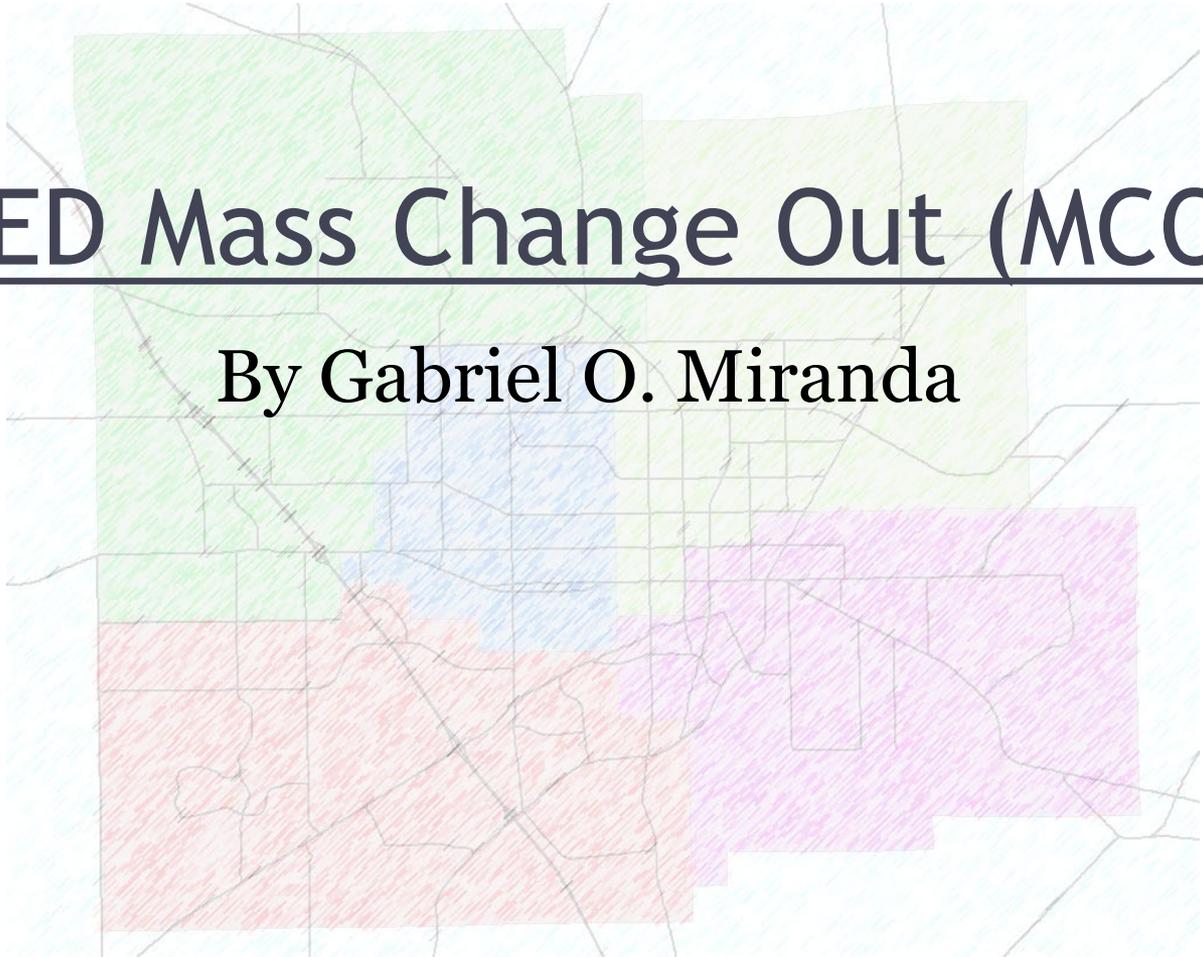


City of Gainesville LED Mass Change Out & Smart Streetlight Upgrade

By Gabriel O. Miranda
Lucian Badea
Philip R. Mann



Gainesville.
Citizen centered
People empowered

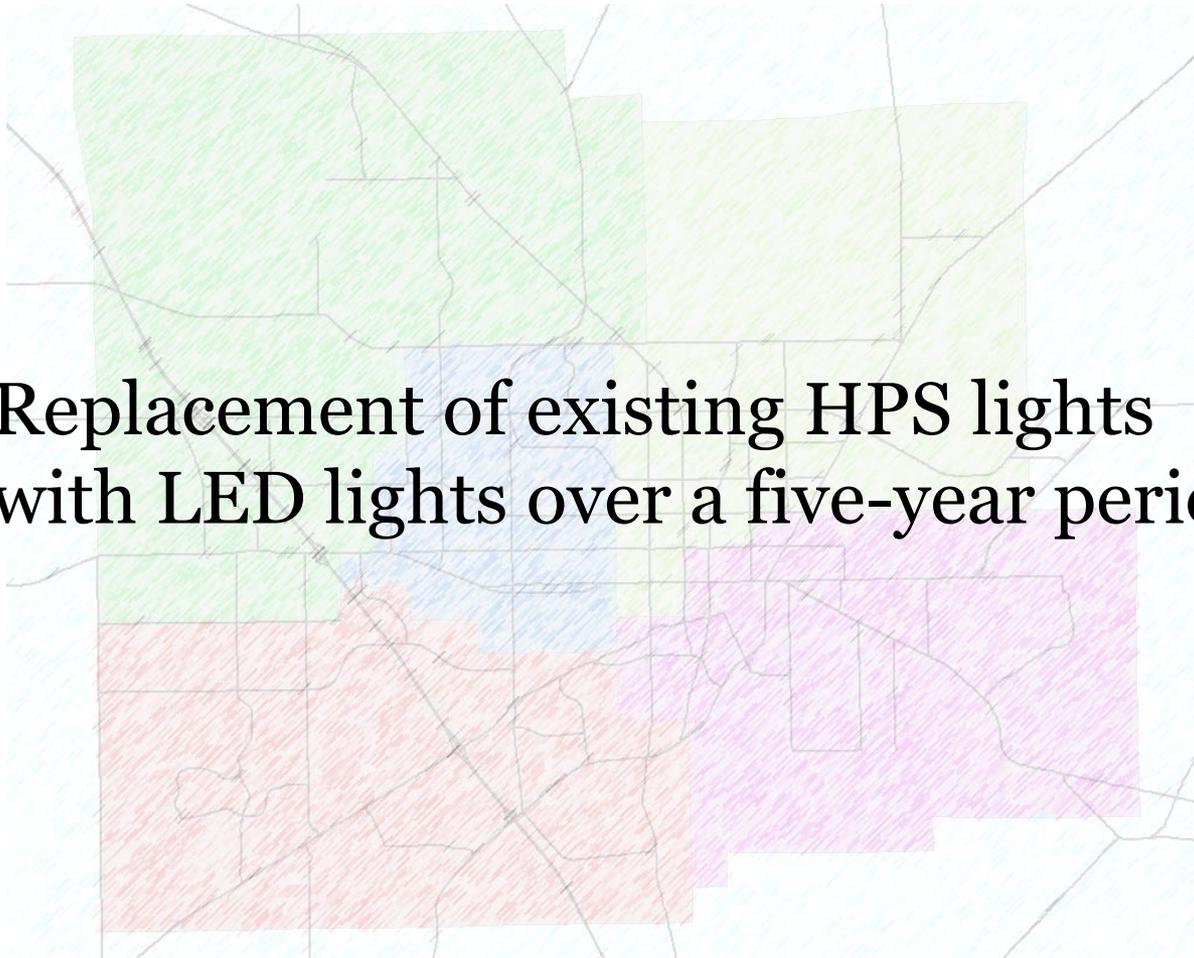


LED Mass Change Out (MCO)

By Gabriel O. Miranda

LED Mass Change Out (MCO)

- Replacement of existing HPS lights with LED lights over a five-year period.

