Bird-Safe Building Design

City of Madison Planning Division

Image Source: Toronto's Bird-Friendly Best Practices Glass Report (2016)

Background

Madison lies along the Mississippi Migratory Flyway Corridor

Used by roughly 8 million migrating birds twice annually

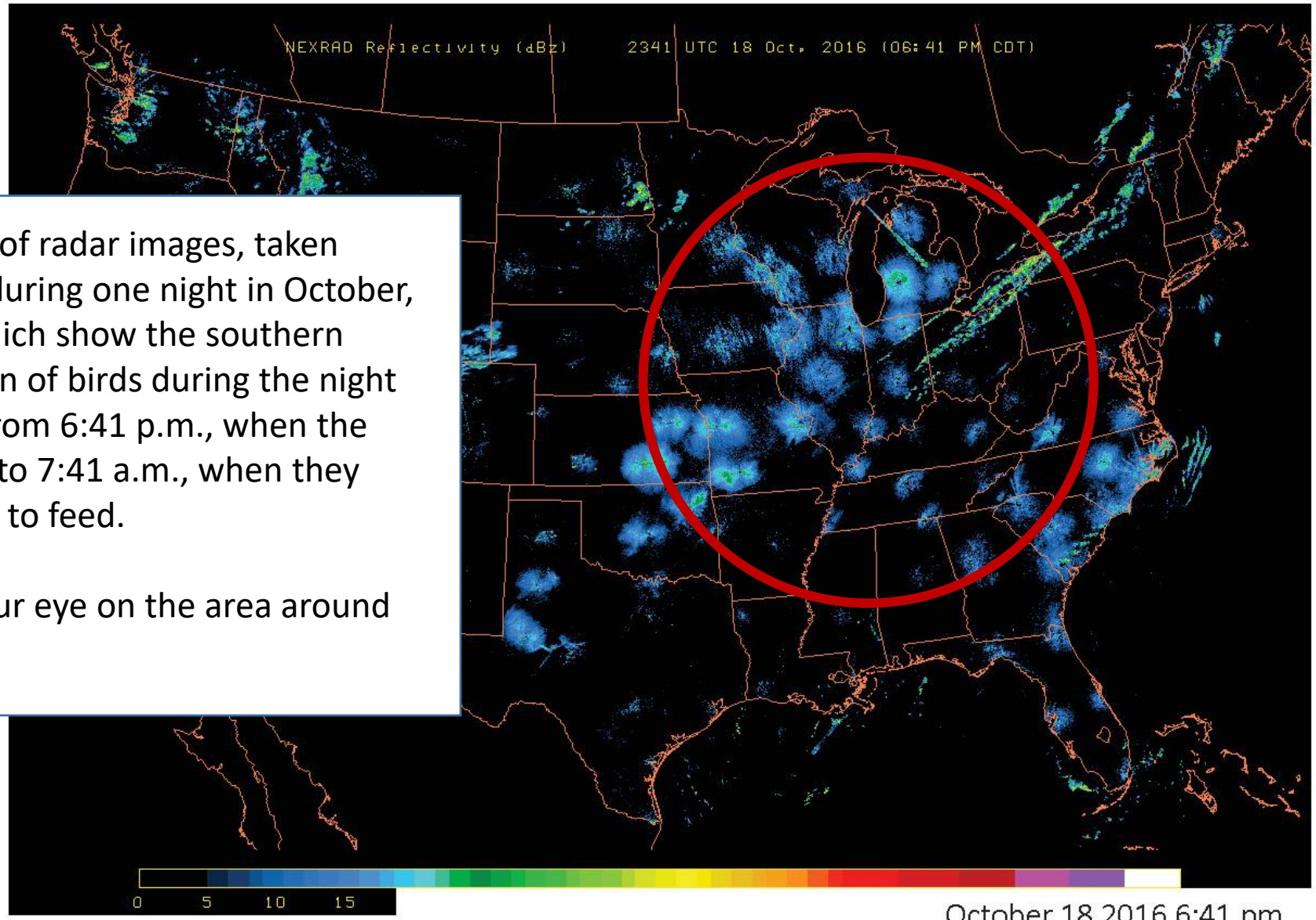
Migratory periods: mid-March to early June and late August to late October

Image Source: Toronto's Bird-Friendly Best Practices Glass Report (2016)

BIRD-SAFE BUILDING DESIGN

A series of radar images, taken hourly, during one night in October, 2016 which show the southern migration of birds during the night time – from 6:41 p.m., when the ascend, to 7:41 a.m., when they descend to feed.

Keep your eye on the area around Illinois…

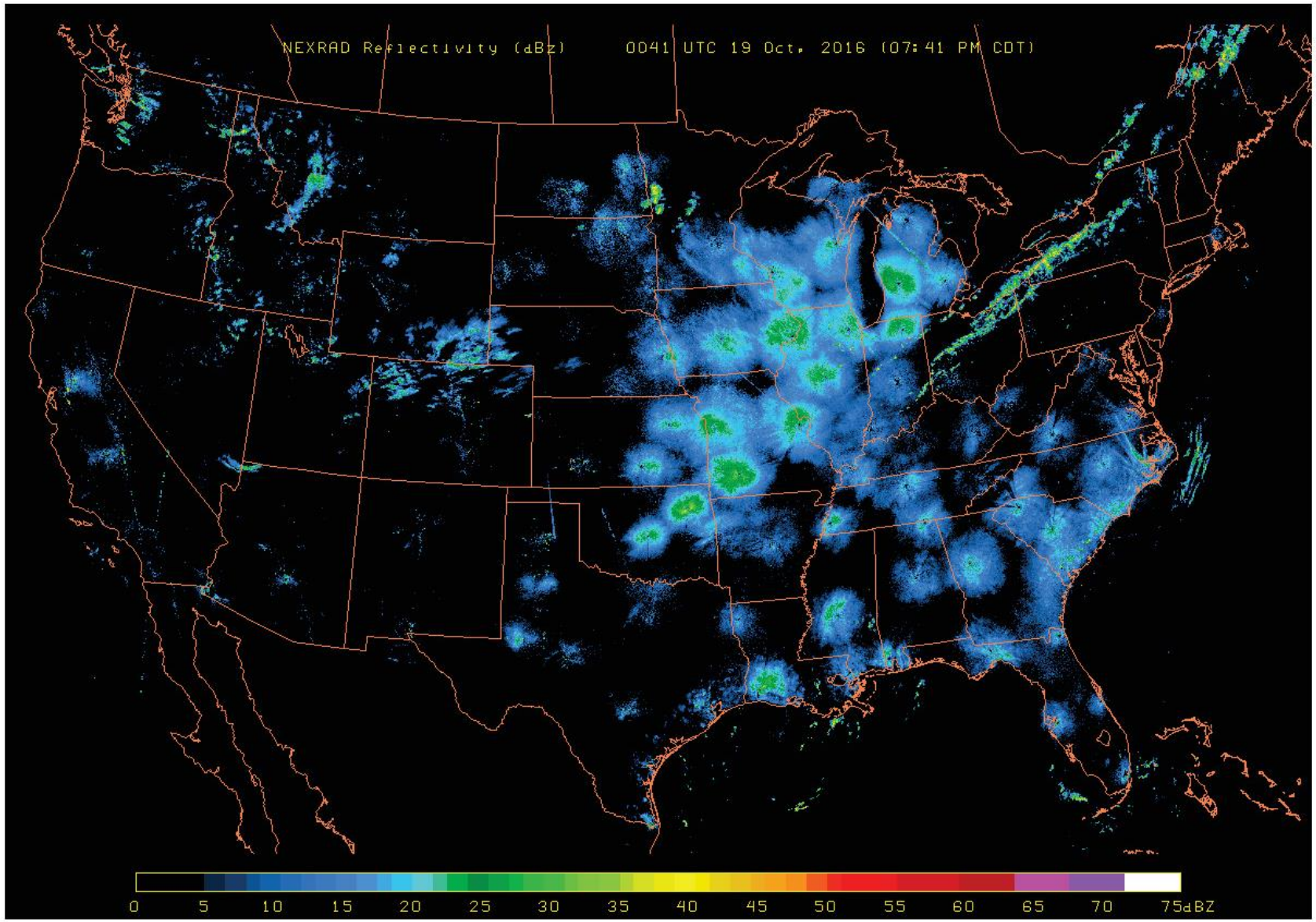


October 18 2016 6:41 pm

http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

BIRD-SAFE BUILDING DESIGN



October 18 2016 7:41 pm

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

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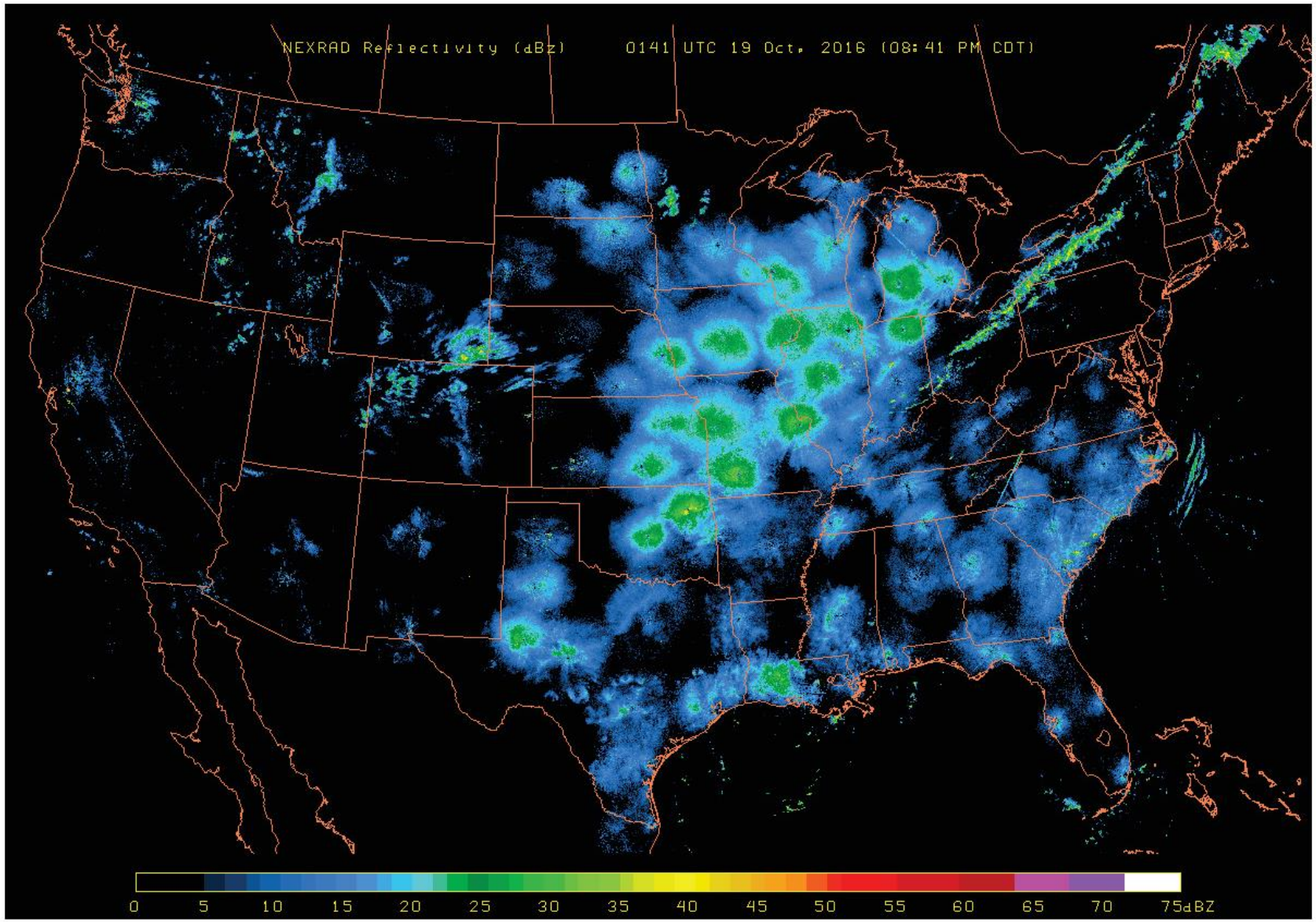

October 18 2016 8:41 pm

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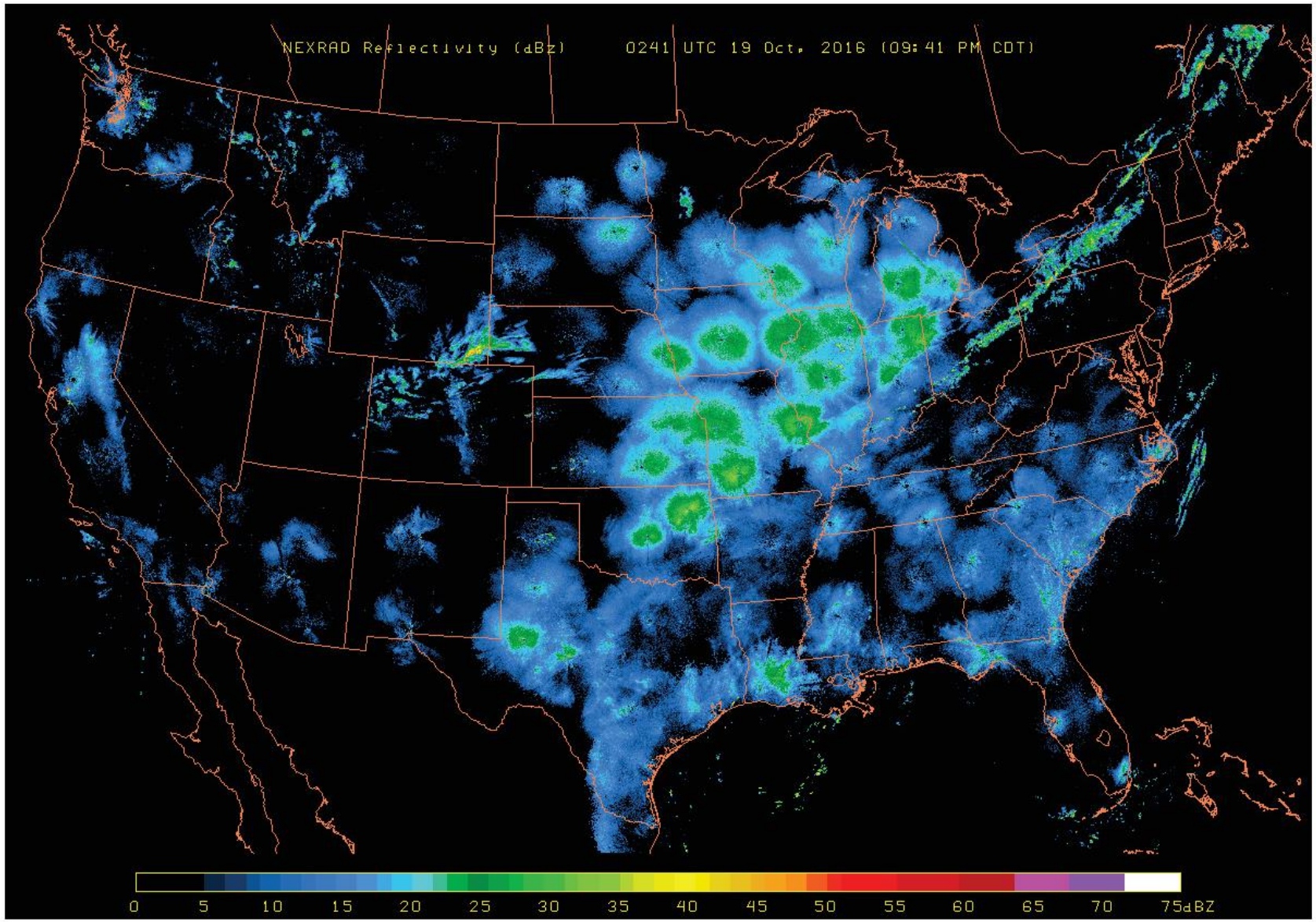

