



Team Bravos

Urban Planners



Grayson Rine



Arthur Chambers

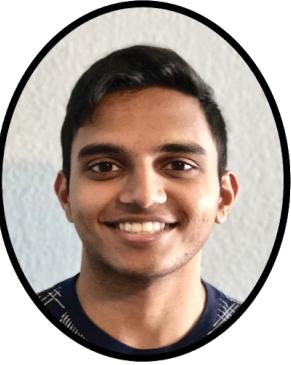
Shane Poldervaart



Computer Science



Jack Knez



Sacheth Swaminathan



Paige Kolupske



Madison Wavra



Chris Davila

Landscape Architects

Background Investigation

- Challenges
 - Mobility
 - Lack of pedestrian routes on neighborhood roads
 - Lack of bike accessibility on roadways
 - Lack of public transit within the city
 - Safety
 - Pedestrians are vulnerable to motor vehicles
 - Lack of early morning and night lighting
 - Circulation
 - Lack of connection between North and South side
 - Lack of big picture draw of Nolanville
 - Lack of downtown corridor



Main Street:



Mesquite Street:

Shane

Mission Statement

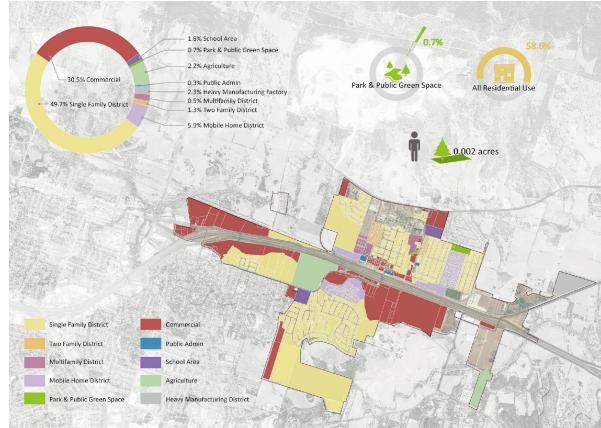


Our vision for the Endeavr Project is to promote **SAFETY, CIRCULATION, and MOBILITY** through alternative modes of transportation for the City of Nolanville. This vision will be achieved by bus routes, bike lanes and sidewalks. Our team proposes these mobility options to be incorporated as easy-to-use smart technologies that are accessible to all of the citizens. Ultimately, we aim to better the City of Nolanville for its residents through comprehensive and sustainable planning and design.

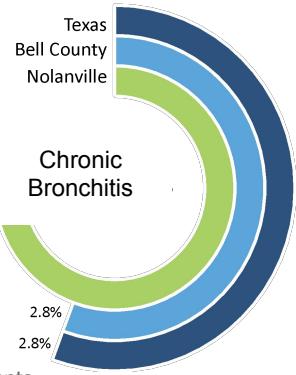


Data Analysis

Land Use Map:



Of the total Land in Nolanville only 0.7% of the land is zoned for Park & Public Green Space.



Chronic Bronchitis in Nolanville is almost 2% higher than that of the entire Bell County because of the pollution in the air.

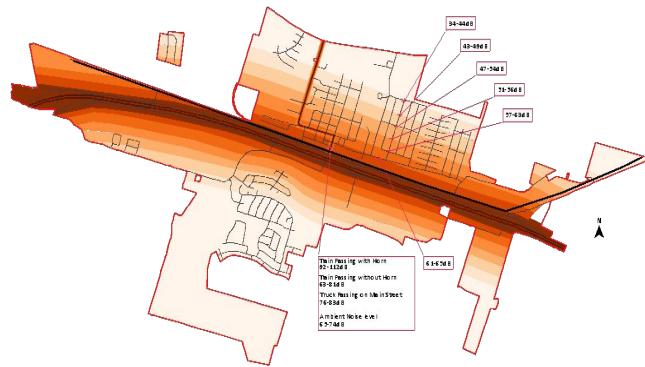
Data by LAND Masters Students

Sidewalks Data Map:

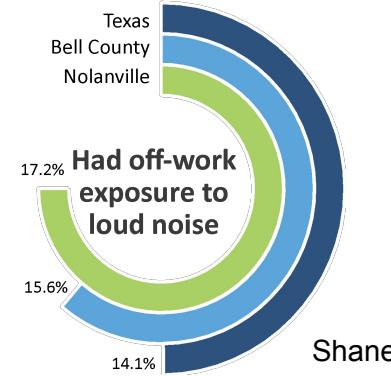
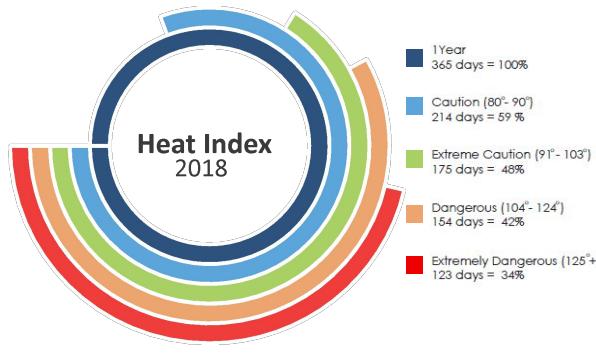


Only 10.3% of the streets in Nolanville have at least one sidewalk on either side of the roadway.

Noise Map:



Nolanville Experiences about 3% more exposure to loud noises then other towns in Bell County because of the train.



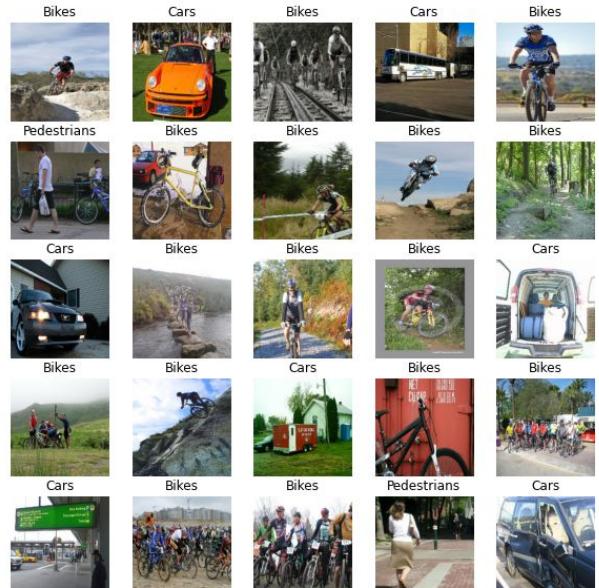
Experiment - Image Classifier

- Purpose

- We want to build and train an image classifier to identify the differences between cars, vehicles, and cyclists from a traffic camera at an intersection
- Used to make judgements about traffic flow to help find a solution to the mobility issue in Nolanville

- Data

- The data for training the model comes from various free dataset hosting websites.
- Cars - https://ai.stanford.edu/~jkrause/cars/car_dataset.html
- Pedestrians - https://www.cis.upenn.edu/~jshi/ped_html/
- Cyclists- <http://www.image-net.org/synset?wnid=n03792782#>
- Train - 1219 images Validation ~ 152 images Test ~ 152 images

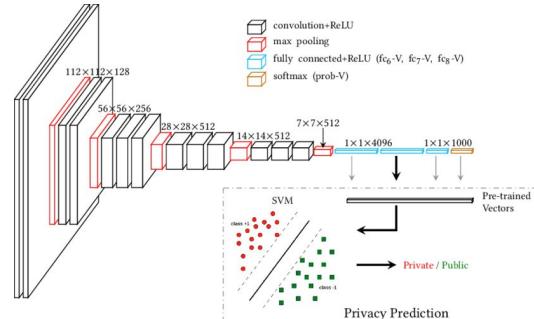


Experiment - Image Classifier

- Model

- Using the VGG16 pretrained convolution neural network
- Trained on over 1 million images
- Allows us to train on smaller dataset
- Very customizable
- Can identify features that we may not even be able to see

■ Ex.



```

vgg_model = applications.VGG16(weights='imagenet',
                                include_top=False,
                                input_shape=(IMG HEIGHT,IMG WIDTH,3))

x = vgg_model.output
# GlobalAveragePooling will flatten the dimensions
x = GlobalAveragePooling2D()(x)
# fully connected layers
x = Dense(1024, activation='relu')(x)

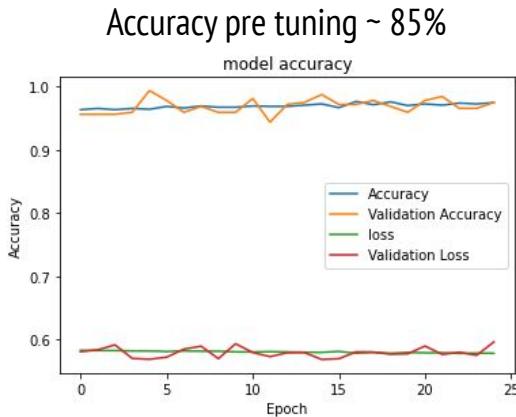
# Last layer for the three classes (Person, bike, car)
predictions = Dense(3, activation='softmax')(x)

for layer in vgg_model.layers:
    layer.trainable = False
  
```

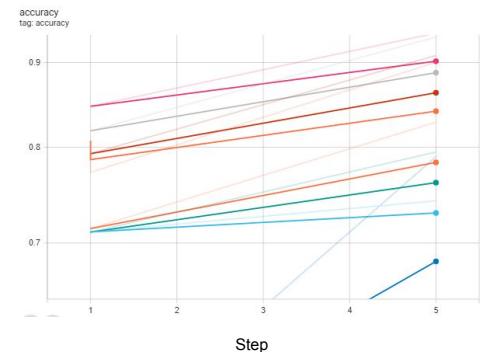
Using pretrained weights

Experiment - Image Classifier

- Output



Accuracy post tuning ~ 90%



- Problems

- Small dataset
- Not able to use actual traffic camera data from Nolanville to test

- Future use

- Can use the cameras once the coronavirus (COVID-19) ends to gather concrete pedestrian, car, vehicle traffic.
- Verify results of the new planning in the future
- Retrain model for use with train recognition and traffic alleviation



Overall Connectivity Map



KEY:

GREEN SPACES

● EXISTING

● PROPOSED

BUS ROUTES

— PROPOSED

— COMPREHENSIVE PLAN

SIDEWALKS

— PROPOSED

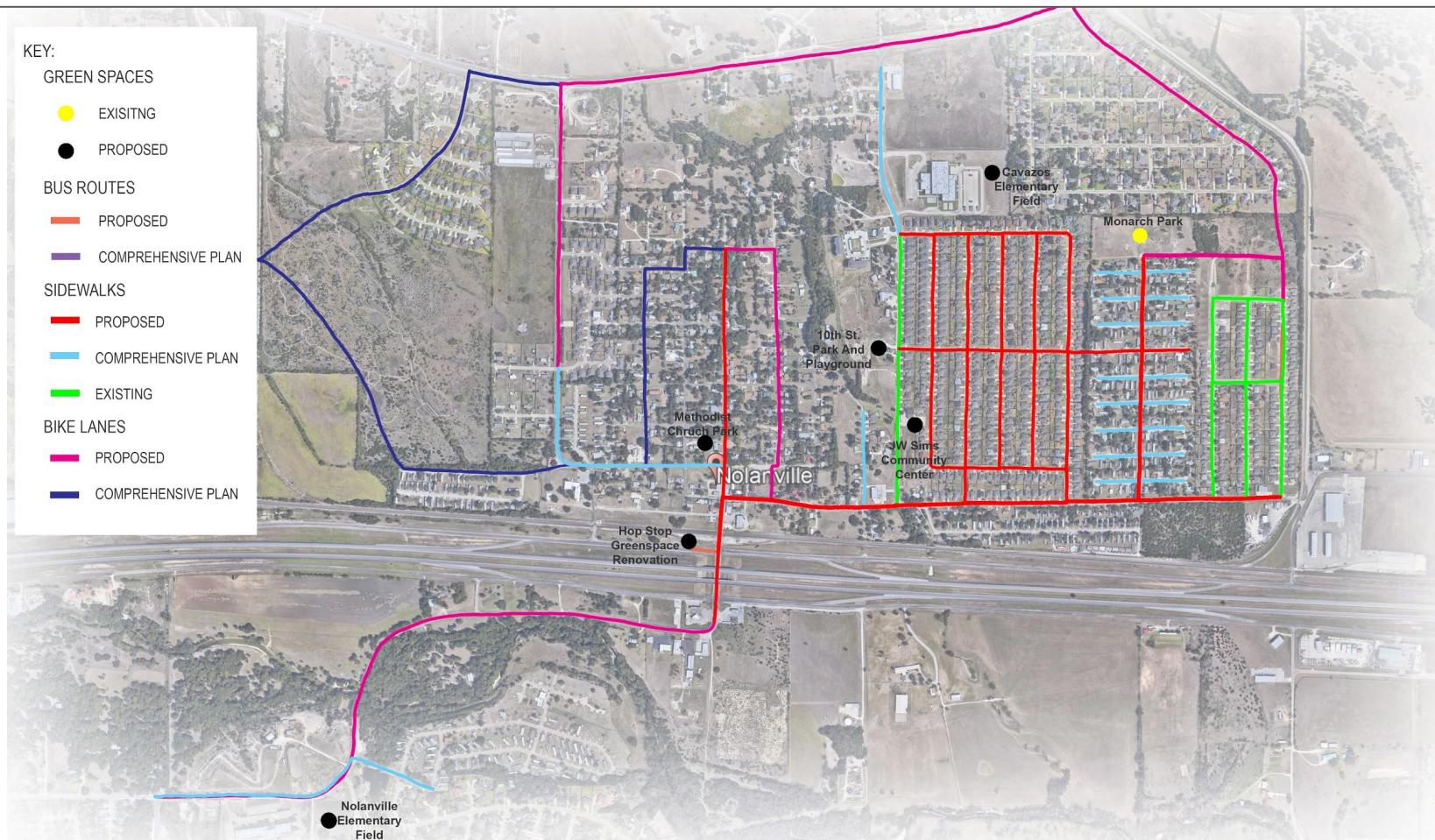
— COMPREHENSIVE PLAN

— EXISTING

BIKE LANES

— PROPOSED

— COMPREHENSIVE PLAN



Complete Streets

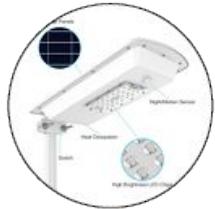
Benefits of Complete Streets:

- Bolster **economic growth** and **stability** by providing accessible and efficient connections
- Improve **safety** by reducing crashes through safety improvements
- Encourage more walking and bicycling
- Help ease transportation woes
- Help children get physical activity and gain independence
- Improve air quality



Streetscapes

Smart Technologies:



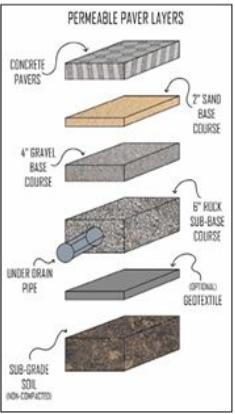
Solar Powered & Motion Sensed Street Lights



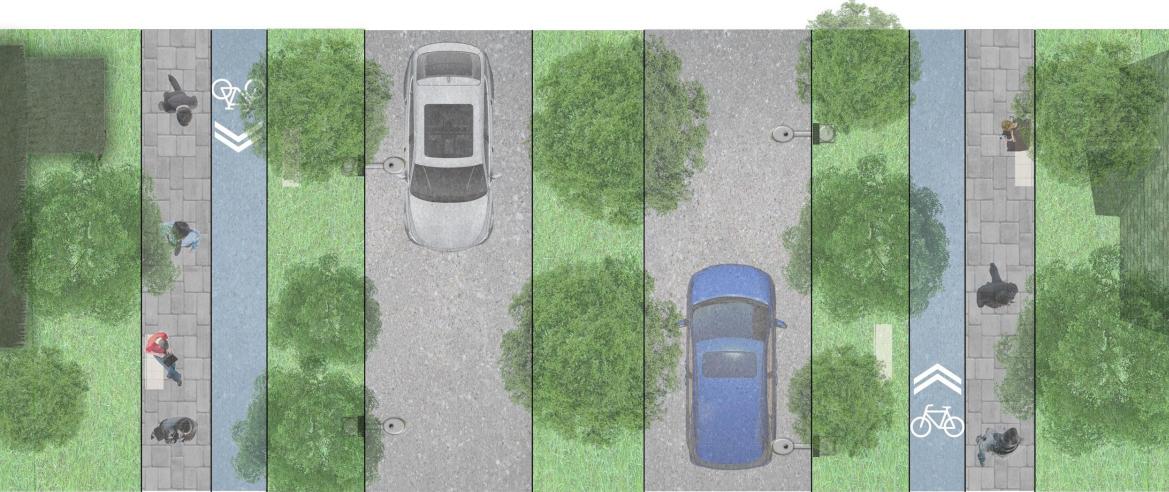
Smart Benches



Glow-In-The-Dark Bike Path



Tree Lined Median



Greenspace Divider

Streetscapes



Smart Technologies:



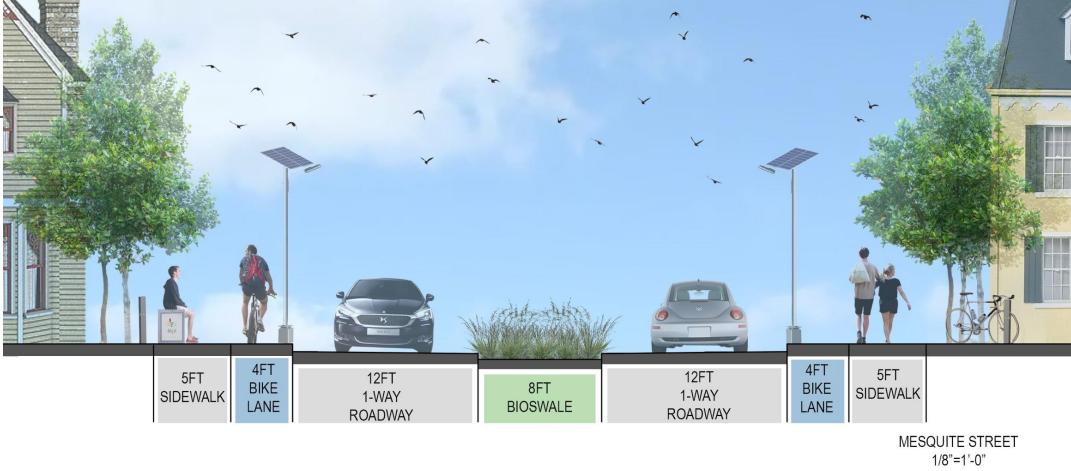
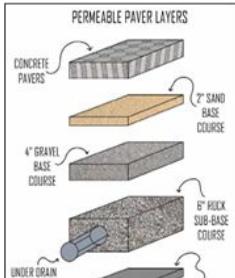
Solar Powered & Motion Sensed Street Lights



