

# Better Buildings Webinar Series

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We'll be starting in just a few minutes....

**Tell us...**

**What topics are you interested in for future webinars?**

Please send your response to the webinar organizers via the question box.



# **Finance and Resilience Initiative Part 2: Taking Action to Improve Resilience & Disclose Performance**

April 28, 2020

3:00 – 4:00 pm EDT

In case you missed it...

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**Finance and Resilience Initiative Part 1:  
Building the Business Case for Resilience**

April 21, 2020  
3:00 – 4:00 pm EDT

U.S. DEPARTMENT OF  
**ENERGY**

Watch Part 1 on the [Better Buildings Solution Center](#)



## Joe Indvik

Head of Clean Energy Finance, RE Tech Advisors  
Sector Lead, Better Buildings Financial Allies

# Agenda

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- 1** Overview of common resilience improvements, financing mechanisms, and disclosure frameworks
- 2** Introducing the DOE Resilience Roadmap
- 3** Insights from the field
- 4** Q&A

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## Takeaway:

Practical tools to help commercial buildings measure, manage, and mitigate climate and resilience risk.

# Today's Presenters

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**Guy Van Syckle**  
Hannan Armstrong



**Mike Doty**  
Greenworks Lending



**Brenna Walraven**  
Corporate Sustainability Solutions

# Finance and Resilience Initiative

## Need:

Building owners looking for guidance on where to start on resilience as climate and weather disasters intensify and market pressure increases.

## Goal:

Bring together experts and emerging best practices to help building owners measure, manage, and mitigate resilience risk. Focus on energy and climate, with other areas considered.

## Activities:

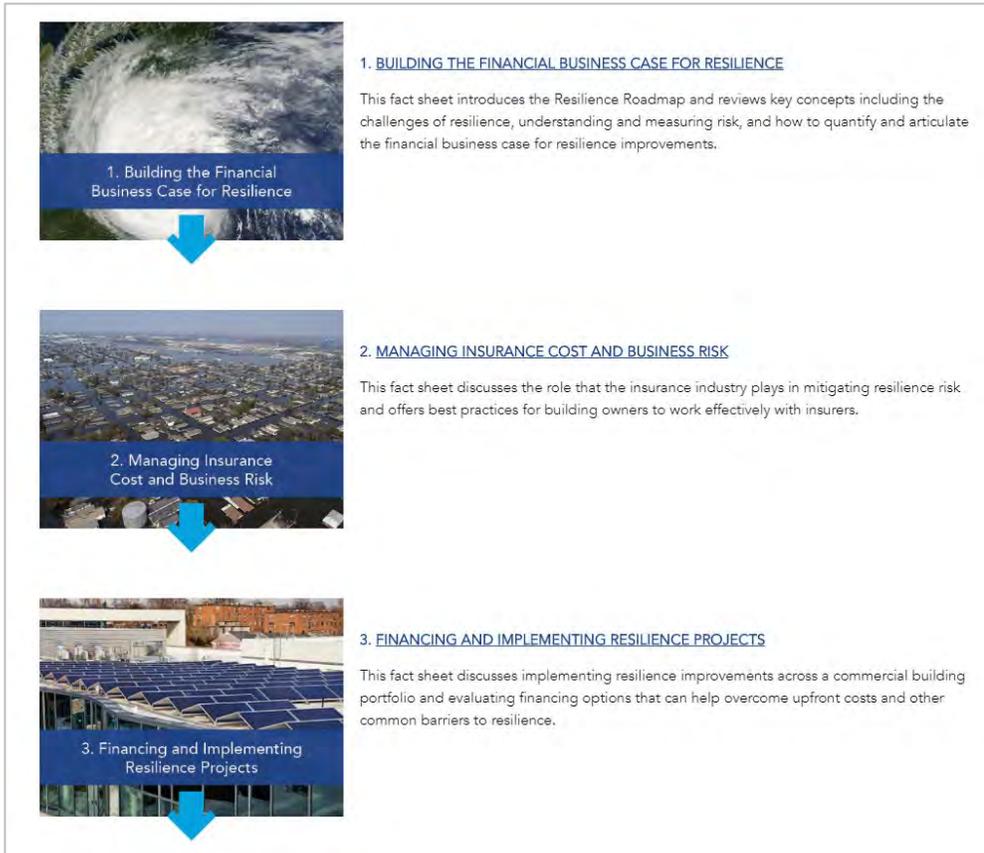
- Roundtable of industry experts from CRE, finance, and insurance industries
- Develop actionable resources
- Share insights with the market

## Steps Toward Resilience



# Resilience Roadmap is Now Live on the Solution Center

## Steps to Resilience



**1. BUILDING THE FINANCIAL BUSINESS CASE FOR RESILIENCE**

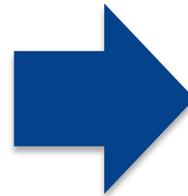
This fact sheet introduces the Resilience Roadmap and reviews key concepts including the challenges of resilience, understanding and measuring risk, and how to quantify and articulate the financial business case for resilience improvements.

**2. MANAGING INSURANCE COST AND BUSINESS RISK**

This fact sheet discusses the role that the insurance industry plays in mitigating resilience risk and offers best practices for building owners to work effectively with insurers.

**3. FINANCING AND IMPLEMENTING RESILIENCE PROJECTS**

This fact sheet discusses implementing resilience improvements across a commercial building portfolio and evaluating financing options that can help overcome upfront costs and other common barriers to resilience.



## Resources & Case Studies



**Figure 1: Physical and Transition Risks from Climate Change**

Category	Potential Impact
<b>Catastrophic events</b> Extreme weather such as hurricanes and	
<b>Changes in weather patterns</b> Gradual changes in temperature and/or higher temperatures, heavy sea levels, heavy rain and wind, and decreased rain to exacerbate the impact of catastrophic	
<b>Market</b> The possibility that markets vulnerable to become less desirable over time. Pricing for building and maintaining infrastructure, climate risks.	
<b>Policy and regulation</b> Regulations to address climate change: disclosure, tougher building standards, emissions caps, changes to subsidies—policies for providing funding for infrastructure major events.	
<b>Resource availability</b> Changes in the availability of key resource and water, including water scarcity.	
<b>Reputation and market position</b> Growing stakeholder pressures to work incorporating climate risk into investment consumer preference for real estate and climate mitigation.	

Source: <https://www.eia.gov/energy-factsheets/energy-factsheet-101.php>

**Measuring resilience risk** accurate. Materiality is an accounting concept omitted from a financial statement asset or portfolio are most susceptible interruptions or losses could be. Disclosures (TCFD) are beginning.

Learn more at [betterbuildings.gov](https://betterbuildings.gov)

**Financing and Implementing Resilience Projects**

**Executive Summary**  
A wide range of technologies, management practices, and financing solutions are available to help building owners improve the resilience of their properties. This fact sheet defines common resilience improvements and provides key considerations for identifying, prioritizing, and implementing these improvements across a commercial building portfolio. It also discusses common barriers to resilience improvements and reviews various third-party financing solutions that can help overcome these barriers.

**Overview**  
Resilience projects in commercial buildings typically take the form of retrofits that improve the envelope, structure, or systems of the property. During natural disasters, energy and electrical power availability is one of the more vulnerable aspects of building operation, so these improvements often aim to make building energy systems more robust, independent, and/or efficient.

Most resilience projects can be divided into three categories, shown in the box. Energy Supply projects help ensure that critical building systems can continue operating during a grid or fuel supply interruption. Resource Conservation projects reduce the energy and water demands of a building, increasing the amount of time it can operate on backup power and reducing the impact of disruptions. Structure Hardening projects mitigate property damage, injury, and system outages in the event of disaster.

Some building owners—particularly those with shorter hold periods—do not consider climate and resilience impacts to be a short-term risk, though that sentiment is beginning to change. Many resilience projects have high upfront costs of implementation, and some projects may not have a simple payback that is within an owner's hold period. However, calculations of the simple payback of resilience often do not include factors such as avoided damage costs, increased marketability and safety, insurance premium reductions, ability to attract competitive investment, and other financial aspects that may be less obvious.

**COMMON RESILIENCE PROJECTS**

- Energy Supply**
  - Renewable energy
  - Combined heat and power (CHP)
  - Battery storage
  - Backup generation
  - Microgrid
  - Electric vehicle charging
- Resource Conservation**
  - Efficient lighting and HVAC
  - Water efficiency measures
  - Building envelope improvements
- Structure Hardening**
  - Seismic retrofits
  - Wind-resistant roofs and windows
  - Flood mitigation

Learn more at [betterbuildingsolutioncenter.energy.gov](https://betterbuildingsolutioncenter.energy.gov)

Available at: <https://betterbuildingsolutioncenter.energy.gov/finance-resilience>

# Common Resilience Projects

## COMMON RESILIENCE PROJECTS

### Energy Supply

- ▶ Renewable energy
- ▶ Combined heat and power (CHP)
- ▶ Battery storage
- ▶ Backup generation
- ▶ Microgrid
- ▶ Electric vehicle charging

### Resource Conservation

- ▶ Efficient lighting and HVAC
- ▶ Water efficiency measures
- ▶ Building envelope improvements

