

Crisis as Catalyst: Meeting the Moment with Transformational Investments

November 30, 2023

Nutter, McClennen & Fish LLP, Boston

and

Streaming on Zoom



**Sustainable
Solutions Lab**

WELCOME

Rebecca Herst

Forum Organizer

Director

Sustainable Solutions Lab

University of Massachusetts Boston

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*Resiliency Senior Technical Leader
Weston & Sampson*

WELCOME FROM HOST

Matthew Connolly

Partner

Nutter, McClennen & Fish LLP

Hurricane Maria

Carmen Yulín Cruz

*Former Mayor
San Juan, Puerto Rico*

CRISIS... a catalyst for change & female empowerment!



Carmen Yulín Cruz
Climate Adaptation Forum
November 30, 2023

They say the
only constant in
life is change.

I say the only
constant in life is
CRISIS...





**CRISES FACED BETWEEN 2016 – 2020
AS MAYOR OF SAN JUAN**

TWO (2) NEW DISEASES

ZIKA & CHIKUNGUNYA

EACH ONE REQUIRED A
UNIQUE SET OF
SOLUTIONS AND
BROUGHT WITH IT
POLITICAL/POLICY
IMPLICATIONS



TWO COASTAL STORMS



POLITICAL UNREST

PUERTO RICANS TOOK TO THE STREETS ON PEACEFUL DEMONSTRATIONS DURING THE SUMMER OF 2019 AND FORCED THE GOVERNOR TO RESIGN.



TWO 6.0+ EARTHQUAKES





COVID-19 PANDEMIC



TWO POWERFUL HURRICANES

- IRMA – SEPTEMBER 6, 2017
- MARIA – SEPTEMBER 20, 2017









28
Calle 12





A CRISIS IS A
MAGNIFYING GLASS
FOR SOCIAL
INEQUALITY &
INJUSTICE.

CRISES BRING WITH THEM A SHIFT IN PEOPLE'S PERCEPTIONS OF THEIR ABILITY TO IMPACT CHANGE.

WHAT PEOPLE WERE WILLING TO DISMISS, MINIMIZE & IGNORE BEFORE A CRISIS, **CANNOT** BE DISMISSED, MINIMIZED AND IGNORED ANY MORE.

WHY? PEOPLE ARE LITERALLY FIGHTING FOR THEIR LIVES!

WHERE PEOPLE ONCE SAW
PROBLEMS; NOW THEY ARE FORCED
TO LOOK FOR A SOLUTION.



PEOPLE BEGIN TO EMBRACE A NEW ROLE AS:

CHANGE MAKERS,

CHANGE ARCHITECTS; AND INSTIGATORS!



PEOPLE BEGIN TO SPEAK UP!



WHEN PEOPLE STAND UP AND SPEAK UP They
ARE FORCED TO LOOK FOR PERMANENT
SOLUTIONS TO RECURRENT PROBLEMS.



During this paradigm shift, you will find leadership in unexpected places!

PALCO

MEET THE WOMEN TORRES DE FRANCIA



FEMA VS WOMEN OF TORRES DE FRANCIA



COLLABORATION INCREASES SHARED POWER!

POWER MUST NOT BE AN ALL OR NOTHING PROPOSITION.



THE CASE FOR COMMUNITY LEAD EMERGENCY RESPONSE....
CTCC (IN SPANISH)





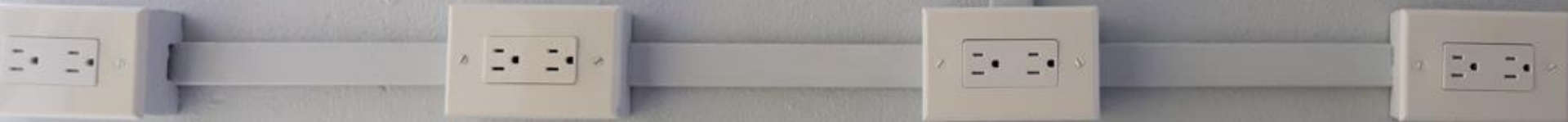


Municipio Autónomo de San Juan
 Ruta Thruway #1 - Línea Torres-Calle Leticia-Playita
 Condado-Santitonia



Buenas tardes...
 Aquí ~~no~~ reportando desde ETEE Playita.
 Sin novedades (si hubiere alguna se informa).
 B.N.
 Buenas tardes...
 Aquí ~~no~~ reportando desde ETEE Playita. No hay novedades.
 Si tuviera alguna se informaría.





**GOVERNMENT SHOULD BE A SUPPORT PLATFORM FOR
COMMUNITY ENGAGEMENT**





IT'S ALL ABOUT
PEOPLE!





HOPE YOU WILL LISTEN TO THE 1ST SEASON OF MY PODCAST

SHEROICS

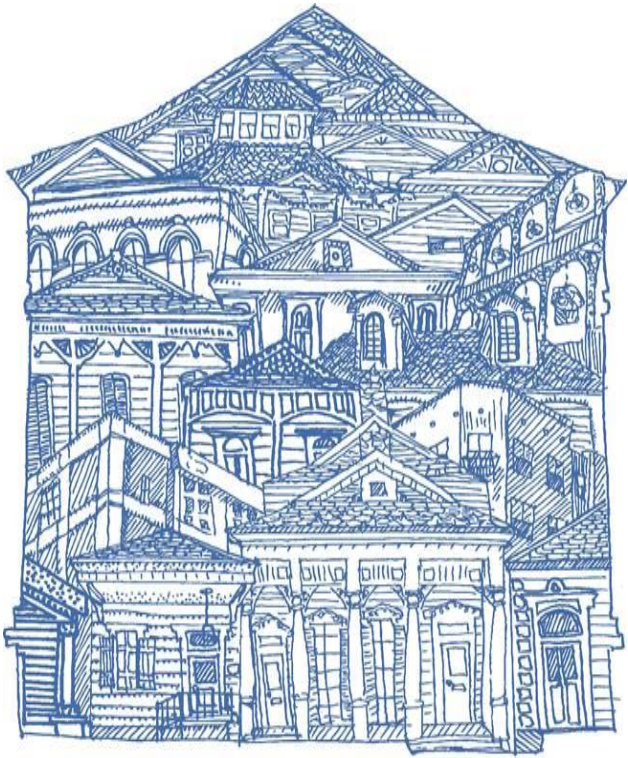
Women changing the world one community at a time!

