

A LEGAL REVIEW OF ACCESS TO SUNLIGHT IN SUNNY ALBERTA

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I. INTRODUCTION

A. Background

In the last five to ten years numerous legal articles have been written on how to protect access to sunlight. A review of these articles shows an increasing repetitiveness in proposed theories and solutions.¹ The majority of these articles owe their creation to the energy crisis which elevated the importance of sunshine from an ancient source of power, to a new and somewhat trendish approach to conservation. Very few articles recognize solar access for more than its energy potential and ignore that it is a natural resource which affects our quality of life.² Granted, it may be easier to view solar access as a source of energy with an economic value attached, but then, the discussion of solar access becomes one of economics rather than of protecting a basic property right.³

Thus, this paper will explore the legal possibilities as applied to protection of access to sunlight not only as an energy source, but also as a source of psychological enjoyment and for horticultural benefits. In exploring this area, this paper will attempt to venture into practical application of the law from the theoretical environment, by suggesting models which could be implemented today. What is required today is a practical approach and evaluation of presently implemented legal mechanisms protecting access.⁴

B. Problem

The problem today is that there is no right to sunlight for a property owner. An individual's access to the sun can be reduced or eliminated by his neighbor(s) constructing a structure or permitting vegetation to grow. This is a problem in both developed and underdeveloped urban areas, especially since there has been little concern for lot orientation in the past. The law provides no protection of solar access. This problem has been highlighted with the advent of solar energy home designs. The solar user must either purchase a large tract of land or risk suffering a loss of direct access to sunlight. The problem is most likely to increase with the growth of energy conserving home designs and leisure time to enjoy yards and gardening.

C. Parameters of the Paper

This study will only be directed to legal methods of ensuring access to sunlight primarily for residential users. It will not discuss the technical characteristics of solar energy nor horticultural applications. This paper will avoid the discussion of incentives and use of solar energy but will simply try to have an objective approach to the analysis of solar uses as well as other uses of property to achieve fair and realistic recommendations.

This paper will have a wider scope than most by seeking to provide access, not only for collector panels, but for defined portions of the property, to permit 'reasonable access'. 'Reasonable access' is enough sunlight to permit active or passive solar use, gardening, or sun-bathing. It is hoped that a portion of the property could be kept free of shade and enforcement could be provided by the appropriate legal mechanism.

D. Definitions

Solar access is the ability to have uninterrupted direct rays of sunlight fall onto one's property.

Solar collector describes a surface which is part of an integrated system specifically designed to use solar radiation as a source of energy to perform useful functions, such as space and water heating.⁵

Right to Light (or solar light) is a legally enforceable right to a reasonable proportion of the natural, unobstructed flow of direct solar radiation.⁶

Active systems usually have a "collector" and mechanical systems to transfer solar radiation to useable heat. The collectors are usually located on the roof of a building but can also be located elsewhere, i.e. on a garage or neighboring detached building. Active systems are usually used for space heating/cooling and water heating and would therefore require access to sunlight for year round performance.⁷

Passive systems usually operate on the principle that solar radiation is “collected” through south facing windows and is then stored in the mass of the building (walls, floor slabs). This ‘stored heat’ is then transferred to adjacent areas by radiation and convection once the sun has set. Concrete floors or walls are typical storage masses.⁸

Solar user refers to one or more persons using sunlight as an energy source, for horticultural purposes, or for simple social enjoyment.

Solar envelopes are basically height limitations that are established with the changing daily and seasonal positions of the sun in mind, and that may vary over different parts of a property.⁹

II. EVALUATION CRITERIA

In evaluating proposed legal mechanisms and actually implemented procedures of solar access protection, criteria are required to objectively determine the most favorable method.¹⁰

It is unlikely that any one method will meet each component of the criteria successfully. However, each method can be evaluated by an analysis of its strengths and weaknesses relative to the evaluation criteria.

A. Fairness (equity and balance of interests)

Since access to sunlight is still in its early stages of social acceptance and applicability, ‘fairness’ is crucial in having individuals, commercial entities, and the courts develop a positive attitude toward it rather than contempt and continued apprehension. To achieve this acceptance one must recognize all of the objectives involved (e.g. vegetation, development, aesthetics) and balance these with those concerned with uninterrupted sunlight (e.g. solar energy, horticulture, etc.). This balance can only be achieved by allocating costs and benefits between solar users, conflicting users, and society. In order to make successful decisions concerning the allocation of these costs and benefits, a compilation is required, so that the effects of decisions can be determined. A final concern when carrying out any solar access strategy is to ensure all parties affected receive adequate notice to permit a co-operative transition rather than a confrontation.

B. Practicality and Flexibility

This characteristic of the criteria recognizes the technical component of solar use. When attempting to protect solar access, numerous factors ¹¹ become apparent since the sun is not a fixed source. Most of the technical details are beyond the scope of the paper (some technical discussion can be found in the appendix). However, it must be remembered that when designing any solar protection mechanism, the requirements are multi-disciplinary in nature. The skills of architects, engineers, lawyers, and planners must be combined to cope with the numerous variables. A concern must also be shown when carrying out present planning for changes in technology; access provisions should not be made to extend permanently into the future and freeze all future development.

The degree of protection for solar access should correspond to the degree of usage except where present action may lead to large future benefits (e.g. planning of new sub-divisions, for orientation, and lot designs). Flexibility is also relevant in making access to sunlight adaptable to municipal and provincial planning to ensure that actions at both levels are compatible.

C. Economics and Administration

Again the cost of legislating must balance the social benefits to society and the solar users. The creation of labyrinths of administration and bureaucracy wastes valuable resources and adds complexity to solar protection. Any method of protecting solar access requiring legislative action suffers a major downfall because of the speed at which the legal machinery moves. However, properly drafted legislation will achieve the greatest results for the overall problem. Also, if the cost of acquiring and enforcing solar access is too high it will discourage many potential users.

D. Simplicity

The method of solar protection should be simple and concise. Since this is already a new area, factors should not be made more complicated by complex legal mechanisms. Clear definitions are sought since an excess of new terminology often leads to confusion. Simplicity and conciseness will also make enforcement and administration much easier to follow.

E. Constitutional – Jurisdictional

There must be some co-ordination of legislation between the three levels of government, especially for the energy aspect of solar use. This requires initiative, direction, and political acceptance especially at the provincial level so that they can advise municipalities in tailoring their specific requirements.

III. LEGAL THEORY

LEGAL MECHANISMS TO PROTECT ACCESS

A. Present Law

Under the present legislation in Alberta, an individual has no right to sunshine, nor can he acquire the right via prescription. The prescriptive easement to unobstructed light has been explicitly set aside in Alberta by section 50 of the Limitations Act.¹² However, even if this concept were available, as it is in England,¹³ it would not be completely successful in protecting solar access.¹⁴ One reason for its inadequacy is that the doctrine is primarily designed to protect light through normal apertures such as doors and windows. However, the decision in Allen v. Greenwood¹⁵ was able to extend prescription to cover a greenhouse. The other major downfall of the ancient doctrine of light is the 20 year prescription period where use must be uninterrupted. Thus, the solar user in England still does not have adequate protection.

In the United States, there has been a wide array of Acts and Ordinances to protect and encourage solar use.¹⁶ In Japan, access to sunlight is considered to be a fundamental right.¹⁷ In Canada, numerous studies have been undertaken or are currently under way, but very little has been implemented.¹⁸ In Alberta, there has been no case law dealing with access to sunlight largely due to its subordinate legal position. The consequences of having no right to sunlight could be serious both economically¹⁹ and socially,²⁰ and as time passes it will become only more difficult to remedy.

B. Restrictive Covenants

Restrictive covenants²¹ are mutually enforceable promises regarding land use which are made in the deed.²² There are generally three situations where covenants may arise: (1) between

adjoining landowners,²³ (2) when a landowner conveys a portion of his property, and (3) a general development scheme be a real estate developer.²⁴ It is this last category which has the greatest potential for solar protection and is especially applicable to Alberta. The developer would simply incorporate into individual titles certain restrictions²⁵ which would guarantee access to direct sunlight. The municipality could also take the initiative to have such covenants used by developers through the developer's agreement with the municipality.

When drafting a solar covenant it must be clearly defined for effectiveness and conform to certain technical requirements²⁶ in order for owners²⁷ of the property to enforce the agreement. Creating such a covenant would generally be viewed as creating a property right which will run with the land.²⁸ As with an express easement, a solar covenant should be drafted²⁹ with a group of specialists.

There are many benefits in using developer's covenants, one of which is the small cost to add the few extra restrictions onto the deed. Also, the idea of a "solar subdivision" would add to the marketability of a subdivision if the concept is properly developed. The use of restrictive covenants also has the attribute of familiarity, since it has been commonly used by developers for aesthetic protection. The use of a developer's covenant is economically sound because it internalizes nuisance costs and allocates land use resources³⁰ by the market place.

Covenants are also flexible in that a developer can control street and lot orientation and the covenants for each lot need not all be uniform. All of this can be done equitably and without any enabling legislation.

There are some weaknesses with the developers use of covenants, one of which is they can only be used for new subdivisions and not for established neighborhoods. The type of covenants arranged between adjoining landowners would experience many of the same problems as with express easements.³¹ Another problem with covenants is that enforcement rests with each neighbor.³² Suggestions have been made by some commentators to have a solar agency administer and enforce such covenants rather than through expensive litigation procedures. It is important to realize that covenants may also hinder the solar user due to aesthetic and vegetation restrictions.

The benefits of restrictive covenants seem to outweigh the weaknesses in this analysis. It is much easier to attempt to safeguard solar access in new areas rather than established ones; because in developed areas, numerous tradeoffs and variables exist that make any restrictions

even more complex. Developers use of covenants could be especially attractive in Alberta since many new subdivisions are being built to accommodate growth. In 1980, there were 32,031 homes constructed in the province.³³ However, lack of awareness and apprehension still plague most developers and builders,³⁴ many of whom are still waiting for more demonstrated acceptance by home buyers.

C. Easements

An easement is generally defined as a “right of the owner of one parcel of land by reason of such ownership, to use the land of another for a special purpose not inconsistent with a general property in the owner.”³⁵ Easements which consist of a right to invade or encroach a servient tenement are ‘affirmative’ easements,³⁶ and those which consist of some special right of immunity are ‘negative’ easements. In order to protect solar access, a negative easement would be required from your neighbor preventing him from blocking your access. This negative easement could be acquired by an express grant,³⁷ implied grant,³⁸ or by prescription.³⁹

(a) Express Easement. An express solar easement could be attained by anyone today who can reach an agreement with any neighbors who own property which has the potential of blocking your access to sunlight. These types of agreements have been upheld by the courts as long as they are clear and explicit.

Using express easements to protect solar access has many benefits, one of which is that they can be used today without government action. Easements are a familiar legal tool⁴⁰ and a simple solar easement would be much less obstructive than right-of-ways, etc.⁴¹ They can also be applied to new or old neighborhoods to protect new home or retrofit users. Furthermore, there are many states where such easements are in existence and legislatively recognized.⁴² Thus, a review of any practical problems in implementation and administration can be done before introducing such easements to Alberta.

A major problem with express easements that soon becomes apparent is their voluntary nature; neighbors may be unwilling to grant the easement. The second obvious problem is that they create an added expense to the solar user. It may also be difficult to determine the cost⁴³ and if easements must be secured from many neighbors, it may not be feasible.

This extra cost may deter potential users and create windfall profits for servient tenants.⁴⁴ Another difficulty faced when attempting to use a solar easement is in drafting it; the easement must be clear and concise. This requires a concise definition describing the boundaries at certain times of day, and terms of conditions for termination or breach.⁴⁶ These elements will add on further costs, as well as the expense of litigation when disputes arise. These problems may deter the widespread use of easements for protection.

(b) Implied Easements. Although an implied easement could be very successful in overcoming some of the problems experienced with express easements, they would be very difficult to extend to solar access.⁴⁷ Parties claiming such an easement would have great difficulty in demonstrating the requisite degree of necessity and pre-existence of the use. Thus, this legal instrument would most likely be inappropriate to protect solar access.

(c) Prescriptive Easements. From the previous discussion on existing protection to solar access, it is clear that prescriptive easements arising from the doctrine of ancient lights cannot exist in Canada. However, even if the doctrine were permitted, many problems would still arise. Firstly, a prescriptive period of any length of time would cause the solar user to take a risk⁴⁸ and if it were eliminated it would essentially create a right of prior appropriation.⁴⁹ This would grant the solar user access at the total expense of his neighbors.

Thus, it is clear that the present law of prescriptive easements is unsuitable and even with many amendments, problems would still arise. The end result could put the solar user in a worse position than with no protection at all.

Despite their potential weaknesses, express easements could be used to protect solar access today. Municipalities could provide model easements and legislation could standardize these easements and give guidance for compensation and descriptions to defray legal fees. Implied and prescriptive easements at this time seem to suffer from more serious deficiencies and do not appear to be easily adaptable for solar protection.

D. Zoning

Zoning is the division of a community into districts and prescribing in some considerable detail the uses and methods of use permitted in each zone.⁵⁰ The power to zone in Alberta is

expressly delegated to municipal councils by way of the Land Use By-laws as per the Planning Act.⁵¹ Essentially there are two ways solar access could be provided by zoning legislation, one method would require amending the Planning Act⁵² of the Province. The other method would be through the Municipality's Land Use By-laws⁵³ which would also require amending the Planning Act. The municipality may also be able to use the developer's agreement to insert clauses which bind the developer to provide for access. The municipality could also include an impact statement⁵⁴ in its General Municipal Plan.⁵⁵ However, there is no legal requirement to have the Land Use By-Law conform with policies identified in the General Municipal Plan. Therefore, it is possible to have a policy with no implementation mechanism.

A municipality could designate certain districts⁵⁶ to be a solar zone and restrict height,⁵⁷ grade, set-back, lot coverage, aesthetic and use requirements. These zones could be especially effective in new areas where building plans would have to conform, otherwise development permits could be refused.⁵⁸ The City of Edmonton has been using Statutory Plan Overlays (SPO's)⁵⁹ to alter or specify regulations to achieve local planning objectives. SPO's could easily be applied to protect solar access.

Zoning is a very versatile tool and many adaptations have developed from its traditional model. Two such innovative approaches are solar envelopes⁶⁰ and Planned Unit Development (PUD).⁶¹

Zoning is economically sound because it takes external benefits into account, so that society collectively pays for the environmental benefits due to solar use.⁶² Zoning is effective in conjunction with other legislation such as a revised building code or nuisance law to promote solar access. Other advantages of zoning are as follows:

- a) familiarity with this mechanism;
- b) relatively little administrative burden;
- c) potential user would know before they install whether they are in a solar zone, and the extent of their protection;
- d) simplicity and clarity;
- e) locally administered zoning should be capable of protecting optimum solar rights for a zone as a whole;
- f) costs to neighbors could best be balanced by a local administration;
- g) solar zoning does not permanently freeze land use;

- h) zoning by-laws are matters of public record and create good general availability;
- i) zoning by-laws are area specific, permitting solar rights to be area tailored; and
- j) can be useful in new areas as well as retrofits.