### Structure Hardening

- ▶ Seismic retrofits
- ▶ Wind-resistant roofs and windows
- ▶ Flood mitigation

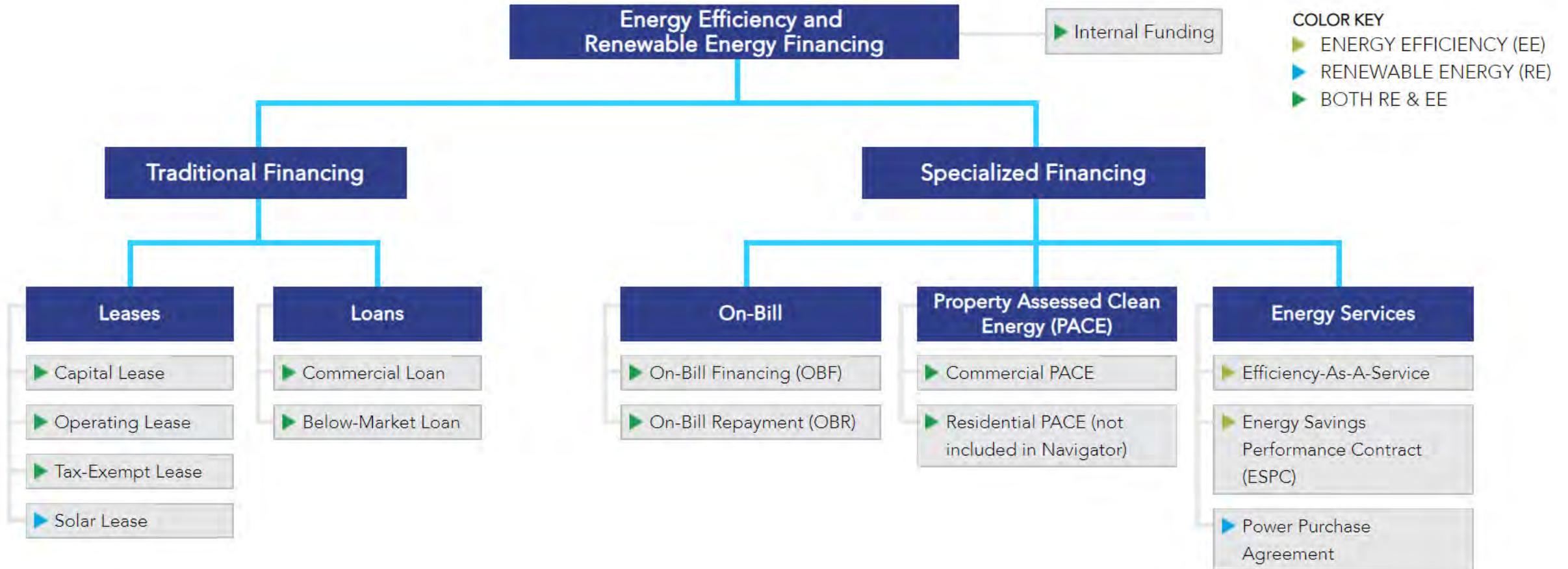
Ensure building systems continue operating

Reduce energy and water demand; increase operating time on backups

Mitigate property damage, injury, and system outages

Source: [DOE Resilience Roadmap](#)

# Energy and Resilience Financing Options



# Better Buildings Financing Navigator

The Better Buildings Financing Navigator is an online tool that helps public and private organizations find financing solutions for energy efficiency and renewable energy projects.



With the Navigator, you can...

1

**Explore:** Learn the basics of the clean energy financing market

2

**Find:** Answer a few simple questions to see which financing options might be a fit for your project

3

**Connect:** Speak to Better Buildings Financial Allies who may be able to finance your project

Available at: <https://betterbuildingsolutioncenter.energy.gov/financing-navigator>

# Better Buildings Financial Allies



# Resilience Finance Case Studies

Available on the Better Buildings Solution Center: <https://betterbuildingsolutioncenter.energy.gov/solutions>



- Primer on CPACE + Resilience
- EE&RE + Microgrid Case Study
- \$40M Seismic Upgrade for Hospital
- Hurricane-Proofing a Nursing Center

...and more.

# Disclosure Frameworks



# Creating a Resilience Risk Management Plan



## Creating a Resilience Risk Management Plan

**Overview**

This resilience risk management plan outline pulls together the content from the [Resilience Roadmap](#) into actionable planning steps. These steps can serve as the broad outline of an internal plan for use by portfolio managers and other stakeholders responsible for managing the financial performance of a commercial building portfolio. Each section covers an aspect of resilience that building owners may want to consider in developing a resilience management plan, and the questions within each section highlight key questions to consider. This resource is intended as a place to start—a broad and customizable outline to help start a conversation around resilience at your organization as you begin building out the skeleton of a plan.

**Outline**

- 1. Introduction and Overview**
  - a. Why was this plan developed?
  - b. What are the next steps?
- 2. Resilience Strategy**
  - a. Resilience mission statement
    - i. What is a mission statement that encapsulates our organization's belief in the importance of resilience and our strategy for improving it?
    - ii. How is resilience tied to our organization's overall mission?
  - b. Objectives
    - i. What are the high-level objectives of our resilience strategy?
    - ii. How do these objectives translate to individual divisions, regions, business units, and employees?
  - c. SWOT Analysis
    - i. Strengths: How is our organization well positioned to tackle resilience?
    - ii. Weaknesses: What shortcomings will make resilience challenging for us and how can we address them?
    - iii. Opportunities: How can we boost other areas of our business by improving resilience?
    - iv. Threats: How could our business be negatively impacted by a failure to adequately address resilience?
  - d. Milestones
    - i. What do we hope to accomplish and by when?
    - ii. What individual, group, or team is responsible for each milestone?
  - e. Governance
    - i. Who is responsible for implementing this plan?

Learn more at [betterbuildingsolutioncenter.energy.gov](https://betterbuildingsolutioncenter.energy.gov)



- **What is your overall resilience strategy?**
  - ✓ Mission statement & Objectives
  - ✓ SWOT Analysis
  - ✓ Milestones
  - ✓ Governance
- **How will you measure and analyze risk?**
  - ✓ Risk exposure, materiality, and vulnerability
  - ✓ Data tracking
  - ✓ Key performance indicators (KPIs)
- **How will you implement improvements?**
  - ✓ Process for identifying and prioritizing upgrades
  - ✓ Insurance strategy
  - ✓ Service providers and financing options
- **How will you communicate progress?**
  - ✓ Public disclosure and investor reporting
  - ✓ Tenant engagement
  - ✓ Marketing

Source: [DOE Resilience Roadmap](#)



Guy Van Syckle

Hannon Armstrong



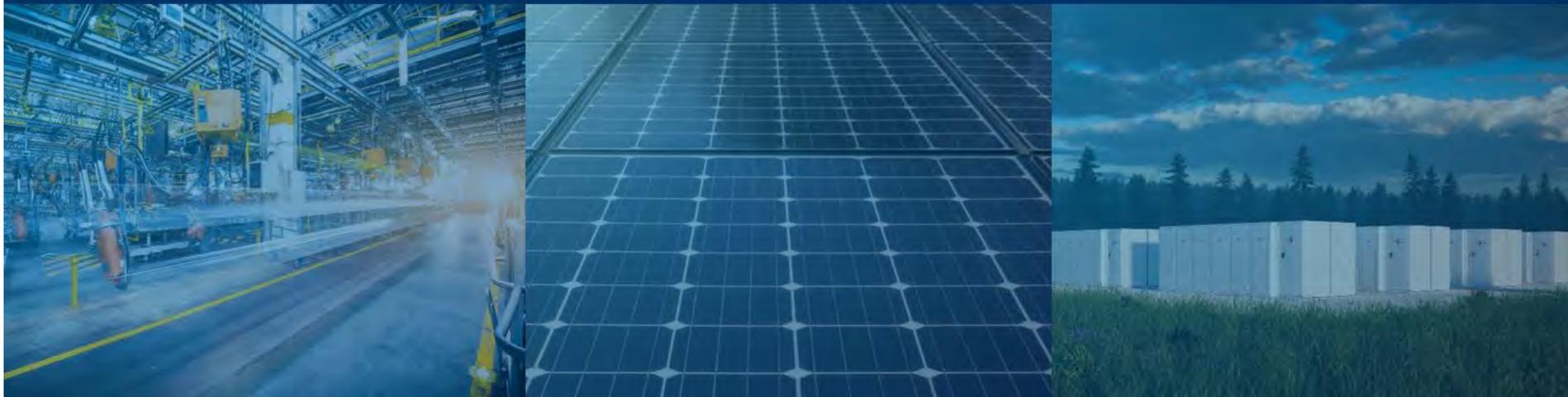
# TAKING ACTION TO IMPROVE RESILIENCE & DISCLOSE PERFORMANCE

DOE BETTER BUILDINGS  
FINANCE + RESILIENCE INITIATIVE WEBINAR

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Guy Van Syckle, CFA  
April 28, 2020

INVESTING IN  
CLIMATE CHANGE  
**SOLUTIONS**



# WHO WE ARE

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**HASI**  
**LISTED**  
**NYSE**

First U.S. public company  
solely dedicated to investments  
in climate change solutions

## Climate-Positive Investor

~\$1 Billion  
Invested Annually

>\$6 Billion  
Managed Assets

## Markets & Asset Classes



**Behind-The-Meter**

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Energy Efficiency  
Distributed Solar  
Storage



**Grid-Connected**

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Solar Land  
Onshore Wind



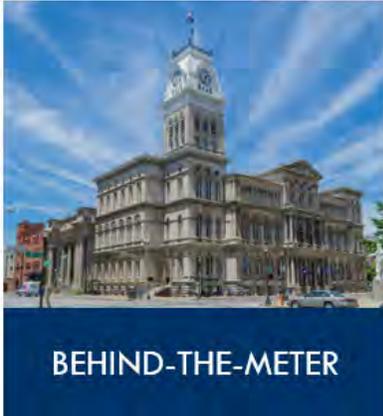
**Sustainable Infrastructure**

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Clean Water  
Ecological Restoration  
Resiliency



# ILLUSTRATIVE INVESTMENTS

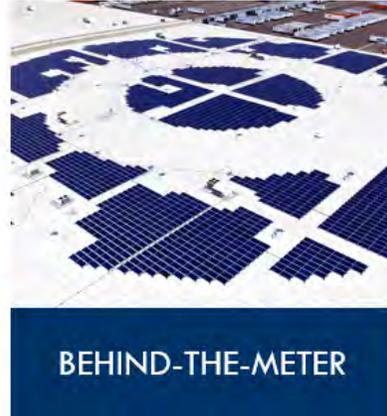


## Energy Efficiency

<\$30 million

Public-Private Partnership with the local municipality for new boilers, HVAC and LED lighting resulting in \$2 million in annual savings

Clients: Publicly traded energy service companies

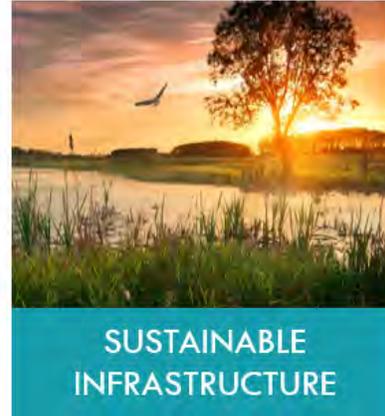


## C&I Solar

<\$50 million

Equity investment in a distributed portfolio of ~200 C&I projects, including high credit quality corporates, such as FedEx and Target

Clients: Solar sponsors



## Ecological Restoration

<\$20 million

Investments in mitigation credits for wetland and stream restoration projects across four states.