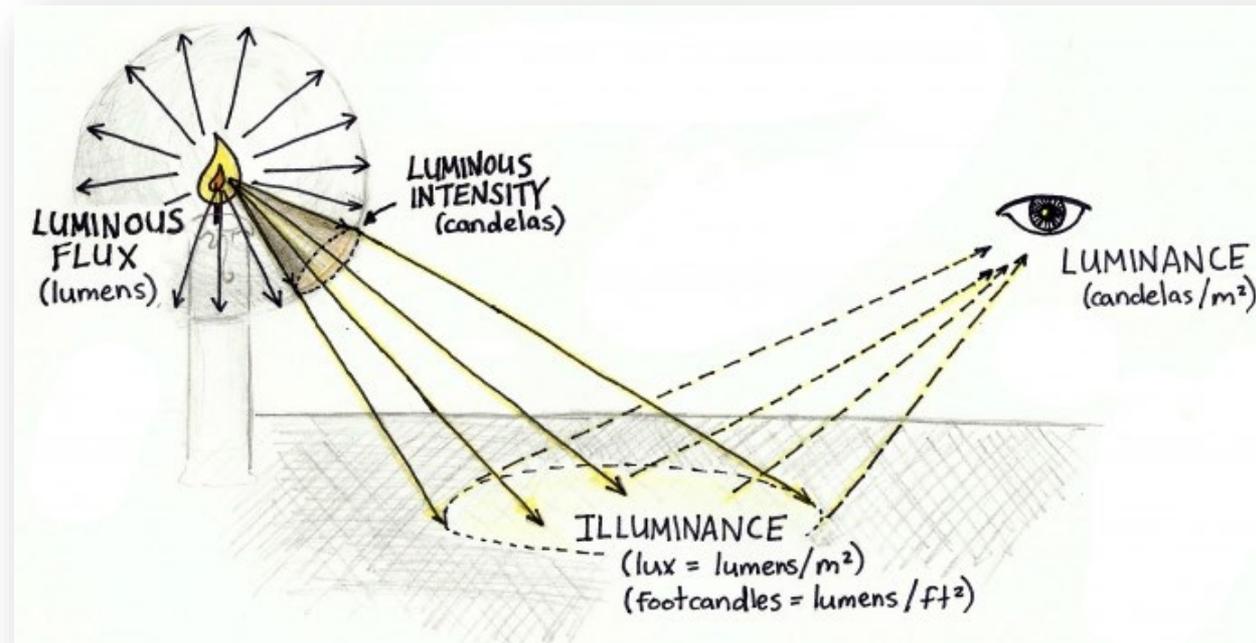


Why LED Public Lighting in Gainesville?

- LED lights use **63% less energy** than traditional High Pressure Sodium (HPS)
- LED lights last **2-3 times longer** than HPS lights (10-15 years).
- Light **rate reduction**. LED Lights replaced during the MCO are subject to a lower rate.

Light Perception

- Lumens: The amount of light emitted by a light source.



Light Perception

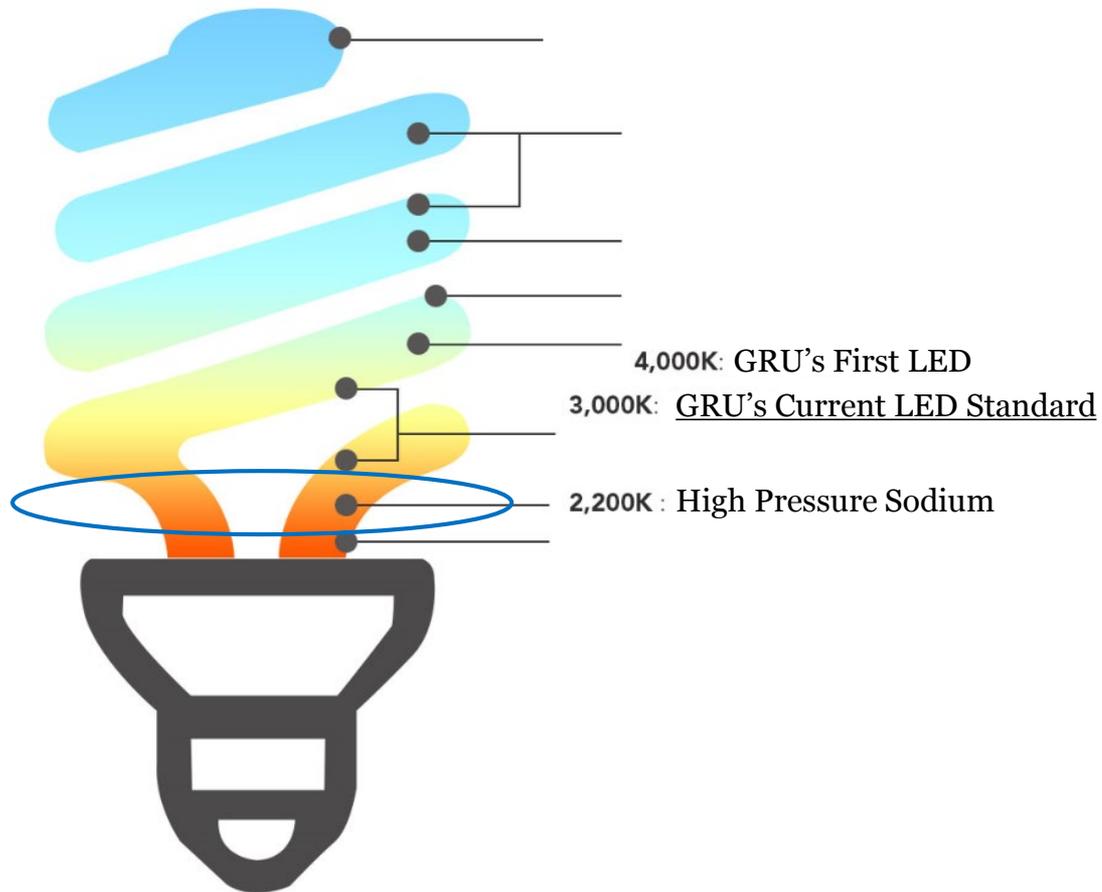
- Correlated Color Temperature: the color appearance of the light emitted by a lamp.



Color Temperature Recommendation

- The *Dark Sky Association* and the *American Medical Association*(AMA)
 - **Recommend** utilizing a color temperature of less than or equal to **3000K**.
- GRU and PWD worked together to adopt the recommended LED light specifications.

Color Temperature Chart



Color Temperature Reduction

- The **3000K** color temperature becomes GRU's new standard.



LED 1 4000K



LED 1 3000K

Light Pollution

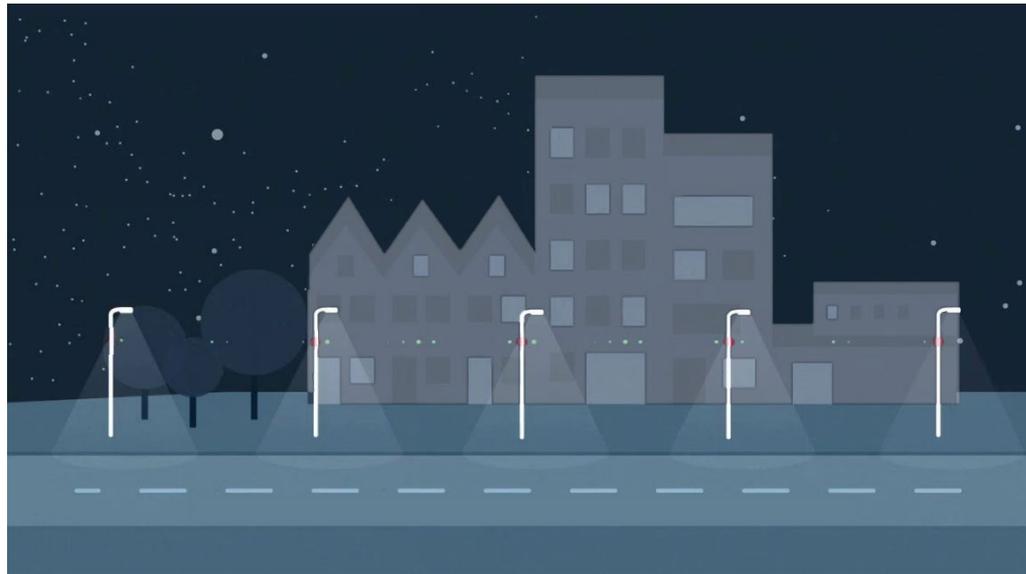


- Light Pollution: Light that is directed upward to the sky or reflect from surfaces that interferes with astronomical observations or appreciation of the sky.



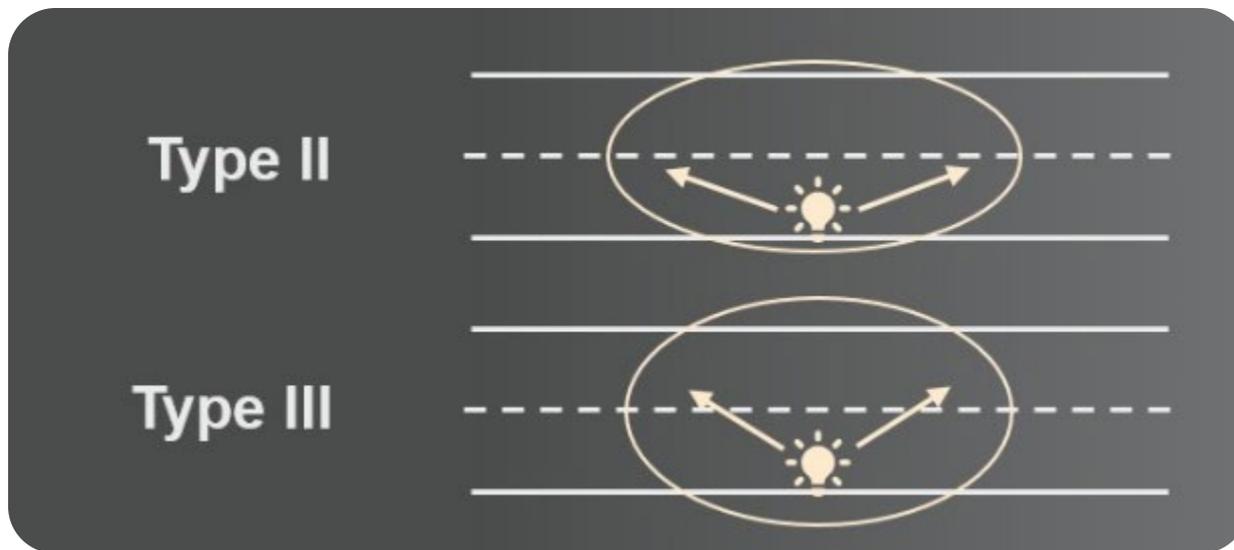
Light Trespass

- Light Trespass: is the unwanted light that falls beyond the property line or area intended to be illuminated.



