

Attachment 3: Low Carbon Index Modeling Risk Analysis

Step 4: Integrate ACWI Low Carbon Target Allocation and Climate Scenarios into ALM Framework to Model Impacts on Risk, Return and Funding Plan

When considering the impacts of introducing an allocation to the ACWI Low Carbon Target (LCT) index, critical factors in staff’s analysis were the potential effects on funding and contribution rates. To better understand the impacts to funding and contribution rates, staff looked at how each climate scenario could result in different portfolio growth rates.

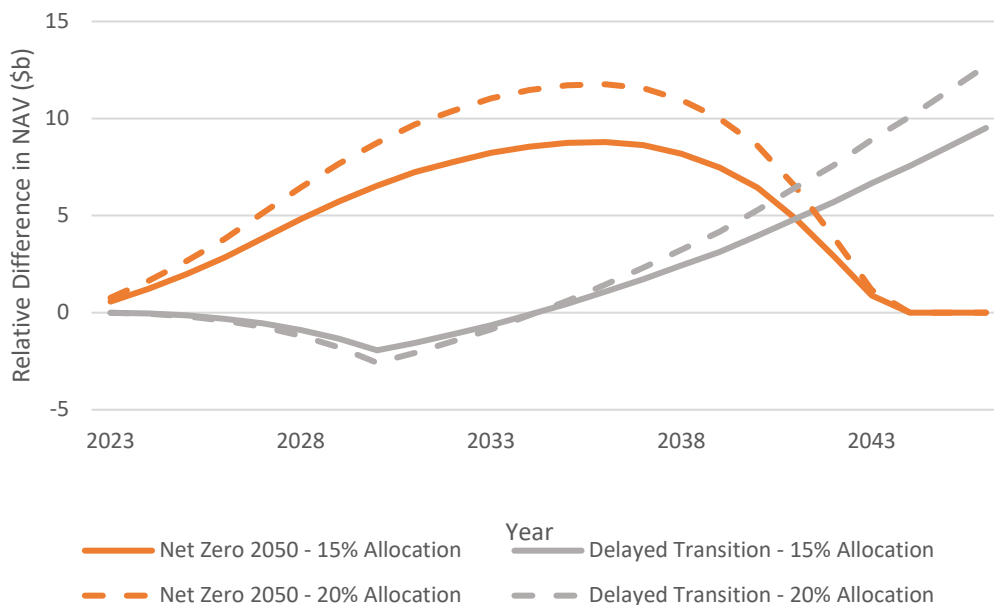
Portfolio Growth Rate Risk

Chart 4 highlights two of the Network for Greening the Financial System (NGFS) climate scenarios – ‘Net Zero 2050’ (an Orderly Transition scenario) and ‘Delayed Transition’ (a Disorderly Transition scenario) – to show potential differences in the growth of the portfolio over time under these two types of scenarios and assuming a 15% allocation or 20% allocation to the ACWI LCT index.

Based on the performance and risk assumptions used, the Fund would grow faster at the outset under the Net Zero 2050 scenario, peaking at approximately \$12bn larger around 2034 as the benefits of the ACWI LCT allocation are realized. After 2034, it is assumed that the benefits of the ACWI LCT allocation have been fully realized.

In the Delayed Transition scenario, it is assumed that the ACWI LCT index underperforms for a time as policies are not implemented to reduce emissions more immediately. After 2030, it is assumed that rapid policy action takes place to reduce emissions quickly, leading to more significant outperformance of the ACWI LCT index.

Chart 4: Difference in Portfolio Growth Over Time in Different Climate Scenarios



Funding Levels Risk

Funding risk measures related to the probability of reaching full funding and the probability of seeing low funding levels were used to help evaluate the possible impacts of allocating to the ACWI LCT index.

While the path of performance can be very different across climate scenarios, there are very modest long-term differences in the probability of achieving full funding in differing NGFS scenarios. The lack of large variation in the long-term funded status is a product of the assumptions used and the TRB rate setting authority provided by the CalSTRS Funding Plan. In scenarios where returns are negatively impacted, funding progress can generally be kept on schedule if the TRB exercises its authority to increase the state contribution rate.

There is also very little difference in the risk of low funding for all allocation levels to the ACWI LCT index and different climate scenarios. In Orderly Transition scenarios, larger allocations to the ACWI LCT index would lead to small improvements in the risk of low funding while reducing emissions. In Disorderly Transition scenarios, larger allocations also reduce emissions but result in a slightly higher risk of low funding.

Contribution Rate Risk

Since allocating to the ACWI LCT index is not expected to materially impact the assumed rate of return, it is anticipated that the contribution rate for teachers will remain the same. Similarly, it is also anticipated that the contribution rate for school districts will not be materially impacted. This is caused by the mechanics of the CalSTRS Funding Plan which results in investment performance impacting mostly the state contribution rate. For this reason, the analysis was focused on the probability of seeing higher contribution rates for the state.

Like the results found with the risk of low funding analysis, the Fund benefits from a larger allocation to the ACWI LCT index in Orderly Transition scenarios as larger allocations slightly improve the risk of high state contribution rates and decrease emissions. In the Disorderly Transition scenarios, larger allocations reduce emissions but introduce greater risk of higher state contribution rates.

Summary

The lack of large swings in the long-term funding and contribution rates is a product of several factors, including:

- The assumption that the ACWI LCT index experiences periods of outperformance and underperformance in each of the scenarios
- The risk-controlled nature of the ACWI LCT index, which should limit the risk relative to the broad market index