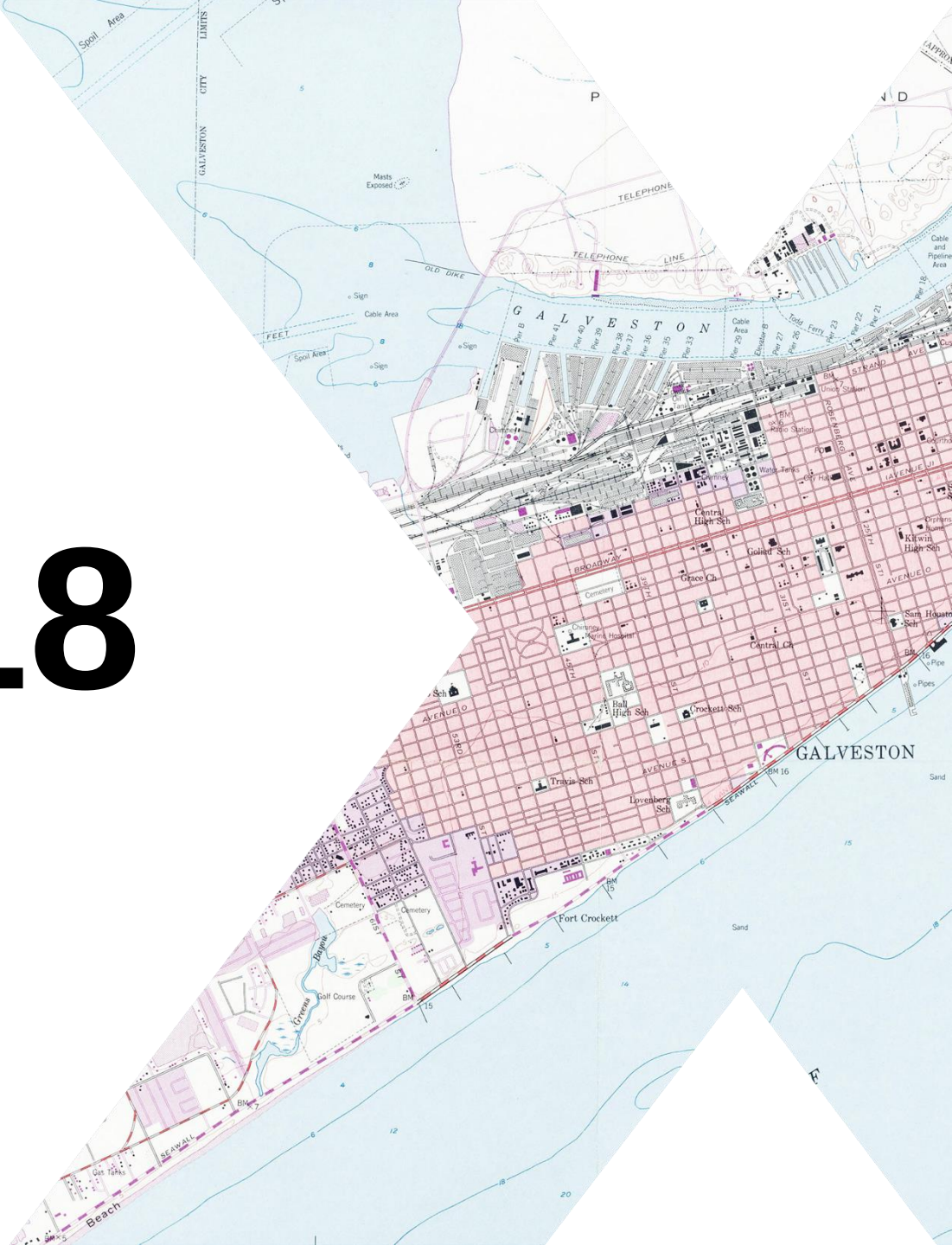
QSF18


GALVESTON
Fort Crockett
Central High Sch
Ball High Sch
Crockett Sch
Travis Sch
Lovenberg Sch
Central Ch
Grace Ch
Golf Course
Cemetery
BROADWAY
AVENUE O
AVENUE S
SEAWALL
Beach
Sand

