



Net Zero Efficiency & Resilience: Process, Assessments & Tracking

March 2023

BUILDING
PERFORMANCE

UNLOCKING
VALUE

PROPRIETARY AND CONFIDENTIAL

Goals for today

1. Definition of carbon neutrality vs. net zero
2. Important aspects of a Decarbonization/Net-Zero Program
3. Components of a Resilience Program
4. Shift from ESG to Climate Change Risk

Carbon Neutrality: Achieved when a portfolio either reduces its operational greenhouse gas (GHG) emissions or balances them with an equal quantity of renewable energy certificates (RECs) and carbon offsets. Can be achieved immediately through the purchase of environmental instruments with no operational emissions reductions, resulting in sunk costs and greenwashing.

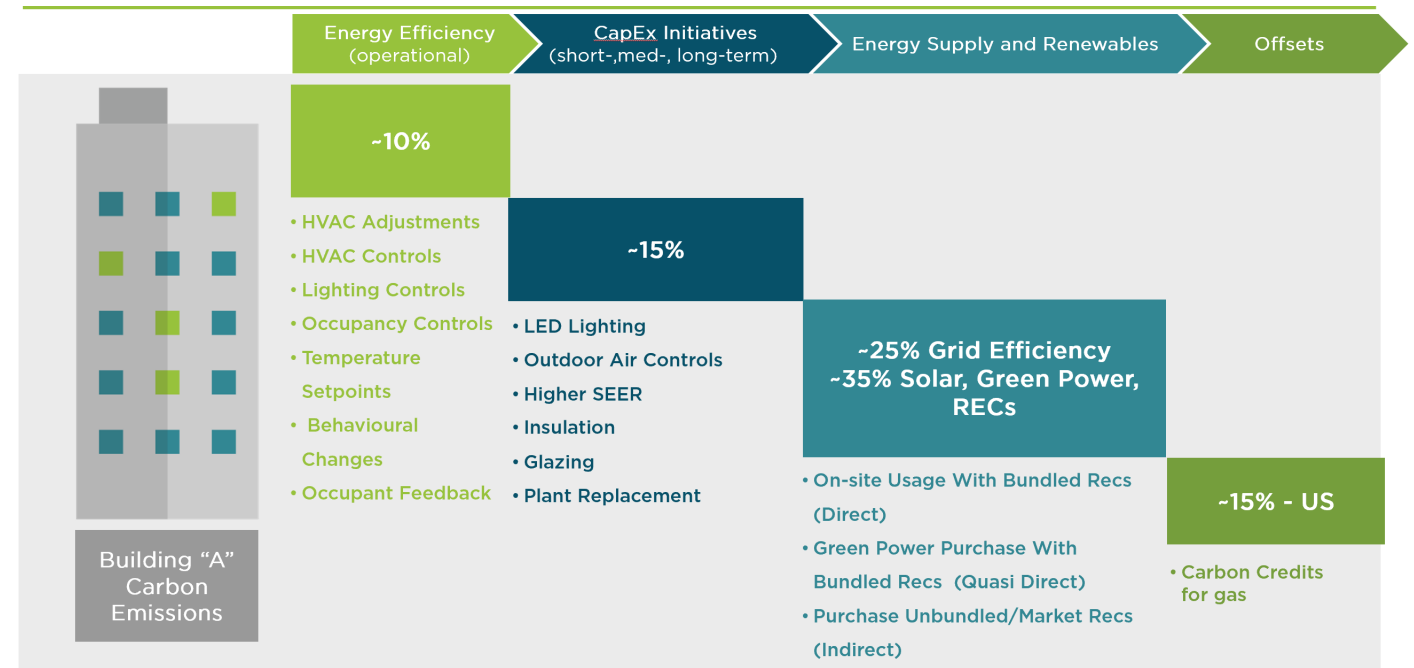
Net Zero Carbon: Achieved when a portfolio has substantially reduced operational GHG emissions, only resorting to purchase of RECs and offsets once operational improvements are exhausted. No universally agreed-upon definition of “substantially.”