A major problem with using zoning by-laws to protect solar access is enforcement; enforcement requires resources on the part of the municipality to inspect property and administer the regulations. Another problem which occurs when zoning is implemented in established areas is how to deal with non-conforming structures. However, s.72 of the Planning Act⁶⁴ can be adapted to deal effectively with this problem. A major criticism of using zoning is that implementation at the local level requires initiative, interest, and expertise by many small municipal bureaucracies. For many small municipalities the demands of effective solar zoning may be beyond their resources in both time and expertise.⁶⁵ It has been argued that even if the solar zones are created they could easily be changed by municipal councils; however, if many users are affected this would not seem to be a political reality. Zoning also varies from one municipality to the next, making solar access provision much easier to incorporate in some cities than others.

Another major problem is that zoning may only control one means of shading, i.e. buildings. However, vegetation also accounts for serious shading problems. To overcome this, some municipalities have developed a comprehensive system which includes “non-conforming floral.”⁶⁶

When considering a zoning method to protect solar access it is crucial to balance competing interests of both parties, for example, whether solar use vs. unrestricted development, or aesthetics⁶⁷ vs. actual solar collectors. Japan has long recognized sunlight as being worthy of protection in relation to the health and well-being of its citizens rather than for use as an energy source.⁶⁸ The Japanese solar right is created by complex zoning and special building codes along with an appropriate grievance procedure.⁶⁹ The Japanese approach could serve as a model for all of North America, as it is founded on a co-operative approach to development rather than our competitive conquering of the environment. The path of progress in North America has tended to maximize land development and strike down any impediments to growth, such as preserving access to sunlight.⁷⁰

E. Site Certification: Through Transferable Development Rights

Site certification is a specialized zoning technique which warrants analysis because of its unique compensation technique.⁷¹

While solar home designs are still restricted to isolated users, a custom designed zoning approach could be implemented to protect solar access for energy use. With provincial enabling legislation, municipalities could issue certificates for specific lots or areas to be protected for solar uses. A board would approve or select the site, notify all affected landowners, and arrange compensation where necessary. Once registered, a site owner has a protected right to sunlight for a specific period.

However, a major problem becomes apparent in this proposed method, and that is how to arrange compensation. To solve this problem a mechanism called Transferable Development Rights (T.D.R.'s)⁷² has been proposed. A T.D.R. is simply a balancing tool for the competing interests of solar energy use and private property rights. Under this concept, land ownership is divided into two categories – the actual ownership of land and the right to develop the land.⁷³ It applies to solar access when a neighbor of a solar user cannot develop his property to maximize his development right because the adjoining property has a solar site certificate. The underdeveloped neighbor could be compensated for this by being able to sell off this underdeveloped portion to landowners in a transferee area,⁷⁵ and possibly receive a reduction in his property taxes. Once this solar site has been properly established, any interference with solar access could be dealt with by nuisance action.⁷⁶

Benefits of this approach are that it is flexible and could be applied to new and old areas equitably and the costs are properly allocated to the public and not the individual user. Also, the nature and extent of the certificate can be defined concisely. The certificate would also be for a limited time so as not to restrict future development permanently.

The use of site certification and T.D.R.'s also has some serious weaknesses largely because of its complexity and unfamiliarity in Canada. There is also very little practical experience with the T.D.R. concept in the U.S. for sunshine. Along with these problems, further legislation would be required to permit the municipalities to incorporate such a concept. This approach becomes less suitable for wide-scale usage of solar and requires an extended effort for

every municipality involved. It is also limited to solar energy applications since horticultural and psychological arguments would probably not warrant certification.

It has been suggested that site certification with T.D.R.'s would be suitable for an interim period to supplement other means of protecting access. However, it is felt that the complexity of this system would not merit the volume of solar access protection at this time.

F. Prior Appropriation

This approach treats sunlight as a natural resource similar to water.⁷⁹ Water law has often been raised as an area of interest largely because many States have been active in developing this area of law.⁸⁰ There are two doctrines of water, riparian rights⁸¹ and prior appropriation. Prior appropriation is the doctrine that has been suggested for solar users. It rests on the principle that whoever first begins to use the resource is entitled to continue such use at the same rate.⁸² If this doctrine is applied to solar access protection, the solar user can achieve a right to sunlight simply by making use of it. However, there are technical requirements which would have to be fulfilled,⁸³ the key element being that water must be claimed for a socially desirable purpose and not permitted to be wasted. Prior appropriation could be very adaptable for active solar energy protection but there are some serious problems (1) difficulties in the definition of an effective appropriation, and (2) the tendency of the rule to stimulate premature development, which could lead to sunlight being used only to restrict adjoining property development causing inefficient land use.⁸⁴

Another major problem is that this doctrine has not been as widely used in Canada as in the U.S. Although the Alberta Resources Act⁸⁵ did not use some of the American doctrine, riparian rights have not been extinguished for domestic use. Thus, the system is not really one of prior appropriation. So if the system was used at present to protect solar access, difficulties would arise within the Act in ensuring beneficial use, transferability, and in avoiding arbitrariness in allocation under the system.⁸⁶

Prior appropriation is not readily adaptable to protecting sunlight for psychological reasons and seems to suffer from major weaknesses even for energy use. It is unlikely that it would be realistically implemented with the massive legislation required, government control, foreign principles and potential for inequity.

G. Solar Rights

A solar right is the legislatively granted right to have an “unobstructed flow of sunlight onto your property.”⁸⁷ For the province to provide such widesweeping protection would give solar access tremendous recognition. However, such legislation would be very difficult to draft, implement and costly to enforce. Problems such as selecting a base point in time at which to award the right leads to numerous problems with non-conformity. A poorly drafted statute could lead to serious inequities among land users and lead to inefficient land use.

Any such massive approach to solar access would have to be accompanied by strong public acceptance and demand to ever become a political reality.

H. Municipal Acquisition and Expropriation

Under this approach the municipality would expropriate skyspace for sale or lease to solar users.⁸⁸ This approach differs from zoning in that compensation would be paid to those burdened by the expropriated right.⁸⁹

Municipal expropriation would have limited application but could be useful in situations where lawsuits are likely. This method could allocate costs efficiently and permit the municipality to integrate solar rights with land use planning.⁹⁰ The payment of compensation to the party being burdened by the right gives equity to the approach but could lead to many difficulties. One such difficulty is the valuation of fair compensation. Another is the need for extensive procedural requirements (e.g. notice, hearings, appeals, compensation rights)⁹¹ requiring time and funds to administer.

Municipal acquisition seems to lead to many serious problems and may require too many resources to seriously consider its implementation currently.

I. Shade Control

Shade control legislation has been proposed by some states to protect solar collectors from vegetation.⁹² The legislation can be relatively simple; once a collector is installed, trees, and shrubs are not permitted to grow and shade it. However, it could be arduous to adapt this procedure to protect sunlight for horticultural or psychological benefits.

Shade control legislation would require government involvement at the provincial or municipal level for enforcement and would require resources to trim the trees of offending parties. Caution should be exercised in implementing such legislation to avoid placing an excessive burden on the owners of adjoining properties.

Shade control may be a useful supplement to other legal mechanisms such as zoning, to ensure access especially in new areas where few mature trees exist.

J. Nuisance

Nuisance is where an act or omission infringes the rights of the public or an individual. At first glance, nuisance law appears to be a very desirable method of protection, since it is flexible in balancing interests and can apply to structures and vegetation. However, nuisance is a very complex area of the law and has many technical requirements.⁹³ There are two categories of the law; public nuisance and private nuisance. A public nuisance must inconvenience many people and offend the public interest, where as private nuisance must be an unreasonable interference with an individual's rights. Since there is no right to light in Alberta, enabling legislation would be required in order for private nuisance action to succeed. But even with a legal right, success would be difficult because it is very difficult to determine when a shading structure is unreasonable. The decision of Earl Putnam Organization Ltd. v. MacDonald⁹⁴ exemplifies the failure of private nuisance action to protect sunlight.

Shading a solar collector could be considered a public nuisance but this would also require legislative recognition of the importance of access to sunlight. It would also require judicial recognition of the public policy benefits of solar use in view of potential negative effects on free and extensive development.

It is very likely that neither of these two categories of nuisance law could presently be used as a solar means of protection. However, nuisance may be successfully used as a supplement to zoning and easements.

K. Inapplicable Approaches

Various legal commentators have recognized a wide array of legal methods to protect access but due to the scope of this paper they cannot all be assessed. Oil and gas law, trespass

and radio and T.V. transmission have been acknowledged and found to be inappropriate in solving the present problem.

(a) Oil and Gas Law

Oil and gas law is likely to be inapplicable for solar access because of major differences between their areas of concern.⁹⁵ There are three main grounds for rejecting oil and gas law: oil and gas law is too concerned with title to or ownership of limited resources; it is too much interwoven with its complex system of lease agreements; and oil and gas law is inseparable from oil and gas taxation law.⁹⁶

(b) Trespass

This common law mechanism would only be applicable to sunlight falling vertically on a landowner's property. Since sunlight at latitudes in Alberta crosses other properties (unless a large tract of land is owned), it is inadequate for solar access protection.⁹⁷

(c) Radio and T.V. Transmission

Since both sunlight and radio and T.V. signals are electromagnetic waves, some analogies between them developed. However, such an analogy is of very little benefit since law on the subject is sparse.⁹⁸

IV. PROPOSED AND IMPLEMENTED LEGISLATION

In contrast to the wave of solar legislation which has been adopted in the United States over the last three to four years, Canada has been relatively inactive.⁹⁹

It seems that the general attitude to solar access protection is a "wait'n'see" approach with little provincial-federal direction given to municipalities in Alberta. Those few municipalities that have solar access provisions or studies underway owe their progress to the special interest and initiative of one or two individuals.

In the search for information on solar access in Canada, it was discovered that there was no current organization of research and legislative information in each province. This could lead

to much duplication among different groups across the country. Thus, the purpose of Table 1 is to fill this void and determine what information is presently available.

Appendix A is a summary of American legislation which has been compiled from a Solar Legislation Guide of the National Solar Heating and Cooling Information Center. This summary has been revised for each state for various times in 1980. Appendix B helps relate some of the present day developments in solar energy in U.S. communities. The reason for its inclusion is that it is important to monitor American experiences to help design and improve Canadian approaches for solar access protection.

TABLE 1 – SOLAR ACCESS ACTIVITY IN CANADA

Provinces and Communities	Implemented Legislation or Procedures	Proposed Legislation and Studies
Province of Alberta		- Bill 228, Right to Light
Town of Millet	- 78/14 Land Use by-Laws 21 for solar collector's protection	
City of Edmonton	- MPC approval of Energy Conservation amendment including solar access policies	- study on energy conservation and solar access by restrictive covenants
City of Calgary		- present study, "Passive Solar Gain in Low Density Residential", possibly future solar zoned sub-divisions
Province of British Columbia		- studies currently underway to be available this year, zoning is considered to be the most appropriate
City of Vancouver		- survey on solar rights conducted in the Vancouver area.
Province of Ontario		- completed major study in 1978 "Perspectives on Access to Sunlight."
Brampton	- Zoning by-laws for selected sub-divisions which provide for solar access	
Ottawa		- "Planning Measures to ensure Energy Conservation and Solar Access" CD-164-6
Kanata		

Province of Manitoba		- “An Access of Potential for Solar Energy in Manitoba” Available Sept. 1981
Winnipeg		
Province of Saskatchewan		- reviewing solar access problems have constructed passive solar model homes
Saskatoon		- preparing report on design of solar subdivisions
Province of Nova Scotia		- legal aspects of solar access in Nova Scotia
Ecology Action Centre, Halifax		

V. SUMMARY EVALUATION

This discussion will briefly review the theoretical approaches proposed in Section II of the paper in light of some of the empirical work done in Canada and the U.S.

A. Restrictive Covenants

The use of restrictive covenants has essentially the same effect as zoning by-laws. However, covenants permit free enterprise to act, not the public bureaucracy. Many states have statutes which recognize restrictive covenants for solar access and also specify that covenants cannot be used to prohibit solar energy users.¹⁰⁰ Some municipalities in the U.S. have offered density bonuses and other incentives to have new development planned for solar access.¹⁰¹ The current practice of subdivision control by restrictive covenants for solar access in the U.S. appears to be extremely successful with only minor problems of an administrative or technical nature.¹⁰²

B. Easements

From the theoretical review, express easements appear to be very simple and effective but, the U.S. experience has found otherwise. The practical problems of description, negotiating, and multi-easements affecting one property take this approach from basic to complex.¹⁰³ Nevertheless, easements can be effective for very small protection and many states have expressly recognized them and have requirements as to their content.¹⁰⁴

C. Zoning

Zoning is probably the most widely used method for protecting solar access. In Canada, the City of Brampton, Ontario has set out guidelines to create solar envelopes to protect access.¹⁰⁵ Along with solar envelopes, bulk plan zoning has also been developed and implemented in Albuquerque, New Mexico.¹⁰⁶ Many other states have legislation authorizing local governments to enact zoning by-laws for access to sunlight.¹⁰⁷

Zoning has tremendous flexibility and can be amended in various ways to adapt to specific areas, give incentives, or to supplement the theoretical discussion.

D. Site Certification and T.D.R.'s

The use of site certification and T.D.R.'s could be an effective method but there is little practical experience to supplement the theoretical discussion.

E. Prior Appropriation

Prior appropriation has been applied on vesting by permit approach in Los Alamos, New Mexico with no serious problems. The success of this method will depend on its treatment by the courts.¹⁰⁸ It must be reiterated that this method was designed to protect solar collectors and does not easily adapt itself to protect non-energy applications. Due to its limited protection, lack of empirical data, and relative unfamiliarity in Alberta this approach does not likely meet the requirements of protection.

F. Solar Right

An example of granting an out and out right to sunlight can be seen by examining Bill 228 in Alberta, introduced by Grant Notley, opposition member (see Appendix C). This Bill recognized the importance of sunlight as more than just a source of energy as discussed in the first paragraph. However, a close review of the Bill reveals many inadequacies. One of these deficiencies is that the proposed Act in section one permits a 90 day period of shading which could lead to serious problems for an individual utilizing sunlight for heating or growing food. Another weakness is that multi-storey zoned areas, would have no protection.

Bill 228 places importance on solar access at the expense of aesthetics, vegetation, and buildings. This categorization fails to meet the evaluative criterion of fairness.¹⁰⁹ The reason for this failure is that such widesweeping legislation would likely lack the social acceptance of Albertans. Because of its intrusive nature and drafting characteristics, enforceability may be very difficult and the ramifications of enforcement could be very harmful to solar users in general.

There are other forms solar rights can take. For example, New Mexico has legislation which creates a right to light for solar collectors based on prior appropriation (see Appendix D). This act also has some inherent weaknesses; it fails to require notice to and permit appeals for those affected by their neighbor obtaining a solar right.¹¹⁰ Unrestricted solar rights can lead to inefficient land use,¹¹¹ since solar access is essentially a problem of competing land uses. The best way to resolve the problem may be at the local level rather than granting widesweeping solar rights. Thus, the most needed revision of the Solar Rights Act involves clarifying the powers of local governments with respect to solar zoning and the granting of solar permits.¹¹²

G. Shade Control

Shade control legislation is implemented primarily to protect solar collectors. An example of such legislation is the California Solar Shade Control Act (see Appendix E). The City of Edmonton has a shadow impact study requirement¹¹³ which has the potential to be amended to protect solar users. However, enforcement could become difficult if it was applied to all construction not just those buildings falling within the present height classification.