Quiet Supersonic Flights 2018

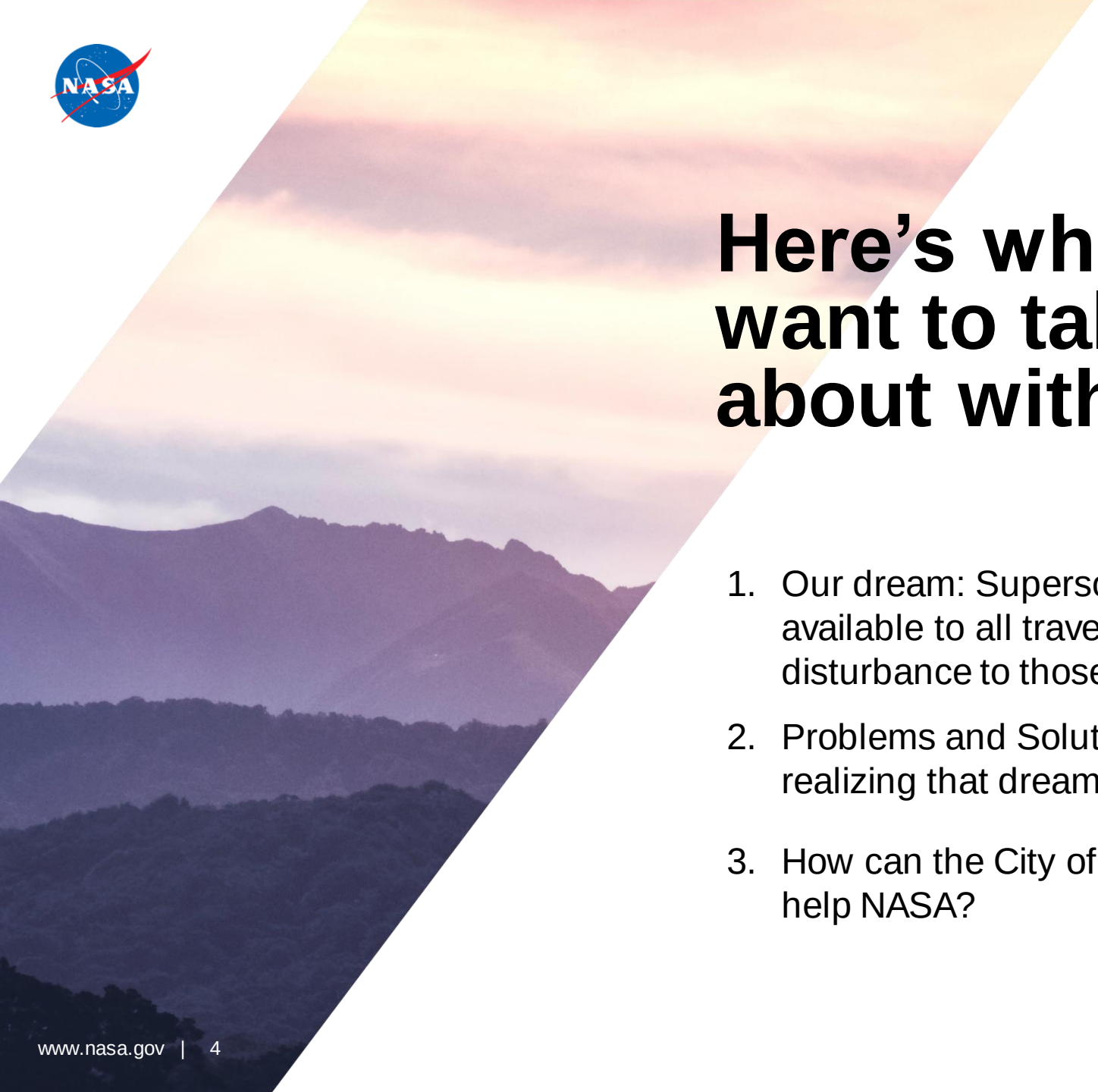
Who are we?

National **Aeronautics** and Space Administration

We conduct research to transform aviation and usher in a new era of flight.