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BIRD-SAFE BUILDING DESIGN

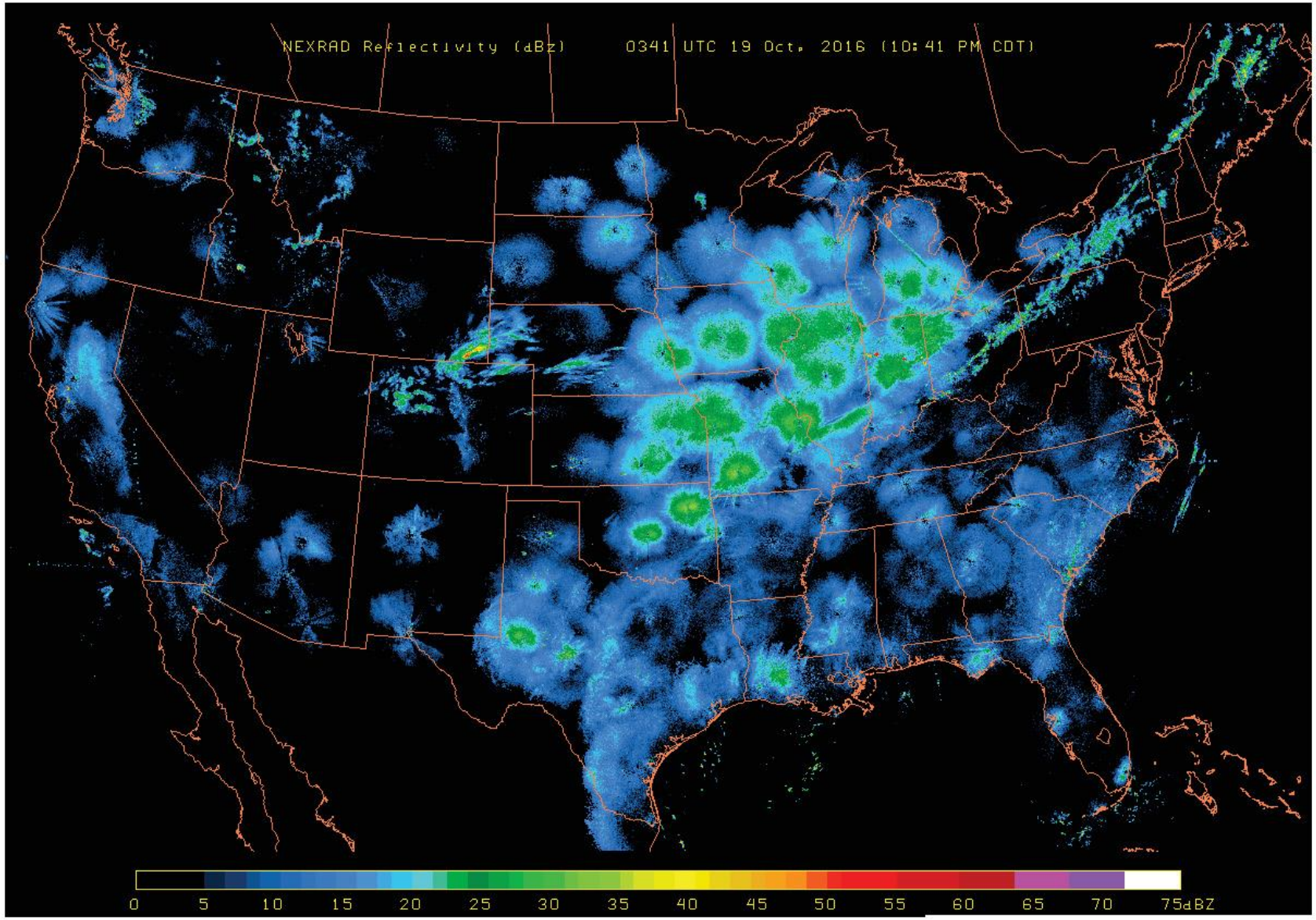

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Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

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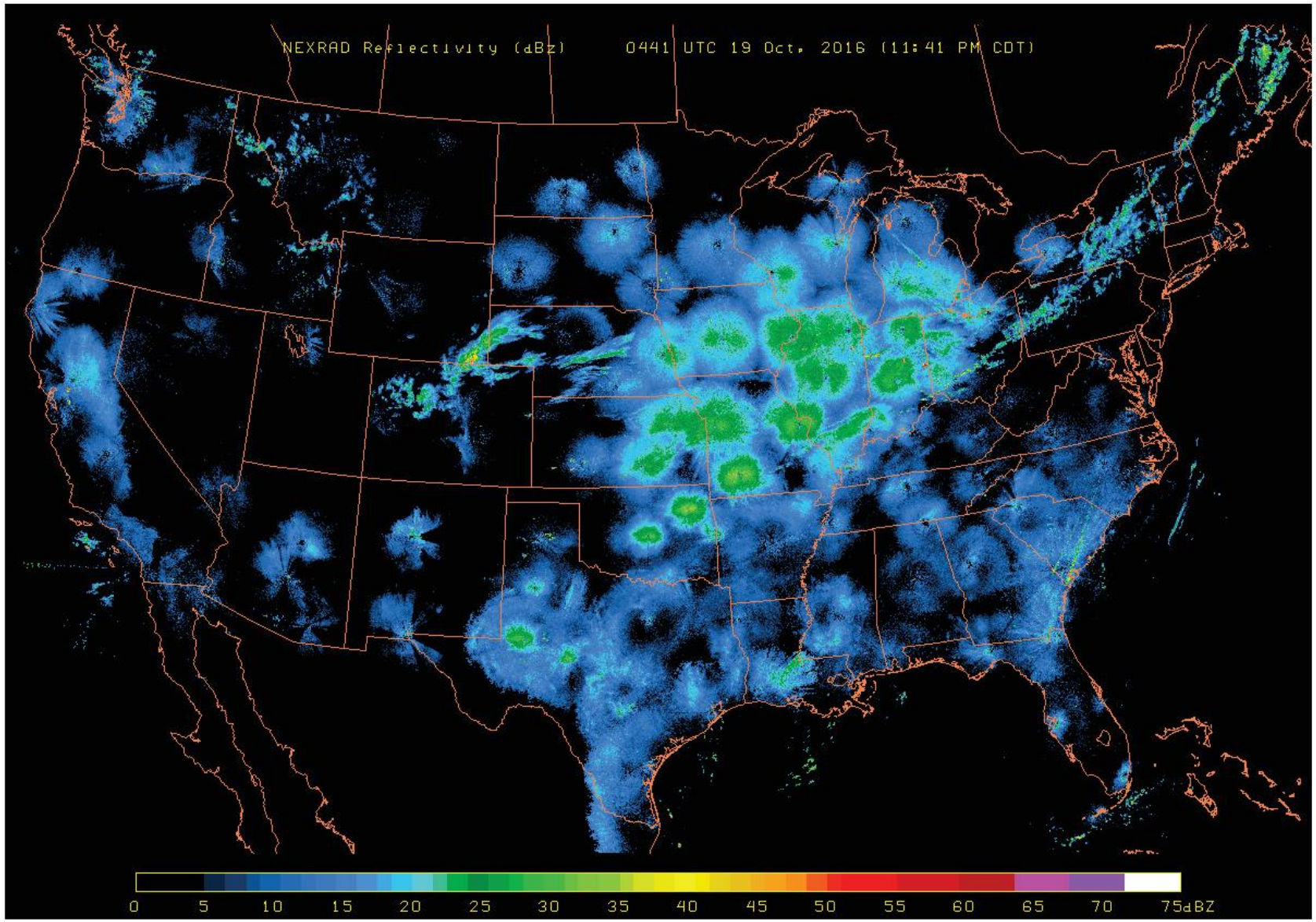

October 18 2016 11:41 pm

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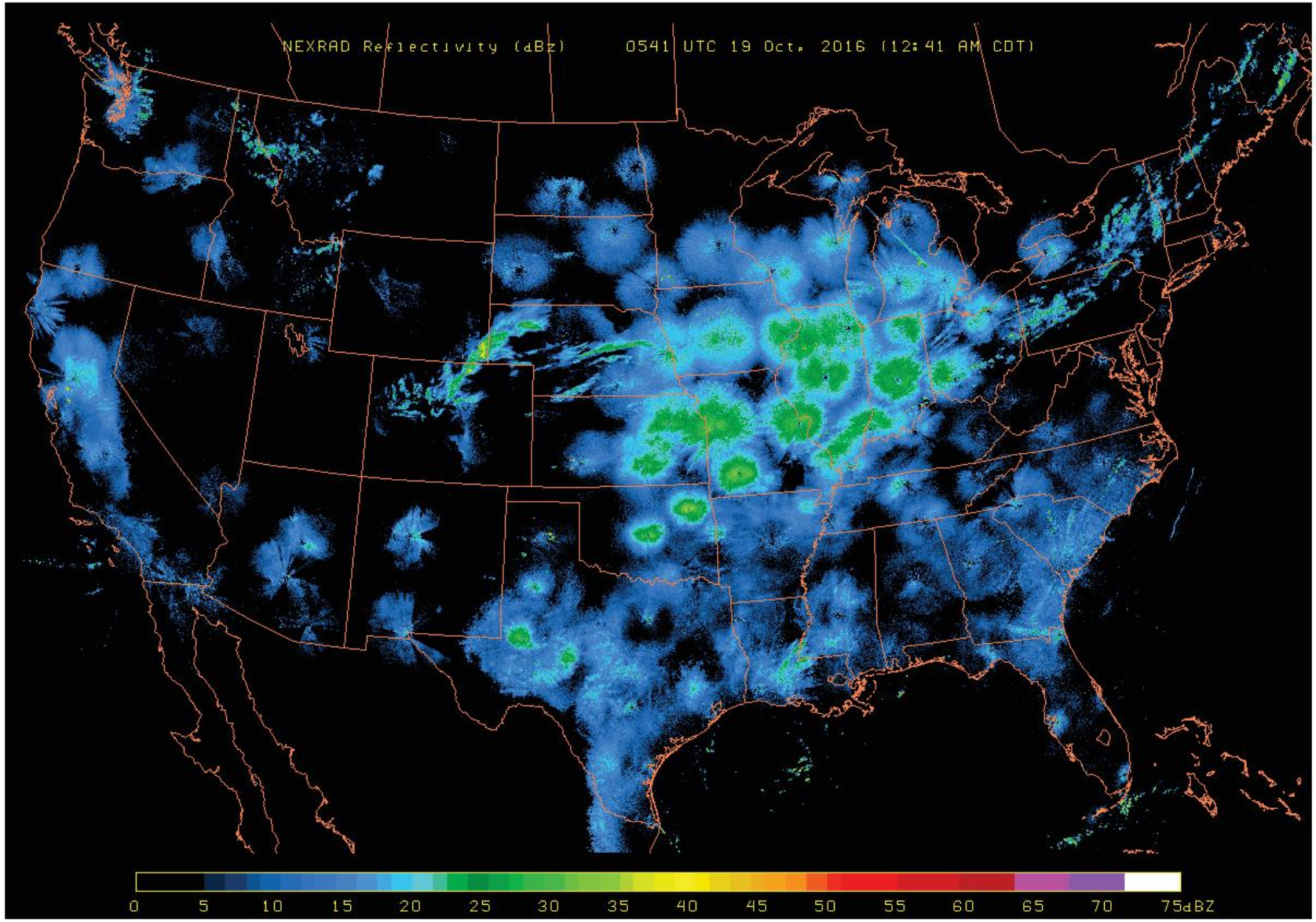
BIRD-SAFE BUILDING DESIGN



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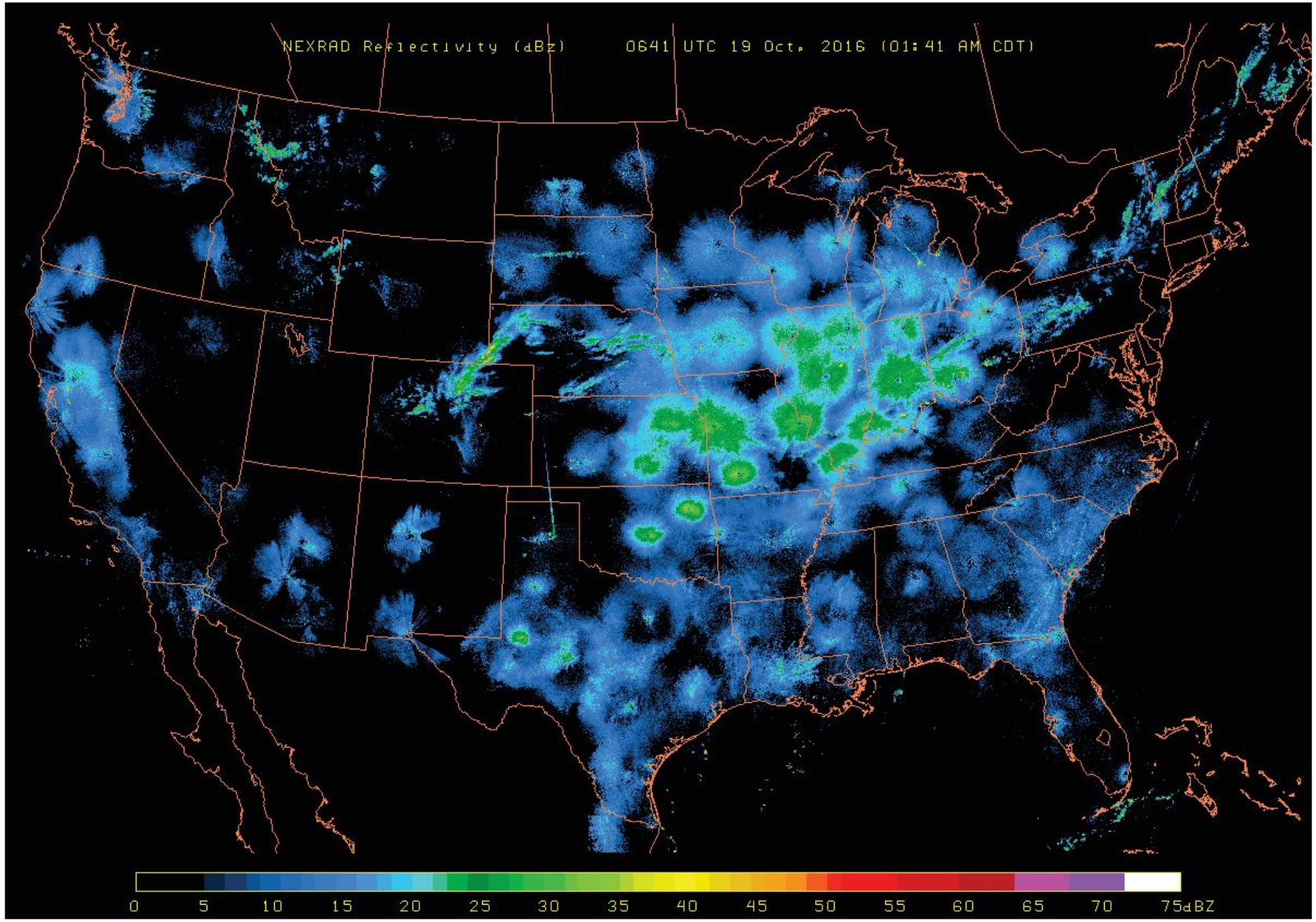