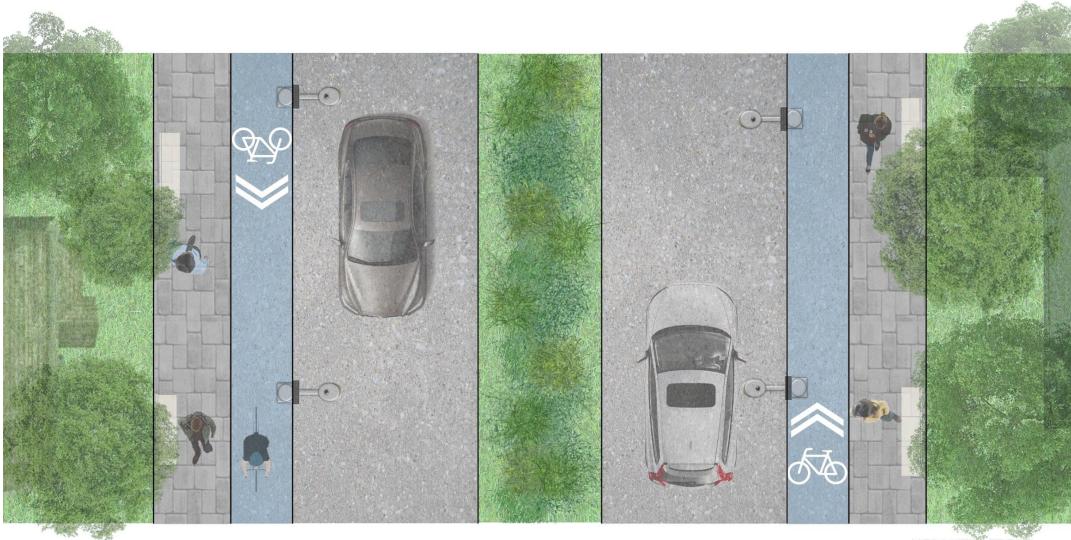
Smart Benches



Glow-In-The-Dark Bike Path



Bioswale Median



Curb Cut For Drainage

Paige

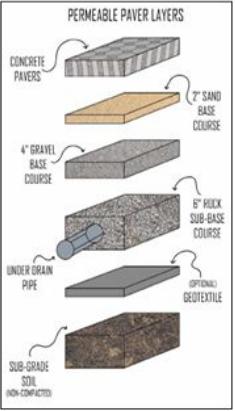
Streetscapes



Smart Technologies:



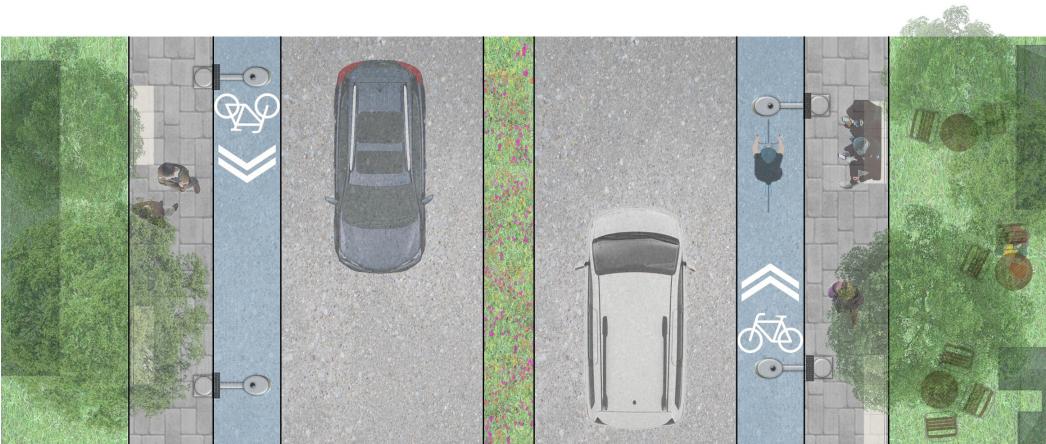
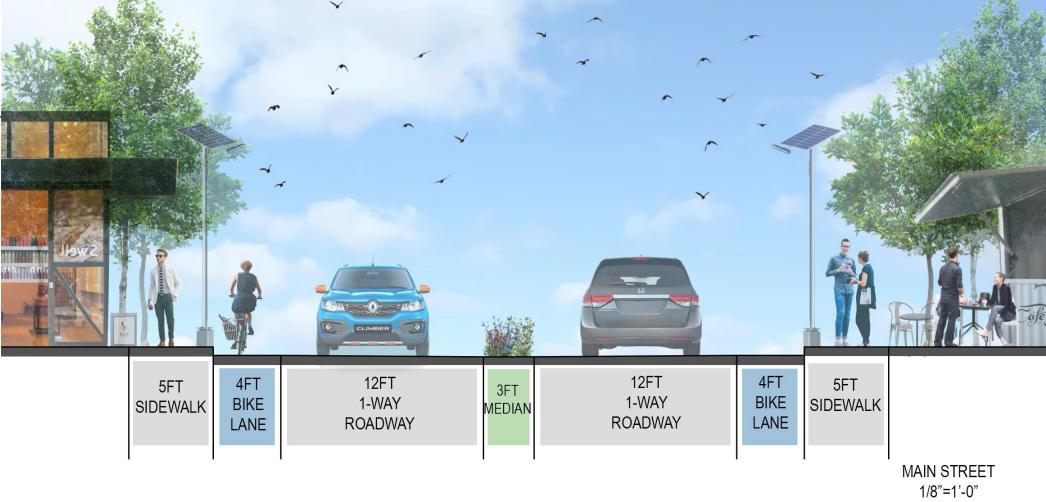
Solar Powered & Motion Sensed Street Lights



Smart Benches



Glow-In-The-Dark Bike Path



MAIN STREET
1/8=1'-0"



Downtown Shops



Outdoor Seating



Seasonal Flower Median

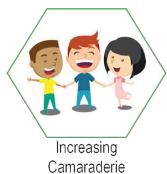
Paige

Connecting North & South Side

Reasoning:

- Creating a beautiful underpass for both sides of Nolanville
- Creating an appealing entrance into Nolanville.
- Showcasing the unique identity of Nolanville

Mural Color Selection:



Increasing
Camaraderie



Increasing Economic
Vitality



Signage & Street Lights

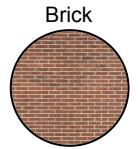


Chris

Green Connector Perspective

Material Used:

- Mural to reflect Nolanville
- Brick, stone, and Pavers
- Drought tolerant wildflowers



Improving the Microclimate

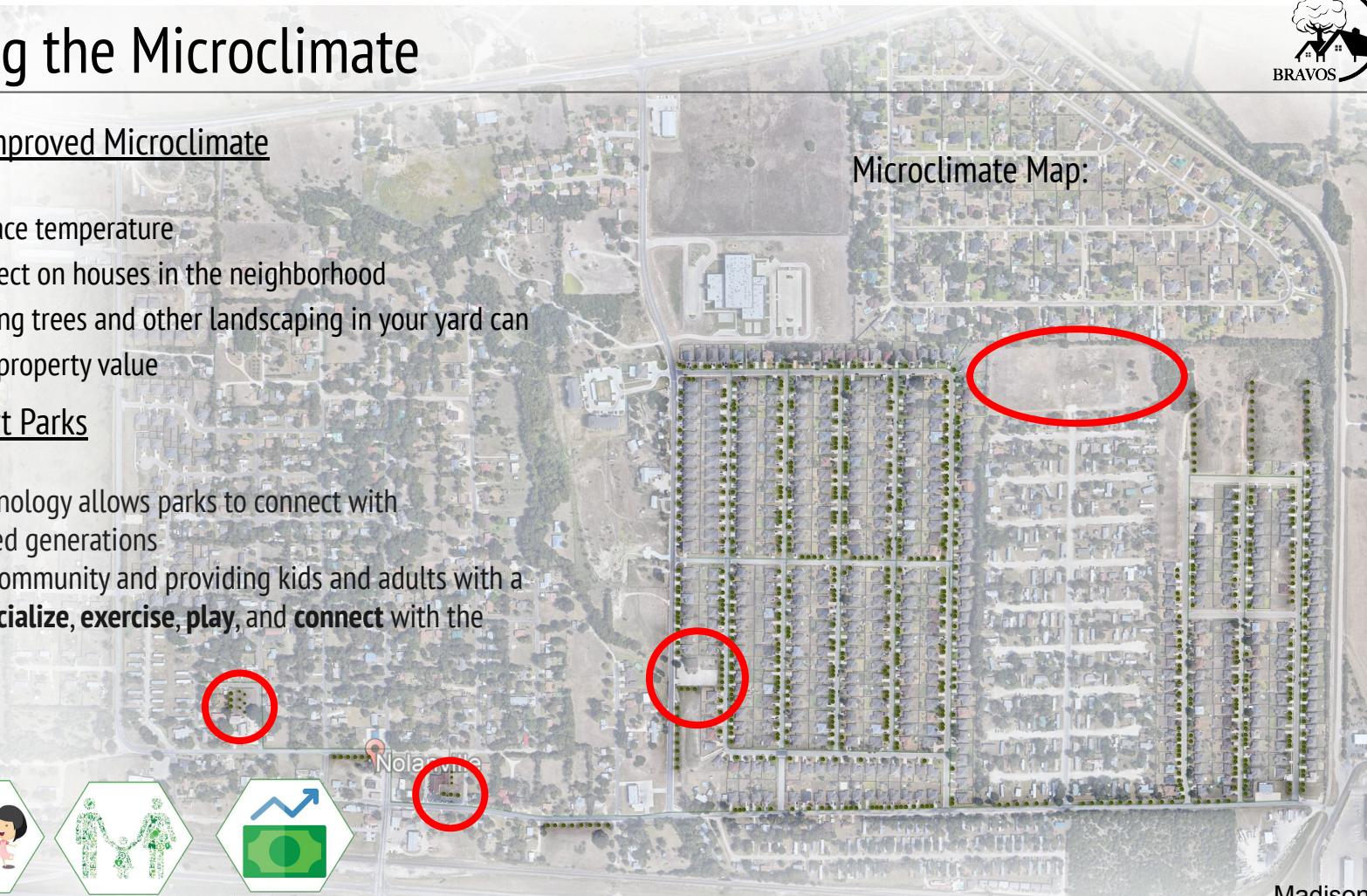
Benefits of an Improved Microclimate

- Lower surface temperature
- Cooling effect on houses in the neighborhood
- Incorporating trees and other landscaping in your yard can also boost property value

Benefits of Smart Parks

- Smart technology allows parks to connect with tech-focused generations
- Fostering community and providing kids and adults with a place to **socialize, exercise, play, and connect** with the outdoors

Microclimate Map:



Madison

Methodist Church Smart Park Design



NEO 360



YALP Sona



Smart Benches



Madison

Main Street Economic Development/ Downtown Corridor Design



← 301 N Main St Nolanville, Texas



Downtown Shops

Outdoor Seating



Seasonal Flower
Median

Paige & Madison



Nolanville's HOP on, HOP off Bus System

How it works:

- The Nolanville Bus picks up and drops off at the existing HOP Stop in Nolanville
- Kiosks located in parks and sidewalk benches display hourly schedule
- Each bus stop is a 10 min or less walk from each other
- Increasing mobility through Nolanville increases accessibility and economic vitality throughout the city of Nolanville

Bus Stop Locations:



Increasing
Camaraderie



Bus Routes
& Stops



Increasing Economic
Vitality



Rainwater Harvesting

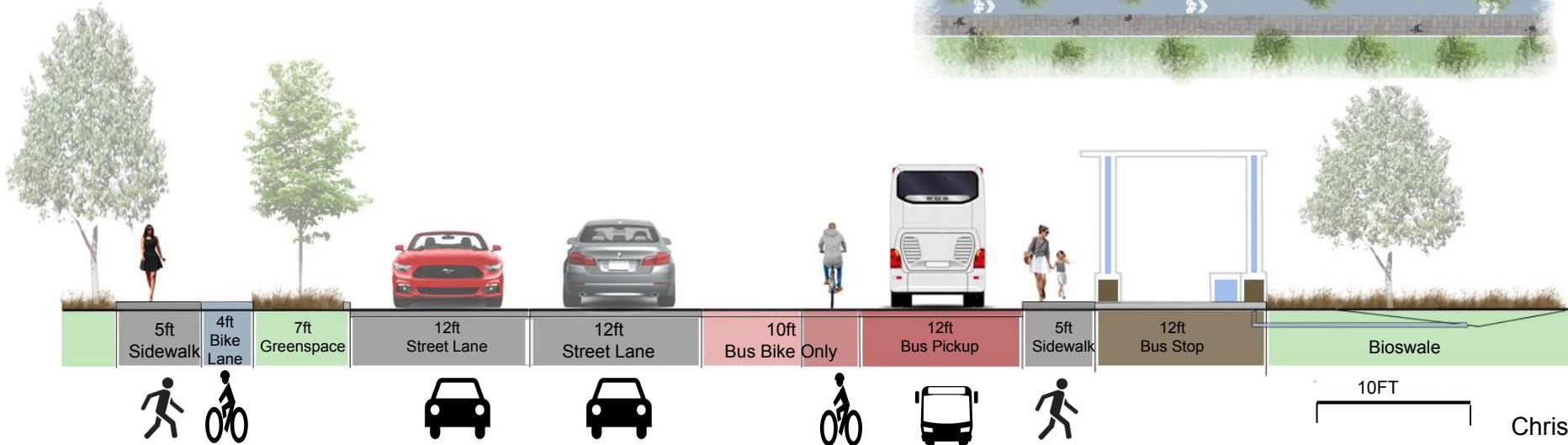
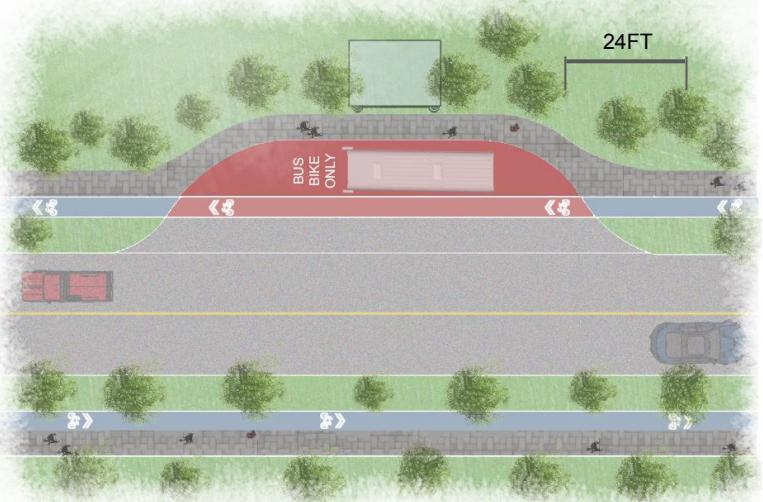
Chris

Pull Off Bus Stop Design



What it can offer:

- This bus stop is created for users that travel by bike, bus, car, and sidewalk
- The design is create a continuous path with little to no obstruction
- This helps create a clear circulation of traffic while using most forms of transportation



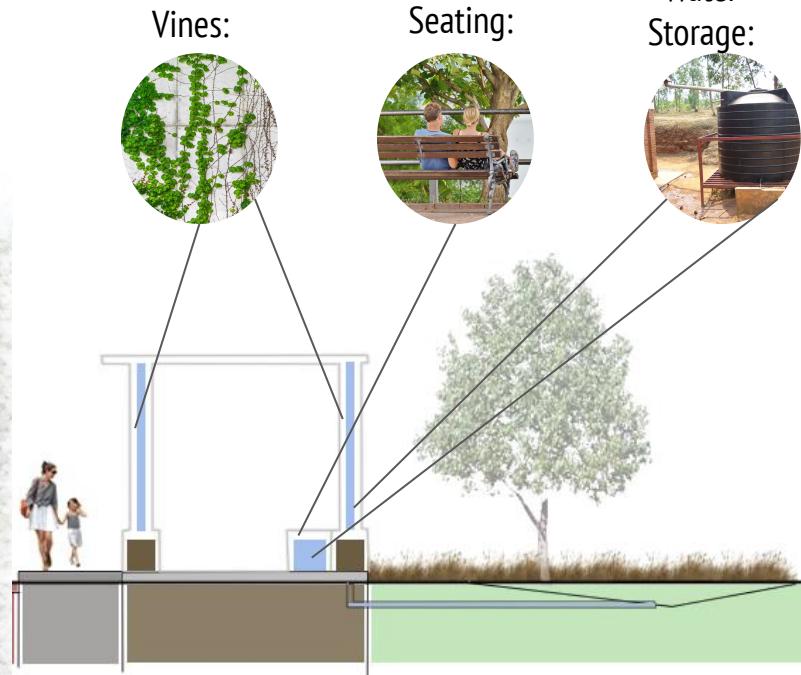
Chris

Smart Bus Stop Design



How it works:

- Vines to bring a green element
- Shade structure for water collection
- A bench for seating and water storage
- Columns collect and channel water

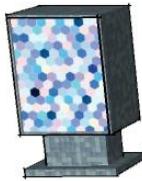


Chris

Kiosk Designs



Half Kiosk:



Seating, Shade, and Electrical Outlet



Full Kiosk:



Seating, Planter, and Electrical Outlet



Seating, Planter and Electrical Outlet



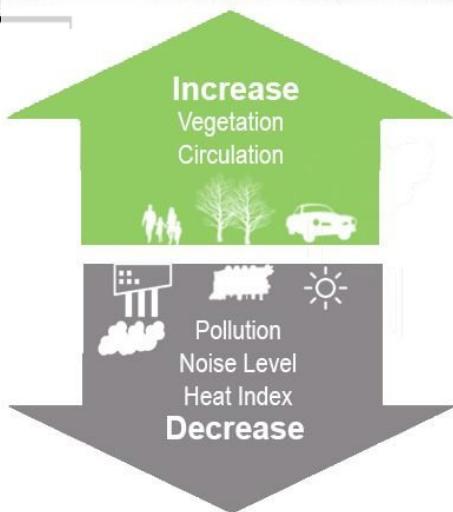
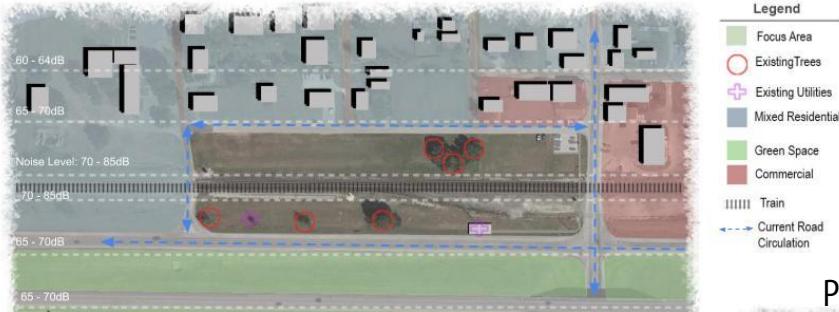
Seating, Shade, Vines, and Electrical Outlet



Chris

Two-Way Frontage Road Design

Existing Conditions:



Outcome:

- Create better circulation when train blocking Main Street
- Creating a two way intersection will enable better **connectivity** and **circulation** to the HOP stop.

