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# Estimated Increases in State of California Employee and Retiree Benefits Costs Caused by Doubling the MICRA Cap

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## 1. INTRODUCTION

The State of California bears tens of billions of dollars in costs related to the provision of medical and dental benefits for active and retired employees. The provision of these benefits is an important obligation of the State of California. The State Controller, John Chiang, retained Gabriel Roeder Smith & Company ("GRS") to prepare and present the State of California Retiree Health Benefits Program GASB NOS 43 and 45 Actuarial Valuation Report dated June 30, 2009 ("Chiang Report"). Among other calculations, the Chiang Report presented actuarial present values (as of 2009) of projected benefits (for active and retired employees) for the next 10 years under the pay-as-you-go, partial, and full-funding policies of $75.6 billion, $55.0 billion, and $41.8 billion, respectively.[1]

The Chiang Report states that under the pay-as-you-go funding scenario, the State is assumed to finance retiree medical and dental benefits from assets available in the general fund where the costs are paid as they come due each year. The Chiang Report estimates that if costs are paid on an annual basis, over the course of 10 years the total cost to taxpayers will be $75.6 billion for current and retiree medical and dental benefits. This payment option is the most likely scenario given the traditional payment structure for state governments and California's projected multi-year budget deficits forecasts.

Under the partial-funding scenario, the State is assumed to set aside in a separate ARC trust 50 percent of the capital set aside in the full-funding scenario. Thus, this fund would

[1] See "State of California Retiree Health Benefits Program: GASB NOS. 43 and 45 Actuarial Valuation Report as of June 30, 2009", pp. 15, 19, 21.

not earn as much investment income and the State would still be required to make an additional state budget allocation each year to fully fund medical and dental benefits. Under this scenario, over the course of 10 years, the total cost to taxpayers will be $55.0 billion for current and retiree medical and dental benefits.

Under the full-funding scenario, the State is assumed to set aside funds for the Annual Required Contribution ("ARC") in a separate trust, earmarked solely for retiree medical and dental benefits. This fund will earn investment income and it is assumed the original capital investment plus the income earned will cover all medical and dental costs for 10 years. Under this scenario, over the course of 10 years the total cost to taxpayers will be $41.8 billion for current and retiree medical and dental benefits.

In an effort to determine the impact on these estimated costs from doubling the Medical Injury Compensation Reform Act ("MICRA") cap (which provides unlimited economic compensation but imposes a $250,000 ceiling on non-economic damages), we overlay a cap-doubling cost impact factor directly onto the very figures presented in the Chiang Report. We ultimately find that over the same 10-year period, doubling the MICRA cap would cost state taxpayers an additional $2.4 billion under the pay-as-you-go scenario; $1.7 billion under the partial-funding scenario; or $1.3 billion under the full-funding scenario.

## 2. DATA

The Chiang Report provides summary results from a series of interrelated analyses. It does not provide a breakdown of the annual value of projected benefits but rather provides the net present value of the 10-year totals for each of the three models. First, we

determined the recreation of Chiang's interdependent tables and analyses was unfeasible with the data and files available to us. Though we did not have an annual breakdown of the aggregate figures and/or the data and models used in the Chiang Report, we were able to locate certain backup materials to the State of California Retiree Health Benefits Program GASB NOS 43 and 45 Actuarial Valuation Report dated June 30, 2008 in the Supplemental Projections dated November 5, 2008 ("Supplemental Projections"). These present several additional data points including the net present values projections of Actuarial Liabilities for 2008 through 2017 under the three different funding policies.[2] Equipped with the Chiang Report and the Supplemental Projections, we were able to estimate the annual breakdown of costs (without MICRA cap adjustments).

