

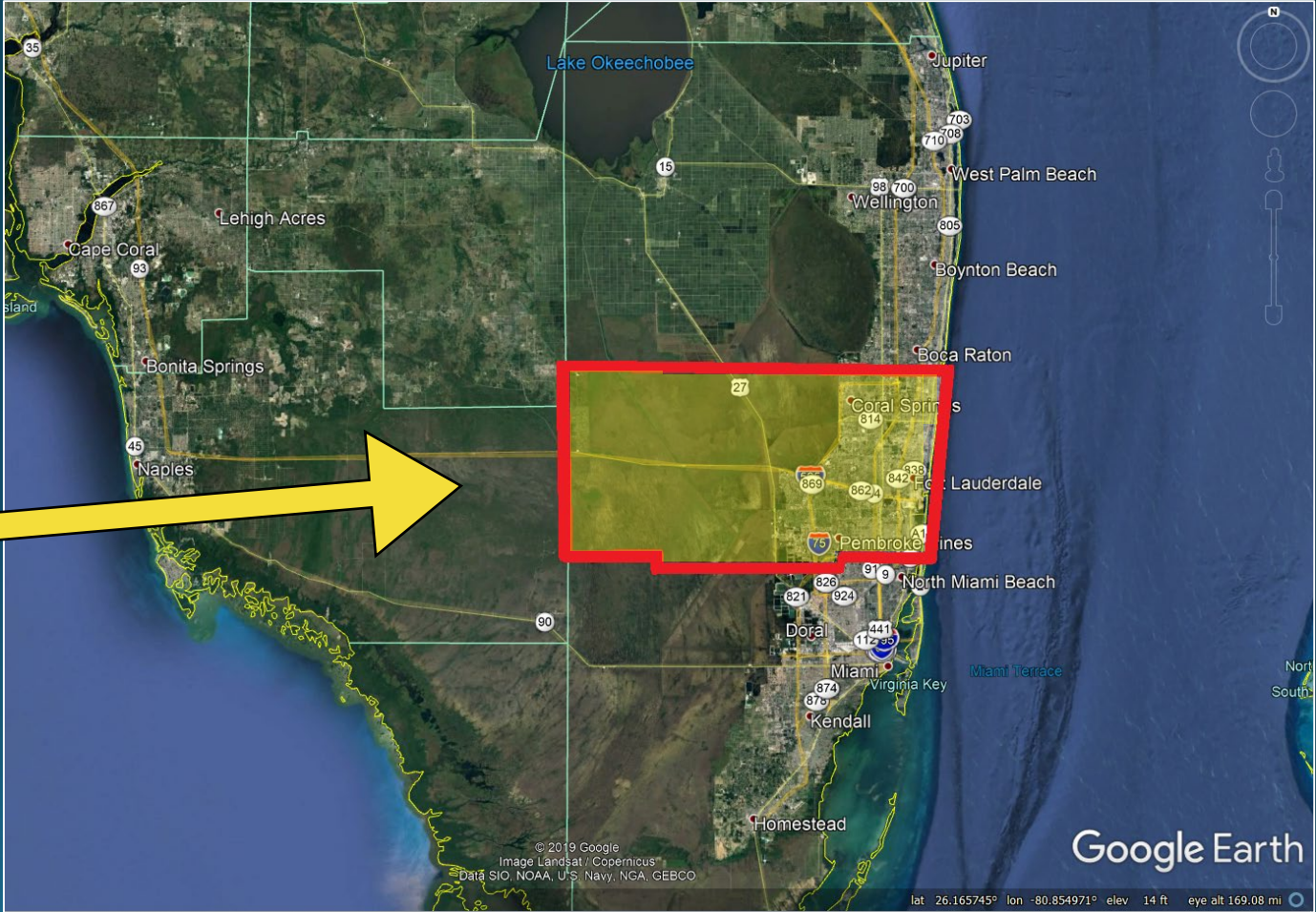
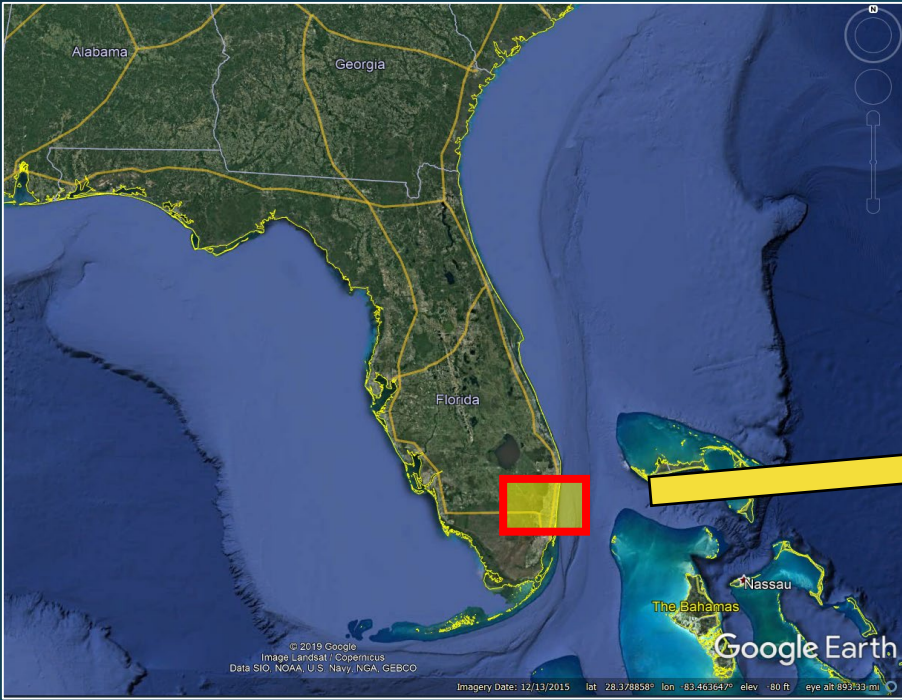
# Let There Be (Turtle-Friendly) Light! An Overview of Broward County's Beachfront Lighting Strategy