Clients: Environmental development firms



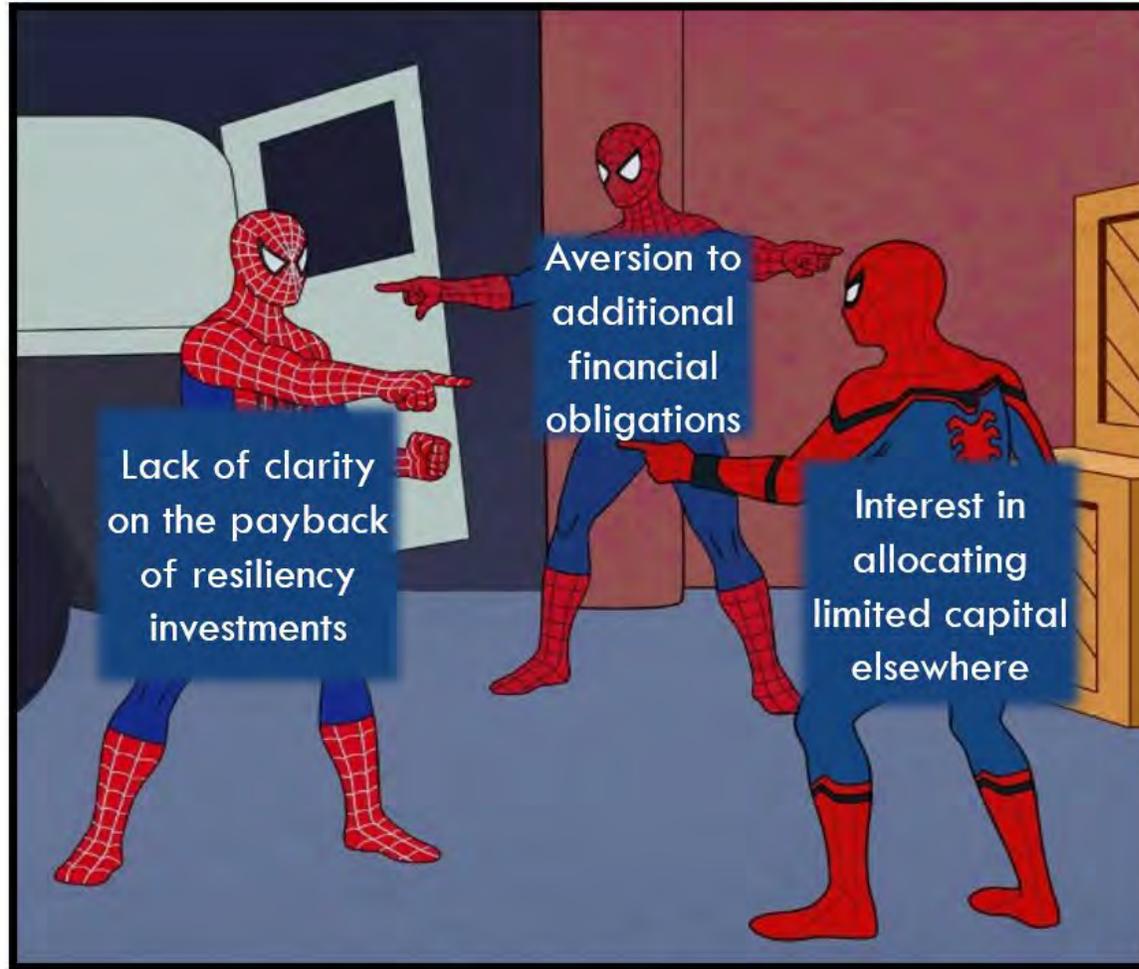
## Stormwater Remediation

<\$10 million

Four separate projects to slow pollution runoff into downstream waterways across the Chesapeake Bay region

Clients: Environmental development firms

# A “FINANCING PROBLEM” IS OFTEN REALLY A..



**Hannon Armstrong  
is currently funding resiliency projects  
according to the credit criteria used on standard capital projects.**

# PRIMARY RESILIENCY FINANCING STRUCTURES

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- Bond Issuance: General Obligation or Revenue Bond (i.e. backed by Stormwater fees)
- Lease Agreement: Fixed payment obligation over term of lease
- Performance Contract or Services Agreement:
  - Customer only pays engineering firm/financier if certain performance metrics are met
  - Resiliency typically paid for out of energy and operational savings, potential savings just from resiliency (ie avoided stormwater fees and reduced insurance costs) insufficient to support financing payments
  - Potentially credit neutral for credit rating agencies if service payment offset by savings
- Property Assessed Clean Energy: Assessment on property tax bill to pay for improvements

# Paying for Resilience with Energy and Operational Savings



CASE STUDY: Energy Savings Performance Contract  
at Parris Island Marine Corps Base

# CASE STUDY: ESPC AT PARRIS ISLAND MARINE CORPS BASE

- Comprehensive upgrade of lighting, water fixtures and control systems across 200+ facilities and associated \$6mn in annual savings subsidized longer payback resiliency measures
- Ameresco is on the hook for installation & performance, US Gov payment is contingent on realized savings/performance
- Ameresco is owed payments by US Gov for the next 25yrs under ESPC, Hannon Armstrong purchased those contract payments to fund the upfront project cost of \$90 million



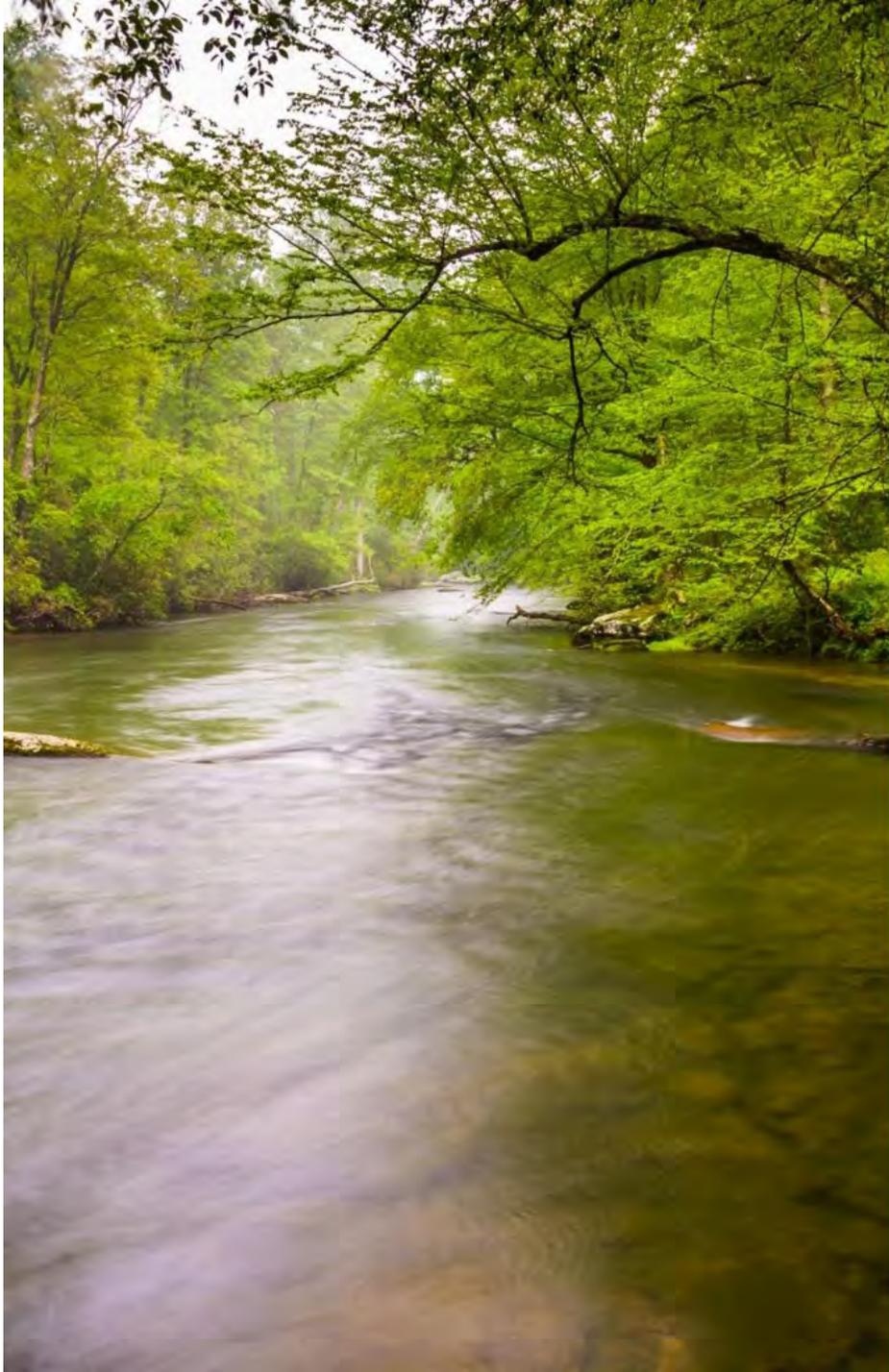
3.5MW CHP Plant w/black start and 30 days of on-site fuel storage



4.0 MW/8.1 MWh battery energy storage system



6.7MW of Solar across two Locations



# Paying for Required Resilience Improvements Over Time

CASE STUDY: Maryland State Highway Administration Stormwater Management

# CASE STUDY: MD STORMWATER MANAGEMENT PROJECTS

- GreenVest executed an \$18m “pay for performance” contract with the Maryland State Highway Administration to help the Administration satisfy their storm water permit obligations under the Clean Water Act
- GreenVest will generate stream restoration credits<sup>1</sup> and the Administration will purchase the credits as they are generated over a 7-year period
- Hannon Armstrong funded the design, permitting and construction and will be paid back through GreenVest credit sales



1) Impervious Acres Treated (IAT) credits to satisfy the Maryland State Highway Administration's Chesapeake Bay Total Daily Maximum Load (TMDL) and Municipal Separate Sewer Permit obligations



# THANK YOU

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Guy Van Syckle

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**Mike Doty**  
Greenworks Lending



# C-PACE: Financing for Resiliency Through Economic Instability

Webinar: April 28, 2020

AC COLUMBUS

# Introduction

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Greenworks Lending is a leading provider of Commercial Property Assessed Clean Energy (C-PACE) financing. Led by several of the industry's founding policy developers and standard-setters, the company was founded in 2015 with the goal of bringing C-PACE financing to building owners and developers across the country. Greenworks has provided financing to hundreds of commercial properties and is active in over 20 states.

