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Office of the President

TO MEMBERS OF THE FINANCE AND CAPITAL STRATEGIES COMMITTEE:

DISCUSSION ITEM

For Meeting of November 16, 2016

ANNUAL ACTUARIAL VALUATIONS FOR THE UNIVERSITY OF CALIFORNIA RETIREMENT PLAN AND ITS SEGMENTS AND FOR THE 1991 UNIVERSITY OF CALIFORNIA-PUBLIC EMPLOYEES' RETIREMENT SYSTEM VOLUNTARY EARLY RETIREMENT INCENTIVE PROGRAM

EXECUTIVE SUMMARY

Each year, the Regents' Consulting Actuary performs an actuarial valuation of the University of California Retirement Plan (UCRP or Plan). Consistent with the funding policy approved by the Regents for the non-laboratory segment of UCRP, and separate agreements with the Department of Energy (DOE) for the funding of each Laboratory segment of UCRP, the highlights of the annual valuation results for each of these segments are provided below. All UCRP assets are maintained in one trust and are available to pay benefits of all members, regardless of the segment to which they are allocated. Highlights of the separate annual valuation of the 1991 University of California-Public Employees' Retirement System Voluntary Early Retirement Incentive Program (UC-PERS Plus 5 Plan) are also provided.

Overall UCRP Valuation Results (all segments and tiers combined)

- The June 30, 2016 overall market value of assets of UCRP was $54.2 billion, down from $55.1 billion as of the previous June 30. The assets reflect a net investment return of approximately negative two percent. The June 30, 2016 actuarial value of assets was $57.2 billion.

- The July 1, 2016 Actuarial Accrued Liability for UCRP grew to $69.3 billion from $65.8 billion as of the previous July 1.

- UCRP's funded ratio on an actuarial value of assets basis increased from 82 percent as of July 1, 2015 to 83 percent as of July 1, 2016. On a market value of assets basis, the funded ratio decreased from 84 percent to 78 percent.

- The UCRP Normal Cost calculated as of July 1, 2016 is $1.9 billion. The UCRP Normal Cost rate is 18.16 percent of the $10.6 billion covered payroll, after a mid-year adjustment to reflect a uniform accrual of costs throughout the year.

- Based on the Regents funding policy for UCRP, the total funding policy contribution rate for 2017-18 for the non-Laboratory segment is 27.99 percent of projected covered payroll, which results in an estimated annual dollar amount of $3 billion.

BACKGROUND

Each year, the Regents' Consulting Actuary, Segal Consulting (Segal), performs an actuarial valuation of the University of California Retirement Plan (UCRP or Plan) and of the 1991 University of California-Public Employees' Retirement System Voluntary Early Retirement Incentive Program (UC-PERS Plus 5 Plan).

The purpose of the annual actuarial valuation for UCRP is to disclose the Plan's funded position as of the beginning of the current Plan Year, analyze the preceding years' experience, and determine total funding policy contribution rates for the coming Plan Year.

The purpose of the annual actuarial valuation for the UC-PERS Plus 5 Plan is to review the fiscal position of its trust account and funding status to assure that the UC-PERS Plus 5 Plan remains adequately funded.

Independent Actuarial Audit

A widely-accepted best practice among trustees of retirement and health systems is to periodically have the work of their system's Consulting Actuary audited by an independent actuarial consulting firm. Actuarial audits provide assurance to plan trustees and other interested parties that the financial condition of the system's plans, as stated by the Consulting Actuary, is accurate. The actuarial valuation results for both UCRP and the UC-PERS Plus 5 Plan underwent a comprehensive actuarial audit for the 2016 valuation cycle. No significant issues were identified in the audit findings. The next actuarial audits for UCRP and the UC-PERS Plus 5 Plan are scheduled for the 2020 valuation cycle.