Purposed Conditions:

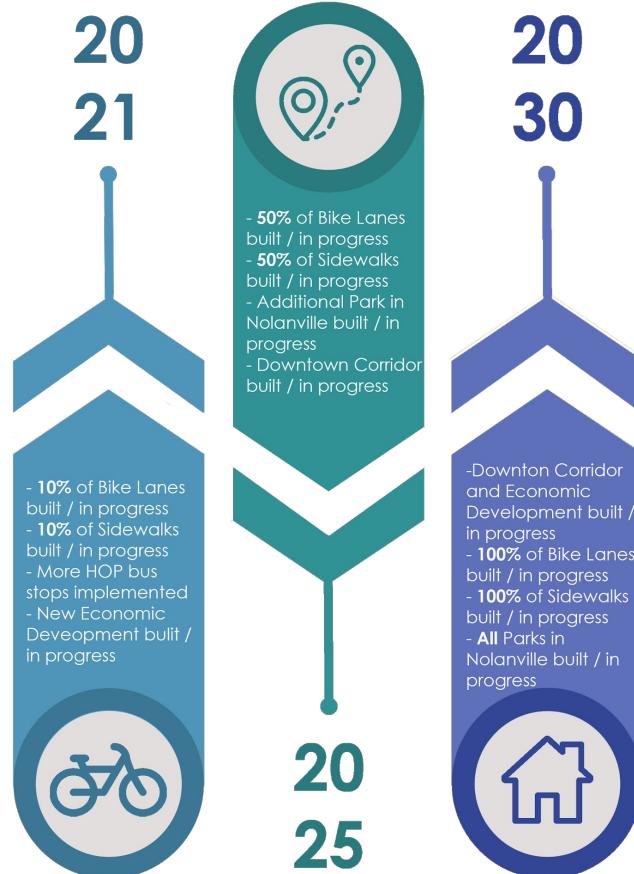


Chris

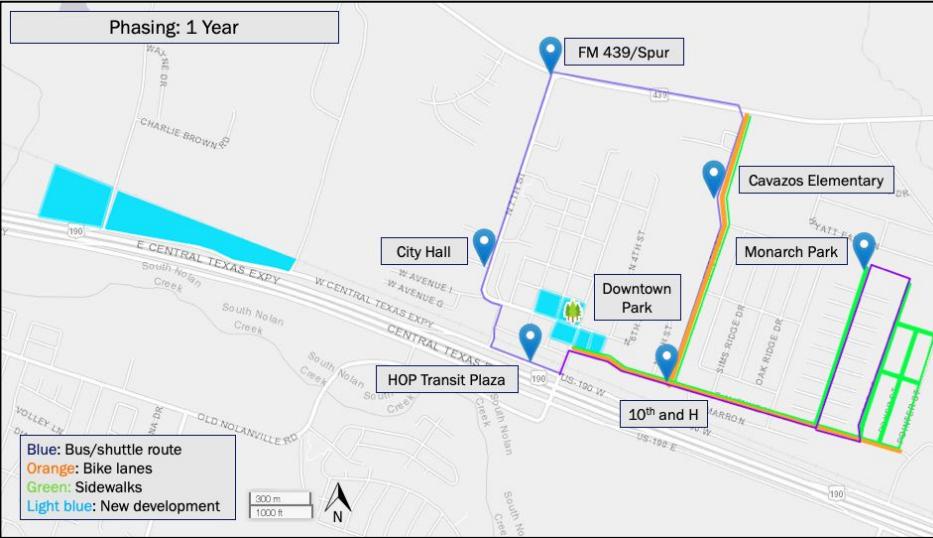
Phasing

The phasing maps are created to illustrate the short term, middle term, and long term goals for the new development of Nolanville.

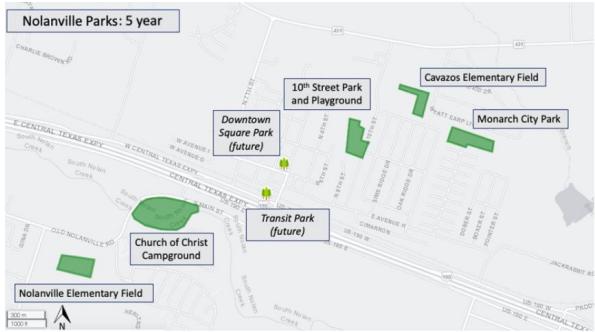
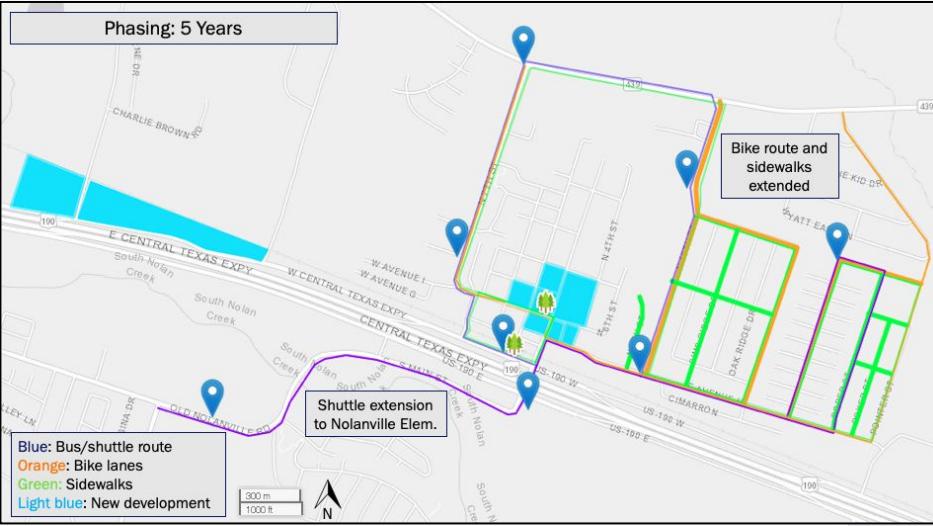
- Maps include:
 - Bike lanes
 - Sidewalks
 - Economic development
 - Parks
 - Bus routes



