate

Vienna Township lies within an area of humid continental climate. The area is subject to a wide temperature variation; the mean temperature is 46.8 degrees Fahrenheit and Genesee County receives approximately 37.5 inches of snowfall per year. The township has approximately 6373 heating degree days per 10 year period. (A heating degree day is defined as a uniform 24-hour period where the average temperature for the day is below 65 degrees Fahrenheit.)¹ A heating degree day is relevant for consideration because normally buildings do not require heating on these days.

Demographics

Vienna Township has a population of 12,914 and is located in northern Genesee County and was established in 1837. Vienna Township is primarily a "bedroom community"; however, the community was first a trading center along the Dixie Highway. Lumbering was the first industry in Vienna Township. By the end of the lumbering era, the township's growth had temporarily ended, and agriculture became the major community industry.² The median family income is \$20,468 and the median home value is \$41,800.

Figure 2



NATURAL FEATURES LIMITATIONS TO URBAN DEVELOPMENT VIENNA TOWNSHIP

LEGEND:

No Significant Limitations to Urban Development



Natural Features Present Moderate Limitations to Urban Development



Natural Features Present Severe Limitations to Urban Development



Valuable Natural Features Suggest Lands Should be Exempted From the Urbanization Process to Preserve These Features



Soils Information Not Available



GCMPC 6/73

0 4000'

SCALE

SOURCE: Soils Information Based Upon 1966 Genesee County Soil Survey and Soils Limitations Rating System, Soil Conservation Service, USDA

A high rate of growth has occurred in Vienna Township, beginning in the 1920s and extending into the present. The population of Vienna Township is expected to grow to 17,100 by 1990.⁴ As Vienna Township is primarily devoid of industry, residential development will be the focus of this analysis. However, commercial development is beginning to play an important role, especially at the intersection of I-75 and M-57.

Land Use

Vienna Township covers an area of approximately 22,116 acres, excluding the City of Clio. The City of Clio is approximately one square mile at the center of the township. During 1971, members of the Vienna Township Planning Commission updated a document entitled 1968 Land Use Data by means of a "windshield survey." One- and two-family residential units were found to occupy approximately 10.47 percent of the total area. Most of the section line roads throughout the community are partially developed. The majority of dwellings along these roads are of a non-farm nature. These dwellings are developed on lots relatively small for rural areas and most of them rely on septic tanks and private wells.⁵

About one-third of the dwellings in the community have been built on unplatted lots of irregular size and depth. Recognizing this, the Vienna Township planning documents stress the need to cluster development, due partially to the

economics of providing sewer services to the expected growth areas in the township. The largest amount of platted land is located west of Clio and was platted coincident with construction of I-75.

Multiple family residential, mobile home parks, and all other dwellings were found to occupy 14 acres, or 0.06 percent of the total land area. Although a trend emerged in the 1970s toward more mobile home parks, it seems to have leveled off. In 1970 approximately 265 acres were zoned to accommodate mobile home development. Figure 3 is an updated map of the land use in Vienna township.

The Michigan Department of Health surveyed housing conditions, and rated approximately 83.9 percent of the housing as "good"; 14.4 percent were rated "fair"; 2.2 percent were rated "poor."⁶

Typically, problems exist in this growing community. Compatibility of land uses is a concern; for example, single family use is directly exposed to the intense activity of commercial or industrial use. Urban sprawl is cited as the most important potential problem,⁷ urban land uses are scattered, and rural sections contain residential dwellings on small lots, while the urbanized areas consist of scattered building development. Transportation is a major factor in the growth potential of the community as I-75 bisects the township. In some areas, the lands that have been preempted for residential uses may be better suited for more intense uses. Water is supplied via a twelve inch

transmission line from the City of Flint. The township is also served by sanitary and storm sewers.

Vienna Township is serviced by the Clio Area School System, including a high school, middle school, and three elementary schools. Recreational facilities are limited in the township, although the City of Clio has a municipal pool and a very fine park and bicycle path system along the Pine Run Creek.

Government

Vienna Township is a charter township and is governed by a five member board of trustees. The Planning Commission consists of nine members with the Township Supervisor serving on the commission. It was created under Public Act 168,1959.