Stephanie Kedzuf

Broward County Environmental  
Planning and Community Resilience  
Division

22:48  
296° tru  
M:080° 06' 10.44"  
N:026° 07' 57.126"

# Broward County, FL



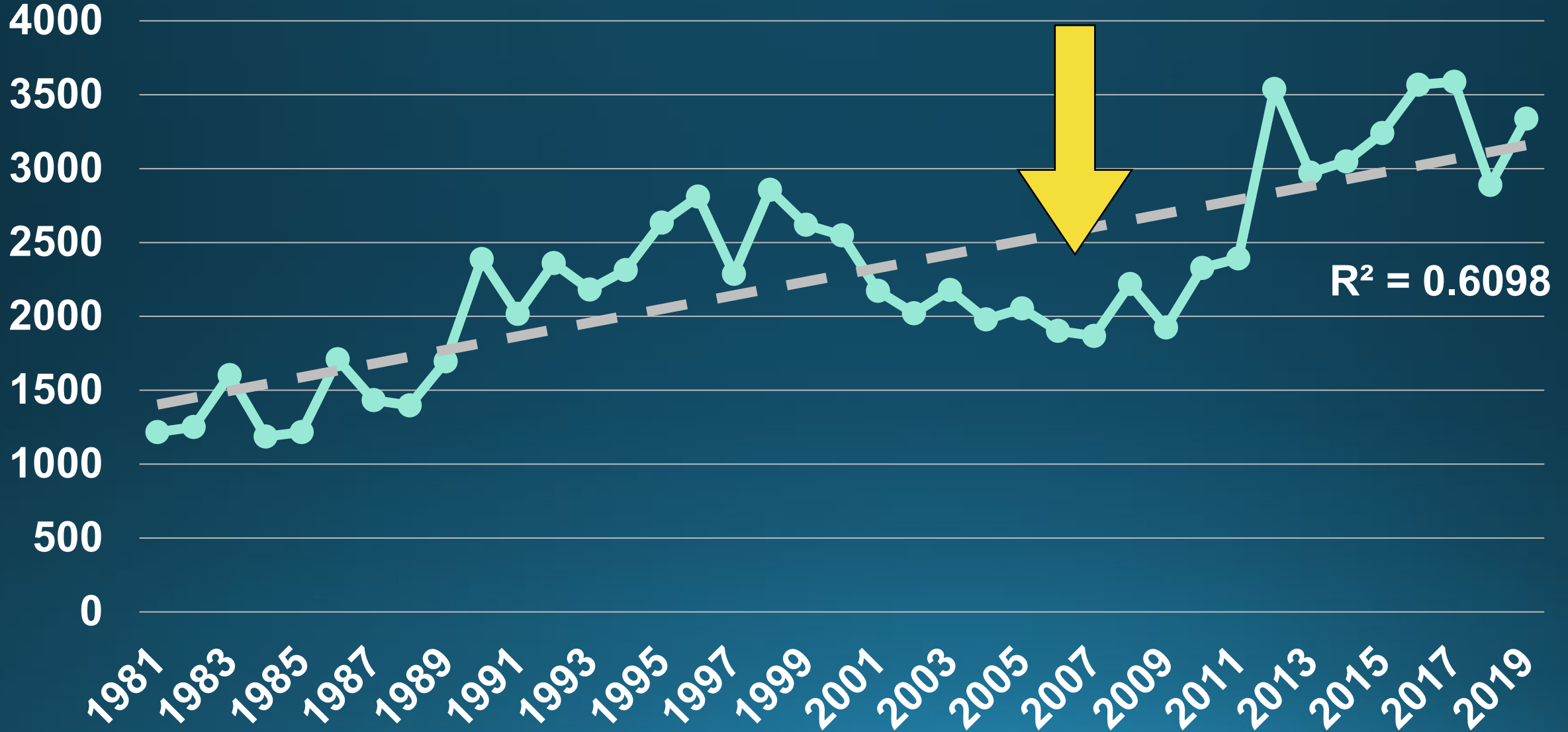
# Sea Turtle Nesting in Broward County

- Monitoring since 1981
- Nesting season is March 1 – October 31
- Leatherbacks, loggerheads, green turtles
- Medium-density nesting beach (FWC)
  - 2,500 nests on average each season