Pillars of a Successful Decarbonization/Net-Zero Program

Basic Requirements

- ✓ Data Quality
- ✓ Prioritizing Operational Emission Reduction
- ✓ Capital Improvements
- ✓ Install on-site renewable energy generation where feasible with On-site RECs
- ✓ Green Power Procurement with Bundled RECs
- ✓ Electrification
- ✓ Tenant Engagement
- ✓ High Quality REC and Carbon Offsets
 - ✓ Embodied Carbon

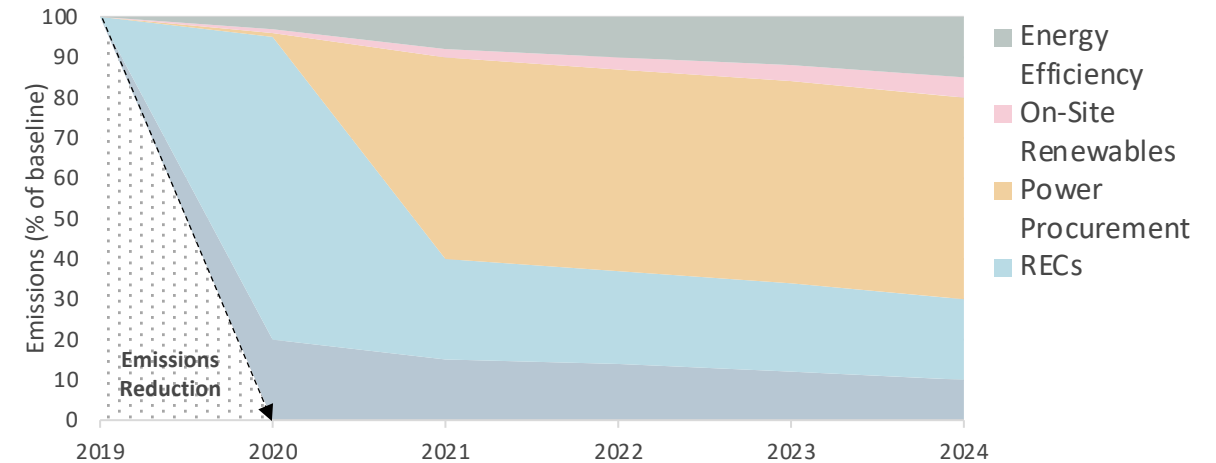
Conceptualizing Net Zero for Real Estate



Establishing a Comprehensive Decarbonization/Net-Zero Program

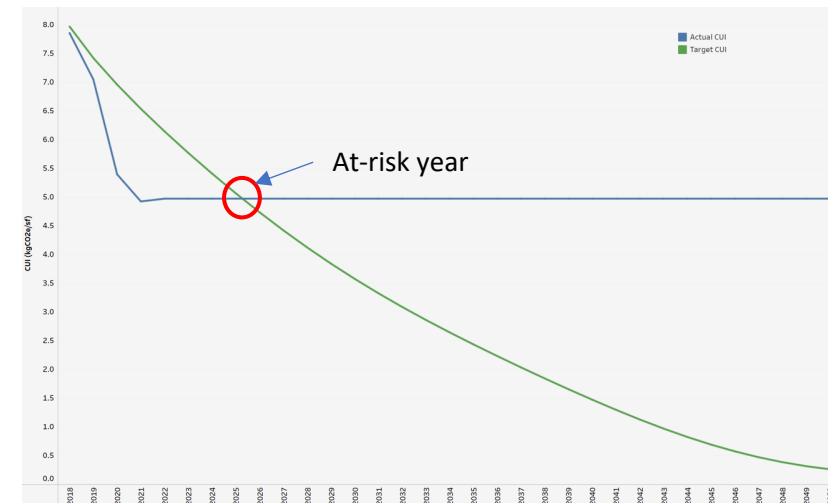
Portfolio Level Strategy

1. Greenhouse Gas Inventory – understand where the portfolio is today
2. Assess High Level Potential to Reduce Emissions
 1. Surveying Portfolio Level Opportunity
 2. Renewable Energy Assessment
 3. Green Power Procurement
3. Set Feasible Carbon Target
4. Evaluate alignment with Frameworks/Commitments