State Proposition 2 Contributions

Upon the Regents approval of the 2016 Tier, the 2015-16 California State budget signed by the Governor included the principal elements of a funding framework that the University negotiated with the Governor, that was approved by the Regents, and that was incorporated into the Governor's May 2015 Budget Revision. Under the agreement with the Governor, the University would receive $438 million in one-time funds over the next three years in Proposition 2 debt repayment funds for UCRP, including $96 million in 2015-16, $171 million in 2016-17, and $171 million in 2017-18. As specified in the State Constitution, Proposition 2 funds must be supplemental, above Regentally-approved contribution rates, and must be used to help pay down the UCRP Unfunded Actuarial Accrued Liability. UC received the first installment of $96 million of State Proposition 2 funds in June 2016.

Recent Regental Action

On March 24, 2016, the Regents approved the UC Retirement Choice Program (Program), which offers new hires or rehires on or after July 1, 2016 the option of choosing their retirement benefits to be under either a defined benefit plan (Pension Choice), which also includes a supplemental defined contribution component for certain employees, or a defined contribution plan with an employer contribution (Savings Choice). For represented employees, the Program is subject to collective bargaining. Note the new Program does not have an impact on this year's UCRP valuation results.

Under Pension Choice, a vested member receives a UCRP monthly lifetime pension in retirement similar to the 2013 Tier with the exception of a lower pensionable salary cap for employees hired on or after July 1, 2016. The pensionable salary cap is based on the California Public Employees' Pension Reform Act (PEPRA) limit (currently $117,020 in 2016 for members with Social Security). The member will contribute seven percent of eligible pensionable pay to UCRP while UC will contribute 14 percent. In addition, all eligible faculty, eligible staff, and other academic appointees who earn base pay in excess of the PEPRA limit, will receive a Defined Contribution Plan (DC Plan) supplemental benefit in the form of employee and employer contributions made to the DC Plan. For eligible faculty, UC will contribute five percent of all eligible pay up to the Internal Revenue Code (IRC) section 401(a)(17) annual covered compensation limit (CCL) ($265,000 for 2016). For eligible staff and other academic appointees, UC will contribute three percent of eligible pay above the PEPRA limit up to the CCL. Members eligible for the DC Plan supplemental benefit will contribute seven percent of eligible pay above the PEPRA limit to the DC Plan. Only newly hired members who are subject to the PEPRA maximum are eligible for the DC Plan supplemental benefit.

Under Savings Choice, participants contribute seven percent of their annual eligible salary up to the CCL to the DC Plan while UC contributes eight percent of the participant's annual eligible salary up to the CCL. The University will also pay a surcharge on behalf of all Savings Choice participants into UCRP (UAAL Surcharge) to go towards paying down the unfunded liability of UCRP. For 2016-17, the UAAL Surcharge is six percent (3.8 percent for the Department of Energy on behalf of Lawrence Berkeley National Laboratory employees) of Savings Choice covered payroll.

UCRP Valuation Results

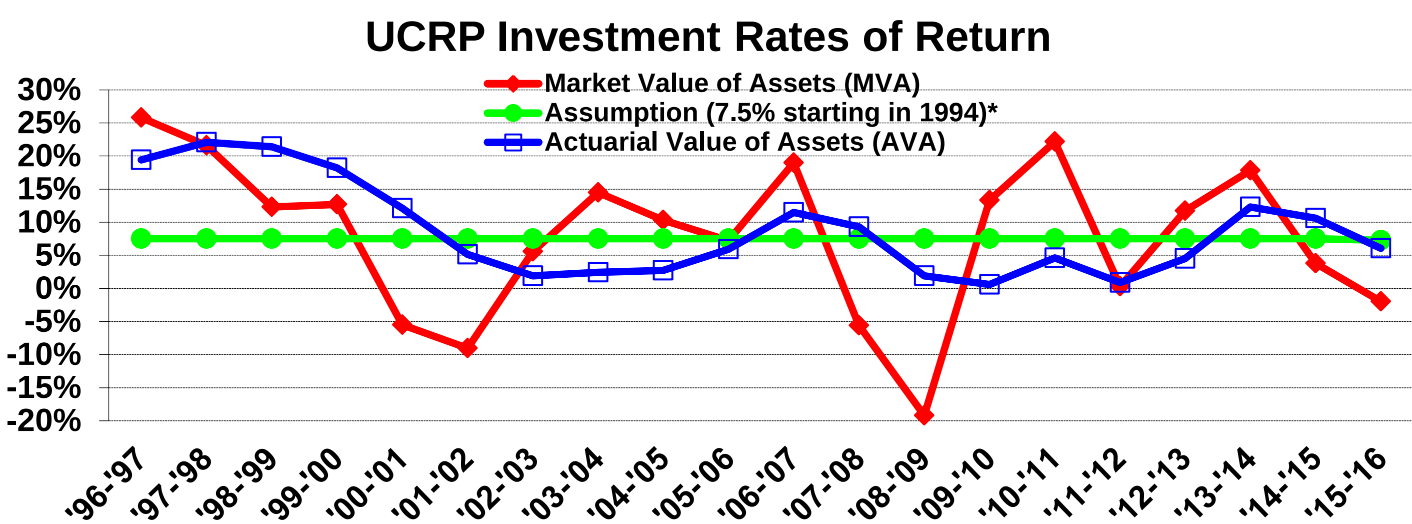
A total of 280,185 members were included in the July 1, 2016 valuation: 70,077 retired members and beneficiaries, 34,624 vested terminated members, 46,972 terminated non-vested members and 128,513 active members; compared to a total of 266,254 members included in the July 1, 2015 valuation.

