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CONGRESSIONAL BRIEFING

Protecting Vulnerable Communities from Climate Impacts

Friday, April 16, 2021

About EESI...

EESI
Environmental and Energy Study Institute

NON-PROFIT

Founded in 1984 by a bipartisan Congressional caucus as an independent (i.e., not federally-funded) non-profit organization

NON-PARTISAN

Source of non-partisan information on environmental, energy, and climate policies

DIRECT ASSISTANCE

In addition to a full portfolio of federal policy work, EESI provides direct assistance to utilities to develop “on-bill financing” programs

SUSTAINABLE SOCIETIES

Focused on win-win solutions to make our energy, buildings, and transportation sectors sustainable, resilient, and more equitable

...About EESI

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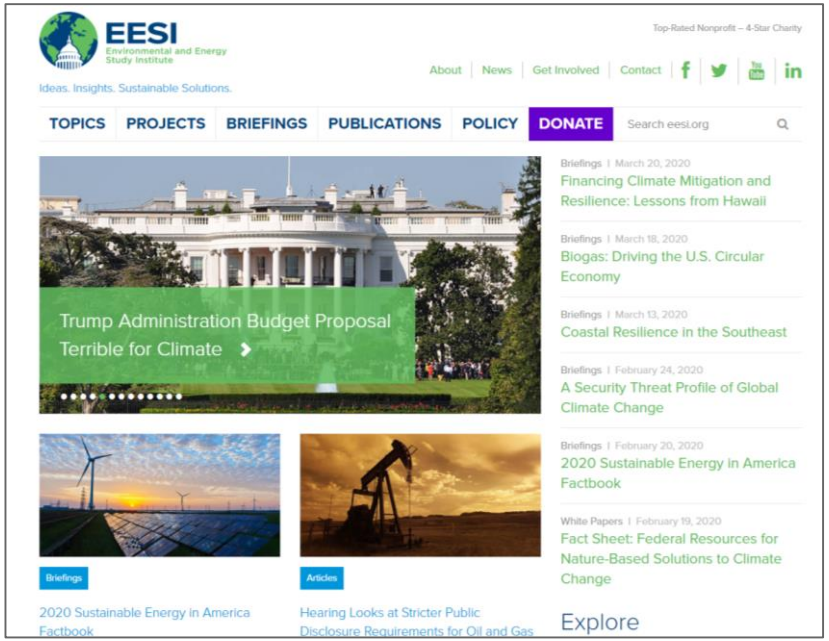

HILL BRIEFINGS

Video recordings and written summaries of Congressional briefings

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Bi-weekly newsletter with all you need to know including a legislation tracker

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FACT SHEETS

Timely, science-based coverage of climate and clean energy topics

Affordable Housing at Risk from Coastal Flooding

Program on Sea Level Rise | (sealevel@climatecentral.org)

Why? A triple threat

- Physical vulnerability of buildings
- Socioeconomic vulnerability of residents
- Increasing floods from rising seas

Affordable housing definition used

- federally subsidized
- “naturally occurring” = unsubsidized
  - Rents below local market rates
  - or < 30% of local median household income

Research factors

- Climate pollution level
- Sea level rise
- Flood heights and likelihoods
- Different years (2050 focus)
- Individual building footprints

https://www.microsoft.com/en-us/maps/building-footprints

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Key findings

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ENVIRONMENTAL RESEARCH
LETTERS

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Sea level rise and coastal flooding threaten affordable housing

Maya K Buchanan[1,5], Scott Kulp[1], Lara Cushing[2], Rachel Morello-Frosch[3], Todd Nedwick[4] and Benjamin Strauss[1,6]

Published 1 December 2020 • © 2020 The Author(s). Published by IOP Publishing Ltd

Environmental Research Letters, Volume 15, Number 12

Citation Maya K Buchanan *et al* 2020 *Environ. Res. Lett.* **15** 124020

Article PDF Article ePub

Figures References

- Exposure triples by 2050
- NJ, NY, and MA
- Threat concentration

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TABLE 1 - Affordable housing units at risk now and in 2050, under high carbon emissions scenario (RCP 8.5)

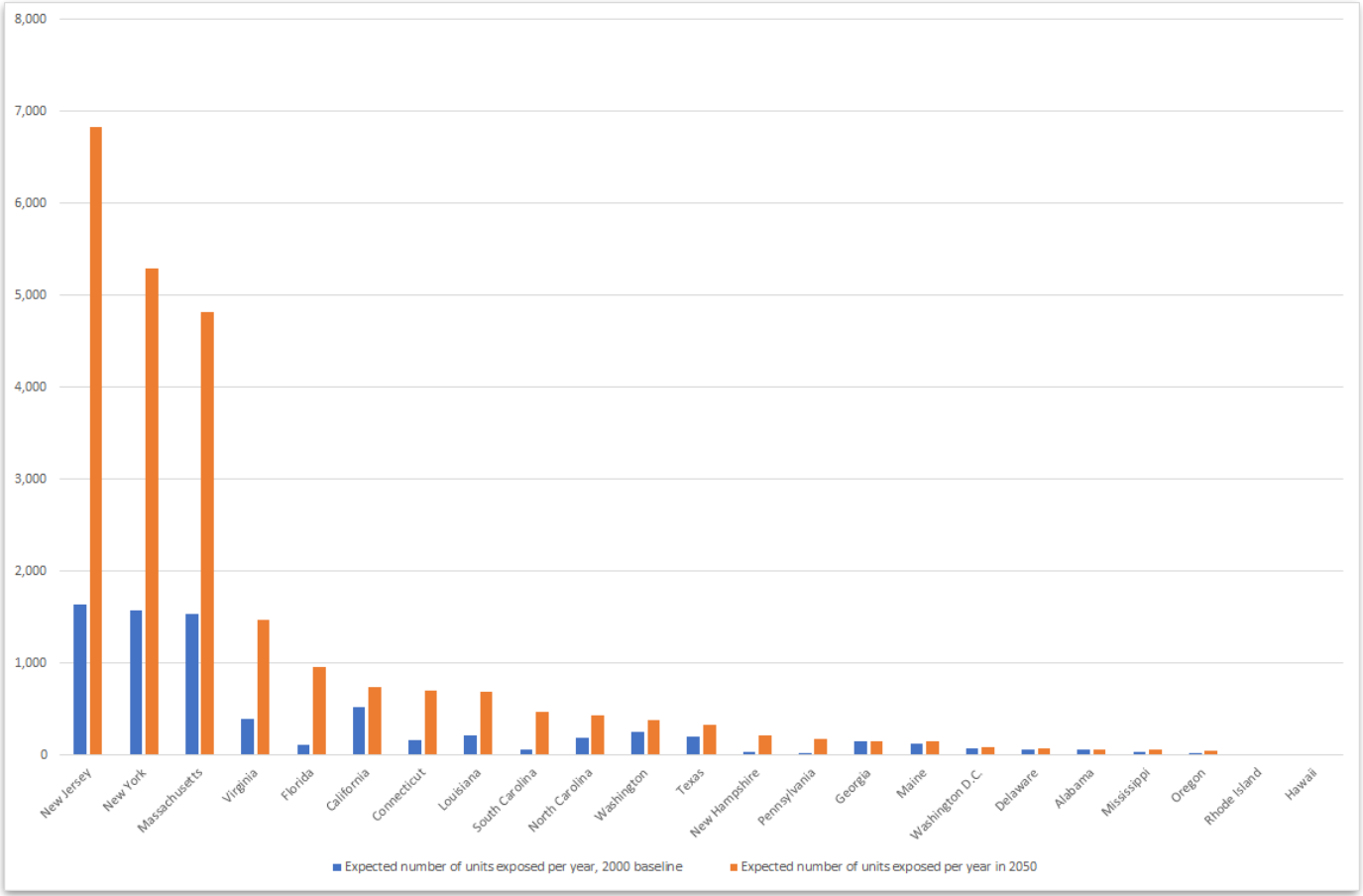

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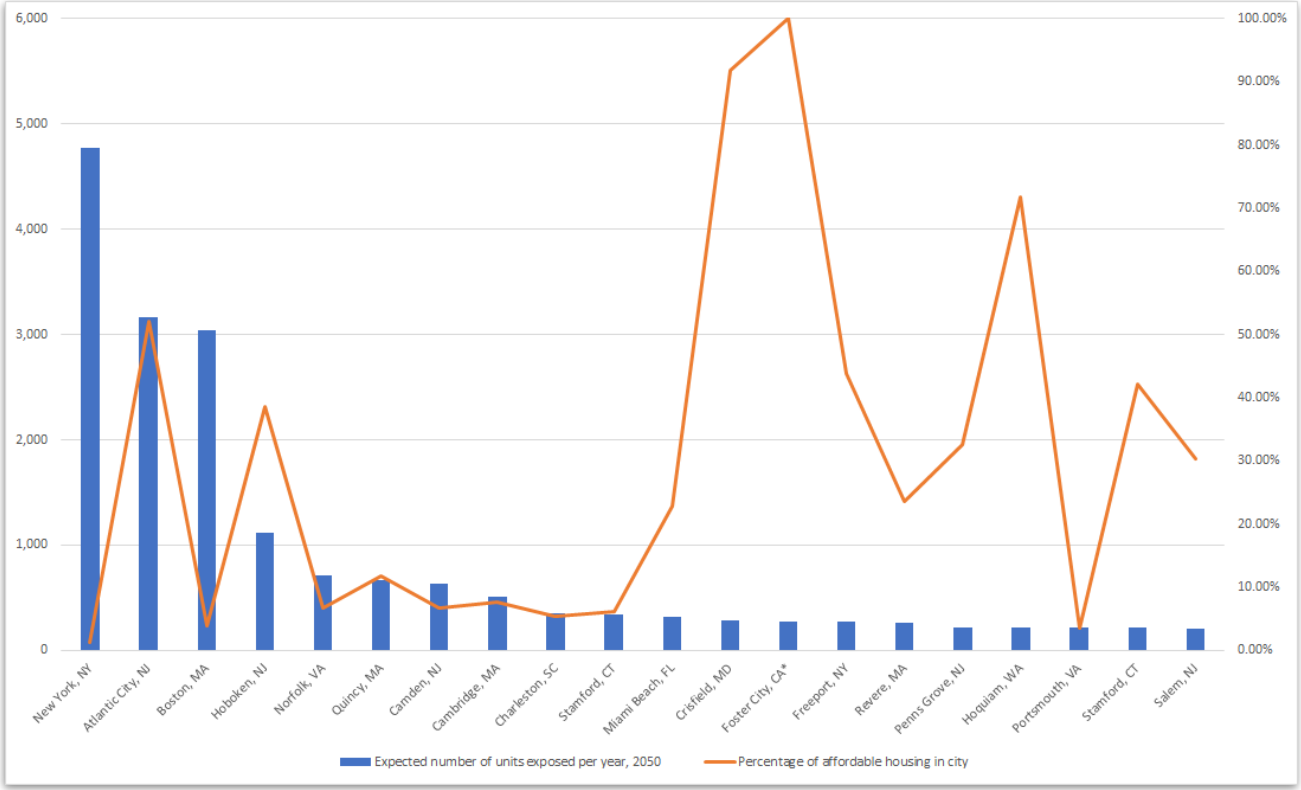
TABLE 2 - Future threat of coastal flooding to the top 20 cities exposed (in absolute terms) for 2050, under high carbon emissions scenario (RCP 8.5)



*Exposure may be overstated in Foster City, CA where new levees may not have been included in a national levee inventory used in the analysis. See paper for details.

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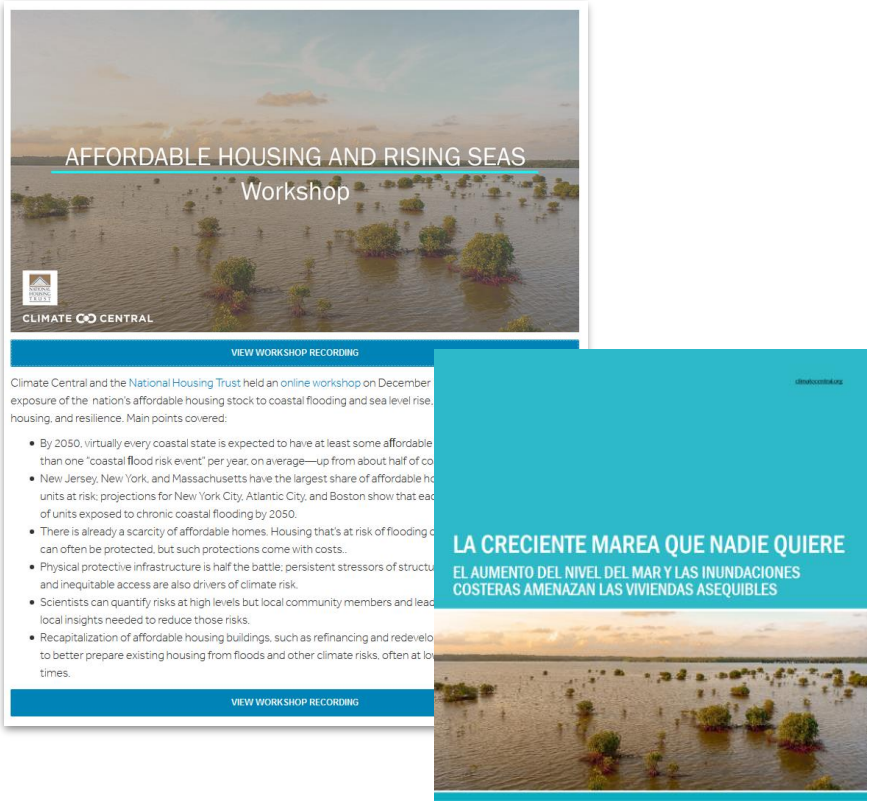
Resources via coastal.climatecentral.org

- Scientific paper
- Report
- Recorded webinar
- Map tool
- Dynamic fact sheets



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COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

DETAILS AND LIMITATIONS

Report | Scientific Paper | Webinar

AREAS TO COMPARE
Counties

STATE
New Jersey

YEAR
2050

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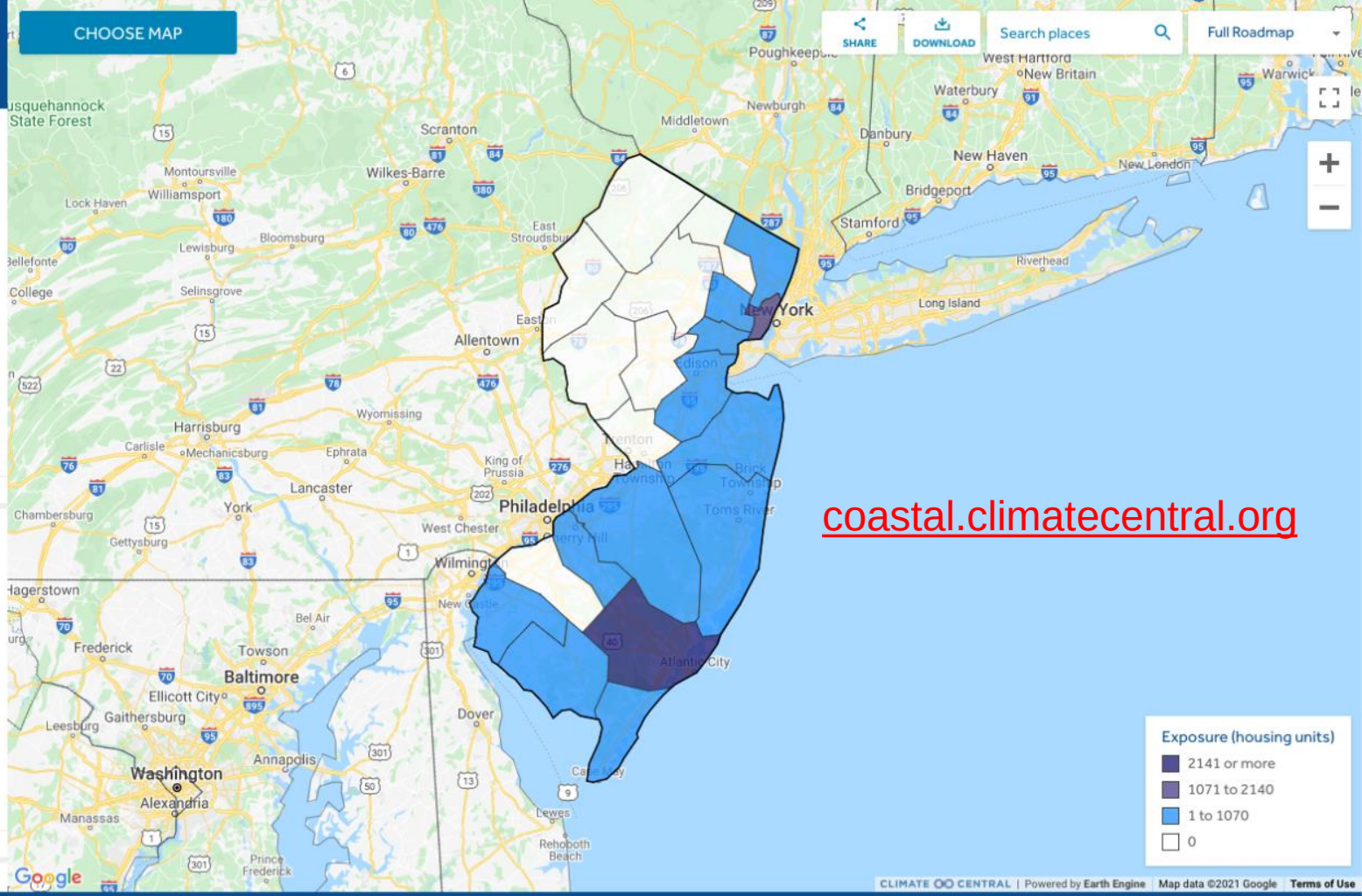