Asset Level Strategy

1. Identify “at-risk” or “stranded” assets
2. Evaluate reasons why
3. Assess potential mitigation measures
4. Create Decarbonization/Net-Zero Action Plan
5. Implement



Case Study: Low-rise Multifamily

Asset

Location: Texas
Property Type: Low-Rise Multi-Family (3 stories)
Year Built: 2008
Size: 340,000+ SF, 350 Units
HVAC & Water Fuel Source: Electric



63



2024
Stranded

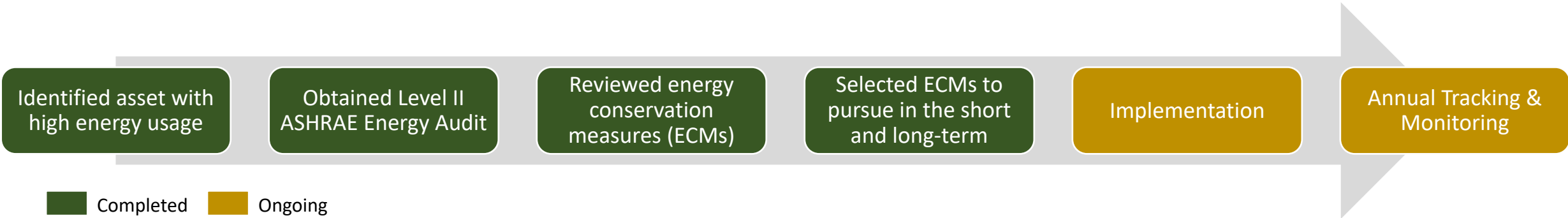
Short-Term Plan:

- Interior and exterior lighting fixtures have been upgraded to LED lighting
- As units get renovated overtime:
- Install Smart Thermostats
 - Install Bathroom Aerators
 - Install Kitchen Aerators
 - Install high efficient Showerheads

- Deregulated Energy Market:
- Evaluate green power options

Long-Term Plan:

- As equipment approaches end of life:
- Upgrade to high efficient water heaters
 - Upgrade Common Area HVAC systems
 - Upgrade Residential Unit HVAC systems
 - Upgrade to high efficient Refrigerators, Dishwashers and Clothes Washers



Case Study: 11-story Boston Office

Asset

Location: Boston, MA

Property Type: Office (11 stories)

Year Built: 2003

Size: 417,000 SF, including 5 levels of garage

HVAC & Water Fuel Source: Electric



73



2030
Stranded

BERDO 2.0

Short-Term Plan:

11 Energy Conservation Measures (ECMs) were suggested to reduce energy use at the property. We plan to move forward with the following ECMs in 2023:

- Wireless DDC Controls for Electric Unit Heaters
- Makeup Air Unit Heat Recovery System
- Retro-commissioning Controls Optimization
- Evaluating on-site solar PV opportunities
- * One tenant on the 5th floor still has fluorescent lights. Will ask tenant to convert to LED.

Long-Term Plan:

Future recommendations to reduce use to avoid exceeding emissions regulations:

- Upgrade ECM VAVs
- Optimize Speed Pump Control
- Mechanical Systems Review Study
- DX Unit Replacement – at end of useful life

Identified asset in emissions regulated city

Obtained Level II ASHRAE Energy Audit & 3 decarb reports

Reviewed energy conservation measures (ECMs)