C. YULIN CRUZ / 787-407-7779 / cyulin.cruz@gmail.com

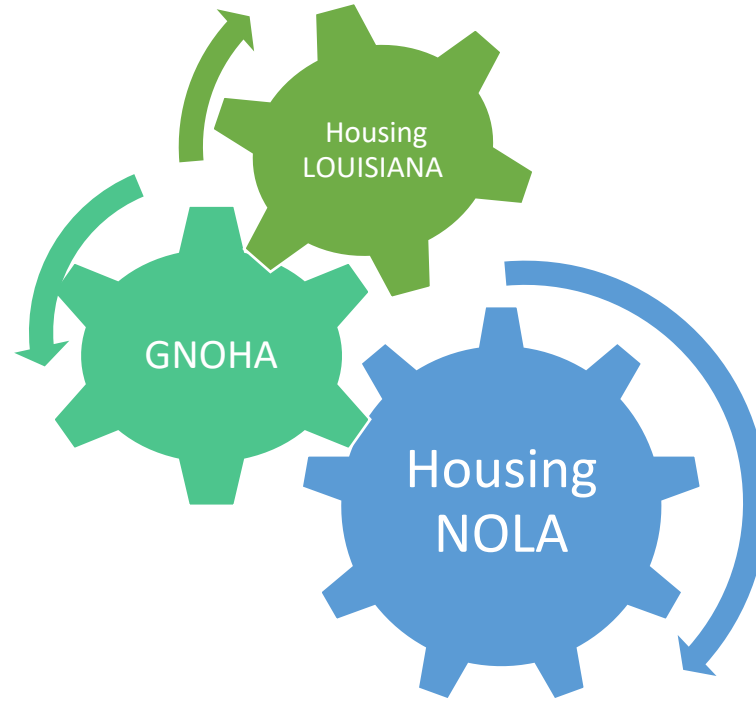
Hurricane Katrina

Andreanecia Morris

*Executive Director
HousingNOLA*



PUT HOUSING FIRST

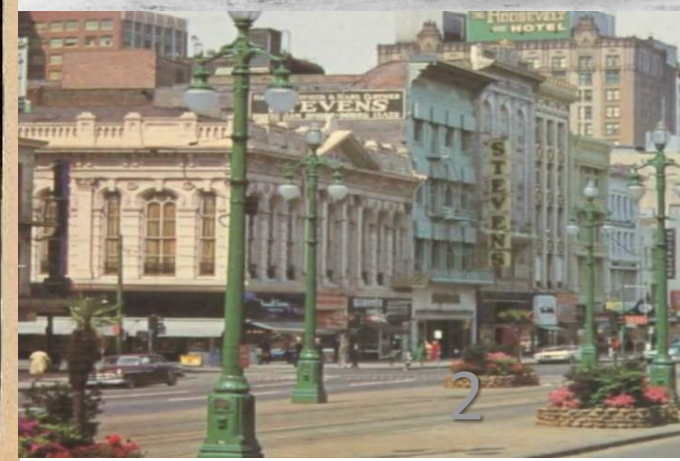
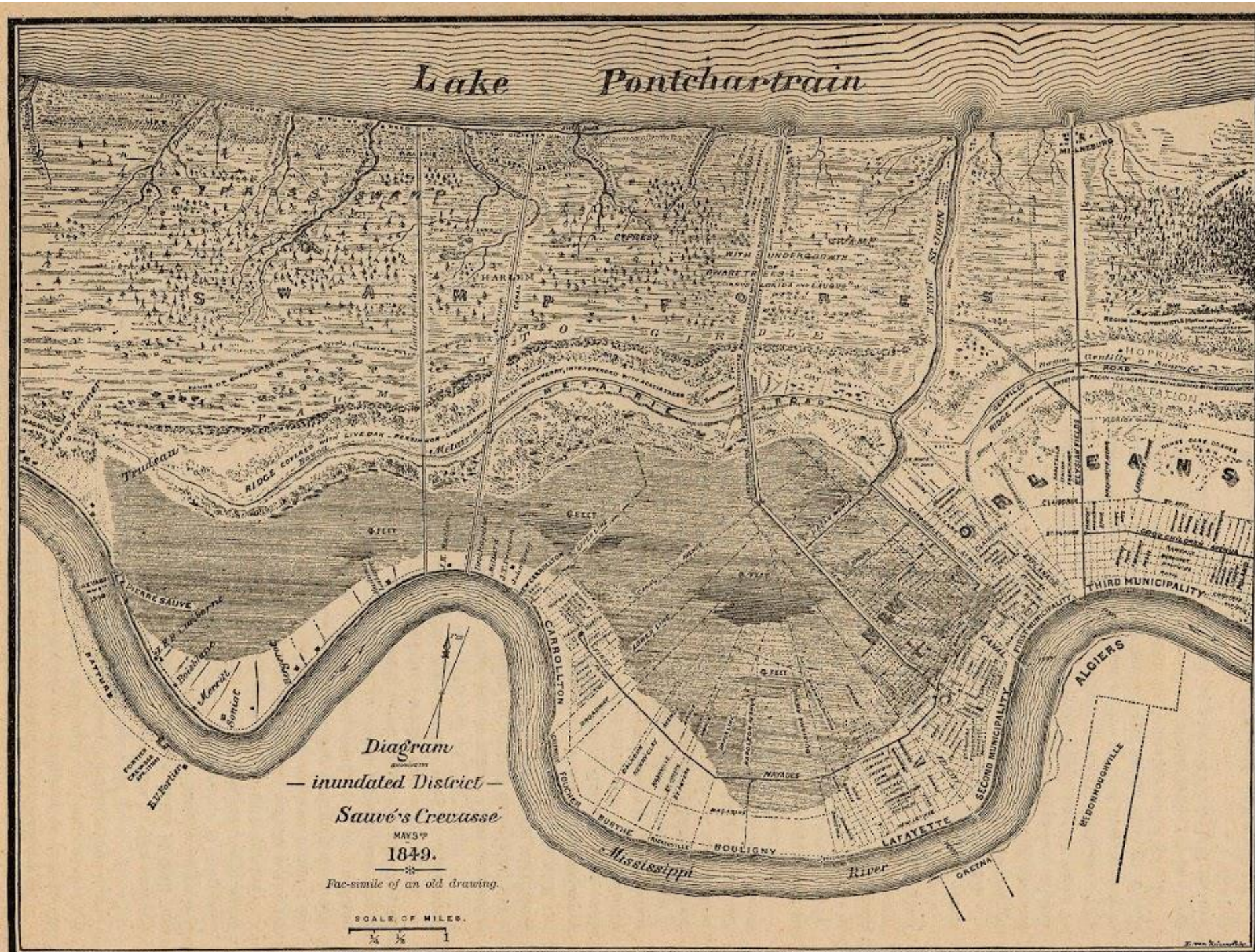


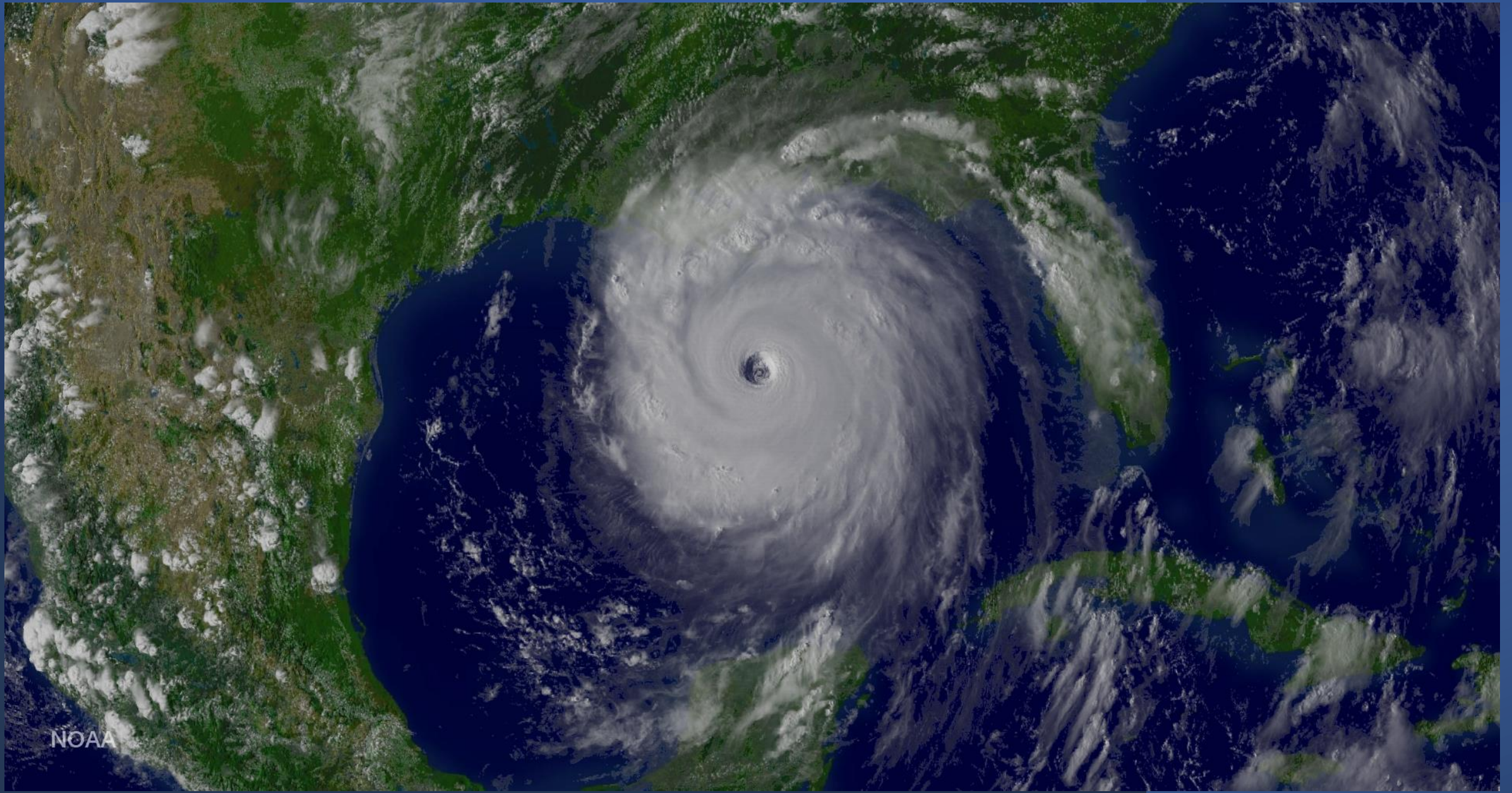
A Strategy to Make Housing a Guarantee: Aligning Policy, Advocacy and Investment Capital in New Orleans & Louisiana

Climate Adaptation Forum

Crisis as Catalyst: Meeting the Moment with Transformational Investments

November 30, 2023





NOAA









Discussion:
• What do you like about these recommendations?
• What concerns do you have about these recommendations?

Event Tables: Safety from Future Flooding (pages 5-6)

Cold Tables: Rebuilding Safe & Stable Neighborhoods (pages 7-8)











\$50 Billion in New Orleans

- 250,000 housing opportunities
- \$10 billion in government funding
- \$40 billion in insurance proceeds, traditional financing, philanthropy and volunteers



Housing for All Action Plan

*Directing investment
to create an equitable, affordable,
and strong New Orleans*

Defining Priorities

- Priority 1: Eliminate Cost Burden by Decreasing the Housing Affordability Gap
- Priority 2: Close the Racial Wealth Gap
- Priority 3: Ensure a More Resilient Housing Stock and System
- Priority 4: Combat Displacement

Our data and measurement systems had to look at the impacts of any strategy or action related to these priorities.

Eliminate Cost Burden

Close the Racial Wealth Gap

Ensure a More Resilient Housing Stock and System

Combat Displacement

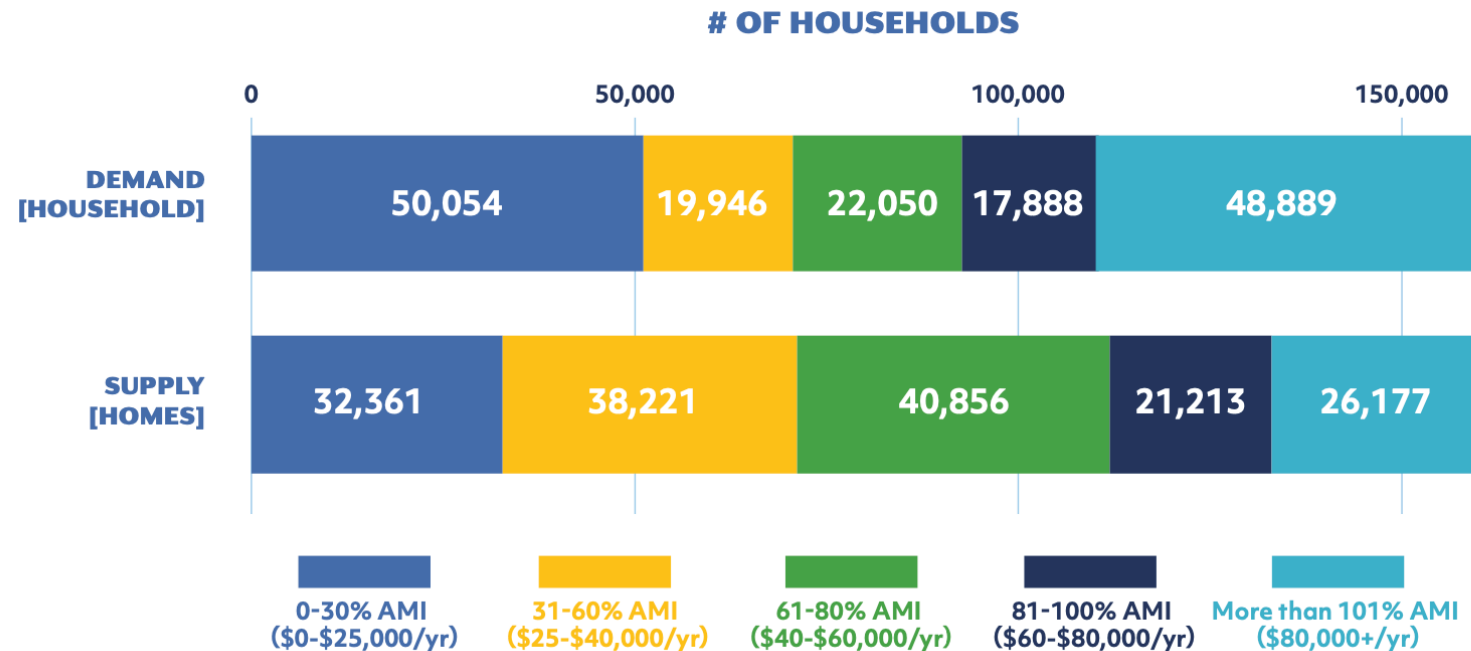
2023 HousingNOLA Annual Report Housing for All Action Plan