Our research goals are driven by the needs – present and future – of the aviation industry.

We do this by working with industry, academic and government partners, including the Federal Aviation Administration.

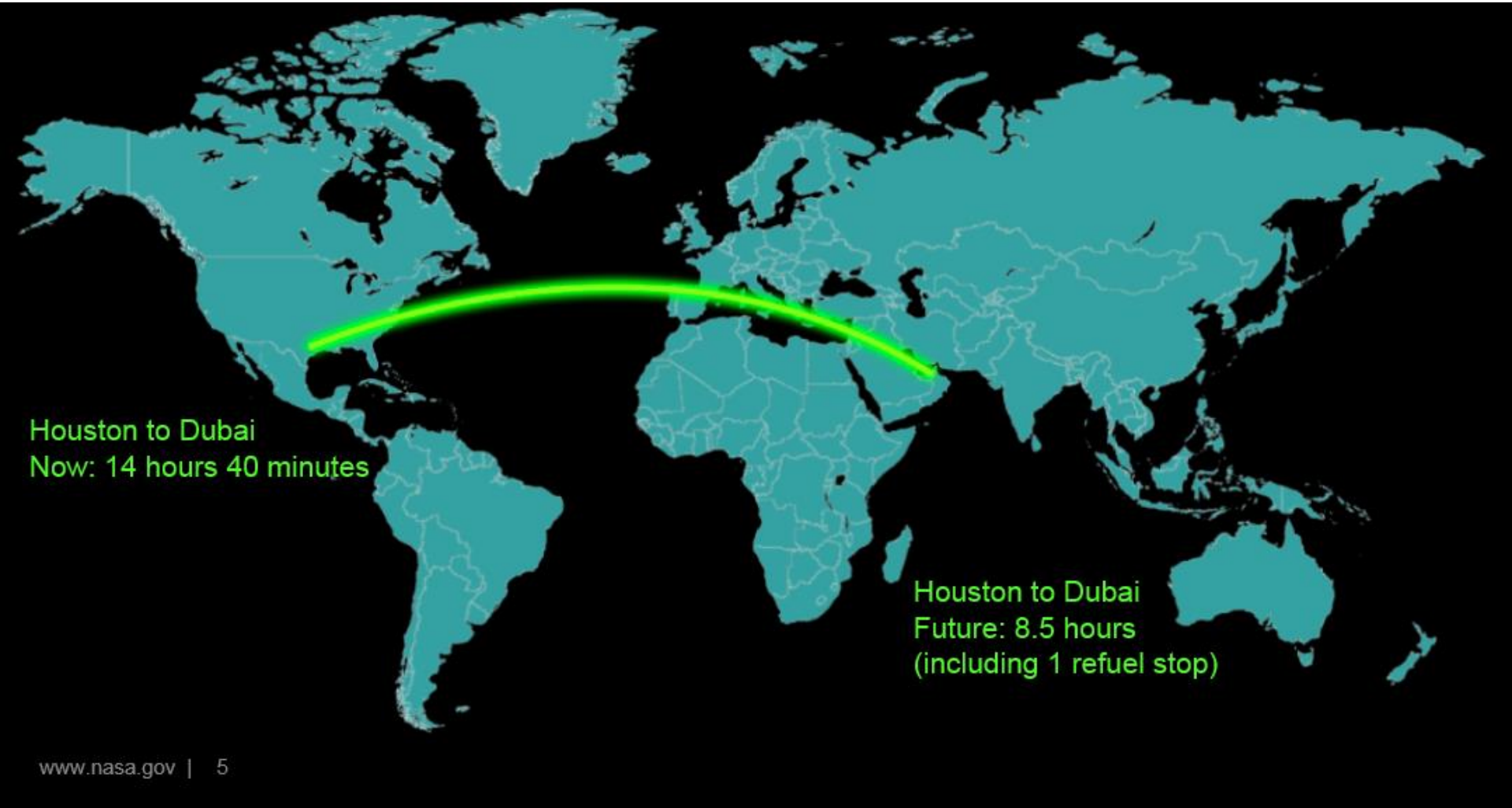


Here's what we want to talk about with you:

1. Our dream: Supersonic air travel available to all travelers without disturbance to those on land.
2. Problems and Solutions to realizing that dream.
3. How can the City of Galveston help NASA?