As of June 30, 2016, the UCRP market value of assets (MVA), after subtracting benefit claims currently payable and other current payables of UCRP, was $54.2 billion as compared to $55.1

billion as of the prior June 30. During 2015-16, the Plan experienced an investment return on its MVA of approximately negative two percent.

When determining the Plan's funded ratio, the Plan's Actuarial Accrued Liability (AAL) is compared to the Actuarial (smoothed) Value of Assets (AVA). The "smoothing" method reduces the short-term impact of market volatility by recognizing in each year only 20 percent of the investment gains and losses in each of the preceding five years. As of June 30, 2016, this five-year period includes investment returns which in total were less favorable than the Plan's assumed earnings rate (7.25 percent). The net result is a 6.04 percent investment return for 2015-16 on an AVA basis.

The chart below shows the investment rates of return on the MVA (red line) and on the AVA (blue line) as compared to the Plan's assumed earnings rate (green line) for the most recent 20-year period. The assumed earnings rate was 7.5 percent through 2014-15 and was changed to 7.25 percent effective with Plan Year 2015-16.



***Investment rate of return assumption changed to 7.25% per annum starting July 1, 2015

Comparing the MVA of $54.2 billion to the AVA of $57.2 billion shows that the total unrecognized investment loss as of July 1, 2016 is $3.06 billion. This investment loss will be recognized in the determination of the AVA for valuation purposes over the next few years. Thus, even if the Plan earns the current assumed rate of investment return of 7.25 percent per year (net of investment expenses) on a MVA basis, there will be investment losses on the AVA in the next few years. More information concerning the impact of these unrecognized investment losses is presented later in this discussion.