October 18 2016 1:41 am

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

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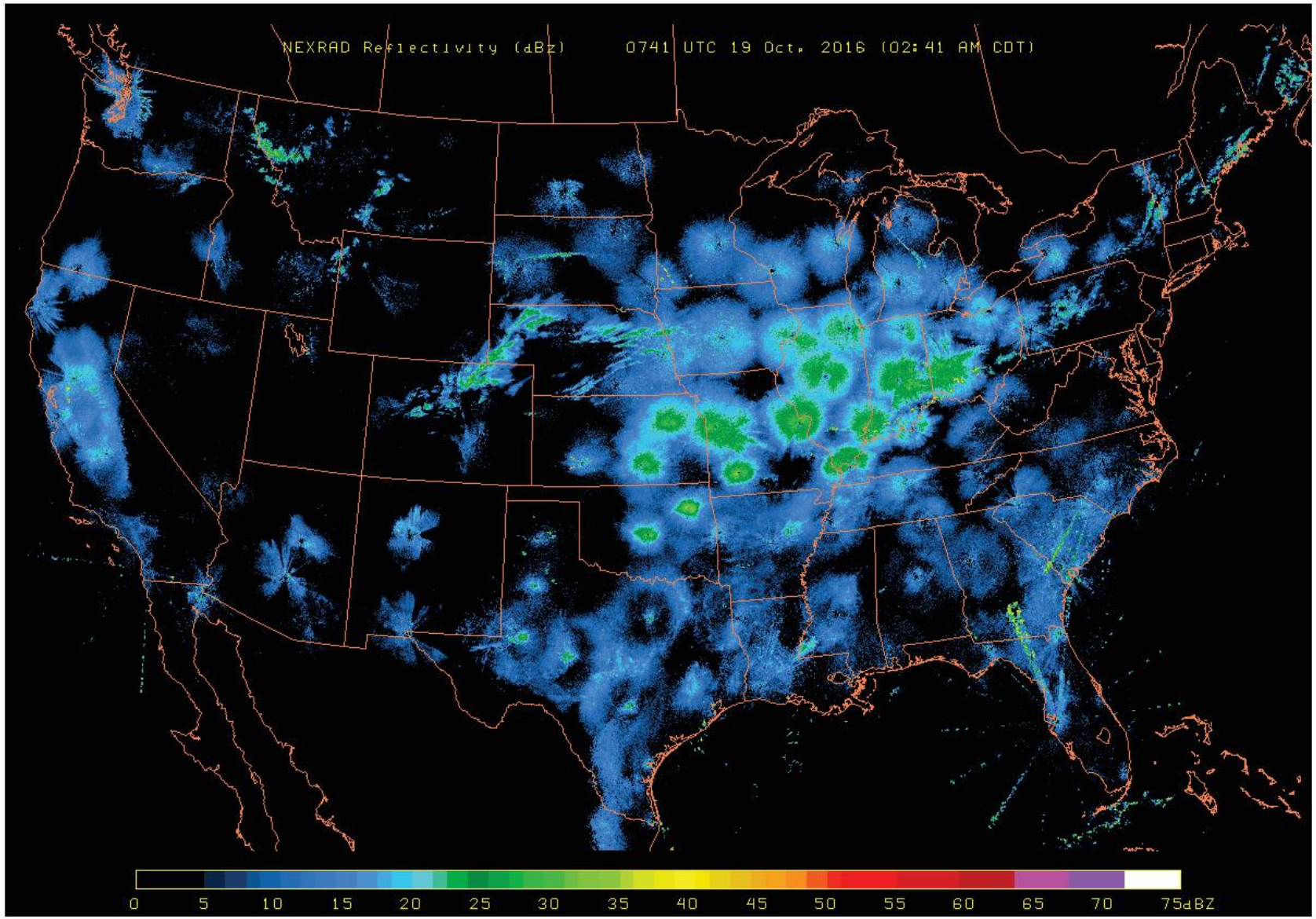

October 18 2016 2:41 am

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

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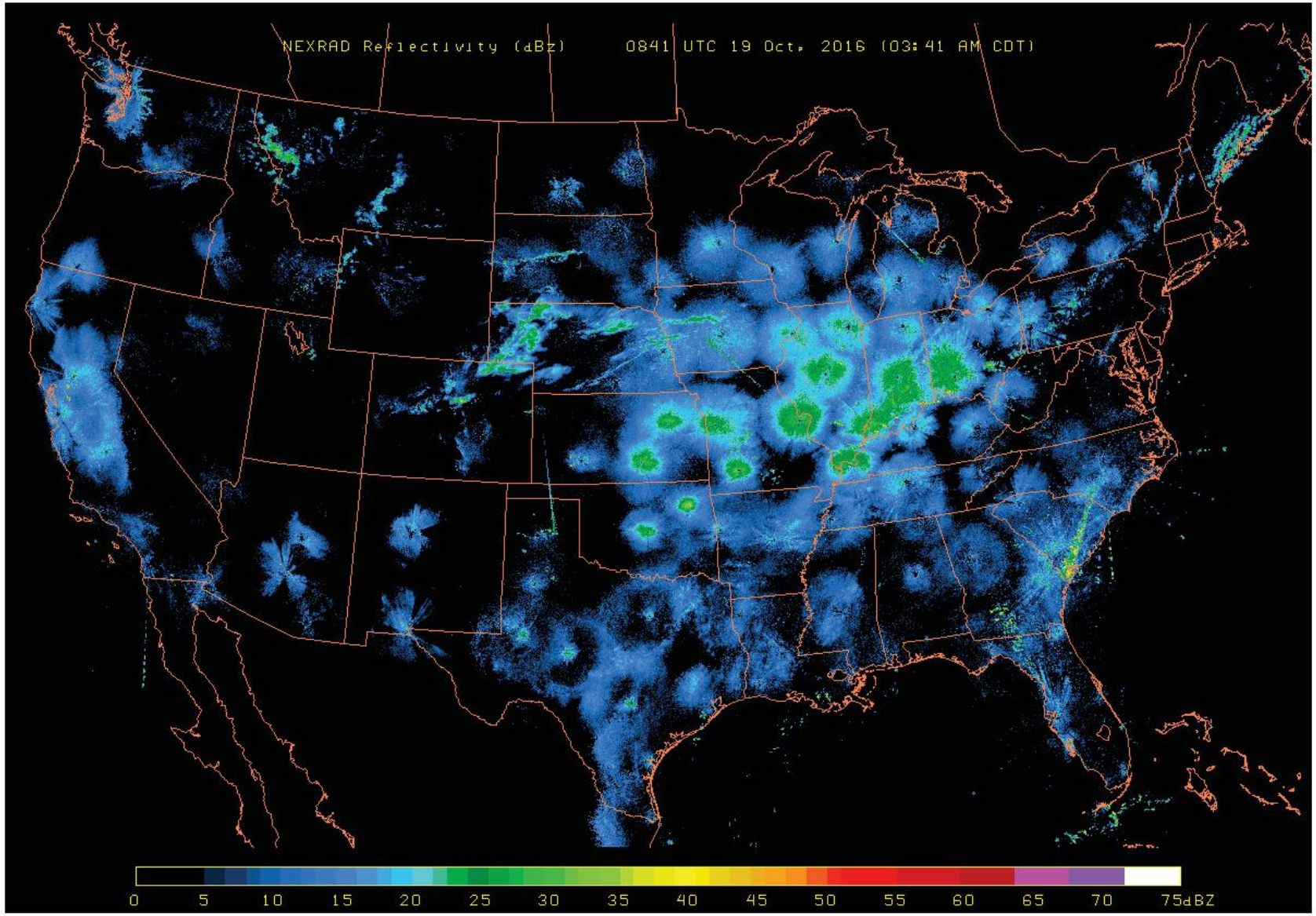

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Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

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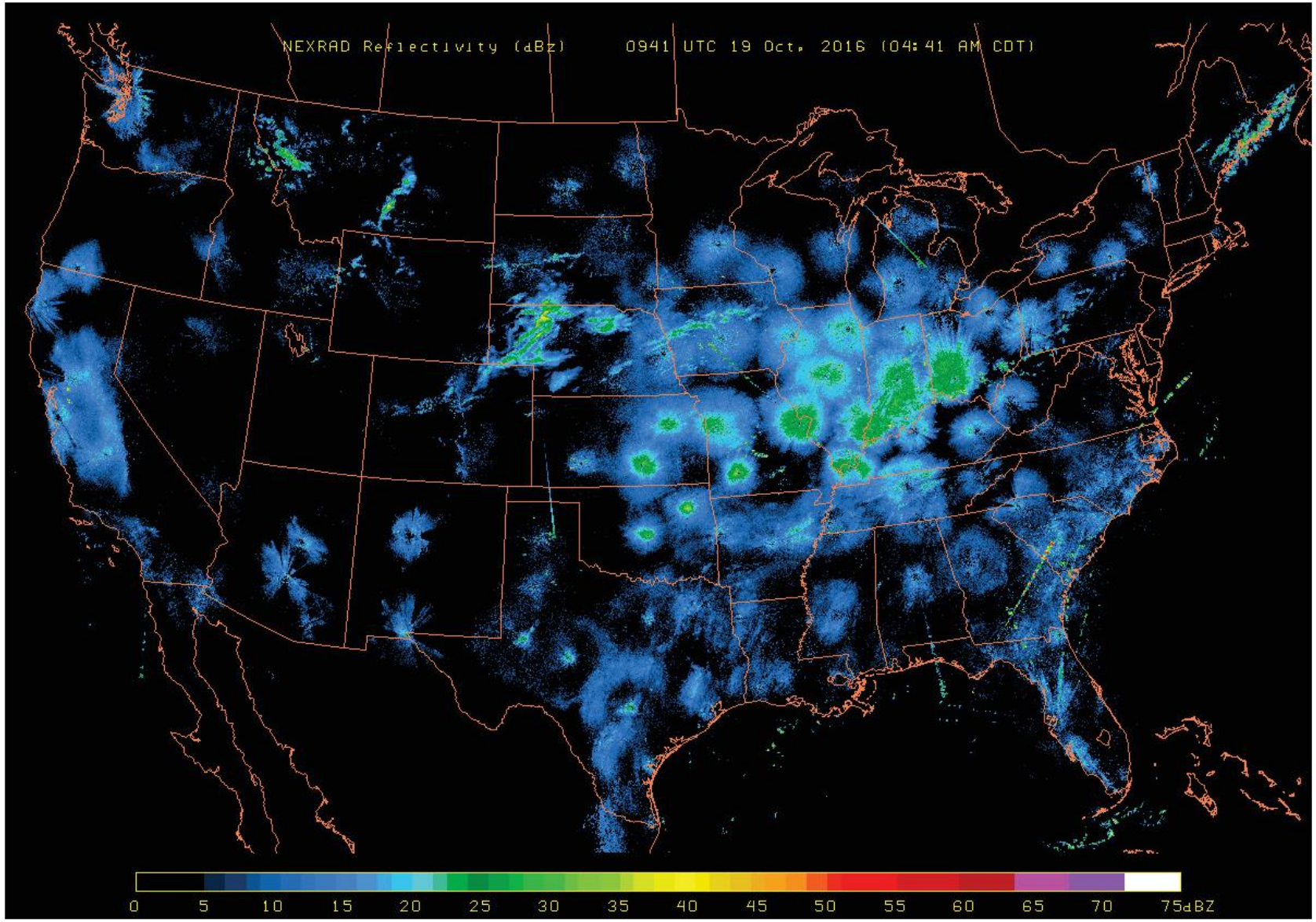

October 18 2016 4:41 am

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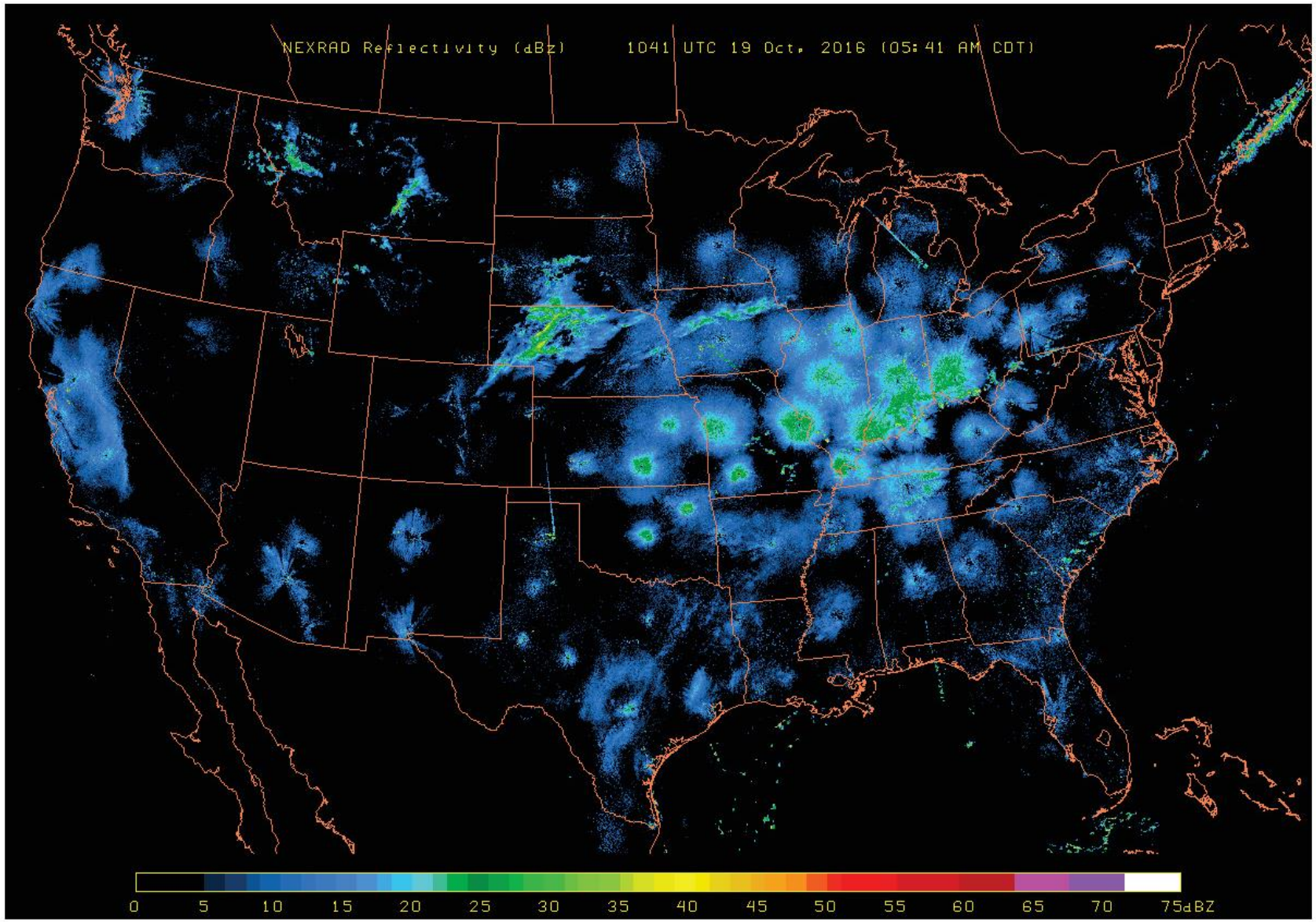