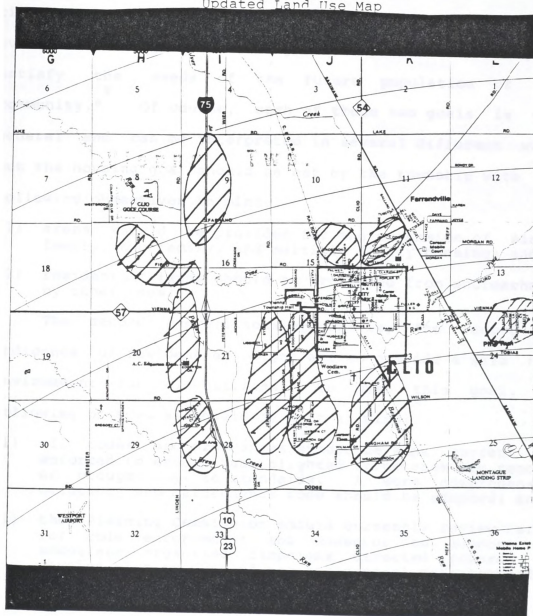
Energy Needs

Vienna Township can best be described as a suburban community with a high potential for growth. Although no comprehensive energy studies have been done within Genesee County or in Vienna Township, consumer information for energy uses is available through the Michigan State University Cooperative Extension Service Energy Agent Andrew Nelson offers an Energy Specialist Course at a minimal fee to residents of the county.

Comprehensive Plan

During August 1973, the Genesee County Metropolitan Planning Commission devised a comprehensive plan for Vienna

Figure 3

Residential
Updated Land Use Map

Source: Vienna Township Comprehensive Plan
August 1973

Residential Area 

North

Township. The general overall development goal stated in ⁸
Vienna Township Comprehensive Development Plan was: "To
 provide a high quality of life for all present and future
 citizens of Vienna Township." Specifically, the first
 overall housing goal is, "To provide sufficient housing to
 satisfy the needs of the future population of the
 community." ⁹ Of course, each of these two goals is very
 general and can be interpreted in several different ways,
 but the housing goal should be met by the township with the
 following objectives in mind:

- (1) areas should be provided for the expansion of single family, two family, and multiple family housing; and
- (2) residential lands should be protected from encroachment by other uses.

The second overall housing goal is, "to reduce the
 incidence of residential blight and to provide a safe home
 environment for all citizens." To meet this goal, the
 following objectives should be kept in mind:

- (1) all codes and ordinances should be kept current and enforced to ensure that blighted structures are removed or brought up to standards. A more comprehensive occupancy and maintenance code should be adopted; and
- (2) the Planning Commission should currently review areas for code enforcement and endeavor to support and encourage organized campaigns directed toward the physical improvement of the residential neighborhoods.

The third overall housing development goal is, "To
 provide a healthful home environment for all citizens." ¹⁰

The two objectives to meet this goal are:

- (1) pollution and noise abatement provisions should be included in the Vienna Township Zoning Ordinance; and

- (2) extension of public sanitary sewers should be encouraged in all areas of concentrated residential development, and no such development should be permitted where sewer and water do not exist or cannot be provided.

The fourth overall housing goal is, "To create a functional pattern of neighborhood units with a compatible relationship to other activities."¹¹ The three objectives designed to meet this goal are:

- (1) a community development plan should provide for neighborhood units which have relatively easy access to essential services and facilities;
- (2) zoning and subdivision ordinances and policies should preclude conflicts between residences and other land uses; and
- (3) residential land use should be coordinated with a transportation plan that routes through-traffic around residential neighborhoods.

Goals pertaining to commercial facilities, transportation, and industrial facilities are not the focus of interest in this study and thus will not be examined. However, since the focus of the study is energy efficient land use, and more specifically residential solar access, environmental goals will be examined. The first overall environmental goal is, "To preserve irreplaceable natural features with amenities that characterize them as environmental assets to the community."¹² The two objectives to meet this goal are:

- (1) open space provisions should be included in the community development plan and the Vienna Township Subdivision Regulations should provide for the dedication of open space or parkland; and
- (2) floodplains within Vienna Township should be protected from being obstructed by development.

The second environmental goal is: "To encourage development procedures which have a positive rather than negative effect on the living environment of Vienna Township."¹³ Three objectives were developed to meet this goal:

- (1) each new development should be considered in regard to its contribution or negative impact upon the townscape of Vienna Township as well as its impact upon adjacent properties and locational desirability;
- (2) community organizations should be encouraged to carry out environmental improvement programs; and
- (3) Vienna Township should enact cluster development procedures and provisions for planned unit development in its zoning ordinance, and should encourage developers to pursue these avenues.

The objectives examined in Vienna Township's Comprehensive Plan are defined as "conditions not yet realized, which the community tries to attain." Goals are not necessarily attainable, however, objectives are "targets for achievement." With these two definitions in mind, it is important to explore the recommendations of the land use plan in relationship to residential development. More importantly, how can these overall general goals and objectives be arranged within the physical constraints of the township to provide a rational plan for development? A crucial question in the land use plan is: "What lands can best accommodate residential growth and the facilities¹⁴ needed to support such growth?"