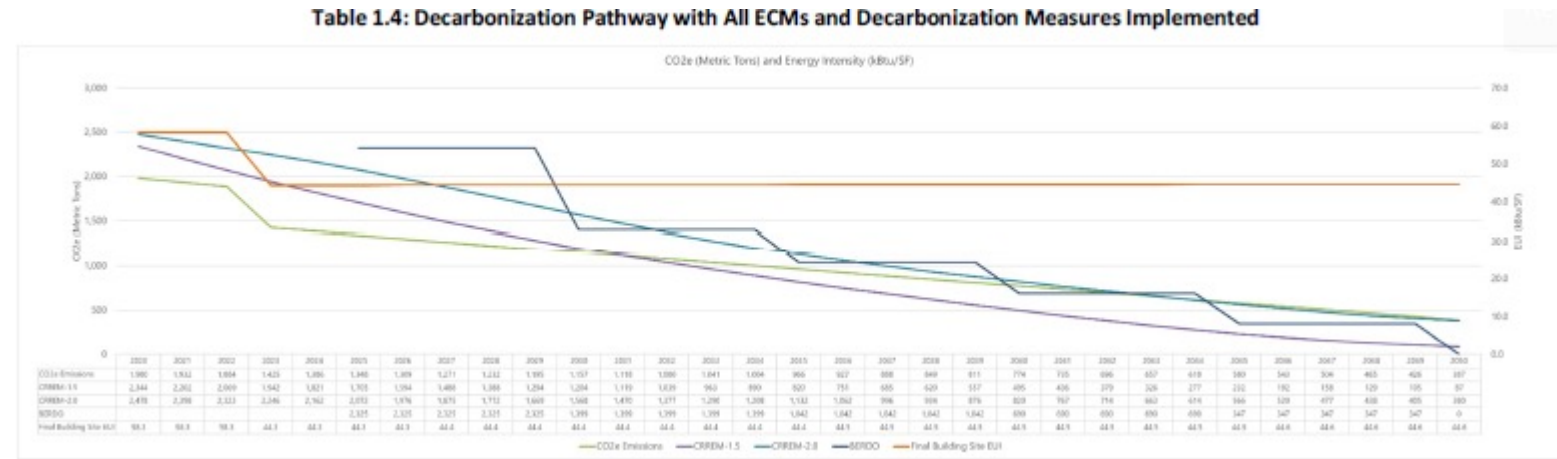
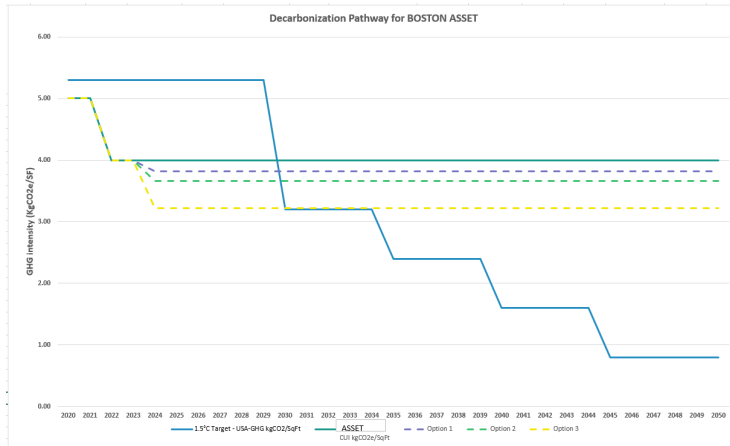
Selected ECMs to pursue in the short and long-term