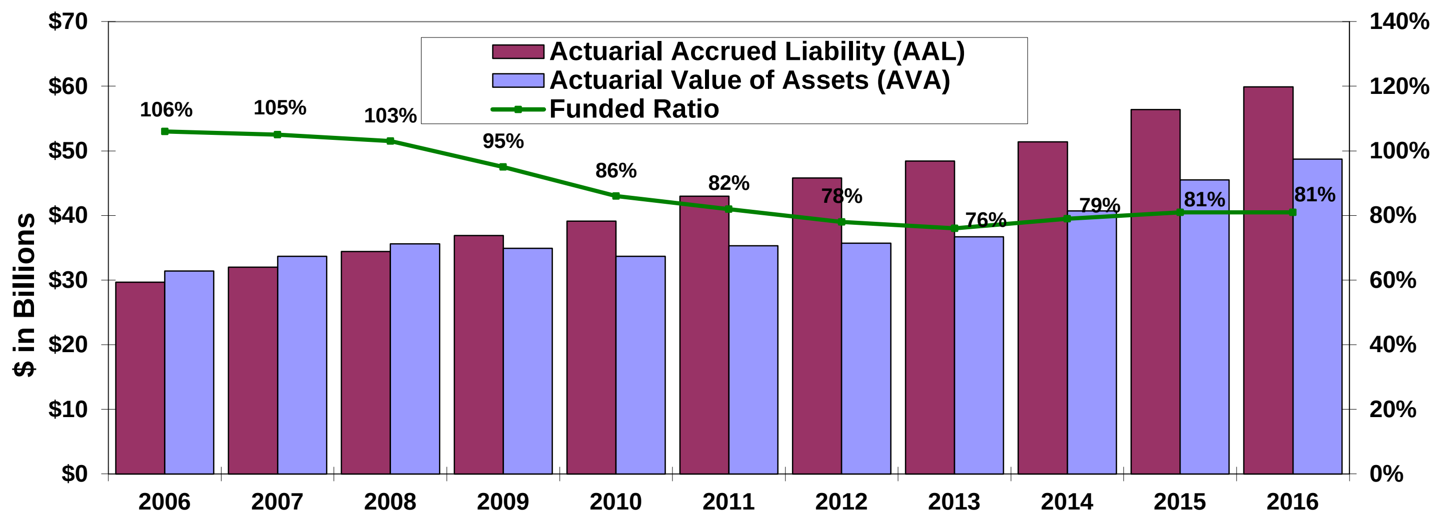
The Plan's overall AAL increased from $65.8 billion as of July 1, 2015 to $69.3 billion as of July 1, 2016. The Plan's funded ratio increased from 82 percent as of July 1, 2015 to 83 percent as of July 1, 2016 mainly due to contributions fully funding the total funding policy contribution.

Note that on an MVA basis the funded ratio decreased from 84 percent to 78 percent due to the investment loss on the MVA.

The overall Normal Cost of UCRP is the annual amount measured as of the valuation date, expressed as a percent of payroll (the Normal Cost rate) that if accrued over the total career of each active member will fully provide for future UCRP benefits. Under the entry age actuarial cost method, the UCRP Normal Cost rate calculated as of the beginning of 2016-17 is 17.54 percent of covered payroll.

Overview of Funded Status of the Non-Laboratory (Campus and Medical Center) Segment of UCRP

The chart below shows the recent history of AAL growth along with changes in the funded ratio on an actuarial value of assets (AVA) basis for the non-Laboratory segment of UCRP.



Total Funding Policy Contribution Rates for 2017-18

After applying the UCRP funding policy to the July 1, 2016 valuation results of the non-Laboratory segment of UCRP, the total funding policy contribution rate for 2017-18 is 27.99 percent of projected covered payroll. The components of the total funding policy contribution rate are shown below:

Normal Cost	18.16%
Amortization of Unfunded Actuarial Accrued Liability (or Surplus)	9.83%
	======
Total funding policy contribution rate	27.99%

The total funding policy contribution as an estimated dollar amount for the non-Laboratory segment of UCRP is $2.99 billion based on projected covered payroll of $10.7 billion for 2017-18.

Actual Contribution Rates

The University and member contribution rates for 2016-17 are as follows:

University Contributions

Type of Participant	University Contribution Rates on Covered Compensation
For UCRP Participants (Non-Lab / LBNL)	14% / 11.8%
For Savings Choice Participants UAAL Surcharge (Non-Lab/LBNL)	6% / 3.8%

Member Contributions

Member / Tier	Member Contribution Rates on Covered Compensation[1]
1976 Tier Certain Bargaining Units[2] / All Others	9% / 8%
2013 Tier Certain Bargaining Units[2] / All Others	9% / 7%
2016 Tier (Effective 7/1/2016)	7%
Safety	9%
Tier Two	none

For years in which the actual contributions, including amounts borrowed (see below), are less than the total funding policy contributions, future actuarial losses are generated that will lead to increases in future total funding policy contributions.

University and member contributions for the LBNL Segment of UCRP are made subject to the terms of the University's contract with the DOE, with member contribution rates subject to collective bargaining for represented members at LBNL.

