



RELi financing underwriting standards / resiliency standards* RESILIENT ACTION LIST



RELi | THE RESILIENT ACTION LIST

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PERKINS + WILL



*RELi consensus national standards cover green + resilient buildings, homes, infrastructure, productivity, and sustainable manufacturing & retailing.

For Educational Use Only

RESILIENT ACTION LIST



Minnesota State Sponsored Workshops

Minneapolis Pollution Control Agency Workshops

Funding for AREA Research

4 RELi Public Workshops / May + June 2015

RELi Workshop Co-Sponsors

Minnesota GreenStep Cities

MN Department of Labor + Industry

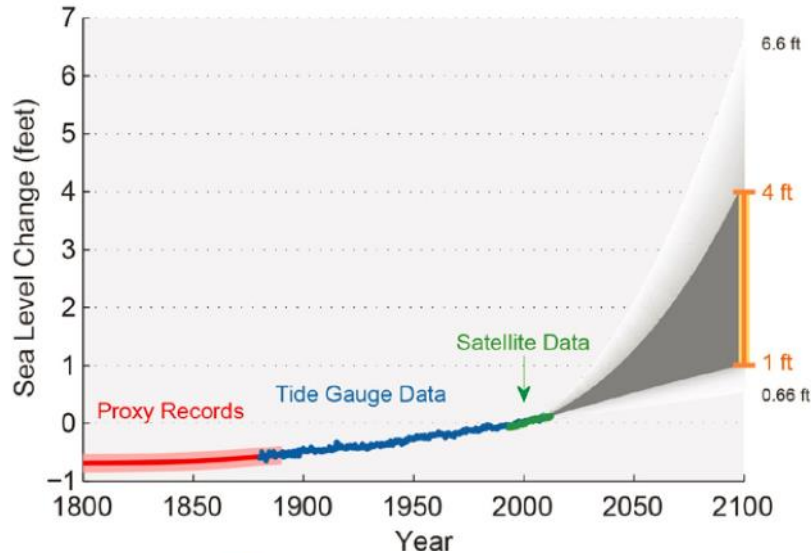
USGBC Minnesota

AIA Minnesota

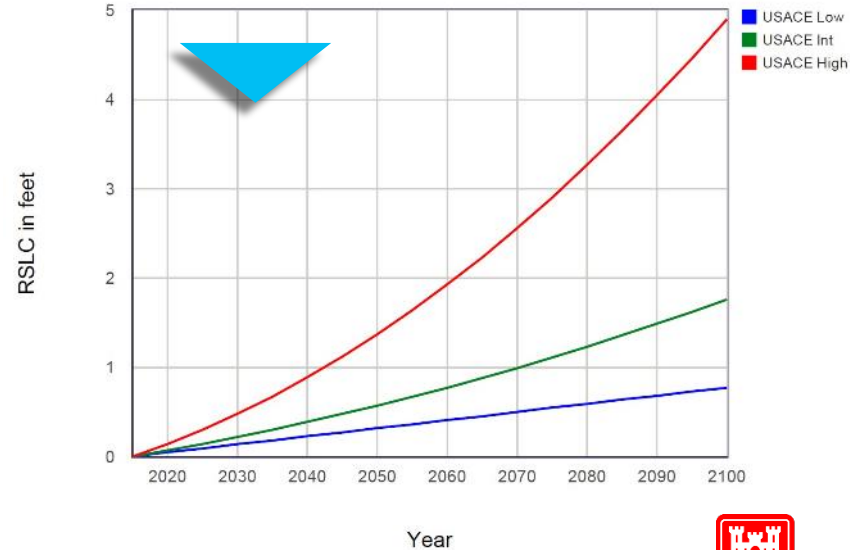
Webinars / RELi Action List link from state website



Sea Level Rise



Estimated Relative Sea Level Change Projections From 2015 To 2100 - Gauge: 8518750, The Battery, NY (2.77 mm/yr)



Many communities are experiencing coastal flooding now from sea level rise,
 especially South Florida & Chesapeake Bay communities.



US Army Corps of Engineers®



U.S. Global Change Research Program
National Climate Assessment



PERKINS+WILL

Sea Level Rise

Unique South Florida Challenge

Stopping South Florida ongoing climate damages from rising seas including existing “sunny day flooding” are many trillions of dollars.

RELi cited map of expected 4' mean South Florida sea level rise (US Climate Assessment Program) shows extensive areas in red inundated with property values of over \$100m / acre <http://ss2.climatecentral.org/#10/25.9043/-80.1508?show=property&level=4&pois=show>

Sea walls alone won't work due to porous bedrock (see photo).