Implementation

Annual Tracking & Monitoring

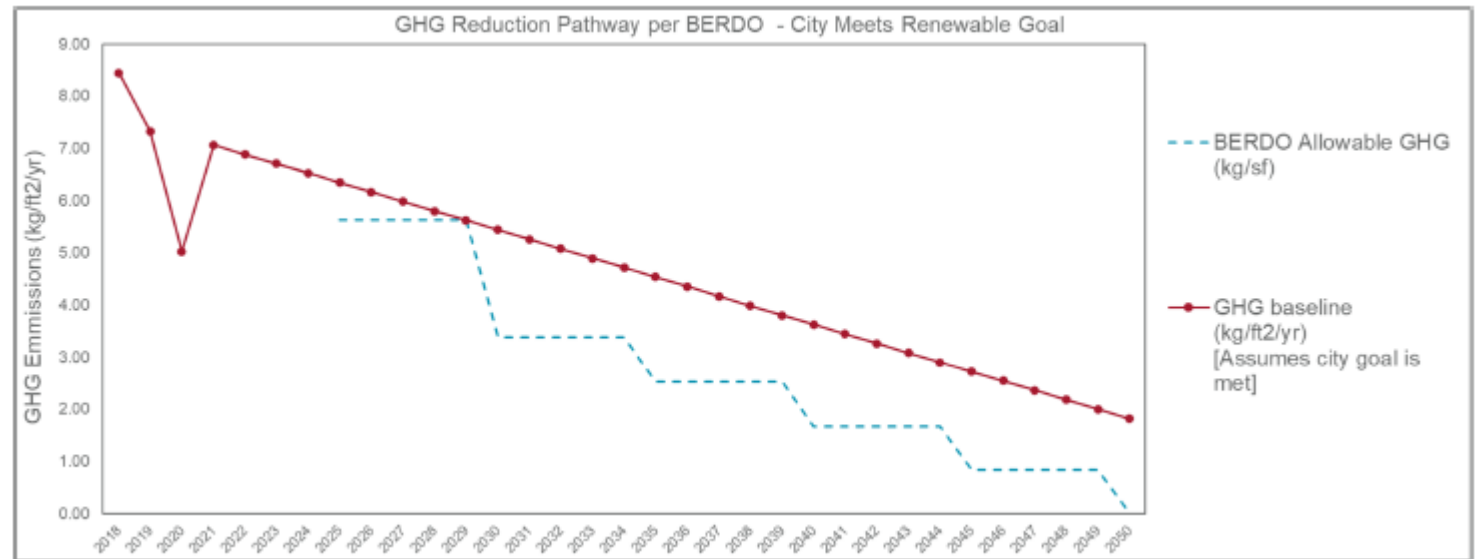
Completed Ongoing

Boston Decarbonization Reports



Decarbonization Reports

Over the course of the last 12 months, TA Realty commissioned a consultant to perform a gap analysis for BERDO 2.0, then proceeded to have an ASHRAE Level II audit with a Decarbonization report created. Lastly, we ran the asset through our corporate decarbonization program to create the last report. All three are shown here.



