No Right of Action

"This policy is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the University of California or its Board of Regents, individual Regents, officers, employees, or agents."

Second, rather than being rescinded and incorporated in the Investment Policy Statements, Regents Policy 6104: Policy on Conflicts of Interest Regarding Assets Managed by the Chief Investment Officer (CIO) would be amended as shown in Attachment 11.

Ms. Ardeshir explained that the seven amended policies would specify the responsibilities of the Board of Regents, and that new Asset and Risk Allocation Policies for each product would reflect the consent responsibilities of the Investments Subcommittee to select asset classes, benchmarks, and asset and risk allocation. Six policies that would be rescinded would be incorporated into the appropriate Investment Policy Statements.

Regent Zettel asked if the Conflict of Interest Policy and its prohibition of Regents' offering "advice or recommendations with respect to the selection of specific investments, investment managers, or investment management firms in which the official has a financial interest" also applied to the campus foundations. Ms. Ardeshir expressed her view that Regents Policy 6104 would also apply to campus foundations, as they abide by Regents policy. Chief Investment Officer Bachher added that he would check on the specific application of that Regents policy to those campus foundations that use independent investment management companies. General Counsel Robinson expressed his view that the campus foundations had voluntarily adopted the same conflict of interest rules in the policy, although as a technical matter the policy did not extend to the campus foundations, which are separate legal entities.

Subcommittee Chair Sherman asked what would be required of a Regent who by happenstance was an investor in a particular fund, such as a private equity fund, in which the General Endowment Pool was invested or planned to invest. Mr. Robinson said it would be good practice to disclose and not to have any other communication or role in decisions about that investment.

Subcommittee Chair Sherman asked if there were any substantive changes in the proposed policy changes. Ms. Ardeshir responded that the Implementation Manual would be new, but would be under the purview of the Office of the CIO. In addition, the private equity benchmark for the UC Retirement Plan was updated.

Regent Makarechian asked why the proposed Conflict of Interest Policy would prohibit the Regents from offering advice. Mr. Robinson commented that there was a natural tension between the advisory role of the Board and this policy. Out of an abundance of caution, a policy choice was made when the policy was adopted to not have Regents advise on individual investments. Regent Makarechian noted, for example, that a Regent could have helpful information. Mr. Robinson said a conscious policy choice was made that a Regent should offer advice only on matters such as asset allocation, but not on the selection of individual investments. Regent Makarechian commented that having a self-interest in an investment was different from giving advice about an investment for the University. Mr. Robinson said this policy could be revisited by the Subcommittee or the Board. Regent Makarechian clarified his position that potential conflicts of interest should be avoided, but advice that did not involve a

conflict should not be prohibited. Mr. Robinson said his office could review the policy and bring possible amendments to the Subcommittee.

Mr. Bachher pointed out that for consistency the name of the General Endowment Pool asset class that previously was called Fixed Income was changed to Liquidity (Income).

Upon motion duly made and seconded, the Subcommittee approved the Chair of the Investments Subcommittee and the Office of the Chief Investment Officer's recommendation and voted to present it to the Board.

4. **UPDATE ON INVESTMENT PRODUCTS**

[Background material was provided to Regents in advance of the meeting, and a copy is on file in the Office of the Secretary and Chief of Staff.]

Chief Investment Officer (CIO) Bachher advised that this update was for the first six months of the fiscal year, from June 30, 2017 through December 31, 2017. Market events in the two months since that time had not been trivial. At the beginning of the fiscal year UC assets under management totaled $109.8 billion; in six months, assets had grown to $118.4 billion, driven by stock market gains around the world. These assets include the $12 billion General Endowment Pool (GEP), the $67 billion UC Retirement Plan (UCRP), the $23 billion UC Retirement Savings Plan (UCRSP), the $15.6 billion working capital pools, and the $1 billion Fiat Lux. When Mr. Bachher joined UC four years prior, assets under management were $88.5 billion.