Photo: Stephanie Kedzuf

# Broward County Sea Turtle Nesting: All Species



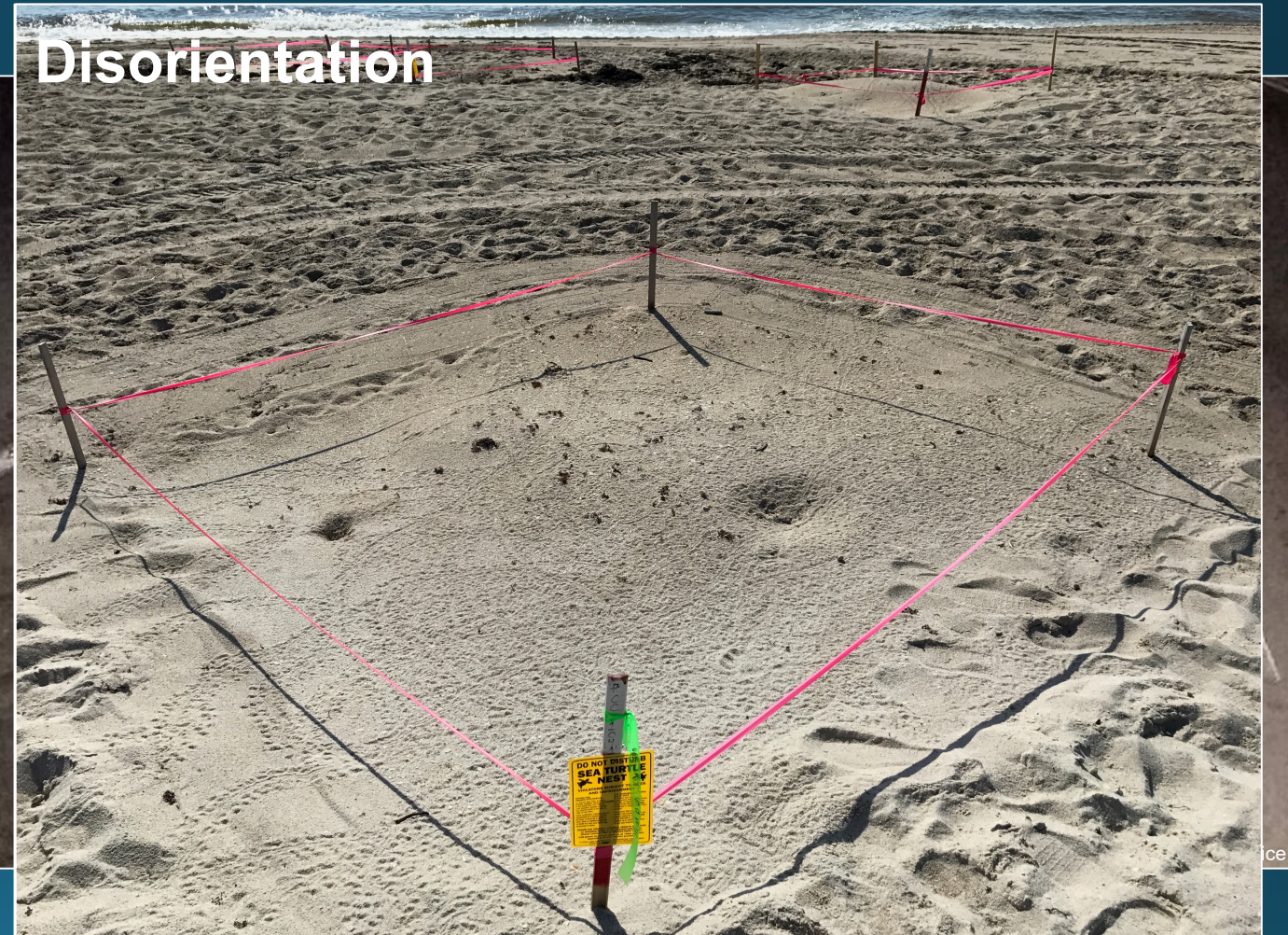
# How Does Lighting Affect Sea Turtles?

- Instinctual reptiles that use light to find ocean
- Adults
  - Reduced beach utilization

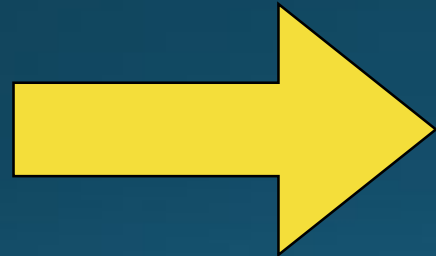


# How Does Lighting Affect Sea Turtles?

- Instinctual reptiles that use light to find ocean
- Adults
  - Reduced beach utilization
  - Disruption of sea-finding
- Hatchlings
  - Misorientation
  - Disorientation



# “Turtle-Friendly” Lighting



**Three Golden Rules**

# “Turtle-Friendly” Lighting

## 1. Low

- Fixture height
- Lumen output

- Example: Low-level bollards in lieu of tall pole fixtures

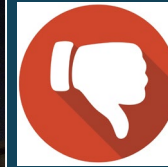


Photo: Kirt Rusenko





# “Turtle-Friendly” Lighting

## 1. Low

- Fixture height
- Lumen output

## 2. Shielded

- Unable to see glowing element

- Example: Canister fixture in lieu of “jelly jar” fixture

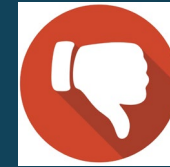
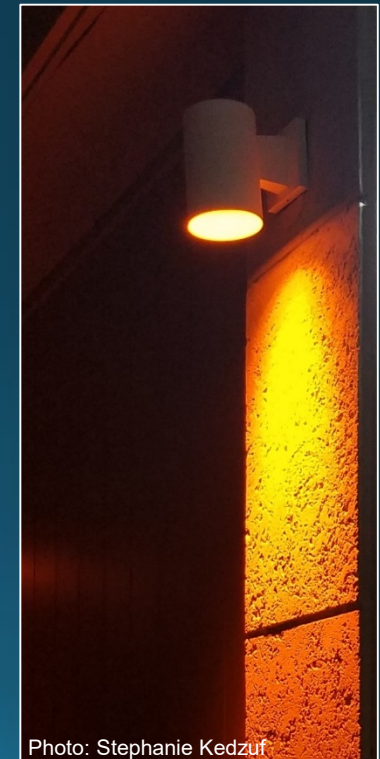
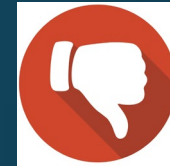


Photo: Home Depot



# “Turtle-Friendly” Lighting

1. **Low**
    - Fixture height
    - Lumen output
  2. **Shielded**
    - Unable to see glowing element
  3. **Long (wavelength)**
    - Red or amber LED (>560 nm)
- **Example: Swap out white bulbs for amber LEDs**

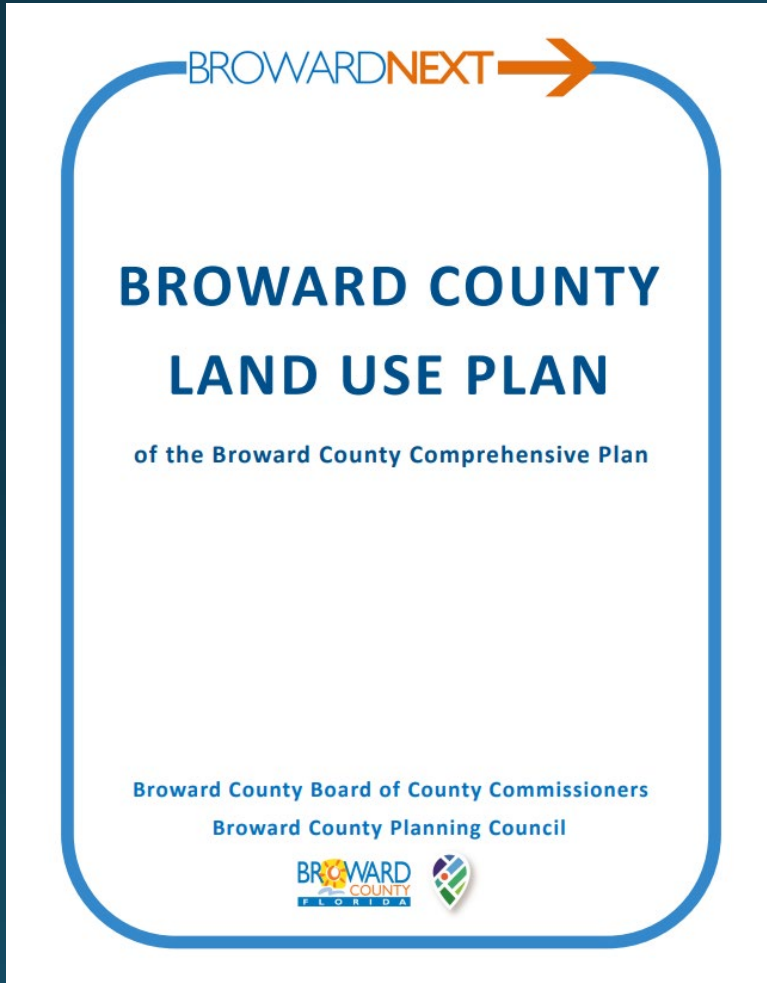


# “Turtle-Friendly” Lighting

1. Low
2. Shielded
3. Long (wavelength)



# Managing Coastal Lighting in Broward County



Deerfield, 2000

Hillsboro, 2007

Pompano, 1999

LBTS, 2002

Fort Lauderdale, 2003

Dania, 2011

Hollywood, 2011

Hallandale, 2001

# Broward County Lighting Surveys

- Monthly surveys (March-September)
- Surveyors walk beach
- Looking for illuminated light sources
  - Categorized by fixture type
- Photographs



# Broward County Lighting Surveys

	Ceiling Mount	Cobra	Floodlight	Globe	Interior	Posted	Rope Light	Up Lighting	Wall Mount
1000 N. Ocean Dr.	3						2		
1100 N. Ocean Dr.									
1200 N. Ocean Dr.									
1300 N. Ocean Dr.									
1400 N. Ocean Dr.									