October 18 2016 5:41 am

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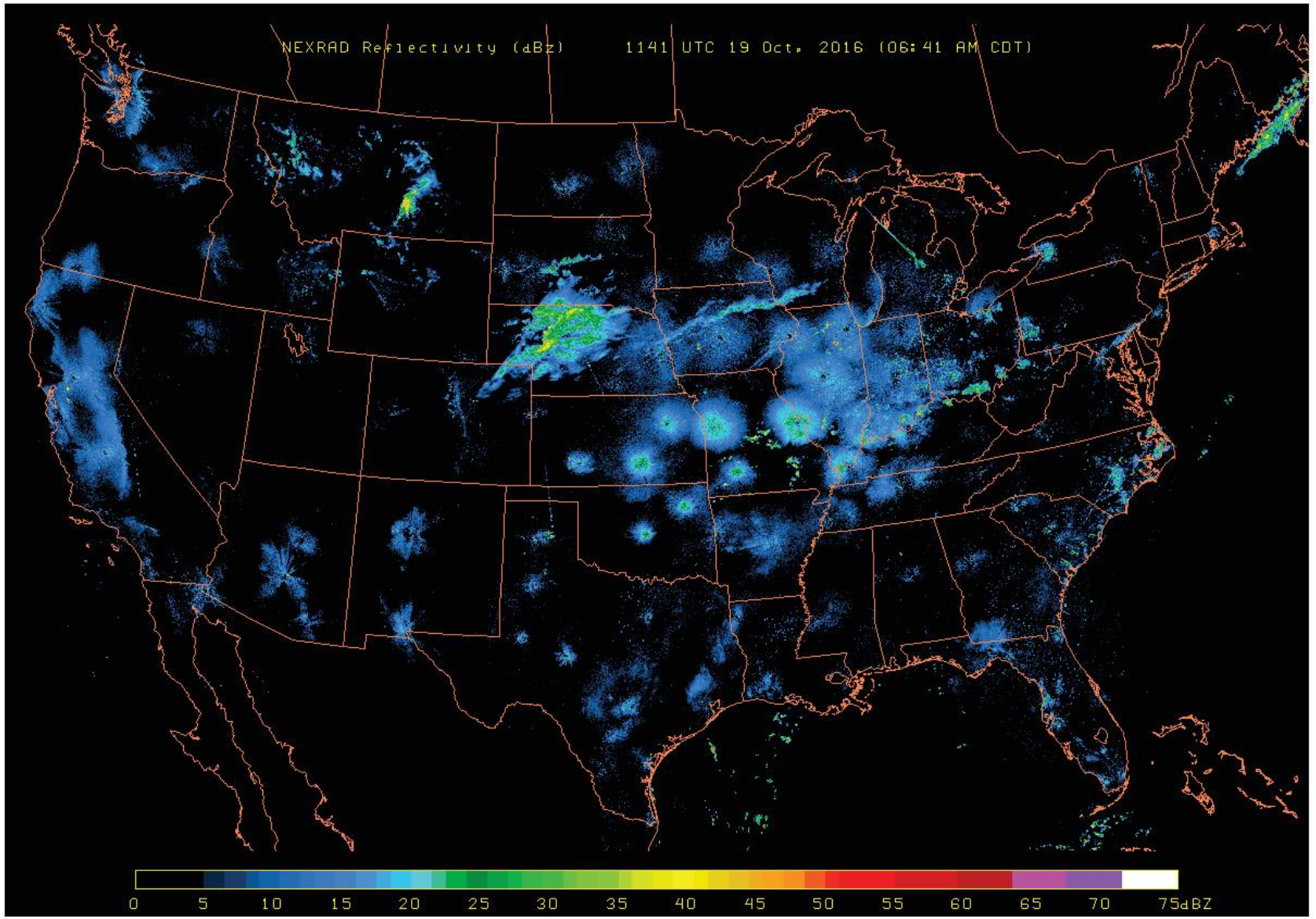
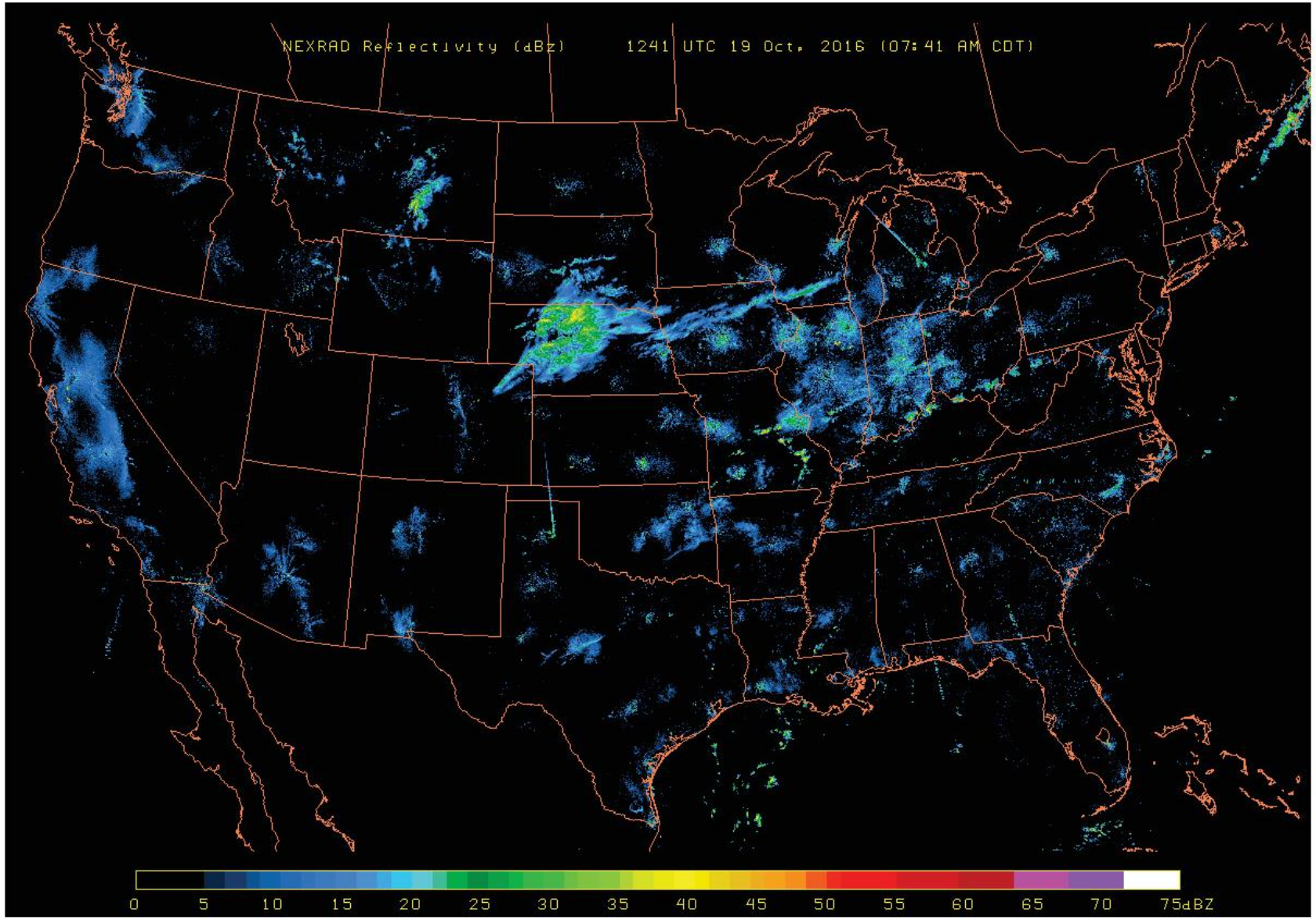
BIRD-SAFE BUILDING DESIGN



October 18 2016 6:41 am

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

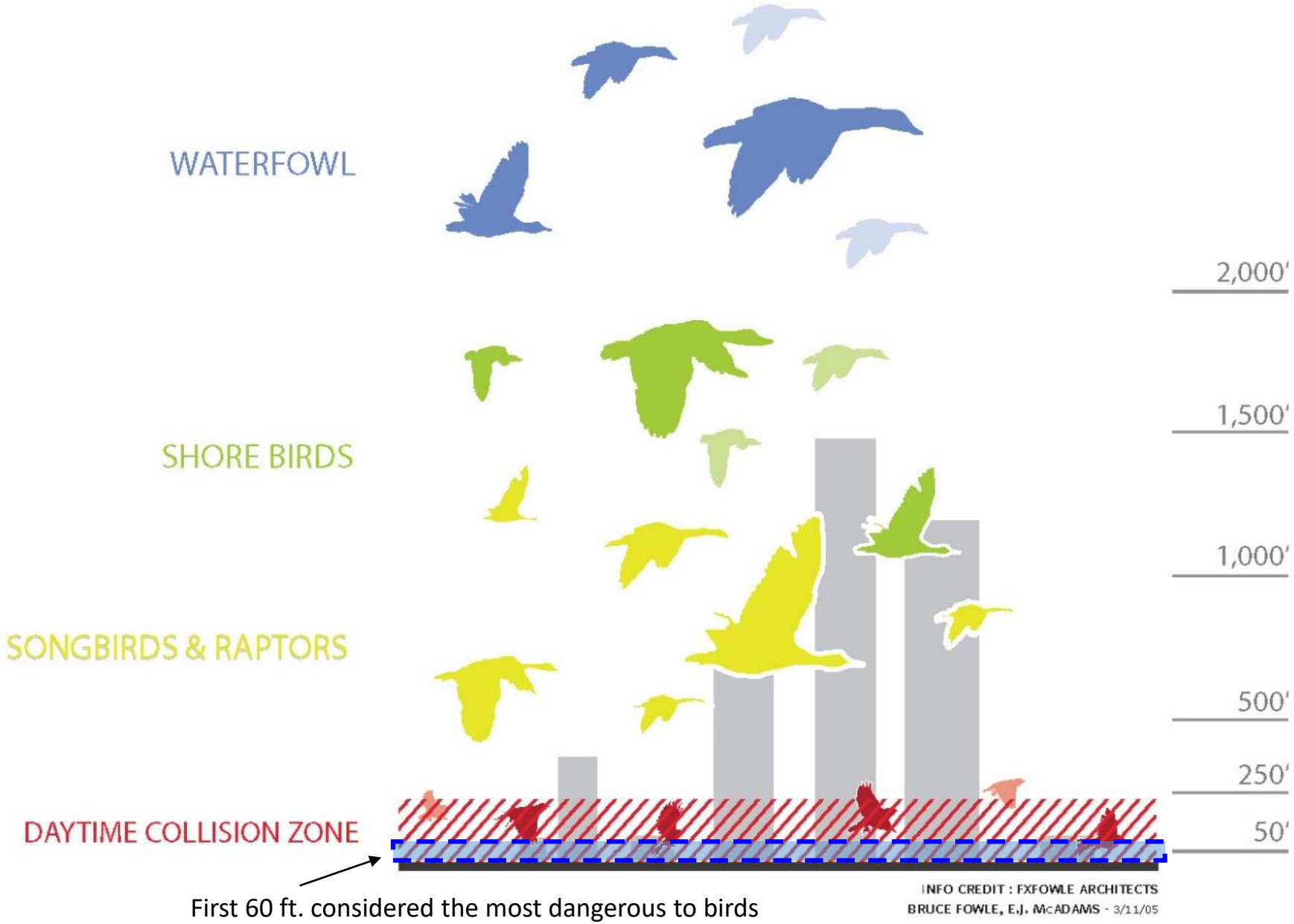
BIRD-SAFE BUILDING DESIGN



October 18 2016 7:41 am

Image Source: http://www.pauljhurtado.com/US_Composite_Radar/2016-10-18/

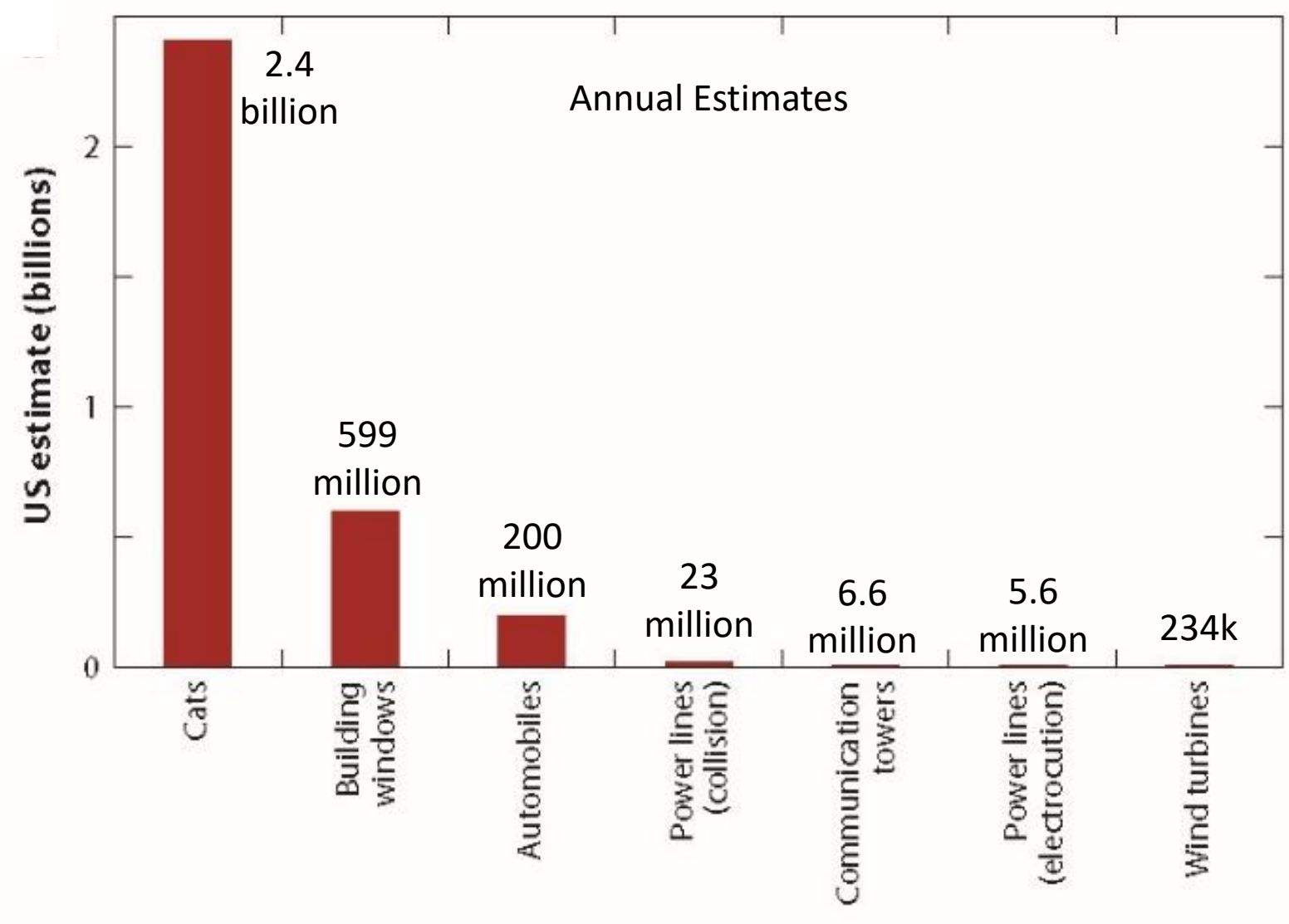
BIRD-SAFE BUILDING DESIGN



First 60 ft. considered the most dangerous to birds

Image Source: New York City's Bird-Safe Building Guidelines (2007)

How do building collisions rank amongst direct causes of bird death?



