COMMERCIALIZING GREEN FINANCE

— Unleashing available $70 trillion in investor assets while stimulating the economy, the building industry, & providing unprecedented social benefits —

Innovative Opportunity

– highly repeatable, rapidly scalable Green Property Bonds transparently deploying available capital –

– improving public health & environment, certified in compliance with environmental marketing rules –

The green bond market is explosive growing to $150 billion / yr. in just five years due to substantial investor demand, and is expected to continue according to Moody's and Bloomberg. Bonds are debt financial instruments sold to investors to raise needed capital. Green bonds improve public health and environment, and green property bonds use green mortgages as collateral to repay the financed debt. Green Property Bonds' and their consensus underwriting certification comply with Green / Social Bond Principles.

Summary

- Innovative opportunity
- Successful precedent
- Financial benefits
- Solutions
- Investment & running costs

Substantial Investor Demand is Providing Many Green Bond Financial Benefits.

– cheaper capital, about 20% more bond proceeds, more valuable & less risky bonds, & *halo effect* in the secondary market for bond issuers. See *Green Bond Business Case* released at the NYSE by JPMorgan and the Sierra Club & updated by leading economists

Empire State Building LEED Gold retrofit reduces energy use by 38%, saving $4.4 million in energy costs annually,

Green property bonds are highly repeatable and can rapidly deploy over $70 trillion in available and needed investor capital to retrofit the building stock as green for the U.S., Canada, Europe, Australia, India, Brazil and, if there is a government guarantee, China. Green property bonds can commercialize green finance since the building industry is the world's largest with over 2 million / 150,000 green home / building mortgages to securitize. Higher-rated Green Property Bonds covered herein are *private label* sold to investors and not to the federal government, which increases and recognizes their added value, since higher-rated green mortgages sold to investors are worth more. Conversely, unlabeled green mortgages sold to the federal government are worth less with the added value not being recognized in the transaction. Importantly, the consensus underwriting Green Value Score and resulting higher-rating precludes any need to pay for credit enhancement.

Financial Results

Generate Revenue

Instruments Used

Market Solutions

Debt Solutions

A green property bond is simply a LEED building or green home mortgage refinanced as a bond sold to investors. It is also known as a green commercial or residential mortgage backed security (CMBS / RMBS) with the consensus underwriting Green Value Score as a simple add-on to the normal CMBS / RMBS due diligence process. Completely unlike subprime bonds that caused the credit crisis, green property bonds are documented as having the highest economic value and least risk.

The bond final sale price represents the market value of the building. In its simplest form, a bond issuer raises a fixed amount of capital, repaying the capital (principal) and accrued interest (coupon) over a set period of time. The issuer needs to generate sufficient cash flows to repay interest and capital.

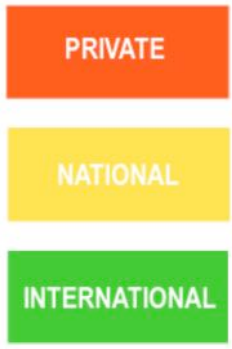
Less than $1 billion of green property bonds secured by mortgages have been issued out of about $300 billion of green bond issuance in the last five years. Green property bonds can easily grow to $1 trillion in issuance over the next five years due to the Green Value Score as the needed green label, which resulted in higher bond ratings, making these bonds highly replicable with over 2 million green mortgages to securitize.

Key words: Carbon pollution reductions; Innovative finance; Private capital; Sustainable investment; Green growth; Impact investment; Debt and capital markets; Green property bonds; Market transformation

Successful Precedent

– CMBS grew to a $ trillion industry due to Phase 1 environmental consensus standard eliminating bank environmental liability –

Sources of Finance



During the 1980's, U.S. commercial real estate was frozen due to hazardous substance cleanup liability from lawsuits by manufacturers against the banks because the innocent owner legal defense was undefined. The consensus Phase 1 standard was issued solving this problem, codified by EPA and the States, resulting in many years of unprecedented property environmental improvement and value creation to this day.

Why was this important? The Phase 1 opened up a 20-year fee-based business model for the banks allowing CMBS to grow to a $1 trillion global industry up to the credit crisis. The banks hired thousands of environmental professionals, qualified the buildings to the Phase 1, and securitized them making a significant fee from each roughly three month deal, repeating the process until almost the entire building stock was securitized by CMBS in the U.S., Canada, Australia, and Western Europe.

Today, Green Property Bonds are replicating this enormously powerful CMBS business model with the consensus Green Value Score, creating a financial stimulus and unprecedented social benefits through new jobs and substantial environmental improvement.