Three-quarters of the assets managed by the Office of the CIO were invested in the United States; the next largest concentration was in developed Europe with a growing concentration in other parts of the world including China. In aggregate, assets were invested half in public equities; 31 percent in fixed income; 12.8 percent in other investments such as private equity, real estate, absolute return, and real assets; and 5.4 percent in cash. Since the end of the year, cash holdings had grown to seven percent. For the first half of the fiscal year, market gains yielded $7.6 billion, underperforming the benchmark by $400,000, with net cash flow of $1.4 billion. Since 2014, UC assets increased $19.7 billion from market gains, outperforming the benchmark by $2.1 billion, with net cash flow of $8.1 billion.

Regent Makarechian asked why the same asset class would have different returns in the GEP from the UCRP. Mr. Bachher explained that one asset class could hold various investments, some more appropriate for one product than another. Senior Managing Director Steven Sterman added that, in high-yield fixed income for example, one UC product had more externally managed funds than another product. The externally managed funds had outperformed UC's internally managed high-yield fixed income over this period, so returns for that asset class varied for various products. Mr. Bachher said the GEP and the UCRP are managed differently. Mr. Sterman added that high-yield and emerging market fixed income investments serve a different function in the Total Return Investment Pool (TRIP) than in the GEP.

Mr. Bachher reported that ten-year returns were 5.8 percent for the GEP, 5.6 percent for UCRP, and 2.2 percent for the Short Term Investment Pool (STIP). For five years, the GEP returned 9.5 percent, UCRP returned nine percent, TRIP returned 6.4 percent, and STIP returned 1.4 percent. For the year ending December 31, 2017, the GEP returned 14.6 percent, UCRP returned 16.7 percent, TRIP returned 10.7 percent, and STIP returned 1.4 percent. The difference in returns between the GEP and UCRP for the year were attributable to UCRP's 57 percent allocation to public equities compared with the GEP's 45 percent allocation.

Subcommittee Chair Sherman asked about the risk differential between the GEP and UCRP. Chief Risk Officer and Senior Managing Director Richard Bookstaber responded that the GEP had been only slightly more volatile than UCRP for the past few years, and the volatility of both approximated the volatility of their benchmarks.

Regent Makarechian asked if it would be appropriate at the current time to reduce the discount rate from its current 7.25 percent. Mr. Bachher commented that considerations about the discount rate cannot be viewed in isolation.

Mr. Bachher stated that market gains had driven more than $27 billion of UC asset growth over the past five years. Active management by the Office of the CIO added another $2.7 billion over that time.

Senior Managing Director Eduard van Gelderen discussed performance of UCRP, which provided 233,000 UC pension plan members an average annual retirement income of $42,000. UCRP began the fiscal year with $61.6 billion in assets and gained eight percent in the six months ending December 31, 2017, including market gains of $4.9 billion. UCRP has a large allocation to public equities. While the public equity allocation is invested around the world, holdings in the United States dominate. Mr. van Gelderen planned to increase its public equity investment in Europe because current valuations there were more attractive than in the U.S. The Office of the CIO would like to increase investment in India and China.

UCRP's funded ratio, currently at about 85 percent, is a function of two factors: the contribution rate and the investment return. Mr. van Gelderen cautioned on making future projections about funding ratios, because they would depend on the performance of equity markets. A graph of the S&P 500 Index price-earnings ratio since 1970 demonstrated that in recent years, investors had paid more for the same amount of earnings. Earnings per price ratio, or yield for equities aside from capital appreciation, was 3.3 percent, not much greater that the current 2.85 percent yield on U.S. ten-year Treasuries, particularly considering the increased equity risk. He expressed concern about current high valuations in equity markets.

Mr. van Gelderen said that UCRP's asset allocation at the end of 2017 was overweight in public equities at 57.1 percent compared with the current policy weight of 52.2 percent. This overweight was the result of good public equity performance. Also the Office of the CIO had not rebalanced the overweight, but rather left it in public equities to compensate

