Decarbonization Advisory Panel Beliefs and Recommendations

April 2019

Joy-Therése Williams
Chair, Decarbonization Advisory Panel
Toronto, Canada

Thomas P. DiNapoli
State Comptroller
State of New York
Office of the State Comptroller
110 State Street
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Dear Comptroller DiNapoli,

On behalf of the Decarbonization Advisory Panel, I am pleased to submit our recommendations for your consideration. It has been a privilege to serve as Chair of this Panel of distinguished peers who volunteered their time and expertise to reach a consensus of opinion for the Report's recommendations.

The Panel would like to commend you, your department and the staff of the New York State Common Retirement Fund for your leadership and the willingness to explore options of managing climate change impacts on the Fund as a whole.

The Charge to the Advisory Panel asked us to identify, assess and manage investment risks and opportunities related to climate change, and how to prepare the Fund for a transition to a low-carbon economy. Our approach took a holistic view to ensure the recommendations can make the Fund sufficiently resilient to changing physical conditions and economies. The Panel members aimed high with its recommendations.

The Panel recognizes climate change as an existential threat to global economies, markets and earth systems. The Fund faces real risks related to loss of value and challenges to the ability to secure the needed rate of return. The Panel also recognizes that preparing the Fund to deal with the challenges of climate change provided opportunities. Opportunities focus on capacity to capture value as the world adapts to new realities.

Our consensus report begins by articulating a set of beliefs that paint a picture of fundamental economic changes as a result of the impact of climate change. Our beliefs set the context for the breadth and depth of our recommendations. Our objective was to articulate a compelling business case for the financial relevancy of climate change to the Fund and the need for significant action to protect and add value to the Fund for the benefit of its members.

Adapting a portfolio as large as the New York State Common Retirement Fund is not just a process but a journey, albeit one that needs to begin with prudent haste if the Fund is to be properly prepared to lower risks and seize opportunities. The Panel took into consideration the Fund's significant operational and logistical challenges and have provided flexibility in how the recommendations can be implemented. It is the Panel's view that some of these recommendations may be taken on board quickly with the resources on hand while others can be executed in short order after preparations have been made.

You will note that divestment as an investment strategy in and of itself is not included in the consensus recommendations. Instead, the Panel looked at the whole picture and believes that implementing our recommendations may well lead to divesting of certain assets, but that decision will be an outcome of a larger, carefully thought out investment strategy. As part of this discussion, there were ideas on which the Panel did not reach consensus. Two Panel members have prepared separate submissions with these alternative approaches that provide helpful context to the recommendations.

The very existence of this Panel is due to an acceptance that the New York State Common Retirement Fund must make changes, or it may not be in a position to meet its mandate for its members in the years ahead. It was a bold and visionary move, and the Panel sought to ensure that the recommendations are just as challenging and ambitious while giving the Fund a firm foundation for the future.

Joy-Therése Williams

Joy-Therése Williams
Chair
Decarbonization Advisory Panel for the New York State Common Retirement Fund

Charge to the Advisory Panel

The Advisory Panel members will provide their expertise on strategies for the Comptroller's consideration on how the New York State Common Retirement Fund might identify, assess and manage the investment risks and opportunities of climate change and prepare for a transition to a low carbon economy.

The Advisory Panel should examine:

(1) Quantitative and qualitative analysis/modeling of the economic impact of climate change on the Common Retirement Fund's investments (e.g., diversification of investments, liquidity of the Fund, risk tolerance, future economic and workforce trends, new opportunities, expected returns);

(2) Economic and policy challenges facing the fossil fuel industry over the short, medium, and long term;

(3) Current state of, and outlook for, clean energy, including possible investment opportunities;

(4) Strategic options to address climate risk through further de-carbonization of the Common Retirement Fund's portfolio, including, but not limited to:

   a. Divesting from significant fossil fuel holdings;

   b. Transitioning to a low-carbon or carbon-free benchmark index for all public equities;

   c. Strategically engaging with portfolio companies;

   d. Using the Green Bank or other organizations to de-risk investments in New York's green economy; and

(5) Experience (including performance analysis) of other pension funds/investors which have undertaken divestment from fossil fuels and/or other concerted de-carbonization efforts.

Decarbonization Advisory Panel Beliefs and Recommendations

A report to the Comptroller of the State of New York as the sole trustee of the New York State Common Retirement Fund (the Fund) on how the Fund can best mitigate investment risks stemming from climate change and maximize opportunities from the new, low-carbon economy. The recommendations herein represent the consensus of the six panel members.

Panel members

Joy-Therése Williams – Panel chair

Alicia Seiger

Bevis Longstreth

Cary Krosinsky

George Serafeim

Timothy Smith

April 2019

Introductory Remarks

The Decarbonization Advisory Panel (the Panel) was charged with advising "the Comptroller, as trustee of the $209.1 billion New York State Common Retirement Fund (Fund), on how best to mitigate investment risks stemming from climate change and maximize opportunities from the new, low-carbon economy."[1] The Panel was appointed in March 2018 by Governor Andrew Cuomo and Comptroller Thomas DiNapoli.

To assist with the process, the Fund met with the Panel on multiple occasions over the course of a year. Staff from the Fund responded to the Panel's questions and provided an accounting of past and current climate-related activities. The Fund also facilitated the Panel's requests for information from trusted third-party reports and industry experts. The Panel would like to thank the Fund staff for their openness and willingness to discuss this topic.

The Panel recognizes the Fund's leadership and depth of activities with regard to climate change, particularly with respect to active ownership. We specifically call out and commend Comptroller DiNapoli for his ongoing leadership on climate change.

Based on the Panel's assessment of the latest climate science, our review of the Fund's materials and our expertise at the intersection of climate change and finance, the Panel believes major, additional steps will be necessary to protect the financial interests of the Fund's beneficiaries in the future. This document lays out the Panel's foundational beliefs (Part 1) which, in turn, drive our consensus recommendations (Part 2). Part 1, Part 2 and Exhibit A (Minimum Standards Framework) represent a united view from the entire Panel. The two appendices are personal statements from individual panel members. While the Panel was not in consensus on the entirety of these pieces, the ideas articulated in these statements influenced the Panel's final recommendations and the Panel agreed it was appropriate to append them in service of additional context and insight.

The Panel views climate change as not one discrete risk factor or even a set of factors, but as a macro disruption across industries (e.g., energy, agriculture, mobility, etc.), geographies (e.g., emerging markets, coastal property, flood plains, etc.) and arenas (e.g. physical, policy, technology, liability, etc.). It will fundamentally change economic systems and thus has a financially material impact on investing. While there is uncertainty on when and where these impacts will fully manifest, the transition to this new future is already well underway. There is no opting-out of climate consequences — to invest as "usual" is to take a bet against scientific principles. To delay action is, itself, a decision to enter unprepared into a more volatile investing environment and a more abrupt market correction.

The Panel acknowledges that in undertaking all or even most of our recommendations, the Fund will confront challenges with respect to staffing and compensation. To allow for these challenges, the recommendations are intended to enhance the Fund's internal operations as

[1] https://www.osc.state.ny.us/press/releases/mar18/030618.htm

well as expand its relationships and leverage the skills and resources of its managers, index providers and consultants.[2]

The Panel's recommendations have been developed to best prepare the Fund for financial impacts as climate change continues to unfold. The Panel sees real risk to the value of the Fund and its ability to achieve a target annual rate of return if the Fund is not prepared for the transition to a low-carbon economy or for the worsening physical risks from climate change. The cost of unpreparedness to the Fund's operations is likely to be significant, including the potential to impact contribution rates. Therefore, we believe our recommendations are consistent with the goals of a responsible investor. However, we understand these recommendations may be challenged in the short-term as the market does not currently reflect the full extent of climate change risks and opportunities. These recommendations break from the status quo and pursuing them will cause the Fund to face challenges in its operations and investing practices.

The Panel has conviction that the market will evolve through efforts by bodies such as the Financial Stability Board, but it may take time. The Panel recognizes that there is uncertainty in the short-term losses and gains that may be associated with its recommendations. In recognition of these challenges, the Panel has built flexibility into its recommendations rather than prescribe a fixed process or implementation road map. The Fund may choose to pilot or phase-in initiatives, which would also allow for course corrections as new information becomes available.