Thus there must also be effective subsurface vertical and horizontal barriers. Based on extensive leak detection experience, subsurface visual leak detection is required.

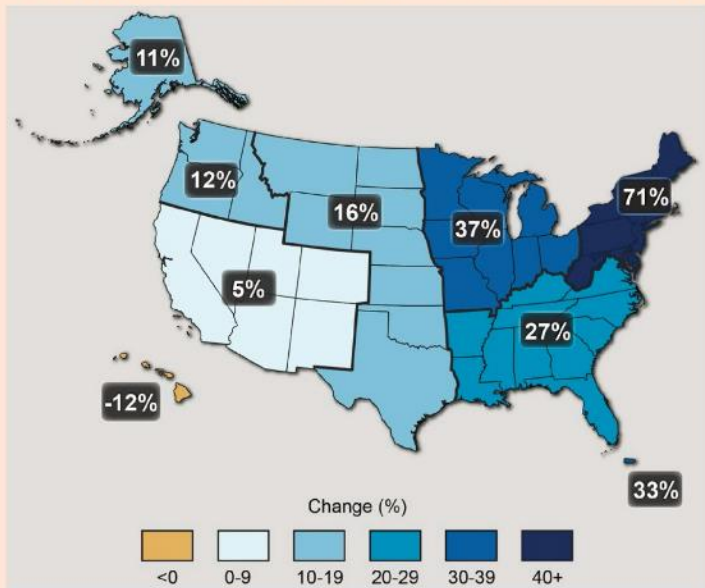
Otherwise, an inland retreat is needed stranding substantial assets / structures.



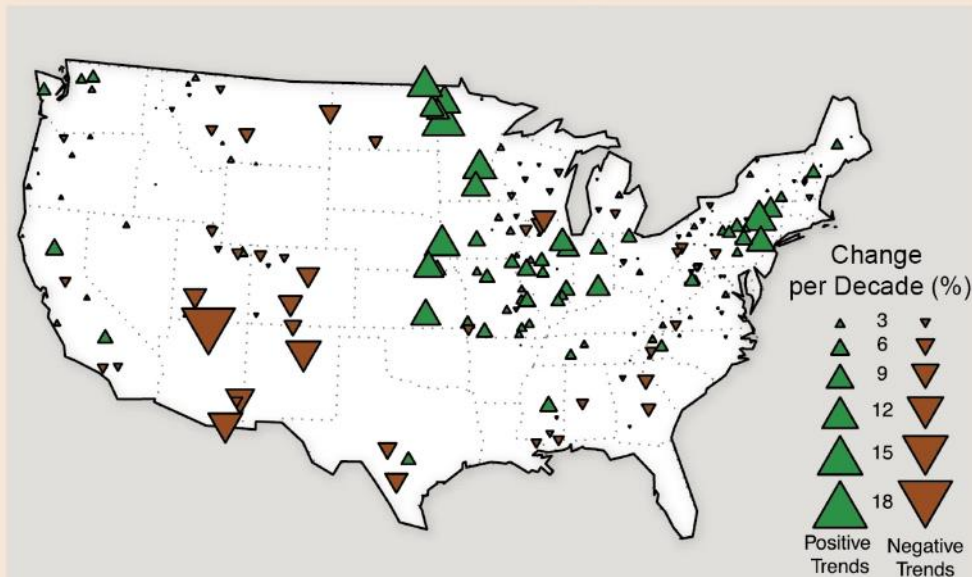
(William A. Wisner, 1972)