for an underweight in private equities. In February, when uncertainty began to creep into public equity markets, the Office of the CIO rebalanced the overweight, moving the excess from public equity into cash. Mr. van Gelderen expressed his view that, should interest rates continue to rise, a sharp correction could occur in public equity markets. Market volatility was likely to increase. In the future, cash holdings would be used to increase UCRP holdings in private equity, real estate, and real assets. The UCRP risk allocation was 84 percent attributable to economic growth factors. The UCRP portfolio was invested at the current time for a period of high economic growth and low inflation, which had paid off well. A period of low economic growth and high inflation would be the most threatening. Increasing allocations to real assets and real estate would increase the future robustness and stability of the UCRP portfolio. Bond yields had been decreasing for the past 30 years, but that would not be true in the future. Compared with other public pension plans, UCRP's returns were consistently in the second quartile for the past ten years and in the first quartile for the past year, despite UCRP's temporarily large cash position. Mr. van Gelderen cautioned about the applicability of such comparisons, as other public pension plans could have different risk profiles and asset allocations from UCRP. Over the past five years, active management by the Office of the CIO had added $1.8 billion in returns over the benchmark.

Mr. Sterman discussed performance of the working capital portfolios, TRIP and STIP, which currently hold more than $15 billion. Growth during the first six months of the fiscal year was concentrated in public equity market gains in TRIP and large seasonal cash inflows to STIP late in the calendar year. By June, about $500 million would be moved from STIP into the GEP as Funds Functioning as Endowments (FFEs). The Office of the CIO along with Executive Vice President and Chief Financial Officer Brostrom had been engaged with UC campuses in managing their working capital to generate higher earnings, moving unnecessary liquidity from STIP into TRIP or the GEP. In the current fiscal year, about $1 billion in working capital would be moved into the GEP.

Mr. Sterman reported that interest rates were beginning to move higher, important for working capital because of its large fixed income allocation, 100 percent in STIP and 50 percent in TRIP. Mr. Sterman expected the federal funds rate to continue to move up during 2018, which would result in a higher yield for STIP. Increasing Ten-Year Treasury Note rates would create a headwind for TRIP; as rates increase, the dollar price of bonds decreases. To mitigate this effect, the TRIP portfolio had been about two percent underweight fixed income for the past one to two years and the duration of the TRIP portfolio had been reduced to 4.5 years, shorter than the benchmark's six-year duration. Private income in TRIP was not sensitive to changes in interest rates.

Mr. Sterman reviewed investment performance of the working capital portfolios. TRIP had earned an average of 7.2 percent a year in the 9.3 years since its inception, five percent a year above STIP's returns. TRIP's one-year return of 10.7 percent was driven by high public equity returns in TRIP's 35 percent public equity allocation, all passively invested. The TRIP portfolio had been consistently overweight public equity and underweight income for the past year or two. Since July, some public equities had been sold to prevent

that allocation from drifting higher. Since its inception in August 2008, TRIP had delivered returns 25 to 50 basis points (bps) above its benchmark.

STIP's short-term allocation was 50 percent commercial paper, with the remaining 50 percent divided among high-quality corporate bonds and U.S. government bonds. The allocation to commercial paper had been reduced and the allocation to federal government bonds increased as interest rates rose. STIP had consistently been a very high-quality, short duration, liquid portfolio, with value added over its benchmark. Addressing a question raised earlier, Mr. Sterman noted that emerging market debt returns had been similar in the GEP and UCRP at about four percent.

In response to a question from Subcommittee Chair Sherman, Mr. Sterman said STIP's duration was about one year and the duration of TRIP's fixed income was 4.5 years. GEP and UCRP cash balances were invested in STIP. Mr. Bachher added that cash was earning 1.75 percent. Subcommittee Chair Sherman pointed out that TRIP's 7.2 percent return in the 9.3 years since its inception was more than the ten-year returns for the GEP and UCRP. Mr. Sterman commented that TRIP's asset allocation was changed at the beginning of the 2015-16 fiscal year. Prior to that, TRIP had a 70 percent allocation to public equity and 30 percent fixed income for a time. Equity returns in the years after 2008 benefited TRIP's returns. Investment Director Susie Ardeshir added that TRIP began in August 2008 and so missed much of the earlier 2008 market downturn that affected the GEP and UCRP.

Ms. Ardeshir reviewed the performance of Fiat Lux, the assets of which the Office of the CIO had managed for 18 months. The portfolio contained 26 percent cash and was underweight its growth allocation, as the Office of the CIO moved patiently to build up Fiat Lux's liquid alternative investments. The Fiat Lux $1 billion portfolio had $800 million of liabilities, and Ms. Ardeshir would focus on building up the portfolio's surplus. For the first half of the fiscal year, Fiat Lux gained 2.1 percent, 0.4 percent above its benchmark. Fiat Lux had a risk profile between those of STIP and TRIP. The duration of Fiat Lux's fixed income was three years and its discount rate was three percent.