With the natural features constraints, development should be concentrated in the central and southern portions of the community. Although suitable land for residential

development is not abundant, the "neighborhood" concept is suggested as a type of development procedure. This concept revolves around the elementary school, with major streets as boundaries, separation of residential and nonresidential uses, some neighborhood convenience shopping facilities, and interior streets designed to encourage a slow, low volume traffic movement.

Projections estimate 3,770 households in 1980 and 5,344¹⁵ households in 1990. It is likely that densities will not exceed the eight dwelling units per acre. From 1960-1970, multiple family dwellings increased by 43 percent. During that same time period, single family homes decreased from 85 percent to 81 percent of the total number of housing units.¹⁶ This type of trend is expected to continue into the 1990s, with multiple family dwellings occupying a greater percentage of the dwelling units.

Spatial relationships ideally include low intensity urban residential uses which should be located where they can be buffered from activity generated by commercial or industrial uses. Agriculture and rural estate development will most probably become urbanized during the planning period (1970 to 1990). The rural character of the land should be preserved, therefore, it is advisable to restrict agricultural and rural estate areas to very low residential densities.

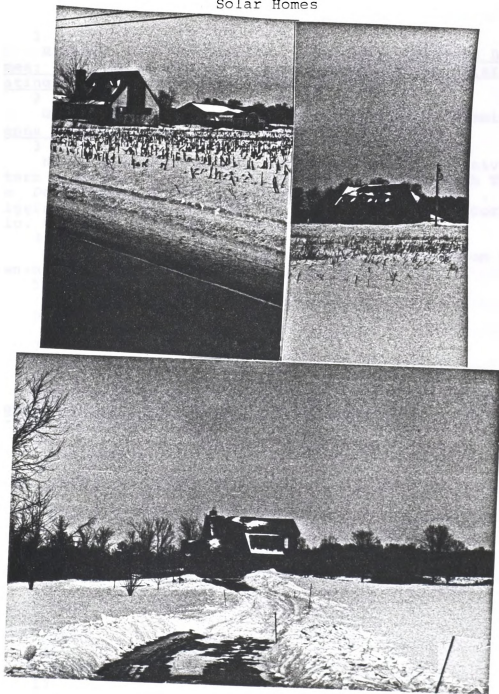
With these considerations developed in the Vienna Township comprehensive plan, the next area of interest is

the regulation involved in accomplishing the goals and objectives. Zoning is a very important and powerful tool in land use regulation. The Michigan Township Rural Zoning Act (Public Act 184, 1943, p. 264) enables for townships to zone. However, not until the mid-1950s did Vienna Township regulate its land through zoning. Vienna Township's Planning Commission, in cooperation with the Genesee County Metropolitan Planning Commission, revised the Vienna Township Zoning Ordinance in 1973.

Summary

Although the information examined throughout Chapter III is approximately twelve years old, it is the best available information for the township. Particularly lacking is relevant information on energy needs of Genesee County. The comprehensive planning document for Vienna Township was very accurate in its prediction of population for 1980. Chapter IV reviews the zoning ordinance for Vienna Township, with consideration of energy efficient land use technique discussed in Chapter I as well. Specific recommendations also are proposed. Following in Figure 4 are three homes in Vienna Township which utilize solar access. Solar access goals or policies are missing from the comprehensive plan in Vienna Township. The foundation of zoning rests within the comprehensive plan and therefore must be added.

Figure 4
Solar Homes



FOOTNOTES - CHAPTER III

¹ Richard H. Montgomery, The Solar Decision Book of Homes: A Guide to Designing and Remodelling for Solar Heating, (New York: Wiley, 1982), p. 10.

² Genesee County Metropolitan Planning Commission, Vienna Township Planning Analysis, 1972, p. II-3.

³ Nate Jonker, "Report to Michigan State University Extern Program . . . on the Clio Community Growth Through the Development of Participatory Decision-Making . . ." (Higgins Lake, MI: Staff to State Senator Gary Corbin of Clio, November 10, 1984). (Mimeographed.)

⁴ Genesee County Metropolitan Planning Commission Vienna Township Planning Analysis, 1972, p. I-1.

⁵ Ibid., p. III-10.

⁶ Ibid., p. V-3.

⁷ Ibid.

⁸ Genesee County Metropolitan Planning Commission, Vienna Township Comprehensive Development Plan, 1973, p. II-3.

⁹ Ibid., p. II-4.

¹⁰ Ibid., p. II-5.

¹¹ Ibid., p. II-13.

¹² Ibid., p. III-2.

¹³ Ibid., p. III-5.

¹⁴ Ibid.

¹⁵ Ibid.