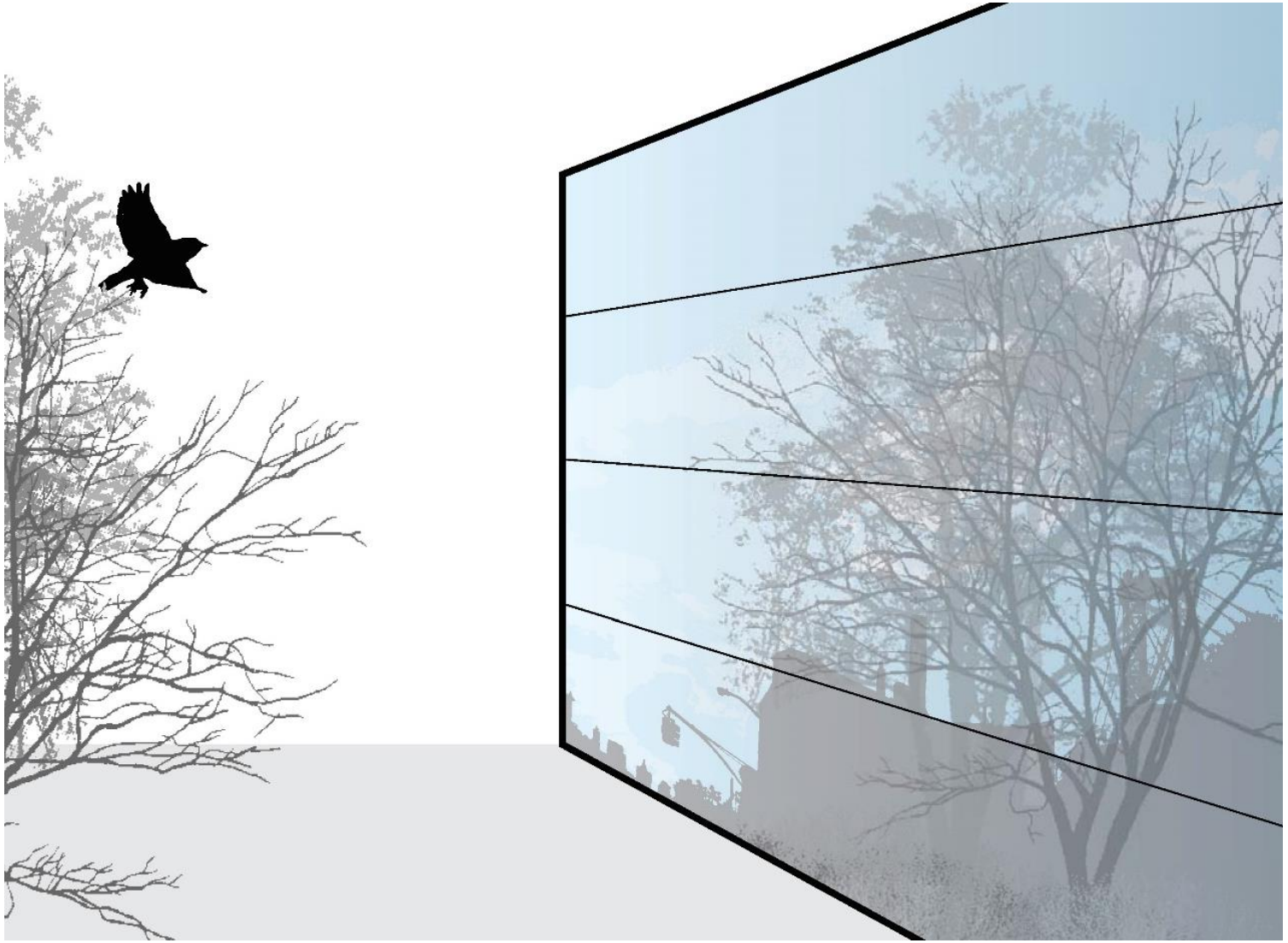
Images Source: Loss et al (2015)

What is it about buildings that makes them so dangerous?

A Red-Tailed Hawk may see its reflection as a territorial rival to be driven away, resulting in a collision.

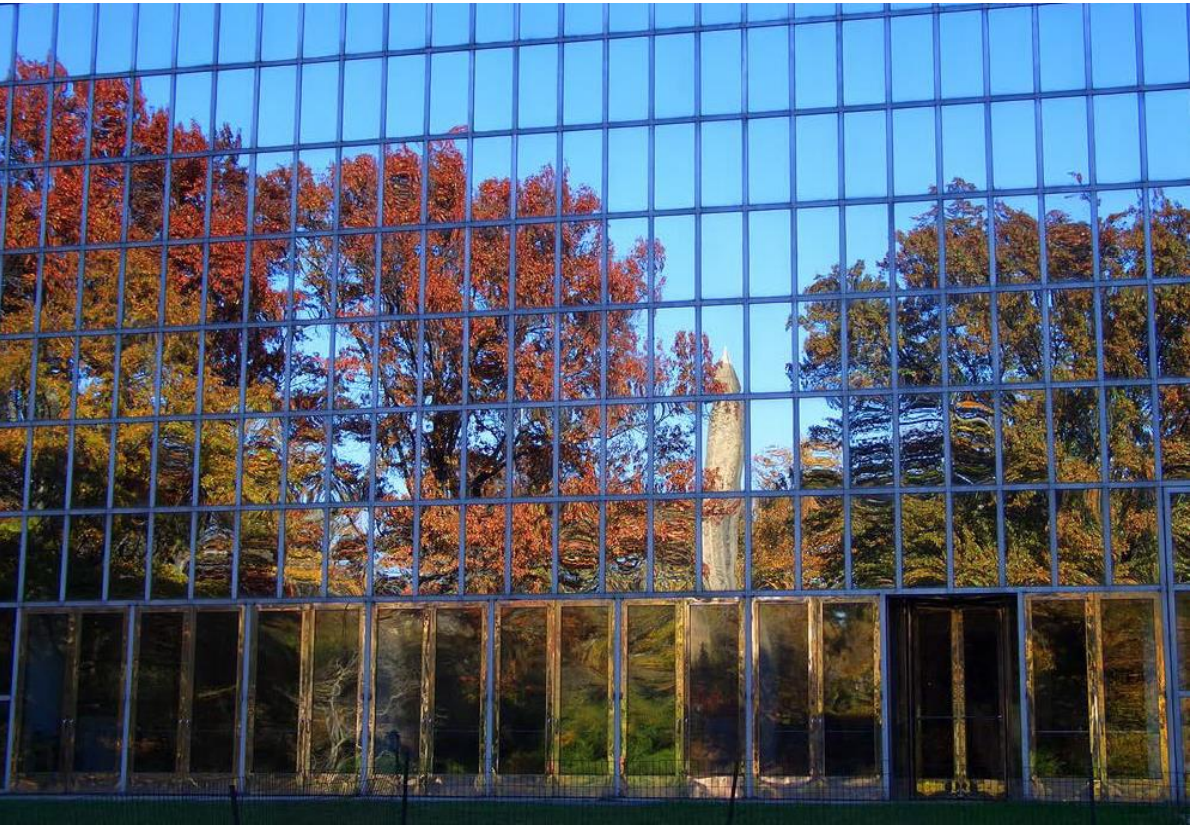
Image Source: San Francisco Planning Department's Standards for Bird-Safe Buildings (2011)

Causes of Collisions: The Reflectivity of Glass (The Mirror Effect)



Images Source: New York City's Bird-Safe Building Guidelines (2007)

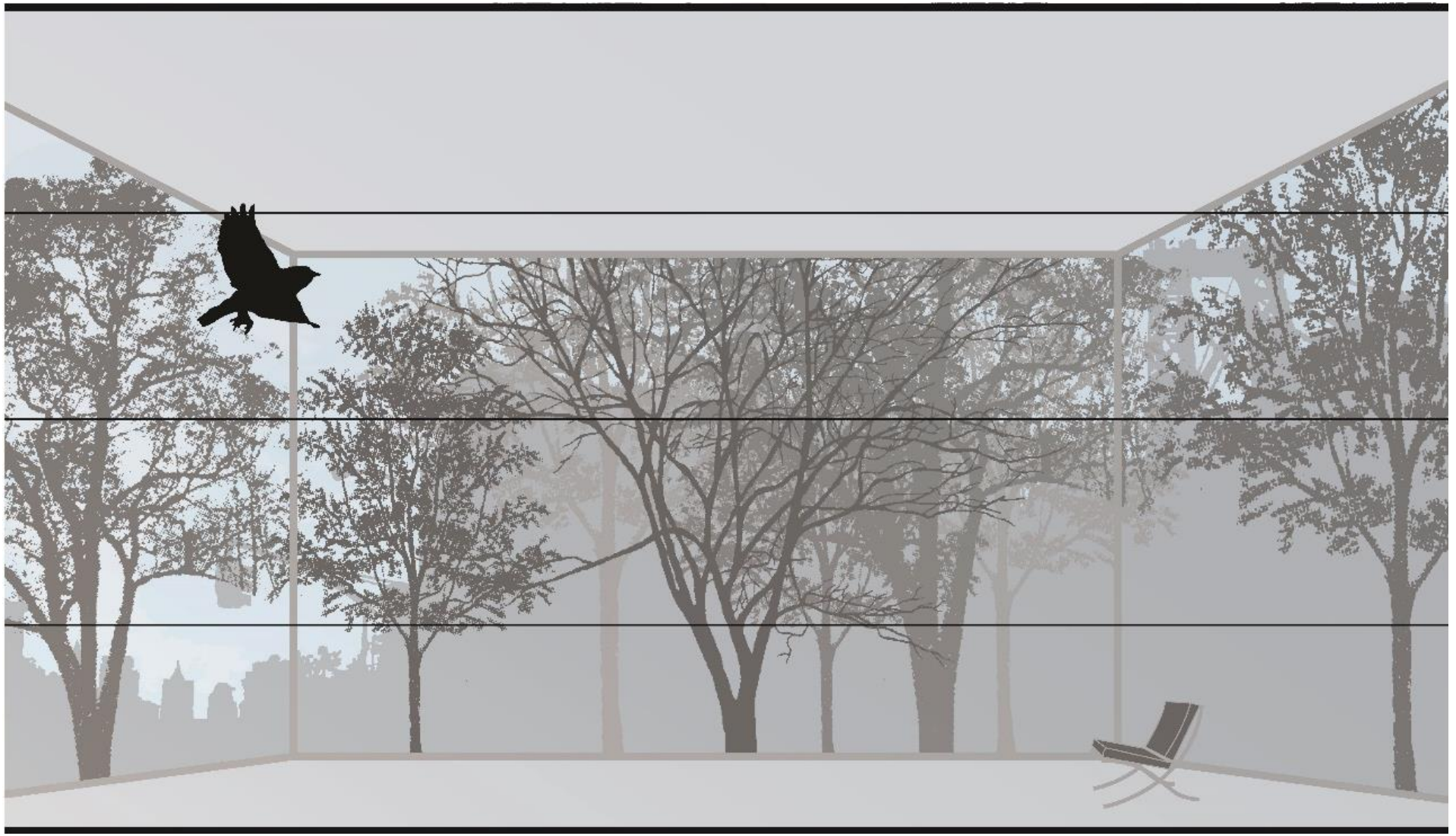
Causes of Collisions: The Reflectivity of Glass (The Mirror Effect)



The glass in this Washington, D.C., atrium poses a double hazard, drawing birds to plants inside as well as reflecting sky above. Photo by Christine Sheppard, ABC

Image Source: San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); (R) American Bird Conservancy's Bird-Friendly Building Guide (2015)

Causes of Collisions: The Transparency of Glass



Images Source: New York City's Bird-Safe Building Guidelines (2007)

Causes of Collisions: The Transparency of Glass

Image Sources: (L) San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); (R) Toronto's Bird-Friendly Best Practices Glass Report (2016)

Causes of Collisions: The Transparency of Glass

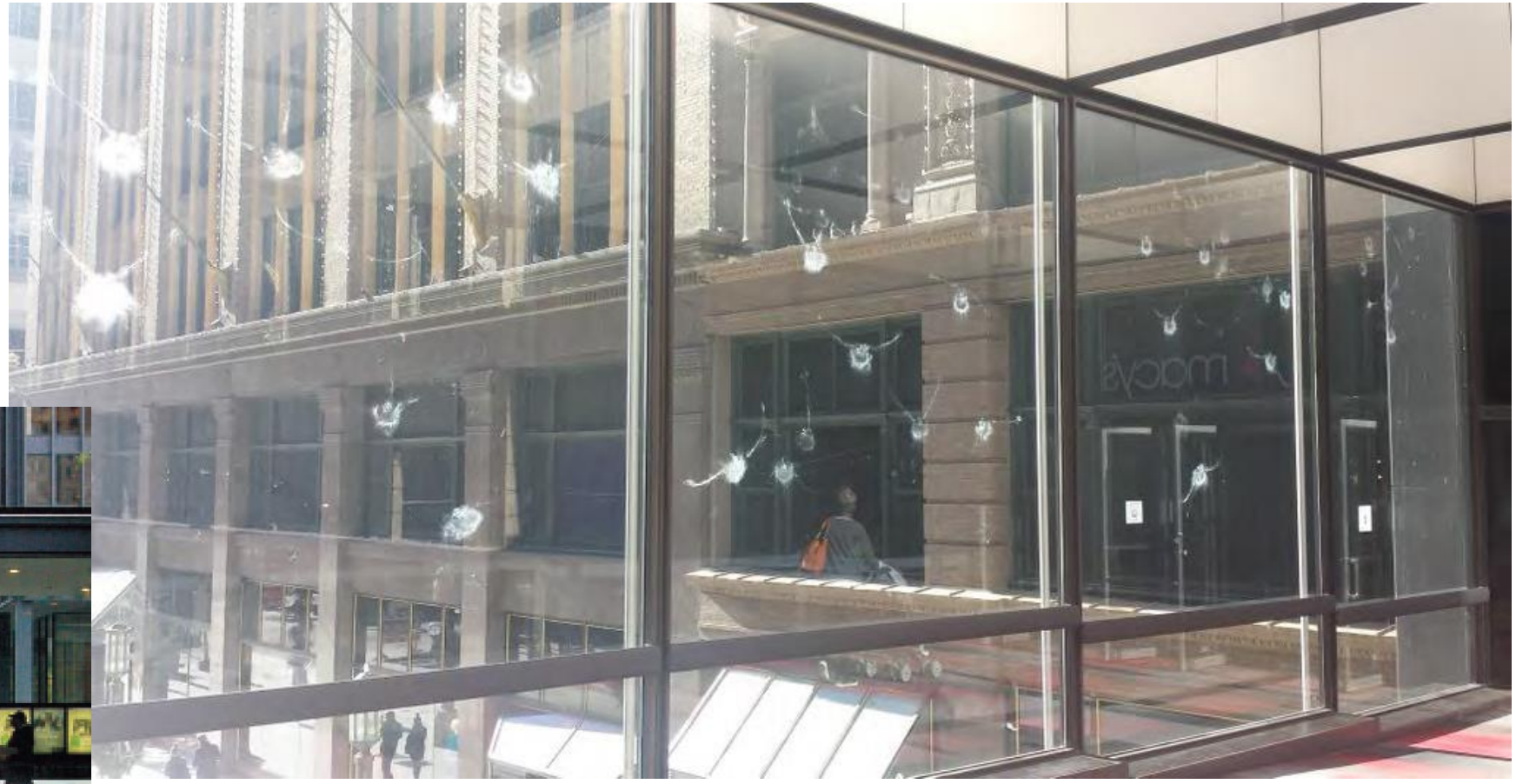


Image Sources: (L) Toronto's Bird-Friendly Development Guidelines (2007); (R) Minneapolis Skyway Zoning Text Amendment CPED Staff Report (wcmsp-184863-2) (2016)

Causes of Collisions: The Proximity of Glass to Landscaping

Image Source: American Bird Conservancy's Bird-Friendly Building Guide (2015)

Causes of Collisions: **Attraction to Light** (aka The Beacon Effect)

Image Source: Clockwise from top left: Toronto's Bird-Friendly Best Practices Glass Report (2016); New York City's Bird-Safe Building Guidelines (2007); Same; Toronto.