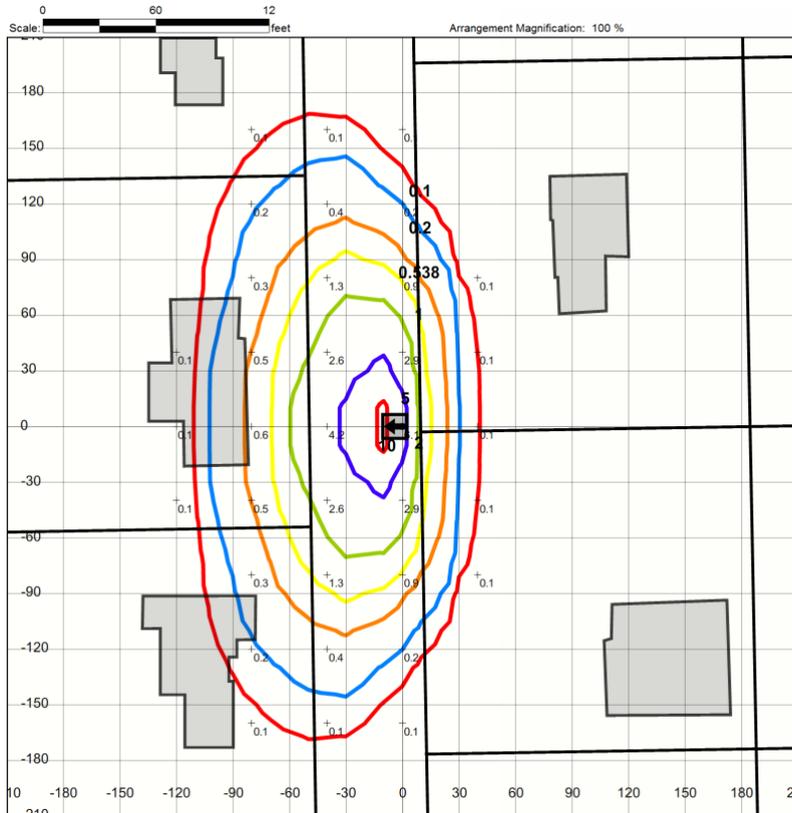
Light Perception

- Light distribution: the projected pattern of light a fixture will disperse onto a surface

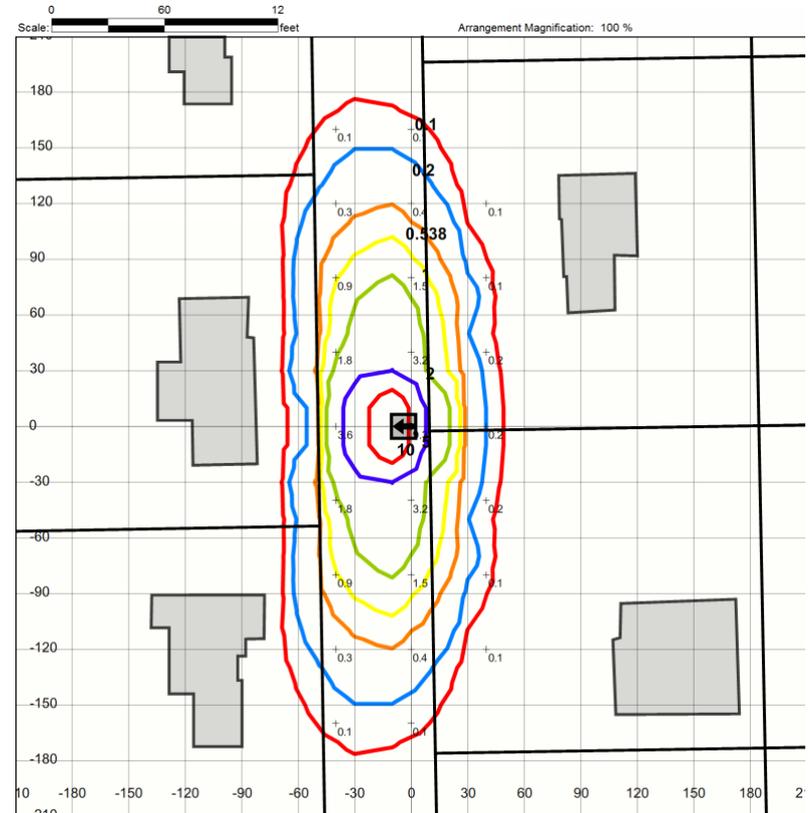


LED Light Distribution

LED 1 Type III



LED 1 Type II (Narrow)



LED Type III (Narrow)



LED Type III (Narrow)



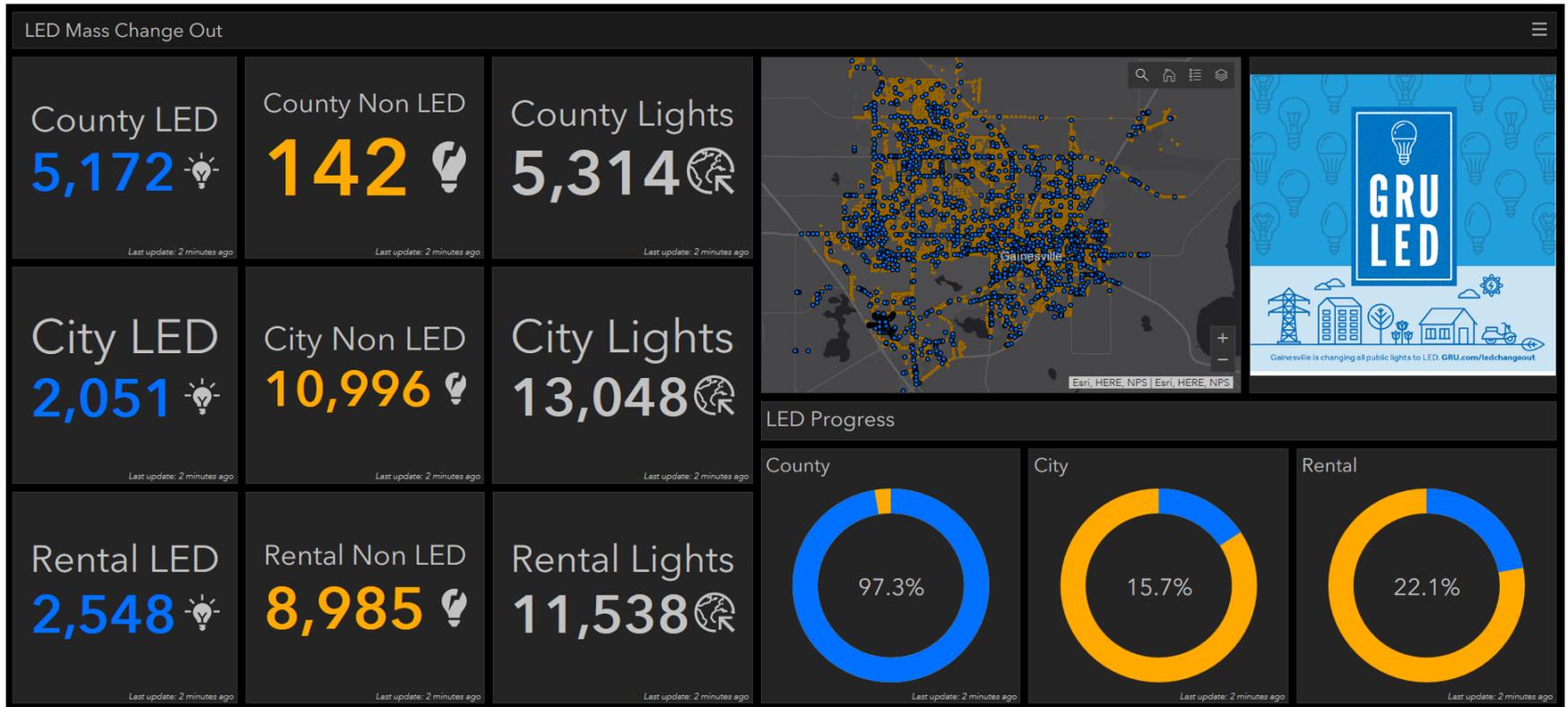
LED Type III (Narrow)