The Panel's recommendations are sweeping and ambitious. We believe our comprehensive approach will best prepare the Fund for resilience in the face of climate change.

It is in this spirit that the Panel offers our beliefs and recommendations for the Comptroller's consideration and with a hope that others will follow the Fund's lead.

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[2] The Panel is not suggesting that these challenges should be solved 'at all costs', but expect that additional expenses may be small relative to the avoidance of loss and realization of opportunities derived from the Transition now underway.

PART 1
Foundational Beliefs: Science, Risk and Opportunity

In support of its recommendations, the Panel submits the following foundational beliefs.

On the Fund's History with Climate-Related Risks and Opportunities

- To date, the Fund has taken leading steps to address climate-related risks and opportunities including:
  - Committing $10 billion to sustainable investments, including $4 billion into a first-of-its kind Low Emissions Index;
  - Participating in climate risk and related analyses in partnership with third-party experts;
  - Filing 140 shareholder resolutions, resulting in 55 agreements, with companies to encourage analysis of climate risk and the decarbonization of operations; and
  - Participating in several United Nations Climate Change Conferences and advocating for climate issues at the global, federal and state levels, including the Paris Agreement, the Clean Power Plan, fuel efficiency standards and carbon pricing.
- The Fund is a leader in effective active ownership as is demonstrated by the length of time it has dedicated to engagement, the volume of activities it has joined and led,[3] and the results the Fund has achieved in driving significant changes in company policies, practices and disclosure.[4]
- The Panel recognizes and commends the Fund for its leadership and sees our purpose as primarily to support, enhance and embolden the Fund's strategy commensurate with known medium and long-term risks and opportunities while navigating near-term uncertainty.

On the Science of Climate Change

- The Panel recognizes climate change as an existential threat to global economies, markets and earth systems.
- The Panel's understanding of climate science and impacts is informed by the consensus of global climate scientists acting within the Intergovernmental Panel on Climate Change (IPCC), including the IPCC's most recent summary for policymakers report entitled "Global Warming of 1.5°C."[5]

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[3] For example, the Fund is currently a member of the Climate Action 100+ effort.
[4] See https://www.osc.state.ny.us/reports/esg-report-jan-2019.pdf and previous reports.
[5] https://www.ipcc.ch/sr15/ In addition, several other documents were referenced by Panel members and these included the National Climate Assessment, U.S. National Academy of Science studies and business groups such as the CCLA, which reflects views of mainstream economists and business people.

- The Panel recognizes:
  - That the consensus of climate science finds that 2°C of warming will cause significant environmental and economic damage, and in general, avoiding significant value damage would require staying within 1.5°C of warming;[6]
  - To stay within 1.5°C warming, global carbon emissions would need to be cut dramatically by 2030 and achieve net zero by 2050;
  - Global carbon emissions are at a record high and, after slowing down for a brief period, began to climb again in 2018;[7] and
  - At 3°C or more of warming, as is implied by current national commitments from the Paris Agreement, even if achieved, researchers predict major value destruction and reduction in GDP.[8] This large risk is underappreciated by the public and undervalued by the marketplace.
- The Panel believes that climate change impacts as described above will require both adaptation and mitigation measures.
- Given the scientific understanding to date, the Panel shares the belief of the just released UN Global Environment Outlook[9] that urgent action is necessary to address climate-related risks and opportunities and the pace of progress today is far below what is needed. The window of opportunity to avert severe and long-term consequences for human health, human rights, biodiversity and global prosperity is closing swiftly.

On Climate-Related Financial Risks

- The Panel believes that climate change poses significant risk to the Fund's investment portfolio across equities, alternatives and credit, as most (if not all) do not currently adequately price climate-related risk.
- The Panel believes two broad categories of climate-related risks will impact the Fund's assets in the immediate, near and long-term: physical risks and transition risks (as defined below).[10]
  - **Physical risks** result from chronic and acute changes in climate patterns including an increase in the frequency and intensity of heat, drought, hurricanes and typhoons, and extreme downpours. These changes create disruptions to supply chains, real assets (including land and agriculture), health and movement of people, among other impacts. Legal liabilities for companies and investors may play a role here as well.
  - **Transition risks** rise from a suite of factors as economies and enterprises move from high to low-carbon intensity and from low to high-climate resilience (the Transition). Price dislocations can result from misjudging the pace and scale of technology

[6] https://tyndall.ac.uk/sites/default/files/publications/briefing_note_risks_warren_r1-1.pdf
[7] https://www.globalcarbonproject.org/carbonbudget/18/files/Norway_CICERO_GCPBudget2018.pdf
[8] https://www.nature.com/articles/s41586-018-0071-9
[9] https://www.unenvironment.org/global-environment-outlook
[10] https://www.tcfdhub.org

innovation and failing to prepare for dramatic and abrupt shifts in policy and regulation. Legal liabilities and regulatory risks for both companies and investors exist here too.

- The Panel observes that companies and regional economies are already suffering material losses as a result of physical climate risk.[11]
- The Panel believes enough global warming is already "baked into the system" to cause significant disruption and impacts to portfolios from physical risk regardless of the speed or scale of the Transition.[12]
- The Panel believes the Transition is well-underway in the energy sector and that companies and utilities heavily dependent on the extraction, refinement, distribution and combustion of fossil fuels will be disrupted by a range of factors. These risks include liability for carbon-emission effects, value depression and demand shifts resulting from innovation and consumer choice.
- The panel recognizes the "policy ambition gap" between the Paris goal and the current policy trajectory. This gap poses significant risks to investors and companies, particularly because of what the Panel sees as a likelihood that governments will be forced to step-in with immediate and stringent regulations that would, in turn, result in abrupt and disorderly impacts on global markets.[13]
- The Panel believes uncertainty with regard to climate risk is not altogether dissimilar to timing any other investment decision and should not be a reason to support the status quo. Being too early in avoidance of the risk of permanent loss is much less of a danger than being too late.[14]
- The use of ESG[15] factors in investing can include a wide range of sustainability factors and combining E, S and G creates situations where a company well positioned for the Transition might receive low ratings because of its social and governance practices or, conversely, a company poorly positioned for the Transition could receive high ratings because of its social and governance practices. Therefore, ESG ratings should be used with caution in the context of climate change.

On Climate-Related Financial Opportunities

- The Panel believes managers and companies with deeply embedded and carefully analyzed climate-related strategies, operations, metrics, governance and incentives will outperform the market as physical risks not properly underwritten in capital markets materialize and the Transition unfolds.[16]

[11] The insurance industry routinely publishes data on losses due to climate change. One such reference is: https://www.swissre.com/institute/research/sigma-research/sigma-2018-01.html.
[12] Multiple studies including: https://www.nature.com/articles/nclimate3357.
[13] https://www.unpri.org/download?ac=5363
[14] https://www.bis.org/review/r151009a.pdf
[15] Generally environment, social and governance issues.
[16] https://www.generationim.com/sustainability-trends/sustainability-trends-2018/

- The Panel believes the Fund can achieve superior risk adjusted returns and protect its portfolio by pursuing investments that account for the impacts of physical and transition risks.
- The Panel believes sustainable assets (as defined in the Recommendations below) benefit beneficiaries financially and improve quality of life.
- The Panel recognizes that global investment in clean energy and low carbon opportunities must increase three to five times current levels in order to stay within 2°C and 1.5°C warming respectively (the "investment gap").[17]
- The Panel believes that within the "investment gap" there exists significant opportunity for investors to capitalize on strategies that maximize resource efficiency in a variety of areas including, but not limited to energy, transportation, agriculture, buildings, circular economy and climate resilient infrastructure.[18, 19]
- The Panel believes soft barriers, such as minimum investment values and percent ownership criteria, consultants, benchmarks and compensation structures needlessly limit the Fund's ability to capitalize on and prepare for the Transition. The Fund will need to pursue modified or innovative processes to capitalize on climate-related opportunities at scale.
- The Panel believes, in general, a greater degree of active oversight will be required to manage index products to achieve alignment with physical risks and the Transition.
- The Panel believes approaches that rely on backtesting may lead to wrong conclusions in investment decisions in light of the nature of climate change impacts. Backtesting is akin to navigating a car down the road using only the rear-view mirror. This strategy works when the road ahead mirrors the past — it does not work when a hard turn is needed to avoid a cliff up ahead. Climate change promises sharp turns ahead.
- The Panel believes the Fund can further enhance its leadership position among US pensions by establishing and promulgating investment standards ambitious in recognizing and coping with both the physical and transition risks of climate change.
- The Panel has conviction that its recommendations stand firmly on a compelling business case that climate risks and opportunities present real financial consequences for the Fund.

Given these foundational beliefs, in particular the timelines climate scientists have made evident, the Panel urges the Fund to act on its recommendations with urgency, particularly the key ambition. The Panel acknowledges the Fund may require preparation in process and resources before it is able to employ all of these recommendations. Regardless, the Panel encourages the Fund to start where it can and grow ambition swiftly.

[17] https://www.iea.org/weo2018/
[18] https://www.ceres.org/sites/default/files/reports/2018-05/Ceres_In_Sight_Clean_Trillion_May10_2018.pdf
[19] https://www.mckinsey.com/business-functions/sustainability/our-insights/resource-revolution-how-to-capture-the-biggest-business-opportunity-in-a-century

PART 2
Panel Recommendations: Pursuit, Processes and Products

The Panel recommends a bold ambition, a big first step, and a suite of actions with regard to the Fund's investment processes and products that support both the ambition and first step. Our recommendations address both mitigating risks and capitalizing on investment opportunities.

Ambition and First Step

The Panel's ambition for the Fund takes into consideration the Panel's belief that securities across the entire portfolio are exposed to physical and transition risks in the business-as-usual scenario. Our "first step" recommendation specifically addresses the Fund's desire to capitalize on the emerging investment opportunities that directly promote adaptation to or mitigation of climate change impacts. The overarching ambition and first step work together to increase the Fund's resilience to climate change.

The Panel recommends the Fund pursue alignment of its entire portfolio with a 2-degree or lower future by 2030 in accordance with climate science consensus. As a first step, the Panel recommends the Fund establish a new "climate solutions" allocation through which the Fund can substantially increase its commitment to investments with a proactive approach to climate risk and opportunity in the near term.

Definition of "Sustainable Assets"

For the purposes of this document, the Panel defines "sustainable assets" as investments, in any asset class, that are consistent with a 2-degree or lower future. Those assets may directly or indirectly work to help create that future or have a neutral effect on its development. The Panel notes that multiple pathways to a 2-degree future have been modeled and recommend the Fund, in consultation with experts, develop a point of view regarding which scenario(s) it deems appropriate and credible.[20, 21] The pursuit of sustainable assets is as much about the decision-making process as it is about the assets themselves. As such, the Panel recommends

[20] In digesting the definition of "sustainable assets" it can be helpful to consider the counterfactual. Assets that are not sustainable are those that assume an expected value that is inconsistent with the physical impacts and transition pathways of whichever warming scenario(s) the Fund assumes. In the end, sustainable assets have integrity against science-based assumptions; unsustainable assets do not.
[21] In its March 25, 2019 announcement, BNP Paribas Asset management referenced the use of the Paris-compliant trajectory as determined by the International Energy Agency's (IEA) Sustainable Development Scenario (SDS) as its reference case. https://docfinder.bnpparibas-am.com/api/files/1FC9FC6C-0DA8-468E-90B3-016DDB5CD270. Note that the Panel is not recommending any particular trajectory and only cites this as an example of how an existing one may be leveraged.

the Fund develop and apply "Minimum Standards" across all of its investment decisions. (See Exhibit A.)[22]

Rather than making a narrow recommendation to divest from specific stocks, the Panel supports the concept of Minimum Standards to guide the Fund in its decisions to sell securities and/or avoid investment managers whose operations and strategies are not sustainable. In pursuit of 100% sustainable assets, divestment of companies not consistent with a 2-degree future is "baked in."

The Panel recognizes so-called "low-carbon indices" as a first step towards decarbonization. These products however, rely on a relatively narrow view (sometimes, but not always, due to data constraints) of what it means to create portfolios that mitigate physical and transition risks. The data to inform decarbonized portfolios need to extend beyond carbon emissions of an organization and move to an analysis that models product demand changes across industries and companies, changes in cost structures across value chains, and an organization's competitive positioning in the marketplace.

Why by 2030?

Much of the argument for a 2030 target was articulated in the Panel's beliefs; a few points are worth reiterating. According to the IPCC,[23] model pathways with no or limited overshoot of 1.5°C require global CO_2 emissions to decline by roughly 45% by 2030, reaching net zero in 2050. To avoid overshooting 2°C, global emissions reductions must decline roughly 20% by 2030 and reach net zero around 2075. The increase in global economic damages between 1.5 and 2 degrees is significant; a 3-degree world verges on unrecognizable.[24] By 2030, the planet will be locked into temperature rises that may put the Fund's value at significant risk. These dates are driving mitigation efforts around the globe.

First step: A New Allocation

The panel recommends the Fund develop a new "climate solutions" allocation. This allocation would rise substantially as a share of the portfolio in the short-term. Over time, the Fund can leverage the data and relationships accumulated through the allocation, combined with its existing and new efforts across all asset classes, to more quickly implement the sustainability overlay across the entire portfolio so as to achieve 100% sustainable assets before 2030.

The climate solutions allocation acts as a leading edge driving the Fund's sustainability goals. The allocation would be multi-strategy (including both equities and debt). Investments under this allocation share a common thread of actively supporting the Transition or addressing adaptation problems. The Fund has already committed $6 billion to investments consistent

[22] The Panel suggests that in working towards the goal of 100% sustainable assets, different tools and analyses may be needed for different parts of the Fund's portfolio. We feel that Minimum Standards is a powerful and flexible tool, and can be applied judiciously where more process is needed. Other areas of the portfolio that are less impacted by or impactful on climate change many require a simpler approach.

[23] IPCC Special Report on Global Warming of 1.5 degrees, 2018.

[24] As noted previously, the ambition of the Paris Agreement's Nationally Determined Contributions adds up to a 3-degree world.

with this recommendation.[25] Further investments may be sourced through increasing allocations that already contribute to climate solutions and through new allocations in existing or new investment relationships.

The Panel recommends establishing a new Head of Climate Solutions position to manage the allocation, supported by a well-resourced team. Cognizant of the diversity of strategies in the allocation and the fact that traditional benchmarks are, by nature, backward looking, the Panel recommends the carve-out be managed against an absolute return rather than a benchmark. The absolute return should be set according to the Fund's blended target rate of return net of fees and inflation.

Specifically, the Panel believes:

- The leading edge of climate-related opportunities require deep expertise in climate mitigation and adaptation solutions.
- Superior returns will flow from making decisions based on a robust pipeline of opportunities rather than weighing the occasional sustainable manager against traditional strategies. A dedicated team will have greater capacity to build a robust pipeline of deal flow and vet opportunities against a broader consideration set.
- Capitalizing on the Transition requires more flexibility than traditional investment practices (i.e., backtesting, benchmarks, tracking error, check sizes, fund structures, etc. – see additional recommendations in the next section).

The Panel recognizes and respects a preference among the sustainability community for "integration" of sustainability practices, including ESG factors. In this approach, responsibility for connecting climate change to investment decisions is shared among investment professionals. The climate solutions allocation is not inconsistent with an integrated approach. By dedicating staff and resources through a new allocation, the Panel points to the following benefits:

- The allocation serves as a hedge against the climate risk to which the rest of the Fund remains exposed.
- The allocation better positions the Fund to capitalize on the Transition.
- The allocation's in-house capacity will serve the Fund well in its pursuit of aligning the portfolio to a 2-degree or lower future.
- Over time, the Fund will generate the data it feels is lacking to test "new" strategies (i.e. fill the current data gap for backtesting).
- In order to ramp-up ambition swiftly and move towards sustainable assets, the allocation provides a blueprint for climate solutions on a larger scale.