## 3. ANALYSIS

First, we decomposed the 2009 Actuarial Present Value of Projected Benefits into annual figures for each of the three models contained in the Chiang Report; see Exhibits 1-3: Panel A. This process required the estimation of a growth rate for the benefit increases year over year. These rates were approximated by the growth rates observed in the Supplemental Projections; see Exhibit 4.[3] The discount rates applied are given in the

[2] See "Re: State of California Retiree Healthcare Benefits - GASB Closed Group Projections," GRS, November 5, 2008.

[3] We fully recognize the limitation to this approach, namely we have estimated an annual growth rate based on the calculated growth rates of the valuations of projected actuarial liabilities provided in the Supplemental Projections. However, not having access to the necessary data and tables directly, we are confident our estimate is the best alternative. Should the necessary data and tables be provided to us, we are prepared to redo this analysis. The growth rate from 2017 to 2018 is assumed to be the equal to the growth rate from 2016 to 2017.

Chiang Report. With the growth rates and discount rates and the final net present value figure, one can iteratively solve for the annual breakdown of the net present value ("NPV").

Next, having solved for the annual costs, one can superimpose the estimated increased costs (in percentage terms) from the doubling of the MICRA cap. This cost increase is taken to be 3.14%.[4] In effect we increase the nominal benefits by the estimated cost of removing the cap; see Exhibits 1-3: Panel B.[5]

Finally, the difference between the annual expected costs of each of these annual decompositions (with the cap and without) is the estimated increase in the cost to California taxpayers providing medical and dental benefits caused by doubling the MICRA cap.

This analysis is repeated for each of the three models presented in the Chiang Report.

## 4. CONCLUSIONS

We estimate that the removal of the MICRA cap will cause California taxpayers to incur an additional cost of $2.4 billion, $1.7 billion or $1.3 billion depending on the funding

[4] See "MICRA and Access to Healthcare, MICRA Helps Lower Healthcare Costs, Ensuring Patients Have Access to Healthcare". Hamm, Wazzan, Frech. November 2008. Page 43. *An average reduction of 3.04% corresponds to a subsequent increase of 3.14% [(1/(1-0.0304))-1 = 0.0314].*

[5] Doubling the cap would have the same effect as removing the cap entirely. See "MICRA and Access to Healthcare, MICRA Helps Lower Healthcare Costs, Ensuring Patients Have Access to Healthcare". Hamm, Wazzan, Frech. November 2008. Page 43.

policy; see Exhibits 1-3: Panel C. The corresponding annual cost increases are provided in Exhibits 1-3: Panel D.

## 5. ILLUSTRATION OF THE COST TO THE STATE OF CALIFORNIA FROM A DOUBLING IN THE MICRA CAP

The cost increases estimated to incur from doubling the MICRA cap are significant. To illustrate these figures in "real life" terms, we have compared these costs to a sampling of items contained in the proposed 2010-2011 California State Budget.[67]

| **Pay-As-You-Go Funding Policy 2010** *$261,634* | | |
|---|---|---|
| State Budget Item | Budget Item *($Total State Funds)* | Cost Increase Percentage of State Budget Item |
| Department of Child Support Services | $301,331 | 87% |
| University of California | $3,048,713 | 9% |
| Department of Parks and Recreation | $507,114 | 52% |
| State Board of Equalization | $328,864 | 80% |

* Dollars in thousands

We have also compared these cost increases to the recent data on the cost of incarcerating inmates in California State Prisons.[8] Each prisoner costs the state approximately $51,000

[6] http://www.ebudget.ca.gov/agencies.html.

[7] The 2010 annual costs increase is contrasted with the 2010-11 state budget.

per year. The 2010 annual cost increase of $261,634,000 therefore represents approximately 5,130 inmates under the pay-as-you-go policy. We have also compared these cost increases to average teacher's salary of $66,995.[9] The 2010 annual cost of $261,634,000 therefore represents approximately 3,905 California teachers under the pay-as-you-go policy. In other words, if the increased cost of providing health benefits, in the event that the MICRA cap is doubled, was to be offset completely through a reduction of inmates, 5,130 inmates would have to be released. Or similarly, if it were offset completely through a reduction in teachers, 3,905 teachers would have to be let go.