Blank	0 lights
1	1 light
2	2-10 lights
3	11-25 lights
4	25+ lights

Some lights “turtle-friendly,” need shielded

All lights “turtle-friendly,” need shielded

**Let's Go On A Lighting Survey!**



<b>Blank</b>	<b>0 lights</b>
<b>1</b>	<b>1 light</b>
<b>2</b>	<b>2-10 lights</b>
<b>3</b>	<b>11-25 lights</b>
<b>4</b>	<b>25+ lights</b>

Some lights “turtle-friendly,” need shielded

All lights “turtle-friendly,” need shielded

	Ceiling Mount	Cobra	Floodlight	Globe	Interior	Posted	Rope Light	Up Lighting	Wall Mount
1100 N. Ocean Dr.				1	2				2



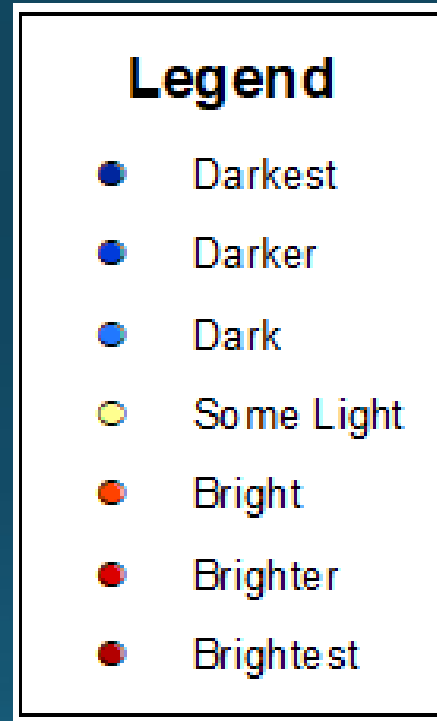
# Working With Code Enforcement

- Lighting survey distribution
  - Code is solely responsible for enforcement of their ordinance
- Annual Sea Turtle Lighting Workshop
- Challenges
  - Staff turnover
  - Difficulty obtaining overtime for nighttime surveys
  - Other responsibilities
- Additional outreach

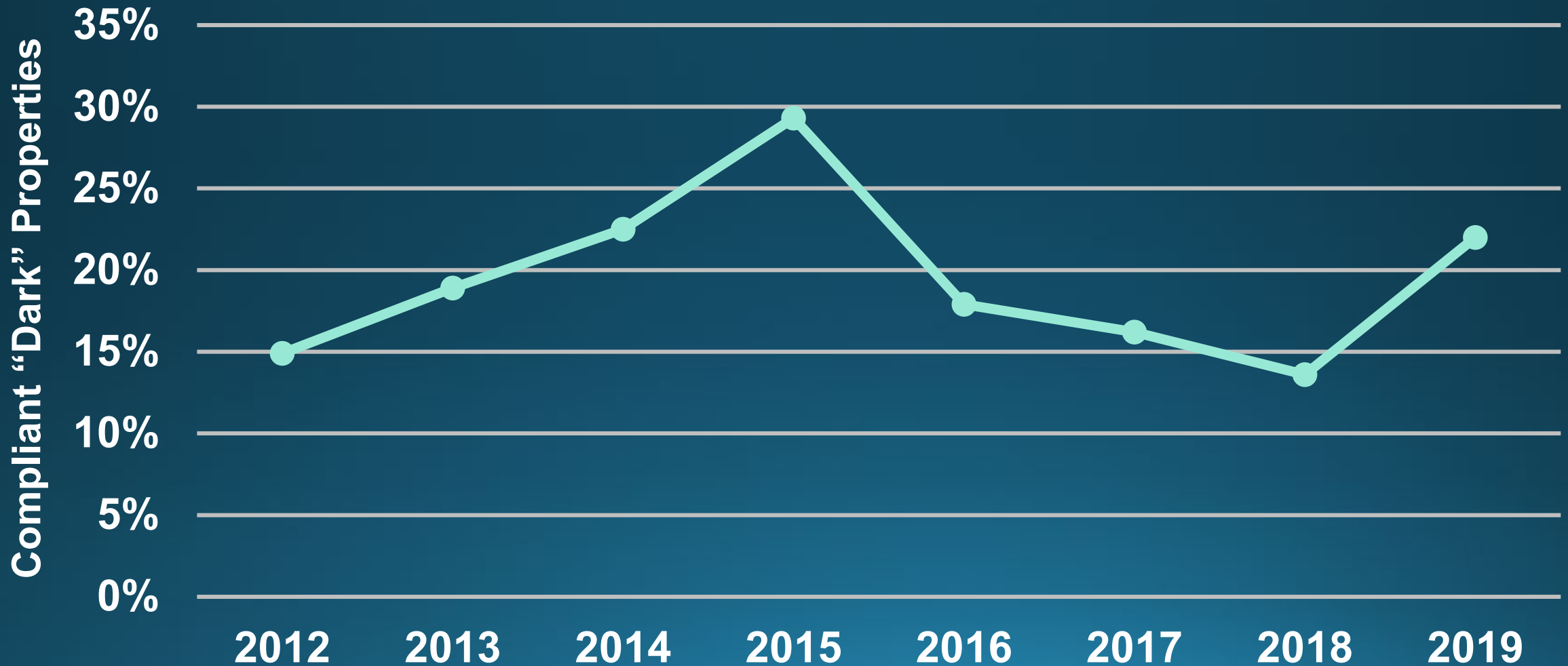


# Visualizing Lighting Trends

- HotSpot analysis in ArcMap
  - Helps visualize how bright or dark a property is compared to others nearby
- City of Hollywood, 2019
  - Distinct darker and brighter areas of beach