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[25] The $6B figure is calculated based on the $10B commitment to the "Sustainable Investment Program" Comptroller DiNapoli announced in December 2018, less the $4B invested in the Low Carbon Emissions Index. The Panel sees the "climate solutions" asset class as an allocation for proactive investments in climate mitigation and adaptation. Whereas the low-carbon index is constrained by a nominal tracking error against a traditional benchmark. Note that index products that consider climate risk and decarbonization will be part of the aligned sustainable portfolio. https://www.osc.state.ny.us/press/releases/dec18/120718.htm

Recommendations to Support the Ambition and First Step

On the Fund's Investment Processes

- **Establish and employ Minimum Standards.** Building on the Fund's effort to memorialize climate change-related principles for investment, the Panel recommends the Fund establish criteria for observation and exclusion based on Minimum Standards for investments. These Minimum Standards would serve as the basis on which the Fund decides to buy, hold or sell assets exposed to transition and physical risks. Minimum standards can be used to construct indices, evaluate managers and direct engagement.[26] See Exhibit A for the Panel's suggestions on Minimum Standards and how they have inherent flexibility to allow for dynamic conditions in investments, companies and strategies.
- **Reconsider benchmarks.** The Panel recognizes the centrality of benchmarks in the evaluation of the Fund's overall performance, individual product and asset class performance, and compensation incentives for investment professionals. Yet, traditional market indices reflect historical trends with no accounting for future dislocations as a result of climate change. This mispricing includes physical risks, of which there is certainty, and impacts of the Transition, about which there is a great deal of uncertainty and therefore risk.
    - **Rethink return.** The Panel recommends the Fund consider moving to absolute return instead of market-driven benchmarks that are plagued with the aforementioned challenges in light of climate change. Note that this is our preferred option for the new climate solutions allocation.
    - **Create a new benchmark.** Notwithstanding the dangers of mispricing embedded in traditional market benchmarks, the Panel understands that this is a foundational element for public funds and will take time to change to absolute return. Therefore, in the interim, the Panel recommends that the Fund develop new sustainability benchmarks.
    - **Use "sustainability" benchmarks.** Benchmarks that are consistent with a 2-degree or lower future would support the goal of 100% sustainable assets. These could be used alone or alongside traditional benchmarks when working with managers. Tying climate-wise strategies to short-term and backward-looking benchmarks limits the value of those strategies out of the gate.
- **Develop expertise on climate risk modeling.** Much of the work to date on climate risk has yielded results that a) are not useful enough to inform investment decisions, b) underestimate impacts, c) overestimate timescales or d) all of the above. The Fund should build on its own capabilities and work with partners to develop sophisticated models to measure the climate risk of the Fund's real assets and to undergird risk methodologies

[26] https://www.regjeringen.no/globalassets/upload/fin/statens-pensjonsfond/formelt-grunnlag/guidelines-for-observation-and-exclusion-from-the-gpfg---17.2.2017.pdf

for new index products. The Panel recognizes the state of existing data and reporting remains inadequate and inconsistent and will benefit from owner-led initiatives.[27]

- **Re-audition consultants and managers.** The Panel recommends the Fund conduct a review of its consultants and managers to identify strengths in climate analysis as well as biases and misaligned incentives hamstringing the Transition. To re-fresh its relationships, the Fund should evaluate third-parties to determine the extent of their knowledge and capabilities regarding climate risk and opportunity. As necessary, the Fund should also actively solicit new consultants and managers with particular expertise in climate.
- **Integrate sustainability metrics into compensation structures.** The Panel recommends the Fund further incorporate sustainability goals into the compensation structures of its staff, consultants and managers.
- **Break the soft barriers.** The Panel understands the rationale for minimum check sizes, percent ownership and non-traditional fee structures. In many cases, however, managers and vehicles best poised to capitalize on the Transition will not fit the Fund's conventional manager mold. The Panel recommends the Fund establish new criteria and metrics to evaluate all asset managers on sustainability criteria and for the climate solutions allocation in particular.
- **Review staffing requirements.** The Panel believes the Fund will need more staffing not only to manage the different initiatives in these recommendations, but also to bolster in-house, climate-specific capabilities. The Fund should consider the appropriate level of dedicated staff and other resources needed to maintain and ratchet its leadership in light of the rapidly evolving array of data sources, products, managers and consultants responding to the Transition.

On the Fund's Engagement Processes

The Panel recognizes the Fund's leadership in corporate engagement activities and encourages the Fund to continue its efforts. Accordingly, the Panel recommends the following:

- **Support forward-thinking companies.** The Fund's voice is powerful and the Panel recommends that the Fund seek out forward-thinking companies in which the Fund has a stake in order to support those companies to effect and accelerate positive change across their industries.
- **Engage with consequences.** The Panel encourages the Fund to utilize all active ownership tools available to them up to and including legal action where necessary. However, in light of the urgency needed on the climate issue and in cases where companies continue to resist change, the Panel recommends the Fund establish a glide-path, including active engagement, so that it will no longer own securities in companies that do not meet and are not making progress toward the Minimum Standards. This should be accomplished as soon as the Fund's capabilities allow. To achieve this goal, the Fund will benefit from working in partnership with select index managers and owners.

[27] https://www.gpif.go.jp/en/investment/pdf/ESG_indices_selected.pdf

- **Engage with investment managers.** As soon as the Fund's capabilities allow, the Panel recommends that the Fund find new managers that are able to invest in accord with Minimum Standards and no longer invest in new managers that do not meet Minimum Standards. As well, the Panel recommends that the Fund leverage its capabilities to empower funds it already owns to develop new sustainable strategies. Lastly, the Panel recommends that where existing managers do not meet Minimum Standards, the Fund will no longer increase allocations to these managers and may re-consider the relationship altogether.
- **Collaborate with peers.** The Panel supports the disclosure of the Fund's stewardship activities as a way to communicate its leadership in active ownership leadership activities. We recognize that engagement in concert with like-minded peers can be more effective and serve to educate and learn from others. The Fund is currently participating in Climate Action 100+ and the Panel recommends continuing and expanding these types of engagement initiatives as resources allow.

On the Fund's efforts in Advocacy and Education

The Panel recognizes the Fund's current efforts in advocacy and education and the value these activities serve in support of advancing the field of sustainable investing. The Panel recommends the following enhancements:

- **Educate beneficiaries.** The Panel encourages the Fund to continue and enhance its efforts to educate its beneficiaries about the impact climate change will have on the State of New York and what can be done to adapt to and mitigate those impacts.
- **Advocate for smart climate finance policy.** The Panel encourages the Fund to continue and ratchet-up where possible its advocacy efforts with state, national and international government bodies in support of progressive climate policy, particularly policies that incentivize the investment community. Specifically, for the government of New York State, the Panel encourages the Fund to be proactive in suggesting investment structures for state-related climate initiatives that will allow the Fund to financially support these initiatives.
- **Educate staff.** The panel recommends the Fund ensure staff are actively encouraged to keep up to date on information and best practices around climate-related risks, impacts and the Transition, especially as events are unfolding rapidly in science and across the finance sector.

On the Fund's Investment Products

The Panel recommends the following actions with regard to specific investment products:

- **Develop new best-in-class index products.** The Panel recognizes the Fund's heavy reliance on passive index products. Based on the Panel's belief that traditional index products carry risk that is not adequately priced in light of climate change, the Panel recommends the Fund work with consultants, managers and partners to develop new index products that better account for climate-related risks. These index products may include the following:

    - A low-carbon index that includes a tilt towards companies better poised for the Transition;
    - An index with an active overlay where non-compliant companies can be sold;[28] and
    - An index built on Minimum Standards for climate-related risks.

- **Investigate direct and co-investments capabilities.** Particularly for the new sustainability asset class, and with support of climate-wise advisors, the Fund should consider pursuing direct or coinvestment opportunities in climate infrastructure and real estate.

- **Seed new strategies.** The Fund should consider seeding new managers, including the "fund of one" strategy where the Fund is the only Limited Partner, having architected the strategy and the General Partnership.[29] The Panel also supports consideration of the Danish pension fund model of creating a separately managed climate infrastructure team as a possible avenue to pursue investments in the climate solutions allocation.