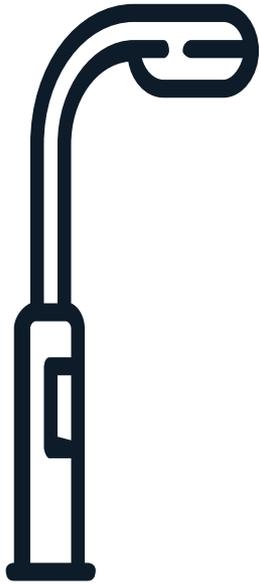


Customer complaints reduction

- GRU and City of Gainesville work together to solve customer complaints case by case.
 - Light replacement
 - Lower lumen output
 - Type III to Type II (Narrow)
 - Bracket size-reduction
 - Re-aim Bracket
 - Tilt light
 - Shield

MCO Current Status (9/5/2019 UPDATE)





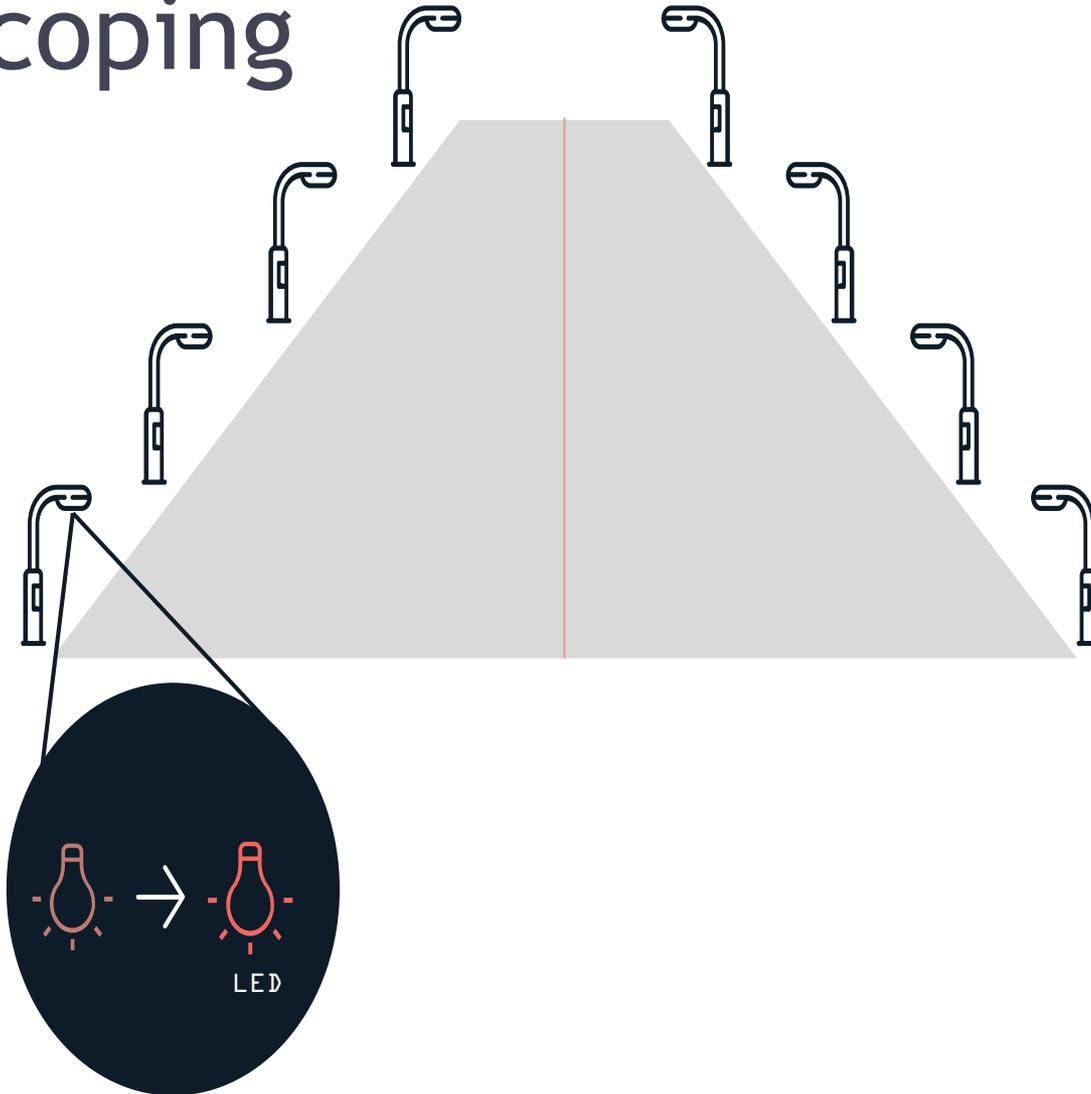
Smart Streetlight Upgrade

Scoping

By Lucian Badea

Smart Streetlight Upgrade

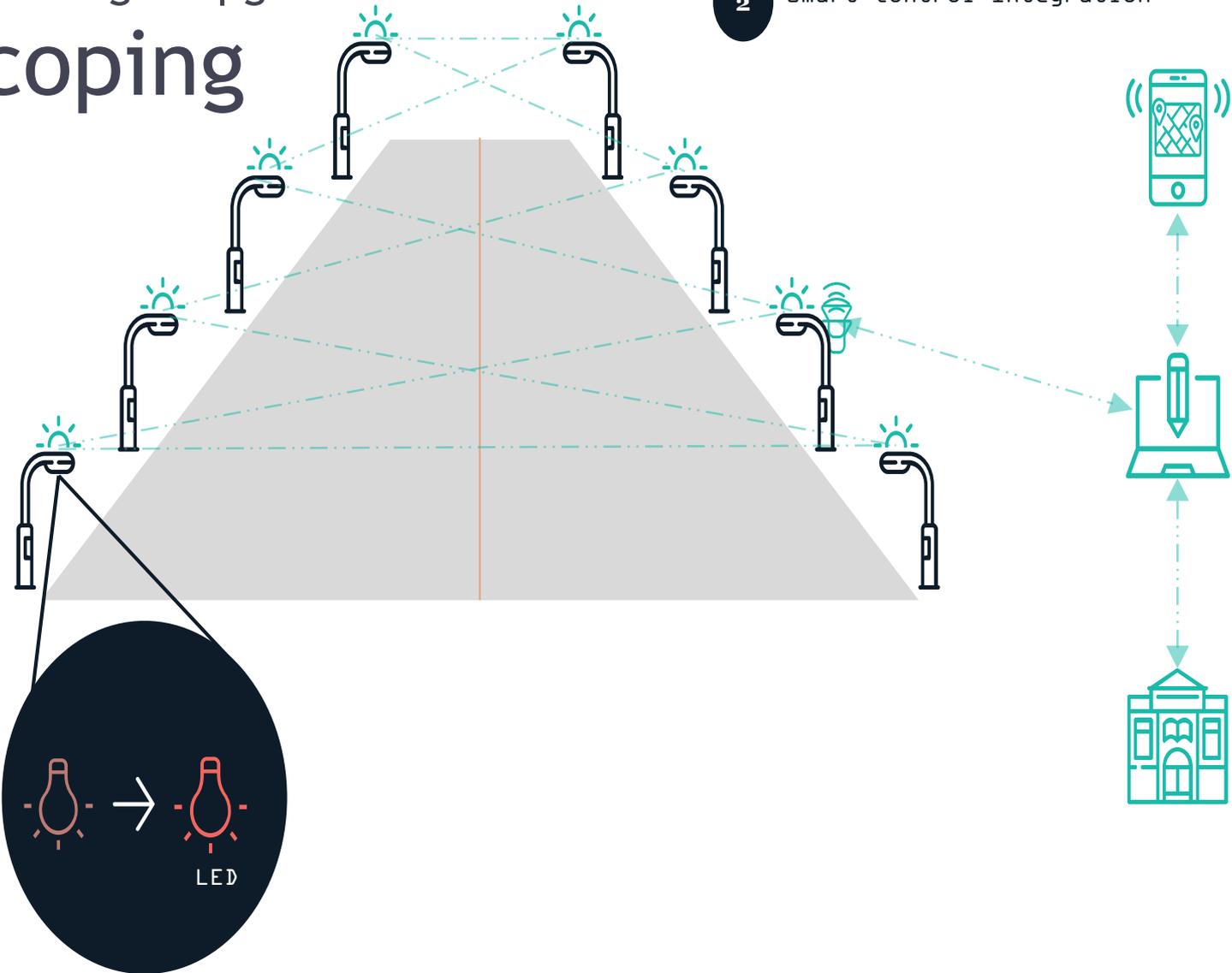
Scoping



Smart Streetlight Upgrade Scoping

2

Smart Control Integration



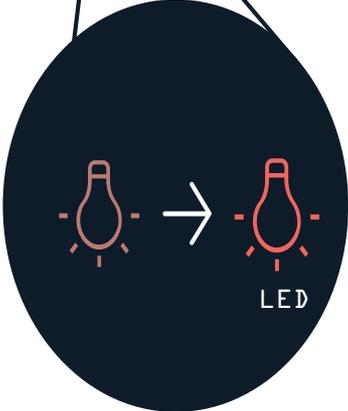
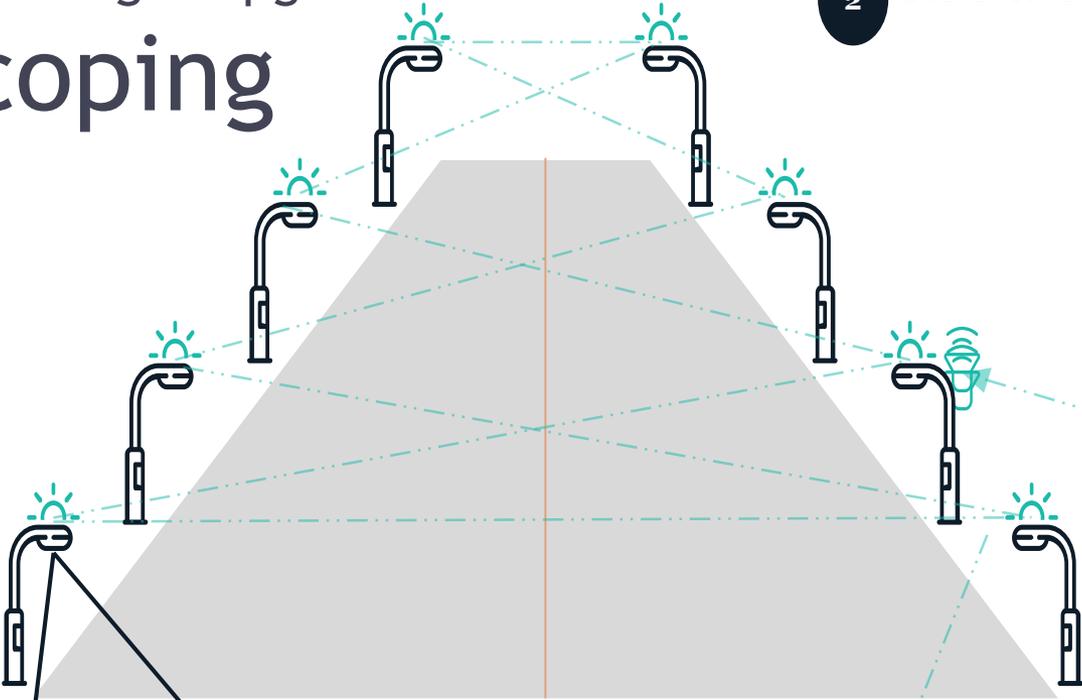