¹⁶ Ibid., p. III-7.

¹⁷ Private collection of Carolyn Bennett, Vienna Township, Winter 1985.

CHAPTER IV

Introduction

The Vienna Township Zoning Ordinance does not prevent solar access rights, but neither does it protect them (refer to Figure 4 on the previous page). The homes in Vienna Township are using solar systems as an integral part of the heating mechanism. Building permits were issued for each of the homes.

Active solar energy systems are those in which the collector and thermal storage components are separated and require a pump or a fan to circulate the solar heated fluid between them. The location of this type of collector is optional; rooftops are commonly used. A passive solar energy system is integrated, requiring no transfer device for solar heated fluids. It is usually built as an essential component of the building rather than as an addition. Each of these types of solar systems must have access to the sun's rays to function properly.¹ Vienna Township's Zoning Ordinance will be reviewed in light of the information reviewed in Chapter II and the Comprehensive Plan for Vienna Township will also be examined and amendments recommended to include solar access considerations.

Having examined the various legal options including zoning as a means of protecting solar access, a question arises as to what is most applicable to a small township, such as Vienna Township, with a high growth potential and a zoning ordinance which neither protects nor encourages solar access. In addition, its comprehensive place is also silent on this issue. In the State of Michigan, no specific statute addresses the solar easement issue. No local government has integrated solar access into the residential or commercial zoning code.

Soldiers Grove, WI

A similar small community in Wisconsin is now encouraging a solar access and has integrated solar access regulations into its zoning ordinance. Soldiers Grove, Wisconsin, population 677, has added Section 2.10 to an otherwise ordinary zoning ordinance. This small town has gained national recognition and calls itself "America's² First Solar Village." The relevant section of the zoning ordinance is as follows:

Ordinance 80-2, Section 2.10 Solar Heating

Where it is feasible to collect sufficient sun new-non-residential buildings requiring heating shall be at least 50 percent solar heated. Feasibility shall be defined in the following manner. Between the hours of 9:00 a.m. and 3:00 p.m. on the winter solstice (the shortest day of the year) there shall be a clear solar access at the building site, not obstructed by any building, equipment, trees, or shrubs which would block the south face of the building, at wall, and/or roof line.

Graphic representation of solar access shall be required in Application for Zoning Permit.

The use of passive solar heating system is

encouraged, active collection devices must be integrated with the surface to which they are affixed, parallel with the wall or roof to which are attached and not projecting from that surface a distance greater than that which may be required for weatherproofing.³

The Village of Soldiers Grove, Wisconsin, does not have a provision in its zoning ordinance for residential solar access. "America's First Solar Village" is certainly lacking in its land use regulation on a local level. The State of Wisconsin provides in Chapter 354, Laws of 1981,⁴ a legal mechanism for local municipalities to issue solar access permits and provide solar access protection. These two legal options have permitted local municipalities to deal with the solar access issue and its relationship to energy efficient land use. Wisconsin is a state with similar climate to Michigan. Soldiers Grove is a much smaller community than Vienna Township but a parallel can be drawn. Both communities are not technologically advanced, nor do they have a specific need for solar access above and beyond the considerations each local municipality has in relationship to energy and land use previously mentioned. It can be done in Vienna Township and was done in Soldiers Grove, but will it be? This is the relevant question. Many communities throughout the United States have enacted differing types of solar access legislation. Large cities such as Los Angeles, California, and Portland, Oregon, have⁵ or will enact solar access protection provisions.

Concern for solar access protection in light of Michigan's dependence on other states for fuel makes

Michigan an ideal location. Why hasn't Michigan done more? Chapter V will attempt to deal with this question.

Vienna Township, MI

The question of how best to accomplish solar access as a legal protection in an energy efficient land use scheme is the relevant point of this chapter. The question of solar access is complicated and in Chapter II many legal mechanisms were examined. None of these legal mechanisms fit every case. In the survey conducted by the author of state energy offices, states vary in approaches, in relevance, and in comprehensive studies of energy needs.

Vienna Township may not need another layer of legality to foster energy efficient land use. It is the purpose of this chapter to apply findings to the case study area. The township is not highly sophisticated in its government, nor is it sophisticated in its planning documents. The township is entirely dependent on the Genesee County Metropolitan Planning Commission for its planning expertise. The zoning ordinance was to be revised by Mr. Ron Nino, but the township supervisor rejected Mr. Nino's assertions which⁶ included various energy efficient land use techniques.