- **Develop partnerships for green lending.** The Fund should explore partnerships with the New York State Energy Research and Development Authority (NYSERDA), the Green Bank and other agencies to establish a sustainable lending facility. This partnership would be supported out of the new asset class with the same absolute return benchmark.

[28] For example, the Climate Action 100+ methodology may provide a starting point for such a strategy.
[29] https://www.axios.com/calpers-direct-could-point-the-way-to-more-climate-wise-investments-bbef8fc9-57e5-4d5b-ae87-03c86150888f.html

Exhibit A: Minimum Standards Framework

Establishing robust Minimum Standards based on sound climate science and best-in-class management practices is critical to implementing the Panel's recommendations. Designing those standards, however, is beyond the remit of a group of volunteers, no matter how expert. The Panel thus offers below a possible framework for establishing Minimum Standards.

An effective set of Minimum Standards would be contextualized to match the Fund's investment portfolio and decision-making processes. At best, robust Minimum Standards can serve to overcome many of the principal-agent problems that exist within investing in general and sustainable investing in particular. The examples below are simplified and are provided solely as illustrative of the proposed framework. Details in the examples are not part of the recommendations.

What are Minimum Standards?

- Criteria that define desired behaviors, achievements or position relative to an established and specific standard.
- The criteria may be quantitative, qualitative or a combination of both.
- The criteria would be coupled with definitive actions should the standards not be met according to a defined timeline.
- When specific criteria are not met according to the defined timeline, the types of actions taken would ideally be in the form of direct investing decisions (e.g. buy, sell, hold), but could also be interim steps such as moving to more aggressive active ownership tools.
- Ideally, criteria would be codified through the use of contracts or other documentation and supported through the alignment of compensation and governance structures.
- Examples of criteria include:
    - A high-emission company's rate of decrease in GHG emissions year-on-year.
    - An appropriate corporate governance system for the management of climate-related issues.
    - A climate policy for an investment manager that clearly addresses risks and opportunities from physical impacts and the Transition.
    - A lobbying policy actively supporting government actions to address climate changes.
    - Leveraging an existing framework such as the TCFD Disclosure Recommendations or the Climate Action 100+ strategy.
    - Investment professional compensation structures tied to specific sustainability outcomes or decision-making processes.

- Examples of actions and timelines include:
    - By 2020, exclude all companies that derive more than 10% of revenue from mining thermal coal or account for more than 1% of global production.[30]
    - If less than 5% decrease in GHG emissions year on year after [#] engagements, consider a shareholder resolution.
    - If a manager has no climate policy after engaging for [X] years, consider no new allocations.
    - If a company shows no progress after engaging on all of the selected engagement criteria, mandate that managers remove that security from segregated funds.

How might Minimum Standards be implemented?

Minimum Standards can be set for companies, funds, indices, fund managers and consultants. Given the reliance of the Fund on external managers and passive indices over direct investing, the Panel proposes that the standards be layered as described below.

- Minimum standards should be applied to external managers and general partners. These standards would likely focus on manager processes and capacity (education, staff, resources) to apply a climate lens to their own investment process.
- In order to apply Minimum Standards to companies, the Fund can communicate its expectations around sustainable assets and climate solutions to the managers. The Fund could leverage existing methodologies, such as that of Climate Action 100+, and expand those methodologies over time.
- For index providers, Minimum Standards might be a combination of criteria on the index provider's processes and capacity and serve as a climate lens that acts as an active overlay on an index.

Minimum Standards should consider changing conditions including the Fund's climate ambition, capacity and resources over time.

- Minimum standards should not be static. Criteria and actions should evolve to match the Fund's climate goals as they change over time.
- The Fund can phase-in Minimum Standards to sub-categories according to a priority ranking such as greatest risk, ease of implementation, etc. Sub-categories that could be considered include:
    - Investment products, e.g., indices, segregated funds, comingled funds, bonds;
    - Third-parties, e.g., consultants, external managers, general partners;
    - By asset classes, e.g., private equity, real estate, public equities, fixed income;
    - By sector, e.g., energy, agriculture, transportation;

[30] BNP Paribas Asset Management https://docfinder.bnpparibas-am.com/api/files/1FC9FC6C-0DA8-468E-90B3-016DDB5CD270.

    - By sub-sector, e.g., utilities, clean energy, manufacturers, upstream oil and gas; and
    - By regions, e.g., coastal areas, US, emerging markets.

Below are a few examples for how Minimum Standards might be implemented. These examples are for illustrative purposes only, are by no means comprehensive.

- Some sub-sectors, such as fossil fuel producers, will be more affected by the Transition than others. Starting with the highest risk sub-sectors first, the Fund could design a set of Minimum Standards that define expectations with respect to identifying, managing and measuring climate risk. The standards would inform the Fund's engagement with companies and managers holding securities in these sub-sectors. If the Minimum Standards are not met, the actions triggered will depend on whether the company is held in a segregated fund (divest), in new comingled funds (do not invest), in indices (work with index provider). Over time, the set of sub-sectors can be expanded to the next most affected by the Transition in an order such as fossil fuel power generators, automotive vehicle manufacturers, utilities, service industries to the fossil fuel providers, etc.
- Some companies and assets will have characteristics that make them more exposed to physical climate risks. Companies or managers with these characteristics will require a different set of Minimum Standards around adapting to physical risks, anticipating implications to their operations and managing financial losses due to increased cost and liability. These Minimum Standards might include criteria such as a robust and climate-informed board and enterprise risk management system.

Appendix A

The following appendix are remarks from individual Panel member Bevis Longstreth. It is included here not as part of the consensus recommendations, but as helpful context on one approach discussed by the Panel.

Remarks of Panel Member Bevis Longstreth on Panel Report in Elaboration and Concurrence

1. **Terminology.**

   In the context of the Panel's work and in reference to investments in the State's Retirement Fund, "divestment" for me is synonymous with "decarbonization" and means:

   a. The elimination from the portfolio over some reasonable time period of assets having an unacceptable (as determined by the fiduciary responsible for the decision) dependence on carbon emissions in pursuit of profits ("FF-Dependent Companies").

   b. The avoidance of the purchase of like assets for the portfolio in the future.

   c. The application of the rules in a) and b) above through, in the case of actively managed portions of the portfolio, direction to the managers and, in the case of indexed portions of the portfolio, selection of indices that conform to such rules.

2. **Fiduciary Duty Today Imposes no Restraint on Achieving a Low Carbon Portfolio, and soon is likely to Require it in the Exercise of that Duty.**

   Fiduciaries responsible for other people's money are charged with the duty of care. Although language differs among various types of fiduciaries, the command is the same: to exercise "reasonable skill, care and caution." It is noteworthy that the required use of caution is what separates fiduciaries responsible for pensions and endowments from corporate fiduciaries, who are subject to the business standard of corporate law, where greater risk is not only permitted and encouraged, but often demanded by stockholders taking comfort in their ability to diversify risk across many enterprises.

   It has become certain that today, a fiduciary possessed of an informed view of relevant climate change factors, may easily conclude — on the basis of financial considerations alone — that decarbonization of the Fund's portfolio is a permissible option.

Thus, it is equally certain that fiduciaries can no longer cling to the legal standard of prudence in order to justify holding FF-Dependent Companies in their portfolios. Fiduciary duty does not bar the gate to decarbonization.

Whether, at this time, decarbonization of a portfolio is compelled by the duty of care and caution is a more difficult question to answer. Anticipatory decarbonization in recognition that, at some unknown and unknowable point down the road, markets will suddenly adjust equity prices downward to reflect swiftly changing prospects for FF-Dependent Companies, however wise as a prudent option today, may not yet be compelled in the exercise of skill, care and caution.