What is unique about NASA's dream for supersonic flight?

OVER WATER **AND** OVER LAND



Associated Press

Benefits beyond the speed:

1. New, world-wide markets for aircraft builders and operators.
2. Helps maintain positive U.S. trade balance.
3. More high-quality U.S. jobs to meet demand for new supersonic products.

Two-fold problem to realizing this supersonic dream:

Sonic booms are loud and annoying to people on the ground.

Annoying enough that regulations were created to prohibit commercial supersonic flight over land.

NASA AERONAUTICS RESEARCH IS LEADING THE WAY TO A SOLUTION

Solution 1: Making sonic booms quiet as a “thump”

1. Years of study = solution.
2. It’s all in the shape of the aircraft and how that affects the sounds on the ground.
3. Concept proven in ground tests using wind tunnels and simulations, and in flight tests using the F-18.
4. A new supersonic experimental aircraft – an “X-plane”– is needed to bring all the pieces together.

Boom vs. Thump

Solution 2: Working to change the rules

1. Current rules are based on speed, no matter how noisy.
2. Better to have a rule based on acceptable sound levels, like current airport limits.
3. Need data on public response to help set a standard for a “low boom.” How low is okay?
4. Working with the FAA, NASA has defined a safe, deliberate approach.

NASA is building a new X-Plane to provide data

This Low-Boom Flight Demonstration X-Plane will fly in 2021.

Flights will prove the supersonic thump geometry works on a larger aircraft.

Key data will be gathered on public perception of quiet supersonic flights in several cities across the nation.

We're working hard to make sure we do this right

- It doesn't matter how quiet NASA thinks these planes will be…
- People's perceptions and responses are most important.
- We've already done a similar test – replicate low booms and measure people's responses – over a small community housing area at Edwards Air Force Base in California.
- In this study we used a NASA F-18 and a special flight maneuver.