Therefore, on the premise of "no new regulations," Vienna Township's Zoning Ordinance will be examined and revised to remove legal barriers to energy efficient land use, specifically solar access. Additionally, the Vienna Township Comprehensive Plan will also be analyzed and amended to include goal of energy efficient land use through

a solar access objective. Without adding a new layer of regulation where it is not specifically needed another goal will be accomplished: political considerations will be minimized. Added regulations usually mean added costs; not so here as new costs would be minimized by the lack of need for new expertise in staffing. The revisions will be simple as they take away restrictions or interchange them, not adding any new regulations.

In 1978, Public Act 184, 1943, the Township Rural Zoning Act, Section 125.271 was amended by Act 637 of 1978.⁷ This amendment provides that a township may regulate and restrict the use of land and structures within its limits to meet energy objectives. Section 1 of the Township Rural Zoning Act now states:

125.271 Zoning Ordinance for regulation of land development and establishment of districts; division of township into districts; purposes; uniform provisions, jurisdiction relative to wells.

Sec. 1 The township board of an organized township in this state may provide by zoning ordinance for the regulation of land development and the establishment of districts in the portions of the township outside the limits of cities and villages which regulate the use of land and structures; to meet the needs of the state's citizens for food, fiber, energy, and other natural resources, places of residence, recreation, industry, trade, service, and other uses of land; to insure that use of the land shall be situated in appropriate locations and relationships, to limit the inappropriate overcrowding of land and congestion of populations, transportation systems, and other public facilities; to facilitate adequate and efficient provisions for transportation systems, sewage disposal, water, energy, education, recreation, and other public health, safety and welfare. For these purposes, the township board of an organized township may divide the township into districts of such number, shape, and area as it considers best suited to carry out this act.⁸ (emphasis

added)

For the first time the above amendment of the state zoning enabling statute provided that zoning could be used to meet the needs of the state residents for energy. However, in the zoning ordinances created throughout the state "energy" is rarely, if ever, used. This change is actually made quite easily. Each statement of intent or purpose can be amended to reference the need to consider energy use and energy conservation in the planning process. The reality that energy plays an indirect role in all planning decisions that developers make because energy figures in cost should not allow us to hesitate to make a visible local government commitment, in writing, to consider energy when decisions about land use are made.

Zoning Ordinance

Following is the Vienna Township Zoning Ordinance

Section 1.00 Purpose:

The purpose of this ordinance is to promote the public health, safety, morals, and general welfare; to encourage the use of lands in accordance with their character and adaptability; and to limit the proper use of land; to avoid overcrowding of population; to provide adequate light and air, to lessen congestion on the public roads and streets; to reduce hazards to life and property; to facilitate adequate provisions for a system of transportation, sewage disposal, safe and adequate water supply, education, recreation, and other public requirements; and to conserve the expenditure of funds for public improvements and services to conform with the most advantageous uses of land, resources, and properties, and with reasonable considerations among other things, to the character of each district, its peculiar suitability for particular uses, the conservation of property values and natural resources, and the general and appropriate trend and character of land, building, and population development, as studied

and recommended within the general plan by the Vienna Township Planning Commission, and endorsed, and regulations adopted, therefore, by the Vienna Township Board.⁹

The Purpose section should also be amended to include the following: "to encourage the use of solar energy, to remove barriers to the use of solar energy, and to provide a means of homeowner protection of access to sunlight for existing or proposed solar collectors."

Section 2.08 under Article II Definitions Building, Height of: The vertical distance from the grade at the center of the front of the building to the highest point of the roof surface in a flat roof, to the deck line for mansard roofs, and to the mean height level between eaves and ridge for gable, hip and gambel roofs.

The addition to this section which would guarantee solar access would be as follows: "in considering a modification of the height limits of this code, the zoning board of appeals shall not allow a modification if such modification will significantly impair solar access of buildings or solar collectors which exist on adjoining property." This addition would curtail problems of solar collectors being placed on roofs.

This addition should be made to all residential zoning districts including Residential Agricultural (RA) District, Section 4.08, Residential Urban (RU-1), Residential Suburban Agriculture District (RSA), Section 5.08, Urban District (RU-2), Section 6.08, Residential Urban Multiple Family (RU-3), Section 7.09, Mobile Home Park District, Section 8.03.

Article II Definitions, Section 2.01, is as follows;

Accessory Structure: A detached structure on the same lot with, and of a nature customarily and subordinate to, that principal structure.¹¹

This section should be amended to include the following: "Accessory buildings or structures shall not be erected in any required front open space. Solar collectors are not considered accessory buildings or structures for purposes of this section and the surface area of detached solar collectors is not to be used in computing lot coverage."

This addition will exempt solar collectors from provisions which govern what portions of a lot may be covered by buildings or structures. It may be desirable to place a collector on the ground and it is important that the zoning ordinance not use the surface area of the collector in computing lot coverage.