However, the risk of the Fund of being too early in decarbonizing is far less than the risk of being too late. And the time is fast approaching when holding FF-Dependent Companies will be as imprudent as holding whale industry stocks was after kerosene replaced whale oil for lighting, or holding stocks in the horse carriage trade was after Henry Ford replaced those buggies with his new-fangled vehicles. What's most important is to recognize we speak here not of some trading loss that can be recouped down the road. *We speak of the risk of permanent loss of capital* from this accelerating energy transition and its accompanying disruption. Indeed, permanent loss accompanied all those still invested in Peabody Energy, the largest private sector coal producer, when, two years after global coal demand peaked, it went bankrupt, having built capacity for demand from India and other emerging markets that didn't materialize, as these countries began the shift to renewables.

Carbon Tracker Initiative, the independent London-based think tank devoted to in depth analysis of the impact of energy transition on capital markets, released a new report, dated September 10, 2018, that bears on this matter. With substantial supporting analysis, it predicts the tipping point when total fossil fuel demand peaks will be between 2020 and 2027, and most likely by 2023. When that happens, or even in anticipation of the peak, investors still committed to FF-Dependent Companies will lose a vast amount of money. "The amounts at risk are colossal. The fossil fuel sector has $25 trillion of fixed assets which is increasingly vulnerable to stranding as the energy transition progresses." The report finds demand for coal, gas and oil to be stalling because 1) the cost of renewables and battery storage is falling fast, 2) emerging economies are pursuing clean energy, and 3) government policy is being driven by the need to slash emissions, control climate change and reduce air pollution.

In weighing the extent of market-place mispricing of FF-Dependent Companies, it is worth considering that no depreciation for the impact of achieving the Paris Agreement goals is currently being recognized on the financial statements of FF-Dependent Companies.

So, the risks of remaining invested in FF-Dependent Companies, including coal, oil and gas companies and other industry sectors especially impacted by the energy transition, like capital goods, transport and automotive, are today large and growing larger swiftly.

What about the risks from decarbonizing? The risk of lost opportunity? Of high relevance here is the unimpeachable evidence adduced by the investment management firm GMO, founded and led by Jeremy Grantham, the guru who famously predicted the dot-com and housing bubbles of 2000 and 2007. In an August publication titled "The Race of Our Lives Revisited," he presents the firm's conclusion that, over long periods of time, it makes no difference to an investor whether one holds or eliminates the energy sector of the market from its ten major sectors. His research extends way back to 1925 with remarkably similar results throughout.

The central point is that returns from a well-diversified portfolio of US stocks will, for a long term investor, be the same with or without including in that portfolio the energy sector. This finding virtually eliminates concern as to whether decarbonization of FF-Dependent Companies is consistent with the duties of skill, care and caution.

3. Continuing to Hold FF-Dependent Companies is an Asymmetrical Bet.

It is unknowable whether a decarbonized portfolio will under- or out-perform in the short term. Looking back over time, results vary, but GMO's work renders those variations trivial. A decision to decarbonize rests on the well-supported claim that FF-Dependent Companies will prove to be bad investments over the long term, exposing those assets to the risk of permanent loss. A manager, in continuing to remain invested in such companies is making an asymmetrical bet where the risks of permanent capital loss stand in contrast to, at best, very modest short-term rewards compared to alternative investments not carrying that risk. This is a bet no manager should make without having in hand a very forceful case to offset the gross imbalance between risk and reward. Today, the burden of proof is on those who would continue to hold FF-Dependent Companies. To meet that burden within the duties of skill, care and caution is, in my opinion, not just difficult; it is swiftly becoming all but impossible.

4. Indexing is No Bar to a Low Carbon Portfolio.

Many managers are committed to indexing to achieve market returns at low cost instead of seeking to outperform the markets through stock selection at far greater cost and significant risk of realizing below market returns. This form of investment, however, is no bar to decarbonizing a portfolio. In the late 1960's many managers decided to divest from companies doing business in South Africa. US companies then active in South Africa included some of the most respected and successful companies within the S&P 500. And, yet, investing in companies conducting business within an apartheid structure was considered to be unacceptable by many institutions affected with the public interest. In no instance was such a decision considered a breach of fiduciary duty. Investment advisers and consultants swiftly responded to this movement by offering to construct active or indexed portfolios that, in either case, excluded such companies. Those products proved to be popular among many institutional investors.

Index funds that are low carbon or even fossil free can not only be readily constructed, but have been offered by a number of investment firms, including the giant Blackrock, which is now serving at very low fees many fiduciaries seeking to index using a fossil-free screen.

5. Engagement.

It is not generally considered to be within the scope of duty for one managing a trust, endowment or pension fund to undertake to change the business model or governance practices of the companies in which one invests. It can often seem like pushing on a string instead of pulling it. To engage involves time, energy and expense, which must, in service to the duty of loyalty to beneficiaries, be devoted solely to their best interests. Moreover, those responsible for trust assets are not generally endowed with the skill set to create or change business models.

Engagement with top management has a record of success in many areas of corporate policy, be they environmental, social or governance. Indeed, shareholder advocacy has been the principal and highly successful driver in making public corporations sensitive to, and in a growing number of cases, responsive to, the concerns generally subsumed under the ESG umbrella.

However, this kind of shareholder advocacy has a poor record where the policy changes sought materially affect management's compensation or power, or the core of the corporation's business.

Engaging with Phillip Morris to drive it out of the cigarette business, or with Remington Arms to get it to stop making guns, or with private prison operators to drive them out of their main business have not proved successful. Engaging to cap executive compensation or give shareholders the power to nominate directors hasn't worked.

Engagement makes sense when the efforts undertaken are likely to serve the interests of beneficiaries to a greater extent than simply removing the investment from the portfolio. In the case of the oil majors, where exploration and sale of fossil fuel is central to their business model, engagement is hard to justify. The long record of efforts by the oil majors to mislead the public, while seeking to defeat governmental action against climate change makes justification even harder.

If the Panel's recommendation that the Fund achieve a portfolio containing 100% sustainable investments before 2030 is implemented, then decarbonization will have been accomplished and any need for engagement over the extraction and combustion of fossil fuels will have been eliminated.

6. Further Rationale for FF-Dependent Company Avoidance.

Beyond the growing risks of permanent loss from the mispricing of equities dependent for their profits on the exploration, development, sale or use of fossil fuels, there is an issue for the Fund as to why, given the science of climate change and its forward looking implications for the planet, it continues to seek profit from those activities. For, as a fiduciary, there can be no purpose in holding such equities beyond seeking monetary returns.

In the past the Fund has decided on the basis of deep distaste for certain profit-seeking businesses to avoid investment in them. (Current examples include private prisons and firearms manufacturers.) Thus, by precedent, the way is clear for the Fund to elect not to hold companies where profits are derived principally from exploration, development, sale or use of fossil fuels.

Put a different way, given the Fund's immensely important public stature and purpose, what possible justification is there for seeking profit from activities that are hurting, and perhaps soon will be hurting irrevocably, the world its beneficiaries inhabit?

Bank of England Governor Mark Carney, said recently at a Parliamentary committee session "There is an inconsistency between monetizing carbon assets and achieving climate goals." This simple statement captures the essence of the issue for investors, and particularly for those like the Fund who are affected with the public interest. Why, given the Fund's freedom to avoid Carney's inconsistency, should it persist any longer in the Fund's investment program?

Bevis Longstreth
March 26, 2019

Appendix B

The following appendix are remarks from individual Panel member Timothy Smith. It is included here not as part of the consensus recommendations, but as helpful context on one approach discussed by the Panel.

Remarks of Panel member Timothy Smith on the Importance of the Fund's Corporate Engagement on Climate Change

The New York State Common Fund and the Comptroller's Office have decades of history engaging companies on important ESG issues going back to the 1980s and their work opposing company involvement in apartheid in South Africa.

I have had the opportunity of working on shareholder engagement with companies since the early 1970's and recognize the importance of the investor voice in impacting company thinking. In my previous work at the Interfaith Center on Corporate Responsibility and now at Walden Asset Management, I worked with the Comptroller's office on a number of issues.

I appreciate the clear and to the point report created by our Panel and also appreciate the opportunity to provide additional commentary in a personal statement appended to the Report. I believe the Fund's important engagement work deserves additional background and commentary.

As global investors increasingly address the risks of climate change with our companies, economy and portfolios, the Fund has stepped up and insured that their voice and vote as a shareholder was registered in corporate boardrooms and with management decision makers.