# Average Lighting Ordinance Compliance, Broward County



# Municipality Improvements: Dania Beach



- **2019 → Highest compliance since 2014**
  - **Three months of compliance rates at 57%**
- **Coordination with City code enforcement and public works**
- **Mostly City-owned properties**

Year	Seasonal Average Lighting Ordinance Compliance
2012	32%
2013	12%
2014	51%
2015	43%
2016	42%
2017	42%
2018	25%
2019	47%

# Property Improvements: Lauderdale-By-The-Sea

March 2018



2018/03/12 23:18

293' tru  
N:080° 05' 39.858"  
N:026° 11' 42.786"

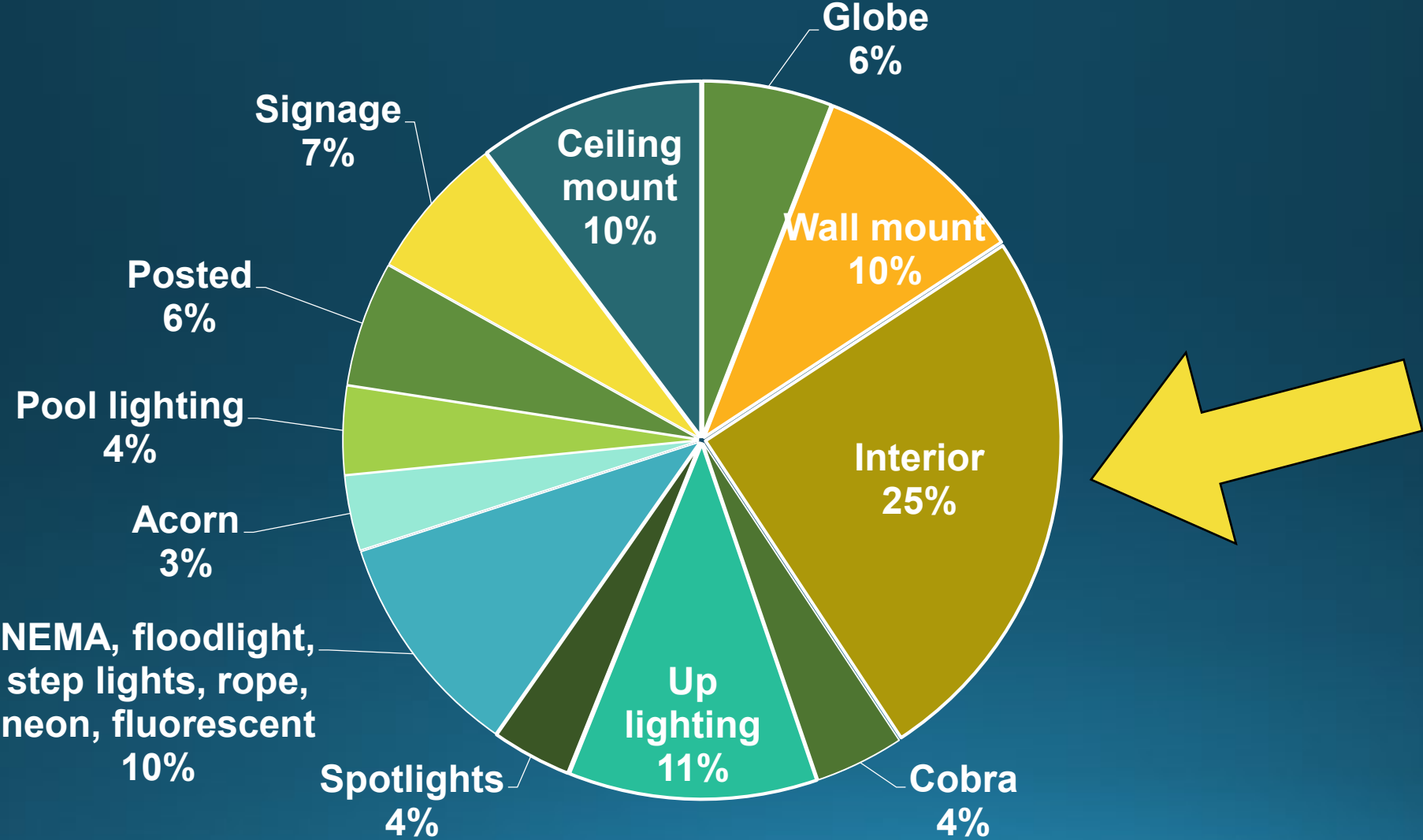
June 2019



JUN 18 2019 22:18

273' tru  
0:000° 08' 00.00"  
0:000° 01' 00.00"

# Broward County Light Fixture Type Usage, 2019



# Interior Lighting

- Easiest & cheapest for property owners to correct
  - Close curtains/blinds
- Achieving compliance is challenging
- Social media outreach