Financial Benefits

– highly profitable bonds will greatly stimulate direct equity investments –

Hearst Tower NYC is LEED Platinum reducing total energy consumption by 40%, total waste to landfills by 82%, composting 100% of its wet food waste, has 100% use of reclaimed non-potable rainwater for landscaping, & reduced water use by more than 30%.

Green property bonds are expected to provide a substantial private sector financial stimulus creating an estimated $400 billion in new wages and 800,000 new jobs. Investment banks conduct the bond underwriting, obtaining the credit rating and assurances to investors of value and legal disclosures of risk of bond purchase. The credit rating is an independent determination of the credit worthiness of the bond provided by the national statistical rating agencies recognized by the Securities Exchange Commission (SEC).

Statistically, green buildings have well-documented financial benefits including highest rents, occupancy, valuation, retail sales, occupant productivity, and 5% - 15% discounted insurance based on Fireman's Fund's improved insurance loss ratios for LEED properties, documented in the *Green Bond Business Case*. LEED Integrative Process integrates the design and construction process with workshops of key parties including the owner, and reduces change orders by 90% according to the Navy, and construction costs by 1% - 10% with Heathrow Airport renovation saving $150 million. Green buildings are over 50% of all new construction and retrofits and reduce CMBS defaults by 30%.

The biggest risk to conventional buildings is obsolescence from green buildings just like buildings without air conditioning, according to Jones Lang LaSalle, Deutsche Bank / RREEF, Wells Fargo and CoStar.

Similarly, green homes are documented by the consensus, transparent underwriting Green Value Score as having 9%-12% higher appraised value and 32% fewer defaults resulting in higher bond credit ratings for 22 green property attributes.

Not all green property attributes increase tangible economic value / bond cash flow. With all Scores documenting added value, the 25 – 100 Green Value Score identifies those 20 green property attributes increasing value and resulting in higher credit ratings, for example:

- **Energy efficiency** reduces operating costs, energy price volatility, risk, and increases climate resilience (40% of the Score). Green properties attract higher valued buyers and tenants.

- **Commissioning** independently checks that the property was built as designed, reducing common failures and also increasing property value by at least $1 dollar / ft2 according to Lawrence Berkeley Labs. *Only LEED properties use commissioning* and it puts the Property Condition Assessment standard required for CMBS on steroids. See the *Business Case.*
- **Onsite green power** like solar or wind reduce operating costs, energy price volatility, liability risk, and increase climate resilience.
- **Water use reduction** reduces property operating costs, wastewater flows, treatment costs, combined sewer overflows to receiving waters, and improves treatment efficiency.
- **Daylighting & improved indoor air** increase occupant productivity by about15% and retail sales by 40% as documented by Carnegie Mellon and PG&E in the *Business Case.*
- **Legally logged wood** pursuant to the consensus Lacey Act Due Care Standard, provides defenses to strict criminal liability (liability without fault) for any party owning, possessing, or selling illegally logged wood from anywhere in the world.
- **Proximity to Transit** increases property value and access.
- **Integrative Process (IP)** reduces change orders, construction costs and failures as documented by Fireman's Fund's *IP Risk Reduction Statement.*

Achievements beyond required transparency. The underwriting Green Value Score requires a legally binding certification that the information provided for the Score is accurate, not misleading, and was prepared by qualified professionals pursuant to the FTC Environmental Marketing Guides and State Truth in Advertising law. The consensus, transparent Green Value Score for green property bonds meets the Green Bond Principles of the International Capital Markets Association as an objective disclosure for the green mortgage securing the bonds.

Further, the Score goes beyond these principles providing investors and the market, a standardized leadership disclosure of environmental benefits, increased economic value for each green mortgage and preventing *greenwash,* which is unlawful.

The Score also complies with green bond requirements of the Office of the Comptroller of the Currency and Federal Housing Finance Agency (owner of Fannie Mae and Freddie Mac):

- Respects existing lien priorities
- Provides prudent underwriting
- Protects investor and consumer interests

Merchandise Mart Chicago LEED Gold by Vornado Trust with many tenants LEED Interiors Certified. Reduced energy and water use, greater daylighting, more efficient lighting with reduced mercury lamps, low VOC paints, non-toxic cleaning products, & a building-wide recycling program including paper, cardboard, plastics, bottles, cans, electronics, batteries, lamps, ballasts, and construction & demolition materials.

The consensus nature of the Score is required by the capital markets to provide Constitutional due process notice and opportunity to be heard to interested and affected parties, thus avoiding substantial antitrust liability risk.