1

LED Streetlight Conversion

Smart Streetlight Upgrade Scoping

2

Smart Control Integration



1

LED Streetlight Conversion

3

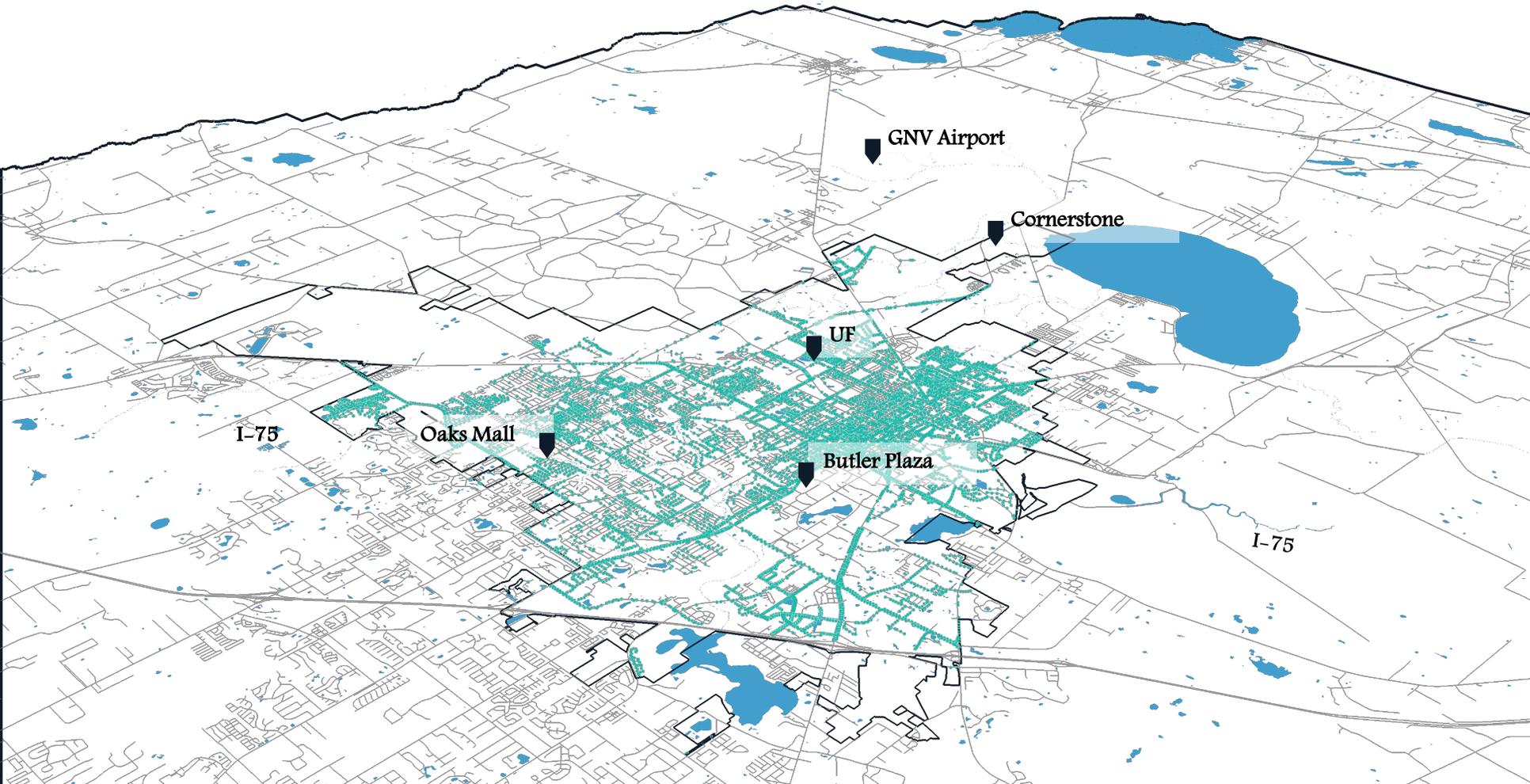
Connected IoT Opportunities

Smart Future Applications

- Dimming, scheduling, remote control, self diagnosis
- Emergency first responder application- blink or brighten feature
- Parking detection
- Blue light emergency response application
- Park safety application
- Gunshot detection
- Environmental monitoring sensors
- Bike and pedestrian monitoring
- Connected waste collection- senses and reports remaining capacity
- Voice activation
- Facility management/ control