H. Nuisance

The public nuisance approach has remained locked into hypothetical speculations as to its success in protecting sunlight. California has adopted the public nuisance approach but there has not yet been any case law resulting from shading problems.¹¹⁴ Again, nuisance action may be of optimal use when used in conjunction with another approach, but as yet it does not provide definite protection.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

It was initially the goal of this project to find one method which would protect solar access in Alberta. However, this was quickly rejected after preliminary research disclosed the numerous trade-offs and complexities which characterize this field. A revised goal for solar law research might be to find the best method(s) for enactment under various conditions for different parties.¹¹⁵

In light of the empirical information and theoretical discussions on the legal mechanisms to protect solar access three approaches are suggested: solar express easements, developers' use of restrictive covenants, and municipal zoning by-laws. Each of these approaches can be constructed to adequately meet the evaluative criteria.

B. Recommendations

Many individuals and organizations have been skeptical about solar law largely because of the uncertainty of solar energy and costs of conventional energy. However, it is the purpose and a recommendation of this paper to examine the problem of solar access in a wider context, than solar as solely an energy source. This perspective finds access to be important because of the psychological and horticultural benefits of sunlight as well as energy benefits.

To overcome the problem and protect access to sunlight, three legal mechanisms have been proposed. The first of these are solar express easements, which enable private individuals to protect their access immediately. Although this approach does have some fundamental weaknesses, it can be an effective method for the present low volume of solar usage and concern. The provincial government should act immediately to give the public guidance into what such an agreement should contain and how much it might cost (see Appendix G).

The second recommended method is the developers' use of restrictive covenants. This approach would permit developers to plan a sub-division for solar use and record the limits of construction and vegetation for each lot on its deed. It has been predicted that within three years developers will be building such sub-divisions.¹¹⁶ Municipalities should be working closely with developers in designing such sub-divisions and providing incentives to make them economically attractive today since they are an investment in the future. Municipalities could also be

improving solar access by way of introducing an impact statement into their General Plans. In view of the hierarchy of municipal legislation it would first be recommended that a solar access impact statement first be implemented.

The third approach recommended, that of zoning by-laws, is probably most effective over a longer period. Zoning has the potential to most adequately protect solar access. However, this approach puts such a heavy burden on municipalities, and there is not presently sufficient public demand and political concern. The province could play a role in offering guidance to municipalities in drafting by-laws and land use planning guidelines for solar access. Having the province perform this role through seminars or the use of consultants could speed the implementation of solar access protection and do so hopefully with a minimum of duplication and waste. The province could also amend the Planning Act¹¹⁷ and compile information on U.S. experiences and local shading problems.

But, when should all this be done and by whom? There seems to be a lack of initiative and direction among the three levels of government. For municipalities to act individually would lead to inconsistent protection and duplication throughout the province and country. The Federal government could act but solar access requires some local administration and constitutionally would most likely fall under “property and civil rights”,¹¹⁸ making it a provincial matter. Nevertheless, many provinces have been applying the “wait’n’see” approach to solar access. Ontario has chosen to leave solar access, and concentrate on other barriers to solar energy use.¹¹⁹ However, the solar access problem is likely to increase in the future and can be intelligently and reasonably dealt with today.

To make these recommendations more meaningful, an appendix has been compiled proposing models for actual implementation. The theoretical analysis of solar access

VII. IMPLEMENTATION

A. Solar Easements

An express solar easement for individual use has been provided in Appendix F. This easement can be used immediately; however, the solar user must bear the entire burden in costs and drafting.

A simple piece of provincial legislation could greatly aid the design, awareness, and respect for express solar easements. Appendix G is the suggested format for provincial

legislation. It was largely based on Minnesota's Solar Access Easement¹²⁰ and a document by The American Bar Foundation.¹²¹ Most state statutes authorizing and condoning solar easements are very similar to the approach provided in the model.

It is hoped that restricting the description of the easement to a solar envelope will make surveying and filing costs reasonable. A final suggestion that the province could consider is reducing property taxes for those granting easements. Minnesota recognized this in subd 5.,

Any depreciation caused by any solar easement which is imposed upon designated property, but not any appreciation shall be included in the valuation of the property for property tax purposes.¹²²

Although provincial solar easement legislation in this form will not solve the problem completely. Its usefulness is that it could be implemented immediately and could provide protection until zoning by-laws and developers' use of restrictive covenants become prevalent.

B. Developers' Use of Restrictive Covenants

A suggested model for this type of restrictive covenant would be very similar to the model of an express easement. It would consist of a solar envelope or three dimensional description of the lot that would limit development on the property accordingly.

Rather than have various private individuals bargain to create solar easements, the developer could simply add a restrictive covenant to the deed of a lot for a property he is subdividing. The developer could design the entire area to maximize southern orientation for most lots as was done in Brampton.¹²³ Once the restrictive covenants are attached to the deed, it would bind the new purchasers and their successors.

This approach may have the same effect as a zoning by-law for the new sub-division except that the developers could have more flexibility in lot designs. These height envelopes need not be uniform except that each lot should experience a reasonable degree of ensured access. Lincoln, Nebraska is currently encouraging the use of restrictive covenants and offers developers certain incentives¹²⁴ until the market demand is sufficient.

C. Solar Zoning By-Law

A solar zoning by-law can be used by a municipality in the planning of a new solar sub-division. Since the drafting of a model by-law is far beyond the abilities of the author, the City of Brampton's solar access highlights of By-Law 139-79 is included in Appendix H. Such legislation can be applied to Alberta municipalities with a few alterations to meet local geography, legislation and latitudes. The goal of this legislation is discussed in the attached correspondence from Brampton.

Difficulties that municipalities may experience are in enforcement and vegetation. Rather than zoning by-laws a municipality could use sub-division regulations or the development agreement to follow a similar format to that of Brampton's By-Law 139-79. A combination of methods can also be an effective approach to solar access protection.

**See hard copy for "The Corporation of the City of Brampton – Planning and Development Department", pp. 39-41

VIII. FOOTNOTES

¹ Jaffe, “A Commentary on Solar Access: Less Theory, More Practise” (1980), 2 Solar L. Reporter at 771.

² See generally – Williams, “Solar Access and Property Rights: A Maverick Analysis” (1979), 11 Connecticut L. Rev. at 430. Goble, “Solar Access and Property Right: Reply to a “Maverick Analysis”” (1980), 12 Connecticut L. Rev. at 270.

³ Hopkins, “Sunlight in Buildings” (1967) at 27.

⁴ Jaffe, “A Commentary on Solar Access: Less Theory, More Practise”, supra n.1.

⁵ City of Ottawa, “Planning Measures to Ensure Energy Conservation and Solar Access” (discussion paper) – CD-164-6 at (j).

⁶ Ontario Ministry of Energy, “Perspectives on Access to Sunlight” (1978), at 2.

⁷ Jaffe, “A Commentary on Solar Access: Less Theory, More Practise”, supra n.1.

⁸ American Planning Association, “Protecting Solar Access for Residential Development: A Guidebook for Planning Officials” (1979) at 13.

⁹ Hayes, “Solar Access Law” (1979) at 91.

¹⁰ Id., at 53. See also, Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, supra n.6 at 10.

¹¹ Since the position of the sun changes, seasonal changes must be recognized in its position and in surrounding vegetation. A determinable number of shade free hours must be set. See Alberta Energy and Natural Resources, “Prospects for Solar and Wind Energy Utilization in Alberta” (1978). See also Hayes, “Solar Access Law”, supra n.9 at 253.

¹² R.S.A. 1955, c 177, s.49, section 50...No right to the access and use of light or any other easement, right in gross or profit a prendre shall be acquired by prescription, and it shall be deemed that no such right has ever been so acquired.

¹³ Doctrine of Ancient Lights, as per Prescription Act of 1832, 2 & 3 will 4, c 71. See easement discussion p.

¹⁴ Bersohm, “Securing Solar Rights: Easements, Nuisance or Zoning?” (1976-77), 3 Colum. J. Environ. L. 112 at 119.

¹⁵ (1979), 1 All E.R. 819 (C.A.).

¹⁶ See “Solar Legislation” (National Solar Heating and Cooling Information Center, Rockville M.D.) Revised 9/30/80.

¹⁷ Takagi “Designs on Sunshine: Solar Access in the U.S. and Japan” (1971), 10 Connecticut L. Rev. 123 at 124.

¹⁸ Actual legislation in existence, Alberta: Town of Millet By-law ”78-14 Land Use” By-law 21 Solar Collections”. Ontario: City of Brampton – subdivision bylaws Number 180-79, 139-79.

¹⁹ e.g. Loss of sunlight for energy purposes could be costly but also for non-energy uses as in Fontainebleau Hotel Corp. v. Forty-five Inc. 114 So (2d) 257, the Eden Roc Hotel was unable to stop an adjacent luxury hotel from building an addition which shaded its pool and suntanning area.

²⁰ e.g. An interview with a City of Edmonton woman who has tried to seek relief from a 33 foot home which was built on an adjacent lots and shades her lot completely until noon (June) disrupting 30 years of enjoyment.

²¹ See generally Newsom, “Restrictive Covenants Affecting Freehold Land,” (5th Ed., 1971).

²² Often found in the deed.

²³ Committee of adjustment consent was obtained to the recent agreement between Eaton (Fairview) and Holy Trinity Church, which guaranteed a specified number of hours of sunlight to Trinity Square despite development of the Eaton Centre. See instrument #B-378560, Toronto Land Titles Office, Ontario Ministry of Energy, “Perspectives on Access to Sunlight,” supra n.6, really the same as an express agreement.

²⁴ Zillman & Deeney, “Legal Aspects of Solar Energy Development,” [1976] Ariz. L. Rev. 25 at 36.

²⁵ For example; they could specify generous building set-back requirements and height restrictions on trees and structures.

²⁶ Participants in covenant are bound by law when:
(1) contracting parties intended for their successors to be bound,
(2) the covenant “touches & concerns” the land,
(3) privity of estate existed between the contracting parties,
(4) the successors in interest had notice of the restriction.

Comment, “Solar Rights and Restrictive Covenants: A Microeconomic Analysis” (1978-79) 7 Fordham Urban L. J. 283 at 286. See also, Megarry and Wade, “The Law of Real Property”, (4th Ed. 1975) at 593 and Burn, “Cheshire’s Modern Law of Real Property” (12th Ed., 1976) at 593.

²⁷ Tulk v. Moxhady (1848) 2 Ph 774; 1 H & Tw 105, said a restrictive covenant could be enforced against latter purchasers.

²⁸ Kraemer, “Solar Law”, (1978) at 61.

²⁹ For drafting of covenants see Newsom, “Restrictive Covenants Affecting Freehold Land”, supra n.21 at 77.

³⁰ Comment, “Solar Rights and Restrictive Covenants: A Microeconomic Analysis”, supra n.26 at 288.

³¹ See express easements, p.12.

³² “This fact has proven itself to be problematic in many previous situations and the result has been a general lack of adherence to covenant restrictions.” City of Brampton, Energy Conservation in Land Use Planning, (1979).

³³ Telephone interview with Alberta Housing, Canadian Mortgage and Housing Corporation statistics.

³⁴ Telephone interview with prominent Edmonton developer who is considering a solar sub-division. Rather than force solar access by caveat on deed, better to encourage solar access by the developer’s approval procedure of builder’s plans. The developer plans sub-divisions with strict adherence to economics.

There have been no municipal or provincial incentives for developers in Alberta to create such sub-divisions.

³⁵ Blacks Law Dictionary (5th Ed. 1979) at 457. See generally Megarry & Wade, The Law of Real Property, supra n.26 at 842 and Bowles, Gale on Easements (13th Ed. 1959)

³⁶ See Bowles, Id., at 3.

³⁷ Formed by bargaining between parties privy to situation. See Id., at 63.

³⁸ The theory envision two adjoining parcels (A and B) owned by one individual (O). A is improved while B remains vacant. An apparent and continuous use exists in favor of parcel A as against parcel B. Parcel A is conveyed to X with no mention in the deed of a grant of the apparent and continuous use. If the use is necessary to the beneficial enjoyment of the land so granted, then an easement is held to have been impliedly granted by O to X.

³⁹ See discussion on existing law and the ancient doctrine of lights. p.8.

⁴⁰ Berryhill and Purcell III, “Guaranteeing Solar Access in Virginia” (1979), 13 U. Richmond L. Rev. 423 at 452.

⁴¹ Gergacz, “Solar Energy Law: Easements of Access to Sunlight” (1979), 10 New Mexico L. Rev. 121 at 129.

⁴² For states which have enacted statutes to provide for the creation and recordation of solar access easements. See n.104.

⁴³ It has been proposed to have the value based on discounted net present value of all cost reductions attributable to the easement itself. It is very difficult to determine because of the almost infinite number of variables to consider and trade-offs. Gaumnitz and Gergacz, “How to Draft and Determine the Value of Express Solar Access Easements” (1980), 9 Real Estate L.J. 128.

⁴⁴ Neighbors may receive compensation for granting easements even though they may never need that area. These windfall profits distort solar usage from a welfare economic perspective because society benefits from individual solar use and the individual should not bear the total costs.

⁴⁵ Moskowitz, “Legal Access to Light: The Solar Imperative” supra n.38.

⁴⁶ Drafting a solar easement may require the combination of a variety of specialists in the legal, engineering, and planning fields.

⁴⁷ Gergacz, “Solar Energy Law: Easements of Access to Sunlight”, supra n.41 at 153.

⁴⁸ During this period, use would have to be uninterrupted this could lead to deliberate shading and use of spite fences.

⁴⁹ Myers, “The Common Law of Solar Access: An Insufficient Protection for Users of Solar Energy” (1978), 6 Real Estate L. J. 320 at 328.

⁵⁰ Laux, “The Zoning Game: Alberta Style” (1971), 9 Alta. L. Rev. 268.

⁵¹ S.A. 177 c.89 s.67 (3)(9) specifies that “a land use by-law may provide for the lighting of the land, buildings or other thing.”

⁵² Id., s.59.

⁵³ For general contents; see Id. s.67.

⁵⁴ A right to light could be introduced into the General Plan, without any enabling legislation, so that any public works and by-laws passed would conform with it. General statements affecting solar access could also be included in building heights, bulk, location, size, density, lot size and use can be regulated by by-law and landscaping and building location can be controlled through Site Plan Control.

City of Ottawa, “Planning Measures to Ensure Energy Conservation and Solar Access”, supra n.5 at (n). Such statements can help create awareness and reduce the apprehension of dealing with a new concern in land use.

⁵⁵ A type of plan which has been described as a constitution for all future development within a city. A plan of this type is normally designed for a considerable period into the future, fifteen to fifty years.

Laux, “The Zoning Game: Alberta Style”, supra n.50 at 271.

⁵⁶ Any district could be designated including residential, commercial, or industrial; solar zones may be “overlaid” on existing zoning so as not to alter previous classifications. Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, supra n.6 at 31.

⁵⁷ The municipality could make amendments like redefining height. Height is presently defined in Edmonton on page 65 of the City of Edmonton Land-Use Bylaw 5996. (Office Consolidation) 1980. For a discussion of possible amendments see: Hayes, “Solar Access Law” supra n.9 at 79.

⁵⁸ This could be especially applicable to Alberta with its many new developments.

⁵⁹ City of Edmonton Land Use By-Law s.820.

⁶⁰ A solar envelope is simply an adaptation of the basic zoning rectangle to alter the height according to the position of the sun. See Hayes, “Solar Access Law”, supra n.9 at 91.