The Fund does this as an individual investor and in coalition with other investors. This climate work goes back well over a decade.

As an investor, the Fund and Comptroller and staff have:

- Corresponded privately with companies;
- Met and held phone calls with management;
- Joined in open letters (jointly by investors) to companies on climate issues;

These appendices are included as helpful context to the recommendations, but do not form part of the consensus.

- Filed shareholder resolutions with specific companies which often led to fruitful dialogues, negotiations and agreements that led to the withdrawal of a resolution;
- Spoke at numerous conferences and seminars representing the state's evolving thinking on climate change and its impact on investors; and
- Among the many climate related issues, the Fund and Comptroller's Office raised with companies were:
    - Urging companies to compare their business strategies to a 2-degree world (keeping their GHG emissions consistent with a two degree or one and a half degree goal) and setting carbon reduction goals;
    - Sustainability reporting including a section on company actions being taken on climate;
    - Company lobbying disclosure including a review of their trade associations lobbying on climate.

The Results

On regular occasions this advocacy resulted in significant changes in company policies, practices and disclosure. On other occasions, the Fund's advocacy was acknowledged but not acted on by the company. Thus, the Fund continued to urge the company to change and asked investors to vote in favor of specific shareholder resolutions.

This long-term patient advocacy often paid off with companies initially resisting change but later taking steps to implement changes.

One of the recent dramatic shareholder engagements led by New York State, was a climate related resolution to Exxon Mobil which was co-led by the Church of England and received an overwhelming vote of 62%. This vote included unprecedented support by BlackRock, State Street and Fidelity.

While Exxon Mobil did an initial report, it fell short and investors led by the Fund, in concert with other investors, kept the pressure on.

Climate 100 Plus Initiatives

The Fund is an active part of a new global investor initiative called Climate 100 Plus. Working in tandem with coalitions in which the Fund participates, globally investors engaged over 160 companies presenting the same agenda and climate requests to these companies. One of these coalition leaders is the Principles for Responsible Investment. PRI members have over 200 Investors with approximately Assets Under Management of $32 Trillion. Climate change is a top member priority. These investors have scrutinized the many risks of climate change for the companies they invest in and their portfolios. As a result of this analysis, a number of these investors are deciding to avoid investments in certain companies while actively engaging others.

This is an enormously powerful investor coalition and already companies have responded to these engagements respectfully and positively.

The Fund is an active member of numerous Climate 100 engagements and is helping lead the engagements with Exxon Mobil among others.

This is a current example of coordinated investor work contributing to changing company climate policies and practices. The Fund believes investor engagement is a tried and true tool for affecting corporate change.

The tightrope the Fund and other investors walk in these engagements is recognizing that companies cannot "flip a switch" and change their business practices on climate overnight. But at the same time the climate clock is ticking rapidly, and obviously we are not moving far or fast enough. Thus, the importance of sustained urgent action by investors.

The Fund and Comptroller understand we need a speedy and widespread transformation by society and companies to be able to live within 2 degrees much less 1.5 degrees global target. Thus, the Comptroller has not naively stated that company engagements and public policy advocacy is enough to prevent significant, negative climate impact. Much more is needed.

Divestment & Engagement Strategies

A vigorous case for divestment of fossil fuel company stocks and bonds has been made by NGOs and a number of investors over the last several years. Numerous institutional investors have responded positively and have either decided to screen out fossil fuel companies like coal and companies in oil sands and some have avoided investing in 200 companies with fossil fuel reserves or the whole energy sector. The message sent by divesting institutions speaks to companies directly but also highlights the urgent global crisis we all face from climate change.

Certainly, divestment acts to challenge the moral and business case advanced by many corporations.

The ability to divest or screen fossil fuel stocks is more easily administered by investors who have separate investment portfolios. It is much more complicated for "universal investors" (who own the market) and are heavily involved in index funds.

In addition, many investors believe that divestment, while a strong moral and environmental statement, is not necessarily the only or most effective approach for influencing company decisions. They believe that having a seat at the table as an investor allows more powerful influence than selling the stock and walking away.

Thus, they argue for "active ownership," using their shares to impact company decision making.

The power of the active ownership approach is arguably stronger than ever with the Climate 100 Plus initiative and action by organizations like PRI, Ceres and ICCR which actively coordinate shareholder engagement with hundreds of companies, including major fossil fuel companies.

These active investors are not registering their opinions with companies and patiently waiting for the message to be heard and changes initiated. They press actively and vocally for significant shifts, often presenting the same studies and positions that advocates of divestment would raise.

It is also clear the Fund must be guided by its legal fiduciary duty. As a fiduciary certain industries (e.g. Coal companies) are prudent to avoid since they are poor investment choices. A strong case is being made that oil and gas companies also face significant risks if they continue to bring expensive reserves to market in a time of decreasing demand and growing climate change. The Panel Report presents this case forcefully.

I strongly encourage careful, thoughtful and urgent assessments of the risks faced by traditional oil and gas companies who are not moving to adapt to a rapidly global transition to a low carbon future (or who actively block that transition). I also support wise business decisions to step back from high risk and potentially lower return investments. The Panel has presented a forward looking proposal to move toward building a Sustainable portfolio with a Minimum Standards framework guiding it. A number of European investors also have published and follow minimum standards for avoiding investments on specific companies or industries whether the guiding issues be climate or Human Rights.

As that process unfolds over time, I also support the Fund being an active owner engaging companies in many industries to address climate change with great urgency. Having this voice at the table is an essential ingredient in stimulating corporate and societal change. It is also important to recognize that engagement may well change a company's "Sustainability profile" making it acceptable for an index or manager to invest in. This list of companies will evolve as companies change so the list of Sustainable companies is not static. And it may be reasonable to provide for judgment calls with companies which are evolving as Sustainability portfolios are created.

Public Policy on Climate

Another extremely important avenue for the Fund to advance a positive climate change agenda is in the area of Public Policy. As one of the country's most prominent and sizable public pension funds, the Fund has been an active voice in attempting to influence public policy by speaking out on laws and regulations.

For example, the Fund is an active member of Ceres (the Comptroller sits on the Board), which helps coordinate investor voices and influence on public policy. For example, Ceres helped coordinate a global investor statement on climate change before the most recent global COP meeting, as well as coordinating and publicizing public statements urging the United States government to maintain its membership in the Paris Accord.

Comptroller DiNapoli attended and spoke at the COP meeting in Poland in 2018 and he and other staff from the Comptroller's Office have attended "Hill Days" to meet with legislators in Washington, D.C.

The Comptroller's Office has also been a national investor leader protecting the rights of shareholders to file shareholder resolutions on key issues like climate, diversity and governance.

This is in response to major trade associations like the Business Roundtable, National Association of Manufacturers and U.S. Chamber of Commerce who are activists trying to restrict the ability of investors to file resolutions on issues like climate.

Our public policy advocacy as an investor is an important complement to our corporate engagement work.

I appreciate the opportunity to add some personal comments as an appendix to the Panel's Report.

Timothy Smith
April 12, 2019

These appendices are included as helpful context to the recommendations, but do not form part of the consensus.

Advisory Panel Members

Joy-Therése Williams

Panel Chair

Joy-Therése Williams is a Senior Advisor at Mantle314. She is a Professional Engineer of Ontario and a Chartered Alternative Investment Analyst. She is an experienced climate change and ESG advisor with over 15 years of multi-disciplinary practice to draw upon. She has worked in multiple industries and for government both in Canada and internationally. Joy holds a Master's of Applied Science with a collaborative in Environmental Engineering from the University of Toronto.

Joy started her career as a mechanical engineer working on aircraft landing gear before returning to school to shift focus. Her subsequent years at ICF Consulting allowed her to work on a broad range of strategic and management projects on topics of climate change and energy for clients as diverse as forestry companies to power generation associations.

To deepen her experience in climate change, she moved to the UK where she was a technical lead on greenhouse gas emission projects for the UNFCCC carbon markets. She gained on-the-ground experience in preparing, educating and registering projects in developing countries for a venture cap firm. Complementary her prior experience, Joy returned home to work for the Ontario Ministry of the Environment in a large modernization project involving the Ontario Environmental Protection Act and Water Resources Act.

