



Washington, DC 20007

Telephone 202-338-3131
Email mts@sustainableproducts.com
Web www.capitalmarketpartnership.com
www.laceyduecare.com



Consensus

Sustainable + Resilient Underwriting Standard

For Infrastructure

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Green + Resilient Infrastructure Underwriting Standard

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INTEGRATIVE PROCESS / HOLISTIC PLANNING

4. Short-Term Hazard Preparedness + Mitigation: prerequisite
5. Integrative Process prerequisite
6. Commissioning + Energy & Water Performance Disclosure: prerequisite
7. Business + Community Case Analysis, Post-Development Evaluation and Reporting: prerequisite

ACUTE / SHORT TERM HAZARD PREPAREDNESS, MITIGATION + ADAPTATION

8. Extreme Events: Emergency Planning: prerequisite
9. Back-up Power Above Flood Level: prerequisite
10. Access to First Aid, Communications, Food, Supplies + Potable Water: prerequisite
11. Sites of Avoidance: Flood Plain, Storm Surge + Sea Rise: prerequisite
12. Safe Design for Extreme Weather, Wildfire, Fire + Seismic Events: prerequisite
13. Adaptive Design for Flooding, Sea Rise, Extreme Weather, Events + Hazards
14. Stormwater and Flood Management – Conventional & Natural Systems
15. Transit + Transportation Connectivity + Protection

CHRONIC / LONG-TERM RESILIENCY + ADAPTATION

16. Improve Community Quality of Life
17. Improved access and walkability, reductions in commute times, traverse times to existing facilities and transportation
18. Energy Efficiency, Onsite Renewable Energy + Atmospheric Protection: prerequisite
19. Ensuring Healthy, Non-Toxic Materials: prerequisite
20. Funds & Resources are Committed for Long Term Maintenance & Monitoring for Energy Efficiency & Renewable Energy
21. Ensuring Safe & Healthy Materials & Products: prerequisite
22. Water Efficiency & Protection. Protect Fresh Water Availability, Reduce Potable Water Consumption: prerequisite
23. Protect Wetlands + Avoid Steep Slopes and Adverse Geology
24. Legally Logged Wood Certification
25. No Pesticides, Herbicides
26. Water Efficient Sites + Resilient Water and Landscapes: Building + Site
27. Reduced Site Environmental Impacts: Lighting, Heat-Island

28. Intangibles

SUSTAINABLE + RESILIENT VALUE SCORE

APPENDIX

Sustainable + Resilient Infrastructure Standard

1. Sources / Referenced Standards

- *Building Resiliency Task Force Report to NYC Mayor & Speaker*© (Urban Green Building Council 2013)
- *Measuring Code Compliance Effectiveness for Fire-Related Portions of Codes Final Report*, National Fire Protection Association and Fire Protection Research Foundation (2008)
- *Eaton Outline of Safety Underwriting Attributes* (2012)
- *Envision Sustainable Infrastructure Rating System & Guidance Manual*, Institute for Sustainable Infrastructure (2014)
- *Fire Safe Adaptable Home* (NAHB)
- *Fortified*© Home & Business Stds. (IBHS 2007-12). “*IBHS fortified structures cannot be designated in the following areas: low-lying barrier islands and coastal regions, close proximity to known seismic fault lines, close proximity to major levees, and steep slopes potentially subject to either erosion or wildfire.*” Fortified requires adherence to its compliance process including renewal after a designated term limit expires. Fortified accumulated by State the areas of peril defined with mandatory, strongly recommended and higher achievement level recognition by design and structural performance metrics for:
 - Hurricane prone regions
 - Tornado & Hail Regions
 - High wind regions with windspeed maps
 - Earthquake regions
 - Wildfire
 - Flood zones
 - Severe winter weather
- International Existing Building Code 2009 Edition
- *MTS ANSI 2.0 Integrative Process Standard for Sustainable Structures & Communities* (2012)
- *Natural Hazards, UnNatural Disasters: The Economics of Effective Prevention* © (World Bank & UN 2010)
- *NFPA 72 National Fire Alarm Code* 2007 Edition
- *NFPA 70 National Electrical Code* 2011 Edition
- *NYC Plan NYC & Post Sandy Building Code* (2013)
- *Perkins+Will Resiliency Framing Issues*© (2014)
- *Resilience Scoring Utility* 2011 Edition
- UN Sustainable Development Goals (SDGs), Key Summary Points - EGM on Science & SDGs (Mar. 21, 2013)
- *Wall Street Due Diligence*© Peer-reviewed & Released at NYSE on Sustainable Investment Business Case & Dangerous Climate Risk (2009 & 2013). *Dangerous* climate change is a word of art referenced in the Kyoto Protocol and defined by leading climate scientists including Jim Hanson formerly of NASA, as the state of climate change when the Earth’s atmospheric CO2 concentrations exceed 350 ppm. Levels as of October 14, 2014 are near 400 ppm and rapidly rising.
- *Weathering the Storm: Building Business Resilience to Climate Change*©, Center for Climate and Energy Solutions (2013)

2. Background / Perspective / Valuation Goals & Principles

Underwriting Defined: standards for raising capital for debt & equity including to issue bonds.

Resilient Defined:

1. Able to bounce back after change or adversity.
2. Capable of preparing for, responding to, and recovering from difficult conditions.

Syn.: TOUGH (New York City "Plan NYC" 2013)

The Australian mantra for adapting to climate change: Protect, Redesign, Rebuild, Elevate, Relocate and Retreat.

Resilient is also being defined as bouncing back from any extreme event which can include an internet crash, global epidemic, or climate change intensified events.

For Purposes of This Standard, Resilient Means both mitigation (carbon pollution reductions) addressing the need to prevent near term irreversible unmanageable dangerous climate change (climate bubble / crash), and adapting to the increasing intensified weather and climate events causing well-documented systemic damages to all economic sectors. This includes safety and acute and chronic events.

Wall St. Due Diligence Released at NYSE on Added Sustainable Investment Value Documents:

- High probability of imminent irreversible unmanageable dangerous climate change without 18 gigaton climate pollution reduction in next 10 years estimated to cost \$2 trillion. This is called Climate Bubble / Crash.
- JPMorgan publication states it is a high probability Black Swan event.
- Green building secondary financing market can provide the \$2 trillion because investors with over \$70 trillion in assets under management want to invest in green buildings / buy green building bonds. Green Bonds are vibrant \$20B+ market with all bonds quickly selling out.
- Secondary market is expected to create \$1 trillion private sector stimulus
- Leading investors, insurers and governments publicly document that ongoing systemic climate damages exists in all economic sectors caused by more intense and severe weather / climate events.
- Fluctuating Deaths, Rising Damages— 3.3 million deaths in the 40 years to 2010, Disasters can strike anywhere, & Damages are rising.

Peer-reviewed due diligence is comprised of over 30 reports, consensus standards, and investor surveys and was updated in 2013 by leading economists. The due diligence findings on added green property value including national statistically valid data were "baked into" the Underwriting Standards. For example, the due diligence showed that energy efficiency has substantially increased economic value by reducing operating costs. Accordingly, 40% of the Underwriting Green Value Score is energy efficiency.

Design, Construction & Valuation Principles & Goals: