



# Building Safer Cities for Birds

## How Cities Are Leading the Way on Bird-Friendly Building Policy

By Meredith Barges and Viveca Morris



# Case Study » **ARLINGTON COUNTY, VIRGINIA**



Arlington County's Long Bridge Aquatics & Fitness Center (2021) includes fritted bird-friendly glass.

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## BIRD-FRIENDLY BUILDING POLICY

**Adopted:** December 12, 2020

**Effective:** March 31, 2022

**Policy Type:** Amendment to the county's Green Building Density Incentive Program

**Category:** Financial Incentive

**Scope:** New commercial and residential projects

**Voluntary/Mandatory:** Voluntary

**Vote:** Approved by Arlington County Board

**Fiscal Impact on County:** Cost neutral

## COUNTY STATISTICS

**Location:** Mid-Atlantic; Atlantic Flyway

**Land Area:** 26.0 sq miles

**Total Bird Species Identified:** 252<sup>1</sup>

**Human Population:** 232,965<sup>2</sup>

**Density:** 9,180 people/ sq mi<sup>3</sup>

**Median Household Income:** \$128,145<sup>4</sup>

Located across the Potomac River from Washington D.C., Arlington is the fourth-most densely populated county in the United States. Less than five percent of its land remains undeveloped.<sup>5</sup> The county has undergone intense development over the last 50 years.<sup>6</sup> Given its siting at an important confluence of the Middle Potomac Watershed, Arlington County provides important habitat for both migratory and year-round bird populations, with over 250 bird species identified in the county.<sup>7</sup>

Recognizing that space in Arlington is at a premium and sustainability measures are needed to mitigate against pressures on the natural environment, the Arlington County Board offers a voluntary Green Building Incentive Program (GBIP) to motivate private developers to use green building practices. Through the

voluntary program, the county approves site-plan requests for higher density buildings than the county's zoning code allows in exchange for meeting specified sustainability criteria. In December 2020, Arlington amended the GBIP with a suite of updates, including a new requirement that all developments participating in the program meet specified bird-friendly building standards.

The timing of the GBIP updates is significant. Amazon.com, Inc., announced in 2018 that it planned to build its second global headquarters (HQ2) in Arlington. The move is expected to bring an estimated 25,000 jobs to Arlington and the greater Capital region,<sup>8</sup> significantly increasing demand for residential units as well as commercial and retail space.



Duane Lempeke

## HOW THE POLICY WORKS

Arlington County's 2020 GBIP amendment requires all site proposals seeking bonus density in the county to achieve at least U.S. Green Building Council LEED Gold certification and other prerequisites, including bird-friendly building standards.<sup>9</sup> Through a tiered benefit system, site plans in which property owners and developers commit to following "high performance green building standards" are awarded "bonus density" in the form of higher "floor-to-area ratio" (FAR, i.e., the ratio of the building's total floor space to the land area on which it is built), with five FAR levels, ranging from 0.25 to 0.7 FAR, each with increasing requirements for energy efficiency.<sup>10</sup> Since its launch in 1999, the county has updated the program five times, each time setting the bar higher for sustainable building standards. The 2020 update followed the introduction of LEED version 4.1 in 2019.<sup>11</sup>

Arlington's GBIP provides an inroad for the county to express and establish community standards for the built environment within the limits of state law. Like many other states, Virginia has a statewide building code based on the International Building Code. A legal principle known as "Dillon's Rule" limits the power of local governments in many U.S. states to set rules that go beyond those explicitly authorized by the state.<sup>12</sup> As a result, local governments cannot require building standards stricter than the state standard without authorization from the state legislature, but they can incentivize such standards.