[8] See Legislative Analyst's Office Overview of California Department of Corrections and Rehabilitation. March 18, 2010.

[9] California Department of Education, http://www.cde.ca.gov/ds/fd/cs/index.asp, Accessed 6/8/2010.

# Exhibit 1

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Pay-As-You-Go"**

| | | | |
|---|---|---|---|
| NPV of Proj. Benefits | $ | 75,632,199 | (1) |
| Discount Rate | | 4.50% | (1) |

**Panel A**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 5.39% | 5.00% | 4.64% | 4.30% | 3.97% | 3.65% | 3.37% | 3.09% | 3.09% | |
| Nominal Benefits | $ 7,918,138 | $ 8,344,763 | $ 8,761,835 | $ 9,168,098 | $ 9,562,138 | $ 9,941,353 | $ 10,304,419 | $ 10,651,309 | $ 10,980,806 | $ 11,320,495 |
| Discounted Benefits | $ 7,577,166 | $ 7,641,549 | $ 7,677,966 | $ 7,688,013 | $ 7,673,148 | $ 7,633,923 | $ 7,571,980 | $ 7,489,842 | $ 7,389,033 | $ 7,289,580 |
| NPV | $ 75,632,199 | | | | | | | | | |

**Panel B**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | 3.14% | | | | | | | | | |
| Adjusted Growth Rate | 5.39% | 5.00% | 4.64% | 4.30% | 3.97% | 3.65% | 3.37% | 3.09% | 3.09% | |
| Nominal Benefits | $ 8,166,396 | $ 8,606,397 | $ 9,036,546 | $ 9,455,547 | $ 9,861,941 | $ 10,253,046 | $ 10,627,494 | $ 10,985,261 | $ 11,325,088 | $ 11,675,428 |
| Discounted Benefits | $ 7,814,733 | $ 7,881,136 | $ 7,918,694 | $ 7,929,056 | $ 7,913,725 | $ 7,873,270 | $ 7,809,385 | $ 7,724,672 | $ 7,620,702 | $ 7,518,132 |
| NPV | $ 78,003,506 | | | | | | | | | |

**Panel C**

| | | |
|---|---|---|
| **Total Increase in Costs (NPV)** | **$** | **2,371,307** |

**Panel D**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | $ 248,258 | $ 261,634 | $ 274,711 | $ 287,449 | $ 299,803 | $ 311,693 | $ 323,076 | $ 333,952 | $ 344,283 | $ 354,933 |
| Annual Increase in Costs (PV) | $ 237,568 | $ 239,587 | $ 240,728 | $ 241,043 | $ 240,577 | $ 239,347 | $ 237,405 | $ 234,830 | $ 231,669 | $ 228,551 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '000s)
PAY-AS-YOU-GO FUNDING POLICY (4.50%)

# Exhibit 1A

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Pay-As-You-Go"**

| | | |
|---|---|---|
| NPV of Proj. Benefits | 75632199 | (1) |
| Discount Rate | 0.045 | (1) |

**Panel A**

| | 2009 | =B10+1 | =C10+1 | =D10+1 | =E10+1 | =F10+1 | =G10+1 | =H10+1 | =I10+1 | =J10+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 0.0538794606583317 | 0.0499800651448999 | 0.0463673627521172 | 0.0429794864286313 | 0.0396579694247934 | 0.0365207292935665 | 0.0336642465577242 | 0.0309348577516369 | =I11 | |
| Nominal Benefits | 7918137.96199621 | =B14*(1+B11) | =C14*(1+C11) | =D14*(1+D11) | =E14*(1+E11) | =F14*(1+F11) | =G14*(1+G11) | =H14*(1+H11) | =I14*(1+I11) | =J14*(1+J11) |
| Discounted Benefits | =B14/((1+$B$6)^(B13-2008)) | =C14/((1+$B$6)^(C13-2008)) | =D14/((1+$B$6)^(D13-2008)) | =E14/((1+$B$6)^(E13-2008)) | =F14/((1+$B$6)^(F13-2008)) | =G14/((1+$B$6)^(G13-2008)) | =H14/((1+$B$6)^(H13-2008)) | =I14/((1+$B$6)^(I13-2008)) | =J14/((1+$B$6)^(J13-2008)) | =K14/((1+$B$6)^(K13-2008)) |
| NPV | =SUM(B15:K15) | | | | | | | | | |