Funding of Total Funding Policy Contribution

In November 2015, the Regents delegated authority and discretion to the President of the University to make additional contributions to UCRP for fiscal year 2015-16, 2016-17, and

[1] Contribution amounts are reduced by $19 per month for 1976 Tier and Safety members.

[2] California Nurses Association (CNA), University Professional and Technical Employees-Communication Workers of America (UPTE-CWA) Local 9919, and American Federation of State, County and Municipal Employees (AFSCME), including Santa Cruz Skilled Crafts Employees.

2017-18. The President of the University may utilize one or more of the following options: borrowing from the Short Term Investment Pool (STIP), or funding from other internal or external sources to transfer funds to UCRP for the previously stated fiscal years in amounts not to exceed the difference between the approved total UCRP contribution and total funding policy contribution. In the event that the STIP would have insufficient funds for these transfers, funds equal to the shortfall(s) will first be transferred from the Total Return Investment Pool (TRIP) to STIP. The transfer amounts not to be exceeded are $563.6 million for 2015-16, $481 million for 2016-17, and $391.8 million for 2017-18. In December 2015, $563,528,700 was transferred from STIP to UCRP. This amount represents an amount that, along with actual contributions received, results in approximately full funding of the total funding policy contribution for 2015-16.

All non-Laboratory locations are assessed a separate supplementary amount to pay for the debt service on the supplemental contributions to UCRP. The additional assessment for 2016-17 is 1.19 percent of covered compensation.[1]

Impact of Unrecognized Investment Losses for UCRP

The unrecognized investment losses represent about six percent of UCRP's MVA. Unless offset by future investment gains or other favorable experience, the future recognition of the $3.06 billion in market losses is expected to have an impact on the Plan's future funded ratio and future total funding policy contributions. This potential impact may be illustrated as follows:

- If the deferred losses were recognized immediately in the AVA, the funded percentage would decrease from 82.6 percent to 78.2 percent.
- If the deferred losses were recognized immediately in the AVA, the total funding policy contribution rate would increase from 27.99 percent of covered payroll to 30.34 percent of covered payroll.

[1] The additional assessment is repaid to the University accounts that provided the borrowed funds; it is not contributed into UCRP. The assessment amount will be reset each year and is projected to range from 1.19 percent to 1.98 percent of covered payroll over the next ten-year period.

UNIVERSITY OF CALIFORNIA RETIREMENT PLAN
Overall Actuarial Valuation Highlights
(Dollars in 000,000's)

Valuation Date	7/1/2007[1]	7/1/2008	7/1/2009	7/1/2010	7/1/2011[2]	7/1/2012	7/1/2013	7/1/2014	7/1/2015[3]	7/1/2016
Asset Information										
(1) Plan Assets at Fair Market Value (MV)	$48,105	$42,023	$32,259	$34,574	$41,873	$41,806	$45,341	$52,784	$55,055	$54,165
(2) Actuarial Value of Assets (AVA)[4]	43,434	43,840	42,799	41,195	42,757	42,965	43,572	48,328	53,762	57,228
Actuarial Valuation Results – Contribution Basis										
(3) Normal Cost (Beginning of Plan Year)	$1,276	$1,262	$1,339	$1,354	$1,404	$1,500	$1,563	$1,636	$1,760	$1,860
(4) % Payroll (Beginning of Plan Year)	16.76%	16.90%	17.00%	16.94%	17.20%	17.44%	17.70%	17.59%	17.73%	17.54%
(5) Actuarial Accrued Liability (AAL: Entry Age)[5]	41,437	42,577	45,161	47,504	51,831	54,620	57,381	60,417	65,841	69,305
(6) Actuarial Value of Assets in Excess of AAL	1,997	1,263	-2,362	-6,309	-9,074	-11,655	-13,809	-12,089	-12,079	-12,077

[1] Liabilities and costs reflect the economic and demographic assumptions adopted 7/1/2007.

[2] Liabilities and costs reflect the economic and demographic assumptions adopted 7/1/2011.