Regent Makarechian asked who sets Fiat Lux's asset allocation. Ms. Ardeshir responded that the Office of the CIO worked with the board of Fiat Lux and a consultant to set an initial asset allocation.

Mr. Bachher turned to discussion of the GEP. Prior to his tenure, private equity, absolute return, or real assets bought for UCRP were allocated 85 percent to UCRP and 15 percent for GEP. Mr. Bachher had focused on investing to maximize performance of each product, given its particular goals and liabilities. This presentation would provide an in-depth view of changes made to the GEP and the UCRSP.

Senior Managing Director Edmond Fong discussed the GEP portfolio and how it had been changed. The investment goals of the GEP were to preserve its purchasing power and increase its principal, by focusing on risk-adjusted returns. The GEP, started in 1933, currently contained 5,700 individual endowments, the majority of which were less than $1 million. Over the past four years, the Office of the CIO reevaluated the GEP's asset and

risk allocation to ensure they met the specific objectives of the GEP. The Office of the CIO also engaged with its stakeholders across UC's ten campuses to discuss optimizing the campuses' capital. Over the past four years $2.5 billion was moved into the GEP from the working capital portfolios, and the Office of the CIO had been able to collaborate and partner with UC campuses on more than $400 million of investments. For those campus foundations that want to invest in private markets, the Office of the CIO offered customized products that enabled the campuses to access hedge funds, private equity, and real assets.

The GEP ended the first half of the fiscal year with $11.5 billion in assets, having gained 6.7 percent in the first six months of the fiscal year, driven by robust public equity returns. The portfolio was toward the higher end of its allowable allocation ranges in public equities and cash, and toward the lower end in alternate investments. Its risk profile was very close to that of its benchmark. The GEP returned 5.8 percent for ten years and nine percent for 25 years, including 50 bps of value added. GEP assets had grown from $6.8 billion five years prior to $11.5 billion, a 70 percent increase. Market gains played a role, as did $2.5 billion of cash inflows since 2014. As of December 31, 2017, the GEP was 2.5 percent overweight public equities, 9.5 percent overweight cash, and 11.3 percent underweight alternatives, a result of available opportunities and opportunity costs.

In its review of the GEP's asset allocation, the Office of the CIO found that the GEP's risk budget would allow an increase in risk, which could be accomplished by reducing public equity and increasing illiquid assets such as private equity and real assets, which would provide an illiquidity premium. Mr. Fong displayed a graph showing the GEP current asset allocation and projected allocation in 2022, and another graph comparing the asset allocations of the GEP with other endowments larger than $1 billion. The GEP's asset allocations to public equity and cash were larger and its allocation to alternative investments smaller than its peers. A Cambridge Associates' study of endowments larger than $5 billion also showed that the GEP had a larger allocation to public equity, and smaller allocations to private equity, real estate, and real assets than its peers.

Regarding the GEP's current large cash position, Mr. Fong stated that for some time finding value had been elusive. He showed a graph demonstrating a strong positive correlation between the GEP's cash balance and the S&P 500 Cyclically Adjusted Price-Earnings Ratio, which indicates the valuations of equities. Mr. Fong anticipated equity volatility to increase and equity returns to compress, meaning that risk-adjusted returns on equity would be lower than in the past. Private equity valuations had also been high. Mr. Fong described the various sources of the GEP's current $1.1 billion in cash: $0.2 billion in secondary sale proceeds; $7 billion in investment proceeds; $2.4 billion in cash inflows; less $7.5 billion investments made and $0.9 billion of GEP payout.

The GEP was invested 75 percent in the United States. Currency risk must be considered for investments outside of the United States. The number of GEP external managers had been reduced from 175 in 2014 to 103 in 2017, and the average investment size increased from $48 million to $122 million.