Arlington's 2020 GBIP updates require that all projects approved under the program meet "baseline community sustainability priorities," including the use of bird-friendly materials.<sup>13</sup> This new prerequisite is classified along with "human interaction with nature" and "light pollution reduction" as a means of addressing "how buildings interact with nature."<sup>14</sup>

The policy defines a "bird-friendly material" as one with a maximum threat factor of 30 in accordance with one of three standards: American Bird Conservancy's Bird Collision Deterrence Material Threat Factor Reference Standard, American Bird Conservancy Bird-Friendly Materials Evaluation Program at Carnegie Museum's Avian Research Center test protocol, or a relevant ASTM standard.<sup>15</sup> (There is currently no ASTM standard for bird-friendly building materials.)

The policy requires that the exterior wall envelope and any associated openings between 8 and 36 feet above grade use bird-friendly materials.<sup>16</sup> Alternatively, a developer may follow the bird-friendly building methodology in the U.S. Green Building Council's LEED Bird Collision Deterrence innovation credit, for which the calculated weighted average of all the Threat Factors of materials on the facade, including non-glass materials, must equal a building score of 15 or less.<sup>17</sup> Further, materials that are not bird-friendly cannot exceed an "aggregate of 10 square

feet within any 10 foot by foot square area of exterior wall" in designated areas.<sup>18</sup>

As a compliance mechanism, the county requires the developer to post a bond or letter of credit — equal to the size of the bonus density multiplied by the average rental rate for real estate in the particular area of the county — before the county will issue a final occupancy permit.<sup>19</sup> If the project fails to meet the required environmental certifications, the financial security defaults to the county.

Arlington's Green Building Incentive Program adds no fiscal cost to the county government, and the County Board foresaw no increased costs to the county from the inclusion of bird-friendly standards in the GBIP.<sup>20</sup> Public education, staff training, and compliance for the program is financed by a Green Building Fund that private developers must pay into if they choose not to meet LEED or Energy Star certification, at a current rate of \$0.045 per square foot.<sup>21</sup> If a developer achieves LEED certification within 18 months of completing a project, the payment is refunded.<sup>22</sup>

The policy has a built-in requirement for periodic review every three to five years or "when the LEED green building rating system is updated," to ensure it stays current with new technologies, trends, and community needs.<sup>23</sup>

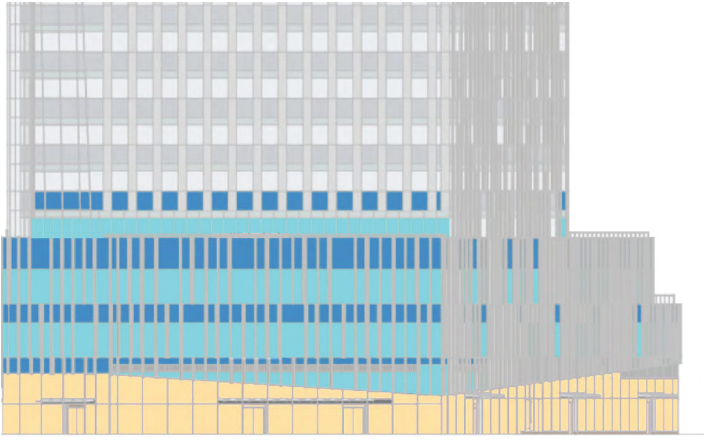
## IMPACTS TO DATE

Because the law only recently went into effect, the full impact of the 2020 GBIP updates are yet to be seen. However, as of April 2023, the county has approved nine site plans for "bonus density" under the 2020 GBIP rules, including Wendy's Residential and PenPlace.<sup>24</sup>

### **Amazon.com's PenPlace**

In late 2018, Amazon.com announced that it had chosen Arlington as the site of its new \$2.5-billion second headquarters (HQ2). For the project, dubbed PenPlace, the e-commerce tech giant submitted a site plan request for a 10.4-acre tract of land in Arlington's Crystal City neighborhood — which was one of the largest undeveloped parcels close to downtown Washington, D.C.<sup>25</sup> The final design, which includes four towers, was approved by the County Board in April 2022, making the project among the first to receive bonus density approval pursuant to the 2020 GBIP.<sup>26</sup>