The company completed the industry's first rated securitization in September 2017 and completed a second securitization in December 2018.



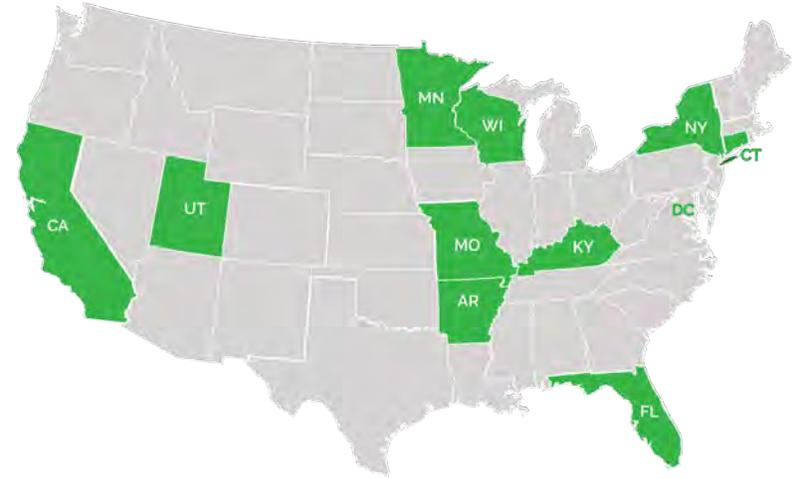
# C-PACE 101

## Commercial Property Assessed Clean Energy (C-PACE):

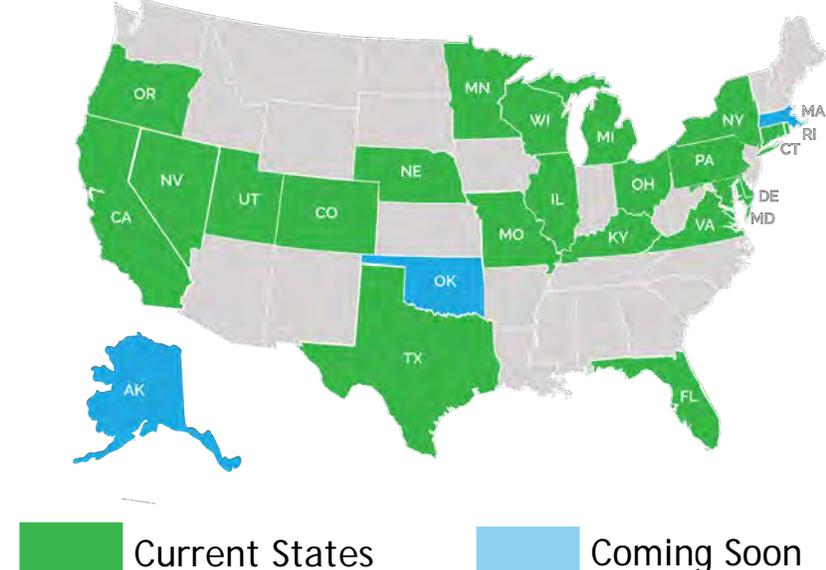
- Public-private financing through which private lenders finance qualified public benefit improvements in commercial properties
- Eligible measures include energy efficiency, renewable energy, water conservation projects, and seismic & hurricane resiliency
- Fixed-rate financing that self-amortizes over the life of the improvements, typically 20-30 year terms
- Enabled by State law and modeled after long-established public benefit assessments (i.e. utility, downtown renewal)
- Documented by a tri-party financing agreement between borrower, C-PACE lender, and government-appointed administrator
- Administrator places a non-accelerating assessment on the property's tax parcel, and remits payments to C-PACE lender
- Requires consent from secured lenders; obtained from 250+ lenders

## C-PACE is Spreading Across the U.S.

11 Available Markets in 2015



22 Available Markets in 2020



# Powerful Solution



## Cash Flow

- 100% financing
- Long payback period, fixed rate
- Covers all hard and soft costs
- Owner keeps ITC and tax benefits



## Flexible & Secure

- No personal or corporate guarantee
- Transfers on sale
- Costs can be passed through in lease or hospitality structures
- Preserves borrowing capacity



## Easy to Qualify

- Qualify based on property value
- Funds most energy and water projects
- All standard commercial property types
- Non-accelerating

# Most Buildings Qualify

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## Building Requirements

- ✓ Commercial, Industrial, Non-Profit, Multi-Family >5 Units
- ✓ Does NOT work for residential, government
- ✓ Located within operational PACE municipality
- ✓ Current on property taxes

## Financial Requirements

- ✓ Financed amount cannot exceed 35% of property value - and 20% for new construction
- ✓ Total property debt (mortgage + PACE) cannot exceed 95% of property value
- ✓ Not in bankruptcy
- ✓ Meets other state statutory requirements



### Hotels & Offices

Increase tenant and guest comfort as well as net operating income



### Retail

Invest in windows, lighting and more with long-term, low-cost capital



### Manufacturing

Offset high energy use with renewables and ensure operations with resiliency measures



### Multi-family

Properties with greater efficiency are not only more profitable, but marketable to tenants as well

# Project Types



## Energy Efficient Upgrades and Deferred Maintenance

Replace HVAC, lighting, windows, roof, etc. or improve seismic or hurricane resiliency to improve property and portfolio value.



## New Construction & Gut Rehabs

Improve cash on cash returns; decrease cost of capital; fill equity gaps.

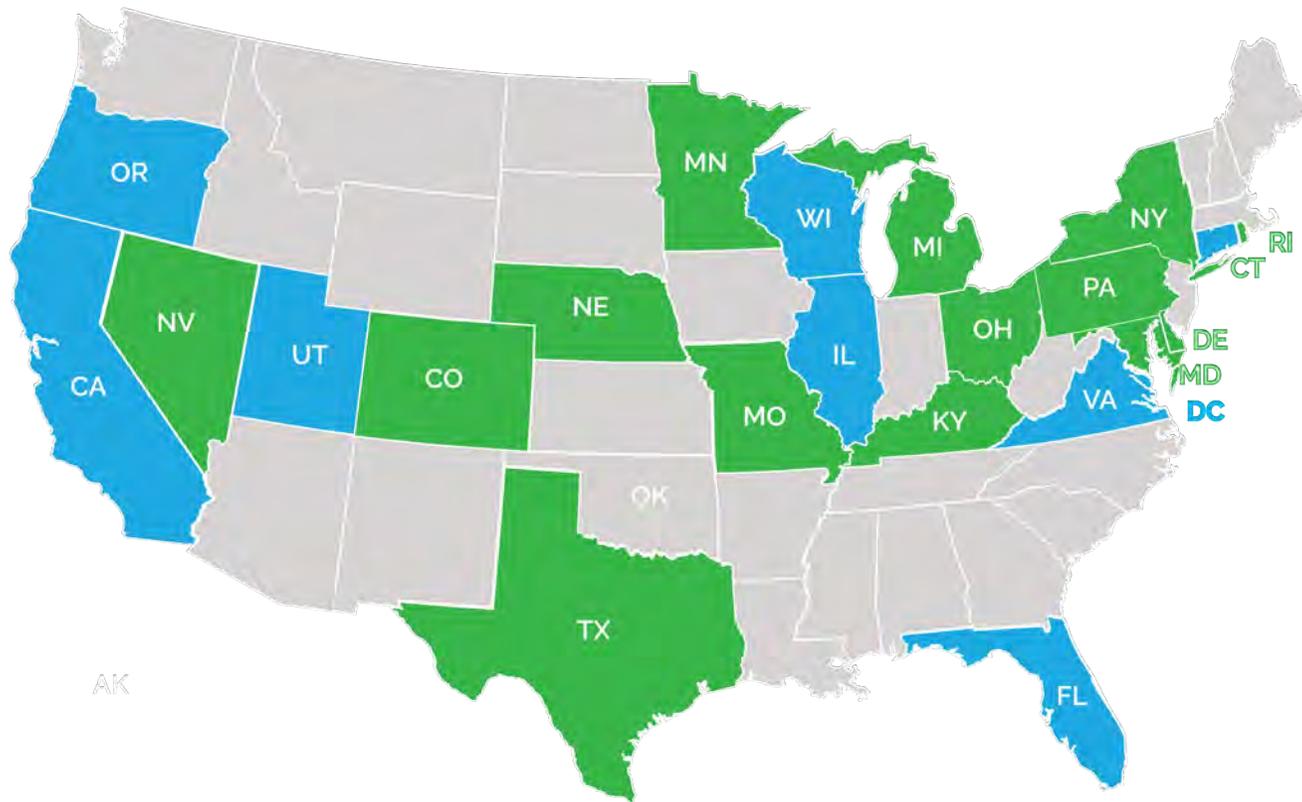


## Solar & Renewables

100% financing and 20+ year repayment drives day-one cashflow and maximizes tax equity for owners.