Another way to insure that local zoning ordinances do not prohibit the use of solar energy components and systems is to amend the local ordinance to explicitly permit the use of solar energy. This may be viewed by the local officials as additional regulation and must be balanced against the other suggestions made throughout this study. A very simple addition, however, might be as follows: add solar energy systems and components as a permitted use on a district by district basis.¹² This addition would be made to Article XIV Administration, Section 4.01 Conditional Use Permit

Review Procedures under subsection A, Intent:

These conditional use permit review procedures are instituted to provide an opportunity to use a lot for an activity which under usual circumstances, would be detrimental to other permitted land uses and cannot be permitted within the same district, but which use can be permitted under circumstances unique and providing protection to adjacent land uses. These procedures are adopted to provide guidelines for the Township Planning Commission and the Township board, to follow in arriving at any decision over which such Commission and board has jurisdiction, and to provide for the public health, safety, morals, and general welfare, as well as to provide for the interest of the property owner.¹³

Street orientation and building placement are important considerations in solar access. In residential subdivisions, streets running east to west provide greatest protection of solar access because the lots will then be longest along a north-south axis. This consideration should be used when site plan approval is sought.

Section 14.02 Site Plan Review Procedures: this section amended to include a requirement that at least 80 percent of the street-length proposed for construction as part of area plan shall be laid out in an east-west direction. If developer can demonstrate to the planning commission that this requirement can be met at a much higher than otherwise cost, bonuses in lot size, parking, street width, zero lot line, or other design features can be allowed to compensate the developer.

Section 3.12 Yard and Lot Requirements under Article III General Provisions of the Vienna Township Ordinances states in subsection 2 of the following:

Yards: All front, side, and rear yards shall be the minimum perpendicular distance measured from the

principle structure excluding all projections not exceeding three (3) feet in length from the structure wall, nor measuring three (3) feet in width to the representative front, side, or rear lot provided, however, the point of measurement of such front, side, or lot line shall be at a point within the subject lot and on a line which will measure not less than (20) feet in length and is parallel to the side of the structure from which the distance is measured, or a parallel line to the lot line and measured to another parallel line tangent to the nearest point of the structure.¹⁴

Setbacks for main structures should be revised to include the following. "Front: front yard setbacks shall be exactly (20) feet for buildings sited on the north side of the street or right-of-way. For buildings on the south side of the street or right-of-way front yard setback shall be a minimum of twenty (20) feet. Rear: rear front yard setbacks shall be exactly (20) feet for buildings sited on the south side of the street or right-of-way. For buildings on the north side of the street or right-of-way rear yard setback shall be a minimum of twenty (20) feet."¹⁵

Solar airspace easements or agreements between neighbors to ensure solar access may be desirable. These negative easements have been previously discussed in Chapter II and will not be further explained here. This type of solar access protection may be useful in communities with a planning staff capable of administration. Vienna Township does not have a planning staff of its own.

Vegetation can be a problem to solar access and the Vienna Township Zoning Ordinance has no specific regulations dealing with vegetation. An entirely new restriction would be needed to accommodate this concern. At the present time

this issue should be dealt with on an individual basis through private agreements. Vegetation which can be controlled on a seasonal basis should be the prerogative of the adjacent property owners. Easements, agreed to by adjacent property owners, to control vegetation can ensure solar access protection on a private level, without government intervention.

Comprehensive Plan

To lend legal credibility and to further other energy conservations within the township an amendment to the Vienna Township Comprehensive Plan should be made. A recommended example might be as follows: "V Goal--To encourage a more energy conscious way of life for all residents." The quality of life in Vienna Township can be improved by allowing citizens to explore alternatives to the high cost of heating their homes in a conventional manner. Energy conservation can improve the public welfare through resource conservation as well as environmental conservation.

Objectives to such a goal might include the following:

"A. The Vienna Township Planning Commission should enact appropriate zoning and subdivision ordinances to ensure solar access.

This would provide one method of energy conservation through solar access."

"B. Transportation routes should be examined to ensure proper energy efficiency in land use.

This may mean drastic changes in the transportation facilities of the future."

"C. Education to citizens should be expanded.

This would begin the process of citizen involvement in exploration of energy alternatives."

Conclusion

The Vienna Township Zoning Ordinance does contain a provision for Planned Unit Developments (PUDs) under Article VI Residential Urban District, Section 6.09.¹⁶ Although the words "energy efficient land use" are not used, they are certainly implied through clustering of dwellings and open space provisions. This provision was added to the township zoning ordinance in the past five years. Don Lee, chairperson of the Vienna Township Planning Commission, was instrumental in making this addition. In numerous conversations with the author Don Lee indicated the reluctance on the part of other Vienna Township Planning Commission members to explore alternatives to the present pattern of land use.¹⁷

FOOTNOTES - CHAPTER IV

¹
Duncan Early and Martin Jaffe, Site Planning for Solar Access (Chicago: American Planning Association, 1979), p. 127.