While Amazon's participation in GBIP provides assurance that the site will follow high-performance green building standards, the significant size and amount of glazing planned for the four buildings raised initial concerns that bird-friendly building requirements were needed at PenPlace beyond the GBIP standard to adequately prevent deadly bird collisions. Ultimately,



Sample Tower Elevation

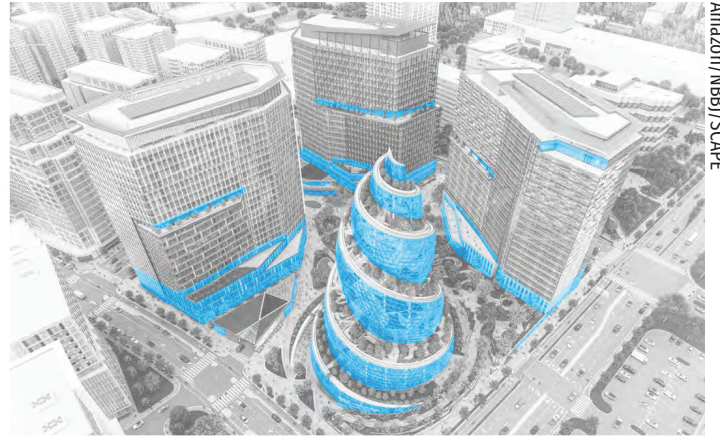
- Arlington & High Risk Bird-Friendly Frit
- Back Painted & Bird-Friendly Frit
- Ground Floor Zone - Bird-Friendly Products under Evaluation

**Slide from a PenPlace presentation to Arlington’s Site Plan Review Committee highlighting Amazon.com’s plans to incorporate bird-safe fritting, given on December 3, 2021.**

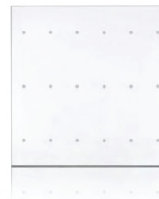
Amazon committed to achieving LEED Platinum certification and using bird-friendly materials exceeding the 2020 GBIP standard.<sup>27</sup>

The project’s signature architectural feature will be an eye-catching, 350-foot spiral-shaped office tower called “The Helix.” Designed by the architecture firm NBBJ, the glassy building will be encircled by a spiraling exterior walkway covered with trees, shrubs, and other greenery from Virginia’s Blue Ridge Mountains.<sup>28</sup> When Amazon first revealed design plans for PenPlace in early 2021, the Helix design rang alarm bells for bird conservationists. The Helix, while an innovation for human architecture, could create ideal conditions for bird collisions from top to bottom if constructed without bird-safe materials.

The Audubon Society of Northern Virginia contacted the project architects to discuss potential hazards for birds before the beginning of the site plan review hearings, and experts at American Bird Conservancy were consulted.<sup>29</sup> Given PenPlace’s size, the county’s review process assumed unusually high stakes. Concerned community members contacted local bird advocacy groups and submitted comments to the county’s Site Plan Review Committee about the importance of using bird-friendly materials on the entire structure beyond the 2020 GBIP’s 8 to 36-foot bird deterrence requirement.<sup>30</sup> Ultimately, the incorporation of bird-friendly materials into PenPlace’s final design from top to bottom won the approval of leading bird conservation nonprofits, including Audubon Society of Northern Virginia and National Audubon Society.<sup>31</sup> In March 2023, Amazon announced that it was moving forward with construction of PenPlace on a delayed timetable.<sup>32</sup>



Amazon/NBBJ/SCAPE



BIRD-FRIENDLY

## HISTORY OF ADVOCACY EFFORTS

In 1999, Arlington County launched its Green Building Density Incentive Program to curb the impact of development on the natural environment. Through the program, more than 17 million square feet of development in Arlington has been certified green.<sup>33</sup>

Leading up to the 2020 GBIP updates, concerns about the impact of window collisions on bird populations had been growing in Arlington County. Joan Kelsch, former Green Building Manager for Arlington County, explained, “People had been talking about [bird-friendly] for a long time, and then we had this opportunity [with the planned updates to the GBIP] to incorporate it into our policy.”<sup>34</sup>

