

OUTDOOR LIGHTING STUDY

House Bill 4254 with committee
amendments
First Analysis (10-28-97)

Sponsor: Rep. Timothy Walberg
Committee: Conservation, Environment
and Recreation

THE APPARENT PROBLEM:

Astronomers have noted that, during this century, most people have lost the spectacular view of the universe that their ancestors enjoyed on clear nights. In many places the night sky has become flooded with glare from excess outdoor lighting that is often poorly designed and utilized, leaving stargazers and others who enjoy studying the grandeur of the night sky to seek out special places where night light is less profuse. Light pollution in night skies generally exists in larger urban areas throughout the country, although the migration of populations to suburban and rural areas has caused the problem to spread, and, even in rural areas, poorly designed yard lights, such as the towering mercury vapor lights that have become a fixture in many farm yards, obscure the night sky. The problem, referred to as "light pollution," is a threat to astronomers, but is also a waste of energy resources, and costs the country millions of dollars annually in electric bills. However, according to those who have studied the issue, light pollution is unnecessary. It is not an inevitable result of having well-lit streets and cities, since as much as three quarters of the glow seen in the sky at night is wasted light, beamed directly skyward from poorly designed light fixtures. Some communities are tackling light pollution: outdoor lighting ordinances have been established in communities near some of the nation's large observatories; and, in California, some cities are saving millions of dollars each year by replacing their street lights with low pressure sodium (LPS) fixtures. Reportedly, the same amount of light is received from these fixtures, with none of the glare associated with mercury vapor lights.

During the past decade, the International Dark-Sky Association (IDA) has worked toward changing attitudes in government and the lighting industry toward ending light pollution. Legislation has been enacted in Maine, and is pending in Massachusetts, requiring that all state-funded light fixtures be "full-cutoff shielded" (fixtures that direct light downwards). Other states are considering similar legislation. Michigan has taken one step toward adopting measures recommended by the

IDA: Public Act 57 of 1993 designated state-owned land in

southern Michigan at Lake Hudson, located within Lenawee County, as the state's first "dark sky preserve." The act specifically required that outdoor lighting in the preserve either not be used at all or, if needed, that special fixtures be utilized and light directed downward away from the night sky. While the main thrust of the act was to provide a recreational opportunity for tourists from Michigan and elsewhere, it was also intended that the dark sky preserve would be used as a pilot project to study the impact (both environmentally and fiscally) of improper use of outdoor lighting. However, while the dark sky preserve has been effective as a recreation area, apparently little has been done with respect to studying the impact of light pollution. Legislation has been introduced to establish an Outdoor Lighting Study Board within the Department of Natural Resources to study the problem.

THE CONTENT OF THE BILL:

The bill would add a new part, Part 752, to the Natural Resources and Environmental Protection Act (NREPA) to establish the Outdoor Lighting Study Board within the Department of Natural Resources (DNR) to study the nature and extent of problems associated with outdoor lighting.

Legislative Finding. The bill would state the legislative finding that excessive and misdirected outdoor lighting is a consequence of using outdoor lighting where and when it is not needed, and of not using the types of outdoor lighting that are most efficient and cost effective for the task intended; that controlling it will decrease energy requirements and save money; that improperly shielded street lights and security lights pose a serious safety hazard; that the unchecked growth of these lighting fixtures deprives residents of the beauty of the night sky and potentially has serious effects on nocturnal fauna and flora; that the lighting is not desirable or necessary; that several other states have adopted legislation to control it; that this state has adopted provisions, under Part 751 of

Resources, and that it draw on the expertise of representatives of various professions to study the

the act, to create a "dark sky preserve"; and that several Michigan local governmental units have adopted various measures to save them considerable amounts of money in energy costs.

Outdoor Lighting Study Board. The board would be created within the DNR, and would consist of 12 members, appointed by the governor, that would include the directors of the Departments of Natural Resources and of Consumer and Industry Services, or their designees; representatives of the electric power industry, the business community, an environmental organization, an amateur astronomy association, local law enforcement, local government planning, and the legislature; an architect or lighting design engineer; and a representative from Abrams Planetarium, Michigan State University. Members of the board would serve without compensation, but could be reimbursed for their actual and necessary expenses to the extent that funds were appropriate or otherwise lawfully available.