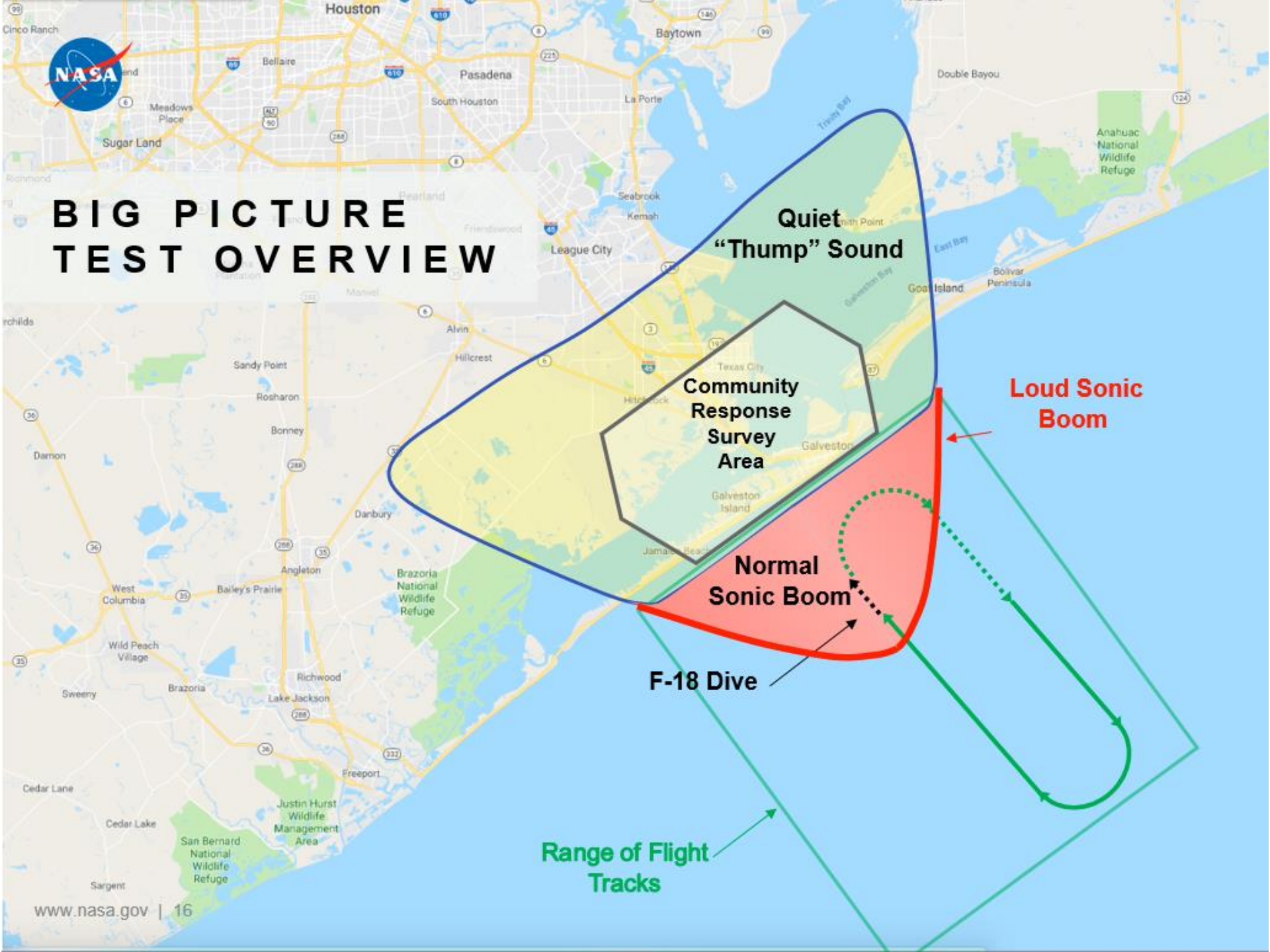
Taking the next step

Before we roll out a national data-gathering effort using the X-plane in a few years, we need to test our methodologies with the help of a city that's not used to hearing sonic booms.


GALVESTON
is the place to fly!
OLD GAL
RALLY HOT SPOT
BUD LIGHT

Galveston meets all key selection criteria

1. Island geography is ideal for sound placement on population.
2. Population density and distribution aid good survey participation.
3. NASA facilities at Ellington Field can support aircraft operations.
4. Local FAA office confirms operations will have minimal effect on nearby commercial flight operations.


BIG PICTURE
TEST OVERVIEW
Quiet
"Thump" Sound
Community
Response
Survey
Area
Loud Sonic
Boom
Normal
Sonic Boom
F-18 Dive
Range of Flight
Tracks
Houston
Baytown
Pasadena
South Houston
La Porte
Double Bayou
Sugar Land
Meadows
Place
Bellaire
Anahuac
National
Wildlife
Refuge
Seabrook
Kemah
League City
Galveston
Galveston
Island
Texas City
Alvin
Hillcrest
Sandy Point
Rosharon
Bonney
Danbury
Angleton
West
Columbia
Bailey's Prairie
Brazoria
National
Wildlife
Refuge
Wild Peach
Village
Richwood
Brazoria
Sweeny
Lake Jackson
Freeport
Cedar Lane
Cedar Lake
Justin Hurst
Wildlife
Management
Area
San Bernard
National
Wildlife
Refuge
Sargent
Bolivar
Peninsula
Galveston Bay
East Bay
Trinity Bay