Another factor that helped to set in motion Arlington’s passage of a bird-friendly provision was the county’s decision to become an official international “Biophilic Cities Partner” in 2019. Seeking that designation motivated county officials to prioritize human connections to nature and birds in the 2020 GBIP updates. As a growing architectural trend, biophilic design is part of the larger “Green Building movement,” bringing an awareness of the importance of “daily contact with nature as an element of a meaningful urban life” as well as an ethical responsibility to “conserve global nature as shared habitat” for people and other living things.<sup>35</sup> David Howell, a member of the Arlington County Forestry and Natural Resources Commission and local Certified Master Naturalist, shared: “Becoming a Biophilic City was the mechanism that we needed to pull all the right things together under one umbrella, which is fundamentally about the fact that people need nature and we benefit from nature.”<sup>36</sup>

Earning the “biophilic city” designation required that Arlington County expand its notion of what it means for humans to live, work, and share space more equitably with local wildlife and plant species in the larger Middle Potomac Watershed ecosystem. This meant re-evaluating the burdens that the built environment was placing on local bird life. Kelsch recalled, “After Arlington applied to be a Biophilic City, the advocates said, ‘Hey Arlington, you’re a biophilic city. Now you need to actually implement some things. We’d like you to take care of buildings and birds . . . The Green Building Incentive Policy was a really obvious inroad to that.’”<sup>37</sup>

Meanwhile, several local conservation groups, including the Audubon Society of Northern Virginia, the Energy and Environment Commission, the Urban Forestry Commission, and the National Audubon Society, helped to push Arlington to include a more stringent bird-friendly building requirement than the optional bird-friendly standard in the 2014 GBIP.<sup>38</sup> As the policy took shape, several groups submitted testimony to the County Board on the need for better protections for migratory birds in Arlington and helped officials to draft and negotiate the final details of the rules. American Bird Conservancy shared expertise and guidance on model bird-friendly building ordinances. And local residents and bird experts, including Ericson and Howell, testified on behalf of the updates.<sup>39</sup>

Although Arlington does not have a bird collision monitoring program or comprehensive data on local bird strikes, county officials grasped the urgency of addressing declining bird populations across North America. Kelsch recalled that the main statistic that helped to make the case for the bird-friendly provision was the staggering estimate that at least 365 to 988 million birds are killed in window collisions each year in North America.<sup>40</sup> “We relied on the bird experts to make a very simple, clear argument: this is a problem and here’s how you fix it,” Kelsch said.<sup>41</sup>

The GBIP amendment met little opposition.<sup>42</sup> The Arlington Chamber of Commerce and NAIOP Northern Virginia, Arlington’s leading commercial real estate development association, expressed concern that the 2020 GBIP changes, as a whole, would “make it more costly to do business in Arlington;”<sup>43</sup> however, neither group cited or objected to the bird-friendly provision in their written comments to the county. Bird-collision experts showed statistics that using bird-friendly materials only adds a small percentage of the total construction cost of a building,<sup>44</sup> and that when bird-friendly design is considered as a part of a site plan from the beginning, including by using specially treated glass and/or fewer windows, additional costs can be eliminated or recovered through energy savings.

Howell credited several county officials as key to supporting the passage of the updates, including County Board Member (then-Chair) Libby Garvey and County Planning Commissioner Elizabeth Gearin.<sup>45</sup> Howell said, “There were a lot of county staff

in the right positions who thought this was a good idea. At least one board member was actively aware of bird issues five or six years ago, before the updates.”<sup>46</sup> Further, Kelsch explained that passing Arlington’s bird-friendly standard as part of a larger suite of sustainable building updates to the GBIP made it more likely to pass than if it had been presented and voted on as a stand-alone policy.<sup>47</sup>

## CHALLENGES AND LIMITATIONS

While Arlington’s definition of “bird friendly” is rigorous, the county’s choice to limit requirements to new large, high-density buildings and on facades at only 8 to 36 feet above grade means that additional bird fatalities will occur that could have been



Cephas, CC BY-SA 3.0, <https://tinyurl.com/boehmkh>

avoided if requirements had been applied more comprehensively. Certainly, existing buildings and smaller-scale projects will continue to pose threats to birds from fatal window collisions.