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AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

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New Jersey

YEAR
2050

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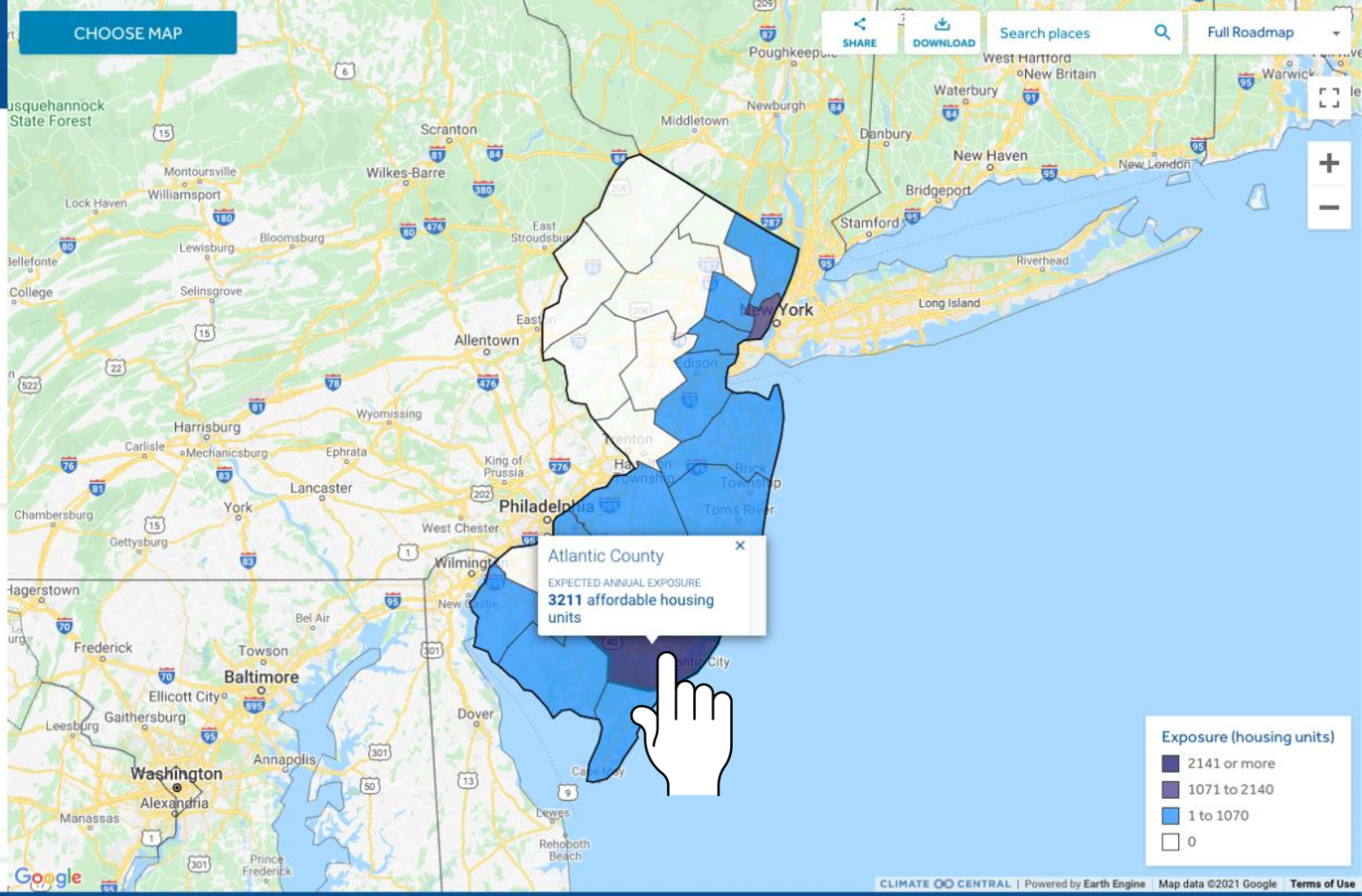

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AFFORDABLE HOUSING AT RISK OF FLOODING IN 2030

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

DETAILS AND LIMITATIONS

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AREAS TO COMPARE

Counties

STATE

New Jersey

YEAR

2030

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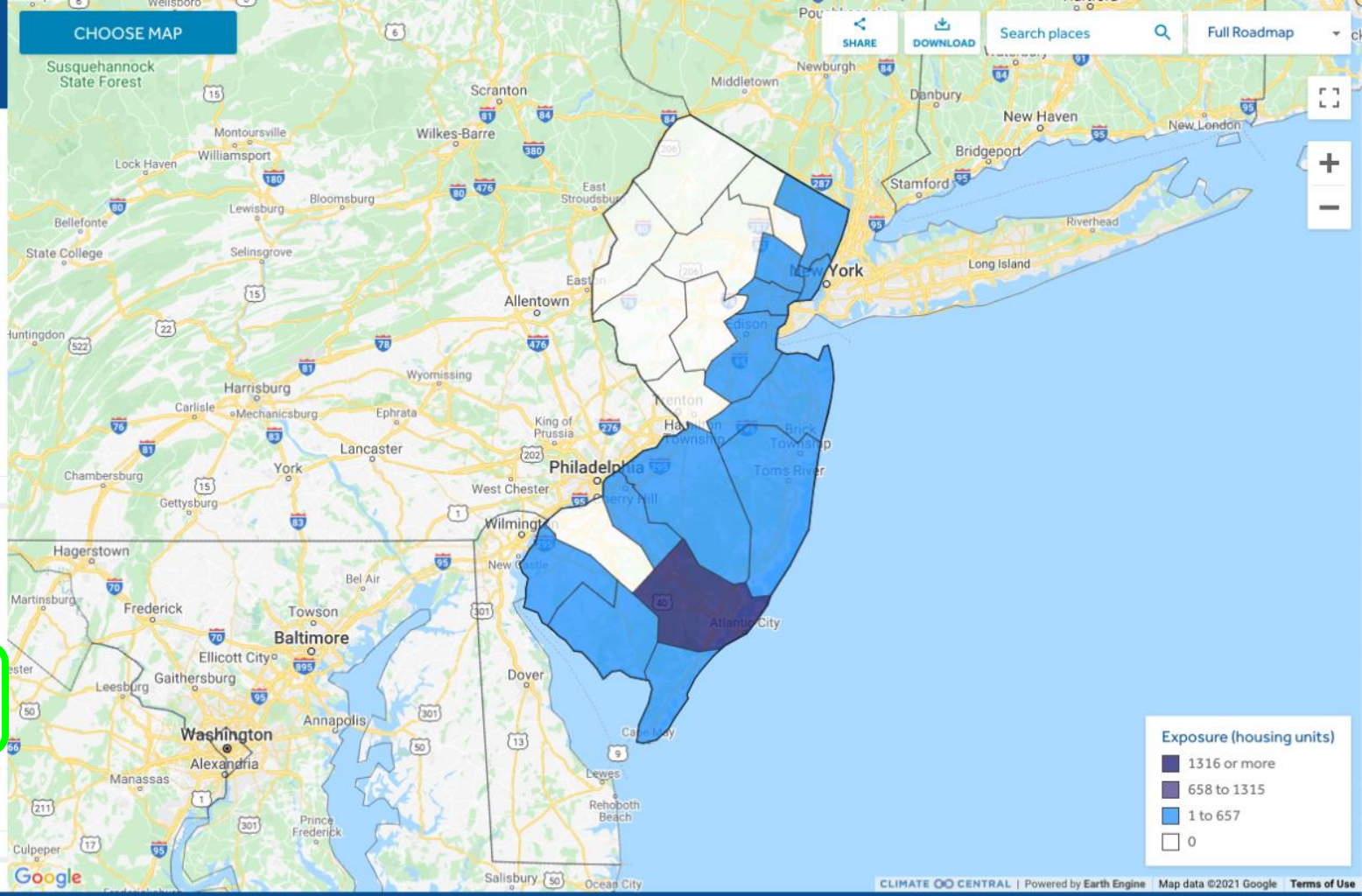

Exposure (housing units)

- 1316 or more
- 658 to 1315
- 1 to 657
- 0

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COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2040

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

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AREAS TO COMPARE

Counties

STATE

New Jersey

YEAR

2040

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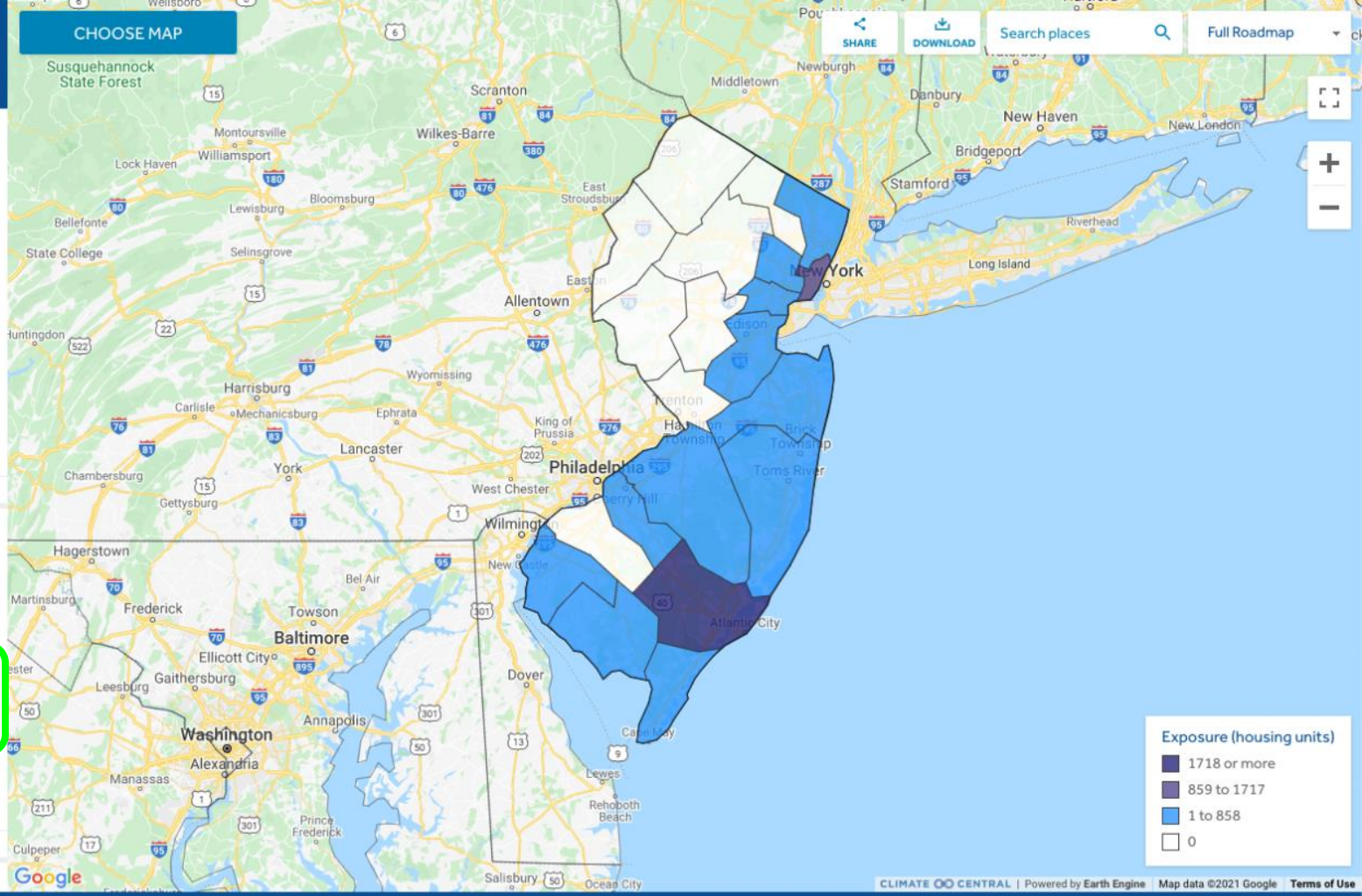

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COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2100

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

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STATE
New Jersey

YEAR
2100

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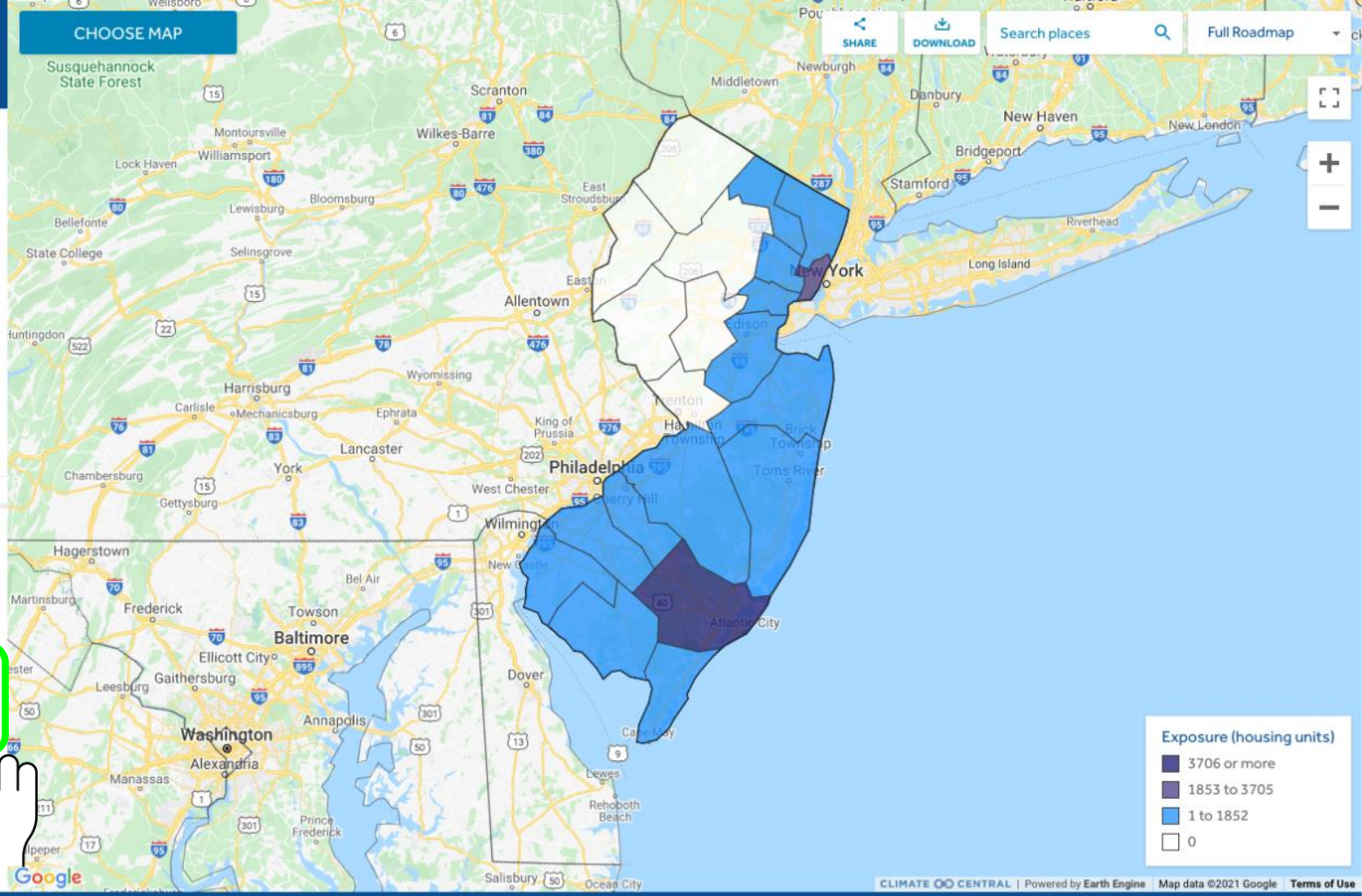

Exposure (housing units)
- 3706 or more
- 1853 to 3705
- 1 to 1852
- 0

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The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