GEP costs for external management consist of a fixed management fee and a variable incentive fee based on performance. In 2015 the GEP paid 94 bps as a percentage of net asset value and earned 6.1 percent of net performance; in 2017 the GEP paid 100 bps as a percentage of net asset value, but earned 15.1 percent. In 2014, 92 percent of the GEP public equity portfolio was actively managed; in 2017 just 56 percent was actively managed. Liquidity was 99 percent actively managed in 2014, but only 82 percent actively managed in 2017.

Senior Managing Director Scott Chan discussed the public equity asset class. Four years ago, the public equity investment strategies for the GEP and UCRP were similar. In 2014 the public equity portfolio had more than 40 managers, with 5,000 underlying securities, which he said essentially replicated an index fund but at higher cost. That strategy was changed to use more passive management, and focus active management where it could succeed, such as in less efficient markets or those less covered by analysts. Active managers were identified who invest in high-quality, good value businesses well-positioned for the long term. The public equity portfolio was consolidated to 13 managers. Strategic relationships with fewer managers enabled lower fee agreements and more customized accounts.

The percentage of actively managed investments within the Office of the CIO's U.S. public equity portfolio had been reduced from 32 percent in 2014 to 17 percent in 2017, and the number of external managers reduced from 20 to one. Active management in the overall public equity portfolio had been reduced from 86 percent to 66 percent. Increasing passive management lowered costs. Equity investment was increased in emerging and non-U.S. developed markets, which currently offered lower valuations than U.S. equities. Active management with regionally specific managers was increased.

Subcommittee Chair Sherman asked about the performance of the remaining public equity active managers. Mr. Chan responded that 2016 had been a challenging year. However in the prior fiscal year, public equities generated gains of 24 percent, four percent above the benchmark. In the current fiscal year to date, public equities had gained 13.4 percent compared with benchmark gains of 12.7 percent.

Regent Makarechian asked what criteria were used to select external active public equity managers. Mr. Chan said the managers were selected based on foundational investment principles. Mr. Bachher added that managers' historical performance in relation to benchmarks, willingness to renegotiate fee agreements including hurdle rates, and transparency about their holdings were factors. Mr. Chan explained that the 13 current external public equity managers included three new managers. He anticipated further reducing the number of public equity managers to nine by the end of the fiscal year, including the three new managers. Public equity fees had been reduced by 21 percent. Mr. Bachher pointed out that UC was in the unique position of being able to leverage the size and scale of both the GEP and UCRP.

Regent Lemus asked about the risks of passive investment. Mr. Chan commented that passive public equity investment had performed remarkably well. He acknowledged the

momentum bias inherent in passive indices. The Office of the CIO had begun to shift the passive public equity portfolio toward value stocks as opposed to momentum and growth stocks.

Regent Anguiano asked what types of funds were being moved to the GEP and noted that the $2.5 billion moved over the past four years from the working capital to the GEP was a large sum when a $50 million tuition increase was being discussed. Mr. Bachher cited the example of the proceeds from UCLA's sale of the cancer drug Xtandi. Those funds were being held as an FFE in the GEP, structured with a payout over a 12-year period. He commented that, ideally, the Office of the CIO would create a product in between TRIP and the GEP. However, currently funds are moved to GEP as FFEs with payout structures shorter than the GEP.

Mr. Fong discussed the roles of the GEP asset classes. The liquidity (income) asset class, formerly known as fixed income, would provide liquidity, while seeking investment opportunities in some new areas such as private credit. The number of high-yield fixed income managers had been reduced, lowering fees.

In the absolute return asset class, in an effort to avoid paying high costs for index-like performance, $450 million of the portfolio's directional exposure, primarily from long-short equity strategies, was transferred to the public equity asset class. Absolute return opportunities had been sought that would increase diversification, within risk-return goals, which resulted in 70 percent of the GEP's absolute return holdings being in customized structures. The number of external managers in this asset class was reduced since 2014 from 33 to 15, and the average investment had increased from $64 million to $166 million.

Since 2014 in the GEP's private equity asset class, the number of external managers had been reduced from 28 to 18, and the average investment increased from $38 million to $103 million, allowing more co-investments and new seeding opportunities. The GEP's allocations to private equity, real estate, and real assets would be increased over time. Real estate and real assets combined currently totaled six percent of the GEP and would be increased to 13 percent as opportunities present themselves, particularly those that would provide cash flow and inflation protection.