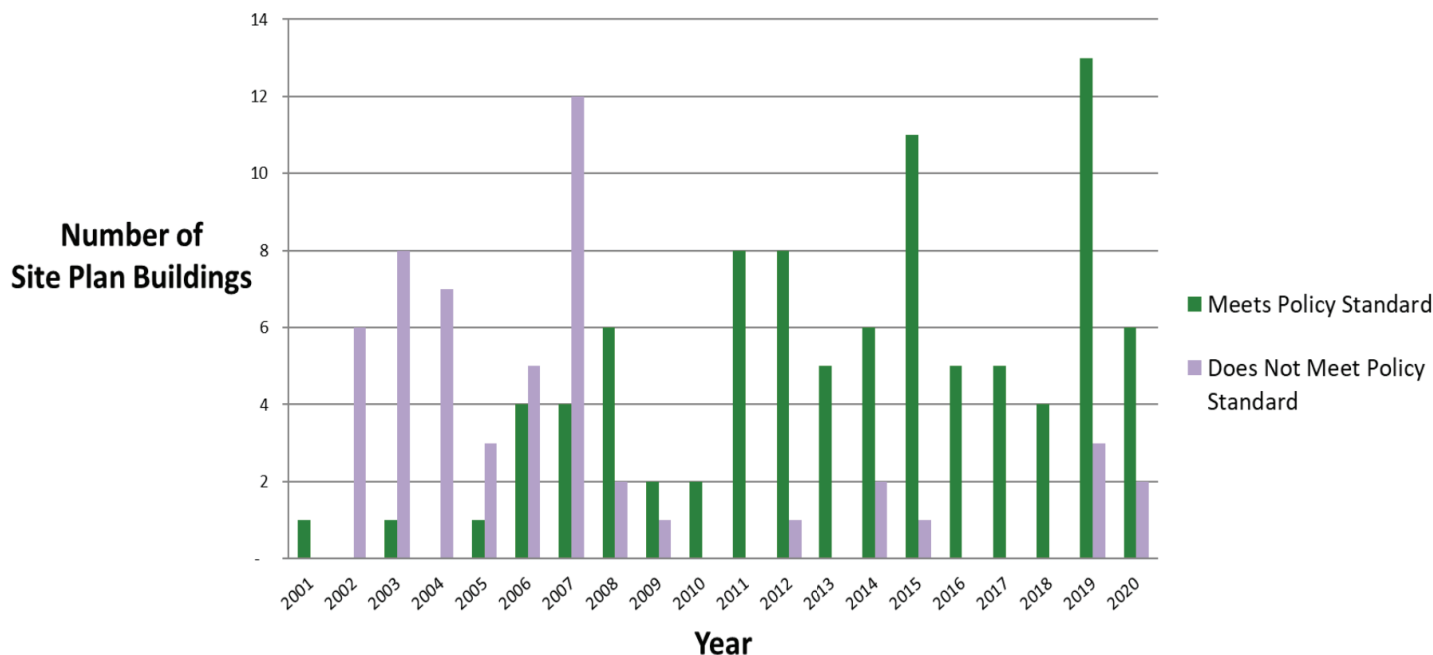
### Voluntary Program

Participation in Arlington’s Green Building Incentive Program is voluntary, so the rules do not cover all new construction or retrofits in the county. Additionally, developers can pursue zoning changes and usually sizable increases in density by negotiating to provide other community benefits such as affordable housing or even parks for the community. EcoAction Arlington cited developers’ ability to opt out of the program or achieve density bonuses without meeting sustainability standards as a barrier to Arlington meeting its sustainable building goals.<sup>48</sup>