⁶¹ A (PUD) is a useful vehicle in promoting a general goal for an area. It gets away from traditional types;

In designing a mini-community, PUD’s can;

(a) achieve flexibility

(b) provide a more desirable living environment than would be possible through strict application of zoning by-laws,

(c) encourage developers to use a more creative approach in their development of land

(d) encourage variety in physical development.

Kraemer, “Solar Laws”, supra n.28 at 84.

See also: Wagman, “Protecting Solar Access: Preventing A Potential Problem” (1976-77), 7 Golden Gate U.L. Rev. 765 at 792.

Other suggested zoning techniques for preserving solar access and energy conservation in general:

Contract Zoning is where the owner will place certain restrictions on the land in exchange for certain variances from the municipality.

Phelps and Yoxall, “Solar Energy: An Analysis of the Implementation of Solar Zoning” (1977), 17 Washburn L.J. 146 at 151.

Zoning for Housing Quality (ZHQ)

- is an approach used in New York which scores various characteristics to promote energy efficiency. Of the total 100 points, 17.4 relate to sunlight.

Bersoh, "Securing Solar Energy Rights: Easements, Nuisance or Zoning?" (1976), 3 Columbia J. of Env. L. 112 at 141.

Bonus Zoning – a landowner would receive the right to more intensive development of a property in exchange for providing a public amenity or energy for shaded neighbors from solar collector.

Cluster Zoning – high buildup is permitted only in the northeast corner of the area with open spaces to the south.

"Perspectives on Access to Sunlight", supra note 46 at 33.

⁶² Notes, "The Right to Light: A Comparative Approach to Solar Access" (1977), 4 Brooklyn J. Int. L. 221.

⁶³ Ontario Ministry of Energy, "Perspectives on Access to Sunlight", supra n.6 at 39.

⁶⁴ S.A. 177 c 89, supra n.51.

⁶⁵ Ontario Ministry of Energy, "Perspectives on Access to Sunlight", supra n.6 at 41.

⁶⁶ City of Albuquerque, "Land-Use Regulation to Enhance Solar Access" (1977).

⁶⁷ Comment, "The Legislative Response to Solar Access: A Lesson for Michigan?", [1979] Det. Coll. L. Rev. 261.

⁶⁸ Takagi, "Designs on Sunshine: Solar Access in the U.S. and Japan", supra n.17 at 134.

⁶⁹ Five problems that the Japanese model can adequately deal with;

- (1) impracticality of applying to older areas,
- (2) zoning boards are notoriously susceptible to local politics and special interest groups,
- (3) it would be very expensive for a state or locality to intelligently rezone,
- (4) difficult to challenge zoning decisions in court,
- (5) expensive to appeal.

Notes: "The Right to Light: A Comparative Approach to Solar Access", supra, n.62 at 240.

⁷⁰ Polis, "Obtaining Access to Solar Energy: Nuisance, Water Rights and Zoning Administration" (1979), 45 Brooklyn L. Rev. at 357.

⁷¹ Ontario Ministry of Energy, "Perspectives on Access to Sunlight", supra n.6 at 47.

⁷² Transferable Development Rights, originated to preserve historic buildings and permit compensation to owners. See Matuson, “A Legislative Approach to Solar Access: Transferable Development Rights” (1978), 13 New England L. Rev. 835 at 853.

⁷³ Williams Jr., “The Dawning of Solar Law” (1977), 29 Baylor L. Rev. 1013 at 1019. See generally, Hayes, “Solar Access Law”, supra n.9 at 204.

⁷⁴ It has been suggested that a landowner in a transferee district can buy up to 1/6 of their existing limit as increased density.

⁷⁵ An area designated by planners that could adapt to increased density.

⁷⁶ See p.23.

⁷⁷ Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, supra n.6 at 50.

⁷⁸ The selection of solar sites and transfer districts all involve recognizing numerous trade-offs. Two economic questions arise; as to the amount of compensation and the demand for the transferable development rights themselves.

Hayes, “Solar Access Law”, supra n.9 at 207.

⁷⁹ The key link to both resources is that they are used and not captured or sold. Williams, “The Dawning of Solar Law”, (1977), 29 Baylor L. Rev. 1013 at 1021.

⁸⁰ Reitze, “A Solar Right Zoning Guarantee: Seeking New Law in Old Concepts”, [1976] Wash. U. L.Q. 376 at 380.

⁸¹ The Riparian doctrine has not been suggested for solar energy. Kraemer, “Solar Law”, supra n.28 at 152.

⁸² Reitze, “A Solar Rights Zoning Guarantee: Seeking New Law in Old Concepts”, supra n.80 at 382.

⁸³ A legally protected appropriation requires:

- (1) an objectively evidenced intent to appropriate,
- (2) notice of the appropriation to other interested parties,
- (3) initiation of confirmatory legal procedure (permit application or court action),
- (4) a diversion of water from a natural stream and
- (5) its application, with reasonable diligence and within a reasonable period of time,
- (6) to a beneficial use.

Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, supra n.6 at 22.

⁸⁴ Williams, “Solar Access and Property Rights: A Maverick Analysis”, supra n.2 at 448.

⁸⁵ R.S.A., 1970 c 388 as am.

⁸⁶ Discussion of problems, See Percy, “Water Rights in Alberta” (1977), 15 Alta. L. Rev. at 142.

⁸⁷ Bill 228, 1980 Private Members Bill “An Act Establishing the Right to Sunlight”, has been introduced twice but died on the order paper, now low priority.
Interview with Grant Notley’s office for critical review of this Bill. See Appendix C.

⁸⁸ City of Brampton, “Energy Conservation in Land Use Planning” *supra* n.32 at 20.

⁸⁹ Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, *supra* n.6 at 54.

⁹⁰ *Id.*, at 55.

⁹¹ Kraemer, “Solar Law”, *supra* n.28 at 143.

⁹² Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, *supra* n. 6 at 45.

⁹³ See, Gevurtz, “Obstruction of Sunlight as a Private Nuisance” (1977), 65 Calif. L. Rev. 94 at 97.

See also, Wagman, “Protecting Solar Access: Preventing a Potential Problem”, *supra* n. 61 at 777.

⁹⁴ (1972), 21 O.R. (2d) 815 at 818. Courts have often held that landowners will have an unrestrained right to build even if their construction will cause shading. Commonly cited; *Fontainebleu Hotel Corp v. Forty-Five Twenty-Five*, *supra* n.19.

⁹⁵ See also Reitze, “A Solar Rights Zoning Guarantee: Seeking New Law in Old Concepts”, 1976 Wash. U.L.Q. 376 at 384.

⁹⁶ Williams Jr., “The Dawning of Solar Law” (1977), 29 Baylor L. Rev. 1013 at 1022.

⁹⁷ Ontario Ministry of Energy, “Perspectives on Access to Sunlight”, *supra* n. 6 at 7.

⁹⁸ See: Williams Jr., “The Dawning of Solar Law”, *supra* n. 96 at 1022.

⁹⁹ Reasons for Canadian reluctance to get involved with solar access;

- Solar access concerns have been largely due to the advent of solar energy which has developed much slower in Canada
- There has been far greater funding in the U.S. for solar legislation and research

¹⁰⁰ State Law and Restrictive Covenants

State	Chapters	Laws Of
Arizona	39	1980
California	1154	1978

Colorado	358	1979
Florida	163	1980
Maine	435	1975
Maryland	381	1980
Washington	170E-1	1979

¹⁰¹ Jaffee, “A Commentary on Solar Access: Less Theory More Practice”, *supra* n.1.

¹⁰² *Id.*, at 773.

¹⁰³ *Id.*, at 777

¹⁰⁴ State Law and Easements

<u>State</u>	<u>Chapter</u>	<u>Laws Of</u>
Colorado	326	1975
Florida	309	1987
Georgia	Act 1446	1978
Idaho	394	1978
Indiana	Public Law 185	1980
Kansas	277	1977
Maryland	934	1977
Minnesota*	786	1978
Missouri	422.021	Missouri Code
Montana	524	1979
Nebraska	Legislative Bill 353	1979
Nevada	314	1979
New Jersey	152	1978
New York	705	1979
North Dakota	425	1977
Ohio	Amended Substitute House Bill 154	1979
Oregon	671	1979
Tennessee	259	1979
Utah	821	1979
Virginia*	323	1978
Washington	170E-1	1979

Source: *Solar Legislation*, National Solar Heating and Cooling Center, Revised 9/30/80.

General discussion of Virginia’s laws, see Berryhill *supra* note 30.

*See also Comment, “The Legislative Response to Solar Access: A Lesson for Michigan?”, [1979] Det. Coll. L. Rev. 261 at 271.

¹⁰⁵ *Infra.*, note (Brampton Bylaw, Appendix H).

¹⁰⁶ Albuquerque, N.M., “Albuquerque Comprehensive City Zoning Code, Height Regulation for Solar Access Protection in Selected Zones”, May, 1977.

¹⁰⁷ State Law and Zoning

State	Chapter	Laws Of
Arizona	94	1979
Colorado	306	1979
Connecticut	Public Act 73-314	
Maine	418	1979
Minnesota	786	1978
Nebraska	353	1979
New York	742	1979
Oregon	671	1979
Tennessee	259	1979
Vermont	Act 174	1980
Washington	170E-1	1979

¹⁰⁸ Jaffee, “A Commentary on Solar Access: Less Theory, More Practise”, *supra*, n. 1 at 776

¹⁰⁹ See discussion of evaluation criteria, p. 5.

¹¹⁰ Polis, “Obtaining Access to Solar Energy: Nuisance, Water Rights, and Zoning Administration” (1979), 45 Brooklyn L. Rev. 357 at 377.

Grout, “Access to Sunlight: New Mexico’s Solar Rights Act” (1979), 17 Natural Resources J. 957.

¹¹¹ Eisenstadt and Utton, “Solar Rights and Their Effect on Solar Heating and Cooling” (1976), 16 Natural Resources J. 363 at 389.

¹¹² Grout, “Access to Sunlight: New Mexico’s Solar Rights Act”, *supra* n. 110 at 963.

¹¹³ City of Edmonton Land Use Bylaw p. 40, section 16.3.

Sun Shade Impact Study

1) A preliminary sun shadow impact study shall be provided as part of the initial submission for a development permit where such a study is required by a Statutory Plan, including the Downtown Area Redevelopment Plan, for buildings which exceed four stories or 14m (45.9 ft. in height).

2) This study shall be prepared by a qualified, registered Professional Engineer or Architect, and for each design alternative of the proposed development, shall identify to scale on a plan at a minimum scale of 1:200 (metric), the following:

a) The proposed development and existing development in the surrounding area, including public roadways, parks, plazas, walkways, and other open spaces intended for the used and enjoyment of the general public; [truncated in original copy?]

¹¹⁴ M. Jaffe, “A Commentary on Solar Access: Less Theory, More Practise,” *supra*, n. 1 at 774.

¹¹⁵ Hayes, “Solar Access Law”, *supra* n. 9 at 2. Conclusions of the Solar Law Project of the American Environmental Law Institute.

- There is no single “ideal” solar access law. Different communities may need different legal approaches.
- Solar access protection should be part of overall plans to guide land use and to conserve energy.
- Because local needs and conditions vary so greatly, it appears that solar access protection can generally be best handled at the local level. The type of solar access law that is best for a given area will depend not only on such physical factors as latitude, climate, architecture, and density, but also on social and economic considerations.
- Localities can do much to protect solar access even if no new legislation is enacted at the state level.
- The major legal constraints on solar access law are, in order of importance, the constitutional requirements of public purpose, of equal protection, and of payment of compensation if the property is so severely regulated that due process requirements are violated. It is less likely that a solar access law will be found unconstitutional if it is supported by legislative findings of necessity and solar access protection is made part of comprehensive land use plans. Courts’ perceptions of the severity of the energy crisis may influence their attitudes on whether public purpose requirements are met.
- Poorly conceived solar access laws could have adverse effects on development patterns, property values, and public attitudes toward solar energy. Well-written access laws can avoid these problems.
- Approaches based on the comparative time of development or use (such as water law analogy) are less fair in their impact, and less certain in their constitutionality, than are controls based on zoning and comprehensive planning.
- Sweeping solar access laws should not be enacted until government gather empirical data as a basis for their choice of law.

The selection of an appropriate method of protecting solar access may change with: time, energy costs, changes in land use planning, and public demands.

Different methods would be required for: federal government, provincial government, municipal government, developers, builders, and individuals.

¹¹⁶ Discussion session with passive home architect B. McFadden. Also the length of time for developers and builders to react depends on the market demand. Thus, it is really public awareness which will have to change for this method to become a reality.

¹¹⁷ S.A., 1977 c. 89.

¹¹⁸ British North America Act, s. 92 (13).

¹¹⁹ Interview with D. Saxe, lawyer, Ontario Ministry of Energy. The Ministry is presently trying to increase awareness of solar energy and overcome institutional barriers and technology problems.

¹²⁰ Chapter 786, s. 500.30, Laws of 1978.

¹²¹ W.A. Thomas, A.S. Miller, and R.L. Robbins, “Overcoming Legal Uncertainties About Use of Solar Energy Systems” (1978) at 44.

¹²² Solar Easements, Minnesota, *supra* n. 120.

¹²³ See following discussion in zoning p. 40 and Appendix H.

¹²⁴ Jaffee, “A Commentary on Solar Access: Less Theory, More Practise”, *supra* n. 1 at 779.

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APPENDIX A: Summary of American Legislation

Table 3 Summary of US Solar Access Legislation

ALASKA

Easements for sunlight are formally authorized and their contents are prescribed (Chapter 83, Laws of 1980).

Local housing and building codes may not be used to prohibit or restrict solar wind or energy systems unless they endanger public health or safety. State government will provide planning assistance to planning authorities for the encouragement of alternative energy systems (Chapter 83, Laws of 1980)

Revised 9/30/80

ARIZONA

Local governments are authorized to regulate solar access (Chapter 94, Laws of 1979).

Contact: Local Planning Commission or
Zoning Board

Covenants or other restrictions on real estate that effectively prohibit the installation or use of a solar energy device are declared void (Chapter 39, Laws of 1980).

Revised 7/30/80

CALIFORNIA

Anyone who owns, occupies, or controls real estate is prohibited from allowing a tree or shrub to cast a shadow on a solar collector between 9:30 a.m. and 2:30 p.m. Trees casting a shadow before the installation of a collector are excluded (Chapter 1366, Laws of 1978).

This law declares that any restriction on real property purporting to prohibit the installation and use of a solar energy system is void and unenforceable. It recognizes solar easements and prescribes their contents. City and county governments may not prohibit or restrict solar energy systems except to ensure the public health. The law requires that new subdivision maps be designed to accommodate passive solar energy systems to the maximum extent possible. It permits city and county governments to require the dedication of solar easements before approving the map (Chapter 1154, Laws of 1978)

Revised 1/30/81

COLORADO

Solar easements are recognized and their contents are prescribed. They are subjected to the same conveyancing and recording requirements as other easements. Any unreasonable restriction on real estate, based on aesthetic considerations and effectively prohibiting or restricting the installation and use of a solar energy device, is declared void and unenforceable (Chapter 326, Laws of 1975; Chapter 358, Laws of 1979).