**Panel B**

| | 2009 | =B20+1 | =C20+1 | =D20+1 | =E20+1 | =F20+1 | =G20+1 | =H20+1 | =I20+1 | =J20+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | =(1/(1-0.0304))-1 | | | | | | | | | |
| Adjusted Growth Rate | =B11 | =C11 | =D11 | =E11 | =F11 | =G11 | =H11 | =I11 | =J11 | |
| Nominal Benefits | =B14*(1+$B$21) | =B25*(1+B22) | =C25*(1+C22) | =D25*(1+D22) | =E25*(1+E22) | =F25*(1+F22) | =G25*(1+G22) | =H25*(1+H22) | =I25*(1+I22) | =J25*(1+J22) |
| Discounted Benefits | =B25/((1+$B$6)^(B24-2008)) | =C25/((1+$B$6)^(C24-2008)) | =D25/((1+$B$6)^(D24-2008)) | =E25/((1+$B$6)^(E24-2008)) | =F25/((1+$B$6)^(F24-2008)) | =G25/((1+$B$6)^(G24-2008)) | =H25/((1+$B$6)^(H24-2008)) | =I25/((1+$B$6)^(I24-2008)) | =J25/((1+$B$6)^(J24-2008)) | =K25/((1+$B$6)^(K24-2008)) |
| NPV | =SUM(B26:K26) | | | | | | | | | |

**Panel C**

| | |
|---|---|
| **Total Increase in Costs (NPV)** | **=B27-B16** |

**Panel D**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | =B25-B14 | =C25-C14 | =D25-D14 | =E25-E14 | =F25-F14 | =G25-G14 | =H25-H14 | =I25-I14 | =J25-J14 | =K25-K14 |
| Annual Increase in Costs (PV) | =B26-B15 | =C26-C15 | =D26-D15 | =E26-E15 | =F26-F15 | =G26-G15 | =H26-H15 | =I26-I15 | =J26-J15 | =K26-K15 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '0(
PAY-AS-YOU-GO FUNDING POLICY (4.50%)

# Exhibit 2

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Partial Funding"**

| | | | |
|---|---|---|---|
| NPV of Proj. Benefits | $ | 54,953,317 | (1) |
| Discount Rate | | 6.125% | (1) |

**Panel A**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 5.68% | 5.28% | 4.92% | 4.58% | 4.24% | 3.93% | 3.64% | 3.38% | 3.38% | |
| Nominal Benefits | $ 6,180,590 | $ 6,531,341 | $ 6,876,249 | $ 7,214,305 | $ 7,544,416 | $ 7,864,340 | $ 8,173,104 | $ 8,470,931 | $ 8,757,017 | $ 9,052,765 |
| Discounted Benefits | $ 5,823,878 | $ 5,799,185 | $ 5,753,055 | $ 5,687,529 | $ 5,604,503 | $ 5,504,984 | $ 5,390,923 | $ 5,264,893 | $ 5,128,577 | $ 4,995,791 |
| NPV | $ 54,953,317 | | | | | | | | | |

