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REPORT TO COUNCIL

SUBJECT

2013-7142 Discussion and Possible Action to Adopt Design Guidelines for Bird-safe Buildings (Study Issue)

REPORT IN BRIEF

The City Council requested a study to address the effects of building design and placement on bird populations due to the concerns about birds striking the building and being harmed or killed. This study considers the possible methods of reviewing building designs to address the problem (see Attachment 1 for study issue paper).

Generally, it appears that the main cause of bird collisions with buildings is the use of transparent and reflective glass. This issue is especially true for buildings near large (one acre of more) open spaces or bodies of water. The area in Sunnyvale that most easily meets these criteria is Moffett Park, given its proximity to the bay.

Architectural design trends change over time with some styles using more glass than other styles. For example, many single-family homes with large expanses of glass were built by Eichler (or other developers using similar designs) in the 1950s-1970s but recent residential and retail developments have not included large walls of glass. New industrial/office buildings constructed in the 1970s and 1980s were one-story tilt up concrete with minimal glass, new office buildings in the city are larger, modern-designed buildings; many of which include wide expanses of glass. The use of glass meets owners' and tenants' design preferences, as well as provides good lighting into the office space. Natural lighting is also a prime method for reducing long-term energy costs.

This report looks for balance between the concern for bird-safe designs and the Green Building goals of the community. This balance is challenging given the relative lack of proven evidence of the impact and causes for bird collisions with buildings. In order to address bird safety concerns, staff recommends adopting bird-safe building guidelines (Attachment 4) that would apply to any project within 300 feet of a body of water or adjacent to open space larger than one acre in size.. General bird-safe guidelines are also included for the review of building designs beyond the 300-foot distance. On January 13, 2014, the Planning Commission considered the item at a noticed public hearing, and voted unanimously to recommend the City Council not pursue bird-safe guidelines or requirements until more scientific information is available about the real impact buildings in Sunnyvale have on bird populations.

BACKGROUND

There has been interest expressed from individuals and environmental groups about incorporating bird safety techniques into the design of buildings. In 2007, the City of Toronto adopted "Bird Friendly Development Guidelines" to respond to the concerns of bird collisions with buildings. The New York Audubon Society adopted similar guidelines later in 2007, followed by the Minnesota Audubon

Society with different guidelines in 2010. In 2011, the City of San Francisco used the Audubon Society guidelines as a basis for adopting the "Standards for Bird-safe Buildings." The Cities of Portland, Oregon and Oakland have also adopted standards (see Attachment 2 for examples of guidelines).

EXISTING POLICY

General Plan

Community Vision

GOAL III. Environmental Sustainability: To promote environmental sustainability and remediation in the planning and development of the City, in the design and operation of public and private buildings, in the transportation system, in the use of potable water and in the recycling of waste.

Land Use

Policy LT -1.11 Protect regional environmental resources through local land use practices.

Policy LT -6.4 Encourage sustainable industries that emphasize resource efficiency, environmental responsibility, and the prevention of pollution and waste.

Community Character

GOAL CC-3 Well-designed sites and buildings - Private Development: Ensure that buildings and related site improvements for private development are well designed and compatible with surrounding properties and districts.

Policy CC-3.2 Ensure site design is compatible with the natural and surrounding built environment.

Safety and Noise

GOAL SN-1 Acceptable Levels of Risk for Natural and Human-Caused Hazards - ensure that natural and human-caused hazards are recognized and considered in decisions affecting the community, and that land uses reflect acceptable levels of risk based on identified hazards and occupancy.

ENVIRONMENTAL REVIEW

Adopting guidelines are not considered a project under the California Environmental Quality Act (CEQA). (Guideline 15378(b)(2)).

DISCUSSION

Overview

Although some cities and organizations have adopted guidelines to address the concerns for bird-safe buildings, there is inconclusive evidence of the scope of the problem. It is easy to understand the concern, but there is not good evidence that specifies type of buildings or conditions that cause or contribute to the problem. Part of this lack of information is the nature of the subjects being studied. Bird behavior is difficult to predict (see the report in Attachment 3), different species have different behaviors, and it is difficult to determine the number of birds killed or injured from colliding with buildings. Reasons include:

- Not all collisions are fatal;
- A collision may not kill a bird immediately, but it may die later in another location from internal bleeding; or
- Predators may take the dead bird before a person on site finds it.