Mr. Fong discussed the real estate asset class, which held investments in both real estate funds and separately managed accounts. The real estate team had made three co-investments to date totaling $50 million. The total portfolio leverage was 36 percent, below industry averages. Hotel management fees had been reduced by 50 percent. Since 2014, the number of external real estate managers had been reduced from 37 to 20, but the average size of investments had not changed significantly, increasing from $19 million to $23 million. In order to reach the desired allocation to real estate, the size of investments would likely have to increase. The GEP real asset portfolio's exposure to commodities had been reduced by 50 percent and investment would increase in long-duration assets that would provide cash flow and inflation protection. This portfolio was becoming an area of focus in the future.

Mr. Bachher summarized that the GEP portfolio was invested 45 percent in public equities, 25 percent in absolute return, ten percent in liquidity, and ten percent in private equity. His office would focus on developing the real estate and real assets portfolios. In the past, real assets had included mainly commodities or assets such as fossil fuel exploration and production. Investing in fossil fuels for the long-term involved financial risk that the Office of the CIO did not want to take. Mr. Bachher saw opportunity to reshape the real assets portfolio by reducing private asset holdings in fossil fuels. He noted correspondence he had received from many UC students regarding fossil fuels. He agreed that from a financial risk perspective owning oil and gas assets and making such investments at the current time would not yield good returns. The Office of the CIO would seek diverse assets that would produce cash flow with downside and inflation protection, such as infrastructure, transmission lines, and utilities.

Subcommittee Chair Sherman asked if the leverage in the real estate portfolio was through external managers or on wholly-owned real estate. Mr. Fong said there was leverage on wholly-owned real estate. Mr. Bachher added that the leverage was non-recourse to the University. Subcommittee Chair Sherman asked if STIP or TRIP could be used to fund that debt. Mr. Bachher responded that STIP or TRIP had occasionally been used to bridge debt, and it could be explored as a longer-term option, which would involve reviewing investment policy. Regent Makarechian said such a mechanism could also provide funding for University housing, rather than paying a higher rate for external funding. Funding housing projects through STIP or TRIP could address campus housing shortages without increasing campus external debt. Policy restrictions should be reviewed. Subcommittee Chair Sherman added that the debt could be carved into tranches, with some being attractive to STIP and some to TRIP. Mr. Bachher said these would be at market rates and with competitive bidding. Subcommittee Chair Sherman agreed. Mr. Sterman commented that real estate debt would typically have a ten-year term and STIP has a policy limit of 5.5 years' maturity. In past real estate transactions, a dedicated real estate lender had been more aggressive than STIP would want to be. However, he agreed the possibility should be considered and compared with other alternatives. Subcommittee Chair Sherman said that, with anticipated interest rates changes, STIP or TRIP could buy out some existing debt at less than par.

Regent Makarechian asked if the 36 percent of leverage in the real estate portfolio was external managers' or the University's. Mr. Bachher said this figure included both leverage in external managers' funds and in UC's separate accounts. The real estate separate accounts were typically owned 99 percent by the University and one percent by the other manager, with non-recourse leverage that was passed on to another entity. Mr. Fong said the 36 percent was an average and that leverage was capped at 60 percent.

As of December 31, S&P 500 volatility was low relative to historical values at 7.7 percent and its valuations were relatively high with a 21.5 price-earnings ratio. The GEP portfolio risk of 5.9 percent was comparable to its benchmark risk of 5.6 percent. The portfolio risk was dominated by economic growth factors. Investment decisions would be made with an eye toward not increasing that risk.

Mr. Fong concluded by pointing out that the GEP returned 5.8 percent over ten years, which included the period when, in addition to the 2008 financial crisis, the GEP greatly underperformed its benchmark in 2008 and 2009. Regarding short-term performance relative to the benchmark, Mr. Fong recalled that the private equity benchmark had recently been changed to be a public market proxy plus a spread. Also, some private equity holdings report only quarterly, creating a lag between benchmarks and private equity valuations.

Subcommittee Sherman asked about the basis of the volatility valuations. Mr. Bookstaber said the Office of the CIO used Blackrock's risk system that weights recent volatility more highly. Subcommittee Chair Sherman commented that until February market volatility had been very low and asked if the portfolio's potential future volatility could be underestimated. Mr. Bookstaber answered in the affirmative.