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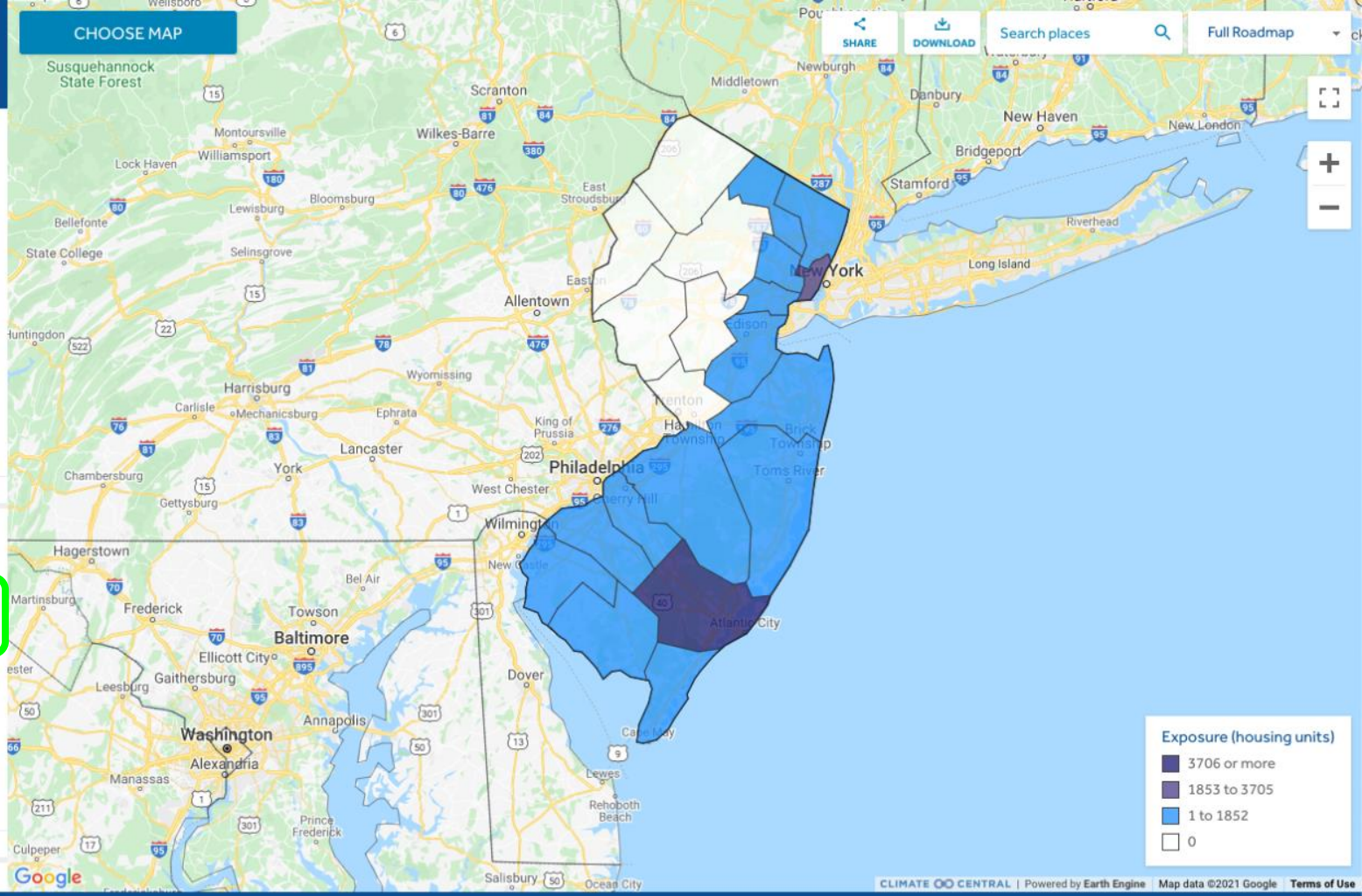

Exposure (housing units)

- 3706 or more
- 1853 to 3705
- 1 to 1852
- 0

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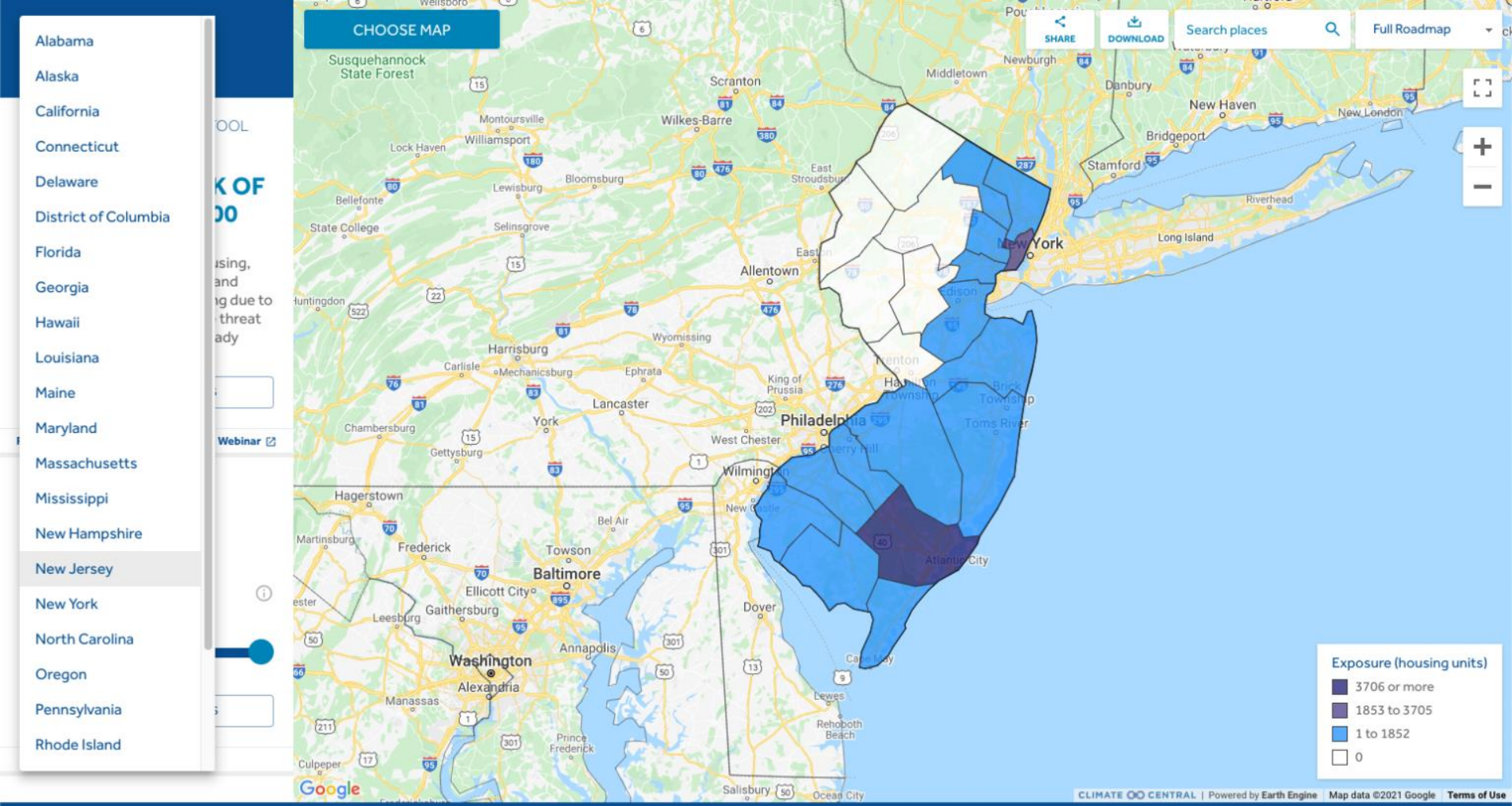
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Maine
Maryland
Massachusetts
Mississippi
New Hampshire
New Jersey
New York
North Carolina
Oregon
Pennsylvania
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Full Roadmap
Exposure (housing units)
3706 or more
1853 to 3705
1 to 1852
0
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AFFORDABLE HOUSING AT RISK OF FLOODING IN 2100

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

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Counties

STATE
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YEAR
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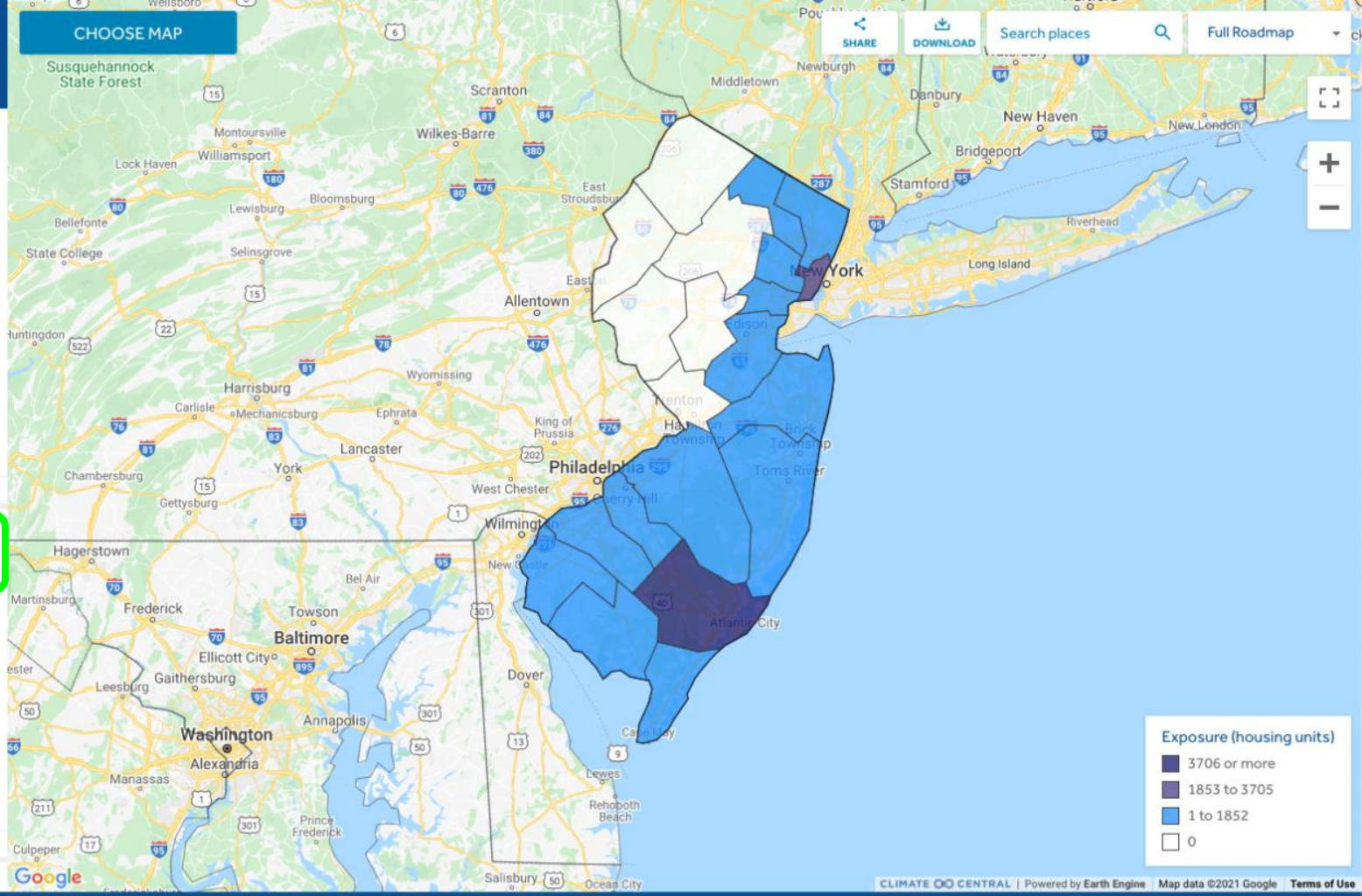

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AFFORDABLE HOUSING AT RISK OF FLOODING IN 2100

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

DETAILS AND LIMITATIONS

- States
- Congressional Districts
- Counties
- Cities
- State Legislative Districts - Lower Chamber
- State Legislative Districts - Upper Chamber
- ZIP Codes

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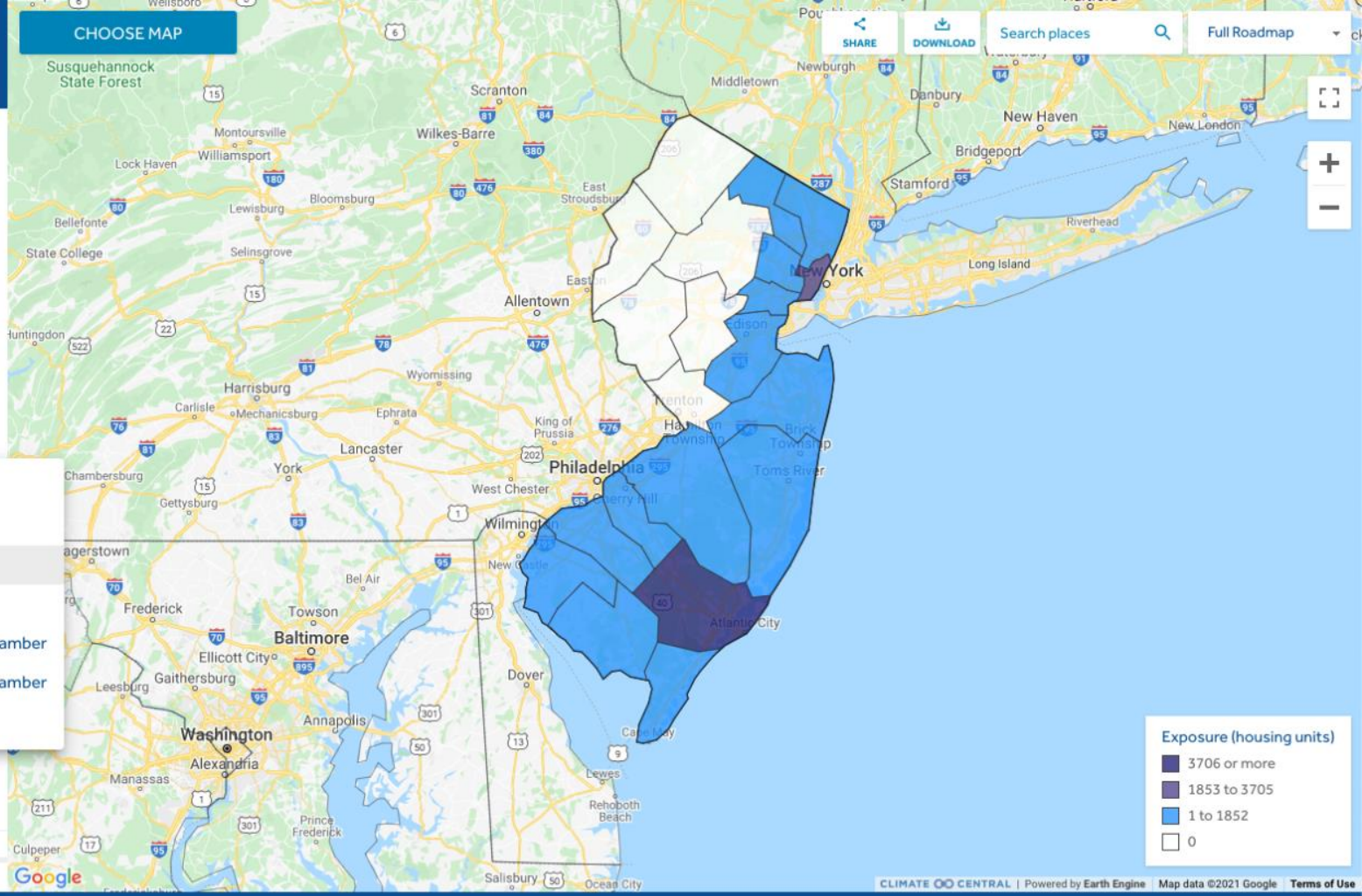

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COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