[3] Liabilities and costs reflect the economic and demographic assumptions adopted 7/1/2015.

[4] Actuarial Value of Assets: The expected market value plus investment gains/losses recognized over a five-year period.

[5] AAL: The actuarial accrued liability based on the funding method used to value UCRP. The actuarial present value of plan benefits and expenses allocated to years prior to the valuation date.

UC-PERS Plus 5 Plan Valuation Results

On October 18, 1990, the Regents approved an early retirement incentive program for University employees who were covered under the California Public Employees' Retirement System (CalPERS) pension plan. The most tax-effective method to provide this group with a benefit generally comparable to an incentive offered to UCRP members was to establish a "frozen" defined benefit plan described in Section 401(a) of the IRC.

The UC-PERS Plus 5 Plan required campus and Laboratory locations to fund their individual liabilities over a period no longer than five years. The UC-PERS Plus 5 Plan is a standard terminal funding arrangement under a wasting trust which, in this instance, is obligated to make fixed lifetime payments under either a single life or joint and survivor annuity option. The assets must remain in the trust until all benefit obligations have been satisfied. MVA, rather than a smoothed value, is used for actuarial valuation purposes. Segal reviews the trust's fiscal position and funding status annually to assure that the UC-PERS Plus 5 Plan is adequately funded.

As of July 1, 2016, the PERS Plus 5 Plan’s funded ratio is 175.4 percent, compared to the funded ratio on July 1, 2015 of 180.2 percent. The decrease in the funded ratio was mainly the result of the lower-than-expected investment return of approximately negative two percent during 2015-16 (the assumed rate of investment return for 2015-16 was 7.25 percent). The net assets of the wasting trust as of July 1, 2016 are $61 million and the AAL is $34.8 million.

As of July 1, 2016, there were 553 retired members and beneficiaries in the UC-PERS Plus 5 Plan, down from 584 as of July 1, 2015.

Key to Acronyms

AAL	Actuarial Accrued Liability
AFSCME	American Federation of State, County and Municipal Employees
AVA	Actuarial Value of Assets
CNA	California Nurses Association
DOE	U.S. Department of Energy
IRC	Internal Revenue Code
MVA	Market Value of Assets
LANL	Los Alamos National Laboratory
LBNL	Lawrence Berkeley National Laboratory
LLNL	Lawrence Livermore National Laboratory
OCIO	UC Office of the Chief Investment Officer
PEPRA	Public Employees’ Pension Reform Act of 2013
PERS or CalPERS	California Public Employees Retirement System
STIP	Short Term Investment Pool
TRIP	Total Return Investment Pool
UAAL	Unfunded Actuarial Accrued Liability
UCRP	University of California Retirement Plan
UPTE	University Professional and Technical Employees

APPENDIX I – Summary of Actuarial Valuation Results by UCRP Segment and for the UC-PERS Plus 5 Plan
APPENDIX II - Glossary of Actuarial Terms
Attachment 1 - UCRP Actuarial Valuation Report as of July 1, 2016
Attachment 2 - UC-PERS Plus 5 Plan Actuarial Valuation Report as of July 1, 2016

APPENDIX I

SUMMARY OF ACTUARIAL VALUATION RESULTS BY UCRP SEGMENT

UCRP Non-Laboratory (Campus and Medical Centers) Segment Valuation Results

- The June 30, 2016 non-Laboratory segment (segment) MVA and AVA were $46.1 billion and $48.7 billion, respectively.
- The July 1, 2016 segment Actuarial Accrued Liability was $59.9 billion.
- The segment funded ratio on an AVA basis was 81.4 percent as of July 1, 2016.
- The segment Normal Cost calculated as of July 1, 2016 is $1.81 billion. The Normal Cost rate is 18.16 percent of the $10.3 billion covered payroll, after a mid-year adjustment to reflect a uniform accrual of costs throughout the year.
- Based on the Regents funding policy for UCRP, the total funding policy contribution rate is 27.99 percent of projected covered payroll, which results in an estimated annual dollar amount of $2.99 billion for 2017-18.