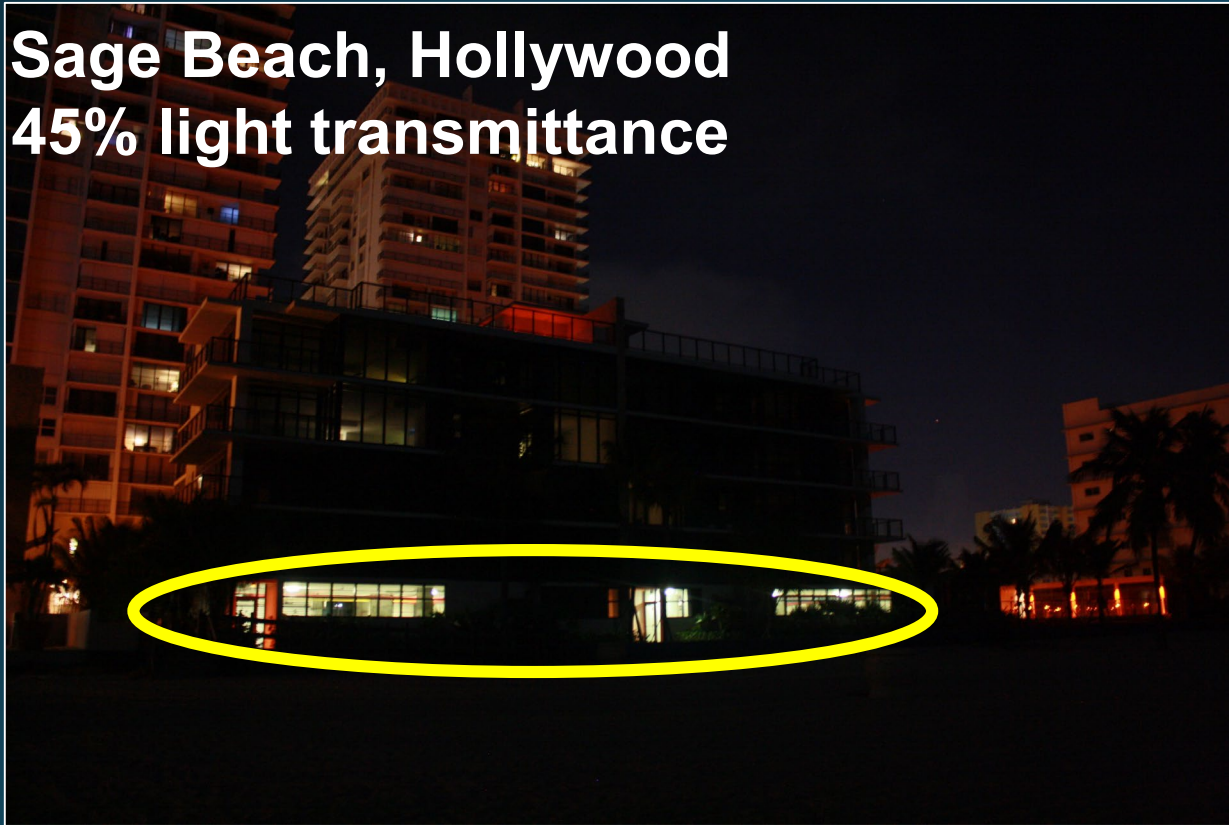


JUL 02 2019 22:17

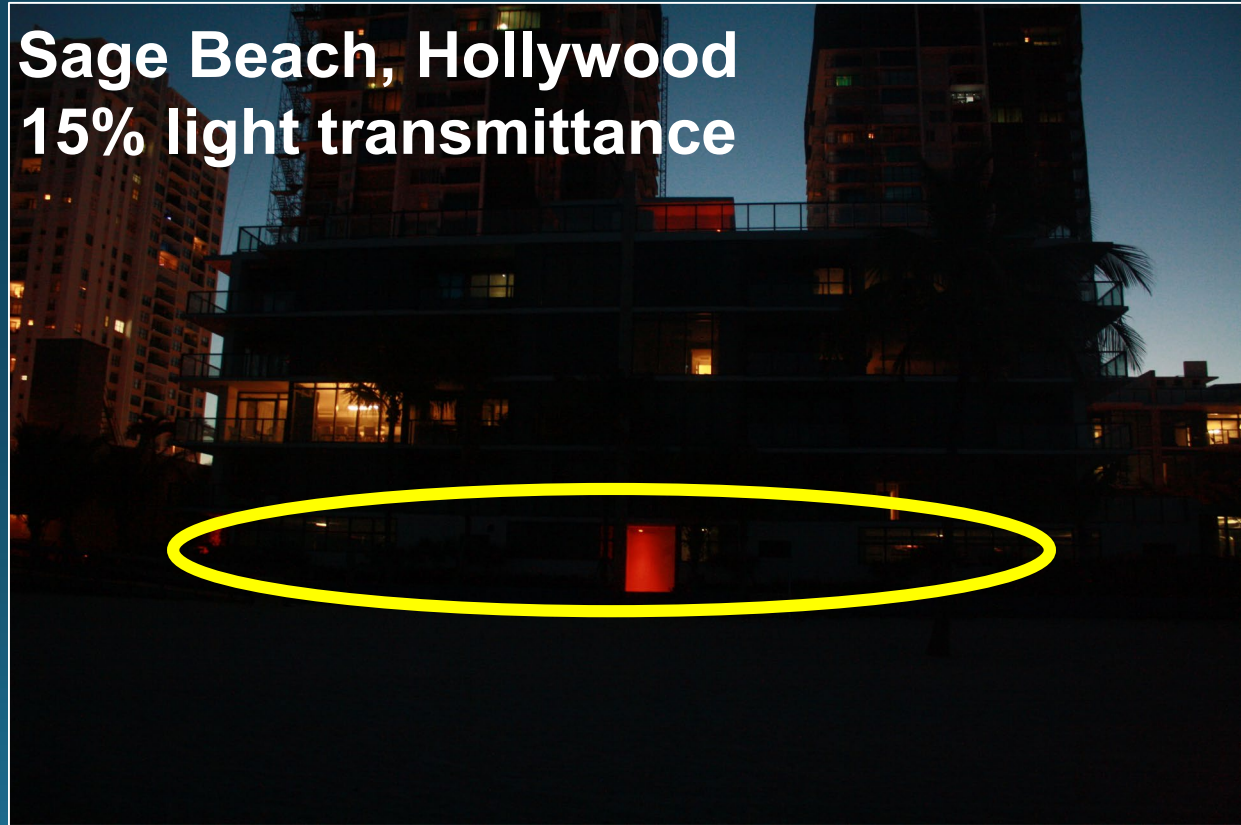
295° tru  
W:080° 07' 05.112"  
N:025° 58' 40.218"