# Legislated Resiliency Financing



- States where Greenworks lends
- States where Greenworks lends and can finance resiliency measures

- ✓ CA (Seismic and Storm Water)
- ✓ CT (Microgrid)
- ✓ DC (Flood Protection and Storm Water)
- ✓ FL (Wind Resistance and Flood Protection)
- ✓ IL (Dupage county all resiliency)
- ✓ OR (Seismic and Storm Water)
- ✓ UT (Storage, EV, Rain Catchment, Seismic)
- ✓ VA (Fairfax Only - Seismic, Hurricane, Stormwater, EV, Non-Diesel Generation)
- ✓ WI (Outside Milwaukee Brownfield Redevelopment)

# Resiliency Measures

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## All C-PACE States:

- ✓ CHP
- ✓ Storage
- ✓ UV HVAC Disinfection with EE Measures

## Regional Measures

- ✓ Seismic
- ✓ Stormwater
- ✓ EV
- ✓ Hurricane
- ✓ Flood Protection
- ✓ Microgrid

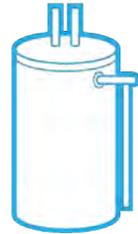
# Energy Efficient Upgrades & Deferred Maintenance



Automated Building Controls



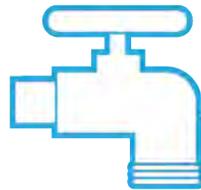
HVAC Systems



Boilers, chillers and furnaces



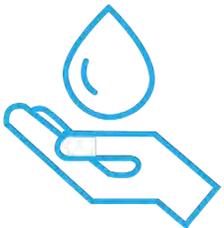
High Efficiency Lighting



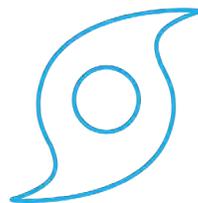
Hot Water Heating Systems



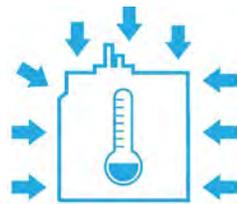
Variable Speed Drives



Water Conservation



Resiliency



Building Envelope



Improve building value by dropping operating expense and improving building equipment



Preserve capital expenditure using C-PACE financing to replace old equipment

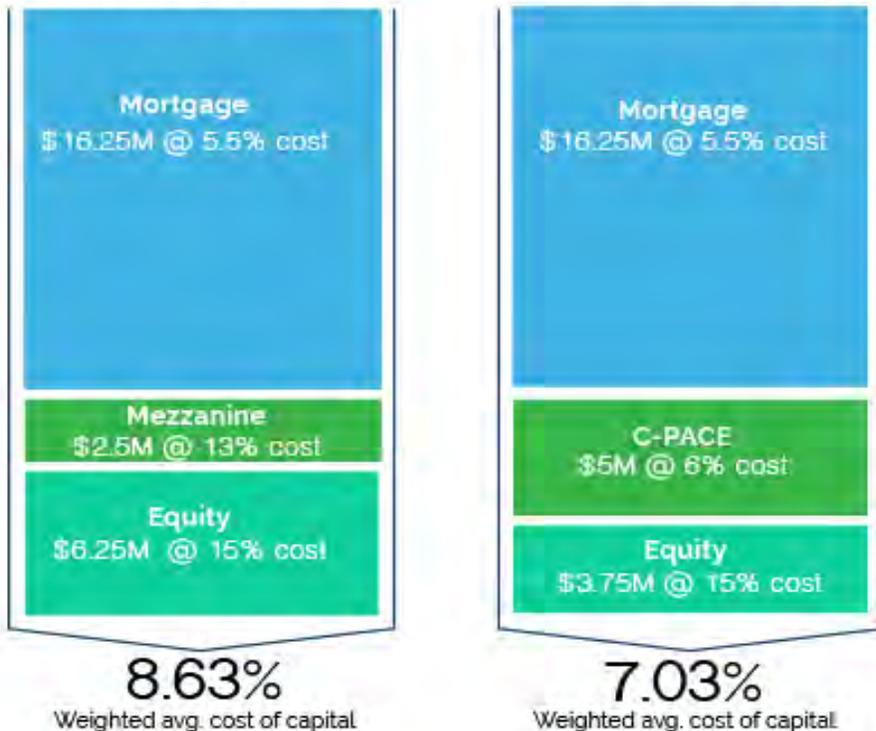


Tax assessment structure may allow pass-through on NNN leases and room surcharge

# New Construction

- ✓ Greenworks capital is roughly half the price of mezz/pref
- ✓ Non acceleration means senior lenders will likely find comfort
- ✓ Can be fully repaid at anytime with no yield maintenance
- ✓ Can fill construction budget gaps due to cost overruns or delays

Traditional Capital Stack      Capital Stack with C-PACE



Increase return on equity:



In this example, ROE improved 46.5% via the replacement of mezzanine debt and reduction in equity

Decrease weighted cost of capital: WACC



improves with C-PACE financing, in this case 160bps. The scenario at left yielded an estimated \$310k/yr

Permanent financing from day one:



Long-term fixed rate capital that stays with the property from construction through term

# C-PACE & Economic Volatility

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## C-PACE Refinancing Provides Liquidity for Businesses:

Greenworks can reimburse property owners for recently completed C-PACE-eligible projects (up to 1 year in CT) - generating immediate liquidity and freeing up capital for operations and reserves.

## C-PACE Helps Complete Capital Stacks:

Greenworks can fill funding gaps in new construction, gut rehab, and retrofit projects - solving issues with construction delay, cost overruns, and lender/investor pullback.

## C-PACE Allows 24-Month Repayment Delay for CRE Owners:

Financing is fixed rate, non-recourse, does not include financial covenants, and includes no payments for up to 24 months post-closing. Funding levels up to 35% of property value.



Completes capital Stack

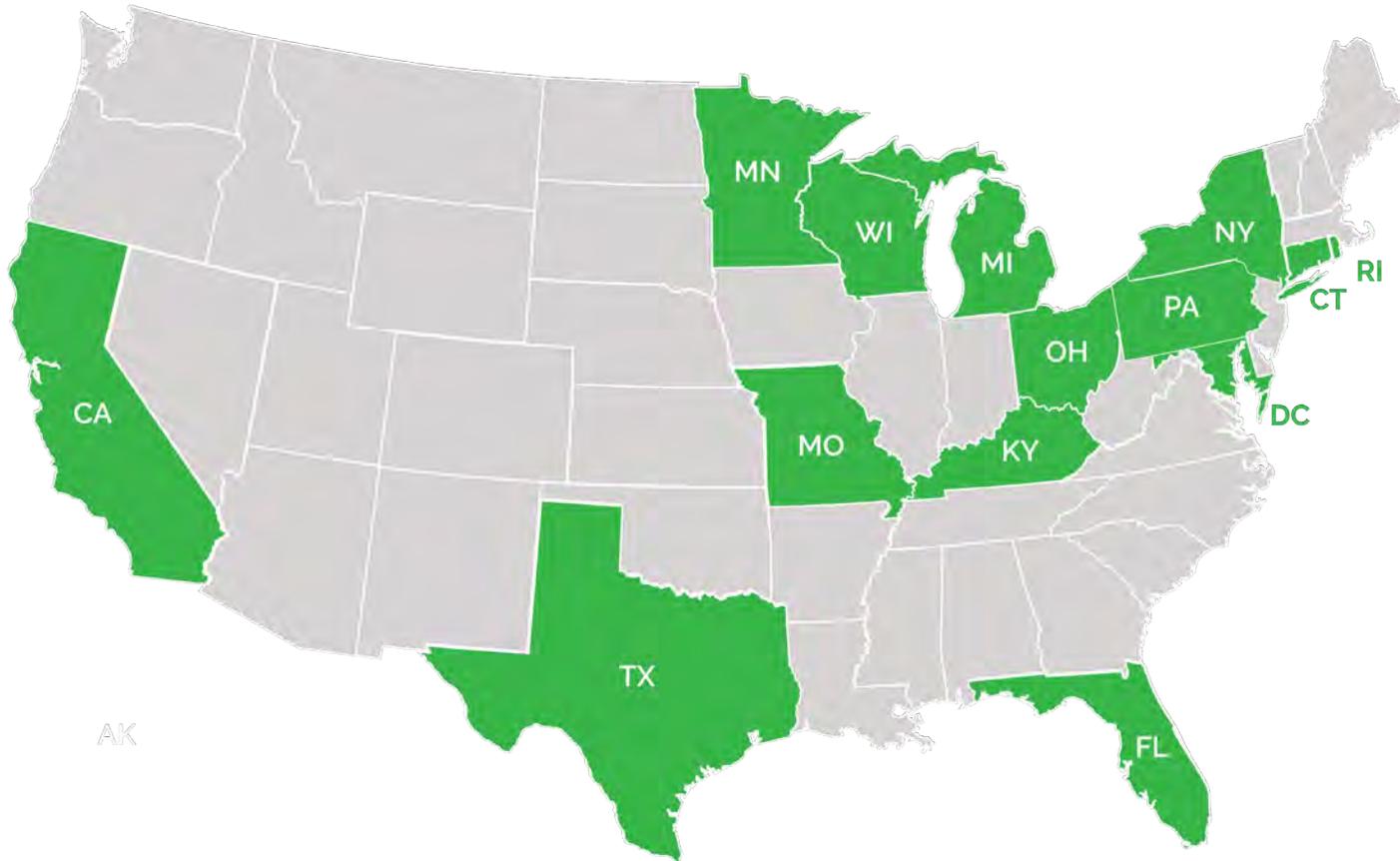


Catalyst to help projects  
move forward



Provides liquidity through  
reimbursement for qualified  
capital improvements

# Retroactive Financing



 States Allowing Retroactive Financing

- ✓ CA (3 years)
- ✓ CT (1 year)
- ✓ DC (Case by case)
- ✓ FL (3 years)
- ✓ KY (No limit)
- ✓ MD - PG Co. (18 months)
- ✓ MI (3 years)
- ✓ MO (Case by case)
- ✓ MN (1 year)
- ✓ NY (Case by case)
- ✓ OH (No limit)
- ✓ PA (Back to Aug of 2018)
- ✓ RI (2 years)
- ✓ TX (Case by case)
- ✓ WI (30 months)

# Wheatfield Gardens

## PROPERTY SUMMARY

Wheatfield Gardens is a hybrid greenhouse vertical farm located in Niagara County, NY with a focus on producing leafy green vegetables and high CBD hemp.

## OPPORTUNITY

Wheatfield Gardens enlisted the help of C-PACE to finance a 340 kW Combined Heat and Power system. This CHP unit is the base of a microgrid system that supports a unique and patented advanced Controlled Environment Agriculture (CEA) system which facilitates the efficient production of hydroponic lettuce and hemp. By simultaneously controlling heating, cooling, humidity and CO2 in the farm's 12.5-acre greenhouse, the system will allow them to meet inhouse energy and supplemental CO2 needs and derive energy efficiency benefits.



BUSINESS TYPE	BUILDING TYPE	PROJECT TYPE	LOAN SIZE	C-PACE TERM
AGRICULTURE	GREENHOUSE	EFFICIENCY	\$1,997,581	20 YEARS



# Wheatfield Gardens, North Tonawanda, NY ENERGY EFFICIENT FARMING

*"Greenworks' C-PACE financing has helped us meet our sustainability and productivity goals while also providing upfront capital and long-term savings. A major focus of ours at Wheatfield Gardens is sustainability and it is great to be able to use C-PACE financing to alleviate the financial burden that often comes with investing in more resource-efficient measures like LED lighting and Microgrids."*



*- Paal Elfstrum, CEO of Wheatfield Gardens*

YEAR ONE SAVINGS

**\$471,775**

SAVINGS OVER PROJECT LIFE

**\$8,788,261**

# 777 Main Street

## PROPERTY SUMMARY

Originally built in the 1960s as the 26-story tall headquarters of Hartford National Bank, 777 Main Street is now certified LEED Platinum, features 285 mixed-income apartments and a commercial space on the ground floor, and is the nation's first C-PACE financed microgrid.