Causes of Collisions: Heavily Vegetated Courtyards Surrounded by Glass

Photo: FLAP Canada

Image Sources: (L) San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); (R) Toronto's Bird-Friendly Development Guidelines (2007)

What can be done to make buildings more safe for birds?

Dark-eyed Junco killed by colliding with window in downtown Toronto.
Photo: Simon Luisi, FLAP Canada

Image Source: Toronto's Bird-Friendly Best Practices Glass Report (2016)

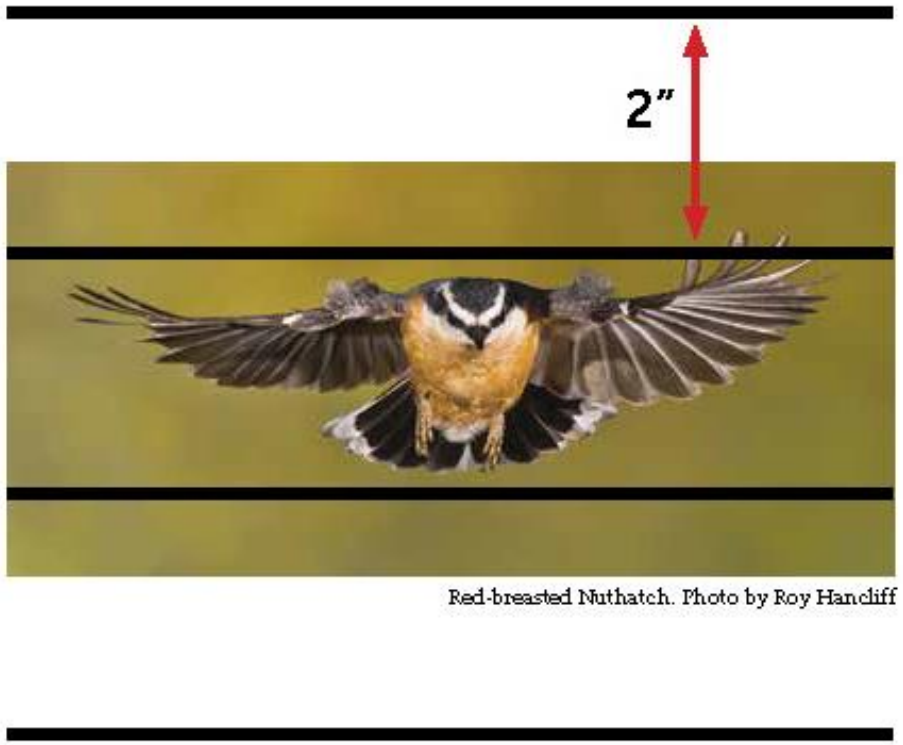
Window Treatments: Making the "Invisible" Visible with Visual Markers

- Birds need cues, or visual markers, to help warn them before they collide
- Pattern needs to be dense
- Visual markers should be high contrast (i.e. white)
- The exterior surface is the most effective surface to deter collisions
- Should also make the glass less reflective

Window Treatments: Making the "Invisible" Visible with Visual Markers

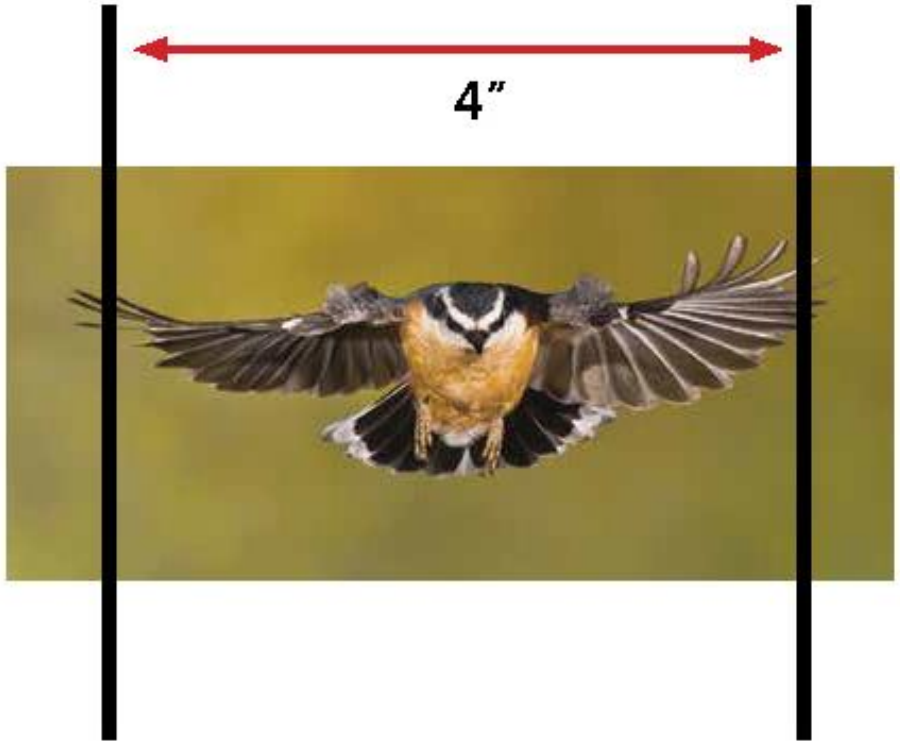
- The "2 x 4" Rule

Horizontal lines with a maximum spacing of 2 inches



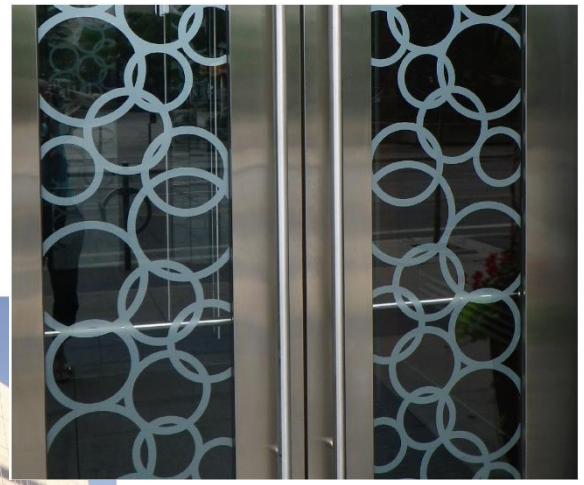
Red-breasted Nuthatch. Photo by Roy Handcliff

Vertical lines with a maximum spacing of 4 inches



Images Source: Toronto's Bird-Friendly Best Practices Glass Report (2016)

FRITTED or ETCHED GLASS



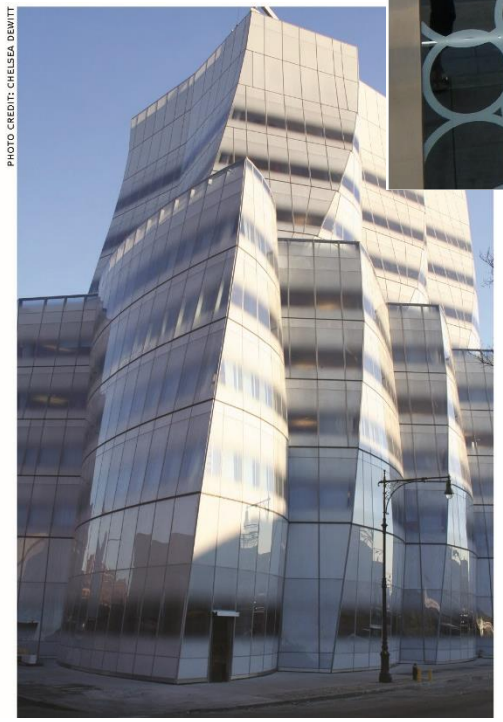


Image Sources (Clockwise from top left): North-South Environmental Inc..; American Bird Conservancy's Bird-Friendly Building Guide (2015); Toronto's Bird-Friendly Best Practices Glass Report (2016); New York City's Bird-Safe Building Guidelines (2007).

DOTS

Photo: FLAP Canada

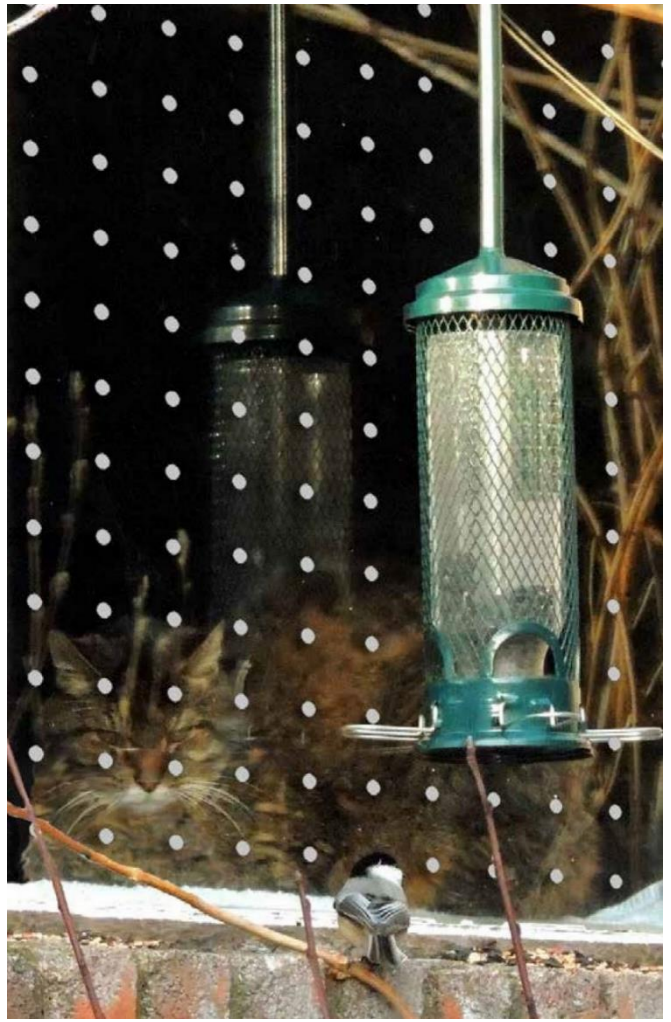


Image Sources: Clockwise from top left: Toronto's Bird-Friendly Best Practices Glass Report (2016); Same; San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); Same.

Building Treatments – Adding Visual Markers – Dot Spacing

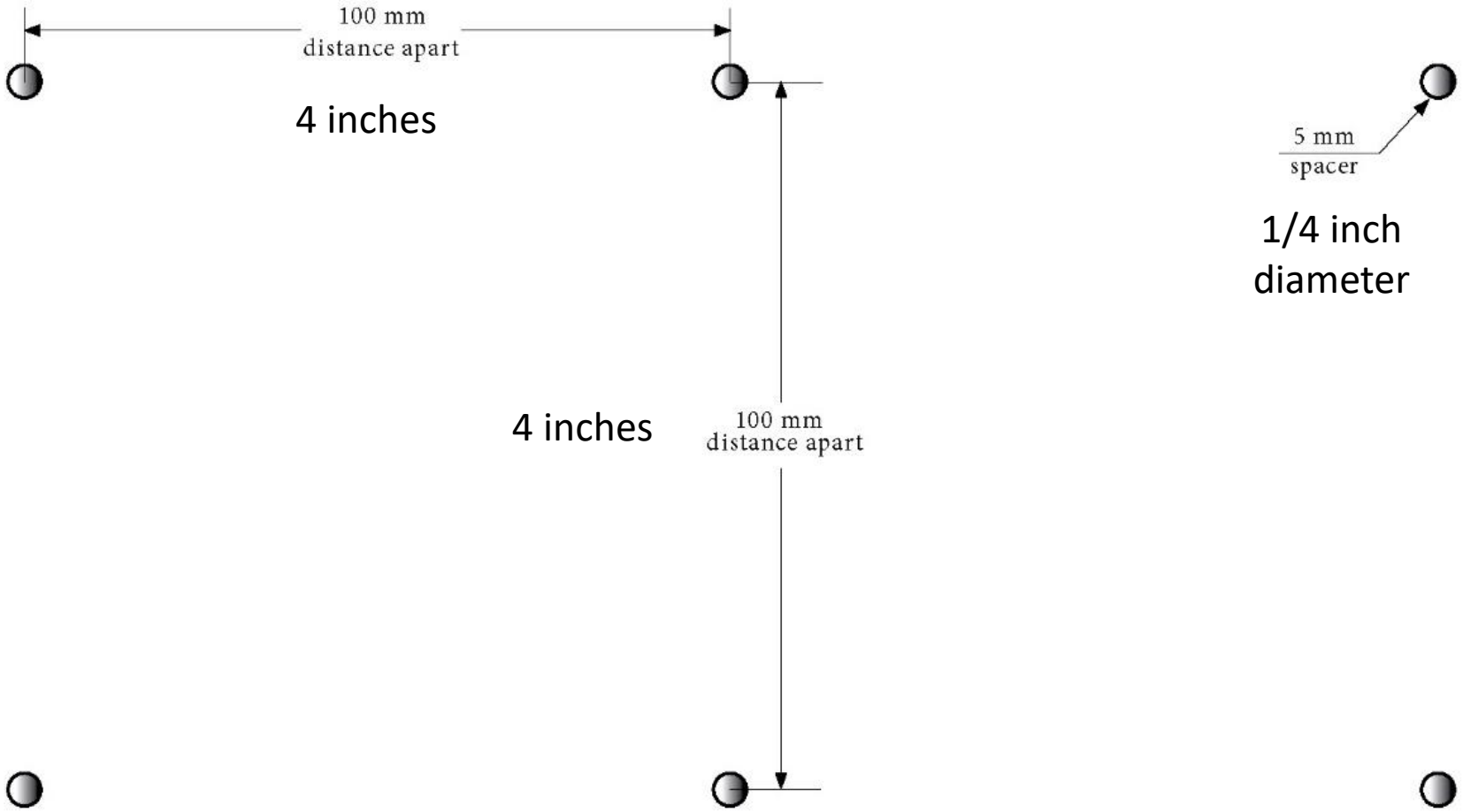
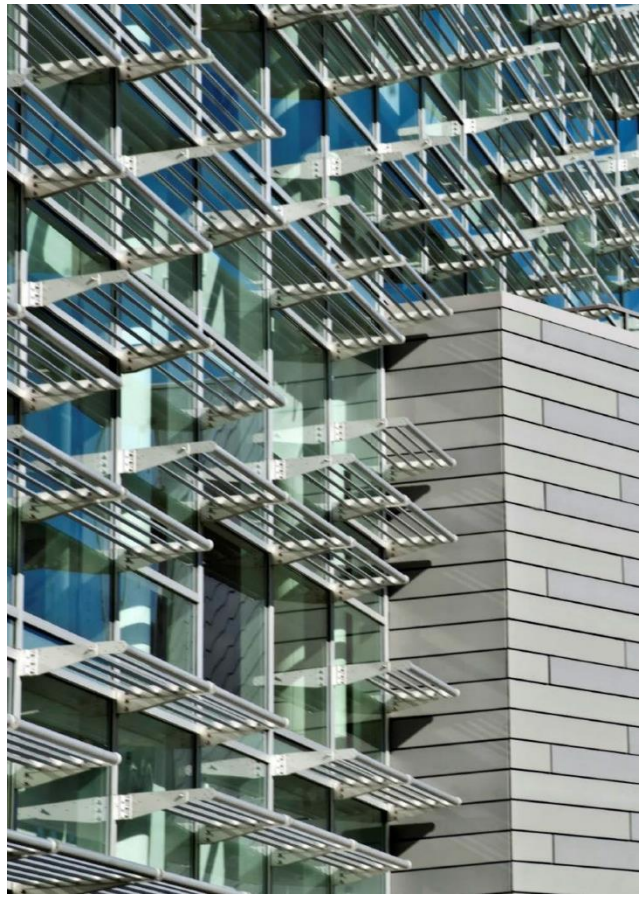