Directing investment to create an equitable, affordable, and strong New Orleans

2023 State of Housing Highlights

The Housing Affordability Gap for Renters in New Orleans

Figure 1: Distribution of Housing Demand and Supply for Renters in New Orleans



Key Outcomes

**45,000 new construction, energy-efficient units
= more than \$10 billion in new household wealth**

How we got there:

- Replacement of units that will become obsolete
- Providing housing for low-to-moderate-income households in the region who commute to jobs in New Orleans, but do not live in New Orleans
- Includes rental and homeownership options

Key Outcomes

\$13 billion in new spending will support economic growth

How we got there:

- Total savings to households who will reduce spending on housing and utility bills, thereby freeing funds for other types of spending on local goods and services

Key Outcomes

**32,000 new homeowners, including more than 26,000
homeowners of color**

How we got there:

- Understand the demographics of the low-to-moderate income households we aim to serve, in order to better quantify racial equity impacts

Key Outcomes

**58,700 fully weatherized and rehabilitated homes;
49,000 of these benefit households of color**

How we got there:

- Ensure all households spend less than 6% of their incomes on energy costs, and create resilient power generation for the future
- Focus population is households at 0-60% AMI, who currently spend more than 6% of their incomes on energy costs, on average

Eliminate Cost Burden

Close the Racial Wealth Gap

Ensure a More Resilient Housing Stock and System

Combat Displacement

Summary Cost Estimate to Address Four HousingNOLA Goals

Intervention	Number of households for intervention	Racial equity impacts (est. HHs of color served)	Average cost of intervention	Total cost
Category 1: Rehab of Homes for Sustainability, Energy Efficiency, and Solar				
Weatherization, rehab, and solar/battery for single-family ownership units with rehab	17,568	14,801	63,000	\$1,106,813,194
Weatherization, rehab, and solar/battery for single-family ownership units with rehab	14,402	11,831	63,000	\$884,674,546

Category 2: Preservation and Acquisition-Rehab

Category 4: Direct Financial Assistance to Households

Provide housing choice vouchers or other direct rental assistance to low-income renters that eliminates cost burden	31,990	26,707	\$158,902	\$5,083,274,980
Provide ongoing supportive services to prevent homelessness	3,865	3,302	\$12,800	\$49,472,000
Household component of new homeownership assistance: Soft second mortgages, DPCC, and housing counseling assistance	33,091	26,408	\$77,500	\$2,654,558,236
Subtotal	79,791	65,451		\$7,697,305,216
Total Cost				\$34,988,356,349
Subtotal	38,344	30,600		\$17,942,476,168

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Eliminate Cost
Burden

Close the Racial
Wealth Gap

Ensure a More
Resilient Housing
Stock and System

Combat
Displacement

2023 HousingNOLA Annual Report Housing for All Action Plan

Directing investment to create an equitable, affordable, and strong New Orleans

A Generational Investment in New Orleans' People and Homes
Over **\$13 billion** in new spending that can support New Orleans businesses and generate economic growth.

- Over **45,000** new, affordable, energy-efficient single-family and multi-family homes constructed, generating more than **\$10 billion** in new household wealth for New Orleans families
- **Over 32,000** new homeowners in New Orleans.
- **Over 58,700** fully weatherized and rehabilitated homes
- **13,000** currently-affordable housing units preserved as affordable

\$34 billion

We can't replace what we displace.



We believe that our communities can provide high-quality, safe and accessible housing that is affordable to individuals and families of all income levels throughout Louisiana

*Andreanecia M. Morris
Executive Director, HousingNOLA*

www.housingnola.org

www.gnoha.org

www.housinglouisiana.org



Superstorm Sandy

Charles Viemeister

*Project Manager
Con Edison*

Con Edison

Meeting the Moment with Transformational Investments

Strategic Planning

Climate Risk and Resilience Group
Charles Viemeister – Project Manager



Agenda

- Company overview
- Impact of Superstorm Sandy
- Our road to climate change adaptation
- Climate science
- Impacts and approaches
- Incorporating climate change

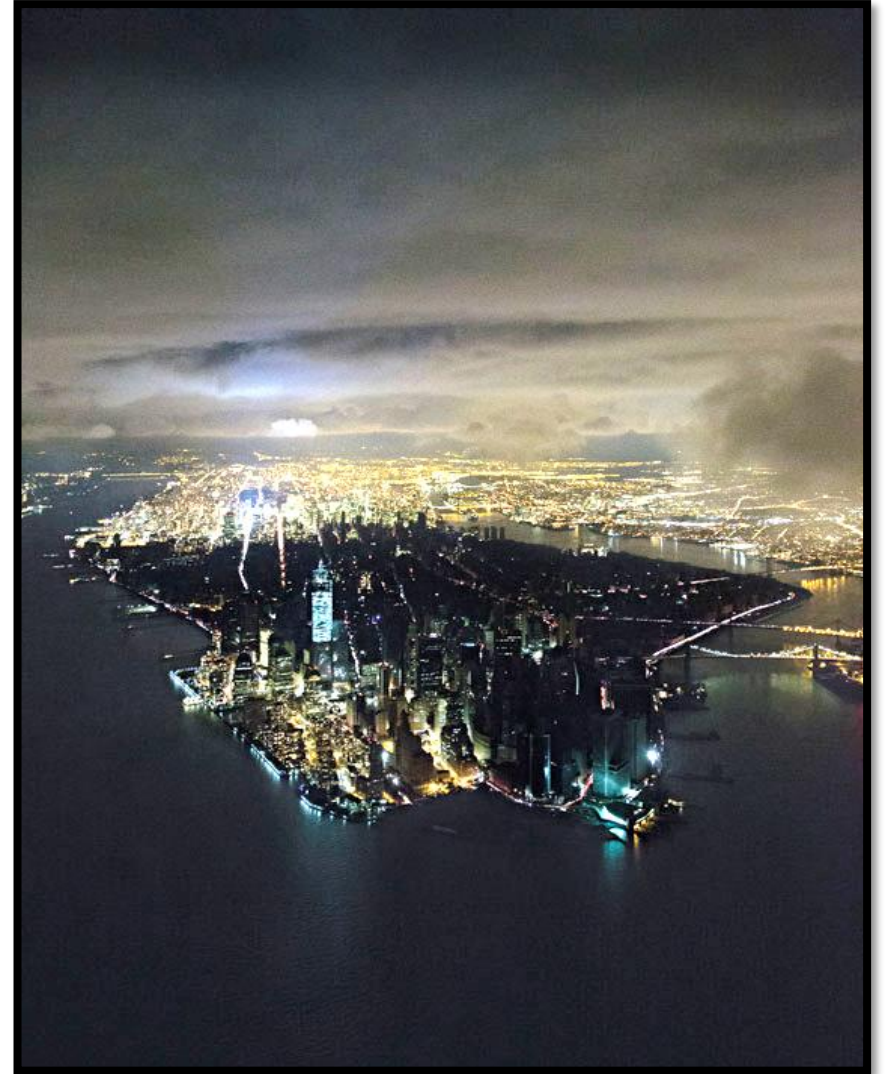
Con Edison overview

- 604 square miles of territory
- Coastal utility
- 3.6 million electric customers
- 130,000 miles of wire and cable
- 1.1 million gas customers
- 8,000 miles of gas pipes
- Largest steam system in U.S.
- 105 miles of steam mains
- 1,650 steam customers



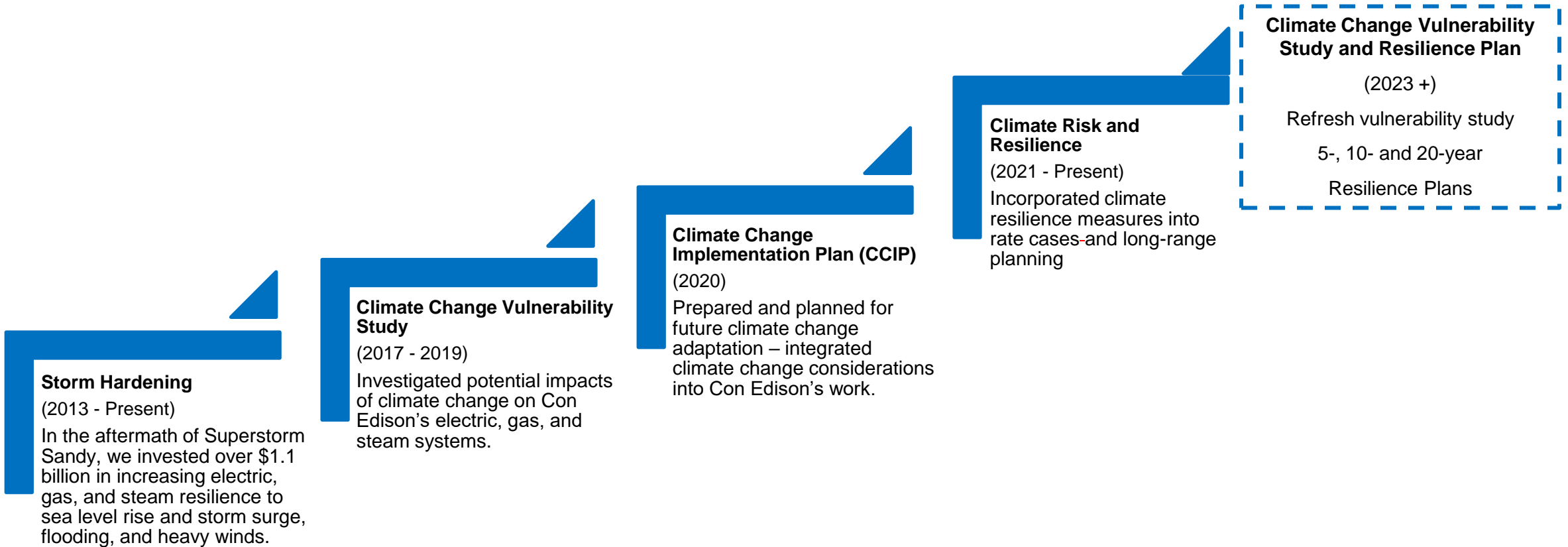
Impact of Superstorm Sandy

- 1.1 million customer outages
- 4,000 MW of generation lost
- 60% of 345 kV feeders lost
- 5 transmission stations shut down
- 2 steam stations and 560 steam customers impacted
- 400 gas services interrupted
- 8 days to restore service
- \$318 million in restoration costs
- \$1 billion invested after storm