This law authorizes local governments to regulate uses of land in planning and zoning regulations to assure access to direct sunlight for solar energy devices. Special exceptions to zoning regulations may be granted to protect solar access. Subdivision regulations may be altered to protect solar access. Effective 1/1/80 (Chapter 306, Laws of 1979).

Revised 7/30/80

CONNECTICUT

The zoning commission of each city, town, or borough is authorized to regulate development to encourage energy efficiency and the use of renewable forms of energy, including solar (Public Act 78-314).

Revised 7/30/80

FLORIDA

Solar easements are recognized and subject to the same requirements as other easements; the contents are prescribed (Chapter 309, Laws of 1978).

Ordinances effectively prohibiting the installation of solar collectors, clotheslines, or other renewable energy devices may not be enacted. No subdivision plan may be approved if it includes private covenants that result in the same prohibition (Chapter 163, Laws of 1980)

Revised 11/1/80

GEORGIA

Solar easements are recognized and subject to the same requirements as other easements; the contents are prescribed (Act 1446, 1978).

IDAHO

Solar easements are recognized and are made subject to the same requirements as other easements; the contents are prescribed (Chapter 294, Laws of 1978.)

Revised 5/15/80

INDIANA

This law formally recognizes solar easements and mandates their contents (Public Law 185, 1980).

Revised 12/1/80

KANSAS

Solar easements are recognized and are subject to the same requirements as other easements; the contents are prescribed (Chapter 277, Laws of 1977).

Revised 7/30/80

MARYLAND

Solar easements are recognized as a lawful restriction on land (Chapter 934, Laws of 1977).

Private covenants becoming effective after 7/1/80 may not impose unreasonable limitations on the installation of solar panels on roofs or exterior walls of buildings (Chapter 381, Laws of 1980)

Revised 7/30/80

MAINE

Local governments are permitted to enact zoning ordinances to protect access to direct sunlight for solar energy use (Chapter 418, Laws of 1979)

Contact: local zoning or planning group

Planning boards are permitted to protect solar access in new developments through subdivision regulations. These may include restrictive covenants, height restrictions, and setback requirements (Chapter 435, Laws of 1979)

Revised 7/30/80

MINNESOTA

Zoning ordinances may provide for the protection of solar access for solar energy systems. Solar easements are recognized and the contents are prescribed; they are enforceable in civil actions. Depreciation resulting from easements (but not any appreciation) shall be included in revaluation for property tax (Chapter 786, Laws of 1978)

Revised 7/30/80

MISSOURI

This law declares that the right to use solar energy is a property right, but it cannot be acquired by eminent domain. Solar easements are recognized and subjected to the same

conveyancing and recording requirements as other easements. The contents are mandated (442.021 of the Missouri Code).

MONTANA

This law recognizes solar easements and subjects them to the same conveyancing and recording requirements as other easements. The contents are prescribed (Chapter 524, Laws of 1979).

Revised 5/15/80

NEBRASKA

This law recognizes solar easements and prescribes their contents. Easements can be enforced in a civil suit. Local governments may include solar access considerations in their zoning ordinances and development plans. Variances from other ordinances may be granted to facilitate solar access (Legislative Bill 353, 1979).

Revised 12/1/80

NEVADA

This law formally recognizes solar easements and prescribes their contents. The easement will run with the land upon transfer of title but can terminate upon expiration or release (Chapter 314, Laws of 1979)

NEW JERSEY

Solar easements are recognized and subject to the same requirements as other easements; the contents are prescribed (Chapter 152, Laws of 1978).

This law amends the Municipal Land Use Law to include as a purpose the promotion of energy conservation and maximum use of renewable energy through planning practices. Master plans shall include an energy conservation and renewable energy provision. Streets shall be oriented to maximize solar gain. Site plan and subdivision ordinances shall include a review of energy conservation and use of renewable resources. Zoning ordinances may regulate building orientation and may require buildings to use renewable energy to the maximum practicable extent. When master plans are re-examined every six years, particular attention shall be paid to energy conservation (Chapter 146, Laws of 1980).

Revised 1/15/81

NEW MEXICO

The right to use solar energy is a property right of landowners; disputes regarding access will be settled by rule of prior appropriation (Chapter 169, Laws of 1977).

Revised 6/13/80

NEW YORK

This law recognizes solar easements and subjects them to the same conveyancing and recording requirements as other easements. The contents are prescribed (Chapter 705, Laws of 1979).

This law amends the general city law, the village law, and the town law to make the protection of solar access a valid purpose of zoning regulation. Effective 1/1/80. Before 9/30/80 the state energy office must issue guidelines to assist local government in implementing the act (Chapter 742, Laws of 1979).

Revised 6/13/80

NORTH DAKOTA

Solar easements are recognized and subject to the same requirements as other easements. The contents are prescribed (Chapter 425, Laws of 1977).

Revised 6/13/80

OHIO

This law recognizes solar easements and subjects them to the same requirements as other easements. The contents are prescribed (Amended Substitute House Bill 154, 1979)

Revised 5/15/80

OREGON

This law enables local governments to regulate solar access in comprehensive plans, zoning ordinances, and subdivision regulations. Solar easements are recognized and their contents are prescribed. Private restrictions prohibiting the use of solar energy are void and unenforceable if the provision is executed after 10/3/79 (Chapter 671, Laws of 1979).

Revised 3/30/80

TENNESSEE

This law recognizes solar easements and prescribes their contents. They are subjected to the same general requirements as other easements. The Tennessee Energy Authority is directed to prepare a sample solar easement for used in Tennessee. Local governments are empowered to protect solar access through zoning regulations (Chapter 250, Laws of 1979).

UTAH

This law recognizes solar easements as a property interest. Easements must be in writing and they will run with the land in perpetuity unless terminated upon stated conditions. Enforcement may be by injunction or other civil action (Chapter 82, Laws of 1979).

Revised 9/1/80

VERMONT

Authorizes regional and municipal plans and municipal zoning regulations to encourage energy conservation and use of renewable resources in site plan review, subdivision regulations, and related land use controls. Exempts windmills and rooftop solar collectors from height restrictions under certain circumstances. Authorizes the appointment of the municipal energy coordinator to the municipal planning commission. Authorizes vacancies for renewable energy resource structures (Act 174, 1980).

Revised 7/30/80

VIRGINIA

This law subjects solar easements to the same legal requirements as other easements and mandates contents of the agreements (Chapter 323, Laws of 1978).

Revised 5/15/80

WASHINGTON

This law permits local governments to regulate protection of solar access in comprehensive plans and zoning ordinance. It recognizes easements, covenants and other restrictions on the use of real property, created to protect access to sunlight. The contents of easements are mandated and they are subjected to the same conveyancing and recording requirements as other easements. Some remedies for interference with a solar easement are authorized (Chapter 170E-1, Laws of 1979).

Revised 8/15/80

APPENDIX B: Various American Experiences

PREPARATION AND ADMINISTRATION OF ENERGY-CONSERVING DEVELOPMENT REGULATIONS BY COMMUNITY

Community	Type of regulation(s)	Comprehensive versus Ad Hoc approach	Estimated Energy Savings?	Source of Initiative	Experience to Date?	Evaluation of Results?
Albuquerque, NM	Zoning provisions to protect solar access	Ad hoc	No	Local architects/ planning staff	Many buildings constructed under regulation/many solar collectors in use	No
Boulder, CO	Incentives for energy-efficient site design and location of development	Comprehensive	No	Planning staff	Several projects have received bonus for energy-efficient design	Plan to evaluate entire growth management system
Dade County, FL	Site plan review criteria for energy-efficient site design	Comprehensive	No	Interested citizens/ planning staff	None	No
Douglas County, KS	Zoning amendment to permit underground housing	Ad hoc	No	Interested citizens/ planning staff	None	No
Davis, CA	Zoning amendments to permit flexible siting of fences and hedges for solar heating; greater use of shade control devices, expand use of home occupations, reduced street width, deregulation of clotheslines, landscaping regs	Comprehensive	No	Interested citizens/ planning staff	Substantial	No
Imperial County, CA	Overlay zoning provisions to manage geothermal energy development	Ad hoc	No	Planning staff/ geothermal industry	Two geothermal plants in constructions	No
King County, WA	Reduced subdivision standards for street width; townhouse regs	Comprehensive	No	Planning staff/ county executive	None	No
Lincoln, NB	Incentives for protecting solar	Comprehensive access	O	Energy council/ planning staff	Three projects in preliminary review	No
Los Alamos, NM	Zoning provisions to protect solar access	Ad hoc	No	Local scientists/ planning staff	50 solar systems registered and protected	No
Port Arthur, TX	Subdivision requirements for passive solar orientation	Comprehensive	Yes (for other options)	Planning staff/ local interest groups	Few subdivisions have been built with proper orientation	No
San Diego County, CA	Mandatory use of solar water heaters in new development; protection of solar access	Comprehensive	Yes	Local interest groups/ county brd/ planning staff	Several projects have been reviewed	Plan to keep track of homes with solar systems for future evaluation
Windsor, CT	Incentives for energy-efficient location of development, reduced subdivision standards for street	Ad hoc	No	Planning staff	Several projects have used narrower streets or energy-efficient locations	No

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Chart: American Planning Association, *Energy-Conserving Development Regulations, Current Practice*

APPENDIX C: Bill 228 Right to Sunlight

Second Session, 19th Legislature, 29 Elizabeth II

BILL 228 AN ACT ESTABLISHING THE RIGHT TO SUNLIGHT MR. NOTLEY

Whereas it is hereby recognized and declared that citizens of Alberta should have protection of existing access to sunlight, in order to preserve the horticultural, psychological, solar energy, and other benefits accruing therefrom;

Therefore her Majesty, by and with the advice and consent of the Legislative Assembly of Alberta, enacts as follows:

1. No person shall erect or retain any permanent structure, or retain any temporary structure for more than a period of 90 days, on land in such a way that the structure impedes direct sunlight on to property of another person unless
 - (a) he has the consent of the other person,
 - (b) the structure was legally under construction on July 1, 1980
 - (c) the structure was approved in a development permit granted prior to July 1, 1980
 - (d) the land on which the structure is located and the land on which the sunlight is impeded are zoned for multi-storey commercial development, or
 - (e) the right to sunlight through the structure on to the other property has been expropriated pursuant to *The Expropriation Act*

2. The right to unobstructed flow of sunlight on to property existing as at July 1, 1980 is an interest in land and may be dealt with as such pursuant to *The Land Titles Act*.

3. (1) A person may require an owner of land to cut or trim any tree, bough, hedge, or other natural growth that
 - (a) is on the owner's land
 - (b) casts a shadow on his land to a greater extent than on July 1, 1980 subject to section 4, and
 - (c) has not been the subject of a consent in writing by him at any time.
(2) An owner who refused to comply with a written request made pursuant to subsection (1) commits an offence.

4. This Act does not apply to an impedance of sunlight that
 - (a) averaged throughout the day, is equivalent to less than a 10% impedance of sunlight, or
 - (b) to a shadow that falls upon the land for less than 2 hours of each day
in both cases measured at the spring or fall equinox.

5. This Act does not apply to any structure in respect of which a development permit was granted prior to July 1, 1980.

6. Every person who infringes on any provision of this Act commits an offence punishable on summary conviction.

7. (1) *The Planning Act, 1977, is amended by this section.*

(2) *The following is added after section 75:*

75.1 No development permit for a structure shall be issued after July 1, 1980, unless the applicant files with the application a statement that the structure will not infringe *The Right to Sunlight Act* and a copy of every consent to an impedance of direct sunlight onto lan that has been obtained from the owner of that land pursuant to that Act

8. This Act binds the Crown.

9. This Act may be cited as *The Right to Sunlight Act*.

10. This Act comes into force on the day upon which it is assented to.

NOTE: this Bill has not been assented to.

APPENDIX D: New Mexico's Solar Rights Act

ARTICLE 3 Solar Rights

47-3-1 Short title

This Act [47-3-1 to 47-3-5 NMSA 1978) may be cited as the “Solar Rights Act”.

History: 1953 Comp., 70-8-1, enacted by Laws 197, ch. 169, 1.

47-3-2 Declaration and findings

The legislature declares that the state of New Mexico recognizes that economic benefits can be derived for the people of the state from the use of solar energy. Operations, research, experimentation and development in the field of solar energy use shall therefore be encouraged. While recognizing the value of research and development of solar energy use techniques and devices by governmental agencies, the legislature finds and declares that the actual construction and use of solar devices, whether at public or private expense, is properly a commercial activity which the law should encourage to be carried out, whenever practicable, by private enterprise.

History: 1953 Comp. 70-8-2, enacted by Laws 1977, ch. 169, 2.

47-3-3 Definitions

As used in the Solar Rights Act (47-3-1 to 47-3-5 NMSA 1978):

A. “solar collector” means any device or combination of devices or elements which rely upon sunshine as an energy source, and which are capable of collecting not less than twenty-five thousand Btu’s on a clear winter solstice day. The term also includes any substance or device which collects solar energy for use in:

- 1) the heating or cooling of a structure or building;
- 2) the heating or pumping of water;
- 3) industrial, commercial, or agricultural processes; or
- 4) the generation of electricity.

A solar collector may be used for purposes in addition to the collection of solar energy. These uses include, but are not limited to, serving as a structural member or part of a roof of a building or structure and serving as a window or wall; and

B. “solar right” means a right to an unobstructed line-of-sight path from a solar collector to the sun, which permits radiation from the sun to impinge directly on the solar collector.

History: 1953 Comp., 70-8-3, enacted by Laws 1977, ch. 69 3.

47-3-4. Declaration of solar rights

A. The legislature declares that the right to use the natural resource of solar energy is a property right, the exercise of which is to be encouraged and regulated by the laws of this state. Such property right shall be known as a solar right.

B. The following concepts shall be applicable to the regulation of disputes over the use of solar energy where practicable:

1) “beneficial use.” Beneficial use shall be the basis, the measure and the limit of the solar right, except as otherwise provided by written contract. If the amount of solar energy which a solar collector user can beneficially use varies with the season of the year, then the extent of the solar right shall vary likewise;

2) “prior appropriation.” In disputes involving solar rights, priority in time shall have the better right except that the state and its political subdivisions may legislate, or ordain that a solar collector user has a solar right even though a structure or building located on neighborhood property blocks the sunshine from the proposed solar collector site. Nothing in this paragraph shall be construed to diminish in any way the right of eminent domain of the state or any of its political subdivisions or any other entity that currently has such a right; and

3) “transferability.” Solar rights shall be freely transferable within the bounds of such regulation as the legislature may impose. The transfer of a solar right shall be recorded in accordance with such regulation as the legislature may impose. The transfer of a solar right shall be recorded in accordance with Chapter 14, Article 9 NMSA 1978.

C. Unless a singular overriding state concerns occur which significantly affect the health and welfare of the citizens of this state, permit systems for the use and application of solar energy shall reside with county and municipal zoning authorities

History: 1953 Comp., 70-8-4, enacted by Laws 1977, ch. 169, 4.

47-3-5. Prior rights unaffected.

Nothing in the Solar Rights Act [47-3-1 to 47-3-5 NMSA 1978] shall be construed to alter, amend, deny, impair or modify any solar right, lease easement or contract right which has vested prior to the effective date of the Solar Rights Act.

History: 1953 Comp., 70-8-5, enacted by Laws 977, ch. 169, 5.

Effective date. – Laws 1977, ch. 169 6 makes the act effective on July 1, 1978.