The board would study the nature and extent of problems associated with outdoor lighting of state facilities and roadways; available statutory and administrative solutions; the potential for a positive economic impact from using more efficient and effective outdoor lighting, including ecological benefits, enhanced tourism, improved public safety and security, and any other benefits; and solutions taken by other jurisdictions. The board would be required to submit a report to the legislature on the results of its study within nine months after its first meeting. Following submission of the report, the board would meet at least annually for the next five years and report further recommendations related to its responsibilities to the legislature. The board would be permitted to seek assistance from any person as it determined necessary or appropriate to fulfill its responsibilities, and could also incur necessary and proper expenses within the limits of funds that were appropriated or otherwise lawfully available to fulfill its responsibilities.

MCL 324.75201 et al.

FISCAL IMPLICATIONS:

According to the House Fiscal Agency, the provisions of the bill would result in costs to the DNR of between \$1,200 and \$5,000. The estimate is based on expenses of \$100 per board member for each meeting. (10-23-97)

ARGUMENTS:

For:

The bill would require that an Outdoor Lighting Study Board be created within the Department of Natural

nature and extent of problems associated with light pollution. In other parts of the country, various groups

have organized to educate the public on light pollution. The International Dark-Sky Association (IDA) has been in the vanguard of the movement. In conjunction with the New England Light Pollution Advisory Group (NELPAG) -- a volunteer group whose purpose is to bring together lighting engineers, physicians, power utility representatives, government officials, astronomers, journalists, and the general public to discuss the virtues of efficient, glare-free outdoor night lighting -- it has compiled and distributed a large body of information on the subject. One of its pamphlets, entitled "Good Neighbor Outdoor Lighting -- A Guide to Selecting and Installing Efficient, Cost-Effective, and Unobtrusive Outdoor Lighting Fixtures," lists the reasons the public should be concerned if outdoor lighting is not well designed and properly installed:

C Most outdoor lighting wastes energy because it is not well designed, resulting in high operating costs and increased environmental pollution from increased power generation requirements.

C Poorly designed or installed lighting can cause a great deal of glare that hampers the vision of pedestrians and drivers. (Glare occurs when you can see light directly from a fixture or bulb.)

C A large fraction of poor lighting shines directly upwards, creating the adverse sky glow above our cities that washes out our view of the dark night sky.

C Poor outdoor lighting shines onto neighborhood properties reducing privacy and creating an unattractive look to an area.

The same publication also provides information on "good" lighting. According to the publication, good lighting has four characteristics:

1) It provides adequate light for the intended task, but never over-lights. Some modern lighting systems illuminate areas to a level one hundred times as bright as is necessary.

2) It uses "fully-shielded" light fixtures that control the light output in order to keep the light in the intended area. ("Fully-shielded" means that no light is emitted above the horizontal; all light going directly upwards it totally wasted.)

3) It has lighting fixtures carefully installed to maximize the effectiveness on the targeted property and minimize

the adverse impact beyond the property borders. A few bright fixtures can often create bright "hot spots" that create a safety problem by making the less lit areas in between seem dark.

4) It uses fixtures with high-efficiency lamps, while still considering color and quality as essential design criteria. High-efficiency lamps cost more initially, but save energy, reduce operating costs, and last a long time. When color is not an important consideration, the yellow light cast by low-pressure (LPS) or high-pressure (HPS) sodium lamps is more efficient than the light cast by white fluorescent or incandescent light sources.

Against:
The bill would require that an Outdoor Lighting Study Board be created within the Department of Natural Resources (DNR) to study the nature and extent of problems associated with outdoor lighting in state facilities and roadways. However, as pointed out by the DNR, no funds have been appropriated to provide resources for this board. Moreover, the DNR also points out that its priority in recent years has been to streamline the various boards, committees, and commissions that have been established within the department over the years; not to add new ones. Also, while most people approve of the requirement that the board submit a report on the results of its study within nine months, others have observed that the requirement that the board meet annually for an additional five years is unnecessary. As written, the bill is unclear regarding the board's purpose during that time.

POSITIONS:

Several professional and amateur astronomers testified before the House committee in support of the bill. (10-22-97)

The Michigan Environmental Council supports the bill. (10-23-97)

The Michigan United Conservation Clubs has no position on the bill. (10-24-97)

The Department of Natural Resources opposes the bill. (10-23-97)

Analyst: R. Young

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