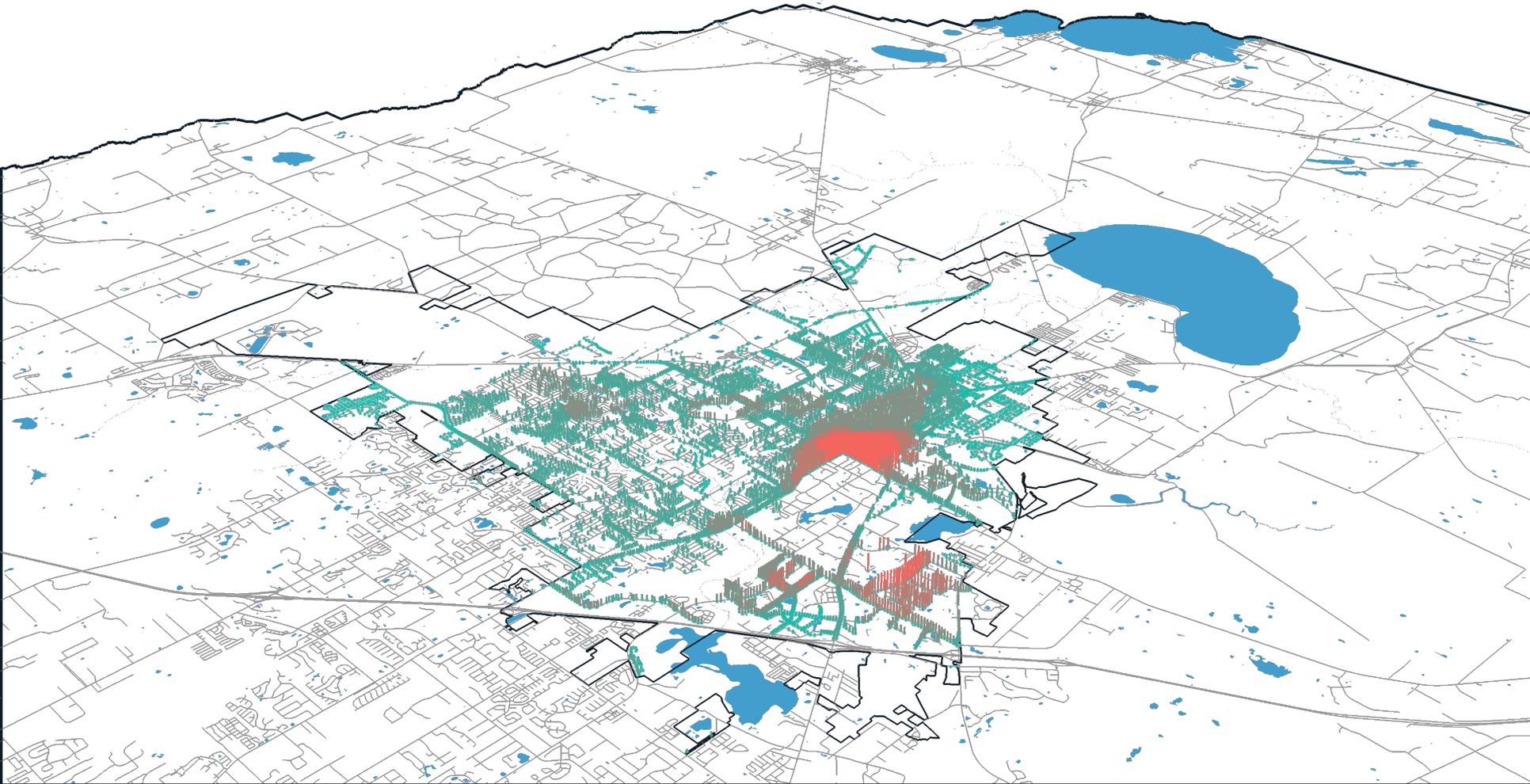


Streetlights



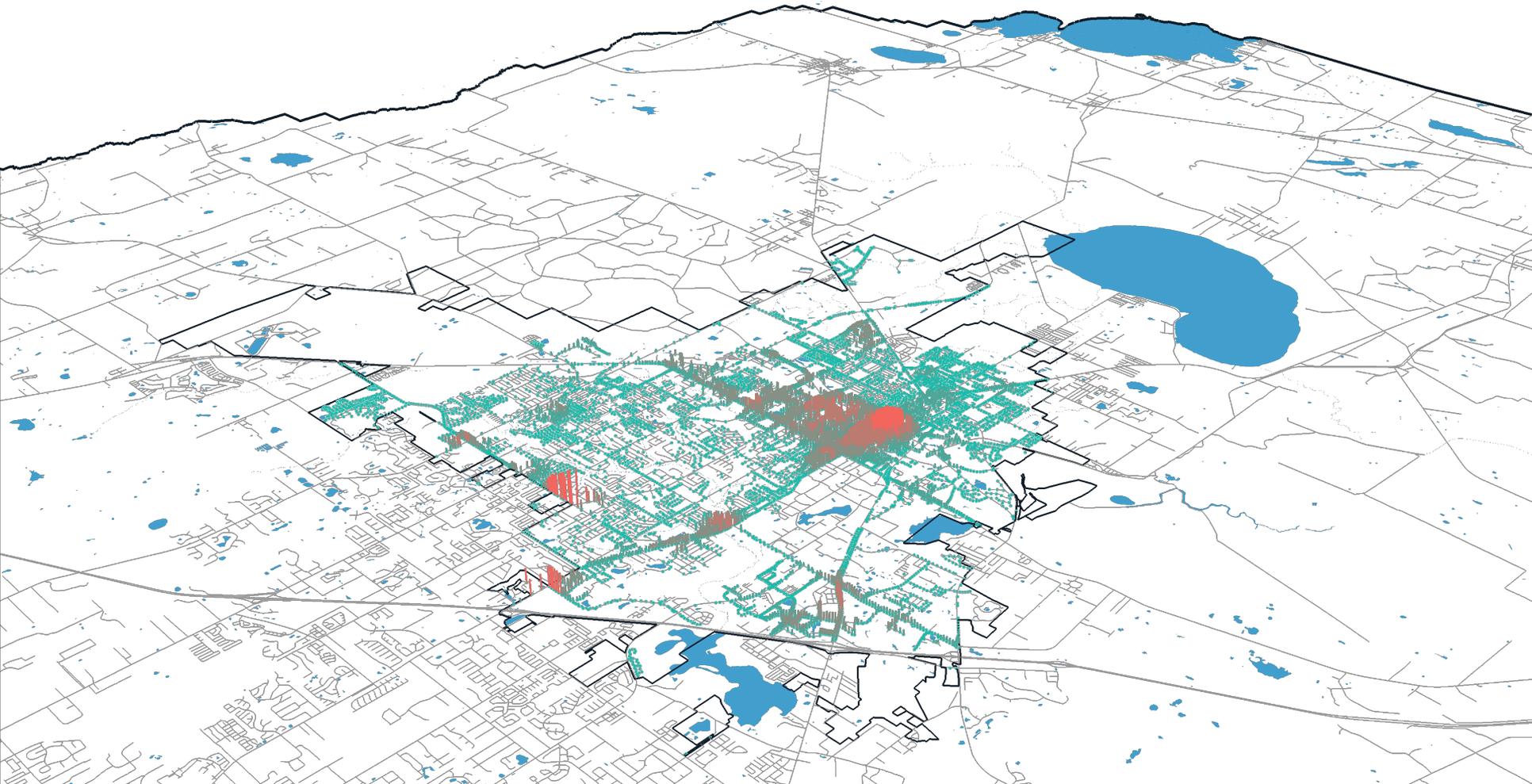
Total Population

Lo High
w



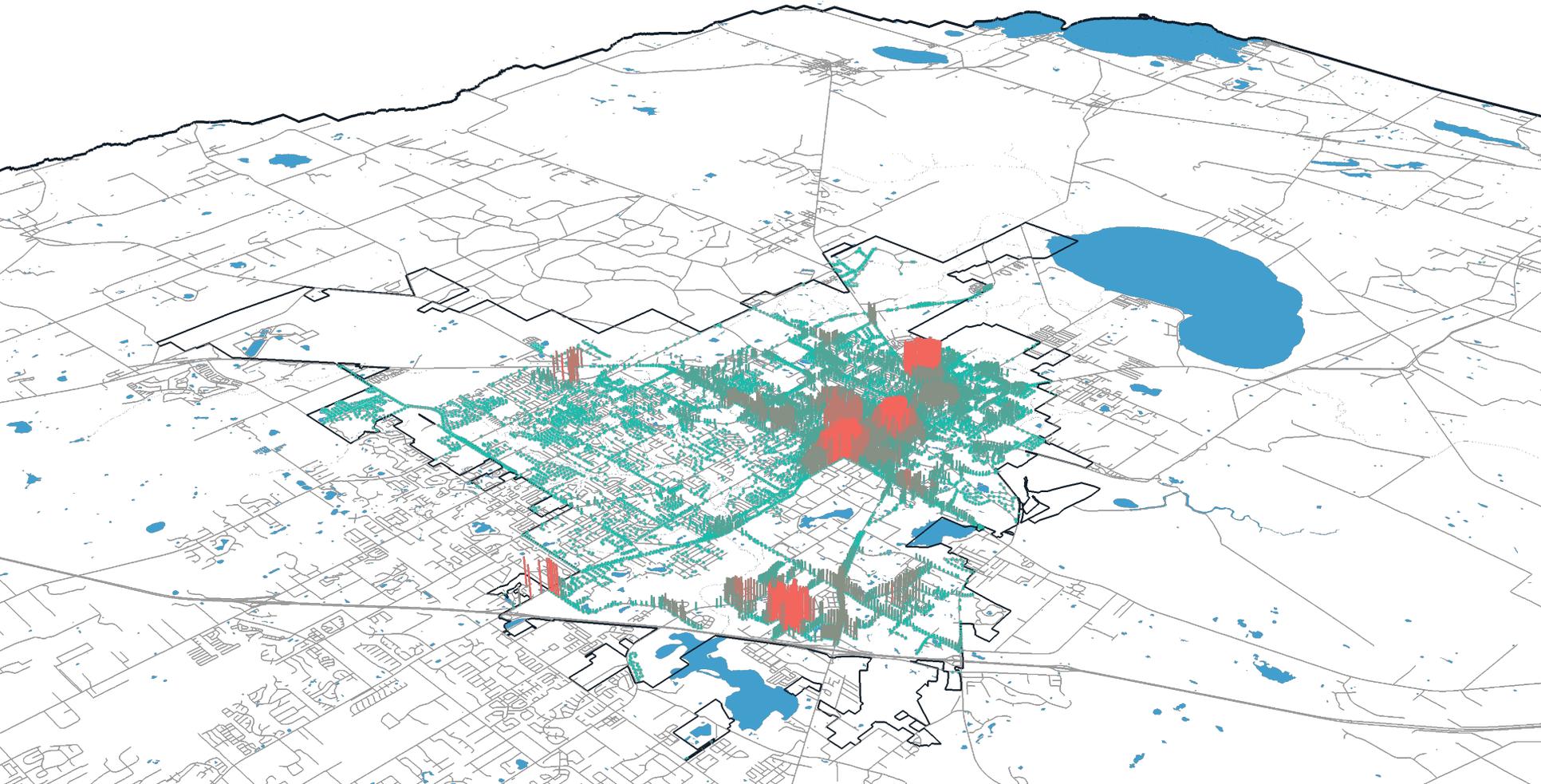
Businesses

Lo High
w



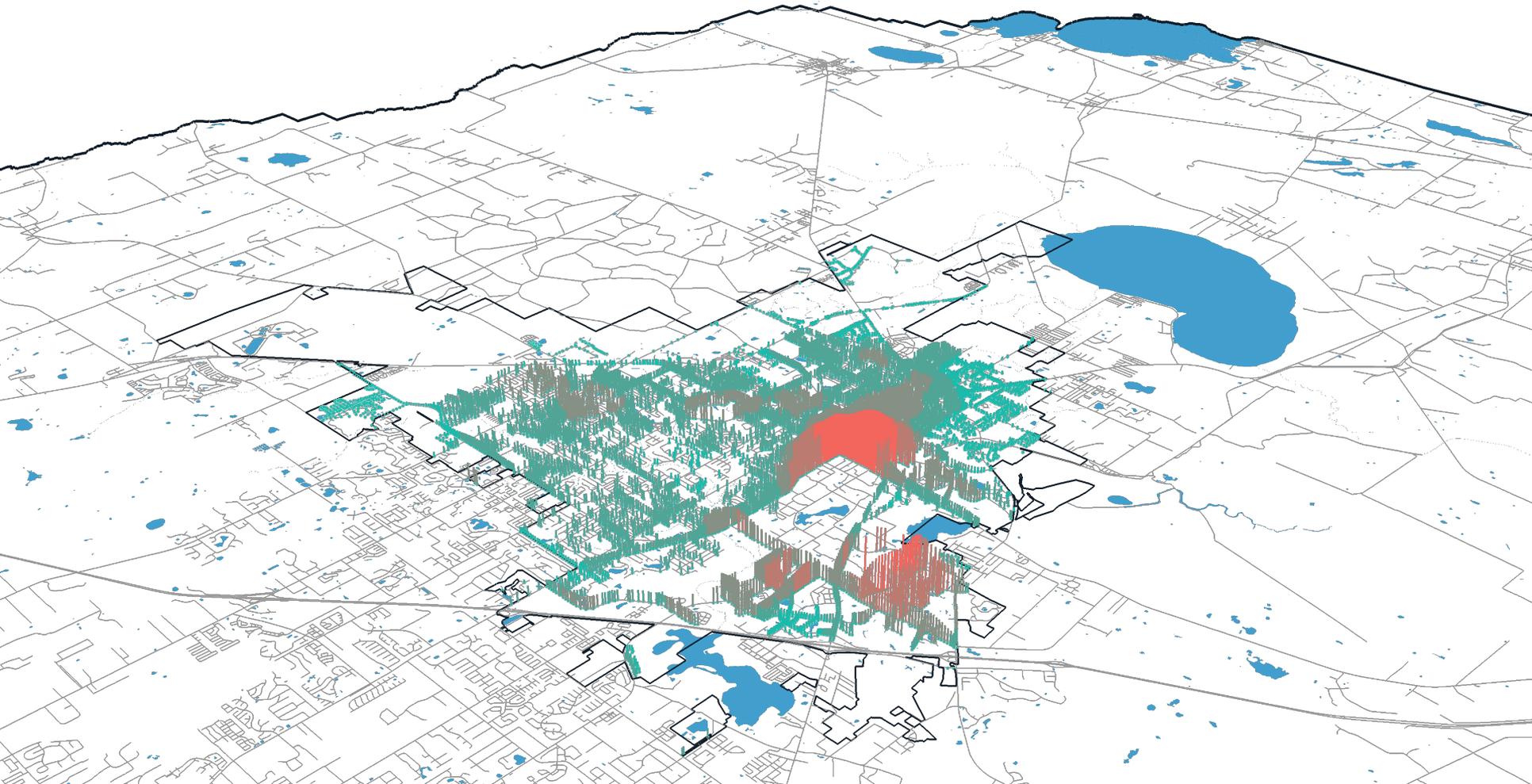
Crime

Low  High



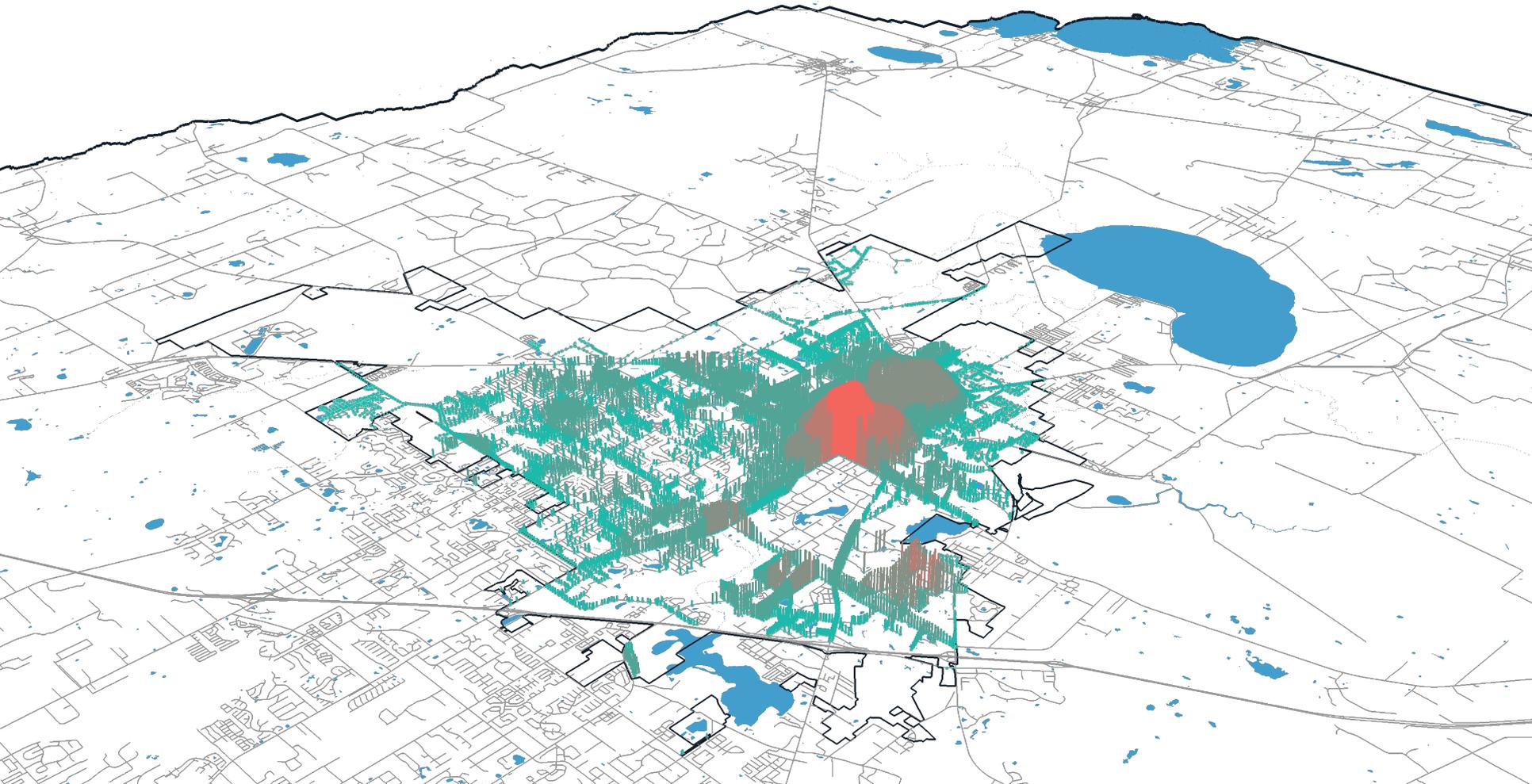