²
Statement by Ardelle Knutson, Clerk-Treasure, Village of Soldiers Grove, WI, telephone interview, February 12, 1985.

³
Village of Soldiers Grove, WI, Ordinance 80-2, Section 2.10.

⁴
Wisconsin, Solar Access Act, Chapter 354 (1980).

⁵
Peggy Woo-Fairbrook, "Staff Report to California Energy Commission . . . Status of Solar Energy Proposals in cities and Counties Responding to the OAT Survey of June 1980." (Sacramento, CA: California Energy Commission, December 1980). (Mimeographed).

Dr. Daniel Levi, "Report to City of Portland, OR Energy Office . . . On the Portland Solar Attitude Survey . . ." (Portland, OR: Conservation Management Services, Inc. Portland, OR, September, 1984).

⁶
Statement by Max Donovan, Vienna Township Supervisor, personal interview, Clio, MI. April 16, 1984.

⁷
Michigan, Township Rural Zoning Act, Sec. 125.271 (1978).

⁸
Ibid.

⁹
Vienna Township, MI, Zoning Ordinance, Section 1.00.

¹⁰
Ibid., Section 2.08.

¹¹
Ibid., Section 2.01.

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Susan E. Mason, "Report to the Department of Commerce/Energy Administration . . . Local Ordinances as Barriers to Energy Conservation . . ." (Ann Arbor, MI, August, 1980, p. 57) (Mimeographed).

¹³
Vienna Township, MI, Zoning Ordinance, Section 4.01.

¹⁴
Ibid., Section 3.12.

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Susan E. Mason, "Report to the Department of Commerce/Energy Administration . . . Local Ordinances as Barriers to Energy Conservation . . ." (Ann Arbor, August 1980, p. 51) (Mimeographed).

16

Vienna Township, MI, Zoning Ordinance, Section 6.09.

17

Statement by Max Donovan, Vienna Township Supervisor, personal interview, Clio, MI, 1984.

CHAPTER V

Conclusions

The objectives of the study were to provide alternatives in an appropriate framework to reach the goal of solar access protection for residential development. Residential development was the focus of the study as residential homeowners are offered tax credits at the state and federal level and these tax credits end in 1985. The development of solar access legislation which can be incorporated into an existing zoning ordinance is a very interesting prospect. Zoning has only recently begun to be used as a mechanism to protect solar access. Private agreements between neighbors can protect solar access but, they also are not the best way to include solar considerations in its development. Solar access is a complicated issue with many unforeseen implications.

Boulder, Colorado

For instance, the City of Boulder, Colorado has enacted a solar access ordinance, Ordinance 4676 which includes the following:

- 1) a site plan must be drawn showing existing and proposed improvements and
- 2) the determination of the height of the shadow casting portion of the roof and

- 3) the appropriate shadow cast by the proposed structure and
- 4) if the shadow cast is entirely within the property lines, the proposed building or addition is in compliance.¹

The type of ordinance may lead to urban sprawl as residences are placed out of the shadow patterns that develop. The type of residential pattern that may develop under this type of ordinance might lead to a transportation system which actually adds to energy consumption. As greater distances are traveled in automobiles, energy is consumed.

Although Boulder, Colorado has many considerations which Vienna Township does not, such as high rise development, several conclusions might be drawn. Solar access for residential development can be incorporated quite simply into an existing zoning ordinance. Subdivision regulations are mandated by the State of Michigan. However, due to the lack of interest on the part of the Michigan Department of Commerce, Subdivision Regulations Study Committee no recommendations have been made to include energy considerations in these regulations.

More emphasis should be placed on this issue by the Energy Administration of the Michigan Department of Commerce. However, in light of the facts presented local municipalities are faced with the challenge of energy efficient land use. The case law developing is changing the way regulations dealing with solar access are devised.

Second, an amendment to the Vienna Township Comprehensive Plan is not a total solution to the planning problems associated with solar access, as goals and objectives are not always attainable in the "real world" setting. Third, the question of vegetation causing blockage of the sun's rays to solar collectors is a seasonal problem. Fourth, questions of law examined in this study and solar access protection mechanisms may be forced to change as new technologies develop.

Implications

A copy of this study will be sent to the Chairperson of the Vienna Township Planning Commission as well as the Vienna Township Board of Supervisors. The amount of interest generated in solar access in Vienna Township recently has been by residents who are installing solar collectors and panels on their homes. This study may lend knowledge to the present planning commission as they revise the present zoning ordinance.