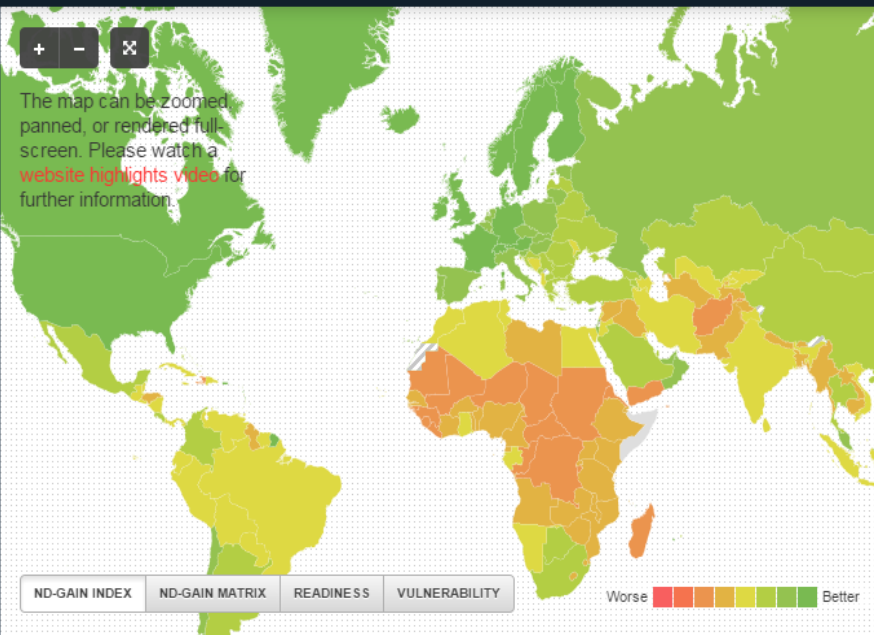
Extreme Rain + Flooding

Observed Change in Very Heavy Precipitation



Trends in Flood Magnitude





1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013



Rigorous and Evolving

The ND-GAIN Index has been designed by industry experts and is improved under a continuous open review process. [See our methodology.](#)

United States

VIEW PROFILE

ND-GAIN Index rank

8

Score: 78.9

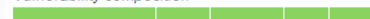
Trend:



Vulnerability 0.221

Readiness 0.799

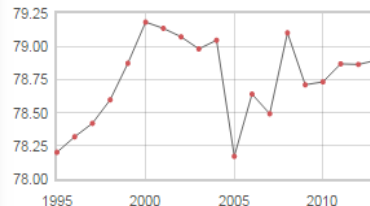
Vulnerability composition



Readiness composition



ND-GAIN Index score over time



**Standard & Poor's
Planned Climate Credit
Rating Downgrades:**
Many US communities
have risks similar
to Southeast Asia –
ranked # 1.

Standards + Poor Rating Service

Vulnerability To Climate Change

Overall ranking	Sovereign
116	Cambodia
115	Vietnam
114	Bangladesh
113	Senegal
112	Mozambique
111	Fiji
110	Philippines
109	Nigeria
108	Papua New Guinea
106	Indonesia
106	Suriname

<http://gain.org/>

Solving Climate Credit Rating Downgrades

Challenge: Near Term Climate Bubble / Crash Can Be Triggered by

- Pending climate credit downgrades, and / or
- Imminent litigation over collapse of coastal property values from faster rising seas.

Accelerating Forces

- Lack of insurance for climate damages / resilience
- Several trillion dollars must be spent on near term solutions.
- JPMorgan predicts unmanageable dangerous climate change is a near term high probability *Black Swan* statistical event.
- Time is of the essence: triggers can happen now.

Solution:

Rating Agencies Use
Consensus Criteria
like RELi Entities
Can Achieve to
Avoid Downgrades
BEFORE They
are Issued.

Accelerating Forces

- S&P criteria use can serve as underwriting for new insurance products, brand improvement, 30 yr. profitable business models.
- Government action not required.
- Capital markets have more than enough investor funds to pay for solution including through green + resilient bonds.
- Green bond growth is explosive.
- Higher ratings for energy efficiency acknowledged
- Improves public health & environment.
- Rebuilds / protects built environment.
- Creates estimated \$800B in new wages / 400,000 new jobs.
- Consensus criteria rating agencies helped initiate are available & similar to existing bond criteria.



RESILIENCY'S POTENTIAL: A COOPERATIVE PERSPECTIVE

Many people are looking to governments for solutions, however in practice policy actions will remain unpredictable, inconsistent and maybe reactive. So businesses must take the lead in mitigating environmental damage and tackling climate + resource challenges.

Dennis Nally – Price waterhouse Coopers

Humanity is Maturing:
Adolescence to Adulthood

Rethink Our Social Contract w/ Each Other
Rethink Our Relationship w/ Rest of Nature
Rethink Our Perspective on Happiness

Necessity is the Mother of Invention

Plato

RESILIENCY'S FINANCING POTENTIAL

Higher credit ratings acknowledged for energy efficiency due to statistically, 32% fewer defaults for energy efficient properties.

We must build with an eye toward prevention, and do so immediately to save money & lives in the long-term.

Shalini Vajihada – re:focus Partners

Investors with over \$70 trillion in assets under management want to buy green bonds.