Flight Test Highlights

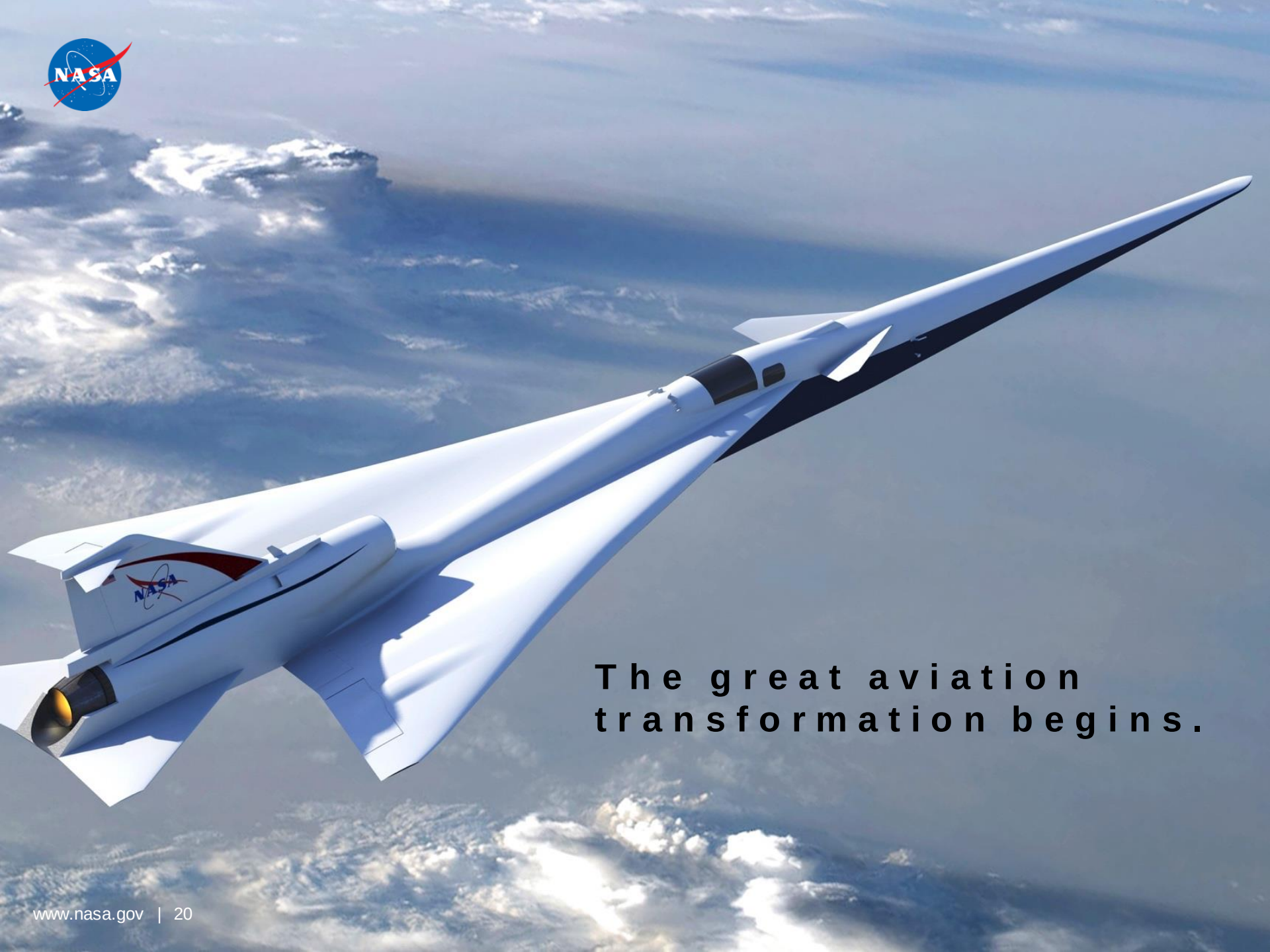
1. Up to three weeks of flights during November 2018
2. One to 8 “Thumps” each day
3. 20 audio sensors set up with the city to measure acoustic exposure
4. 500 members of the public recruited to respond to survey

PUBLIC ENGAGEMENT

1. Pre-selected survey participants will be recruited via postcard mailing
2. Media day
3. Opportunities for visits by students/VIPs with flight technology and personnel such as pilots, engineers
4. Citizen science project open to all in test area
5. NASA exhibit at Houston Air Show

What to remember

1. Galveston was selected by NASA to participate in an important test that will help make commercial supersonic flight over land possible.
2. Galveston was selected because of its unique geography and its proximity to Ellington Field.
3. The test period is planned for November, but the exact dates are flexible.
4. The maximum length for the test is 3 weeks.
5. All the sounds heard should be “thumps” of varying loudness but some residents may occasionally hear a sound more like a boom.
6. There is no chance for physical harm to people or animals.


NASA
The great aviation transformation begins.