Limitations

The limitations foreseen prior to the study were: lack of general energy studies for Genesee County and Vienna Township, no new information specifically available on how the county uses energy. This information would have been useful in determining the appropriate legal mechanism to deal with the solar access problem. In a recent issue of the Michigan Energy Journal, Tom Stanton asks the question

"Solar Access: It's nice, but" Does Michigan or any other locality need another layer of legal regulation to protect solar access?² Stanton has suggested that state legislators not waste their time on creating elaborate legal statutes to protect solar users. Stanton further suggests, "The bottom line suggests that local government should deal with the issue via zoning ordinances There are literally dozens of more important, more helpful pieces of energy legislation that could be introduced in Michigan."³

This view lends more credibility to the study in suggesting that a new ordinance to deal with solar access is not necessarily needed. Removal of the barriers that exist in the present ordinances would appear to be sufficient. That, indeed, is the difference applied in this example of Vienna Township.

The planning profession is catching up and in some respects lagging behind. Solar energy is no longer a topic of discussion at the American Planning Association Conventions or at Michigan Chapter Conventions. The majority of literature written on solar access was written prior to 1980. In the past five years new literature on solar access has dwindled considerably. Solar access is no longer a novel idea for planners and they are dismissing it as a subject area as the "energy crisis" worsens.

Recommendations

There are many areas worthy of further study beyond the changing of a township ordinance to include solar access in

residential use. Namely, commercial and industrial structures should also be included. Transportation systems should be studied in relationship to siting needs of solar collectors. Earth sheltered housing and building codes should be studied. This type of structure is intimately attached to passive solar heating needs.

Economics of solar access and land regulation should be compared. A study of planner's awareness of energy needs might also be appropriate. In a recent interview with Roger Hamlin, he suggested that upon an informal survey of his classes, nearly half of the planning students do not believe there is an "energy crisis."⁴

Summary

The Vienna Township Zoning Ordinance has been revised in Chapter IV to include what are, in the author's opinion, the most relevant considerations for solar access. Therefore, land use patterns within the township will begin the process of consideration of solar access. Solar access has unique land siting needs and in light of the past ten years of energy abuse in the United States, it is important to recognize that local governments can play an important role in energy conservation.

Energy conservation is the key to America's energy problem. Conservation and energy waste have been the focus of much literature. The American public is finally becoming educated through its utility bills. The cost of energy

consumption is teaching the American public the necessity to conserve. Chapter I gave a view of the world energy problem. How does the State of Michigan face this "energy crisis"? The most recent building code adopted by the state is not the most energy conscious.⁵ Michigan seems to lag behind other states in energy conservation development, although it does have a few well established programs. Michigan was among the first states to institute energy home audits through Consumers Power Company. Energy awareness and conservation has led Americans to look to the free power sources available. The sun is a natural choice. Ancient man/woman used it and so can modern man/woman.

The body of law which has developed to protect the sun's rays from reaching the earth is diverse. Different legal mechanisms were initially introduced into American case law as a means of dealing with the gap between individual users of solar power and the regulations, or lack thereof, to govern solar access protection. The state survey conducted by the author concludes that different states are dealing with the solar access problem differently.

After the various solar access theories were examined in Chapter II's literature review, Chapter III described the Vienna Township case study area from a planner's perspective. Included in the description of the township was a review of the comprehensive plan and climate affecting the area. Chapter IV is the applications section of the

study determining how best to reach the goal of solar access protection through zoning and Comprehensive Planning amendments in Vienna Township. This section brings the literature reviewed in Chapter II into play on the "real world" situation of Vienna Township. In simplest terms an amendment to an existing zoning ordinance can give individual property owners the incentive and the legal protection to use solar as a means of heating their homes. The sun has been around much longer than humans and will be. Planners examine the possibilities of the future. The planning profession must prepare for the future energy shortages. the incorporation of solar access considerations into existing land use regulations can accomplish this.

Chapter V is a conclusion of the findings as well as implications for further study. Chapter V also contains a Limitations and Summary section to provide a better understanding of what is to be done next.

FOOTNOTES - CHAPTER V

1
City of Boulder, Colorado, Zoning Ordinance, Section
4676, 1980.

2
Tom Stanton, "Solar Access-Does Michigan Need It?"
Michigan Energy Journal, Summer 1984.

3
Ibid.

4
Statement by Dr. Roger Hamlin, Professor of Urban
Planning, Michigan State University, East Lansing, MI,
February, 1985.

5
The Michigan Energy Code Applied to One and Two
Family Dwellings, Michigan Department of Commerce/Energy
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