Progress of Climate Change Adaptation Work at Con Edison

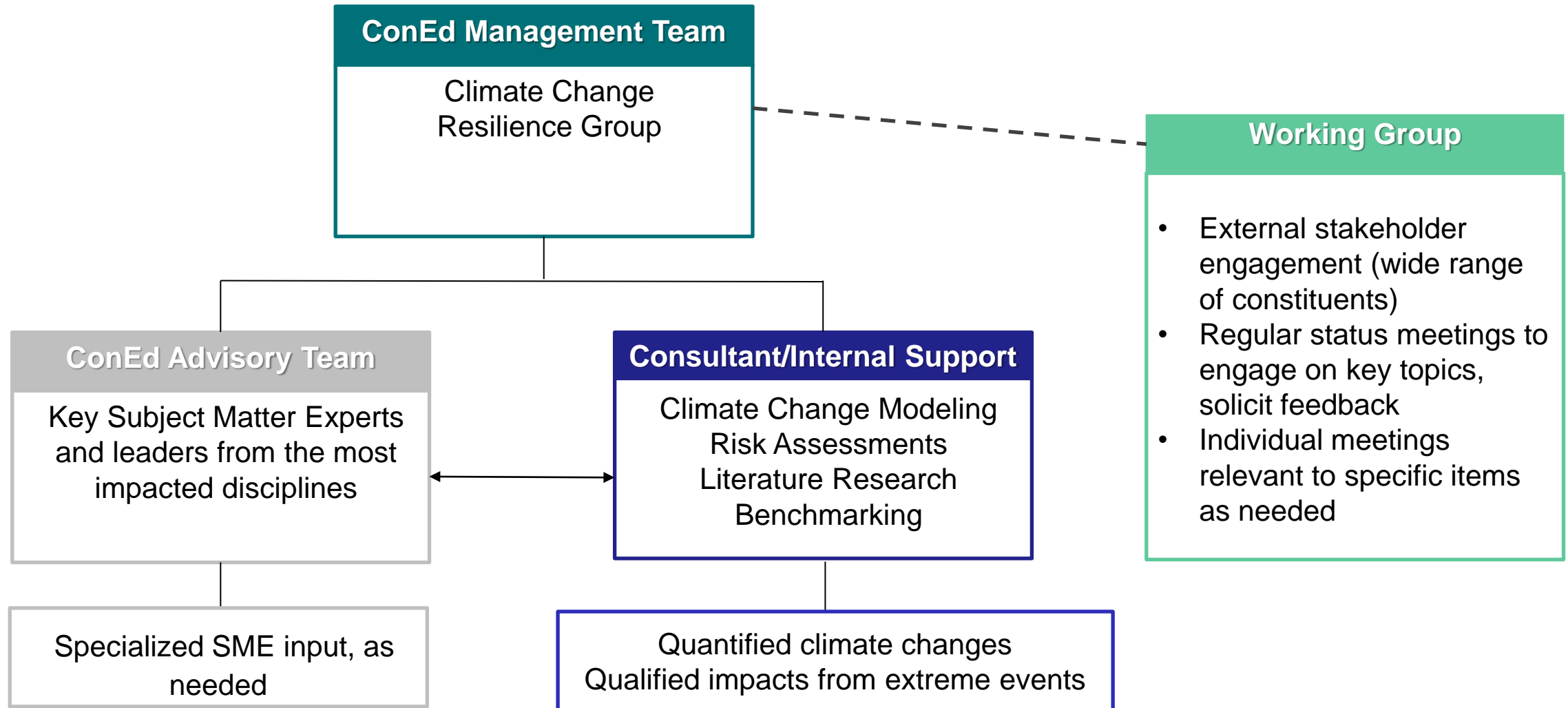
The Company continues its commitment to mitigating risks and improving system resilience by taking actions to prevent, mitigate, and respond to physical impacts of climate change (e.g., heat, sea level rise, and extreme events)



Climate Change Vulnerability Study

- Evaluate energy system vulnerability and options for resiliency
- Use the latest climate science to project future weather scenarios
- Stress test our energy systems against future weather
- Identify vulnerabilities
- Evaluate options to adapt
 - **Temperature**
 - **Precipitation and inland flooding**
 - **Extreme events**
 - **Sea level rise & coastal storm surge**

Engagement Structure



Identified Climate Resiliency and Adaptation Options

Per our Resilience filing, the Company proposes to invest over \$900 Million in electric resilience investments targeted to improve resilience to numerous climate variables over the next 5 years

		Heat		Flooding		Extreme Events
		Ambient temperature	Heat waves/Temperature Variable (TV)	Deluge rain	Sea level rise and storm surge	Storms, polar vortices, and other weather events
Potential impact		Asset useful life and operating environment	Load increase (TV increase by one degree per decade)	Flooding	Protection breach	Physical damage
Adaptation Areas	Electric	<ul style="list-style-type: none"> Transformers Substations Strategic installation of new interrupters New area station equipment Advance existing climate resilience programs (network resilience programs) 		<ul style="list-style-type: none"> Submersible distribution equipment Relay replacements Erosion protection and drainage upgrade Unit substation hardening Switchgear/relay wiring upgrades 		<ul style="list-style-type: none"> Selective undergrounding Distribution overhead hardening Mutual aid retainers / truck stockpile Overhead transmission structures Disconnect switches Demand management (smart meters, distributed energy resources)
	Gas	N/A	N/A	<ul style="list-style-type: none"> Gas main replacement program Gas service replacement program Liquified natural gas hardening 		
	Steam	N/A	N/A	<ul style="list-style-type: none"> Waterproofing Flood protection 		

Application of climate change

1,2 Specification & procedure changes

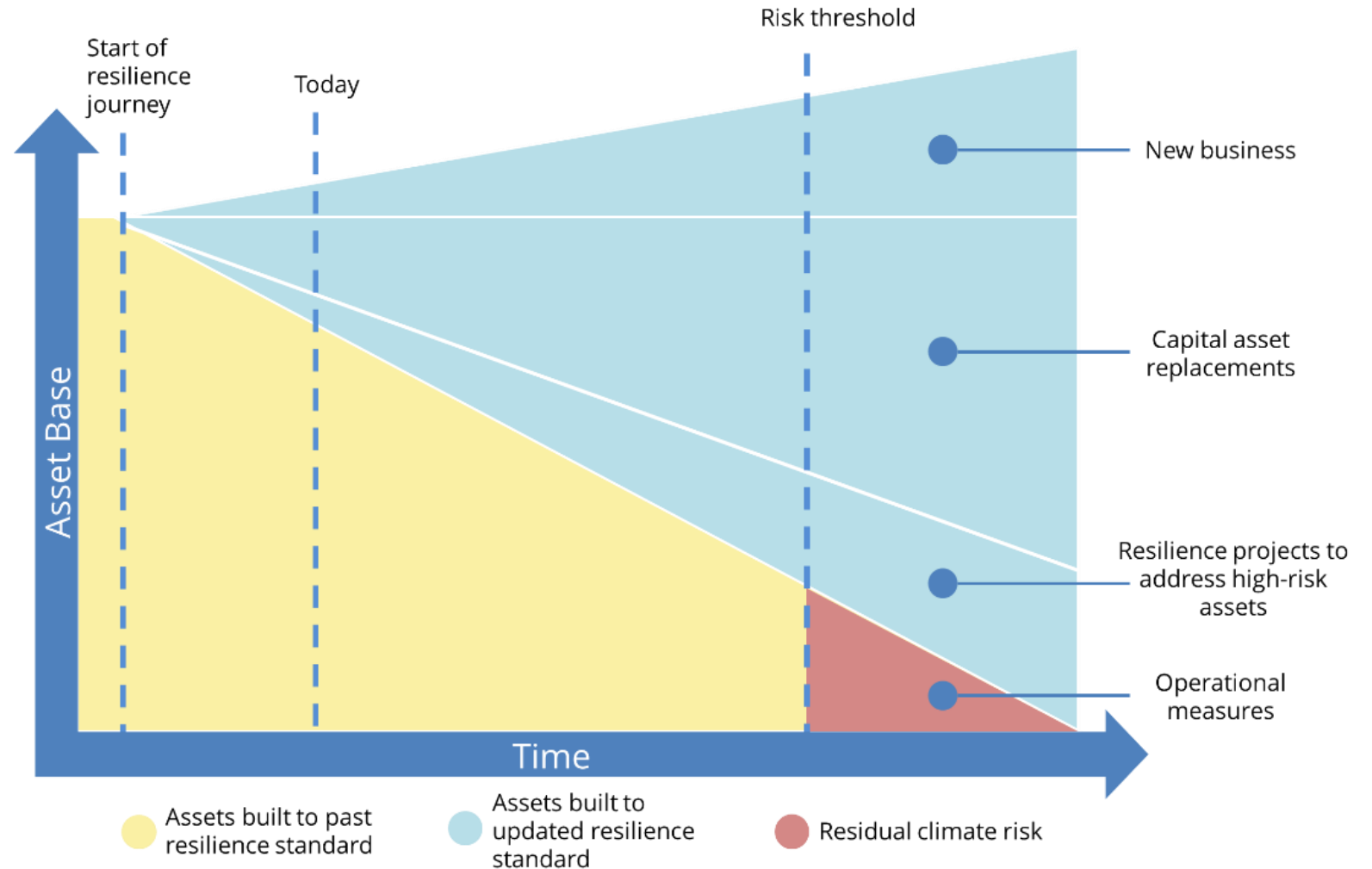
All new assets are built considering climate projections

3 Projects & program identification

Begin adapting existing asset base to acceptable risk thresholds related to future climate. Consider lead time.

4 Operational measure identification

Review that assets built to existing standards are protected when climate risk is realized.