These factors result in a wide variation in the reporting of the impact buildings have in affecting bird populations.

Although studies have been prepared for diverse areas such as Toronto, New York and Minnesota, there are significant differences in the environment between those areas, and from Sunnyvale. Differences include:

- Sunnyvale has little vacant land and is experiencing redevelopment, not green field growth;
- Open space and water appears to be a key factor in bird strikes, because those locations are where birds feed, mate, etc. Sunnyvale has relatively little native open space or water, except near the bay and parks; and
- There is not a designated migratory flyway through Sunnyvale (the Pacific Flyway basically runs along the Pacific Ocean coast), although migratory birds do fly through the Bay Area given the proximity of water and food.

Why Do Bird Strikes Occur?

The two key aspects of development that seem to affect bird collisions with buildings are:

- *Location*
    - Surrounding area and location of the building. Buildings that are near or adjacent to large open spaces and/or water seem to have a greater potential for bird strikes.
    - Strike zone. It is commonly believed that the area between ground level and 60 feet are where most collisions occur.

- *Building features*
    - Transparency of glass. Birds seem unable to detect and avoid glass. Birds may try to fly through transparent glass to reach a vegetated area on the other side of the building.
    - Reflectivity of glass. It is commonly thought that birds mistake their reflection as a threat that causes them to fly towards the reflection toward off the intruder, which results in injury because of the high speed they tend to fly towards the glass.
    - Building features. An elevated skyway with reflective or transparent glass that links two or more buildings can be problematic because the landscaping behind is easily visible below and above the structure. Green roofs and atriums can create concerns because birds flying into either feature can strike the building upon entering or leaving the space.
    - Lighting. Birds often fly most at night, and a lit building can confuse and disorient a bird, causing it to fly into the building. A building with interior lights on or up lighting from spotlights can have this effect.

Addressing the Issue

Many methods to address bird safety are expensive and result in building designs not typical for the area. One of the most effective designs is to significantly reduce the amount of building glass or employ patterns on glass to discourage attempts for through-passage to a maximum space measuring two inches tall by four inches wide. Elements such as etched or fritted glass are expensive and have a different appearance than regular glass. It would be expensive and difficult for a building typically found in Silicon Valley to have all glass from ground to 60 feet to include treated glass. Also, green building techniques include energy efficient elements, such as the use of glass to reduce energy costs (although there is a pilot LEED program that grants a point for projects that include bird-safe design elements).

There are several ways to design a building or include design elements to address bird collisions. In some cases, the options are very expensive or inconsistent with the community goals or those of the owner or tenant. In order to balance the interest of addressing the issue with reasonable goals, the following approaches are suggested:

1. Areas near open space or water. Provide the strictest regulations in areas most likely to be populated by birds, such as close to large expanses of water or open space. The City of Oakland uses a one-acre threshold for water and open spaces. Buildings adjacent to those areas must meet specific design criteria.
2. Landscaping and building features. Ensure all projects meet specific site design criteria that would reduce the likelihood of a bird strike. Items to be considered include landscape design, the use of transparent glass, green roofs, atriums and skyways.
3. Lights out at night. Require operational standards that reduce bird strikes, such as lights out at night, or recommend or require the use of blinds to reduce the light from buildings. Also, prohibit up lighting or spotlights. Night lighting near buildings can disorient birds, especially during bird migration (typically February-May and August through November).
4. Monitoring. Provide building owners with numbers to call when dead birds are found on their property, and require new projects to post small signs with the number to call. This would help better define the problem and possible solutions.

Regulatory options

The most difficult aspects of this issue are the absence of scientific data stating the problem, the lack of certainty about which measures would work to reduce the impact and the difficulty in determining the success of any program developed.

Selecting guidelines and regulations for bird safety are not as simple as establishing other regulations, such as green building requirements. Green building review includes a checklist of all the items incorporated in the building design based on a defined reduction in energy consumption and/or greenhouse gas impacts. In this example, a LEED reviewer, after significant training, determines the LEED point value of a building and submits that information to the city as part of the building permit. In the case of bird-safe requirements, it is either unknown how effective a design would be or unknown if the results would change. There are no bird-safe building reviewers, nor agreed-upon criteria to include in the review.