**Panel B**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | 3.14% | | | | | | | | | |
| Adjusted Growth Rate | 5.68% | 5.28% | 4.92% | 4.58% | 4.24% | 3.93% | 3.64% | 3.38% | 3.38% | |
| Nominal Benefits | $ 6,374,371 | $ 6,736,119 | $ 7,091,841 | $ 7,440,496 | $ 7,780,957 | $ 8,110,912 | $ 8,429,357 | $ 8,736,521 | $ 9,031,577 | $ 9,336,598 |
| Discounted Benefits | $ 6,006,474 | $ 5,981,008 | $ 5,933,431 | $ 5,865,851 | $ 5,780,222 | $ 5,677,583 | $ 5,559,945 | $ 5,429,963 | $ 5,289,374 | $ 5,152,424 |
| NPV | $ 56,676,276 | | | | | | | | | |

**Panel C**

| | | |
|---|---|---|
| **Total Increase in Costs (NPV)** | **$** | **1,722,959** |

**Panel D**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | $ 193,781 | $ 204,778 | $ 215,592 | $ 226,191 | $ 236,541 | $ 246,572 | $ 256,252 | $ 265,590 | $ 274,560 | $ 283,833 |
| Annual Increase in Costs (PV) | $ 182,597 | $ 181,823 | $ 180,376 | $ 178,322 | $ 175,719 | $ 172,599 | $ 169,022 | $ 165,071 | $ 160,797 | $ 156,634 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '000s)
PARTIAL FUNDING POLICY (6.125%)

# Exhibit 2A

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Partial Funding"**

| | | |
|---|---|---|
| NPV of Proj. Benefits | 54953317 | (1) |
| Discount Rate | 0.06125 | (1) |

**Panel A**

| | 2009 | =B10+1 | =C10+1 | =D10+1 | =E10+1 | =F10+1 | =G10+1 | =H10+1 | =I10+1 | =J10+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 0.0567504422439638 | 0.0528081463226978 | 0.0491627550386449 | 0.0457579106782028 | 0.0424053968524815 | 0.0392613201342738 | 0.0364398247588714 | 0.0337727036598737 | =I11 | |
| Nominal Benefits | 6180590.00563845 | =B14*(1+B11) | =C14*(1+C11) | =D14*(1+D11) | =E14*(1+E11) | =F14*(1+F11) | =G14*(1+G11) | =H14*(1+H11) | =I14*(1+I11) | =J14*(1+J11) |
| Discounted Benefits | =B14/((1+$B$6)^(B13-2008)) | =C14/((1+$B$6)^(C13-2008)) | =D14/((1+$B$6)^(D13-2008)) | =E14/((1+$B$6)^(E13-2008)) | =F14/((1+$B$6)^(F13-2008)) | =G14/((1+$B$6)^(G13-2008)) | =H14/((1+$B$6)^(H13-2008)) | =I14/((1+$B$6)^(I13-2008)) | =J14/((1+$B$6)^(J13-2008)) | =K14/((1+$B$6)^(K13-2008)) |
| NPV | =SUM(B15:K15) | | | | | | | | | |

**Panel B**

| | 2009 | =B20+1 | =C20+1 | =D20+1 | =E20+1 | =F20+1 | =G20+1 | =H20+1 | =I20+1 | =J20+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | =(1/(1-0.0304))-1 | | | | | | | | | |
| Adjusted Growth Rate | =B11 | =C11 | =D11 | =E11 | =F11 | =G11 | =H11 | =I11 | =J11 | |
| Nominal Benefits | =B14*(1+$B$21) | =B25*(1+B22) | =C25*(1+C22) | =D25*(1+D22) | =E25*(1+E22) | =F25*(1+F22) | =G25*(1+G22) | =H25*(1+H22) | =I25*(1+I22) | =J25*(1+J22) |
| Discounted Benefits | =B25/((1+$B$6)^(B24-2008)) | =C25/((1+$B$6)^(C24-2008)) | =D25/((1+$B$6)^(D24-2008)) | =E25/((1+$B$6)^(E24-2008)) | =F25/((1+$B$6)^(F24-2008)) | =G25/((1+$B$6)^(G24-2008)) | =H25/((1+$B$6)^(H24-2008)) | =I25/((1+$B$6)^(I24-2008)) | =J25/((1+$B$6)^(J24-2008)) | =K25/((1+$B$6)^(K24-2008)) |
| NPV | =SUM(B26:K26) | | | | | | | | | |