Our Strategies to Address Climate Risks

We have been working with our stakeholders to adapt to these risks through our Climate Change Implementation Plan and apply our three strategies to address climate risks.



Prevent

Harden energy infrastructure and assets against **projected climate conditions** to **prevent outages**



Mitigate

Modify system design and flexibility to **mitigate disruptions** to customer service



Respond

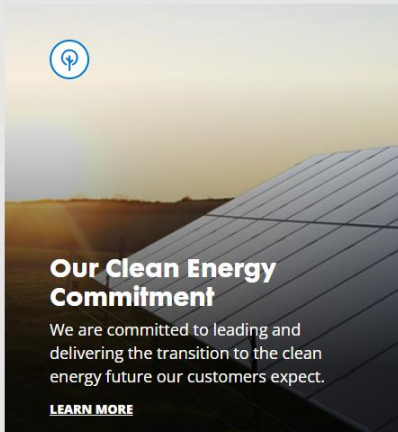
Operational improvements to reduce recovery timeframe in **response to extreme weather**

Our Climate Change Efforts

<https://www.coned.com/en/our-energy-future/our-energy-vision/storm-hardening-enhancement-plan>

Our Energy Vision

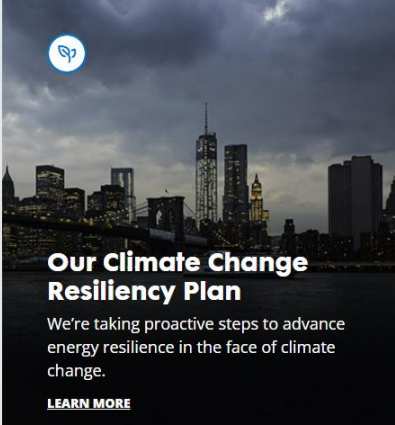
We will take a leadership role in the delivery of a clean energy future for our customers. We will do that by investing in, building, and operating reliable, resilient, and innovative energy infrastructure, advancing electrification of heating and transportation, and aggressively transitioning away from fossil fuels to a net-zero economy by 2050.



Our Clean Energy Commitment

We are committed to leading and delivering the transition to the clean energy future our customers expect.

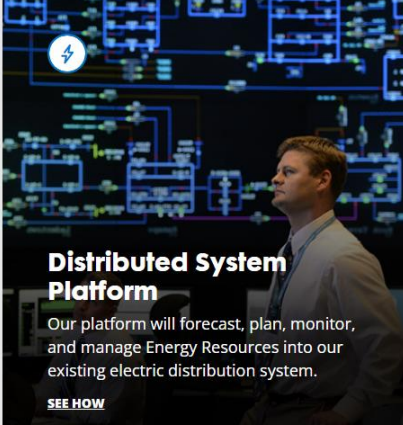
[LEARN MORE](#)



Our Climate Change Resiliency Plan

We're taking proactive steps to advance energy resilience in the face of climate change.

[LEARN MORE](#)



Distributed System Platform

Our platform will forecast, plan, monitor, and manage Energy Resources into our existing electric distribution system.

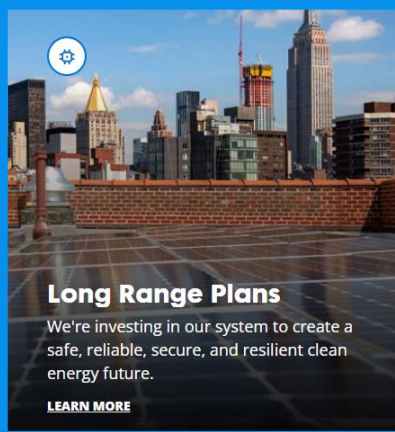
[SEE HOW](#)



Investing in Renewable Energy

We've got a plan for creating more renewable energy.


[SEE HOW](#)



Long Range Plans

We're investing in our system to create a safe, reliable, secure, and resilient clean energy future.

[LEARN MORE](#)



Energy Innovation & Projects

We're pursuing groundbreaking initiatives that help us transition to a clean-energy future.

[SEE HOW](#)

Boston Covid Response

Christopher Osgood

*Senior Advisor, Infrastructure
City of Boston*



Redesigning Streets at the Start of Covid

November 30, 2023

B

Crisis as Catalyst: Respond, Recover & Thrive



Respond

Recover

Thrive

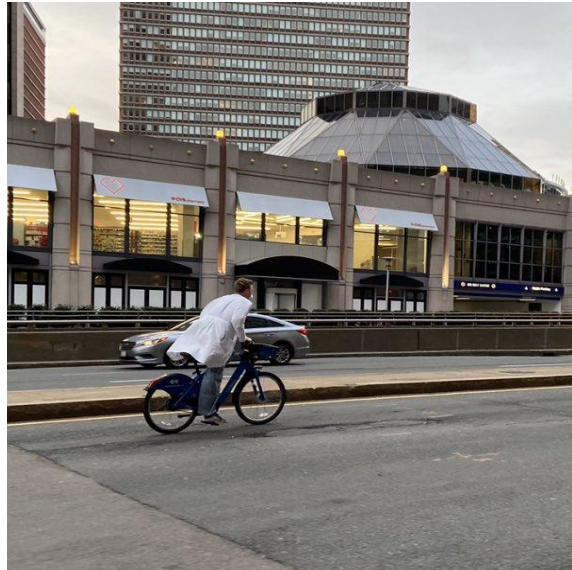
Crisis as Catalyst: Early Actions to Respond

Respond

Temporary Takeout Zones



Free Bluebikes Passes for Hospital Staff



Help with Food Access



Crisis as Catalyst: Respond, Recover & Thrive

Expand Outdoor Dining

Strengthen Transit

Accelerate Road Safety

Crisis as Catalyst: Respond, Recover & Thrive

Expand Outdoor Dining



Strengthen Transit



Accelerate Road Safety

Crisis as Catalyst: Respond, Recover & Thrive

Expand Outdoor Dining



Strengthen Transit



Accelerate Road Safety



Crisis as Catalyst: Respond, Recover & Thrive

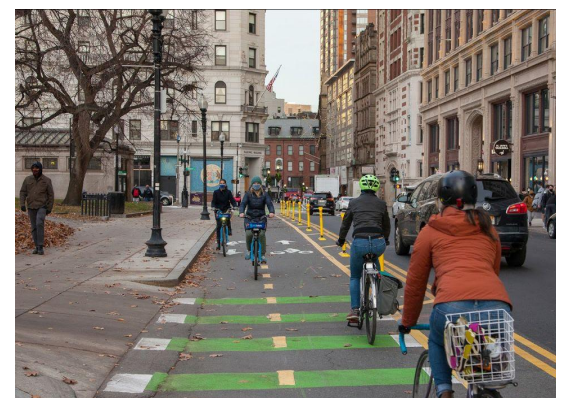
Expand Outdoor Dining



Strengthen Transit



Accelerate Road Safety



B HEALTHY STREETS BOSTON

Healthy Streets Quick-Install Bike Lanes



Healthy Streets Bus Lanes



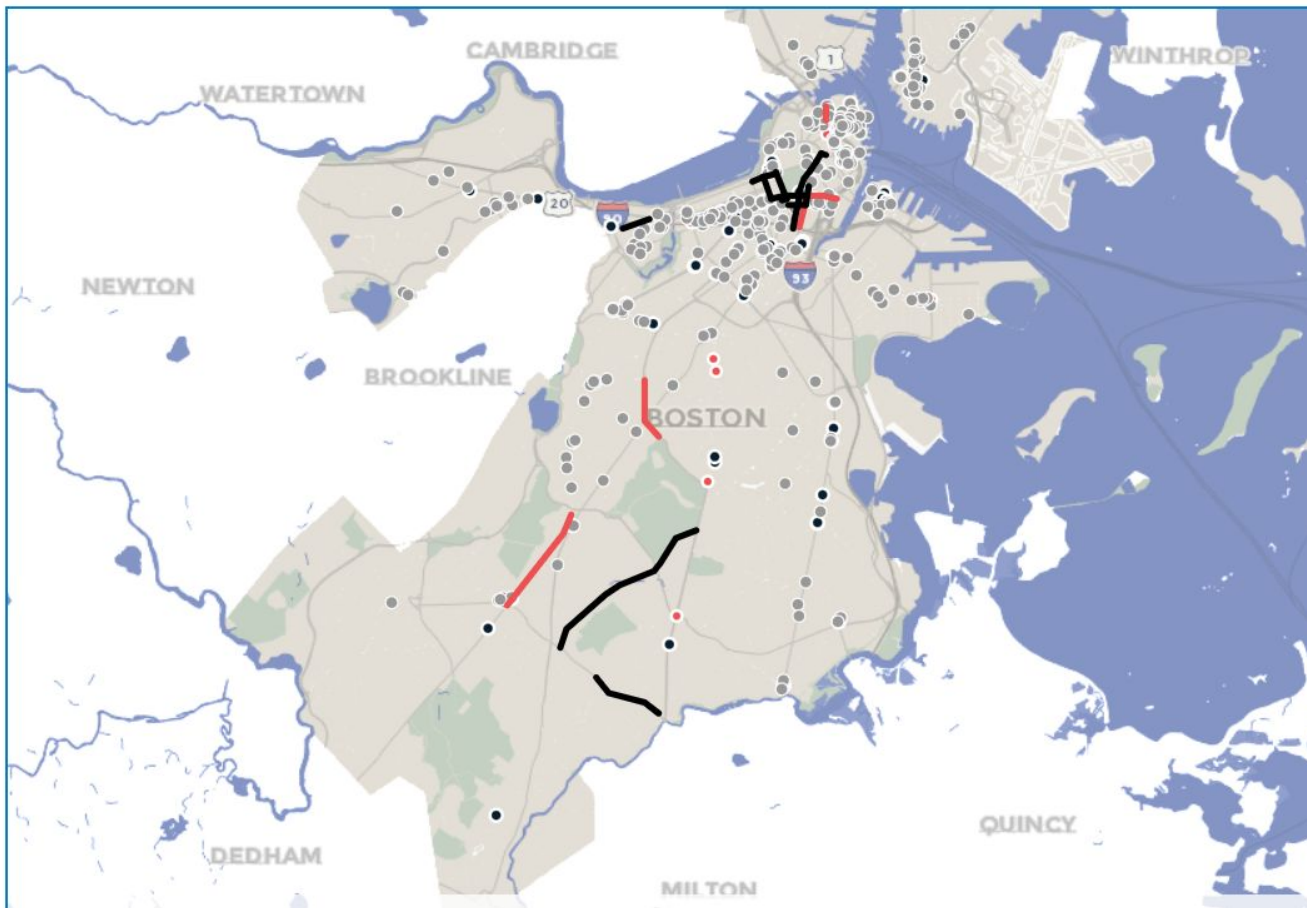
Temporary Outdoor Seating for Restaurants