APPENDIX E: California Shade Control Act

PUBLIC RESOURCES CODE DIVISION 15. ENERGY CONSERVATION AND DEVELOPMENT CHAPTER 12. SOLAR SHADE CONTROL Cal Pub Resources Code § 25980 (2005)

§ 25980. Short title; Declaration of state policy

This chapter shall be known and may be cited as the Solar Shade Control Act. It is the policy of the state to promote all feasible means of energy conservation and all feasible uses of alternative energy supply sources. In particular, the state encourages the planting and maintenance of trees and shrubs to create shading, moderate outdoor temperatures, and provide various economic and aesthetic benefits. However, there are certain situations in which the need for widespread use of alternative energy devices, such as solar collectors, requires specific and limited controls on trees and shrubs.

§ 25981. "Solar collector"

As used in this chapter, "solar collector" means a fixed device, structure, or part of a device or structure, which is used primarily to transform solar energy into thermal, chemical, or electrical energy. The solar collector shall be used as part of a system which makes use of solar energy for any or all of the following purposes: (1) water heating, (2) space heating or cooling, and (3) power generation.

§ 25982. Solar collector shade trees prohibited

After January 1, 1979, no person owning, or in control of a property shall allow a tree or shrub to be placed, or, if placed, to grow on such property, subsequent to the installation of a solar collector on the property of another so as to cast a shadow greater than 10 percent of the collector absorption area upon that solar collector surface on the property of another at any one time between the hours of 10 a.m. and 2 p.m., local standard time; provided, that this section shall not apply to specific trees and shrubs which at the time of installation of a solar collector or during the remainder of that annual solar cycle cast a shadow upon that solar collector. For the purposes of this chapter, the location of a solar collector is required to comply with the local building and setback regulations, and to be set back not less than five feet from the property line, and no less than 10 feet above the ground. A collector may be less than 10 feet in height, only if in addition to the five feet setback, the collector is set back three times the amount lowered.

§ 25983. Violations

Every person who maintains any tree or shrub or permits any tree or shrub to be maintained in violation of Section 25982 upon property owned by such person and every person leasing the

property of another who maintains any tree or shrub or permits any tree or shrub to be maintained in violation of Section 25982 after reasonable notice in writing from a district attorney or city attorney or prosecuting attorney, to remove or alter the tree or shrub so that there is no longer a violation of Section 25982, has been served upon such person, is guilty of a public nuisance as defined in Sections 370 and 371 of the Penal Code and in Section 3480 of the Civil Code. For the purposes of this chapter, a violation is hereby deemed an infraction. The complainant shall establish to the satisfaction of the prosecutor that the violation has occurred prior to the prosecutor's duty to issue the abatement notice. For the purpose of this section, "reasonable notice" means 30 days from receipt of such notice. Upon expiration of the 30-day period, the complainant shall file an affidavit with the prosecutor alleging that the nuisance has not been abated if the complainant wishes to proceed with the action. The existence of such violation for each and every day after the service of such notice shall be deemed a separate and distinct offense, and it is hereby made the duty of the district attorney, or the city attorney of any city the charter of which imposes the duty upon the city attorney to prosecute state infractions, to prosecute all persons guilty of violating this section by continuous prosecutions until the violation is corrected. Each and every violation of this section shall be punishable by a fine not to exceed one thousand dollars (\$ 1,000).

§ 25984. Timberland and agricultural cropland

Nothing in this chapter shall apply to trees planted, grown, or harvested on timberland as defined in Section 4526 or on land devoted to the production of commercial agricultural crops. Nothing in this chapter shall apply to the replacement of a tree or shrub which had been growing prior to the installation of a solar collector and which, subsequent to the installation of such solar collector, dies.

§ 25985. Ordinances exempting jurisdiction from provisions of chapter

Any city, or for unincorporated areas, any county, may adopt, by majority vote of the governing body, an ordinance exempting their jurisdiction from the provisions of this chapter. The adoption of such an ordinance shall not be subject to the provisions of the California Environmental Quality Act (commencing with Section 21000).

§ 25986. Equitable relief to exempt passive or natural system

Any person who plans a passive or natural solar heating system or cooling system or heating and cooling system which would impact on an adjacent active solar system may seek equitable relief in a court of competent jurisdiction to exempt such system from the provisions of this chapter. The court may grant such an exemption based on a finding that the passive or natural system would provide a demonstrably greater net energy savings than the active system which would be impacted.

APPENDIX F: Individual Solar Easement

A recorded instrument in the following form would be adequate to create an easement for concerned individuals.

[Grantor(s)] hereby convey(s), grant(s), and warrant(s) to [Grantee(s)] for the sum of [] a negative easement to restrict in accordance with the following terms the future use and development of the real property of [Grantor(s)] recorded as follows with the [land titles office] of Alberta.

The solar access area to be protected [is/will be] at the following location(s) on the real property of the Grantee(s) recorded as follows: (see solar envelopes zoning for description technique).

The grantor(s) boundaries for development are recorded as follows:

Conditions

No structure, vegetation, or activity or land use other than the ones which exist on the effective date of this easement which are not required to be removed herein or excepted herein shall penetrate the airspace at a height greater than [] over the [above-described real property of the Grantor(s)/following areas of the above described real property of the Grantor(s)] with the exception of [].

The solar express easement will terminate upon written agreement between the Grantee(s) and Grantor(s) or their successors.

The attached map showing the affected properties and the protected areas of the property is incorporated as part of this instrument. This model was adapted from p. 46 of "Overcoming Legal Uncertainties About Use of Solar Energy Systems", Thomas, Miller, and Robbins.

The Tennessee Energy Authority has sample easements available which may be helpful when drafting.

APPENDIX G: Provincial Legislation for a Solar Easement

A. Solar Easement

The following is a suggested list of requirements for a provincial statute which would recognize and condone the use of solar easements

Outline:

1. Definition
2. Creation/Termination
3. Contents
4. Enforcement

1. Definitions

Solar Easement: A right, expressed as an easement, covenant, condition, or other property interest in any deed or other instrument executed by or on behalf of any landowner, which protects the solar access at a described location by forbidding or limiting activities which would cause interference. The solar easement must be described as a three-dimensional space in which obstruction is prohibited or limited.

Structure: Anything constructed, installed or portable that requires for normal use a location on a parcel of land. This includes fences, billboards, poles, transmissions lines and advertising signs.

2. Creation/Termination

Any property owner may grant a solar easement in the same manner and with the same effect as a conveyance of an interest in real property. The easements shall be created in writing and shall be filed, duly recorded, and indexed in the appropriate land titles office of Alberta. No duly recorded solar easement shall be unenforceable on account of lack of privity of estate or privity of contract; such easements shall run with the land or lands benefited and burdened and shall constitute a perpetual easement until termination.

Any terms or conditions under which the solar easement is granted can be terminated upon a written agreement between the Grantee(s) and Grantor(s) or their successors.

3. Contents

Any instrument that creates a solar easement shall include, but the contents are not limited to:

- (i) description of the real property subject to the solar easement, and a description of the real property benefiting from the solar easement;
- (ii) a description of the solar envelope or the three dimensional space and times of day in which an obstruction to direct sunlight is prohibited;

(iii) termination conditions;

(iv) any provision for compensation of the owner of the real property benefiting from the solar easement, or compensation of the owner of the real property subject to the solar easement for maintaining the solar easement;

(v) [optional] A map may be attached of the adjoining properties.

4. Enforcement

This easement shall be enforced by an action for injunctive relief, damages, or both, plus costs.

5. Commentary

This suggested format for provincial legislation was largely based on Minnesota's Solar Access Easement¹ and a document by the American Bar Foundation.² Most state statutes authorizing and condoning solar easements are very similar to the approach provided in the model.

It is hoped that restricting the description of the easement to a solar envelope will make surveying and filing costs reasonable. A final suggestion that the province could consider is reducing property taxes for those granting easements. Minnesota recognized this in sub. 5,

Any depreciation caused by any solar easement which is imposed upon designated property, but not any appreciation shall be included in the valuation of the property for property tax purposes. 130

¹ Reference appears without publication information

² Reference appears without publication information

APPENDIX H: Explanation of Solar Aspects Incorporated Into By-Law 139-79

Prepared by: Greg Ross,
Policy planner
Date: June 1979

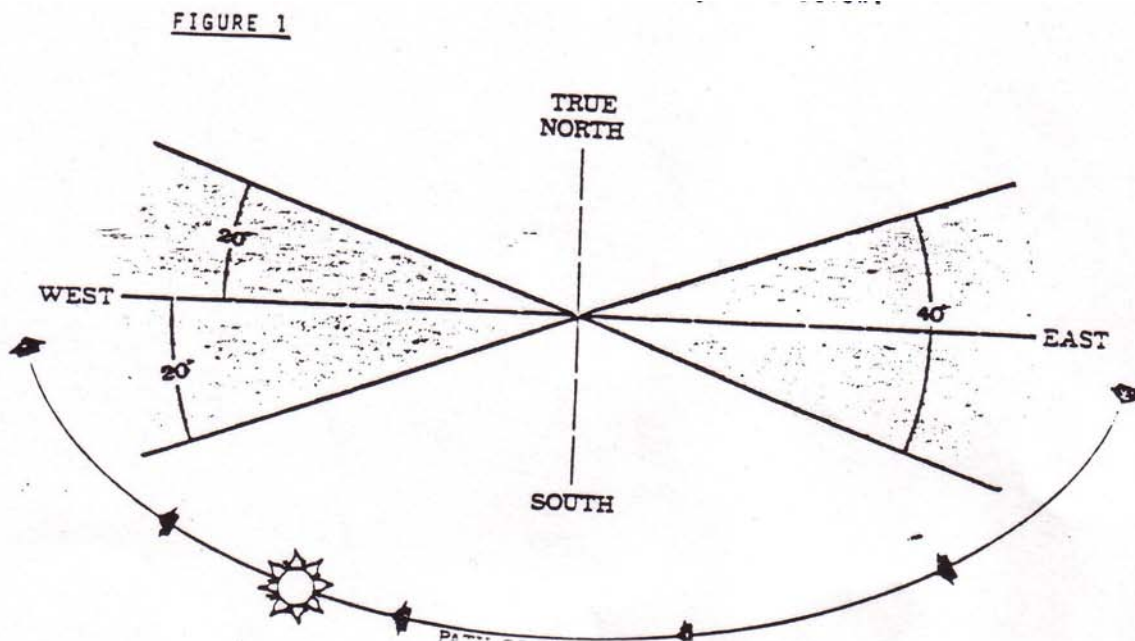
A. INTRODUCTION

By-law 139-79 pertains to a residential subdivision plan for a 50-acre parcel of land located on the west half of Lot 13, Concession 1, WHS in Brampton, Ontario. The subdivision, submitted by the Alliance Building Corporation of Toronto, was designed according to solar energy policies and criteria defined by City staff. The plan was Draft approved on April 23, 1979. Streets are generally oriented along the true east-west axis and building lots oriented front to rear along the true north-south axis.

B. POTENTIAL ACCEPTABLE SOLAR ALIGNMENTS

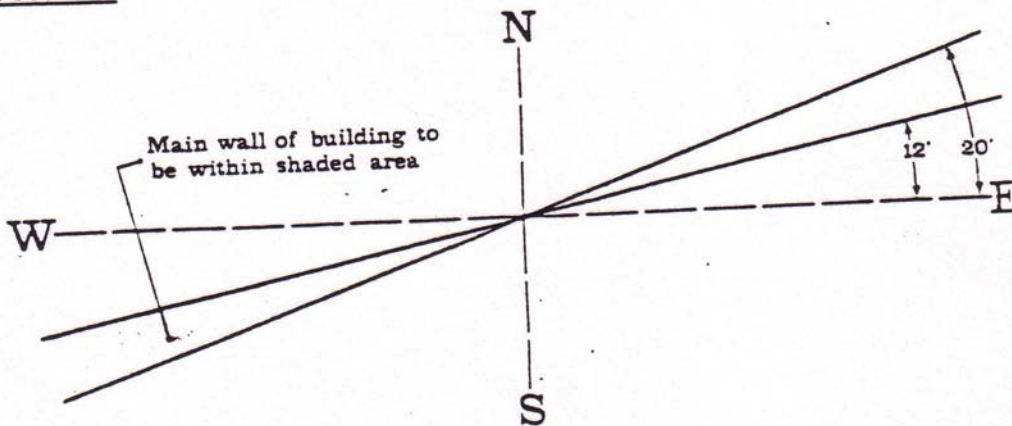
The primary objective of the City was to ensure full south wall exposure to direct sunlight during the hours of 9:00 a.m. and 3:00 p.m. during the heating season for the maximum number of housing units in the Alliance subdivision. If this was achieved, then most of the housing units would potentially utilize either passive or active solar energy systems to whatever extent desired.

There is a critical tolerance range between 20° south-east (or 20° north-west) and 20° south-west (or 20° north-east), on the respective sides of the true north-south axis, where a main wall face of a residential unit could be aligned along a straight line to successfully utilize direct sunlight in a passive or active heating system. This principle is illustrated in Figure 1 below:



However, in the case of the subdivision to which the By-law applies, the potential acceptable solar alignments for a main wall are much more limited due to the constraints imposed by the Draft Approved subdivision plan which fixes the lotting arrangement and orientation. The By-law identifies the lots which, by virtue of their specific orientation, may successfully accommodate a passive solar housing unit. All potential lots are oriented along a straight line oriented at an angle of 12° south-west or greater, (i.e. 12° south-west). Thus, the By-law contains a provision for the siting of the main wall facing “south” on lots which are oriented within the range of possibility, (i.e. although a lot angle may exceed 20° south-west, a building may be positioned on the lot within the 20° south-west tolerance limit if the lot angle is not too excessive and the lot has sufficient area to accommodate the unit whose sides are no longer parallel to the side yard lot lines). The following figure illustrates the 12° - 20° south-west orientation range.

FIGURE 2



C. MAXIMUM HEIGHT OF POTENTIAL OBSTRUCTIONS TO DIRECT SUNLIGHT REQUIRED TO OPERATE PASSIVE SOLAR HEATING SYSTEMS

A maximum height for buildings, structures, and fences which are opaque or translucent and coniferous vegetation is another provision contained in By-law 139-79. This applies to building sites situated on the north side of east-west streets. This provision is defined by a flat plane calculated to be 71.5° to the vertical plane rising from the 9.14 m (30') minimum rear yard setback line on the immediately abutting northerly lot(s) as illustrated schematically below in Figures 3 and 4.