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AREAS TO COMPARE
Counties

STATE
New Jersey

YEAR
2050

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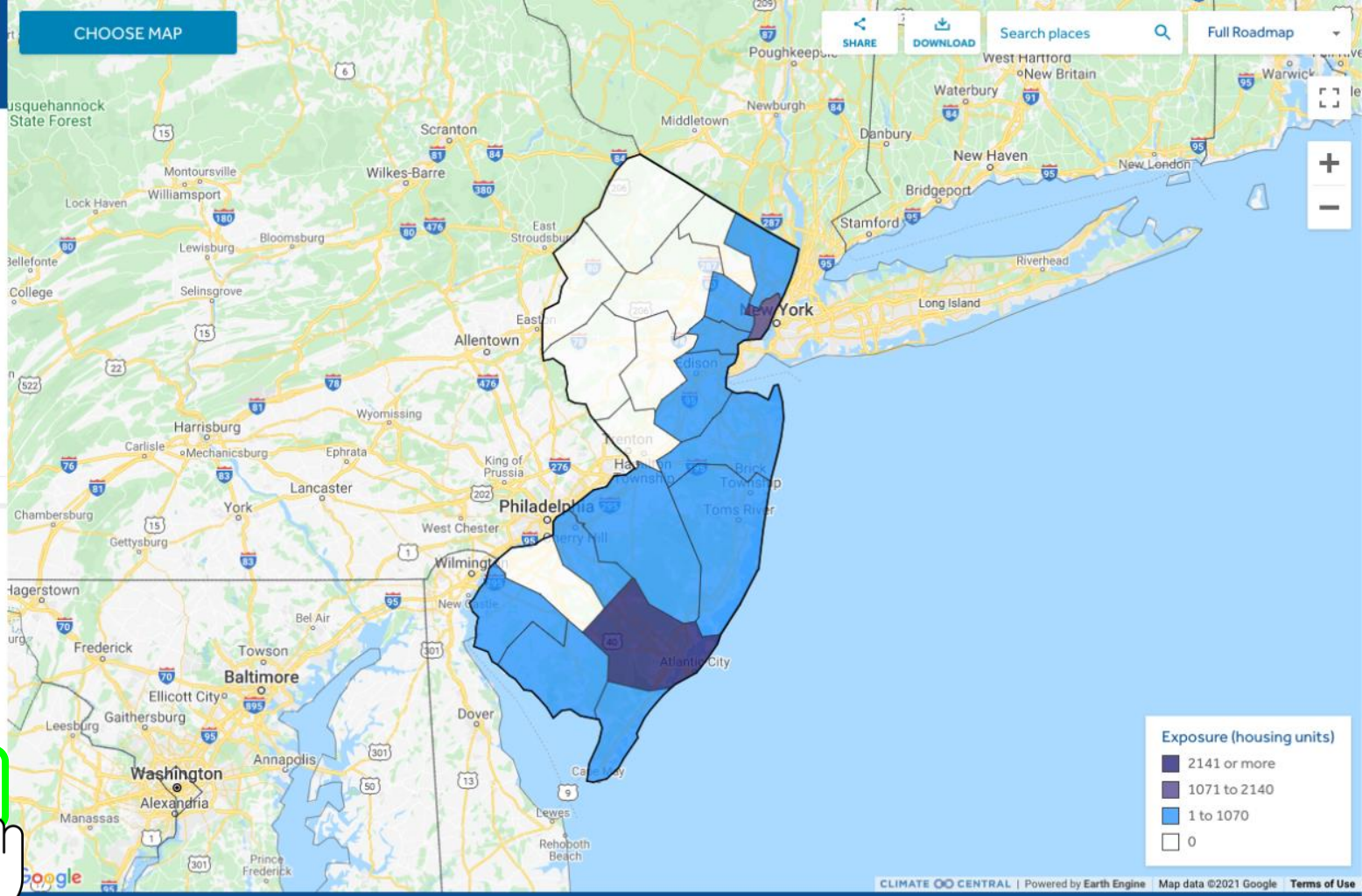

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Counties

STATE
New Jersey

YEAR
2100

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Housing Type

- (●) All affordable housing
- ( ) Subsidized housing only

POLLUTION SCENARIO
unchecked pollution

Estimate Type

- (●) Best estimate
- ( ) Good luck scenario
- ( ) Medium luck scenario
- ( ) Bad luck scenario

DONE

Exposure (housing units)
- 3706 or more
- 1853 to 3705
- 1 to 1852
- 0

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AFFORDABLE HOUSING AT RISK OF FLOODING IN 2100

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AREAS TO COMPARE
Counties

STATE
New Jersey

YEAR
2100

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Housing Type

- (●) All affordable housing
- ( ) Subsidized housing only

POLLUTION SCENARIO
moderate cuts

Estimate Type

- (●) Best estimate
- ( ) Good luck scenario
- ( ) Medium luck scenario
- ( ) Bad luck scenario

DONE

Exposure (housing units)
- 3354 or more
- 1677 to 3353
- 1 to 1676
- 0

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Congressional Di...

STATE

Massachusetts

YEAR

2050

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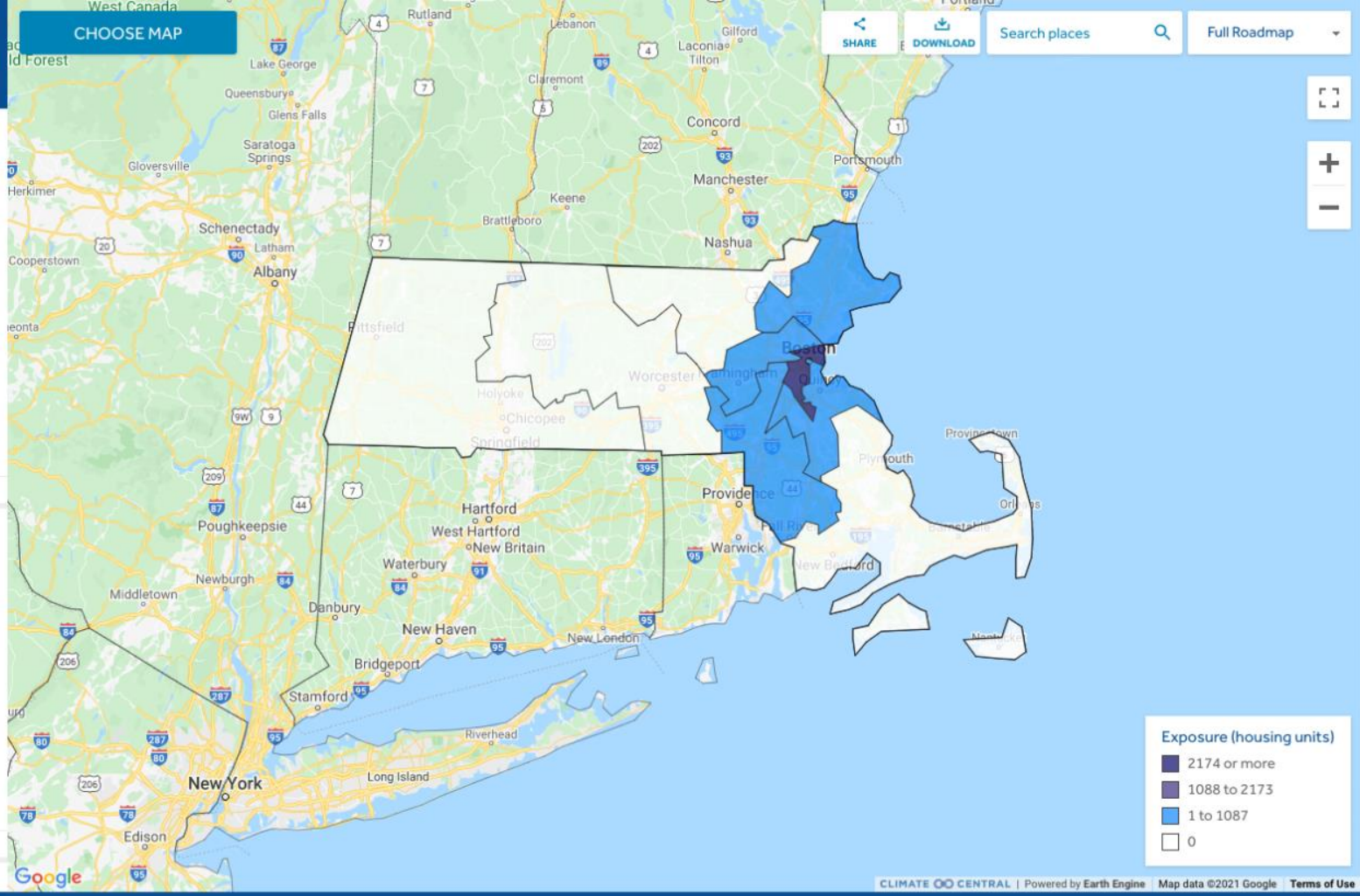

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ZIP Codes

COUNTY

Atlantic County

YEAR

2050

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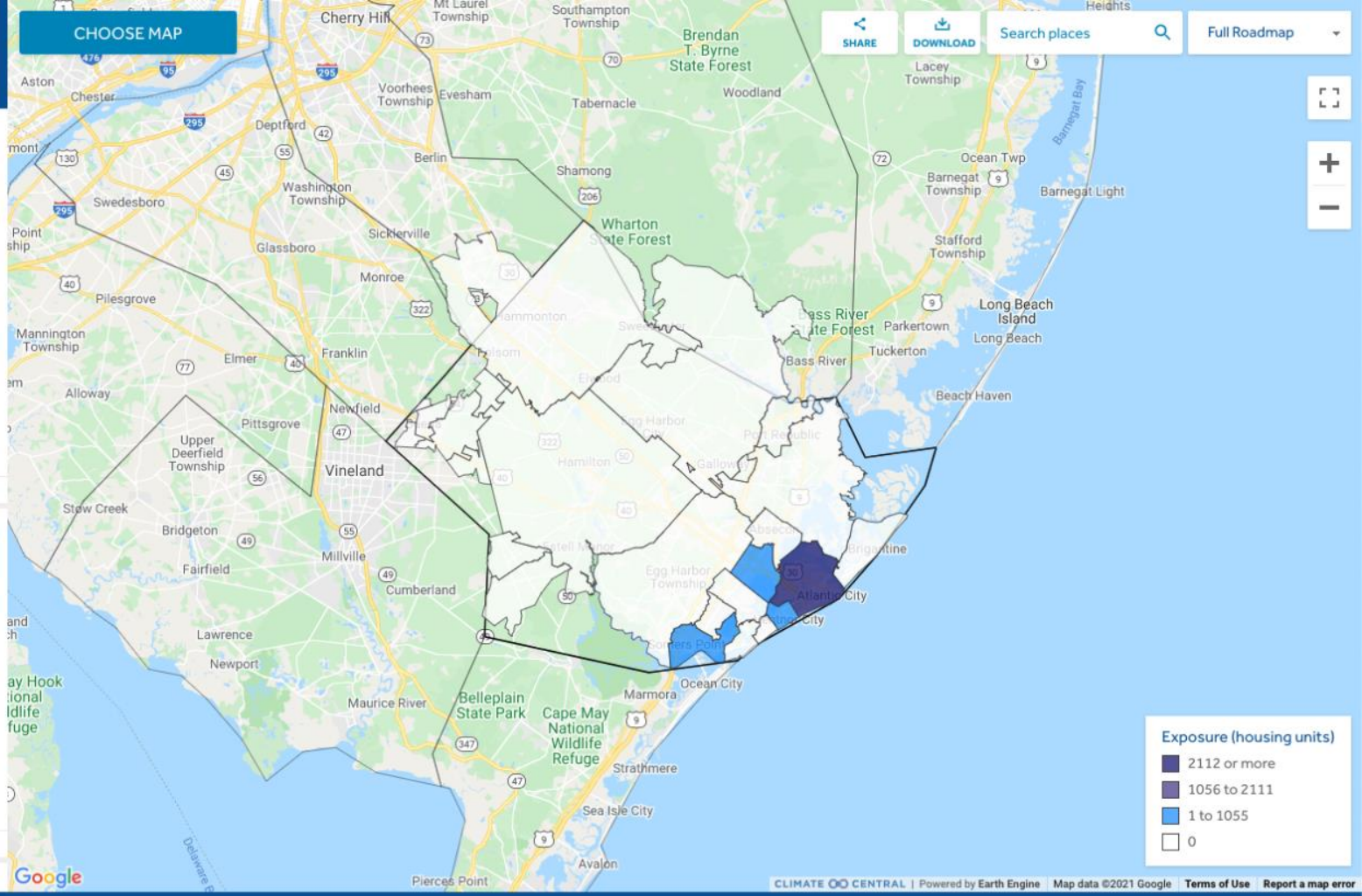

Exposure (housing units)

- 2112 or more
- 1056 to 2111
- 1 to 1055
- 0

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Counties

STATE
Florida

YEAR
2050

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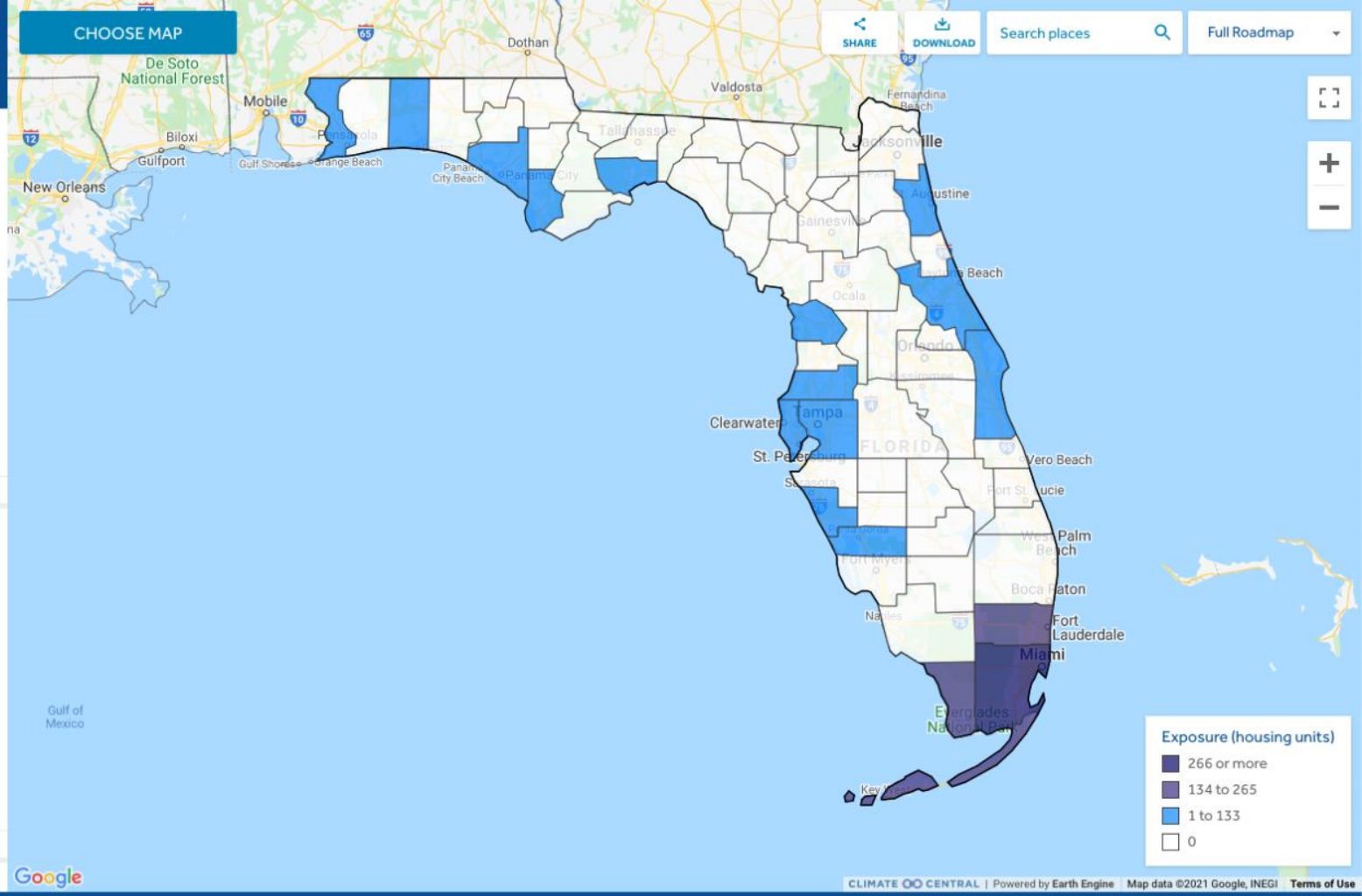

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COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