Food Takeout Priority Zone



Expanded Bus Stop



Learn more at:

www.boston.gov/healthy-streets

Crisis as Catalyst: Recover & Thrive

Expand Outdoor Dining



Roughly Double
the Number

Strengthen Transit



Expanded to 2
more Routes

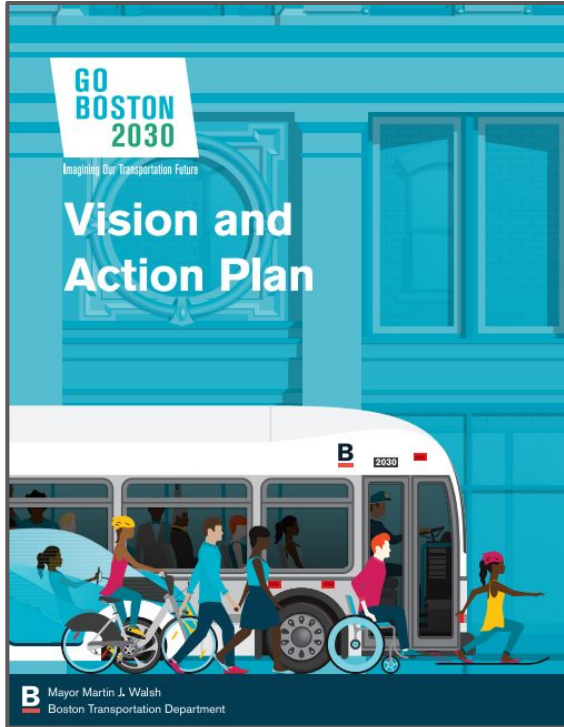
Accelerate Road Safety



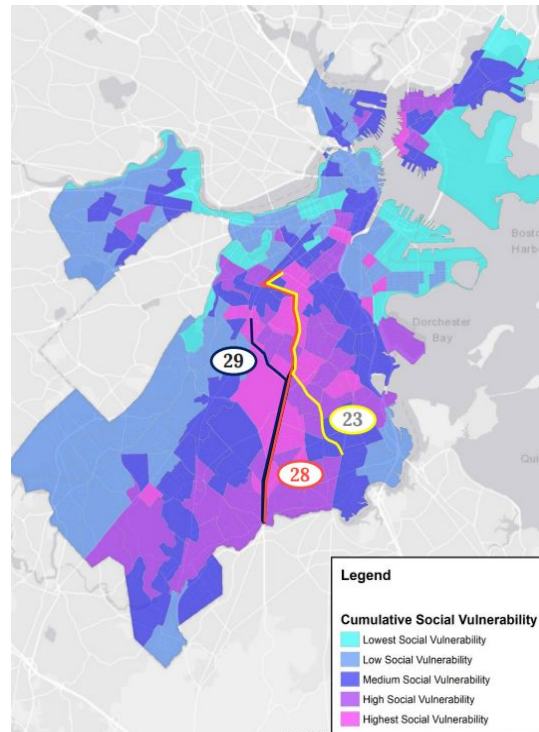
Pedestrian &
Cyclist crashes
down 46%

Crisis as Catalyst: Lessons Learned

Use Your Plans



Foreground Equity



Build the Quick-Build Muscle





Long Wharf on December 23, 2022

Lessons from Quabbin Reservoir's Legacy

Stephen Estes-Smargiassi

*Director of Planning and Sustainability
Massachusetts Water Resources Authority*



Lessons from Quabbin Reservoir's Legacy

*Environmental Business Council of New England
Sustainable Solutions Lab at the UMass Boston*

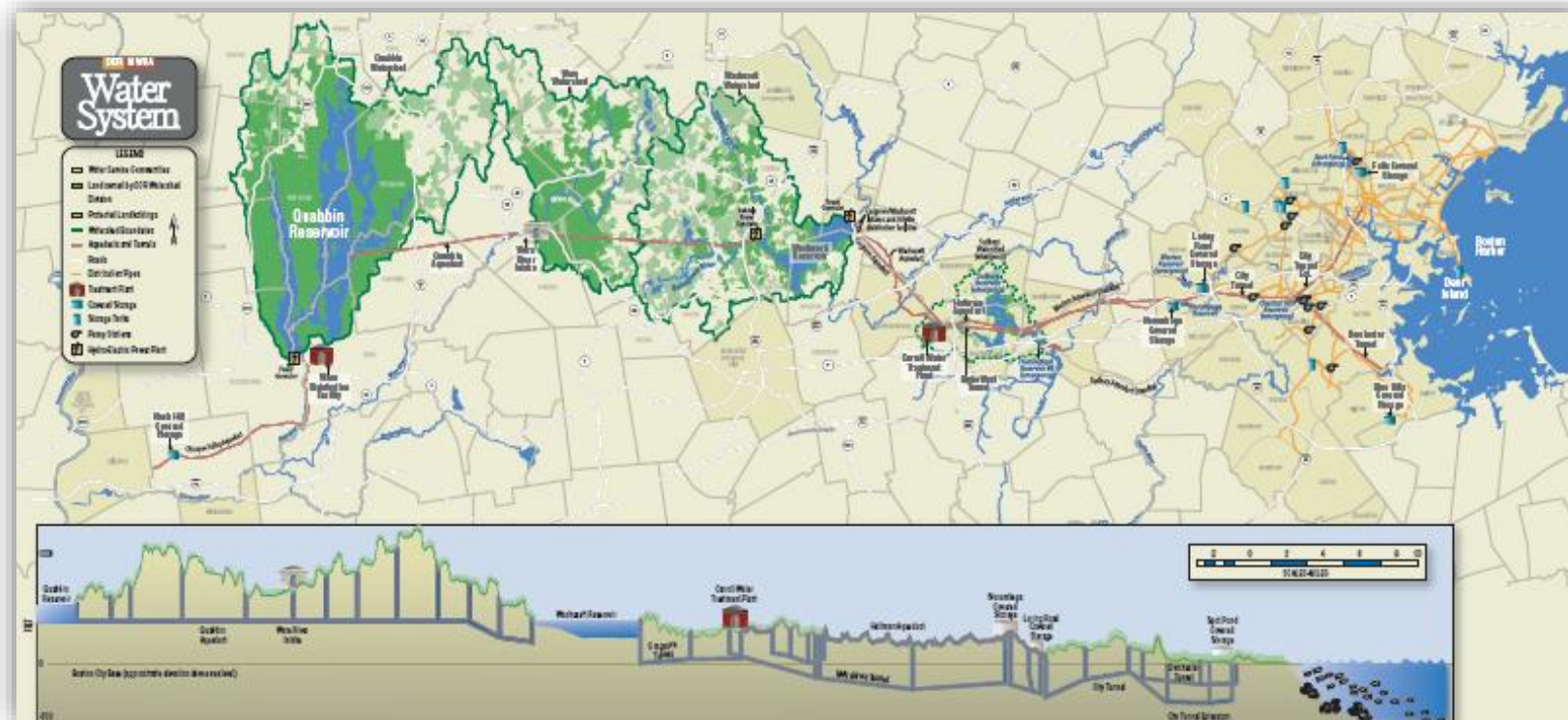
Stephen Estes-Smargiassi
Director of Planning and Sustainability

November 30, 2023



Boston Region's Wholesale Water and Sewer Agency

- Created in 1985 to revive the regions' obsolete and aging water infrastructure
- MWRA provides wholesale water and wastewater services to over 2.5 million customers in 61 communities
- MWRA delivers an average of 200 million gallons per day to its water customers
- MWRA collects and treats an average of 350 million gallons of wastewater per day, with a peak capacity of 1.2 billion gallons





The Climate is Changing, but
Our Customers Still Want to:

Drink with Confidence

Flush with Pride

Not think about it too much...

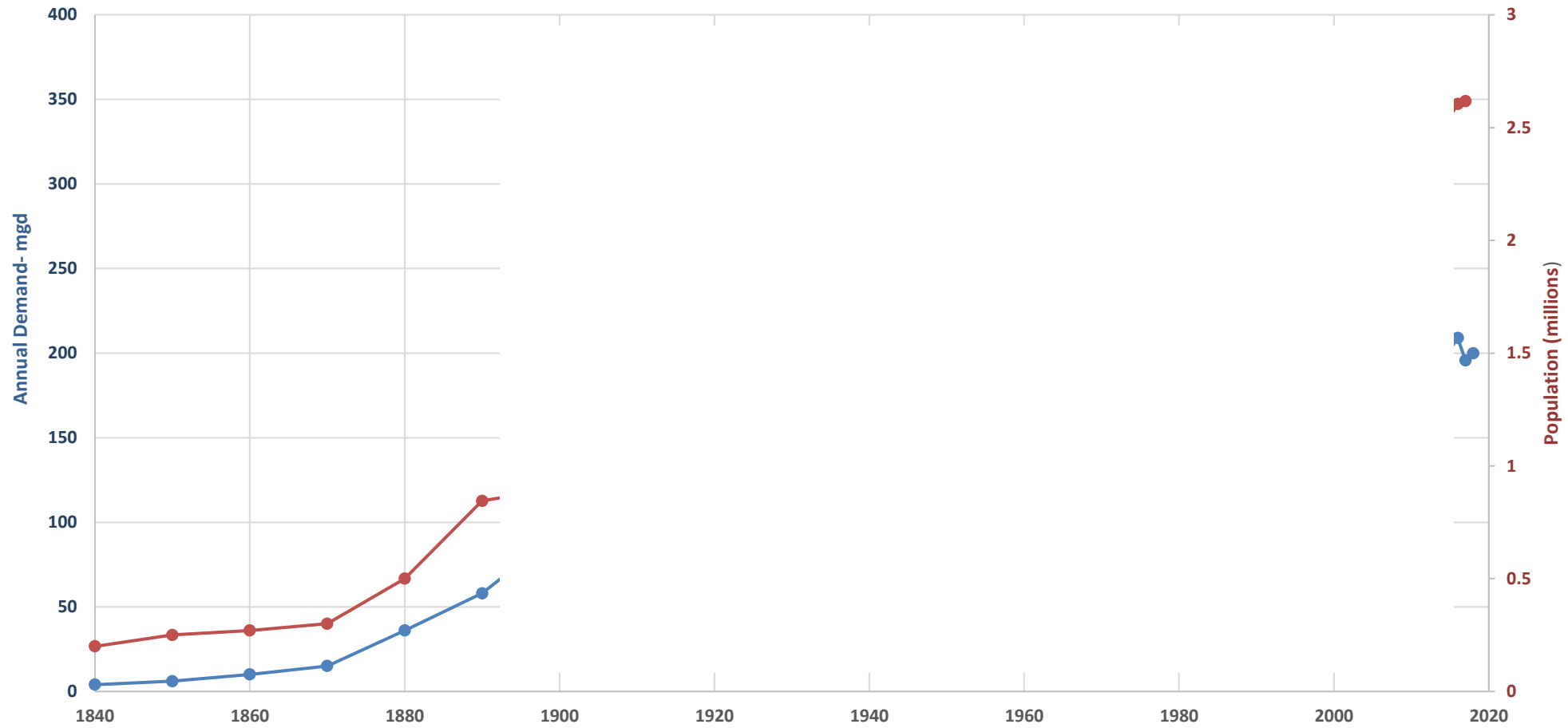


Changing Precipitation Quantity and Patterns

- Currently, we average 104 rain events per year with an average of 44 inches of rainfall
- Models suggest we'll see longer dry spells with shorter, heavier rain
- An overall modest increase in total rainfall
- Wetter wets, drier dries