FIGURE 3: 3-DIMENSIONAL MAXIMUM HEIGHT PLANE

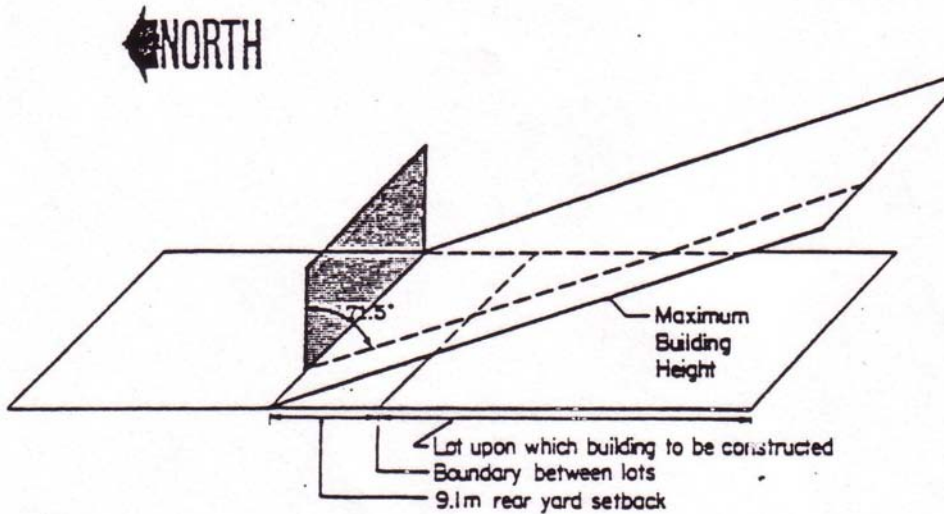
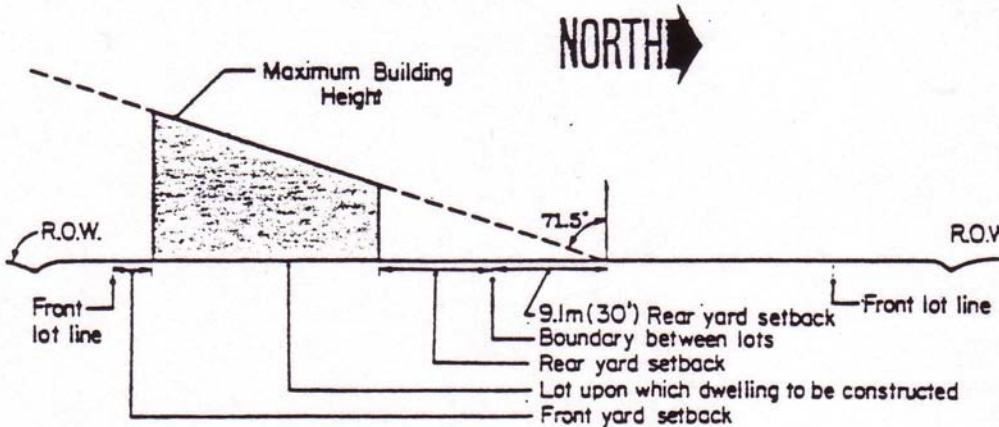


FIGURE 4: 2-DIMENSIONAL CROSS-SECTIONAL ASPECT OF MAXIMUM HEIGHT LINE

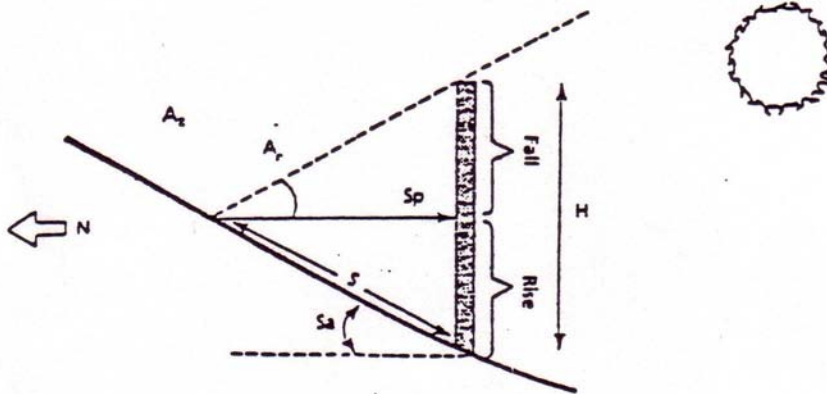


The 71.5° angle was derived from shadow diagram calculations performed on a typical semi-detached housing unit measuring 50' X 50' X 25' where the peak of the roof occurs at the mid-point and parallels the street line. The unit was oriented at 13° south-west which applies to the majority of potential passive solar lots in the subdivision to which By-law 139-79 applies. This resulted in the generation of a reasonable maximum shadow pattern. This procedure is the subject of part D of these explanatory notes.

s_A = slope angle (as described in Figure 5, below)

s_1 = slope percent/100.

FIGURE 5: AN ILLUSTRATION OF VARIOUS TERMS USED IN SHADOW LENGTH EQUATIONS



For the simple condition of shadows on a level surface or 0% slope, as was the case in the subject subdivision, the shadow length is given immediately by the formula:

$$1) S = H/\tan A_1$$

The shadow will fall in a direction exactly opposite the direction of the sun, numerically:

$$2) A_z \text{ shadow} = A_z \text{ sun } +/- 180^\circ$$

These two steps, which were followed to give the results illustrated in Diagrams A-E attached, are briefly demonstrated to reveal their association:

$$1) S = ?$$

$$H = 25' \text{ (Roof Peak)}$$

$$A_1 = 11^\circ \text{ (At 9:00 a.m. and 3:00 p.m. at } 44^\circ \text{N latitude on December 21}^{\text{st}})$$

$$S = \frac{H}{\tan A_1}$$

$$= \frac{25'}{\tan 11^\circ}$$

$$= \frac{25'}{0.19}$$

$$= 132'$$

D. SHADOW CALCULATIONS AND ILLUSTRATIONS

The exact latitude of a community (44°N in the case of Brampton) and the exact solar altitudes* and azimuths** at that latitude form the necessary data base for doing shadow calculations. The latter information can be obtained from the ASHRAE Handbook of Fundamentals published by the American Society of Heating, Refrigeration, and Air Conditioning Engineers. The key day of the year to perform shadow calculations is on the winter solstice or December 21st. This day has the least amount of sunlight time and the sun is at its lowest altitude above the horizon. Thus, shadows generated on December 21st will be longer than at any other day of the year. If an object is exposed to direct sunlight during a defined period of time on December 21st, the object will not be shadowed (i.e. save for cloud cover or an eclipse of the Sun) for at least the same period of time at any other day of the year.

One other fundamental consideration in determining the amount of exposure to direct sunlight during the heating months is the critical “six hour heating period”, which occurs between 9:00 a.m. and 3:00 p.m.. The amount of BTUs (British Thermal Units of heat) generated hourly by direct rays of the sun before 9:00 a.m. and after 3:00 p.m. is relatively negligible compared to the amount generated hourly between the defined parameters.

The following abbreviations are used in explaining all of the potential equations for doing shadow calculations:

A_1 = solar altitude

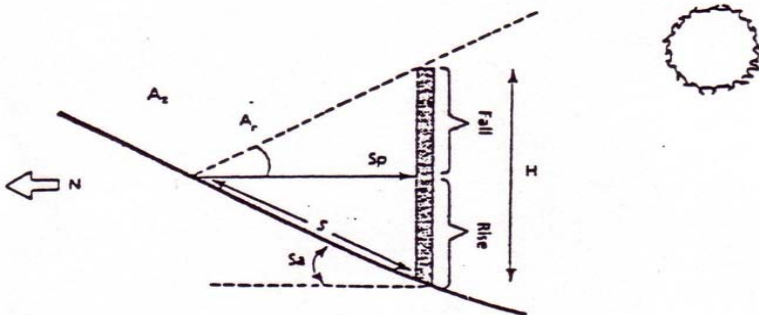
A_z = solar azimuth

H = height of object casting shadow

S = true shadow length (as shows in cross-section in Figure 5, below).

S_p = plan projected shadow length (the shadow length as shown in a plan view of an object and its shadow; it presumes a distance measured on a hypothetical level surface, instead of the varying irregularities of an actual site, as clearly shown in Figure 5, below).

FIGURE 5: AN ILLUSTRATION OF VARIOUS TERMS USED IN SHADOW LENGTH EQUATIONS



* definition of solar altitude: the angular distance from the horizon of the sun.

** definition of solar azimuth: the angular distance between true south and the point on the horizon directly below the sun.

The following information, although not applicable to By-law 139-79 due to the existence of a predominantly level surface, would be utilized where shadow length calculations are performed for sloping surfaces. The shadow length calculation becomes more complex due to the rise or fall of the land. If the land rises in the same direction as the sun's rays are going, the shadow will be shortened; if the land falls away, the shadow will be lengthened. This fact may be expressed mathematically:

$$3) \text{ Fall}_{\text{shadow}} = S_P \times \tan(A_1)$$

$$4) \text{ Rise}_{\text{land}} = S_P \times \tan(S_a) \\ = S_P \times S_1 S_1$$

The rise of the land and fall of the shadow will equal the height of the shading object.

$$5) H - \text{fall} + \text{rise} \\ = S_P \times [\tan(A_1) + \tan(S_a)]$$

or

$$6) H = S_P \times [\tan(A_1) + S_a]$$

Thus, the projected shadow length is:

$$7) S_P = \frac{H}{[\tan(A_1) + S_1]}$$

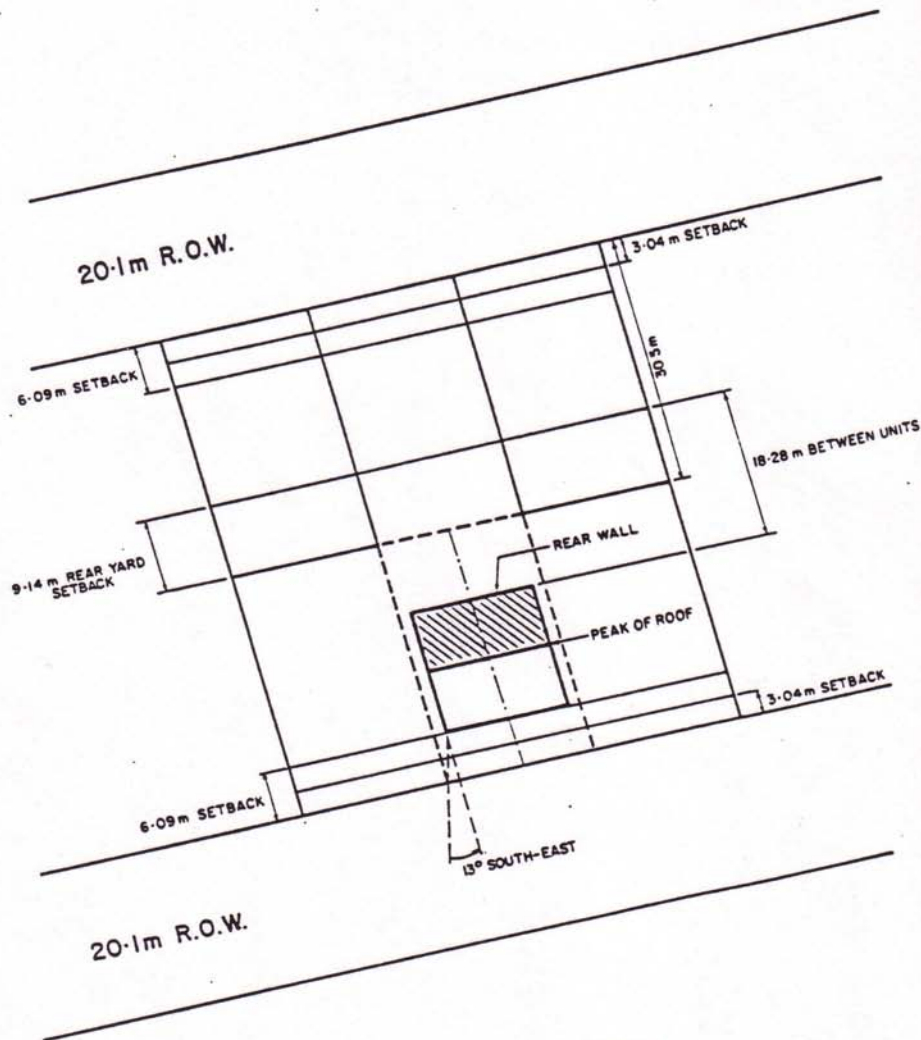
However the slope of the land does not usually lie in the direction of the sun's rays, and the slope along this direction will be different from the true slope of the land. To account for the angle between the sun's rays and the slope of the land, equation 7) must be modified to:

$$8) S_P = \frac{H}{\tan(A_1) + S_1 \times \cos(A_z - W)}$$

where W = angle between the direction of the shadow and the direction of the upward slope.

DIAGRAM A

EXISTING CIRCUMSTANCES
& PRESCRIBED STANDARDS



NOTES

1. Plan Illustrates A Semi-Detached Unit.
2. Roof Peak = 7.62m
" " Occurs At Mid Point Of Unit.
3. Height Of Rear Wall Is 6.09m.
A Limited Front Yard.
4. Plan Uses Setback Range With A 3.04m Tolerance

EXPLANATORY ILLUSTRATION
TO BY-LAW



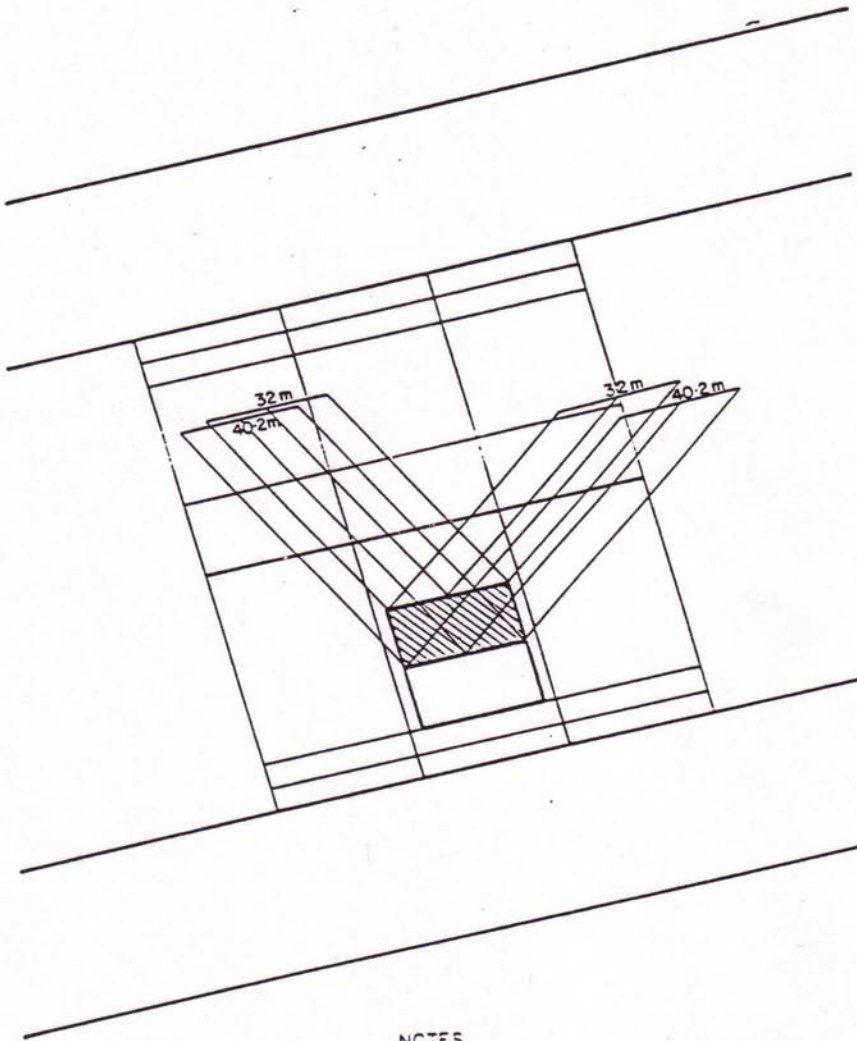
CITY OF BRAMPTON
Planning and Development

Date: 1979 06 06 Drawn by: G.R. S.C.E.