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Counties

STATE
Florida

YEAR
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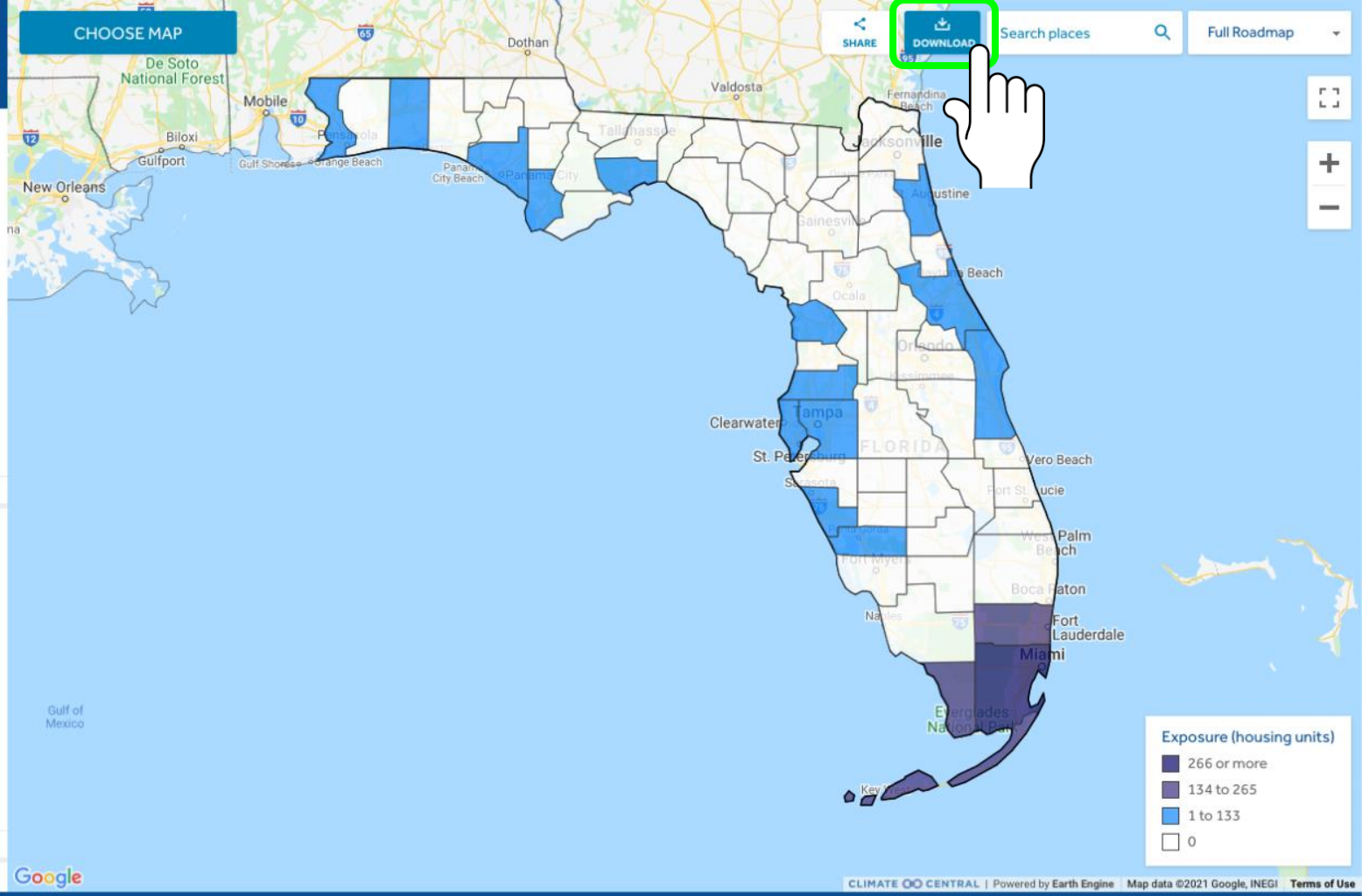

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Fact Sheet	PDF of this map, summary data, and related resources
Map Image	PNG of this map
CSV Data	Spreadsheet of the data associated with this map
Flood Layers	Global GIS map layers illustrating the extent of sea level rise and coastal flooding
Land Elevation Data	CoastalDEM®: Climate Central's proprietary, more accurate Digital Elevation Model for coastal areas

Also freely available: data, reports, and figures on coastal flood threats to population and infrastructure for thousands of jurisdictions in the **US** and **Caribbean**.

Contact us about assessing threats to your own assets or communities.

CANCEL

Exposure (housing units)
- 266 or more
- 134 to 265
- 1 to 133
- 0

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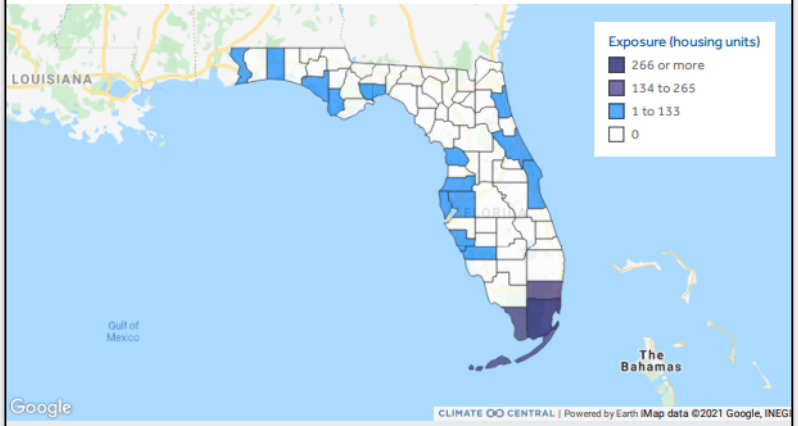
Affordable Housing at Risk of Coastal Flooding in Florida in 2050

The combination of the physical vulnerability of affordable housing, the socioeconomic vulnerability of residents, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

962 UNITS EXPOSED



Counties with the most affordable housing at risk of coastal flooding in 2050

1. Miami-Dade	10	399 Units
2. Monroe	5 + 1	216 Units
3. Broward	5	200 Units

= 40 Units

For more resources, state briefs, methods, full citations, limitations, and more see **coastal.climatecentral.org** (choose map: affordable housing)

About This Analysis

This analysis provides a best estimate of affordable housing units at risk if annual global climate pollution continues to climb through most of the century, eventually resulting in 3 or 4°C of warming by 2100 (a pathway known as RCP 8.5).

Frequently Asked Questions

What causes sea level to rise?
Warming temperatures due to climate change are causing ice to melt and water to expand, increasing the volume of ocean waters and causing the sea level to rise. Additionally, in some places land is sinking due to natural processes or extraction of water or fossil fuels from the ground.

What causes climate change?
The main activity causing climate change is the burning of fossil fuels, which emits heat-trapping pollution.

Can sea level rise be slowed?
Major cuts in heat-trapping pollution would reduce future sea level rise, but some sea level rise is inevitable due to pollution already in the atmosphere.

How does sea level rise affect flooding?
Sea level rise raises the platform atop which waves, tides, and storm surge arrive, making coastal floods more severe and more frequent.

Why is affordable housing particularly vulnerable to sea level rise?
Affordable housing tends to be older and is rarely equipped with resilience-enhancing features (such as flood proofing, off-grid energy, or backwater valves), due to the cost of such measures. Additionally, residents of affordable housing often lack the financial resources to repair, rebuild, or retreat from their housing after it is damaged by flood waters.

Terminology

Affordable housing includes both subsidized housing and naturally occurring affordable housing.

Subsidized housing is supported by federal or state programs.

Naturally occurring affordable housing is rented below local market rates or for less than 30% of local median income levels without rental assistance.

Exposure or Units Exposed denotes the number of affordable housing units in a given area expected to be exposed to at least one coastal flood risk event in a year.

A unit experiences a **coastal flood risk event** when the local coastal water level reaches higher than the lowest ground elevation of the building containing the unit.

"At risk of flooding" is a synonym for **exposure** to flooding, as defined above.

Reducing Your Risk

- Actions to curb heat-trapping pollution will reduce sea level rise, but some rise is unavoidable.
- Learn more about the actions you can take yourself at **sealevel.climatecentral.org/flood-preparation**.
- **Contact us** to learn how we can help your community participate in **FEMA's Community Rating System**.
- Enterprise Community Partners' **Portfolio Protect tool** identifies properties' risk from climate disasters.
- Enterprise Community Partners' **Keep Safe guide** shows how to make homes more resistant to natural disasters.
- New Ecology's **Multifamily Housing Resiliency Audit** provides actions to improve resiliency to severe weather.

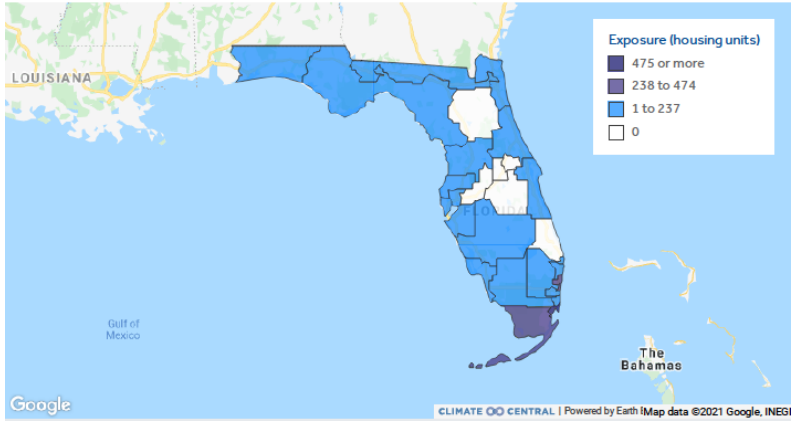
Climate Central is a non-profit science and news organization providing authoritative information to help the public and policymakers make sound decisions about climate and energy.

Learn more about what is at risk from sea level rise and coastal flooding at **coastal.climatecentral.org"** and **riskfinder.org**

Affordable Housing at Risk of Coastal Flooding in Florida in 2070

The combination of the physical vulnerability of affordable housing, the socioeconomic vulnerability of residents, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

2092 UNITS EXPOSED



Congressional Districts with the most affordable housing at risk of coastal flooding in 2070

1. FL-27	9 houses	712 Units
2. FL-26	5 houses	379 Units
3. FL-22	3 houses + 1	276 Units

= 80 Units

For more resources, state briefs, methods, full citations, limitations, and more see coastal.climatecentral.org (choose map: affordable housing)

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About This Analysis

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Frequently Asked Questions

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Warming temperatures due to climate change are causing ice to melt and water to expand, increasing the volume of ocean waters and causing the sea level to rise. Additionally, in some places land is sinking due to natural processes or extraction of water or fossil fuels from the ground.

What causes climate change?
The main activity causing climate change is the burning of fossil fuels, which emits heat-trapping pollution.

Can sea level rise be slowed?
Major cuts in heat-trapping pollution would reduce future sea level rise, but some sea level rise is inevitable due to pollution already in the atmosphere.

How does sea level rise affect flooding?
Sea level rise raises the platform atop which waves, tides, and storm surge arrive, making coastal floods more severe and more frequent.

Why is affordable housing particularly vulnerable to sea level rise?
Affordable housing tends to be older and is rarely equipped with resilience-enhancing features (such as flood proofing, off-grid energy, or backwater valves), due to the cost of such measures. Additionally, residents of affordable housing often lack the financial resources to repair, rebuild, or retreat from their housing after it is damaged by flood waters.

Terminology

Affordable housing includes both subsidized housing and naturally occurring affordable housing.

Subsidized housing is supported by federal or state programs.

Naturally occurring affordable housing is rented below local market rates or for less than 30% of local median income levels without rental assistance.

Exposure or Units Exposed denotes the number of affordable housing units in a given area expected to be exposed to at least one coastal flood risk event in a year.

A unit experiences a **coastal flood risk event** when the local coastal water level reaches higher than the lowest ground elevation of the building containing the unit.

"At risk of flooding" is a synonym for **exposure** to flooding, as defined above.

Reducing Your Risk

- Actions to curb heat-trapping pollution will reduce sea level rise, but some rise is unavoidable.
- Learn more about the actions you can take yourself at **sealevel.climatecentral.org/flood-preparation**.
- **Contact us** to learn how we can help your community participate in **FEMA's Community Rating System**.
- Enterprise Community Partners' **Portfolio Protect tool** identifies properties' risk from climate disasters.
- Enterprise Community Partners' **Keep Safe guide** shows how to make homes more resistant to natural disasters.
- New Ecology's **Multifamily Housing Resiliency Audit** provides actions to improve resiliency to severe weather.

Climate Central is a non-profit science and news organization providing authoritative information to help the public and policymakers make sound decisions about climate and energy.

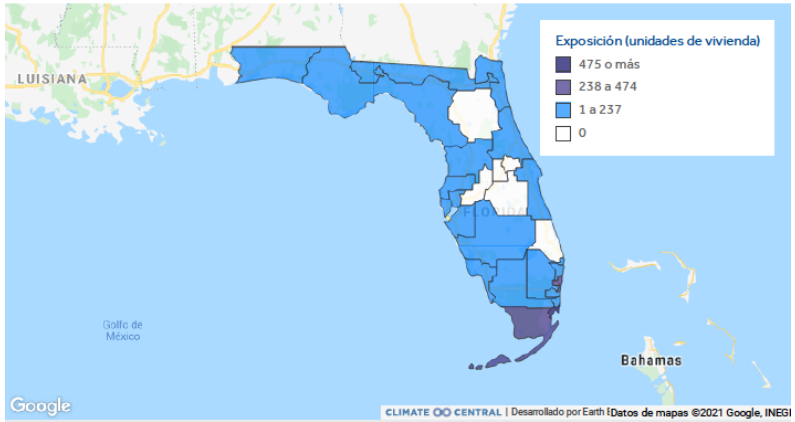
Learn more about what is at risk from sea level rise and coastal flooding at **coastal.climatecentral.org"** and **riskfinder.org**

CLIMATE CENTRAL

Vivienda Asequible en Riesgo de Inundación Costera en Florida en 2070

La combinación de la vulnerabilidad física de una vivienda asequible, la vulnerabilidad socioeconómica y las inundaciones costeras más frecuentes debido al aumento del nivel del mar presenta una triple amenaza para los residentes de las ya escasas viviendas asequibles de Estados Unidos.

2092 UNIDADES EXPUESTAS



Distritos Congresionales es con la mayoría de vivienda asequible en riesgo de inundaciones costeras en 2070

1. FL-27	🏠 🏠 🏠 🏠 🏠 🏠 🏠 🏠 🏠	712 Unidades
2. FL-26	🏠 🏠 🏠 🏠 🏠	379 Unidades
3. FL-22	🏠 🏠 🏠 1	276 Unidades

🏠 = 80 Unidades

Para obtener más recursos, resúmenes estatales, métodos, citas completas, limitaciones y más, consulte coastal.climatecentral.org (elija un mapa: viviendas asequibles)

CLIMATE CENTRAL

Acerca de Este Análisis

Este análisis proporciona una mejor estimación de las unidades de vivienda asequible en riesgo si la contaminación climática global anual continúa aumentando durante la mayor parte del siglo, lo que eventualmente resultará en un calentamiento de 3 a 4 ° C para 2100 (una vía conocida como RCP 8,5).

Preguntas frecuentes

¿Qué causa el aumento del nivel del mar?
El aumento de las temperaturas debido al cambio climático está provocando que el hielo se derrita y el agua se expanda, lo que aumenta el volumen de las aguas del océano y hace que suba el nivel del mar. Además, en algunos lugares la tierra se está hundiendo debido a procesos naturales o extracción de agua o combustibles fósiles del suelo.

¿Qué causa el cambio climático?
La principal actividad que causa el cambio climático es la quema de combustibles fósiles, que emite contaminación que atrapa el calor.

¿Se puede dilatar el aumento del nivel del mar?
Los recortes importantes en la contaminación que atrapa el calor reducirían el aumento futuro del nivel del mar, pero es inevitable un aumento del nivel del mar debido a la contaminación que ya está en la atmósfera.

¿Cómo afecta el aumento del nivel del mar a las inundaciones?
El aumento del nivel del mar eleva la plataforma sobre la que llegan olas, mareas y marejadas ciclónicas, lo que hace que las inundaciones costeras sean más graves y frecuentes.

¿Cómo se determinó el riesgo de inundaciones costeras para las viviendas asequibles?
Las viviendas asequibles tienden a ser más antiguas y rara vez están equipadas con características que mejoren la resiliencia (como protección contra inundaciones, energía fuera de la red o válvulas de remanso), debido al costo de tales medidas. Además, los residentes de viviendas asequibles a menudo carecen de los recursos financieros para reparar, reconstruir o retirarse de sus viviendas después de que hayan sido dañadas por las inundaciones.

Terminología

Viviendas asequibles incluyen tanto la vivienda subvencionada como la vivienda asequible normal o de origen natural.

Las viviendas subsidiadas son apoyadas por programas federales o estatales.

Las viviendas asequibles normales o no subsidiadas se alquilan por debajo de las tarifas del mercado local o por menos del 30% de los niveles de ingresos medios locales sin asistencia para el alquiler.

Exposición o Unidades Expuestas denota la cantidad de unidades de vivienda asequible en un área determinada que se espera que estén expuestas a al menos un evento de riesgo de inundación costera en un año.

Una unidad experimenta un **evento de riesgo de inundación costera** cuando el nivel del agua costera local alcanza un nivel más alto que la elevación del suelo más baja de la edificación que contiene la unidad.

Reduzca Su Riesgo

- Las acciones para frenar la contaminación que atrapa el calor reducirán el aumento del nivel del mar, pero algún aumento es inevitable.
- Obtenga más información sobre las acciones que puede realizar usted mismo en **ready.gov/floods**.
- **La guía Keep Safe** de Enterprise Community Partners para hacer que los hogares sean más resistentes a tormentas, terremotos e inundaciones.

Climate Central es una organización científica y noticiosa sin fines de lucro que proporciona información autorizada para ayudar al público y a los legisladores a tomar decisiones acertadas sobre el clima y la energía.

Obtenga más información sobre lo que está en riesgo por el aumento del nivel del mar y las inundaciones costeras en **coastal.climatecentral.org*** y **riskfinder.org**

CLIMATE CENTRAL

CLIMATE CENTRAL

COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

The combination of physical vulnerability of affordable housing, socioeconomic vulnerability, and more frequent coastal flooding due to sea level rise presents a triple threat to residents of America's already scarce affordable housing.