## OPPORTUNITY

Planning and installation of a 15KW rooftop solar photovoltaic array to compliment a multi-measure microgrid system that includes everything from a 400KW fuel cell to NEST thermostats in each residence.



BUSINESS TYPE	BUILDING TYPE	PROJECT TYPE	LOAN SIZE	C-PACE TERM
MIXED USE DEVELOPMENT	MULTI-FAMILY/RETAIL	MICROGRID, SOLAR; MECHANICAL CONTROLS	\$1,000,000	20 YEARS

# Advantages

- Greenworks' best in class underwriting leads to a smooth financing process
- Reputation in industry facilitates mortgage lender consent (required)
- Balance sheet lender
- Transparent, rapid approval process



- Largest C-PACE provider in the U.S.
- First firm to securitize asset class
- Original state policy authors

- Greenworks develops long-term relationships as part of each project, including contractors, owners and other stakeholders



# Thank You

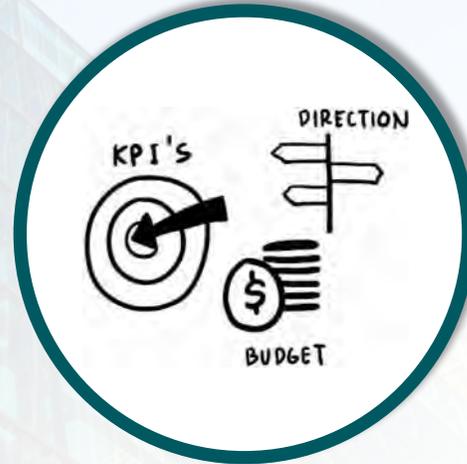
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**Brenna Walraven**

Corporate Sustainability Solutions

# Taking Action to Improve Resilience + Disclose Performance



Better Buildings Finance + Resilience Initiative

April 28, 2020

Brenna Walraven, BOMA Fellow



Efficiency Pays. Always Has. Always Will.

# Agenda

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- How vs. Why
  - Business Case for Resiliency
- Growing Investor Interest (Pressure)
- Alphabet Soup
  - Benchmarking and Disclosure of Climate Related Risks & Opportunities
- Future Expectations
  - Greater Risk Management and Transparency

## RESILIENCE

[ri - zil - yuhns]

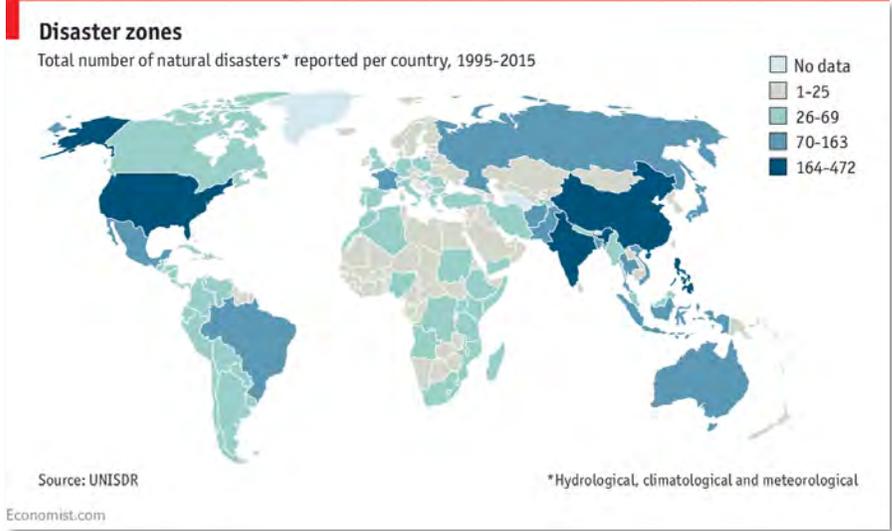
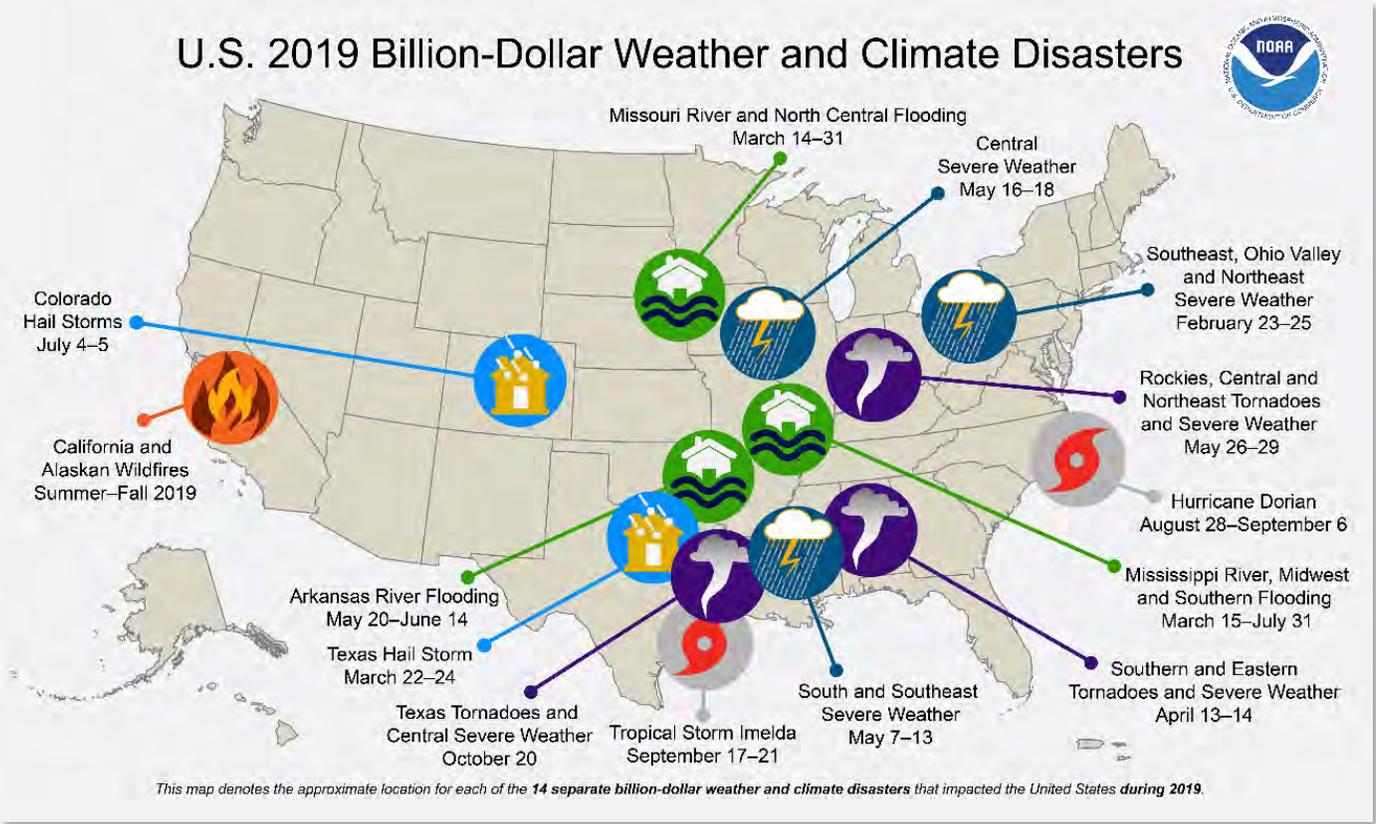
**the power to be**

able to recover readily

from adversity or challenge

# Resilience, Risk Mitigation, and Implications for CRE

## Moody's Warns Cities to Address Climate Risk or Face Downgrades



Moody's Investors Services Inc., November 29, 2017  
 Seaside Heights, New Jersey | Photographer: Mario Tama/Getty Image  
 NOAA | U.S. 2019 Billion Dollar Weather and Climate Disasters | [www.ncdc.noaa.gov/billions](http://www.ncdc.noaa.gov/billions)  
 Economist | Weather Related Disasters are Increasing | [www.economist.com/graphic-detail/2017/08/29/weather-related-disasters-are-increasing](http://www.economist.com/graphic-detail/2017/08/29/weather-related-disasters-are-increasing)

## How + Why for Commercial Real Estate + Resilience

- Failing to Prepare is Preparing to Fail
- Includes Business Continuity
  - For the Building & Support Teams
  - For Building Tenants
- Be Neighborly
- Embrace the Community
  - First Responders
  - City & County Agencies
  - Sustainability & Resiliency Offices



## Business Case is the Why

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- Save more than you spend
  - financial drivers are real
- Enhance brand
  - be known as good corporate citizen
  - win-win solutions on saving costs and enhancing value
- Reduced risk will increasingly be priced into real estate
  - Sustainability – also means measuring, monitoring, and managing
  - Resiliency adaptations
- Sustainability is increasingly viewed as a proxy for good management *and risk reduction*



# Growing Investor Interest (Pressure)

## Market Context for Growing Investor Interest in ESG

- Evidence of market shifts
- Increasing Climate Related Legislative + Regulatory Requirements
  - Energy Benchmarking & Disclosure, Local Law 92, etc.
- Security Exchange Commission (SEC)
  - SASB, TCFD, GRESB
- Investors are inquiring
- Appraisals including Sustainability
- Growth of Certifications
- Corporate campaigns for social causes
- Demographics are shifting
  - More people care, particularly young people

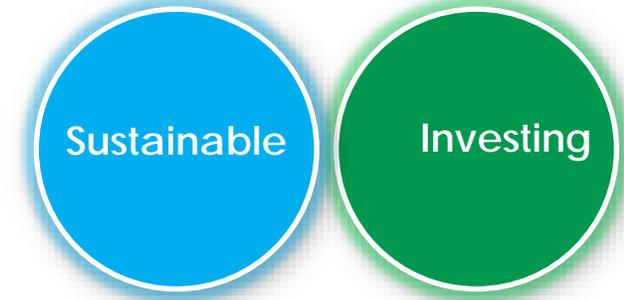


## Why Investors are Increasingly Focused on Climate Change

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### ***35% of REIT properties are exposed to climate hazards***