Components of a Resilience Program

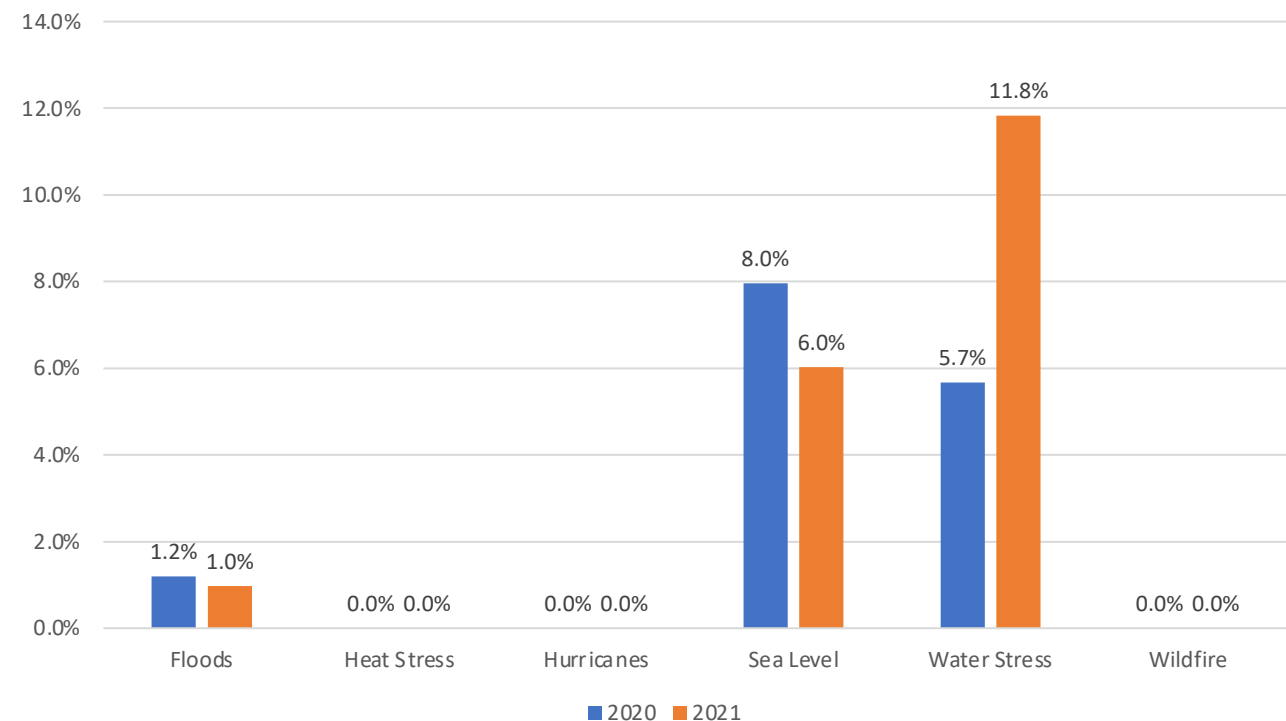
Resilience Program

1. Evaluate Portfolio Level Risks
2. Identify assets with high risks
3. Evaluate reason for high risks
4. Understand asset characteristics
5. Mitigate to lower risk
6. Re-evaluate Portfolio Level Risk after Mitigation

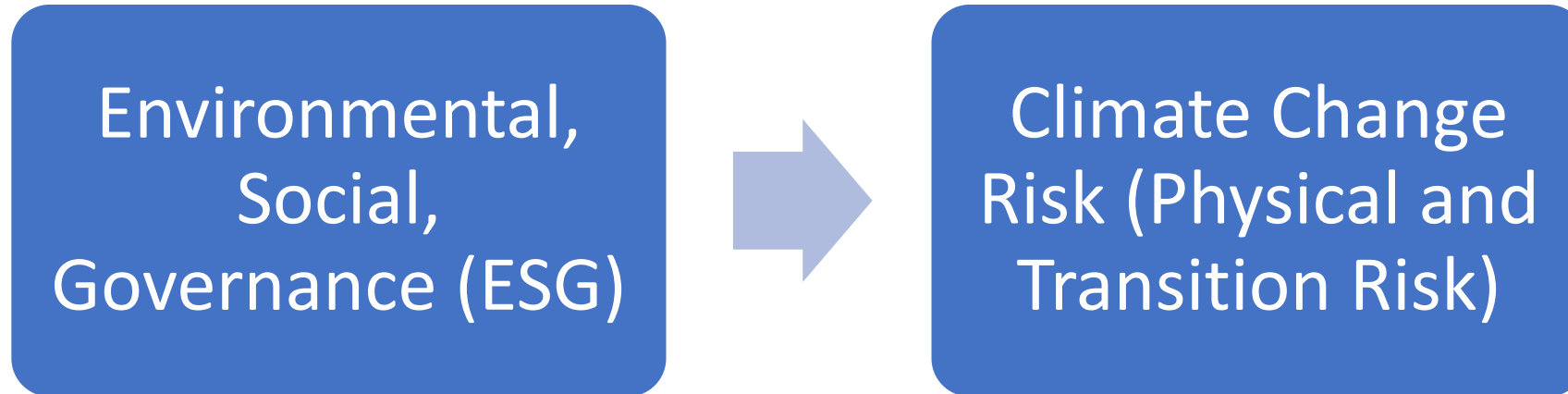
TCFD(Taskforce on Climate-Related Financial Disclosure) Alignment

- Framework on how to report Climate Related Risks
 - Governance
 - Strategy
 - Risk Management
 - Metrics and Targets

% GAV of Very High Risk by Physical Peril 2020-2021



Shift in Thinking



Physical Risk (Resilience)

- Increased physical perils due to climate change
 - Floods, heat stress, wildfire, water stress, hurricanes, sea level rise

Transition Risk (Environmental, Social and Governance)

- Transition to a low-carbon economy
 - Increasing Regulations
 - Meeting goals and commitments
 - Volatile carbon and energy prices
 - Changes in customer preference