There are two methods the City could use to incorporate bird-safe design review into the planning process - through the CEQA review process or the adoption of bird-safe design guidelines.

CEQA Review Process

The City could incorporate bird-safe criteria in its environmental review process. This would require formal action by the City Council to adopt specific thresholds triggering review, based upon substantial qualitative and factual data. For instance, the level of threshold might be defined as a specific number of birds killed from collisions with a building. That level of specificity would be difficult to develop because evidence is inconclusive at this time.

Bird-Safe Design Guidelines

General bird-safe design guidelines for any new project can also be used to limit the number of bird collisions with buildings. Guidelines could vary depending on the location. For instance, more

stringent guidelines could apply to buildings located close to bodies of water and open space, where birds are most likely to congregate, than elsewhere in the city. The following criteria could be used to define when greater attention to bird-safe building and site design should apply:

1. Project is located within 300 feet of the bay and/or body of water (including creeks and vegetated flood control channels), the total of which exceeds one acre in size; and/or
2. Project is located immediately adjacent to a landscaped area, open space or park larger than one acre in size.

The following guidelines attempt to balance different interests and can be used in reviewing projects, with particular application to those projects that meet the above two locational criteria. Using these guidelines and working with applicants, the required bird-safe features for each project would be defined. Projects differ based on specific building and site design factors, and the guidelines provide flexibility in reaching an appropriate solution for each situation.

A. Building and Site Design

1. Analyze the site to determine potential attractions for birds, such as parks, water features, and landscaping, paying particular attention to ground floor features, since this is where most collisions seem to occur.
2. In areas that exceed the threshold levels, maximize readily visible differentiations of material, texture, color, opacity or other features to fragment glass reflections and reduce overall transparency from ground level to 60 feet up, including the possible use of etched, fritted and opaque-patterned glass.
3. Utilize low-reflectivity glazing, shading devices, and angled glass to reduce reflections.
4. Avoid designing a project in a way that a line of buildings lead to a perpendicularly-placed building that includes reflective or transparent glass;
5. Avoid transparent glass walls coming together at building corners to avoid birds trying to fly through glass.
6. Prohibit glass skyways or freestanding glass walls.
7. Reduce glass at top of building, especially when incorporating a green roof into the design.
8. Prohibit up lighting or spot lights on site.
9. Shield lighting to cast light down onto the area to be illuminated.

B. Landscaping Design

1. Minimize reflection of existing and new vegetation on building facades.
2. Avoid placing tall landscaping near glass and avoid the use of green roofs and water features near glass.

C. Operational

1. Turn building lights off at night in areas not in use, install motion detectors when no occupants are present, or incorporate automatic blinds into window treatment to use when lights are on at night.
2. Create smaller zones and task lighting in internal lighting layouts to discourage wholesale area illumination.
3. Minimize the exterior visibility of interior landscaping to reduce attractiveness.

D. Monitoring.

1. Donate discovered dead birds to an authorized bird conservation organization or museum.

2. Consider placing signs in several locations around the building with the telephone number of an authorized bird conservation organization or museum to aid in species identification and to benefit scientific study.
3. Include a bird-safe program to monitor the site's success with bird-safe design features and to ensure ongoing steps are taken to reduce bird strikes. These efforts would include determining how dead birds will be handled and donated to an authorized bird conservation organization or museum for scientific study.

Conclusion
There are not clear facts or findings that demonstrate the impacts of building siting and design on bird safety. Sunnyvale has very little vacant land, which means that the opportunities to address the issue are during redevelopment (or significant remodeling) of a site. While there may be issues with single-family homes with large expanses of glass or a new multi-family residential development, it is more likely that larger office buildings with significant amounts of open space are contributing to the potential problem, especially those closer to water or open space.

Possible solutions for reducing the impacts can result in significant additional costs and/or changes in building design and construction. Glass that is considered easier to see by birds is very expensive, especially if used throughout a building. Designing a building using the most stringent bird-safe elements significantly reduces glass elements and increases the use of solid structures.