Subcommittee Chair Sherman asked if the Office of the CIO had any needs that should be filled in order to accomplish its work. Mr. Fong responded that the lean team at the Office of the CIO collaborates well.

Regent-designate Anderson asked if further consolidation of external managers was anticipated. Mr. Bachher commented that most of the consolidation had been accomplished, with the total number of external managers having been reduced from 340 managers to about 120, which could be further reduced to about 100.

Chief Operating Officer Arthur Guimaraes stated that the goal of the UCRSP is to improve retirement outcomes for UC employees, which required having outstanding investments, engaging with plan participants, and encouraging participants to save. Participants in the UCRSP defined contribution (DC) programs automatically saved seven percent and average additional voluntary contributions of 10.5 percent, for a total of 17.5 percent compared with an industry average of 6.2 percent. Adding the University's contribution brings the total average savings to 25.5 percent. UC participants were saving well for retirement, adding $1.1 billion per year to the UCRSP.

UCRSP, the nation's largest 403(b) plan, currently had 324,000 participants and assets of $23.8 billion, having grown by about $5 billion over the past five years. Since 2014, the number of investment options for participants were reduced from 68 to 14. Reductions in asset management fees over the past four years had saved more than $20 million. When the UCRSP was started in 1967, UC was one of the first university plans to offer members the ability to save on a discretionary basis.

Mr. Guimaraes reviewed changes made to UCRSP in 2017. The Calvert Fund was eliminated; Fidelity and Dimensional Fund Advisors (DFA) were repackaged to institutional funds; three Vanguard funds were renamed; the UC Balanced Growth and UC Global funds were eliminated; and State Street Global was engaged as the third-party manager for the Target Date Funds. This involved transitioning $8 billion into new funds and having a multi-stage communication campaign to participants, with a great deal of support from UC Human Resources.

Regent Makarechian asked about coordination between UCRSP and UCPath. Director Marco Merz stated that all payroll deductions for UCRSP are handled through UCPath, which communicates with Fidelity Investments. A new UC employee who chooses the Savings Choice DC plan is automatically enrolled in the retirement benefit with an automatic seven percent payroll deduction that is handled through UCPath and sent to Fidelity Investments, UCRSP's record keeper, where the participant could make an investment selection or be enrolled in the default Target Date Fund. Regent Makarechian asked who was responsible to check the accuracy of the Fidelity records. Mr. Merz said that the UC Office of Human Resources was responsible for the administrative and record-keeping portion of UCRSP; the Office of the CIO was responsible for the investment portion. A reconciliation audit is handled by the Office of Human Resources on an annual basis.

Mr. Guimaraes reviewed the UCRSP investment options. Its Brokerage Window has assets of $1.5 billion. Subcommittee Chair Sherman asked if there were any restrictions on a participant's investments with the Brokerage Window. Mr. Guimaraes said there were limited restrictions, such as that individual securities could not be purchased through the Brokerage Window. UCRSP core funds include fixed income funds, and both active and passive public equity funds. Mr. Guimaraes characterized the Target Date Funds as the crown jewels of the UCRSP. The Target Date Funds automatically reduce a participant's risk over time by changing asset allocation as he or she approached retirement. All Target Date Funds have outperformed their underlying composite benchmarks for the quarter, one-, three-, and five-year periods ending December 31. He expressed appreciation to Mr. Sterman's fixed income team, since the Target Date Funds' outperformance over the shorter time periods was driven by fixed income. The changes made in the UCRSP align with national trends. Mr. Guimaraes noted that the UCRSP average management fee is seven basis points (bps), well below the industry average of 35 bps.

Regent-designate Anderson asked if UCRSP participation rates had changed over time. Mr. Merz said an impressive 75 percent of UC employees save in the 403(b) plan, with the percentage steadily increasing with participants' ages. The participation rate had increased over the past ten years.