Vehicle Accidents

Low  High

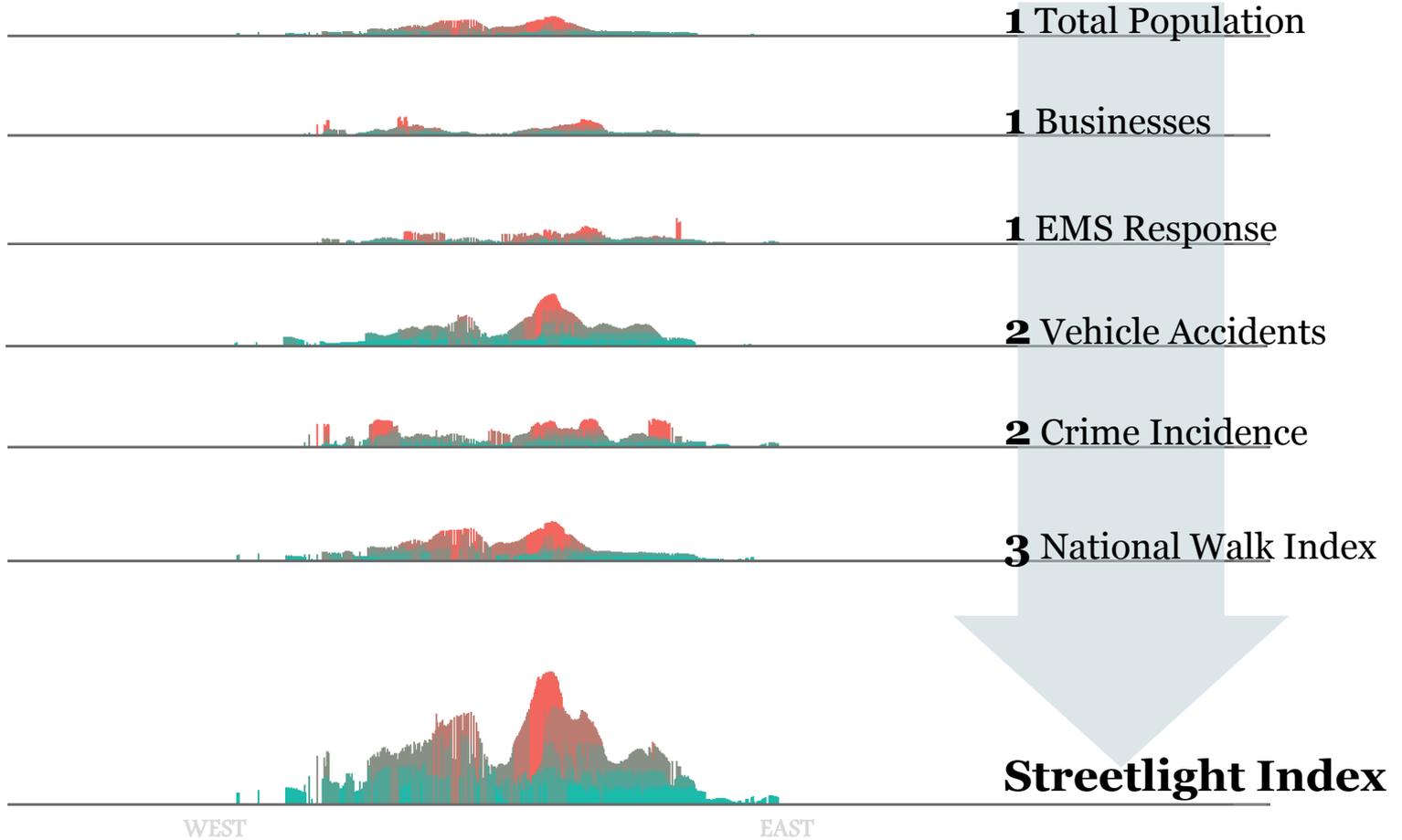


National Walk Index

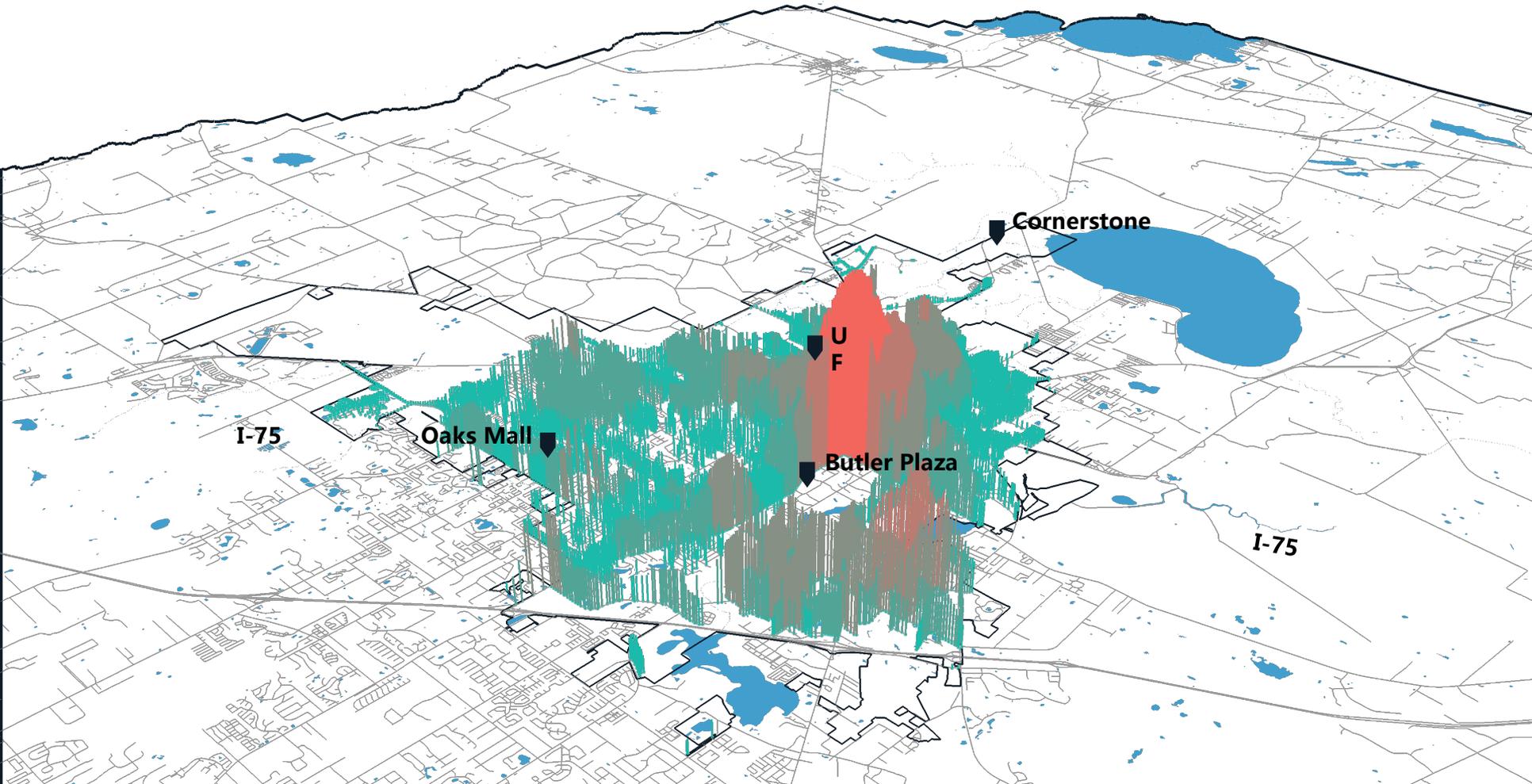
Lo High
w



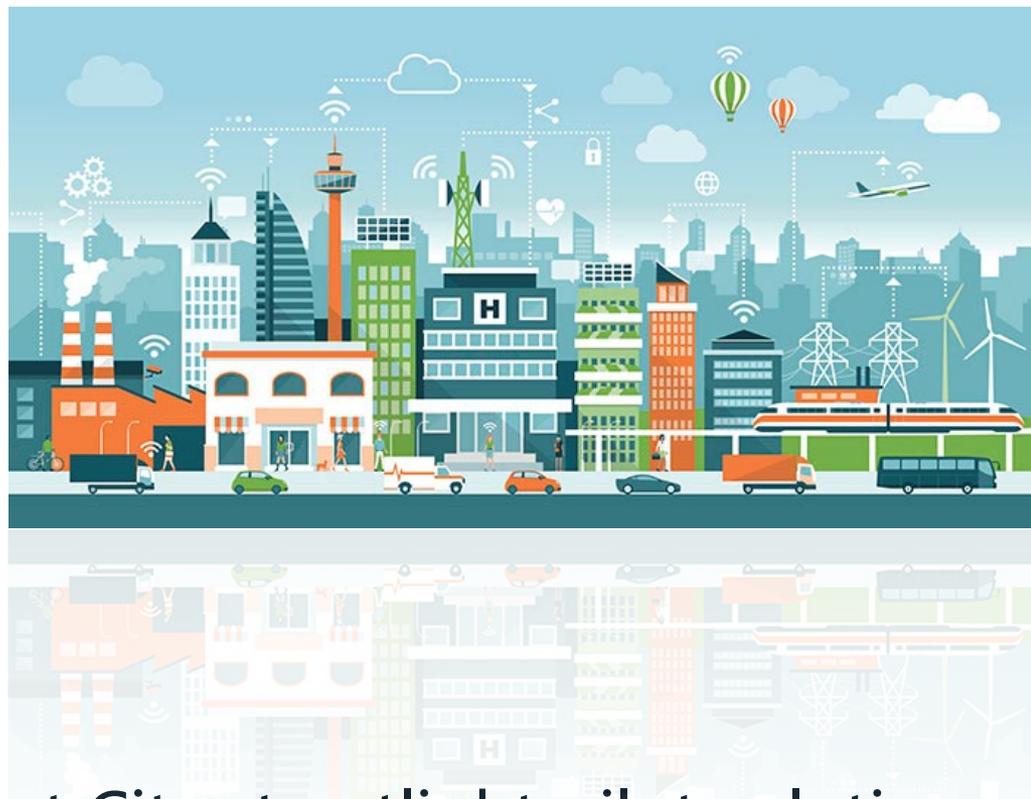
Streetlight Index



Streetlight Index



Next Steps



- Exploring near term Smart City streetlight pilot solutions and work with GRU to plan deployments
- Work with vendors compatible with GRU's preferred AMI solution to establish the technology the framework for further collaboration and save resources
- Test some of the available technologies in order to identify the toolkits best suited to City's needs

Questions