# FWC Window Tint Recommendations

Sage Beach, Hollywood  
45% light transmittance



Sage Beach, Hollywood  
15% light transmittance

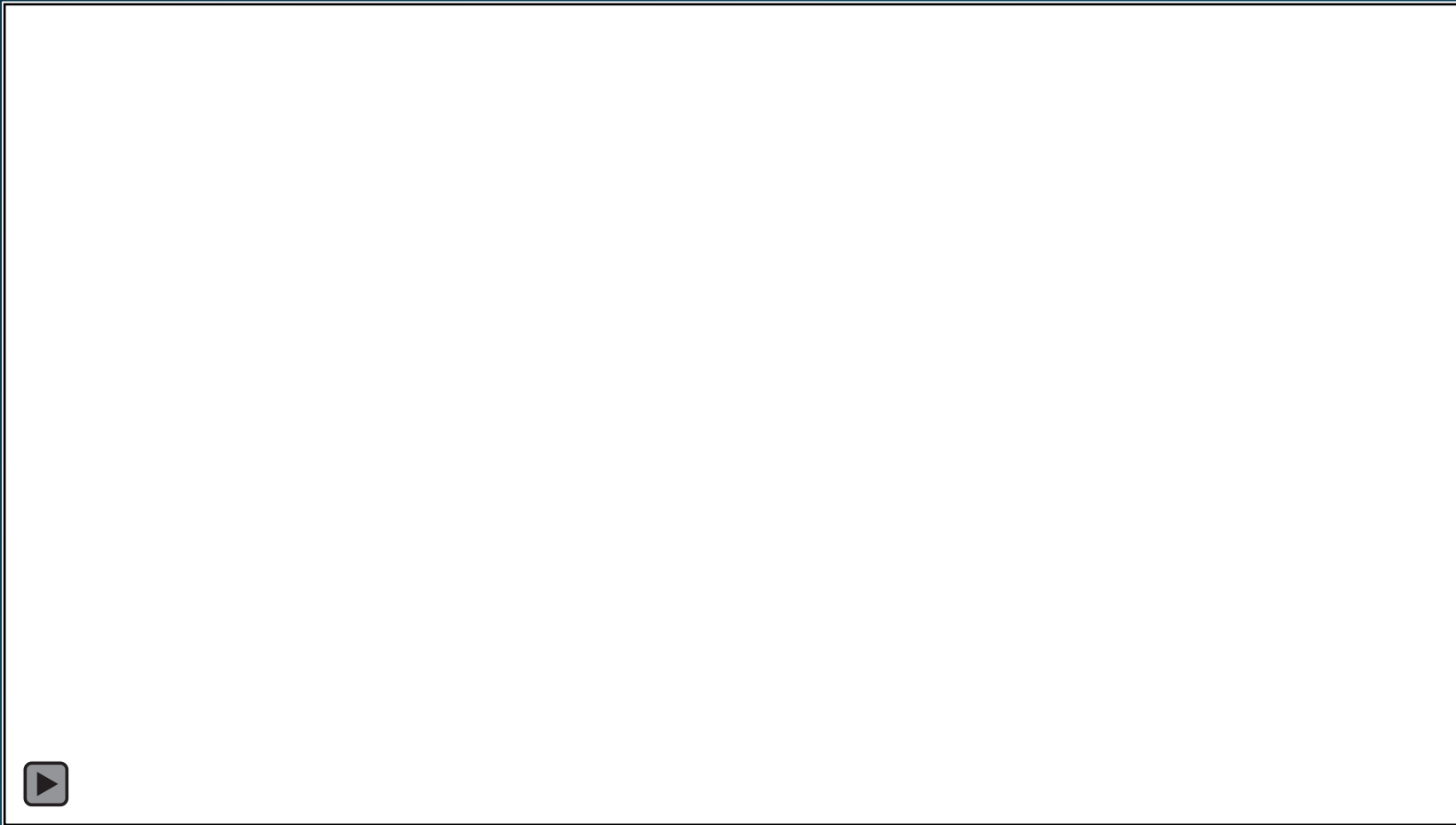




# Future Work To Be Done



# Thank you!



[skedzuf@broward.org](mailto:skedzuf@broward.org)

954-519-1255