Mr. Merz commented that, based on his experience, UCRSP was currently industry-leading, but emphasized the importance of continuing to focus on the future, assessing challenges that plan participants would face over the upcoming ten to 20 years, and finding innovative solutions to address those challenges. Current participants would face an era of lower returns, which would be particularly problematic for DC participants who had access only to public markets, not private markets, which could offer performance premiums. Another retirement challenge facing UCRSP participants, and an even bigger problem for the nation, could be the disappearance of guaranteed retirement income. Both asset allocation risk and longevity risk had been shifted from the employer to the employee. UC employees who opt for the DC plan were being asked to construct a portfolio that would fund their retirement, making the Target Date Funds so important. The risk of running out of money in retirement was real for employees who no longer had access to a defined benefit (DB) plan. UC's implementation of the Retirement Choice Program meant that an

increasing number of its employees would have only a DC benefit. A third challenge facing UCRSP was participants' increasing desire to use their assets to express their views, for instance around environmental, social, and governance (ESG) issues.

Mr. Merz discussed both traditional and innovative ways these challenges could be addressed. Possible lower future returns could be countered by participants' saving more. Possible mechanisms to increase participants' saving rates were to increase the default savings rate from its current seven percent. Some plans used auto-escalation, through which the automatic savings rate was increased one percent a year, even up to ten percent. UC's dedicated communication and education campaign could be made more visible. To increase returns, higher-yielding asset classes could be added to investment options, by unitizing the Office of the CIO's High Yield Active, Private Equity, and Private Real Estate portfolios and embedding them in the Target Date Funds. Subcommittee Chair Sherman asked if a unit class of the GEP could serve that function. Mr. Merz pointed out that the Target Date Funds reduce risk over time, while the GEP had a static risk allocation that did not take into account a participant's age.

Mr. Merz said it would be important to consider how guaranteed income could be embedded into the DC plan. He expressed his view that incorporation of guaranteed income should be in conjunction with the Target Date Funds. To address participants' desire for investments that address ESG issues, Mr. Merz was considering a financial technology solution that would allow a choice of ESG options, but with asset allocation help.

Mr. Merz said the collaboration between the Office of the CIO and UC Human Resources had been very strong and would increase in the future. The Office of the CIO planned to make a quarterly video to increase the visibility of resources.

Embedding income into the Target Date Funds would be challenging, as UCRSP participants were bifurcated, with a very large proportion of employees participating in the UCRP DB plan, but an increasingly large group with no access to UCRP. A second set of Target Date Funds that would incorporate guaranteed income could be generated. An almost automatic annuity purchase could be embedded in these Pathway Income funds. Liquidity could be provided by using only a portion of a participant's accumulated assets to purchase the annuity. Retail annuity products were extremely expensive, and costs would have to be controlled. UC could use its size and scale to gain institutional pricing so the annuities could be delivered to participants in the most cost-effective manner. Mr. Merz acknowledged the fiduciary risk of embedding guaranteed income, but the Office of the CIO could partner with an outside asset manager that would assume the fiduciary risk of selecting the annuity provider.

Mr. Merz offered more detail of the functioning of such a program. For a 20-year old hire's first 35 years of employment, from age 20 to 55, the asset allocation for the Pathway Income Fund would be identical to that of the Target Date Fund. However, from age 55 and 65, the Pathway Income Fund would start investing in an annuity-tracking fixed income portfolio that would be liquid but mimic an annuity purchase, in effect dollar-cost-averaging into the annuity purchase. When the participant reaches age 65, the transition of

a portion of the participant's assets into the annuity would occur. The annuity would become effective in the later stages of life to ensure that a participant did not run out of money. Between age 65 and the beginning of the annuity payments, income would be distributed through the sale of investment assets via a drawdown, while assets in the annuity replication strategy would be used to buy deferred income annuities. This plan would be further researched in 2018 and the Office of the CIO would work with stakeholders in Human Resources, the Academic Senate, and the UC Retirement System Advisory Board. Mr. Merz hoped to be able to implement this alternative by 2020.

Mr. Bachher summarized that the Office of the CIO had saved $300 million in management costs over the past four years. He complimented his current team of 26 investment professionals, nine operations personnel, five risk managers, six treasury staff previously with the UC department of finance, seven investment fellows, and seven support staff.

The meeting adjourned at 5:00 p.m.

Attest:

Secretary and Chief of Staff