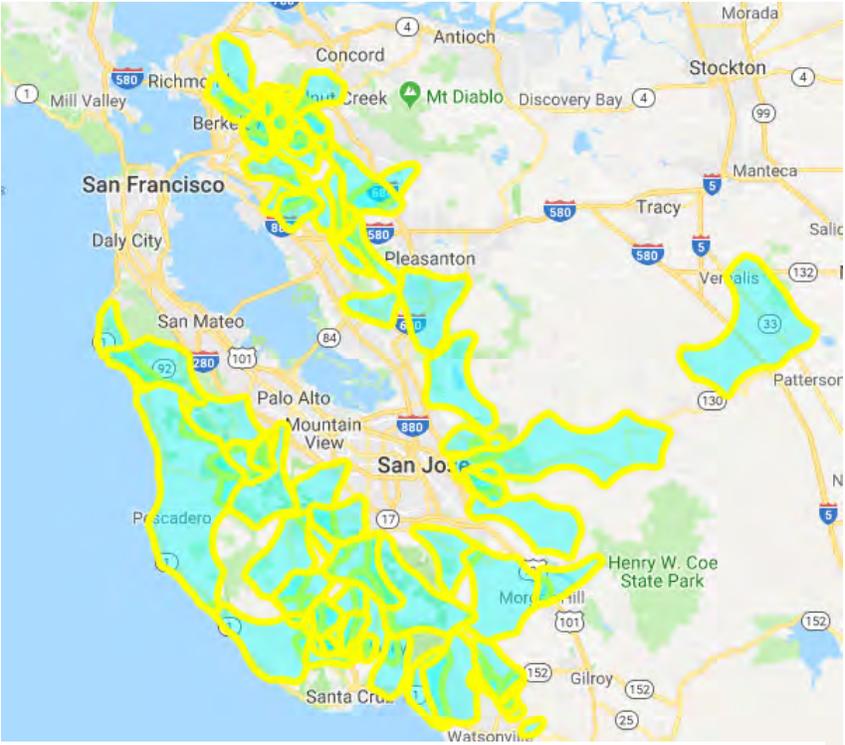
- ***per GeoPhy and 427 Analysis***



### ***Larry Fink, BlackRock CEO Letter to Investors***

- “Research from a wide range of organizations on the socioeconomic implications of physical climate risk is deepening our understanding of **how climate risk will impact both our physical world and the global system that finances economic growth.**”
- “Our investment conviction is that **sustainability and climate-integrated portfolios can provide better risk-adjusted returns to investors.**”

# Types of Climate Risk + Their Potential Impact on Real Estate

Category	PG&E plans power outages starting Wednesday; they could affect Palo Alto too	
<b>Market</b> The possibility that markets will become less desirable over time for building and maintaining in the face of climate risks.	Quarter-million people across dozens of Bay Area cities at risk of losing electricity; agencies urge people to plan ahead	markets
Transition risks	 <p>The highlighted communities in this map provided by PG&amp;E face power shutoffs as part of the utility company's efforts to ensure its electrical equipment doesn't spark a wildfire. Image courtesy PG&amp;E.</p>	

# Why do Investors Increasingly Care?

## How a focus on ESG, and specifically Resiliency, can Impact Value



### Accretive Value Drivers

- Increased Occupancy
- Increased Tenant/Resident Retention
- Shorter Lease-up and Down Time
- Lower Operating Expenses
- More Desirable Spaces (light, air)
- Potential for Rent Premiums
- Higher NOI's
- Value Creation



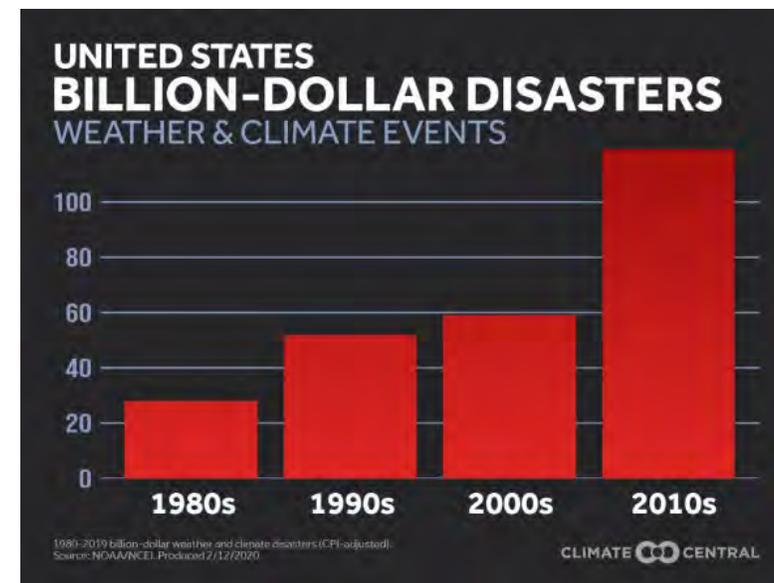
### Defensive Value Protectors

#### *Decreased...*

- Regulatory Compliance Risk
- Functional Obsolescence Risk
- Climate Risk: Flood/Wind/Fire/Drought
- Insurance Premium Risk
- Carbon + Resource Expense Risk
- Reputational Risk
- Resilience Risk: Recovery/Business Interruption Losses
- Down Cycle Valuation Risk

# Alphabet Soup Benchmarking and Disclosure of Climate Related Risks + Opportunities

- Overview of SASB
- Overview of GRESB
- Overview of TCFD



## Context for ESG & Resilience Strategy Considerations

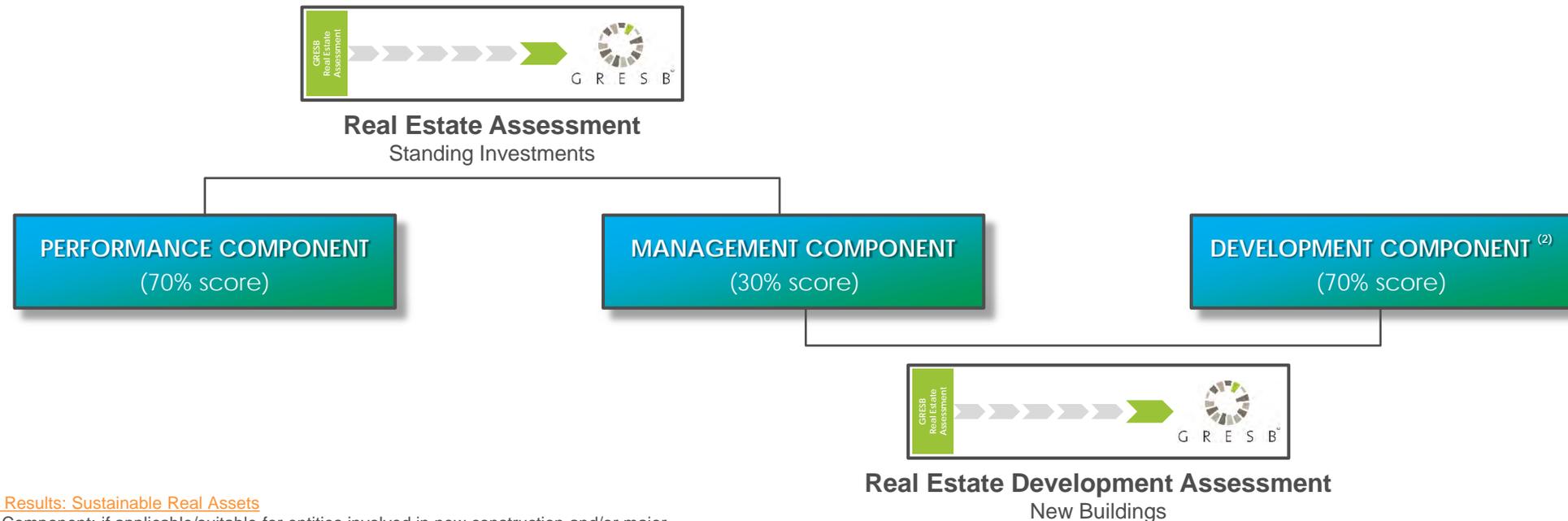
**SEC requires disclosure on anything that an investor would see as the potential to have a material impact on financial performance of a company**

- SASB has guidelines around materiality and disclosure
- Public REIT's will increasingly need to disclose and set strategy to deal with material impacts
  - Part of Strategic Planning
  - Annual Reporting
  - Annual Sustainability/ESG Report
  - Recurring Materiality Assessments



# GRESB Overview

- Global Real Estate Sustainability Benchmark
- Over USD 4.5 trillion in Real Asset Value <sup>(1)</sup>
- Only reporting framework specific to real estate
- GRESB investor members represent USD 22 trillion in institutional capital <sup>(1)</sup>
- Measured against 3 main components



<sup>1</sup> [GRESB 2019 Results: Sustainable Real Assets](#)

<sup>2</sup> Development Component: if applicable/suitable for entities involved in new construction and/or major renovation projects or with on-going or completed projects during the reporting period.

# Task Force on Climate-Related Financial Disclosure

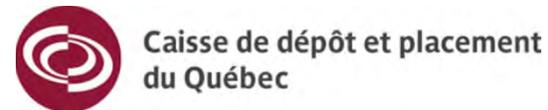


## TCFD has identified the following types of climate risks and opportunities:

- **Climate-Related Risks:**
  - Transition to a low-carbon economy
  - Physical risks for climate change related weather event
    - Fire, flood, hurricane, tornados, polar vortexes, earthquake
- **Climate-Related Opportunities:**
  - Resource Efficiency
  - Energy Source
  - Products and Services – like *better* buildings
  - Markets
- **Resilience**
  - How do we better prepare for and recover from weather related events



BLACKROCK®



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JPMORGAN CHASE & CO.