Some of the techniques to reducing the impacts of building design on birds can result in significant additional costs and/or changes in building design and construction. As with many resource-protection issues there may be tension between goals: keeping wildlife safe, building more energy efficient buildings, providing open space for employees, etc.

Staff finds that a policy-based approach would balance the emerging science on this issue while allowing for continual improvements in bird-safe design.

FISCAL IMPACT
The costs to the City to implement the recommended guidelines would be minimal. Staff time would include reviewing applications to ensure any additional requirements are included in the building and site designs. Application fees can be adjusted in the future to cover any incremental expense.

If the City Council adopts the Planning Commission recommendation to prepare a scientific study on the impact of Sunnyvale buildings on bird safety, a one-time cost may be incurred. The cost of the study cannot be estimated at this time without further evaluation by staff of the scope of work, including investigating if an outside funding source is available.

PUBLIC CONTACT
Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's website. Additionally, a Planning Commission study session was held on October 28, 2013, and two members of the Audubon Society attended and spoke on the item, as well as an office developer and architect, and members of the community. Staff has discussed the issue with several architects and developers with active projects in Sunnyvale.

ALTERNATIVES

1. Adopt the guidelines listed in Attachment 4 to include appropriate bird-safe designs in project designs. Guidelines include:
    a. Specific guidelines for projects located within 300 feet of the bay and/or body of water, the total of which exceeds one acre in size, and/or adjacent to a landscaped area, open space or park larger than one acre in size;
    b. City-wide guidelines for other areas; and
    c. Monitoring efforts.
2. Direct staff to return to Council with proposed threshold levels such that any project that meets or exceeds that level must require additional environmental review to ensure the project incorporates bird-safe designs into the design.
3. Alternative 1 with modifications to the guidelines.
4. Take no action.

STAFF RECOMMENDATION

Alternative 1:

1. Establish the guidelines listed in Attachment 4 to include appropriate bird-safe designs in project designs. Guidelines include:
    a. Specific guidelines for projects located within 300 feet of the bay and/or body of water, the total of which exceeds one acre in size, and/or adjacent to a landscaped area, open space or park larger than one acre in size;
    b. City-wide guidelines for other areas; and
    c. Monitoring efforts.

Due to the lack of clear facts and findings that demonstrate the degree of the problem for birds from buildings staff finds that a policy based approach to bird-safe buildings is preferable to a legislative approach. Integrating bird-safe design into the CEQA process allows the questions and responses to reflect the most current state of research on the issue.

Requiring building owners and developers to significantly alter their building design approach to address a concern that is difficult to define seems problematic. Cities and environmental groups in different parts of North America have attempted to address the issue with expensive options for building development for a problem that is easy to comprehend but difficult to prove. The proposed alternatives address the most obvious aspect of the issue: reduce glass building design and require significant operational and monitoring efforts for buildings located immediately adjacent to the most significant bird environment areas (areas adjacent to water and open space). Specific locations will require bird-safe designs to be considered and reviewed as part of a development application, and all building owners will be encouraged to reduce night lighting (a worthy goal regardless) and to help monitor discovery of dead birds in an attempt to learn more about the subject.

The goals and guidelines listed are meant to balance the needs of birds and Sunnyvale property owners.

BOARD / COMMISSION RECOMMENDATION

On January 13, 2014, the Planning Commission considered the item at a noticed public hearing, and

voted unanimously to recommend that the City Council not pursue bird-safe guidelines or requirements until more scientific information is available about the real impact buildings in Sunnyvale have on bird populations. The Commission encouraged environmental groups, such as the Audubon Society, to work with the City in doing a scientific study in Sunnyvale on specific properties to determine how many birds are harmed due to building design, which types of birds and make recommendations about how changes to building design would make a difference to bird safety. If the Council adopts the Planning Commission recommendation, staff may need to return to the Council at a later date with a budget request to cover the cost of the scientific study. The estimated cost is unknown at this time without further evaluation to determine the possible scope of work.

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Approved by: Robert A. Walker, Interim City Manager

ATTACHMENTS

1. Study issue paper CDD 13-13
2. Examples of bird-safe studies and guidelines
3. Article regarding bird safety
4. Bird-safe guidelines
5. Correspondence