DETAILS AND LIMITATIONS

Report | Scientific Paper | Webinar

AREAS TO COMPARE
Counties

STATE
Florida

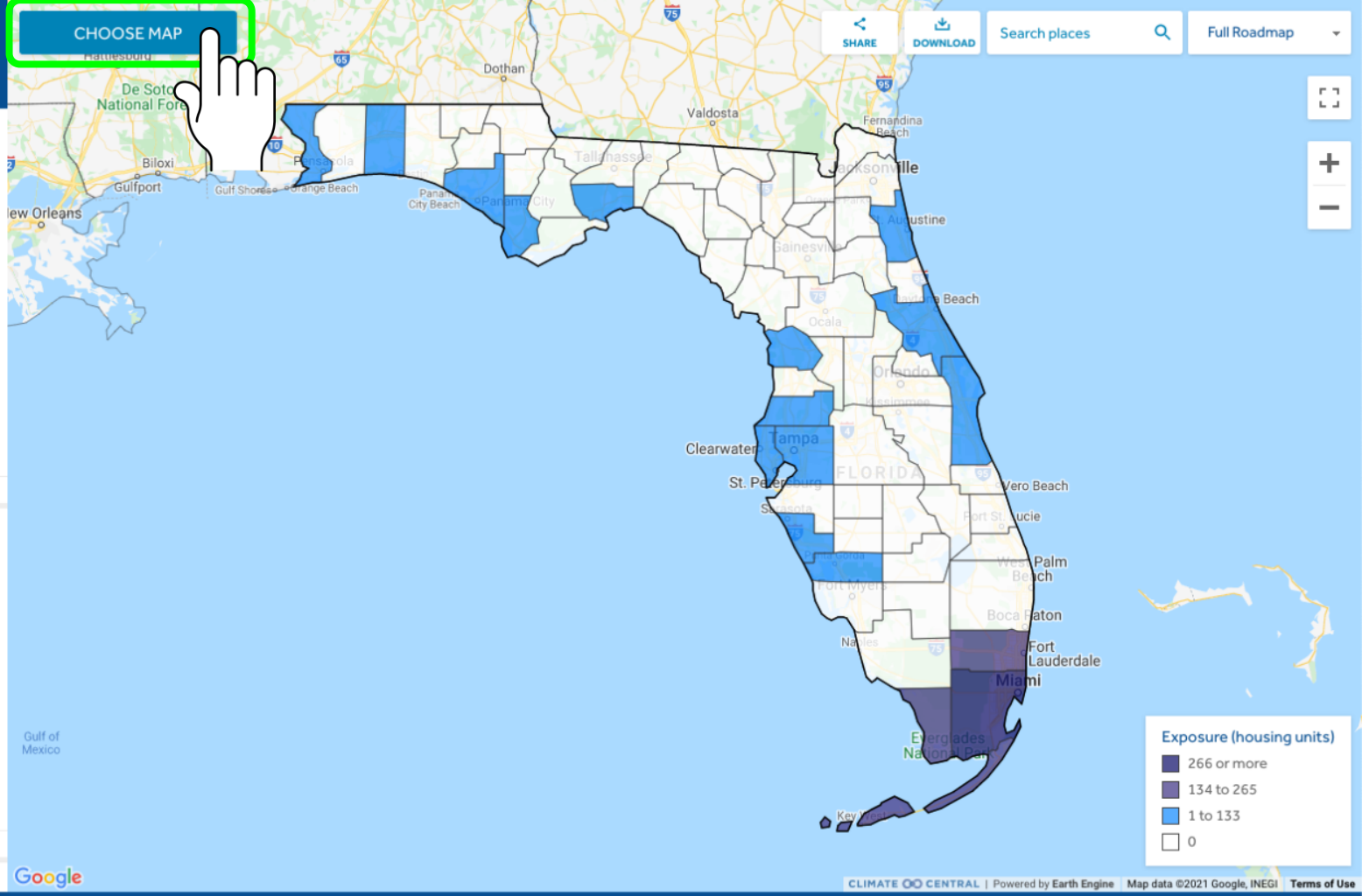
YEAR
2050

CHANGE OTHER SETTINGS

Video Tutorial

CHOOSE MAP

SHARE | DOWNLOAD | Search places | Full Roadmap



CLIMATE CENTRAL

COASTAL RISK SCREENING TOOL

AFFORDABLE HOUSING AT RISK OF FLOODING IN 2050

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DETAILS AND LIMITATIONS

Report | Scientific Paper | Webinar

AREAS TO COMPARE
Counties

STATE
Florida

YEAR
2050

CHANGE OTHER SETTINGS

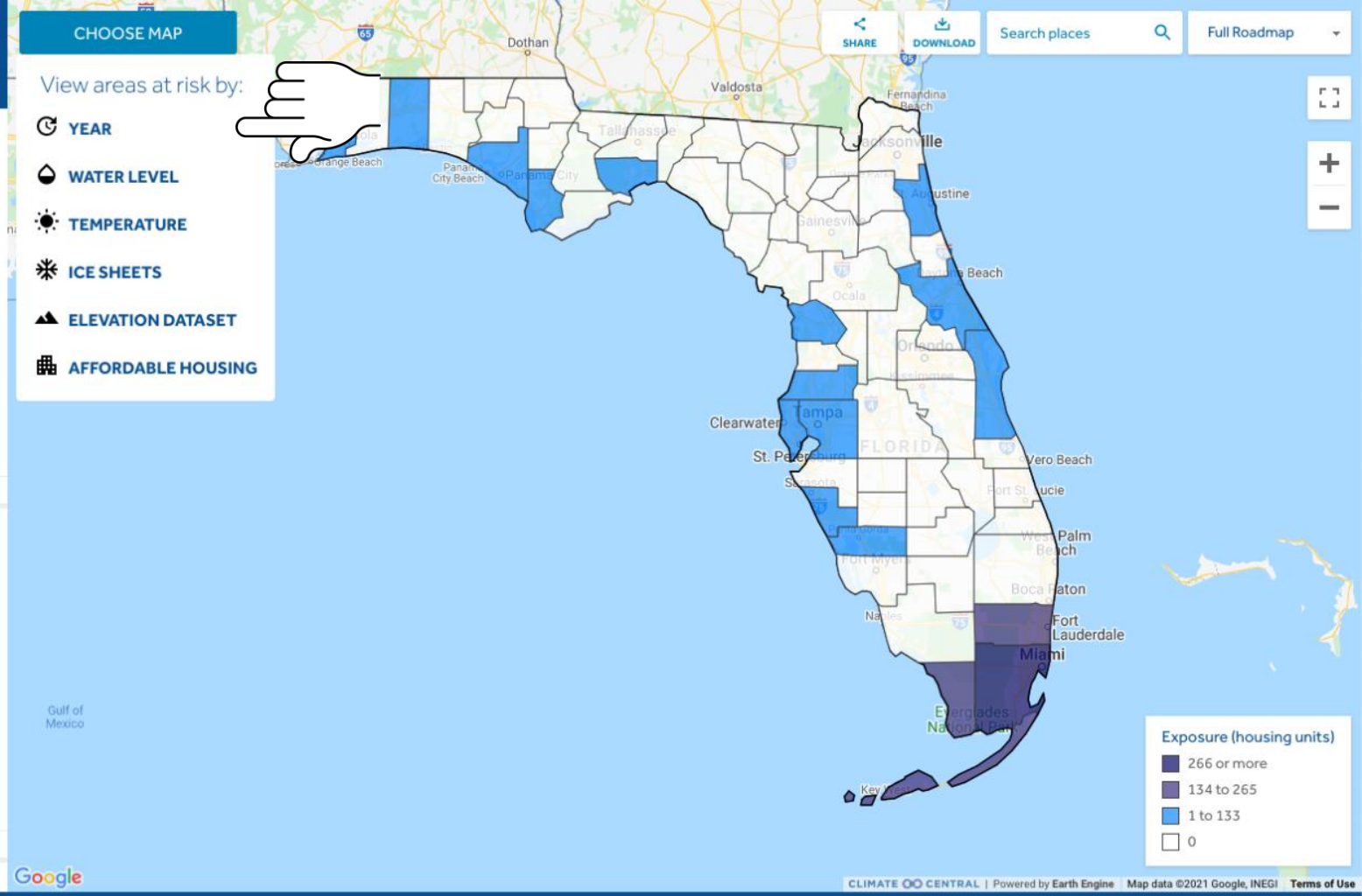
Video Tutorial

CHOOSE MAP

View areas at risk by:

- YEAR
- WATER LEVEL
- TEMPERATURE
- ICE SHEETS
- ELEVATION DATASET
- AFFORDABLE HOUSING

SHARE | DOWNLOAD | Search places | Full Roadmap



CLIMATE CENTRAL

COASTAL RISK SCREENING TOOL

LAND PROJECTED TO BE BELOW ANNUAL FLOOD LEVEL IN 2050

Explore sea level rise and coastal flood threats by adjusting the controls below.

DETAILS AND LIMITATIONS

YEAR

2050

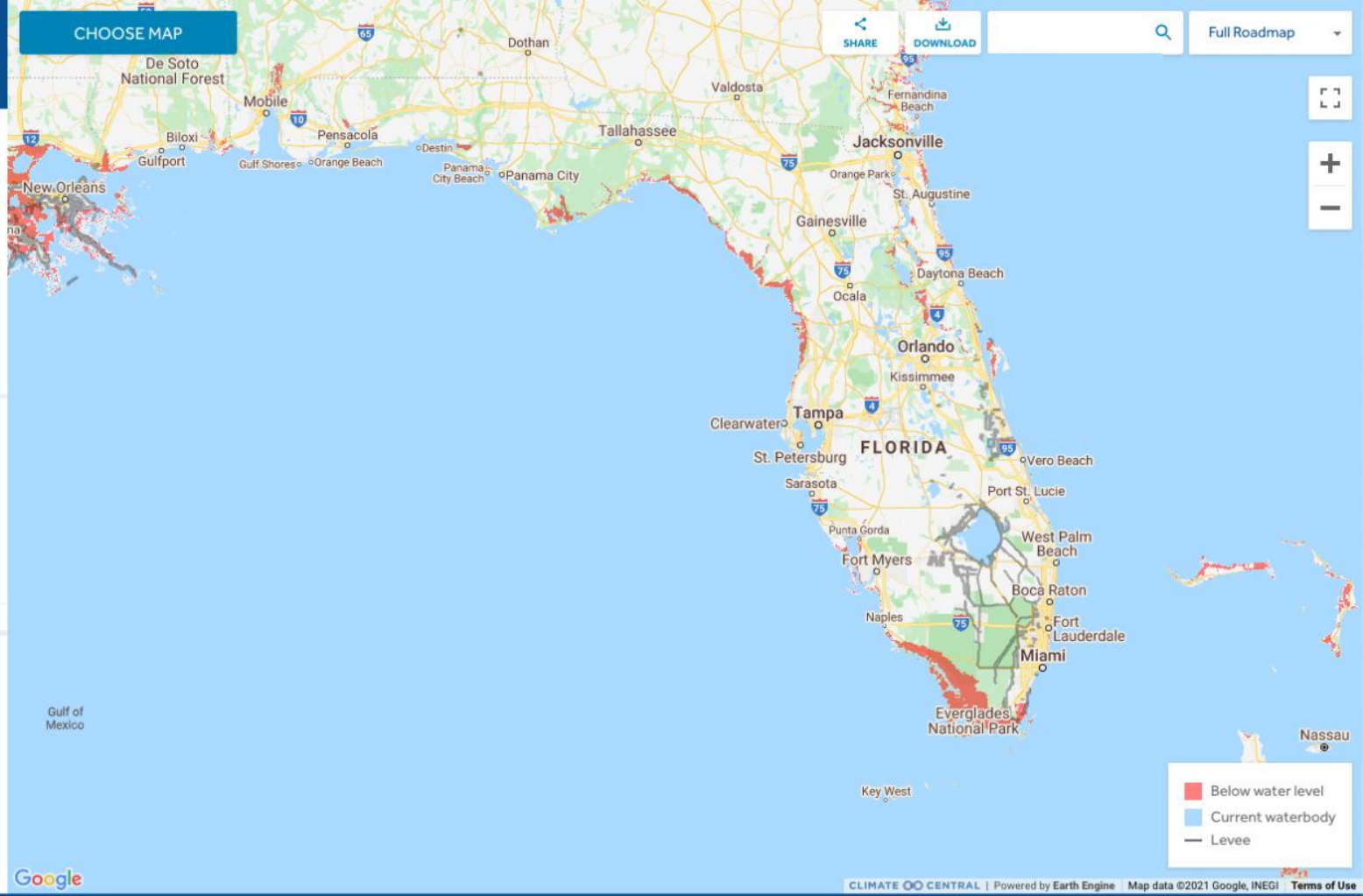
CHANGE OTHER SETTINGS

Video Tutorial

CHOOSE MAP

SHARE DOWNLOAD

Full Roadmap



Coastal.climatecentral.org

(Choose map: Affordable housing)

Queries to: Program on Sea Level Rise

sealevel@climatecentral.org

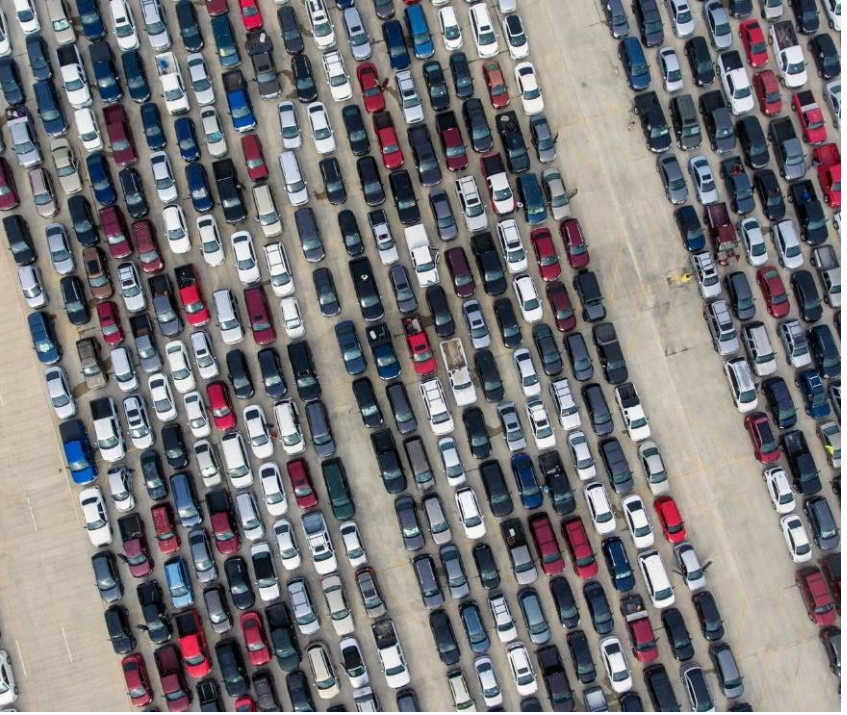
CLIMATE CENTRAL

Preserving Affordable Housing From Climate Risk

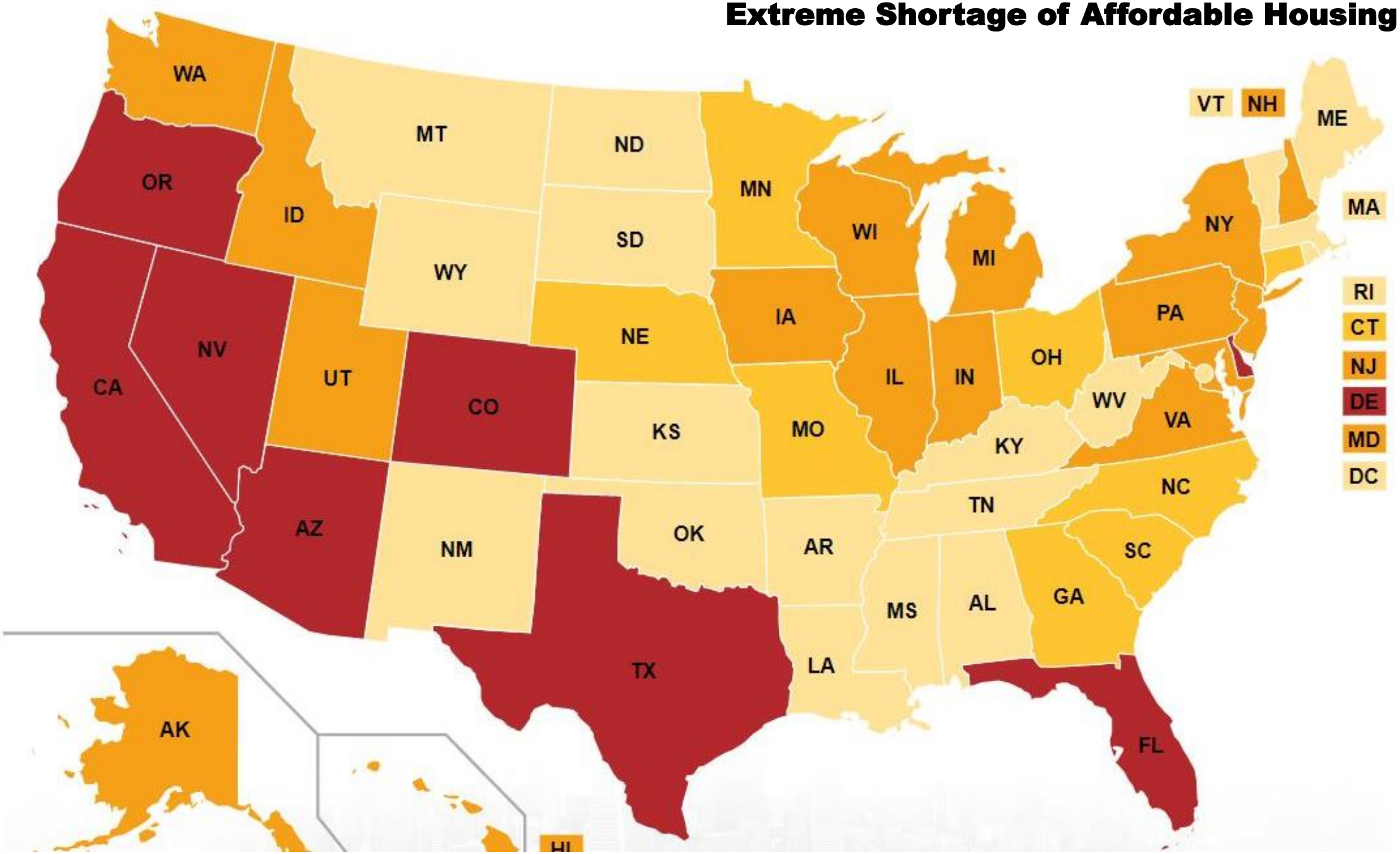
Enterprise: Who We Are

Create opportunity for low- and moderate-income people through fit, affordable housing in diverse, thriving communities.