Vickie Tillman – President, Morningstar Global Ratings

Green bonds provide resilience financing and were a \$20b market in 2013, \$40b in 2014, and expected to be \$100b in 2015 with most if not all bonds selling out thus providing cheaper cost of capital.

These financial incentives are key so elected officials have voter support to pay now for prevention in order to avert future disasters.

To secure higher credit ratings for cities and their bonds and cheaper cost of capital to provide the needed large-scale capital markets financing, the credit rating agencies require a uniform national consensus underwriting approach like RELi.



Public Announcement

6,500 E-mails / 12-1-14 approval

Underwriting for Green + Resilient Buildings, Homes & Infrastructure Bonds



We are seeking written and in-person comments for the Resilient Infrastructure Underwriting Standard Amendments and Green + Resilient Underwriting Checklist. More information on the review and comment process is available at: <http://mts.sustainableproducts.com/resiliency>

What are the benefits of Consensus-based Underwriting Standards? What is the need?

Green Properties are a \$450B/yr. US industry with explosive growth. The Consensus-based Underwriting Standards' Green Value Score covers homes, buildings, community infrastructure, & manufacturing. They identify important Green + Resilient property attributes that increase economic value and mobilize funding for sustainability and adaptation at multiple scales. The Standards are being used for Green Property Bonds being issued in 2014 and Green + Resilient Bonds in 2015. The standards also support higher credit ratings for cities by reducing cost and risk through sustainability + resiliency. They cover 90% of global economic activity throughout the supply chain.

Underwriting Standards are used to raise capital for debt + equity, including bonds. Consensus standards are developed through a national vote of approval in a democratic process, and are required by regulators and rating agencies to reduce legal, technical, political and business risk and uncertainty.

Sequoias are a good example of resiliency; withstanding storms, fire, drought, and disease—living over 3000 years.



The National Consensus Green Property Underwriting Standards are being amended to include Resiliency. Along with carbon mitigation and reduction, they will now include climate adaptation + infrastructure for communities.

A National Public Meeting
for interested and affected parties
is being held 9am-Noon on September 16

at Perkins+Will
(located in the World Wildlife Fund Headquarters)
1250 24th Street NW, Suite 800,
Washington, DC 20037

More info: <http://mts.sustainableproducts.com/resiliency>



PERKINS
+ WILL

Infrastructure, LLC
INFORMED IMPACT INVESTMENTS

References

Appraisal
Institute®

**CAPITAL MARKETS
PARTNERSHIP**

Hon. Gavin Newsom
California Lieutenant Governor,
Chairman

Vickie Tillman, Former S&P
Global Ratings Head, Vice Chair

ACEEE
Apparel Institute
Australia
Bank of America Securities
Baltimore Green Building Council
BOMA Foundation
BOMA International
Canada Green Building Council
CIBC
CGI Property Innovations
City of Chicago
City of Dallas
City of Denver
City of New York
City of Oakland
City of Santa Monica
City of San Francisco
City of Seattle
Citizens Bank of Canada
Covestro Global
Delaware Valley Green Bldg. Council

- January & Laddner
- Daurst Development
- EPA ENERGY STAR
- Environmental Builders Association
- Evolution Partners
- Fawcett Inc.
- Fireman's Fund Alliance
- First Alternative Financial
- Forbo Flooring
- Forest Stewardship Council
- Garding Ed in Development
- Goldman Sachs
- Green Building Alliance
- Global Green
- Investor's Circle
- JPHouse Group
- Lafarge
- Malacofix LLC
- Milliken
- Morgan Stanley Smith Barney
- National Association of Realtors
- New Jersey Green Building Council
- New York Green Building Council

NYSE:ED
 Phillips
 Prudential & Associates
 Seagrams Energy
 Social Investment Forum
 State of California
 State of New Jersey
 Steinert Builders
 Turner Construction
 UBS Securities
 United Kingdom
 US Green Building Council
 US Treasury Department
 Vancity Bank
 Vison & Elkins
 Wells Fargo
 Woodward Clyde & Deane
 West Coast Greener
 World Green Building Council



**National Consensus
Green Building
Investment Underwriting
Standards**

Commercial Buildings

UNANIMOUSLY APPROVED
September 2, 2008

Version 2.2 – July 2012
Sections 1.0 through 8.0 of 19



COMPREHENSIVE



<Structures + Communities>

<Operations + Design>

Covers (3) Major Areas

1. Integrative Process + Holistic Planning
2. Acute / Short-Term Conditions:
Hazard Preparedness, Mitigation + Adaptation
3. Chronic / Long-Term Conditions:
Adaptation + Resiliency