Image Source: Toronto's Bird-Friendly Best Practices Glass Report (2016)

EXTERIOR SHADES & SCREENS



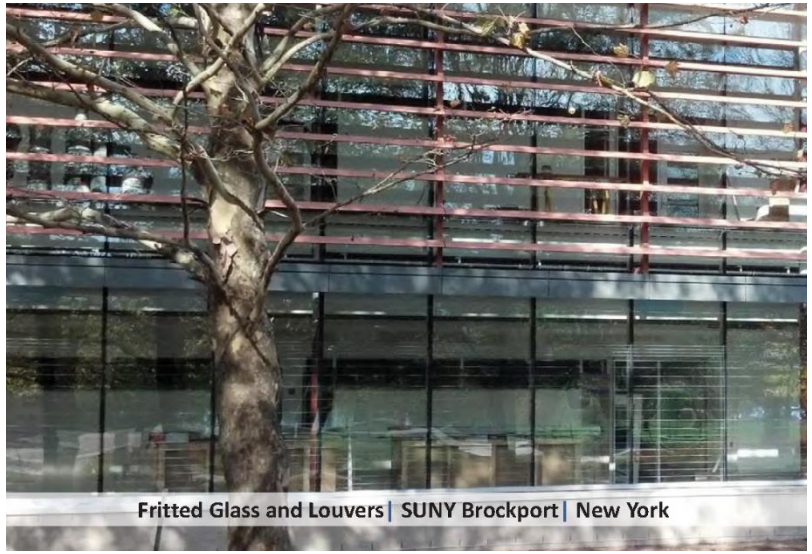


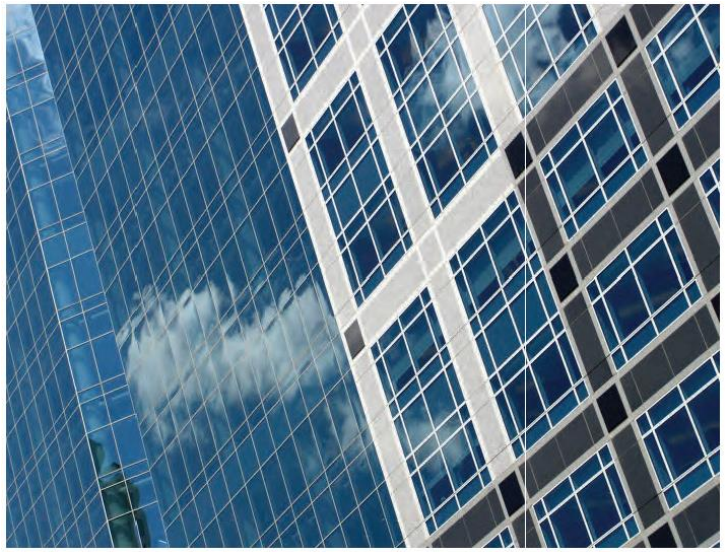
Image Sources: Clockwise from top left: Toronto's Bird-Friendly Best Practices Glass Report (2016); San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); Alslinn Weidele/Ennead Architects; Toronto; Minneapolis Skyway Zoning Text Amendment CPED Staff Report (wcmsp-184863-2) (2016).

NETTING

Photo by FLAP Canada

Image Source: Markham (Canada) Bird-Friendly Development Guidelines (2014)

MULLION DENSITY & OPAQUE MATERIALS



Dense, visible window mullions

Reasonably visible mullions w/ mix of opaque & transparent materials

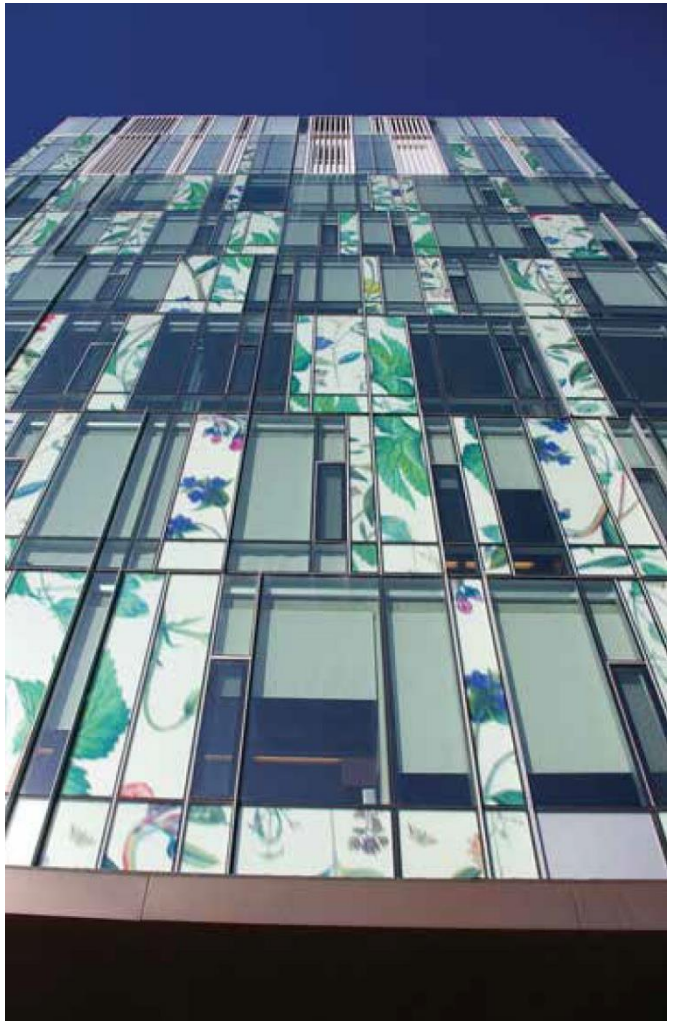


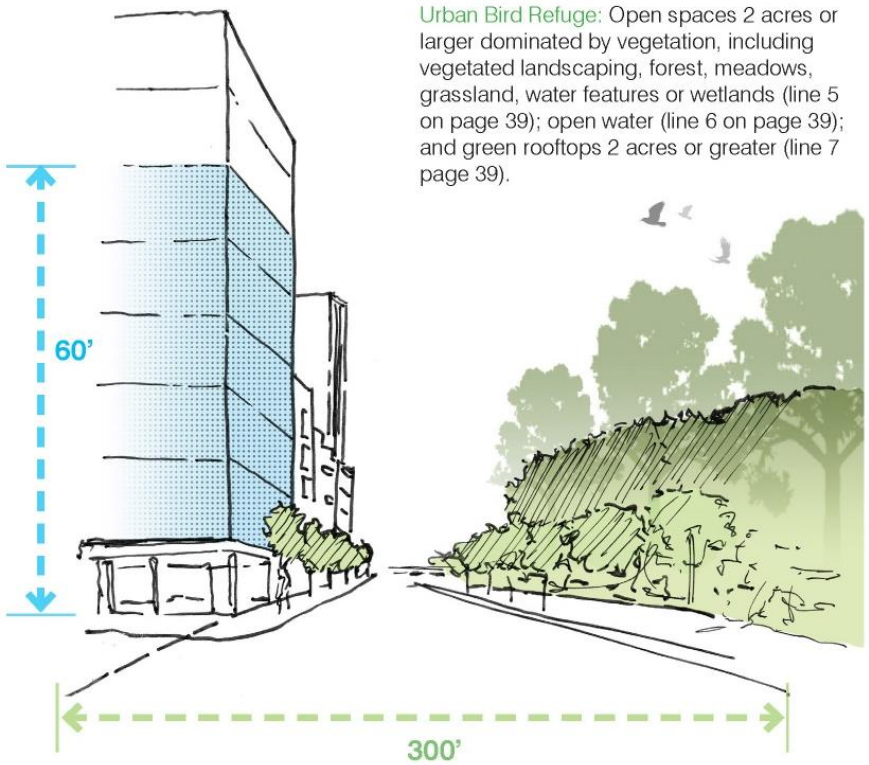
Image Sources: (Left & Center) Calgary's Bird-Friendly Urban Design Guidelines (2011); (Right) Toronto's Bird-Friendly Best Practices Glass Report (2016)

How have municipalities approached regulating/encouraging bird-friendly buildings?

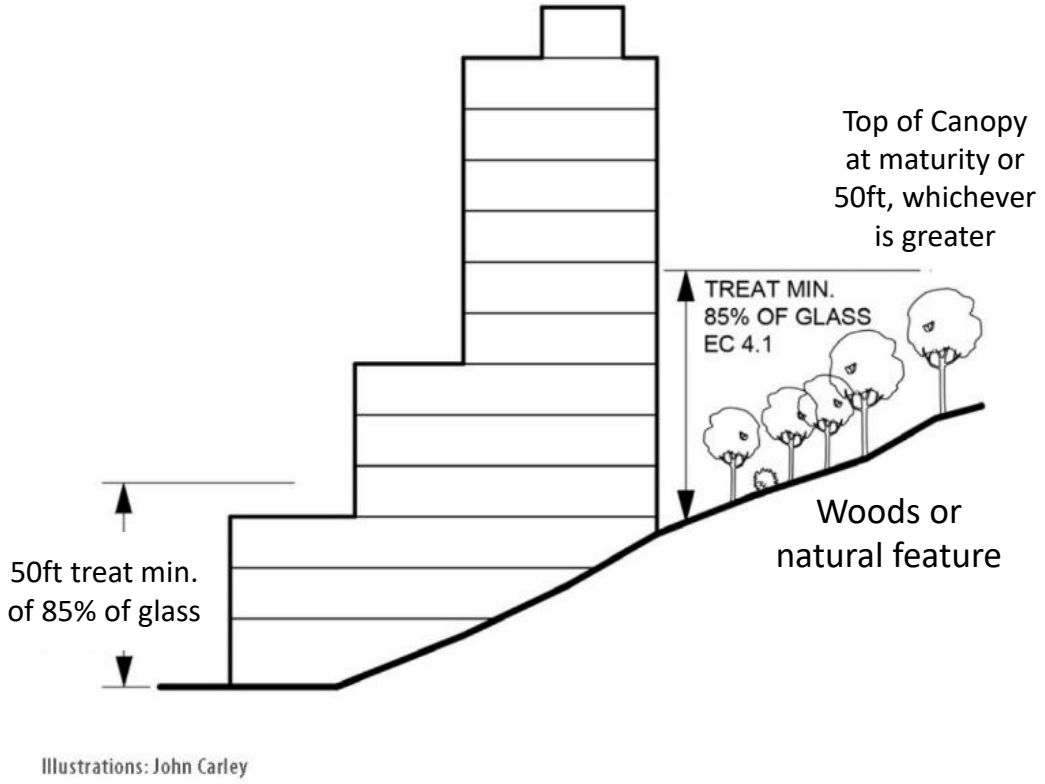
Image Source: (L) San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); (R) American Bird Conservancy's Bird-Friendly Building Guide (2015);

Municipal Regulations/Guidelines – Which Buildings Need to be Treated?

- **Proximity to Natural Areas or Natural Features (two examples)**



Buildings less than 300 ft. from an "urban bird refuge" must treat 90% of the glass on the first 60ft. of the building



All buildings must treat 85% of all glass within the first 50ft. OR to the height of the adjacent tree canopy, whichever is greater

Image Sources: (L) San Francisco Planning Department's Standards for Bird-Safe Buildings (2011); (R) Toronto's Bird-Friendly Best Practices Glass Report (2016)

Municipal Regulations/Guidelines – Which Areas of the Building are Being Targeted?

- **Rooftop Landscaping**

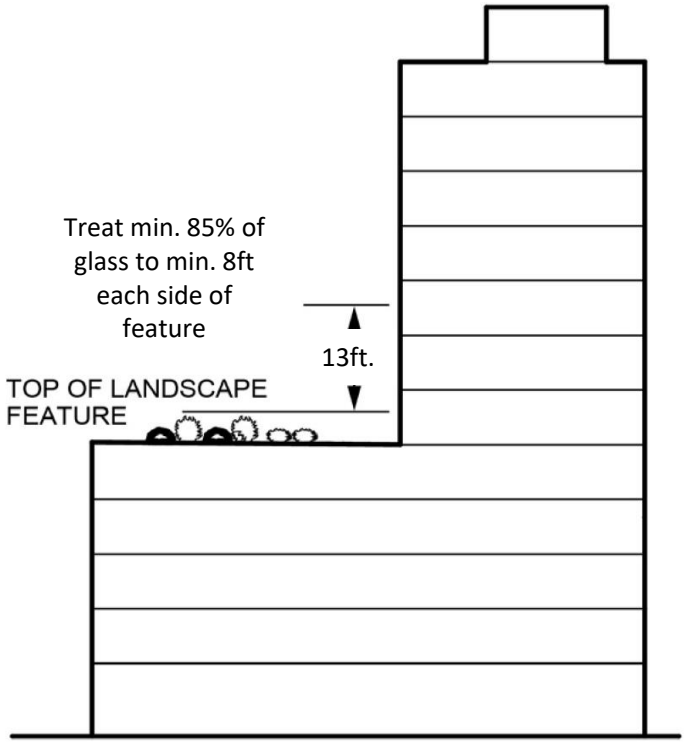
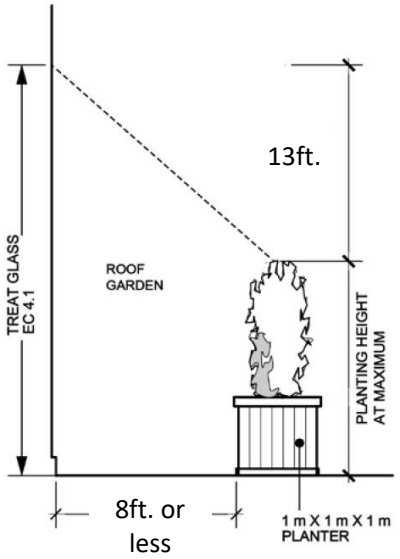


Illustration: John Carley



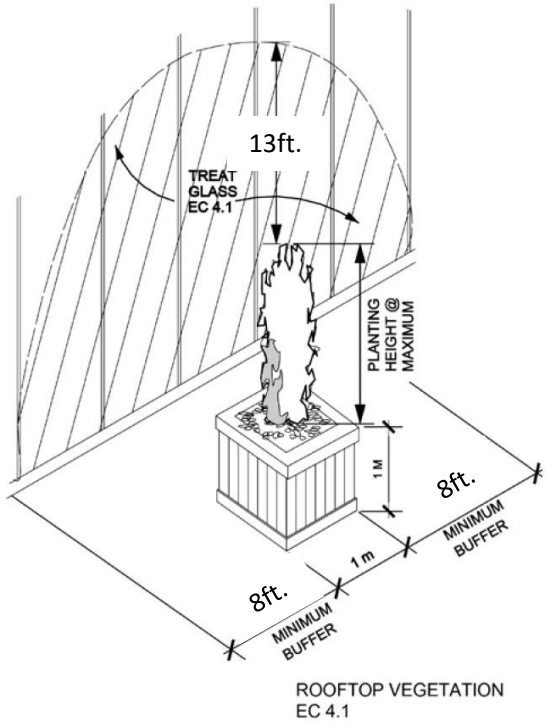
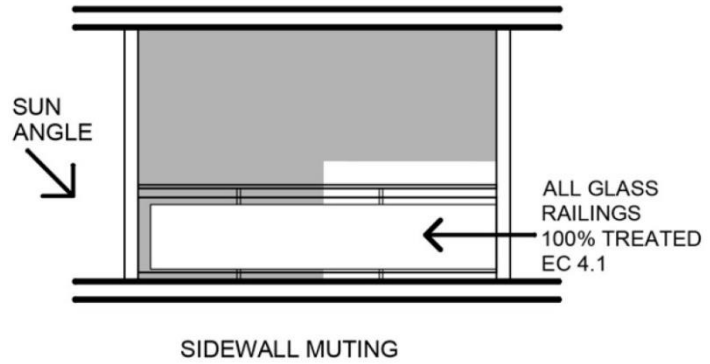


Image Sources: Toronto's Bird-Friendly Best Practices Glass Report (2016)

Municipal Regulations/Guidelines – Which Buildings Need to be Treated – Glass Railings

- **Glass Balcony Railings**

ıss balcony railings within the first 12 m of the building
e with visual markers provided with a spacing of no greater
m x 100 mm.