Collaborating Partners: Federal, State, Local



Extreme Shortage of Affordable Housing



What are the Impacts?

- Loss of Affordable housing
- Displacement of Households;
- Impact to Workforce and Economy;
- Lowered property values;
- Lowered Tax Base

Superstorm Sandy

STRATEGIES FOR MULTIFAMILY HOUSING RESILIENCE

Community

Strategies that encourage behavior which enhances resilience.

Adaptation

Strategies that improve a facility's ability to adapt to changing climate conditions.

Protection

Strategies to reduce a building's vulnerability to extreme weather.

Backup

Strategies that provide critical needs when a facility loses power or other services.

READY TO RESPOND

Strategies for Multifamily Building Resilience Vol. 1

Disaster Preparedness for Affordable Housing Organizations

Enterprise green communities®

Moxby Rigby

Freeport Public Housing

KEEP SAFE

A GUIDE FOR RESILIENT HOUSING DESIGN IN ISLAND COMMUNITIES

Enterprise

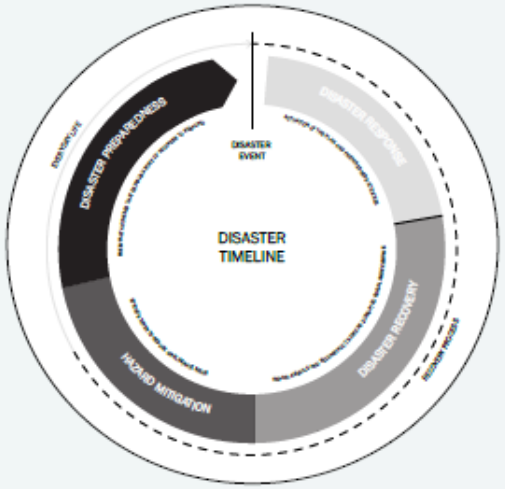
ASOCIACIÓN DE CONSTRUCTORES DE PUERTO RICO

MANTÉNGASE SEGURO

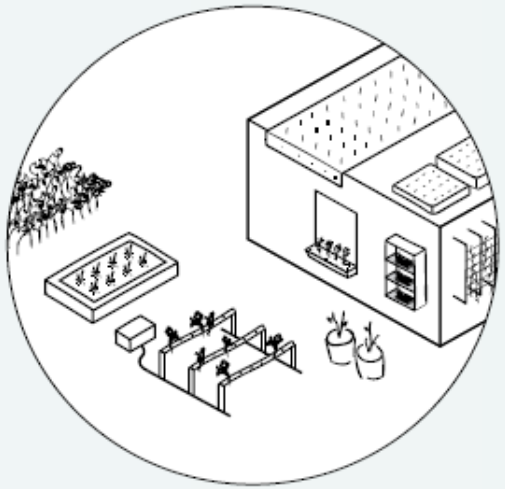
UNA GUÍA PARA EL DISEÑO DE VIVIENDAS RESILIENTES EN COMUNIDADES ISLEÑAS

Enterprise

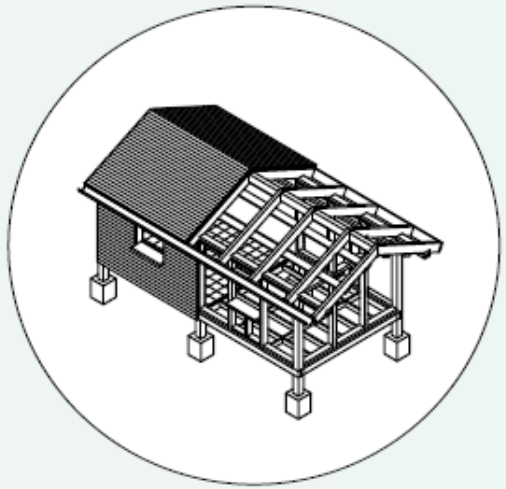
ASOCIACIÓN DE CONSTRUCTORES DE PUERTO RICO



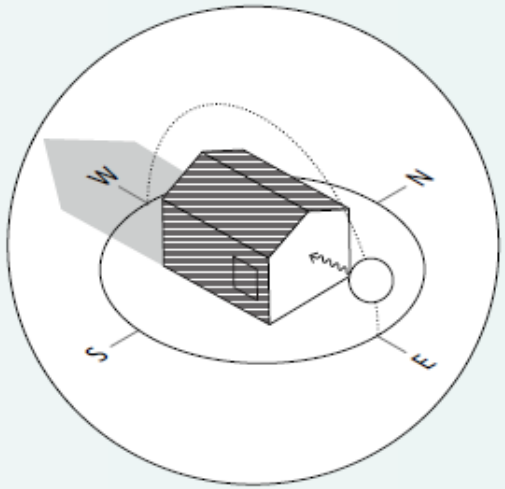
Introduction



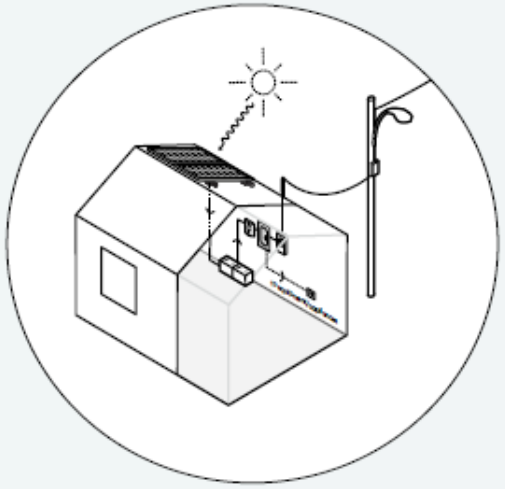
Chapter 1: A Safer Site



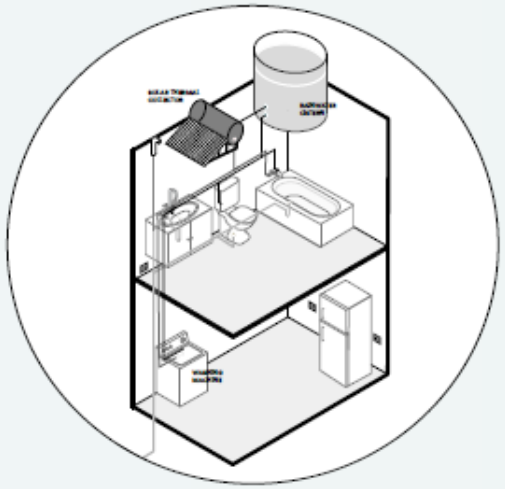
Chapter 2: Building Protection



Chapter 3: Passive Habitability

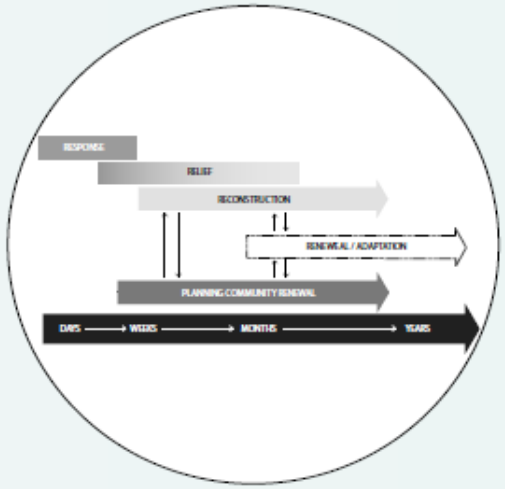


Chapter 4: Energy Generation



Chapter 5: Water Management

Chapter 6: Household Preparedness



Chapter 7: Community Engagement

KEEP SAFE *Miami*

ARE YOU READY TO RESPOND?

Disaster can strike at any time, and a poorly managed response can put property and lives at risk.

This Toolkit equips **multifamily affordable building owners & managers** with a plan to address crisis.

Watch the video or scroll down to learn more.

The smaller photograph shows w
immediately after Hurricane San
The New York Times

Fannie Mae

BELLWETHER ENTERPRISE

Enterprise

Building Resilient Housing

Funding

Affordable Housing
Mitigation and Adaptation
Operations
Staffing Capacity

Technical Assistance

Identifying Risk
Finding Solutions
Building Capacity to Respond

Stronger Infrastructure

Stable Grid
Resilient Systems

Planning

Participatory
Equity at Forefront
Model sharing

Laurie Schoeman
National Director, Resilience and Disaster Recovery
lschoeman@enteprrisecommunity.org

Protecting Vulnerable Communities from Climate Impacts:

Investing in Communities for the Long Term

Anna Weber

Natural Resources Defense Council

Environmental and Energy Study Institute (EESI) & Energy Efficiency for All (EEFA) briefing | April 16, 2021

The Washington Post

Climate and Environment

As rainstorms grow more severe and frequent, communities fail to prepare for risks

Lack of a current, national rainfall database means some states use 60-year-old statistics as they design roads, bridges and dams that are supposed to last 50 years

By **Jim Morrison**

April 9, 2021 at 5:30 a.m. EDT

https://www.washingtonpost.com/climate-environment/2021/04/09/climate-change-rainfall/

Design standards for roads, storm-water systems, dams and construction regulations — even whether a home is in a flood plain and requires flood insurance — are based on precipitation estimates.

https://www.washingtonpost.com/climate-environment/2021/04/09/climate-change-rainfall/

But the increasing number of extreme storms means the past is not a reliable predictor of the future.

“**So if you’re building a house to last for 30 years, or a piece of infrastructure to last for 50 to 100 years, you’re basing it on out-of-date data from the get-go**,” said Alice Hill, who served in the Obama administration as a special assistant preparing for climate change.

“**And that’s doomed to failure because these events are accelerating**.”

https://www.washingtonpost.com/climate-environment/2021/04/09/climate-change-rainfall/

Climate-Smart Codes and Standards

The problem:

- Current building standards require designing according to past climate conditions, assuming that those conditions will continue into the future.
- Climate change invalidates that assumption. This makes the nation's housing and infrastructure increasingly vulnerable to damage from flooding and other natural hazards.

Homes are flooding outside FEMA's 100-year flood zones, and racial inequality is showing through

September 24, 2020 3.10pm EDT

https://theconversation.com/homes-are-flooding-outside-femas-100-year-flood-zones-and-racial-inequality-is-showing-through-146728

Climate-Smart Codes and Standards

Examples of solutions:

- Implementing **flood risk management standards** that require publicly funded projects to be built to a higher margin of safety against extreme floods and sea level rise.
- Updating the **NFIP's minimum floodplain development standards** to help ensure climate-smart land use decisions in 22,000+ communities.
- Adopting **modern, protective building codes** to save lives and money.
- Investing in floodplain mapping—including **advisory maps of future conditions**—and updated precipitation statistics to provide access to the most up-to-date planning information.

For more information:

https://www.nrdc.org/experts/joel-scata/flood-protection-standard-needed
https://www.floods.org/whats-new/asfpm-and-nrdc-file-petition-to-strengthen-nfip-minimum-standards/
https://www.npr.org/2016/09/15/492260099/outdated-fema-flood-maps-dont-account-for-climate-change
https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report

Flood Risk Disclosure

The problem:

- Many states do not require sellers to inform prospective homebuyers about a property's flood history.
- Disclosure requirements for renters are almost nonexistent.
- As a result, too many people learn of their home's propensity to flood only after disaster strikes.

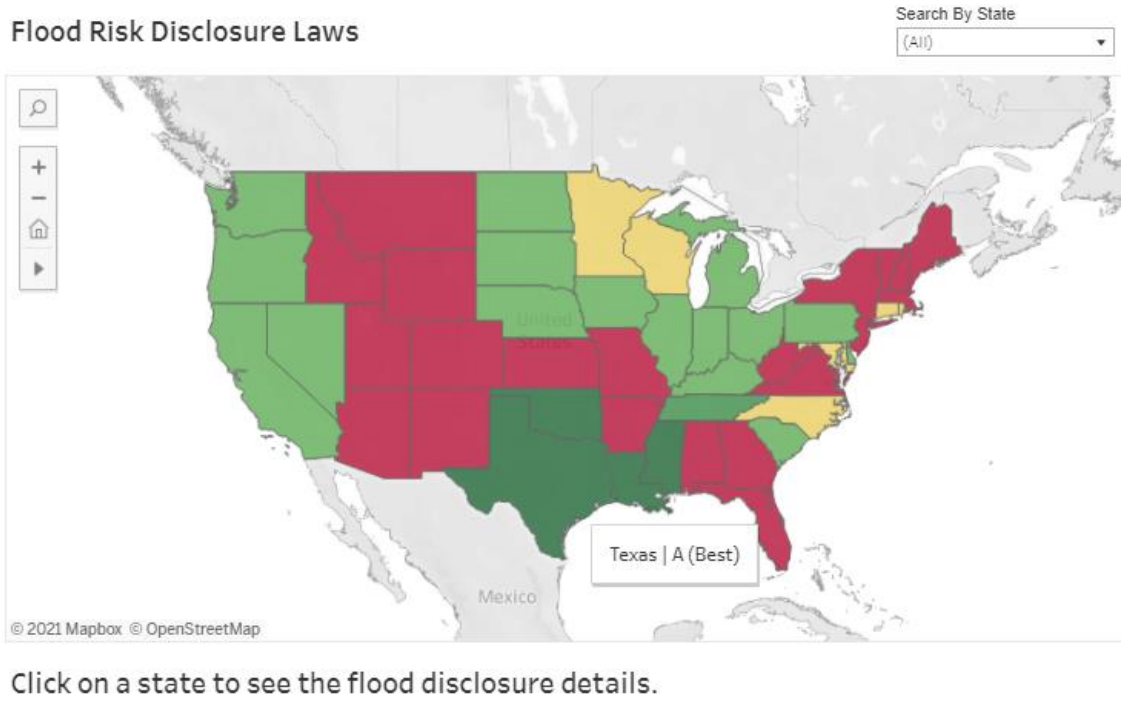


Image from NRDC, https://www.nrdc.org/flood-disclosure-map

"It's not a matter of if, but when. With climate change, we seem to be getting more and more rain, heavier rain, and it's been a lot more unpredictable."

SCOTT HARRIS of Baltimore

Undisclosed: Most Homebuyers And Renters Aren't Warned About Flood Or Wildfire Risk

October 18, 2020 · 9:00 AM ET

https://www.npr.org/2020/10/18/918725965/undisclosed-most-homebuyers-and-renters-arent-warned-about-flood-or-wildfire-ris

Flood Risk Disclosure

Examples of solutions:

- Incentivizing the adoption of comprehensive **flood risk disclosure requirements** at the state level.
- Creating **a public, open data system** to transparently share the government's flood risk and damage information.
- Guaranteeing both homeowners and renters a **"right to know"** about their home's history of flood insurance coverage, damage claims paid, and whether there is a legal requirement to purchase flood insurance.

For more information:
https://www.nrdc.org/flood-disclosure-map
https://riskcenter.wharton.upenn.edu/digital-dialogues/improving-flood-risk-disclosure/
https://www.npr.org/2020/10/20/921132721/living-in-harms-way-why-most-flood-risk-is-not-disclosed

Pre-Disaster Hazard Mitigation

The problem:

- Not enough funding is available for planning and projects that reduce risk before a disaster.
- Complex application requirements mean lower-capacity communities can't access grants.
- Long timeframes and other barriers prevent low-income households from benefiting.