SHEET 1 OF 5

DIAGRAM B

9A.M & 3P.M. SHADOW ON DEC. 21st.



NOTES

1. i) S = 32m ii) S = 40.2m
 H₁ = 6.09m Rear Wall H₂ = 7.62m Roof Peak
 A = 11° A = 11°

Formula $S = \frac{H}{\tan A}$

2. A₂ = ±41.4°

Formula A: Shadow = A, Sun: 180°

EXPLANATORY ILLUSTRATION
 TO BY-LAW

SHEET 2 OF 5



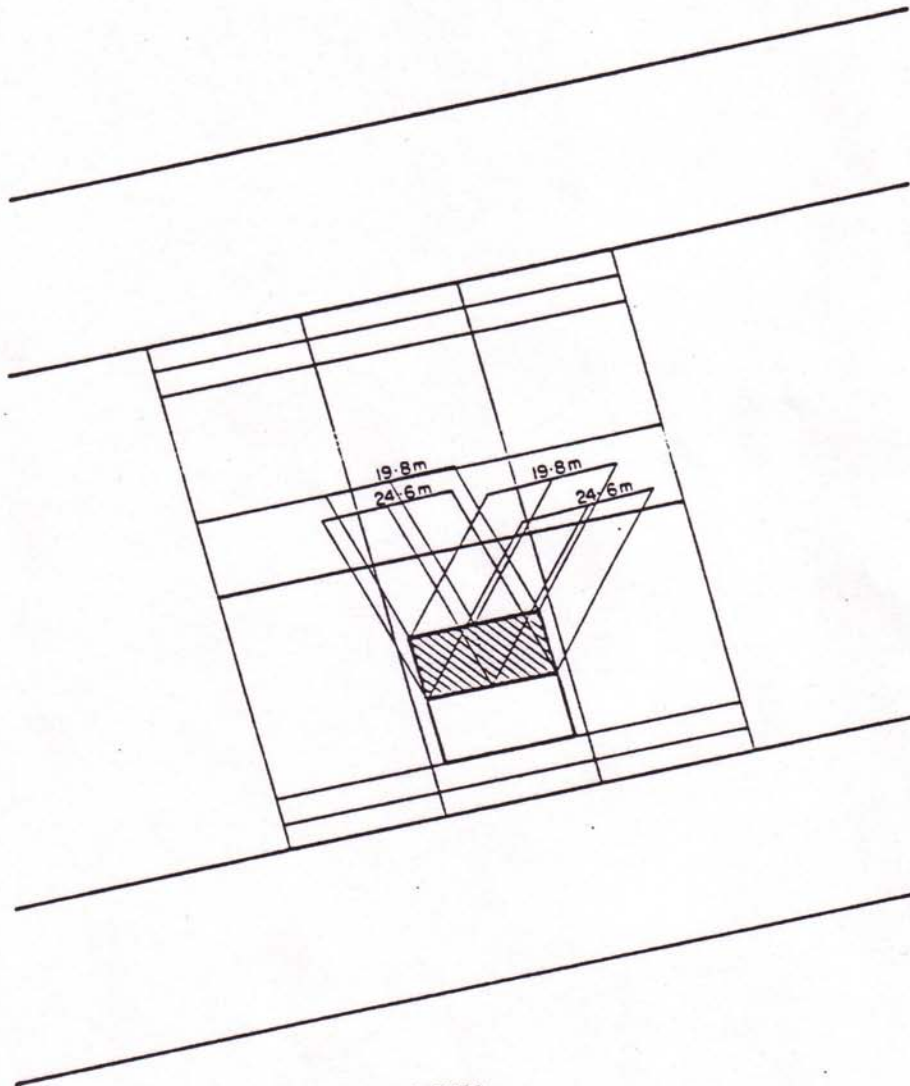
1:500

CITY OF BRAMPTON
 Planning and Development

Date: 1979 06 07 Drawn by: G.R.E.
 File no. M. 2

DIAGRAM C

10 A.M. & 2 P.M. SHADOW ON DEC. 21st.



NOTES

- 1) S = 19.8 m H₁ = 6.09 m Rear Wall A₁ = 17.2°
- " S = 24.6 m H₂ = 7.62 m Roof Peak A₂ = 17.2°

Formula $S = \frac{H}{\tan A}$

- 2. A₂ = ± 28.8°

Formula A₂ Shadow = A₁ Sun ± 60°

EXPLANATORY ILLUSTRATION
TO BY-LAW

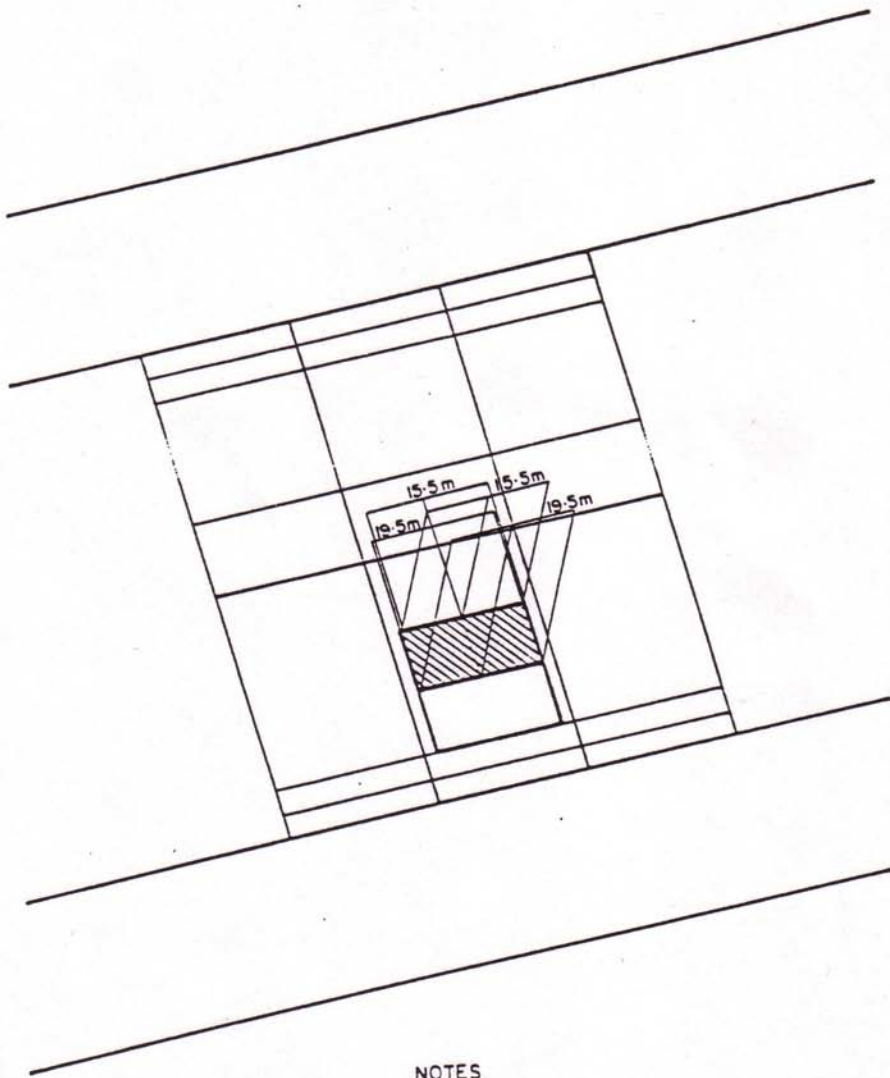


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Planning and Development

Date: 1999-07-27

DIAGRAM D

11 A.M. & 1 P.M. SHADOW ON DEC 21st.



NOTES

- 1. i) S = 15.5 m ii) S = 19.5 m
 H₁ = 6.09 m Rear Wall H₂ = 7.62 m Roof Peak
 A₁ = 21.2° A₂ = 21.2°

Formula $S = \frac{H}{\tan A_1}$

- 2. A₂ = ± 14.8°
 Formula A₂ Shadow = A₁ Sun: 180°

EXPLANATORY ILLUSTRATION
 TO BY-LAW



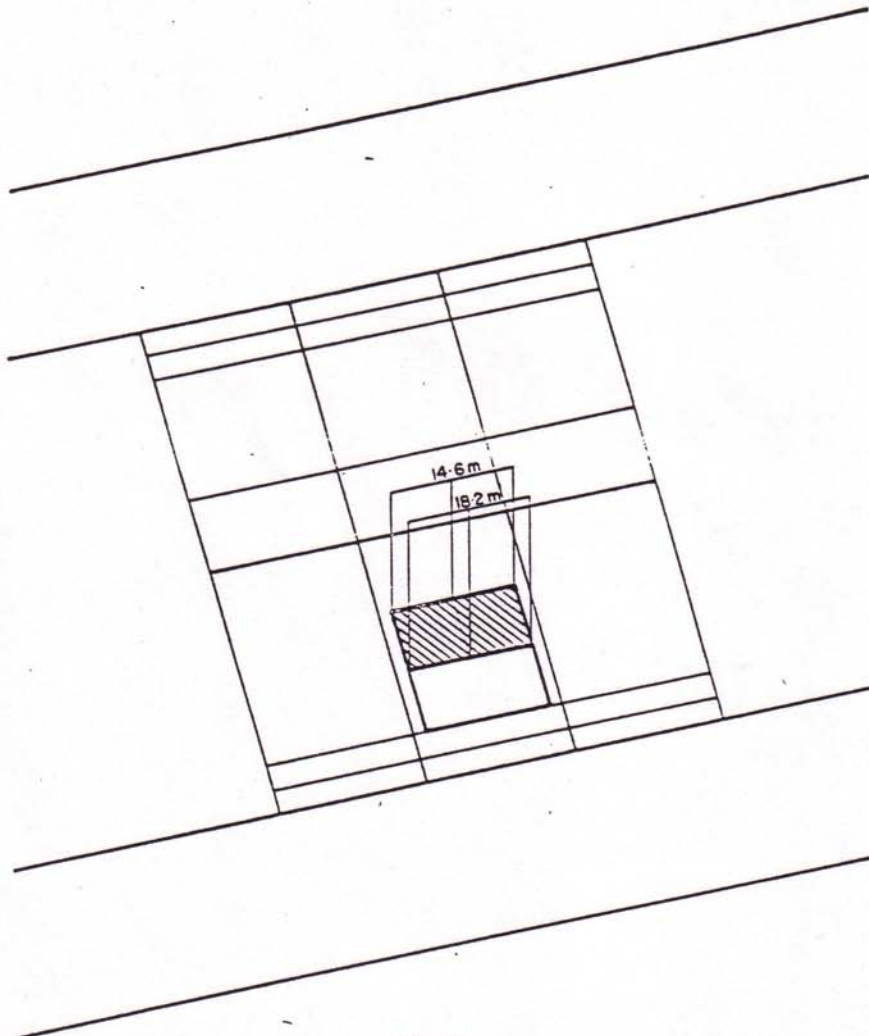
CITY OF BRAMPTON
 Planning and Development

Date: 1999 06 07 Drawn by: LRE

SHEET 4 OF 5

DIAGRAM E

NOON SHADOW ON DEC. 21st.



NOTES

- 1) S = 14.6 m H) S = 18.2 m
 H₁ = 6.09 m. Rebr. Wall H₂ = 7.62 m. Roof Peak
 A₁ = 22.6° A₂ = 22.6°

Formula: $S = \frac{H}{\tan A}$

- 2) A₂ = 0°

Formula: A₂ Shadow = A₂ Sun + 90°

EXPLANATORY ILLUSTRATION
TO BY-LAW

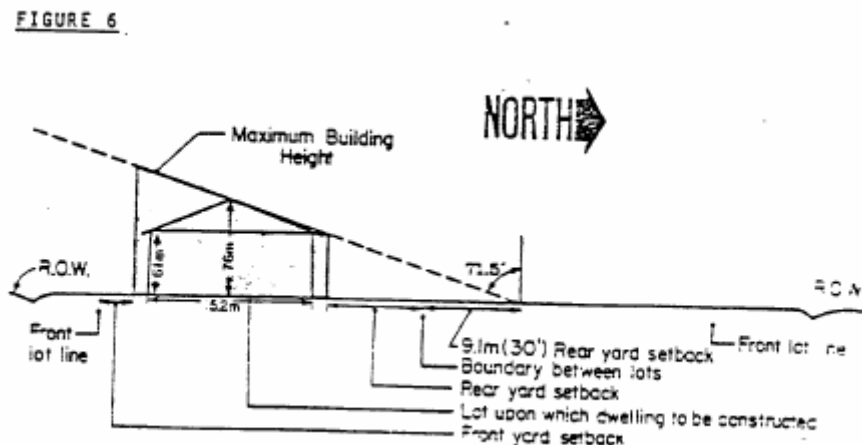


CITY OF BRAMPTON
Planning and Development

E: DETERMINATION OF THE 71.5° HEIGHT RESTRICTION ANGLE

The shadow diagrams A-E revealed that at least morning shadows between 9:00 and 10:00 a.m. generated by a semi-detached unit with “conventional” dimensions etc., impeded access to direct sunlight for residential units situated on lots immediately abutting to the north and north-west. However, since December 21st is the worst day of the year for exposure to direct sunlight insofar as number of daylight hours and length of shadow is concerned, it was considered to perhaps be unduly restrictive to consider protecting access to direct sunlight for all potential passive solar sites throughout the entire six hour period discussed above for that particular day. January 21st solar altitude and azimuth figures were then used in the calculations to see what differences occurred. The result, given all of the data illustrated on Diagram A attached, was that the shadows generated under such circumstances did not seriously interfere with direct sunlight reaching the surface of the vertical plane rising from the 9.14 m (30’) rear yard setback line on the northerly lots between 9:00 a.m. and 3:00 p.m.. The shadow between 9:00 and 10:00 a.m. would cover only part of the vertical plane mentioned above for a minimum part of the hour while the remainder of the six hour solar heating period would be totally free of shadow problems.

A height restriction plane was then simply plotted on a cross-sectional representation of Diagram A. The angle between the height restriction plane and the vertically plane rising from the rear yard setback line of the northerly lot(s) was measured as being 71.5°. This is illustrated below.



F. CONCLUSIONS

The 71.5° angle, as calculated, would generate a height restriction plane for the reasonable maximum shade situation associated with the given building dimensions, lot and unit orientation and prescribed lotting standards as illustrated on Diagram A attached.

A breach of the defined height restriction plane by any large opaque or translucent object (e.g. roof peak) would generate an unacceptable shadow length during the heating period. This conclusion resulted in the incorporation of the following provision in By-law 139-79.

“Where there is a rear yard to the north of and on the same lot as a dwelling unit, structures and fences which are opaque or translucent and coniferous vegetation, shall at no point exceed the plane which determines the maximum height of any buildings on that lot.”

Note:

1) The shadow calculation formulae and Figure 5 were obtained directly from the following publication: Protecting Solar Access for Residential Development: A Guidebook for Planning Officials; US Department of Housing and Urban Development, Office of Policy Development and Research; Washington D.C.; (contract number: H-2573)

2) The acceptable orientation range of 20° south-east (or 20° north-west) to 20° south-west (or 20° north-east) was interpolated from information from various sources including the above-named document.