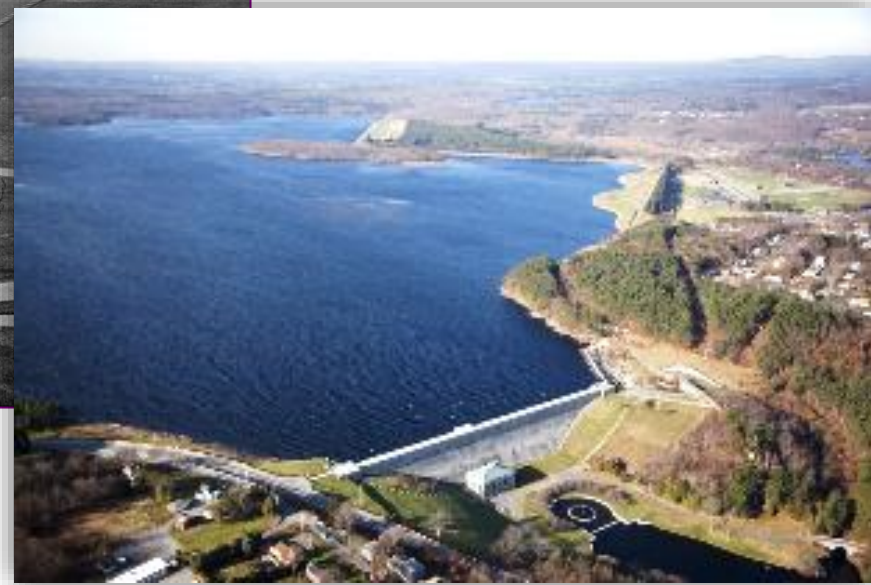
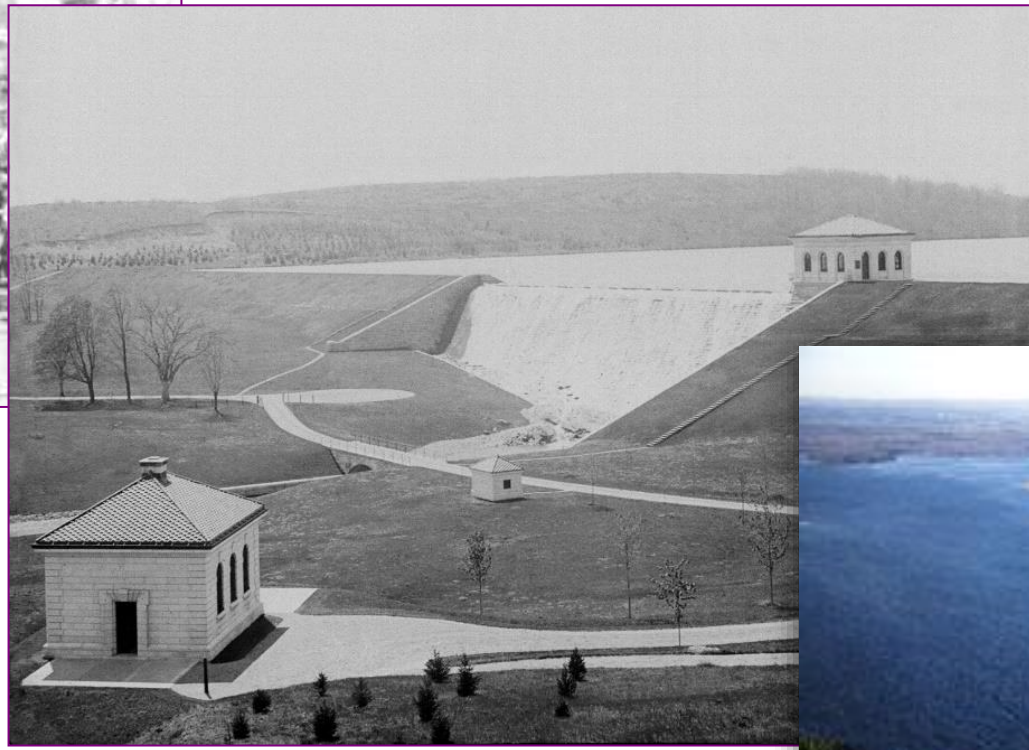


MWRA Long Term Demand and Population – 1840 - 1890



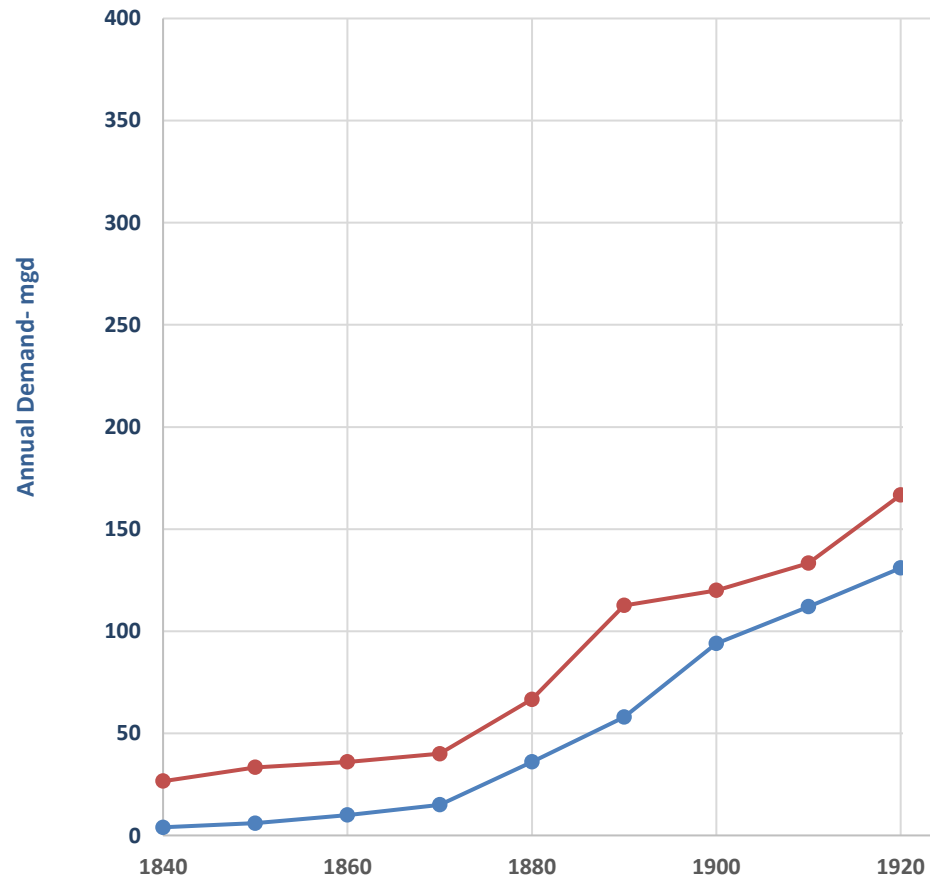


Cochituate, then Sudbury, then Wachusett Reservoirs





MWRA Long Term Demand and Population – 1940 - 1920



3
2.5



- Daniel Burnham is perhaps best known for his famous statement: *“Make no little plans. They have no magic to stir men's blood and probably will not themselves be realized.”*



Major New Tunnels and Pipes



Loaded Muck Cars - Bottom of Shaft #2 (Cont. #14) 5/5/30 (14) 89. Photo-Snow



Contract 85 Base Rings and Gantry Crane, Lock Joint Natick Mass. (85) ~ 39
Photo Cushman 5/29/39



Dams, and a Reservoir



Looking Northwest at East Branch Baffle from Sta. 19+80
Cont. #51 ~ 2-10-37 ~ Photo. Pike ~ (5) 122



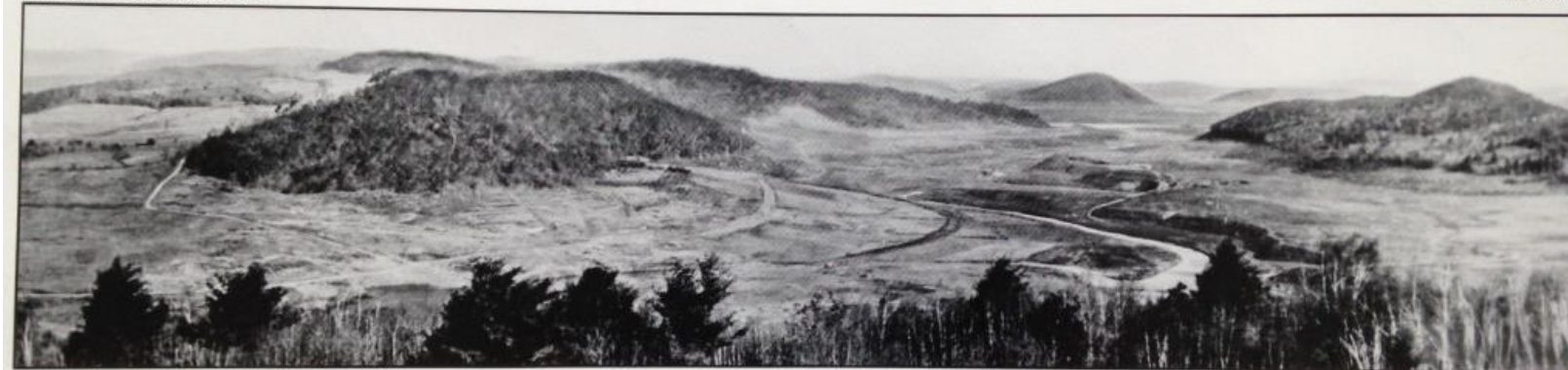


Enfield, one of the 4 "lost towns"



Enfield, Massachusetts- 1927

Gardner Photo



Enfield site cleared prior to flooding- 1939

Gardner Photo



Enfield site flooded- 1987 Reservoir 11 feet below full elevation with 90 feet of water over former business district.