Phase 1: 2021

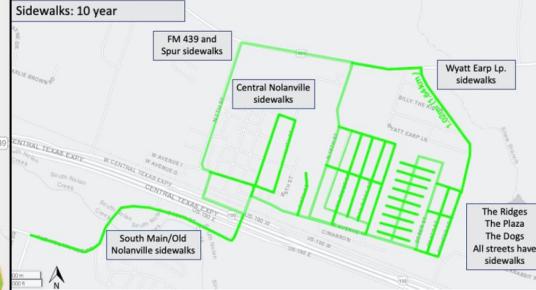
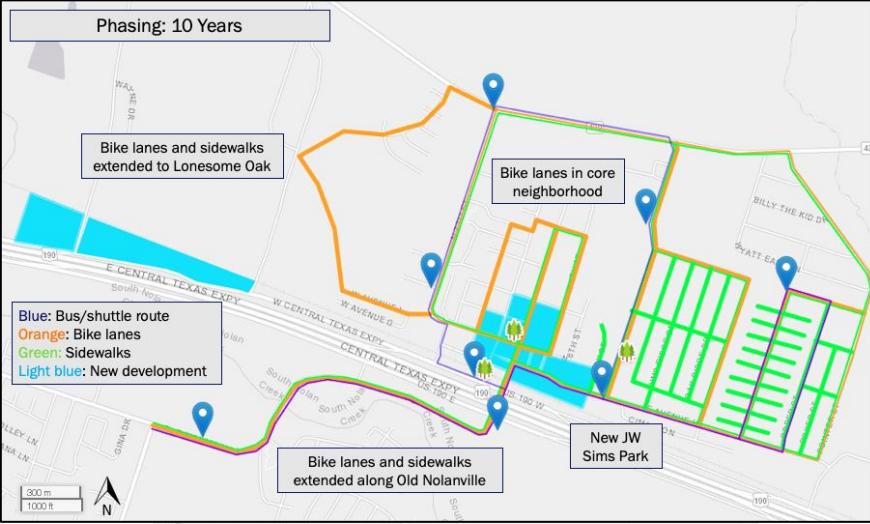


Phase 2: 2025



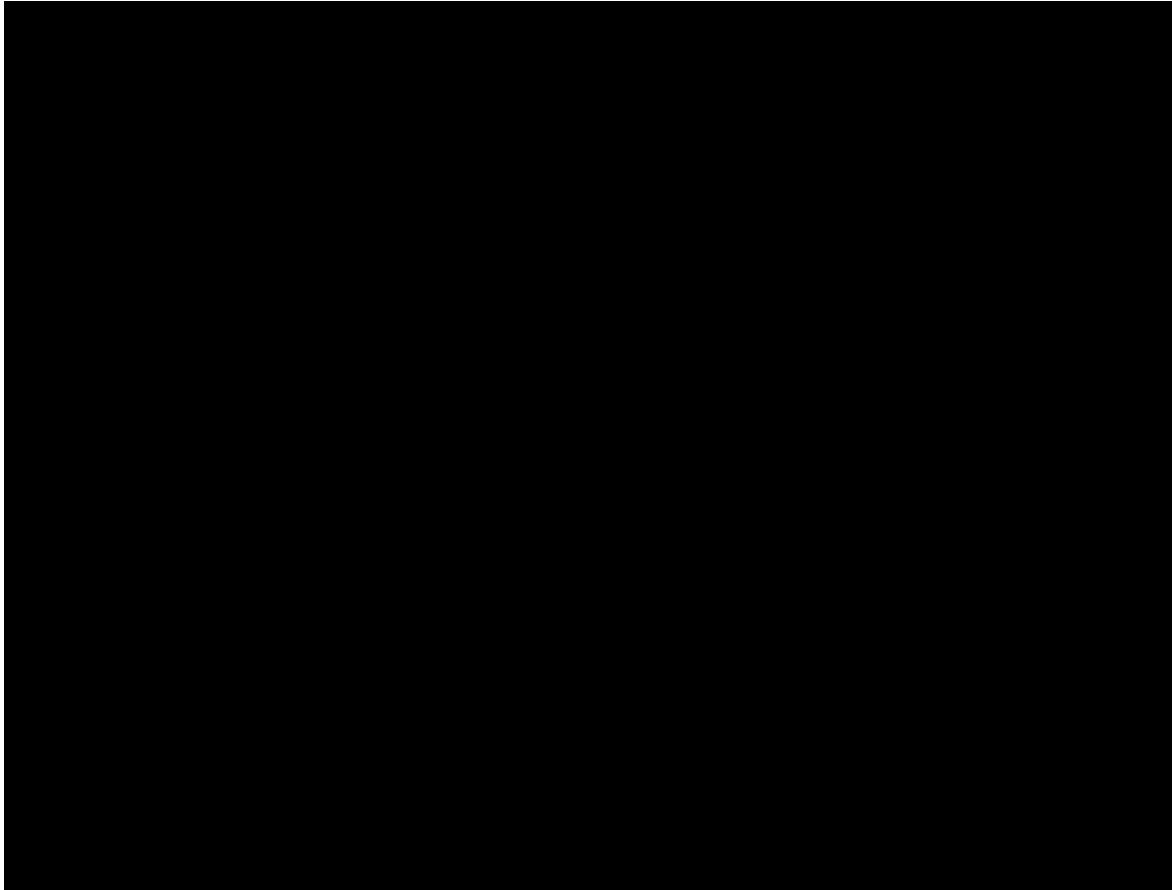


Phase 3: 2030





SAFETY, CIRCULATION, & MOBILITY



Questions?

Urban
Planners



Grayson Rine



Arthur Chambers

Shane Poldervaart



Computer
Science



Jack Knez



Sacheth Swaminathan

Landscape
Architects



Paige Kolupski



Madison Wavra



Chris Davila

Arthur

Sources



- https://www.huffpost.com/entry/glow-in-dark-bike-path-lane-sun-poland_n_57fd0732e4b068ecb5e1d57b
- https://www.include.eu/steora//urban_plus
- <https://www.amazon.com/Bestqool-SSL10-Security-Commercial-Waterproof/dp/B07DZQ97C6>
- Icons made by Google from www.flaticon.com
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- Icons made by Smashicons from www.flaticon.com
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- <https://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/highways.html>
- <https://www.who.int/ceh/capacity/noise.pdf>