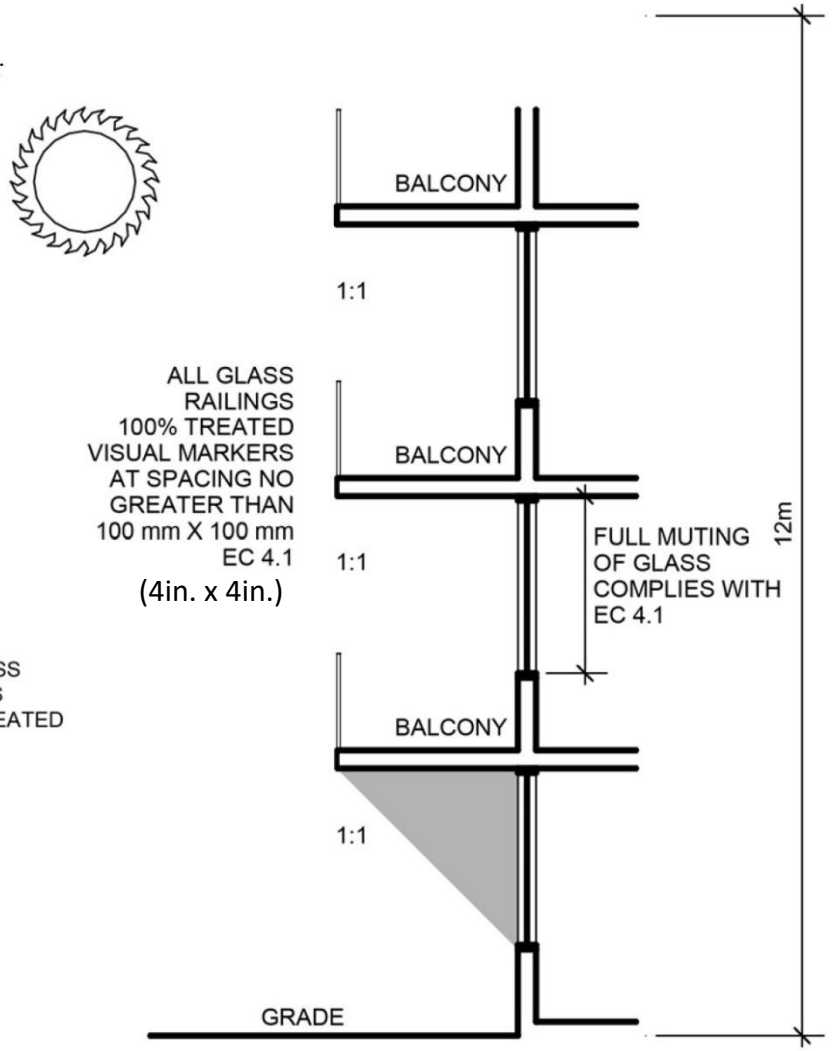
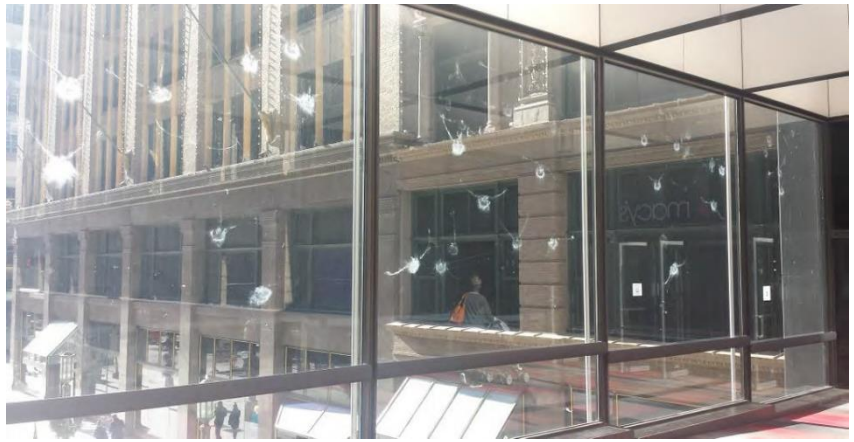


Illustration: John Carley

Image Sources: Simon Brown (Flickr); Toronto's Bird-Friendly Best Practices Glass Report (2016)

Municipal Regulations/Guidelines – Which Buildings Need to be Treated?

- **Glass Corridors (i.e. Parallel Glass)**



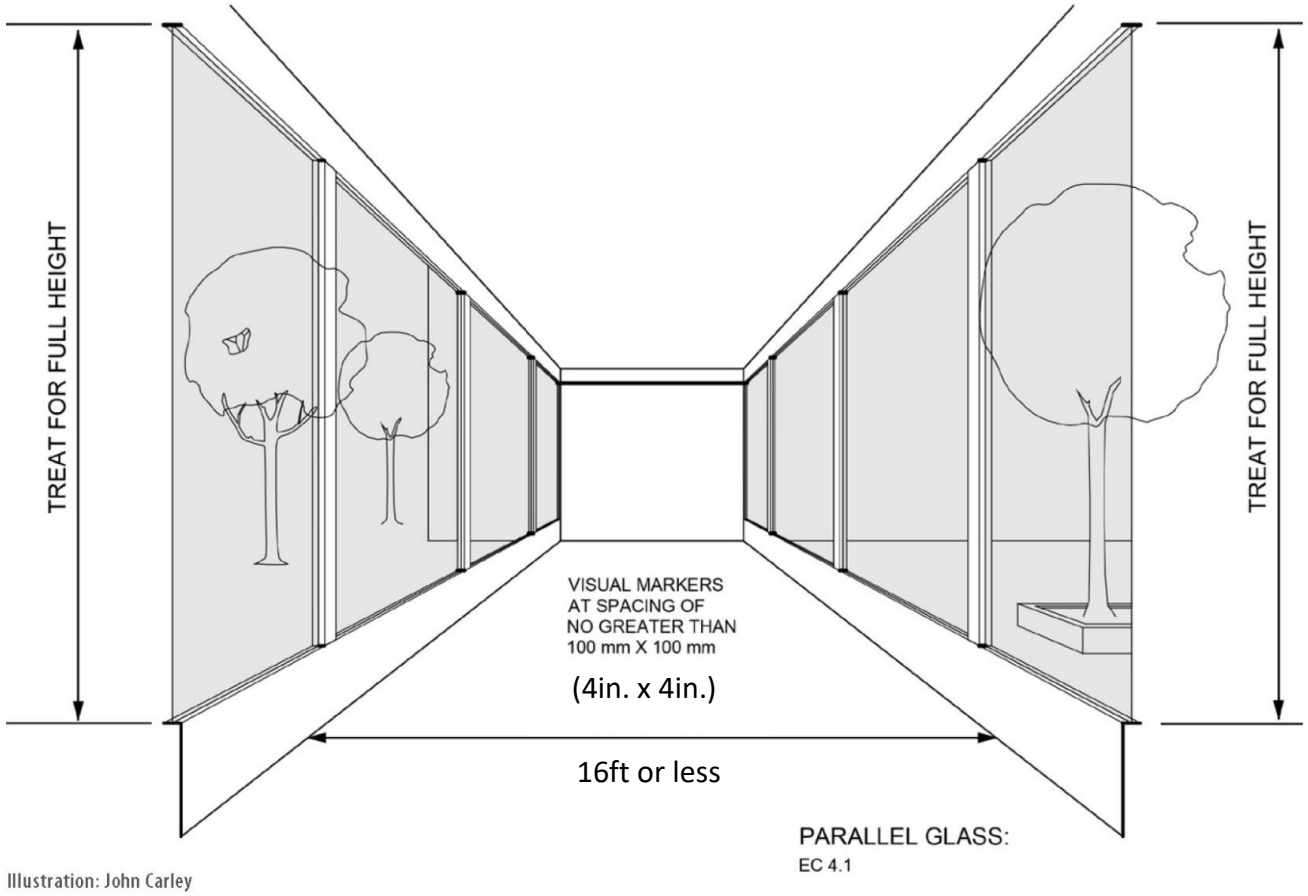
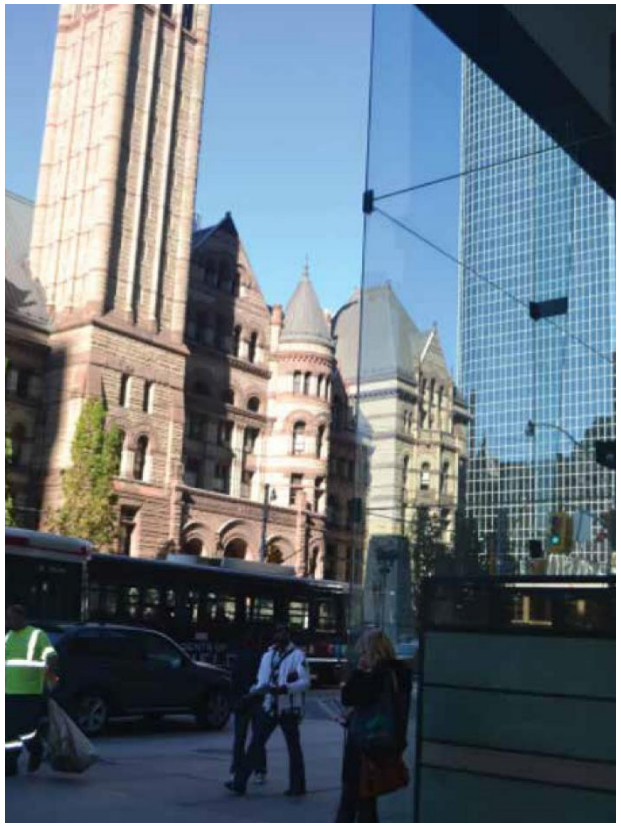


Image Sources: Toronto's Bird-Friendly Best Practices Glass Report (2016)

Municipal Regulations/Guidelines – Which Areas of the Building are Being Targeted?

- **Glass Corners**



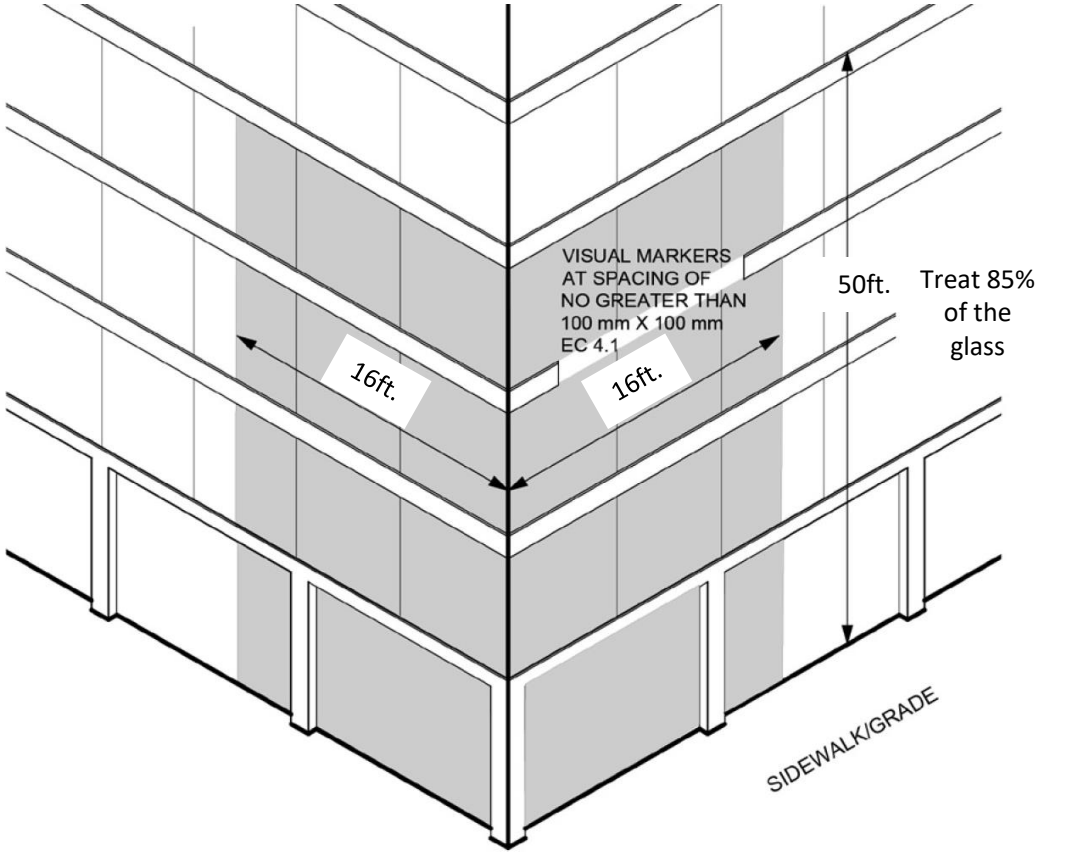


Illustration: John Carley

GLAZED CORNERS:
TREAT ALL GLASS AT CORNERS

Image Sources: Toronto's Bird-Friendly Best Practices Glass Report (2016)

Lights Out Program

- National Program which aims to reduce the number of bird fatalities by working to convince building owners and managers to turn off excessive lighting during the months bird are migrating.

Wisconsin's only chapter (in Milwaukee)

WIngs
WISCONSIN NIGHT GUARDIANS FOR SONGBIRDS
WISCONSIN HUMANE SOCIETY

https://www.wihumane.org/wildlife/preventing-window-collisions

Image Source: San Francisco Planning Department's Standards for Bird-Safe Buildings (2011)

Resources:

- American Bird Conservancy's Bird Friendly Building Guide

- The City of Toronto: Bird-Friendly Best Practices Glass Report (2016)
- The City of San Francisco: Standards for Bird-Safe Buildings (2011)
- The City of Calgary: Bird-Friendly Urban Design Guidelines (2011)
- The City of Markham (a suburb of Toronto): Bird-Friendly Guidelines (2014)
- The City of Oakland: Bird-Safety Measures
- The State of Minnesota's Bird-Safe Building Criteria: http://www.b3mn.org/guidelines2-2/s_14.html

- American Bird Conservancy – Webpage with Tested Bird-Safe Products
- Fatal Light Awareness Program (FLAP) (Canadian Research & Awareness Non-Profit) – Resources Page