Image from FEMA, https://emilms.fema.gov/is_0727/groups/34.html

Disparities in Disaster Mitigation Resources and Information Can Leave Households Unprepared for Climate Threats

July 6, 2020

Olivia Arena

The effects of climate change—from more frequent and stronger disaster events to chronic flooding and heat waves—will blanket entire regions. But the resources, attention, and political will for ensuring everyone is prepared are not equitably distributed.

https://www.urban.org/urban-wire/disparities-disaster-mitigation-resources-and-information-can-leave-households-unprepared-climate-threats

Pre-Disaster Hazard Mitigation

Examples of solutions:

- Increasing **funding for pre-disaster mitigation**—including dedicated funding for low-income/frontline communities.
- Providing communities with **technical assistance** and resources for capacity building and planning.
- Permanently authorizing the Community Development Block Grant - Disaster Recovery (**CDBG-DR**) program.
- **Streamlining grant applications** and updating benefit-cost assessment and cost-share requirements.
- Using innovative approaches for home buyouts, green infrastructure, and other solutions **to give families and communities more agency** over adaptation options.

For more information:
https://www.nibs.org/projects/natural-hazard-mitigation-saves-2019-report
https://www.nrdc.org/resources/going-under-long-wait-times-post-flood-buyouts-leave-homeowners-underwater
https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2018/09/natural-disaster-mitigation-spending--not-comprehensively-tracked

BRIEFING ROOM

FACT SHEET: The American Jobs Plan

MARCH 31, 2021 • STATEMENTS AND RELEASES

“Every dollar spent on rebuilding our infrastructure... will be used to prevent, reduce, and withstand the impacts of the climate crisis.”

https://www.whitehouse.gov/briefing-room/statements-releases/2021/03/31/fact-sheet-the-american-jobs-plan/

Protecting Vulnerable Communities from Climate Impacts

April 16, 2021

Heather Rosenberg

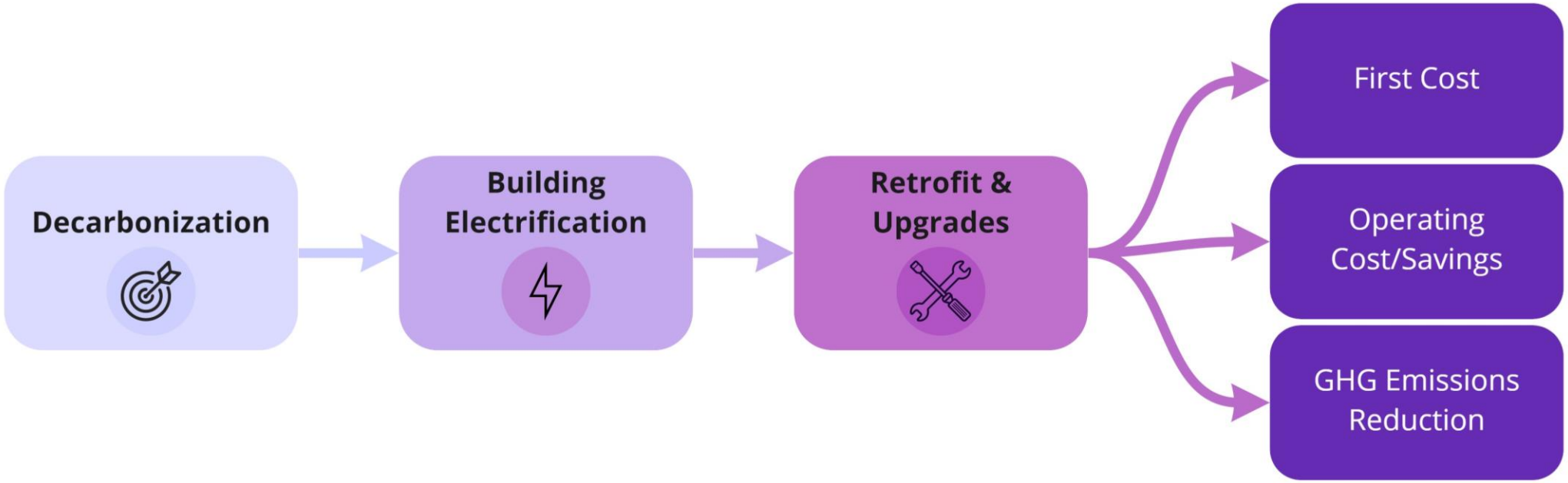
Resilience Leader—Americas

Arup

For vulnerable communities, even solutions can become challenges

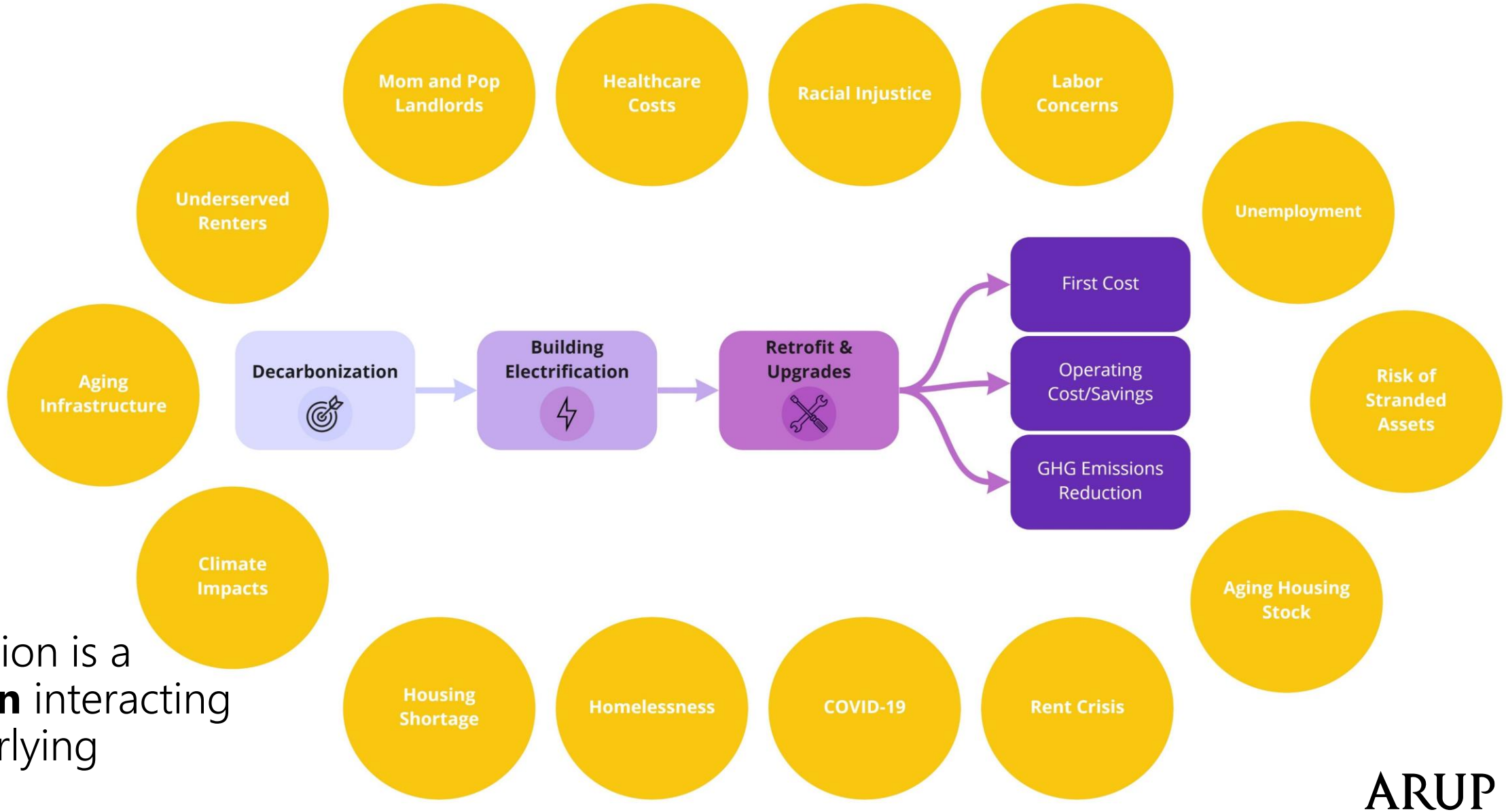
ARUP

Traditional Considerations for Electrification Policy



ARUP

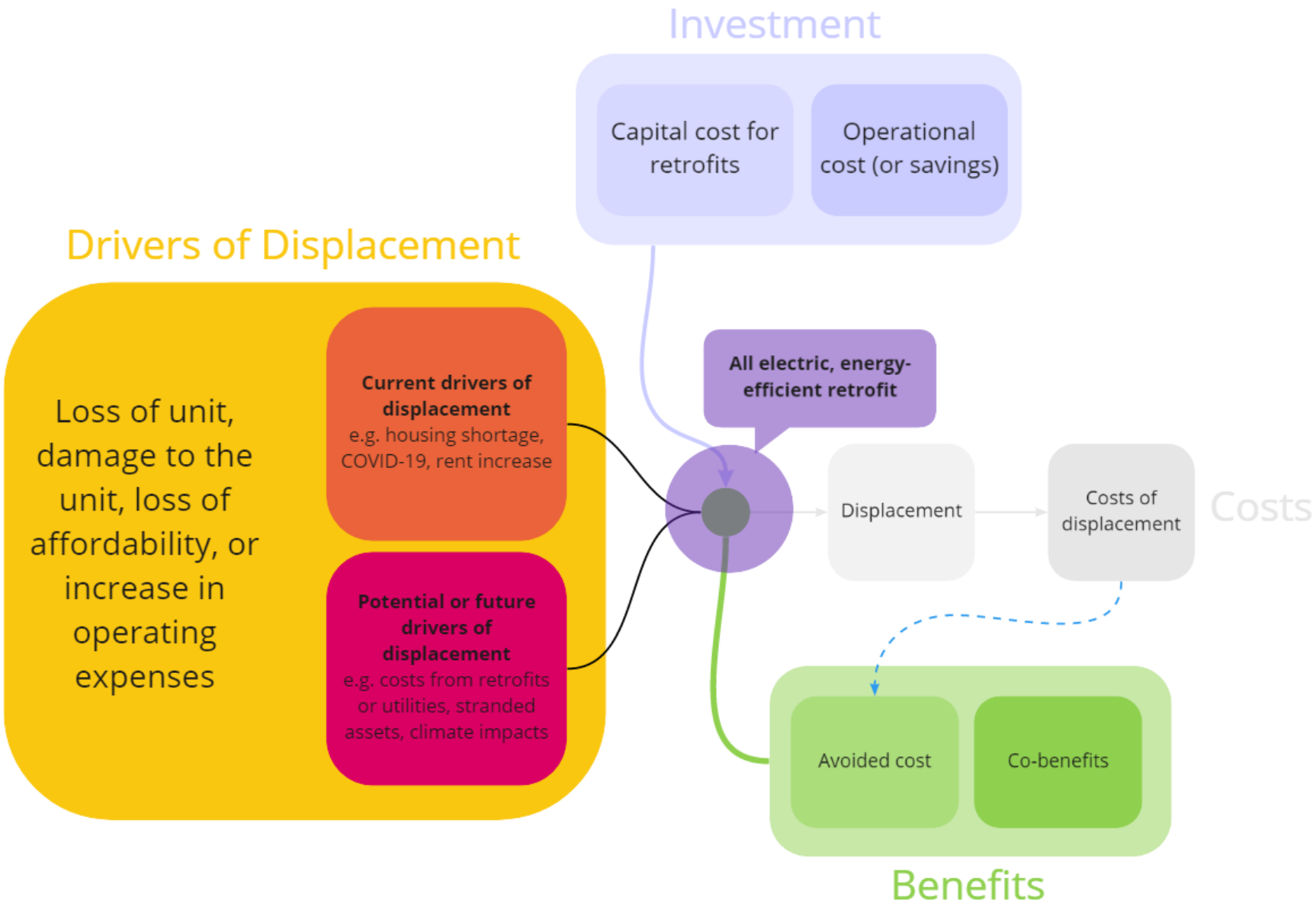
Electrification in Context for Affordable Housing



Electrification is a **disruption** interacting with underlying **stressors**

ARUP

Displacement is the Driving Stakeholder Concern



ARUP

Equitable Transition to Energy Resilience

ARUP

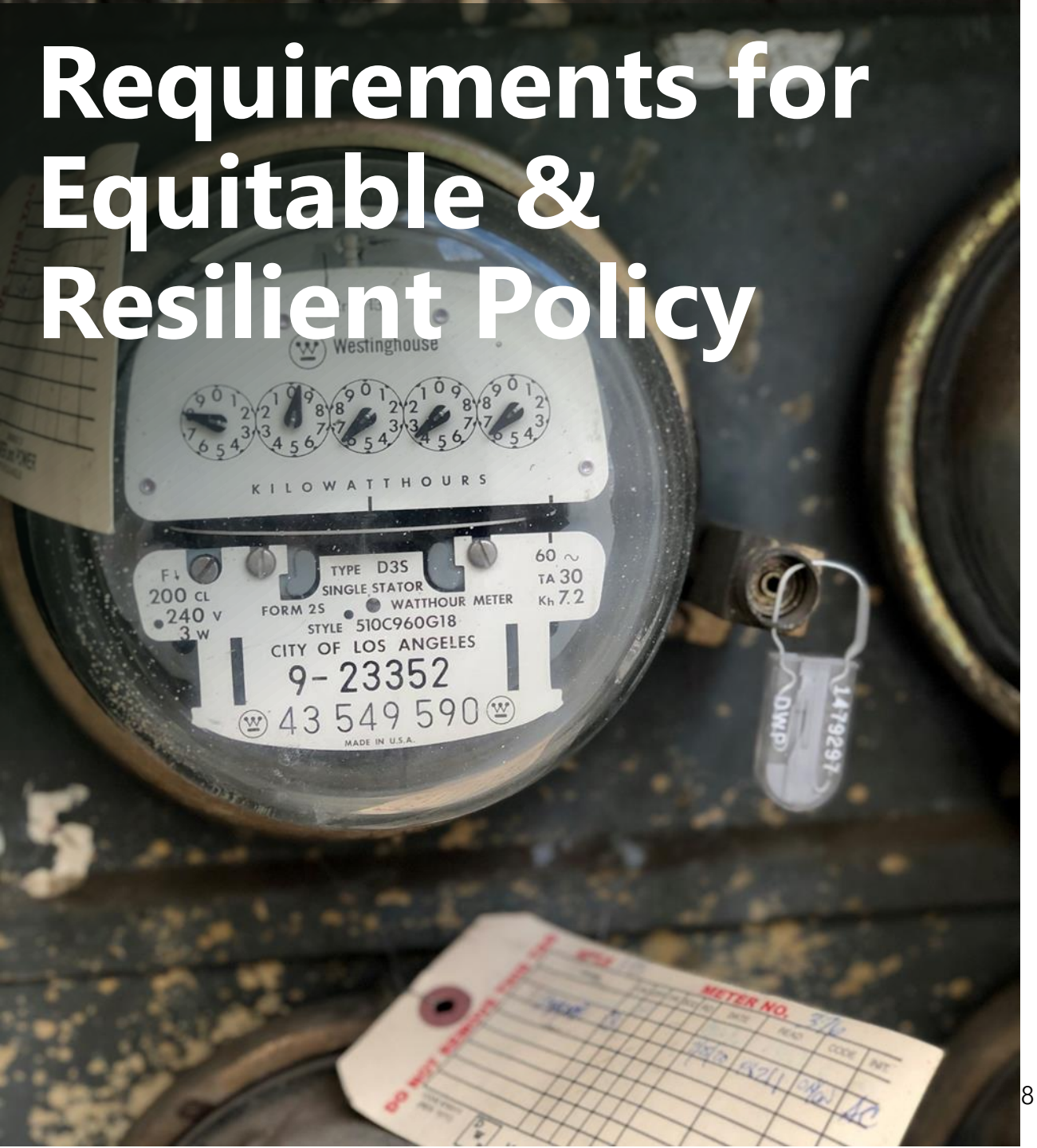
Recommendations

Existing affordable housing stock is essential and must be preserved

- Capital is needed for resilience retrofits to keep it **fit for purpose**
- Investment can trigger **displacement**
- Policy should be designed to **protect residents** from displacement
- Suites of policies should expand **co-benefits**

ARUP

Requirements for Equitable & Resilient Policy



- **Leverage** change to build resilience
- **Integrate** mitigation and adaptation
- Strong **partnerships and stakeholder** engagement
- Complementary policy **bundles**
- **Relevant** incentives and subsidies
- Focus on multi-family and **renters**
- Recognition of **societal** costs and benefits

ARUP

Thank you

Heather Rosenberg

Heather.Rosenberg@Arup.com

ARUP

EESI
Environmental and Energy Study Institute

What did you think of the briefing?

Please take 2 minutes to let us know at:
www.eesi.org/survey

***Materials will be available at*:**
www.eesi.org/041621eefa

***Tweet about the briefing*:**
#eesitalk @eesionline

Friday, April 16, 2021