### First-Floor Exemption

The 2020 GBIP updates exempt property owners from following the bird-friendly requirement from the ground floor up to eight feet. Ericson, speaking on behalf of the Audubon Society of Northern Virginia, argued unsuccessfully that the

## Green Buildings Approved in Arlington



### GBIP participation rates have climbed since the program's inception.

requirement should also apply to the ground floor.<sup>49</sup> Reportedly, the county set the 8-foot starting point due to concerns that including the ground floor would conflict with Arlington's 2015 retail plan, which requires transparent windows on storefronts at the first floor. For applicable buildings, the first floor must have "a facade which is at least 70 percent transparent (i.e., 70 percent glass and 30 percent solid walls)."<sup>50</sup> County officials interpreted the rule to mean that bird-safe building strategies would be incompatible with the requirement, although most bird-friendly materials are still "transparent" to people, creating no conflict with the county's storefront transparency goals.

Howell suggested that the perceived conflict between retail and bird-safe requirements stems from a misunderstanding about bird-friendly design.<sup>51</sup> In its written comments, the Audubon Society of Northern Virginia explained: "Glass featuring a pattern visible to birds on the 2" x 4" pattern is still 'transparent' to people. It does not prevent visibility or light travel from outside to inside (or from inside to the outside)."<sup>52</sup>

### Height

Arlington's policy mandates bird-friendly building standards on facades of regulated buildings from 8 to 36 feet above grade. This 36-foot height limit falls far short of American Bird Conservancy's recommended "first 100 feet" rule. Any glass at bird foraging height (up to 100 feet) can be problematic for birds because it can reflect trees, shrubs, and other habitat, creating a deadly optical illusion. Audubon Society of Northern Virginia and other conservation groups pushed unsuccessfully for a higher height threshold. However, the 36-foot rule was

reportedly a compromise to address concerns from the business sector about potential economic and design impacts of the proposed changes.

### County-Owned Properties

While Arlington County has committed to a green building policy for construction and major renovations of county-owned buildings, it does not yet include a provision for bird-friendly building practice in its own Capital Improvement Plan (2023-2032).<sup>54</sup> Arlington County's Long Bridge Aquatics & Fitness Center (built in 2021), was outfitted with Guardian-brand bird-friendly glass,<sup>55</sup> further demonstrating that bird-friendly design is an attractive, affordable, and practical option. To make bird-friendly building practices accessible to the wider public and to help normalize bird-friendly building practices, it is helpful for local governments to implement bird-friendly building material in their own municipal buildings.

## LESSONS LEARNED

The effectiveness of Arlington's density bonus program for accelerating the adoption of bird-friendly glass is yet to be seen, but it appears promising so far. The program is a valuable example of how localities can motivate developers to include bird safety in designs at low cost and how bird-friendly requirements can be smoothly integrated into a green building policy. A density bonus is most effective as a policy tool in a dense, highly developed city like Arlington, where the ability to add more floor space to a site is appealing for developers; this policy tool is not as effective in a locality where developers can access plentiful



Arlington County's Long Bridge Aquatics & Fitness Center (2021) includes fritted bird-friendly glass.

and affordable undeveloped land.<sup>56</sup> In those cases, other green incentives for developers – such as tax incentives or expedited permit review and approval for buildings meeting green standards, including bird-safe building design – may be more appropriate than a density bonus.

The program's built-in review requirement creates important opportunities for Arlington to regularly refine and improve the bird-friendly requirements in the GBIP in the future, including to keep on pace with more comprehensive bird-friendly building laws, such as New York City's law (2019).

Arlington's bird-friendly policy is inexpensive for the city to implement. Kelsch indicated that including bird-friendly standards in an existing green building incentive program and suite of environment-related building issues made it easier for developers to comply with the rules, more popular, and more likely to pass than if a bird-friendly policy had been presented and voted on as a stand-alone program.<sup>57</sup>



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