

Energy-Conserving Standards: Maryland Sustainable Buildings Act of 2020 (HB 192 and SB 299)

TESTIMONY OF DR. MARK SOUTHERLAND

I am a professional ecologist who has served on the boards of Maryland Academy of Sciences' Science Council, Maryland Water Monitoring Council, Howard County Environmental Sustainability Board, Howard County Conservancy, Patapsco Heritage Greenway, and Safe Skies Maryland.

Two events brought me to conceiving and advocating for this bill:

1. Glass Buildings as Energy Sinks. As a scientist working in the fields of energy conservation and green buildings, I was struck by the exponential growth of buildings with extensive glass facades. I realized that these majority glass buildings would be an energy sink and erode the energy conservation gains from decades of green building policies. While the extensive use of glass was originally considered green, because it reduced the need for artificial lighting, technological advances in LED lighting meant that the heat gain from windows and the need for additional air conditioning far outweighed the benefits. If future building was dominated by extensive glass facades, then we were setting up society for increasing energy costs and greenhouse gas emissions for decades.

2. Glass Buildings as Killers of Birds. As a consultant to Maryland DNR on the licensing of windpower turbines, I learned that, while we could avoid major bird mortality at windpower turbines (with proper lighting and siting), building glass was a thousand times much larger killer of birds. Then I witnessed the construction of the first of several new large glass buildings being built in Downtown Columbia and realized that we were creating a deathtrap for birds migrating through our community. I realized that, as the number of glass buildings statewide and nationwide was growing rapidly, bird deaths from building collisions was about to become much worse.

Win-Win Solution. Most importantly, I learned that both problems were easily solvable. The building standards embodied in this bill would both conserve energy and reduce bird mortality by 90%. So, I was compelled to act and, working with Senator Guzzone and others, began efforts to solve this problem at the local and state level.

I leave it to the national expert, Dr. Chris Shepard, and others to provide the technical details, but here is a summary of the problem and the solution:

This is an important problem with existing solutions and a diverse concerned citizenry

1. The number of majority glass buildings is increasing exponentially, setting up society for long-term energy costs as building envelopes will be in place or at least 50 years.
 - There are no daylighting or energy benefits with window-to-wall ratios over 60 percent, and in most cases an area of 25-40 percent is optimum, i.e., lowest energy consumption
 - When glass treated to be bird friendly is used, energy loss is much reduced

2. 1 billion birds die in the U.S. every year colliding with transparent or reflective building glass (and the number of glass-dominated buildings is growing exponentially)
 - People walk into glass when they don't see the frame; birds never recognize a frame
 - Nearly all species are affected; even the best and brightest birds collide and die
 - Declining populations of migratory songbirds are significantly attributable to this non-sustainable loss
 - Birds are both an ecological mainstay and an economic driver through factors such as pest control and tourism (Maryland receives \$333 million in revenue from bird watching each year)
3. Building design and treated glass are an existing solution
 - Flight tunnel tests have demonstrated the degree of safety provided by different kinds of glass
 - Green Business Council LEED program has codified a bird-friendly building pilot credit 55
 - Building façade, screens, and shades work
 - Glass with UV or visible patterns of narrow lines or dots in 2x4" arrangement work
 - Bird-friendly design is generally cost neutral at the design phase
 - Bird-friendly designs and glass are energy efficient and saves dollars over time
4. Bird Safe Building designs and retrofits are being implemented
 - Many beautiful glass buildings are bird friendly such as Anchorage Museum and the Inuit Headquarters in Mountainview CA
 - Expansive Jacob Javits Conference Center in NYC was retrofitted to be bird friendly and has reduced bird deaths by 90% and energy consumption by 25%
 - Locally the Maryland DNR Tawes Building, National Aquarium, Fort McHenry and others are retrofitting their glass to be bird friendly
5. Bird Safe Building laws are being implemented
 - Minnesota has had a mandatory bird safe building law since 2013
 - Mandatory laws are also in place in New York City, San Francisco CA, Oakland CA, Palo Alto CA, Highland Park IL, Cook County IL, Ontario Province, Toronto, and Markham, Canada, with voluntary laws in other places
 - Proposed laws are currently being considered in US House (a bi-partisan bill) and US Senate, as well as Washington DC and other cities

Maryland has a chance to act locally to save money, fight climate change, and reduce the unsustainable deaths of economically important birds. Waiting even one year will see more glass buildings built and more money lost, more greenhouse gas emissions, and more birds dying.