Solutions *– transparent, consensus, leadership Green Value Score achieved higher ratings; – no greenwash*

Green property bonds achieved higher credit ratings and thus are expected to resolve market confusion over added green property value through higher-rated, publicly-traded bonds. Due to the economic and social benefit demand for more green properties to be securitized by bonds, these bonds are expected to synergistically encourage more direct equity investments for retrofits including equity funds, thus providing more green properties to securitize.

Green Property Bonds Are Calculated by Leading Governments, Scientists, Economists, and Investment Banks to Provide a Very Profitable Private Sector Climate Solution.

– with a $14 trillion / 420 gigaton carbon pollution reduction required in the next 12 years (by 2030) to keep dangerous climate manageable and allow climate resilience to work, up 70 times since 2009. On average, green properties reduce carbon pollution by about 40%, and the greater the reductions, the more valuable the property. The building industry is the world's largest and based on successful precedent, Green Property Bonds are expected to grow to a $ trillion global industry (Oct. 8, 2018 UN IPCC Report for Policymakers & *Green Bond Business Case)*.

Stakeholders

Green bond issuers. Any company, government agency or financial institution that develops, registers and sells a bond. The Chinese Government, Toyota, Apple, Vornando, TD Bank, and the World Bank are only a few examples. The issuer usually selects a financial institution as an underwriter to administer the issuance of the bond, line up investors, contract for the credit rating, and prepare with law firms the required disclosures consistent with securities laws.

Shanghai Tower LEED Platinum is the world's second largest building with the world's highest observation tower, wind turbines, 21% energy reduction, rainwater collection systems throughout the structure, & double glass facade reducing energy use by 34,000 tons of carbon / yr. The building has a 120º twist, the optimal rotation to minimize wind loads by 24%, which reduced materials costs by $58 million. Building cost was $2.4 billion. Each of the building's nine sky lobbies has gardens showcasing plants from China allowing a walk in the sky with trees. One-third of the site is green space.

Green bond investors. Individuals, companies, institutional investors who buy green bonds with the expectation of a financial return. Institutional investors include endowment funds, hedge funds, insurance companies, asset managers, investment companies, investment trusts, mutual funds, pension funds, sovereign wealth funds.

Green bonds partners. A broad spectrum of organizations interested in developing a commercially viable green bond market, including financial institutions, development banks, NGOs, credit rating agencies.

Credit rating agencies and auditors. Institutions and professionals responsible for verifying compliance with the standards for green bonds and established credit standards.

Regulators. Financial authorities responsible for regulating capital markets; they examine the qualifications of underwriters as well as the securitization of credit assets and bonds' custodial arrangements, and regulate the issuance, clearing and settlement provisions. Regulators include securities commissions and other regulatory bodies, including stock exchanges and central banks.

Credit guarantors and other intermediaries. Creditor guarantors provide credit guarantees and credit enhancement products in secondary markets, thus modifying the risk profile of the underlying bond. A wide range of financial intermediaries offers a variety of intermediation and credit enhancement services, including raising investor capital, establishing special purpose vehicles.

See UNEP Green Bonds (Feb. 2016).

Minimum investment required & running costs

Green Property Bonds are publicly-traded and only available to *qualified investors* with the resources to make the minimum $100,000 investment.

Public and private entities incur various costs when they issue bonds. Depending on the value, complexity, number of markets, taxes, risk profile of the issuer, etc., the issuance of a green bond might cost from thousands of US dollars to millions. Fees are usually calculated as a share of the face value of the issuance. Depending on the number of services bought, service fees can exceed 1 per cent of the face value. For smaller and riskier issuance the sum of fees and taxes can reach 5 per cent of the face value. The lead financial institution usually charges a fee that comprises structuring, placement, legal and underwriting services.

The level of complexity of the deal is a primary determinant of the fee, a *plain vanilla* bond for example, being one of the cheapest products. In certain developing countries it might be cheaper to issue a bond abroad. Amortization and deferred payments are used to budget issuance costs across the maturity.

See UNEP Green Bonds (Feb. 2016)

How to Get Involved —
info@usgbc.org & mts@sustainableproducts.com

Mirabella Florida has 100 LEED Platinum homes that survived the intense 2016 hurricane season with no damage since the homes are built to withstand the strongest hurricane, and not located in a flood zone. The homes use nearly 40% less energy than a conventional home with monthly bills about $30, and save 2,500 gallons of water per person every year.

The homes have special insulation; spray foam in all holes and gaps, including those around power outlets with plumbing sealed duct work; moisture barriers; water-resistant flooring; attic air barriers; radiant board in the roof; windows with triple caulking; fire-retardant and termite-treated wood; erosion control, and special paints and glues to prevent breathing and other health problems.