Lawrence Berkeley National Laboratory Segment (LBNL) Valuation Results

- The June 30, 2016 LBNL MVA and AVA were $2.04 billion and $2.15 billion, respectively.
- The July 1, 2016 LBNL Actuarial Accrued Liability is $2.26 billion.
- The LBNL funded ratio on an AVA basis was 95.5 percent as of July 1, 2016.
- Based on the modified employer contribution rate for LBNL approved by the Regents on September 17, 2015, the LBNL employer contribution rate is 11.8 percent of payroll for 2016-17. Based on the results of this valuation, the LBNL employer contribution rate will then change to 11.9 percent of payroll effective July 1, 2017. The member contributions for LBNL will be made on the same basis as determined for the non-laboratory segment of UCRP, subject to the terms of the University’s contract with the DOE and subject to collective bargaining for represented members at LBNL.

Lawrence Livermore National Laboratory Retained Segment (LLNL) Valuation Results

- The June 30, 2016 LLNL MVA and AVA were $3.3 billion and $3.49 billion, respectively.
- The July 1, 2016 LLNL Actuarial Accrued Liability was $3.94 billion.
- The LLNL funded ratio on an AVA basis was 88.5 percent as of July 1, 2016.
- Based on a contractual obligation, the required contribution from the DOE, subject to available funding, for 2016-17 (due by February 28, 2018) is $145 million.

Los Alamos National Laboratory Retained Segment (LANL) Valuation Results

- The June 30, 2016 LANL MVA and AVA were $2.69 billion and $2.85 billion, respectively.
- The July 1, 2016 LANL Actuarial Accrued Liability was $3.23 billion.
- The LANL funded ratio on an AVA basis was 88 percent as of July 1, 2016.
- Based on a contractual obligation, the required contribution from the DOE, subject to available funding, for 2016-17 (due by February 28, 2018) is $128 million.

APPENDIX II: GLOSSARY OF ACTUARIAL TERMS

- **Present Value of Benefits (PVB)**: the “value” at a particular point in time of all projected future benefit payments for current plan members. The “future benefit payments” and the “value” of those payments are determined using actuarial assumptions as to future events. Examples of these assumptions are estimates of retirement patterns, salary increases, investment returns, etc. Another way to think of the PVB is that if the plan has assets equal to the PVB and all actuarial assumptions are met, then no future contributions would be needed to provide all future service benefits for all current members, including future service and salary increases for active members.
- **Actuarial Cost Method**: allocates a portion of the total cost (PVB) to each year of service, both past service and future service.
- **Normal Cost (NC)**: the cost allocated under the Actuarial Cost Method to each year of active member service.
- **Actuarial Accrued Liability (AAL)**: the value at a particular point in time of all past Normal Costs. Plan assets would match this amount if the current plan provisions, actuarial assumptions and participant data had always been in effect, contributions equal to the Normal Cost had been made and all actuarial assumptions came true.
- **Actuarial Value of Assets (AVA) or smoothed value**: a market-related value of the plan assets for determining contribution requirements. The AVA tracks the market value of assets over time, smoothes out short-term fluctuations in market values and produces a smoother pattern of contributions than would result from using market value.
- **Market Value of Assets (MVA)**: the fair value of assets of the plan as reported by the plan’s trustee, typically shown in the plan’s audited financial statements.
- **Unfunded Actuarial Accrued Liability (UAAL)**: the positive difference, if any, between the AAL and the AVA.
- **Surplus**: the positive difference, if any, between the AVA and the AAL.
- **Actuarial Value Funded Ratio**: the ratio of the AVA to the AAL.
- **Market Value Funded Ratio**: the ratio of the MVA to the AAL.
- **Actuarial Gains and Losses**: changes in UAAL or surplus due to actual experience different from what is assumed in the actuarial valuation. For example, if during a given year the assets earn more than the current assumption of 7.25 percent, the amount of earnings above 7.25 percent will cause an unexpected reduction in UAAL, or “actuarial gain” as of the next valuation. These include contribution gains and losses that result from actual contributions made being greater or less than the level determined under the funding policy.