Most recently, Joy applied all her previous experience establishing the responsible investing framework and acting as the in-house climate change subject matter expert at the Ontario Teachers' Pension Plan. Working across asset classes including private equity, infrastructure, real estate, credit and public equities, she helped to integrate environmental, social and governance practices in investment teams. A large part of her role focused on educating the organization on climate change and helping to develop a corporate response.

Joy brings her pragmatic approach to climate change and other environmental, social and governance issues to demystify the complexity of the issues and focus on what's relevant and practical in order to achieve progress.

Alicia Seiger

Alicia Seiger is a lecturer at Stanford Law School and Managing Director of both the Stanford Sustainable Finance Initiative and the Steyer-Taylor Center for Energy Policy and Finance. Leveraging her sector expertise and operational experience, Alicia develops climate-related solutions, research and engagement across Stanford Law, Graduate School of Business and the Precourt Institute for Energy.

Her course "Climate: Politics, Finance and Infrastructure" prepares Stanford law, business and engineering graduate students to lead in the face of climate disruptions.

Alicia serves as board member for the not-for-profit Ceres, which helps busineses and investors connect sustainability to the bottom line, and Prime, which places charitable capital into market-based, hard-tech solutions to climate change.

In 2014, she established a professional education program called *Investing in a New Climate* to help asset owners manage climate risk and capitalize on innovation opportunities. She is also a founder of Stanford Professionals in Energy (SPIE) and laid the groundwork for establishing the Aligned Intermediary.

Her recent publications include Changing the Climate of Capital and De-risking Decarbonization: Making Green Energy Investments Blue Chip.

Alicia has been designing and executing climate and energy strategies for businesses, foundations, investors, and NGOs since 2004. She has served on the management teams of multiple startups, including at TerraPass, a pioneer of the US carbon offset market, and Flycast Communications, one of the world's first web advertising networks.

Alicia holds an MBA from the Stanford Graduate School of Business, where she also worked as a case writer for the Center for Entrepreneurial Studies, and a BA in Environmental Policy and Cultural Anthropology from Duke University.

Bevis Longstreth

Bevis Longstreth is a retired partner of Debevoise & Plimpton, the New York-based international law firm. He is a graduate of Princeton University and Harvard Law School. He served for two years in the Marine Corps. For 20 years, until July of 1981 when President Reagan appointed him as the 60th Commissioner of the Securities and Exchange Commission, he practiced law with Debevoise's New York office, where he was admitted to partnership in 1970.

In February 1984, after his resignation from the SEC, Bevis returned to Debevoise and the practice of corporate, finance, banking and securities law. He served as an Adjunct Professor at Columbia University Law School from 1994 to 1999. He has been a frequent speaker and has lectured on various securities and corporate law topics, has written numerous articles on business-related subjects and is the author of *Modern Investment Management and the Prudent Man Rule,* a book to reform the legal standard for fiduciaries, published by Oxford University Press in 1986. For many years he served on the Boards of Directors of the investment management firms College Retirement Equities Fund, AMVESCAP and GMO.

Cary Krosinsky

Cary Krosinsky is a widely respected educator, author and senior advisor on sustainable finance.

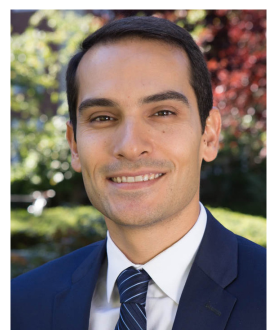
His ongoing teaching includes popular courses on sustainable investing at Brown, at the Yale School of Management, at NYU, and he is a Faculty Advisory Committee member on Energy Studies at Yale College teaching an exit seminar on the subject.

He co-hosted a successful symposium at Peking University HSBC Business School in Shenzhen on January 8-9, 2019 and contributes regularly to China's ongoing opening up to all things ESG as part of his new Sustainable Finance Institute. His five books, for example, include the recent *Sustainable Investing: Revolutions in Theory and Practice,* chosen by the People's Bank of China for translation and inclusion in the government's official Green Finance Series in 2018 as the only foreign contribution.

He is also Co-Founder and Director of Real Impact Tracker, the Carbon Tracker Initiative and its Parent Investor Watch, Principal at NPV Associates and Sustainability Advisor to DeepGreen. He was a contributor to the recent China-UK Green Finance Taskforce report titled *Delivering a Greener Tomorrow.*

He led a working group for the Principles for Responsible Investment in 2015 which resulted in the development and publishing of a Framework for Asset Owner Strategy on Climate Change.

George Serafeim



George Serafeim is a Professor of Business Administration at Harvard Business School. He has taught courses in the MBA, executive education and doctoral programs, and is currently teaching the elective course "Reimagining Capitalism: Business and Big Problems" in the MBA curriculum, which received the Ideas Worth Teaching Award from the Aspen Institute and the Grand Page Prize. He has presented his research in over 60 countries around the world and ranks among the top 20 most popular authors out of over 12,000 business authors on the Social Science Research Network.

His research focuses on measuring, driving and communicating corporate performance and social impact. His work is widely cited and has been published in the most prestigious academic and practitioner journals, such as *The Accounting Review, Strategic Management Journal, Journal of Accounting and Economics, Journal of Finance, Organization Science, Journal of Accounting Research, Management Science,* and *Harvard Business Review.* His research is regularly cited in the media, including The New York Times, Bloomberg, Financial Times, The Wall Street Journal, Economist, The Guardian, BBC, Le Monde, El País, Corriere della Sera, Washington Post, and NPR.

Professor Serafeim has served in several not-for-profit organizations including the board of directors of the High Meadows Institute, the working group of the Coalition for Inclusive Capitalism, and the Standards Council of the Sustainability Accounting Standards Board. He has expertise in professional services firms as the co-founder of KKS Advisors, focusing on integrating material sustainability issues in business strategy and investment decisions. He serves on the steering committee of the Athens Stock Exchange and as the Chairman of Greece's Corporate Governance Council. Moreover, he has extensive experience in the investment management industry serving on the advisory board of investment firms that focus on environmental, social and governance (ESG) issues as catalysts for value creation. He has been recognized by Barron's as "one of the most influential people in ESG investing."

Timothy Smith

Director of ESG
Shareowner Engagement

Tim is the Director of Environmental, Social and Governance (ESG) Shareowner Engagement, and leads Walden's ongoing shareholder engagement program to promote greater corporate leadership on ESG issues. This includes company dialogues, shareholder proposals, proxy voting, and public policy advocacy. He is actively involved in representing Walden at public events and in fostering long-term client relationships. He is Co-Chair of Walden's ESG Research & Engagement Committee and a member of the Corporate Governance Committee.

Prior to joining the firm in 2000, Tim served as Executive Director of the Interfaith Center on Corporate Responsibility (ICCR) for 24 years. ICCR coordinates corporate responsibility programs for over 275 religious, institutional investors committed to using shareholder advocacy to influence corporate conduct and promote social justice. ICCR has been a primary player in the corporate responsibility movement and social investment community since the early 1970s.

In 2007, 2012 and 2013, Tim was named as one of the "Top 100 Most Influential People in Business Ethics" by Ethisphere Institute. He is a board member of Wespath (formerly the General Board of Pension and Health Benefits of the United Methodist Church). In 2010, he received the Bavaria Award for Impact at the third annual Joan Bavaria Awards for Building Sustainability into the Capital Markets. In 2011 and 2012, he was named one of the most influential people in corporate governance by the National Association of Corporate Directors. He serves on a number of sustainability stakeholder dialogue teams with companies as well.

Tim previously served as Chair of US SIF, the sustainable, responsible and impact investing industry trade group, for five years, and presently serves as Chair of its Public Policy Committee. He also co-chairs the Investment Committee of the Thirty Percent Coalition. He is Chair of the Board of Shared Interest and former Chair of the Kimberly-Clark Sustainability Advisory Board.

Tim earned a BA from the University of Toronto and Masters of Divinity degree from Union Theological Seminary.

Decarbonization Advisory Panel Beliefs and Recommendations

April 2019