# Future Expectations for Greater Risk Management + Transparency

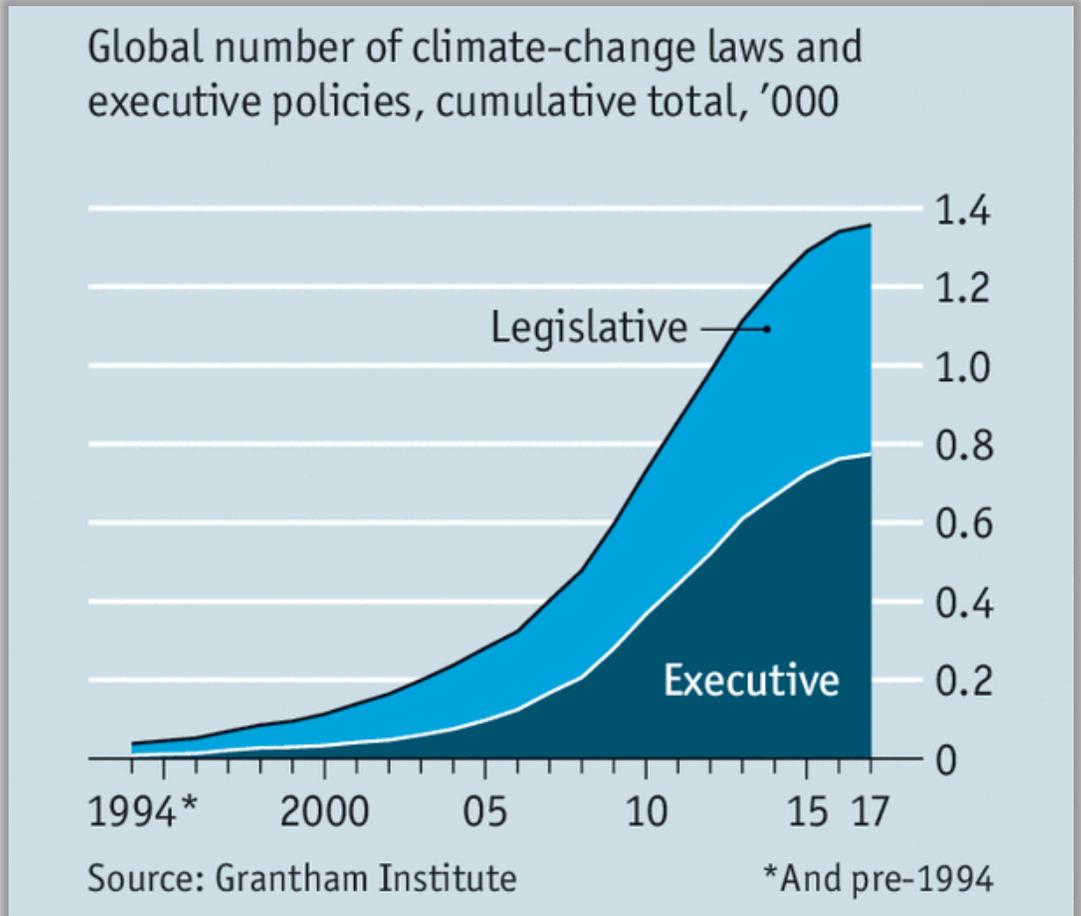
## Traditional Insurable Loss Calculations



THE MAJORITY  
OF **LOSS**  
IS **PREVENTABLE**

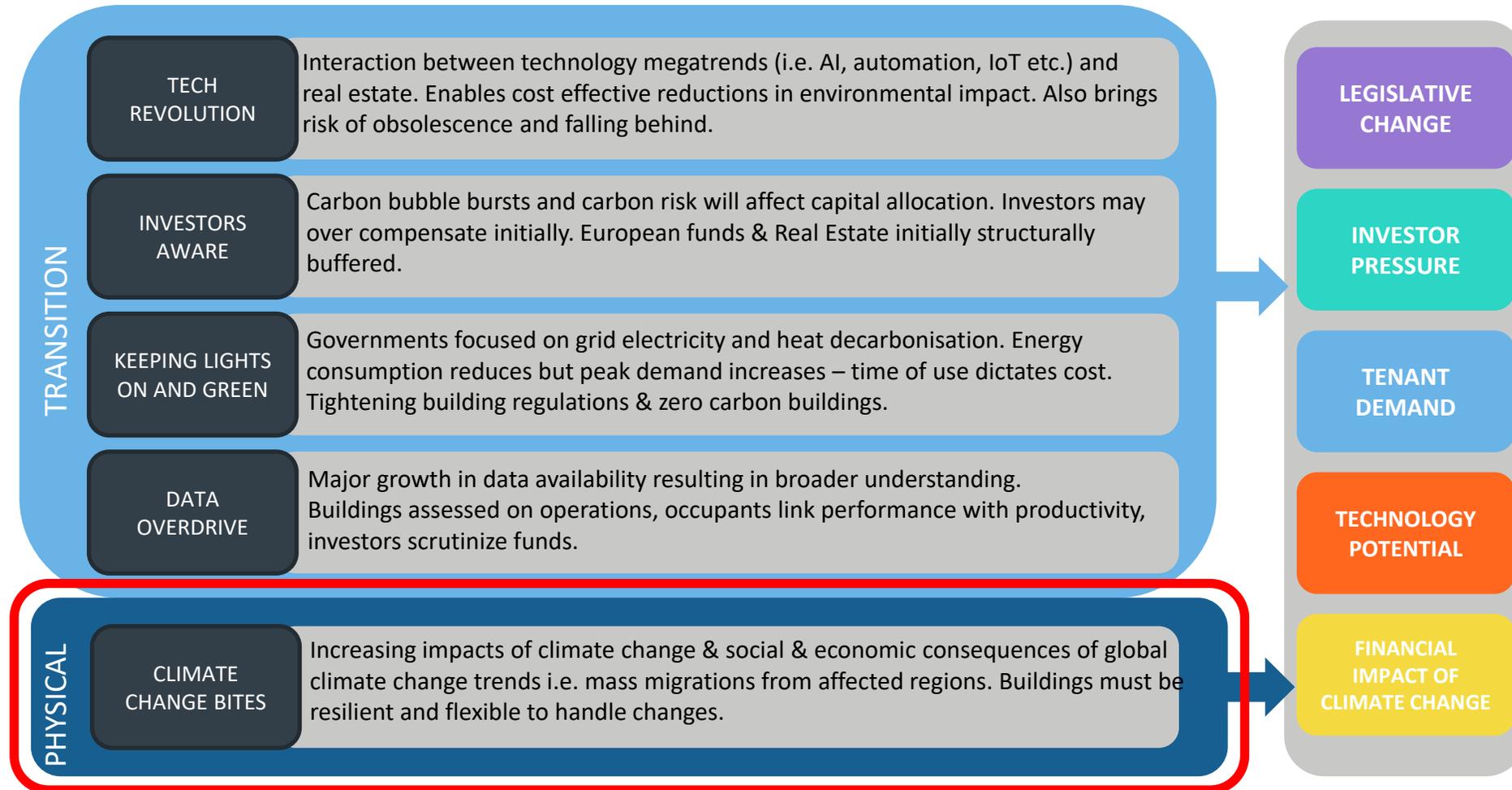


# Future Expectations for Greater Risk Management and Transparency



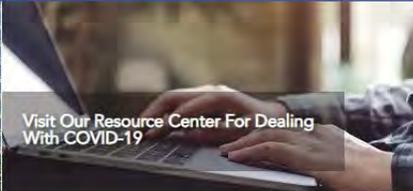
<https://www.willistowerswatson.com/en-GB/Insights/trending-topics/climate-risk-and-resilience>  
<https://www.economist.com/international/2017/11/02/climate-change-lawsuits>

# “Tomorrow’s World”: Megatrends Impacting Real Estate Investment in Next 15 Years





Thank You



## BETTER BUILDINGS

Better Buildings is an initiative of the U.S. Department of Energy (DOE) designed to improve the lives of the American people by driving leadership in energy innovation. Through Better Buildings, DOE partners with leaders in the public and private sectors to make the nation's homes, commercial buildings and industrial plants more energy efficient by accelerating investment and sharing of successful best practices.

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# Q & A

# 2019-2020 Better Buildings Webinar Series



## BACK BY POPULAR DEMAND:

THE BEST OF THE 2019  
BETTER BUILDINGS SUMMIT

Tue, Sep 17, 2019 | 3:00 - 4:00 PM ET



## HOW BUILDINGS OF ALL SHAPES AND SIZES ARE BECOMING ZERO ENERGY USERS

Tue, Dec 3, 2019 | 3:00 - 4:00 PM ET

## FINANCE + RESILIENCE: a two-part miniseries



### PART 1: BUILDING THE FINANCIAL BUSINESS CASE FOR RESILIENCE

Tue, Apr 21, 2020 | 3:00 - 4:00 PM ET



### PART 2: TAKING ACTION TO IMPROVE RESILIENCE & DISCLOSE PERFORMANCE

Tue, Apr 28, 2020 | 3:00 - 4:00 PM ET



## GETTING TO 100%:

OVERCOMING BARRIERS TO  
TENANT DATA COLLECTION

Tue, Oct 1, 2019 | 3:00 - 4:00 PM ET



## BEST OF THE BETTERS:

THE 2019 BETTER PROJECT AND  
BETTER PRACTICE PRESENTATIONS

Tue, Jan 7, 2020 | 3:00 - 4:00 PM ET



## ENERGY EFFICIENCY AND RENEWABLE ENERGY IN SMALL AND RURAL K-12 SCHOOLS

Tue, Oct 22, 2019 | 3:00 - 4:00 PM ET



## SAVE MONEY AND BUILD RESILIENCE WITH DISTRIBUTED ENERGY TECHNOLOGIES

Tue, Feb 4, 2020 | 3:00 - 4:00 PM ET



## GET SMART (LABS):

RESULTS FROM THE  
SMART LABS ACCELERATOR

Tue, May 12, 2020 | 3:00 - 4:00 PM ET

[REGISTER TODAY >](#)



## RETHINKING LEASING:

SPOTLIGHT ON THE  
2019 GREEN LEASE LEADERS

Tue, Nov 12, 2019 | 3:00 - 4:00 PM ET



## BUILDING VALUE:

HOW ENERGY EFFICIENCY IMPACTS  
MORTGAGES AND MORE

Tue, Mar 3, 2020 | 3:00 - 4:00 PM ET



# 2019-2020 Better Buildings Webinar Series

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## GET SMART (LABS):

RESULTS FROM THE SMART LABS  
ACCELERATOR

Tue, May 12, 2020 | 3:00 - 4:00 PM ET

[REGISTER TODAY >](#)

For the past three years, 18 Better Buildings partners have been working through the Smart Labs Accelerator to reduce their energy intensity in their laboratory buildings through the development of a Smart Labs Program. This webinar will highlight best practices for developing a Smart Labs Program and feature results from Accelerator participants.

## Additional Resources

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Finance and Resilience Roadmap:

<https://betterbuildingsolutioncenter.energy.gov/finance-resilience>

Better Buildings Financing Navigator:

<https://betterbuildingsolutioncenter.energy.gov/financing-navigator>

REGISTER  
TODAY



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U.S. DEPARTMENT OF  
**ENERGY**

# Additional Questions?

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