Campbell Photo



Fred & Lucy R. Bisnette - Belchertown - 7/22/31 - Photo - Pike (2) 19

(2) 19



Bulldozer Pushing Tree into Fire ~ Clearing Reservoir Site ~
Cont. 61 ~ 1-26-39 ~ Photo Pike ~ (6) 1



*Burning Brush in Greenwich ~ Clearing Reservoir Site ~
Cont. 63 ~ 3-29-39 ~ Photo Pike ~ (63) 2*



*Looking Northerly at North Dana from near Church ~
Clearing Reservoir Site ~ Cont. 72 ~ 3-21-39 ~ Photo Pike ~ (72) 5*



- Daniel Burnham is perhaps best known for his famous statement: *“Make no little plans. They have no magic to stir men's blood and probably will not themselves be realized.”*
- **National Environmental Policy Act (NEPA) was signed into law on January 1, 1970**
- ***Small Is Beautiful: A Study of Economics As If People Mattered* by economist [E. F. Schumacher](#). 1973**

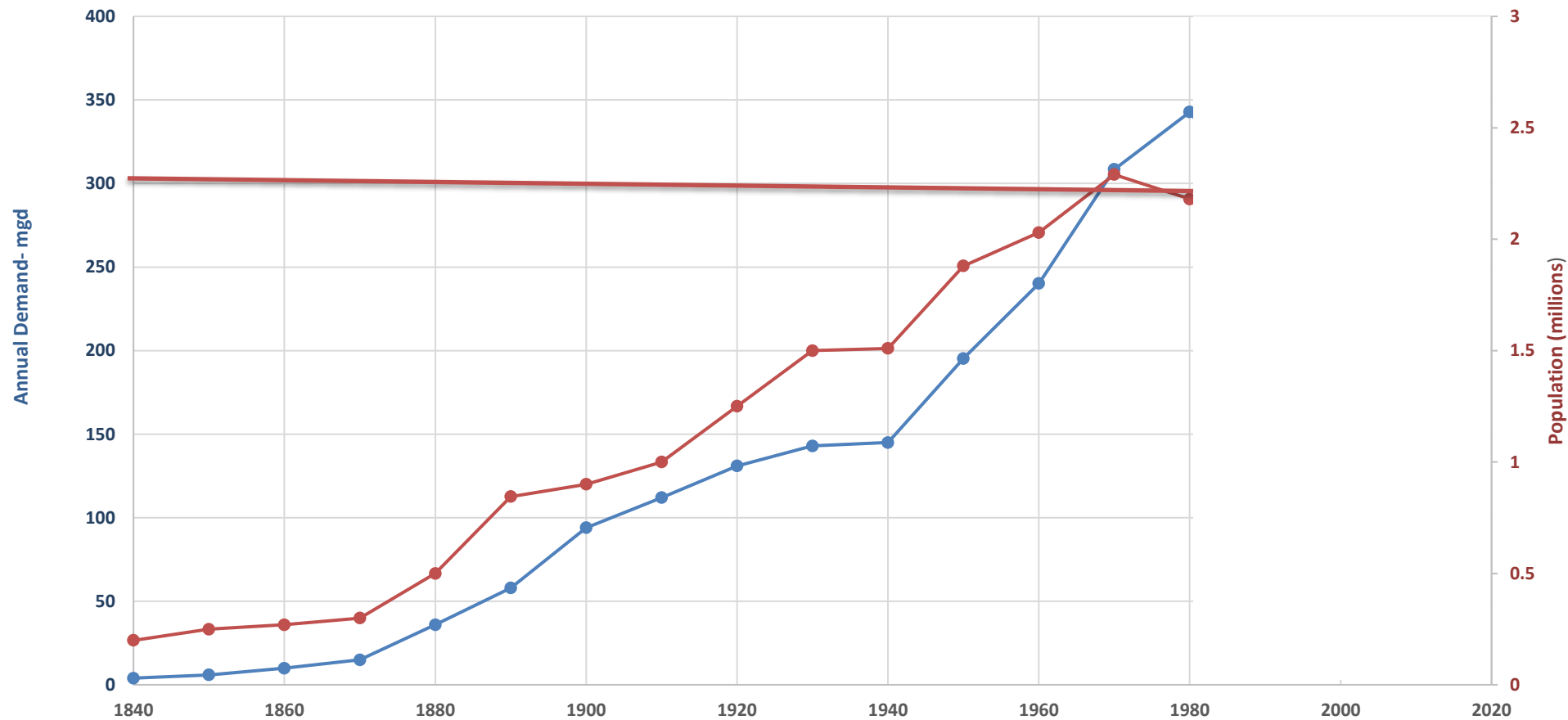


Every grave and monument relocated to a new cemetery



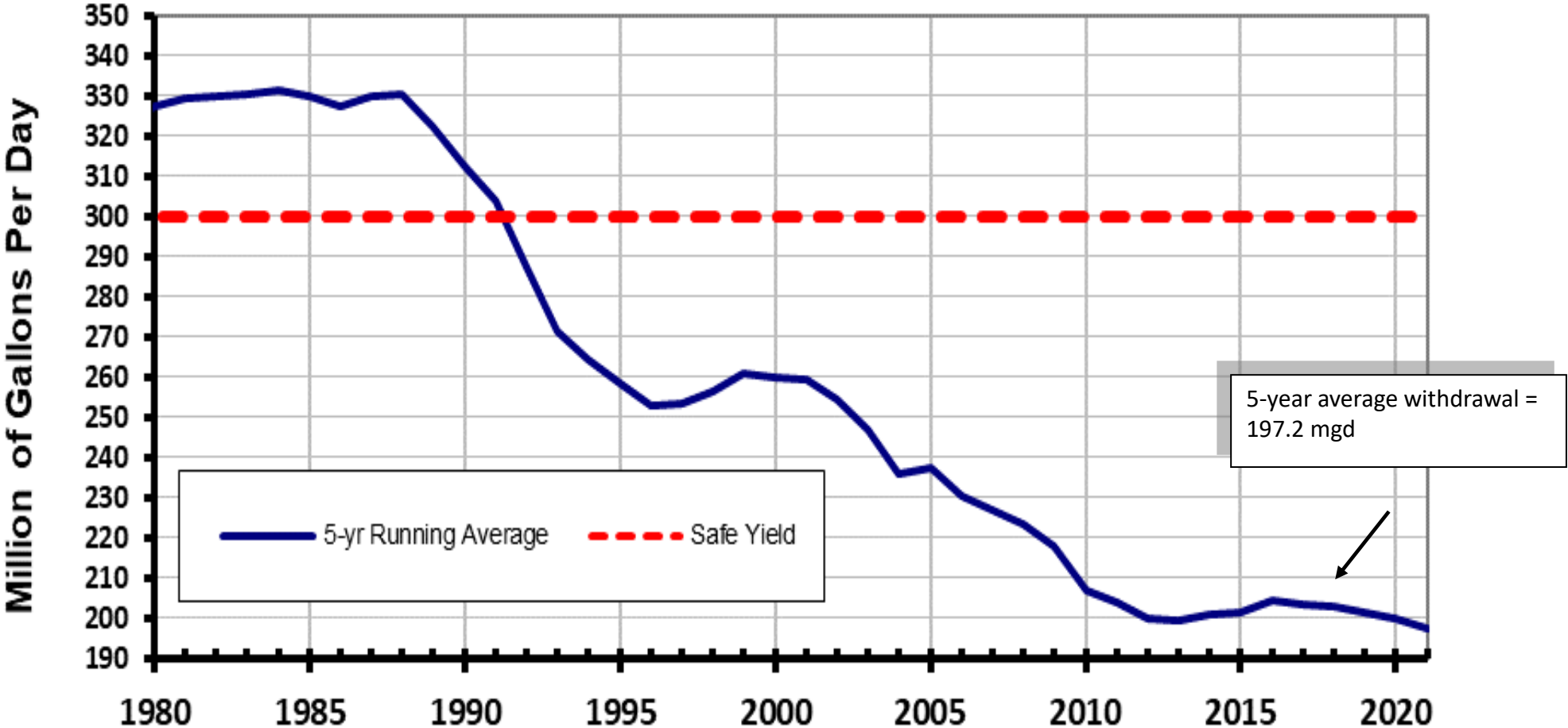


MWRA Long Term Demand and Population – 1840 – 1980





Our Demand Has Dropped Dramatically – Resilient Again





**Large Reservoirs + More Precipitation =
Plenty of High Quality Water**





More High Quality Water Means We Can Help Our Neighbors

- Quabbin Reservoir Can Act as the Regional “Flywheel”
- Existing Partial Users May Use More in Dry Years, Less in Wet
- Adjacent Communities May Need Emergency Supply More Often
- Some Communities May Choose to Permanently Connect
- Improvements in Reliability, Water Quality, and Environmental impacts

Questions or Comments?

Stephen Estes-Smargiassi

smargias@mwra.com

617-788-4303 (o) 617-839-9638 (m)

www.mwra.com

Drink with Confidence

Flush with Pride

This presentation represents the opinions of the author and not necessarily those of the MWRA

MODERATED DISCUSSION

Panel Moderator:

John Valinch, Forum Co-Chair

Senior Manager of Climate Resilience and Land Use
GroundworkUSA

Panelists:

Carmen Yulín Cruz, Former Mayor of San Juan, Puerto Rico

Stephen Estes-Smargiassi, MWRA

Christopher Osgood, City of Boston