**Panel C**

| | |
|---|---|
| **Total Increase in Costs (NPV)** | **=B27-B16** |

**Panel D**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | =B25-B14 | =C25-C14 | =D25-D14 | =E25-E14 | =F25-F14 | =G25-G14 | =H25-H14 | =I25-I14 | =J25-J14 | =K25-K14 |
| Annual Increase in Costs (PV) | =B26-B15 | =C26-C15 | =D26-D15 | =E26-E15 | =F26-F15 | =G26-G15 | =H26-H15 | =I26-I15 | =J26-J15 | =K26-K15 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '0(
PARTIAL FUNDING POLICY (6.125%)

# Exhibit 3

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Full Funding"**

| | | | |
|---|---|---|---|
| NPV of Proj. Benefits | $ | 41,793,972 | (1) |
| Discount Rate | | 7.75% | (1) |

**Panel A**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 5.95% | 5.55% | 5.18% | 4.83% | 4.49% | 4.17% | 3.90% | 3.63% | 3.63% | |
| Nominal Benefits | $ 5,041,270 | $ 5,341,037 | $ 5,637,208 | $ 5,928,945 | $ 6,215,392 | $ 6,494,548 | $ 6,765,672 | $ 7,029,236 | $ 7,284,702 | $ 7,549,453 |
| Discounted Benefits | $ 4,678,673 | $ 4,600,352 | $ 4,506,218 | $ 4,398,538 | $ 4,279,393 | $ 4,149,973 | $ 4,012,268 | $ 3,868,743 | $ 3,720,971 | $ 3,578,844 |
| NPV | $ 41,793,972 | | | | | | | | | |

**Panel B**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | 3.14% | | | | | | | | | |
| Adjusted Growth Rate | 5.95% | 5.55% | 5.18% | 4.83% | 4.49% | 4.17% | 3.90% | 3.63% | 3.63% | |
| Nominal Benefits | $ 5,199,329 | $ 5,508,496 | $ 5,813,952 | $ 6,114,836 | $ 6,410,264 | $ 6,698,172 | $ 6,977,797 | $ 7,249,624 | $ 7,513,100 | $ 7,786,152 |
| Discounted Benefits | $ 4,825,364 | $ 4,744,587 | $ 4,647,502 | $ 4,536,445 | $ 4,413,565 | $ 4,280,087 | $ 4,138,066 | $ 3,990,040 | $ 3,837,635 | $ 3,691,052 |
| NPV | $ 43,104,344 | | | | | | | | | |

**Panel C**

| | | |
|---|---|---|
| **Total Increase in Costs (NPV)** | **$** | **1,310,372** |

**Panel D**

| | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | $ 158,060 | $ 167,458 | $ 176,744 | $ 185,891 | $ 194,872 | $ 203,624 | $ 212,125 | $ 220,389 | $ 228,398 | $ 236,699 |
| Annual Increase in Costs (PV) | $ 146,691 | $ 144,235 | $ 141,284 | $ 137,908 | $ 134,172 | $ 130,115 | $ 125,797 | $ 121,297 | $ 116,664 | $ 112,208 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '000s)
FULL FUNDING POLICY (7.75%)

# Exhibit 3A

**Actuarial Present Value of Projected Benefits ($ in thousands)**
**"Full Funding"**

| | | |
|---|---|---|
| NPV of Proj. Benefits | 41793972 | (1) |
| Discount Rate | 0.0775 | (1) |

**Panel A**

| | 2009 | =B10+1 | =C10+1 | =D10+1 | =E10+1 | =F10+1 | =G10+1 | =H10+1 | =I10+1 | =J10+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Base Growth Rate (inflation) | 0.0594627421455008 | 0.0554519026584654 | 0.0517520020692986 | 0.0483134049245802 | 0.0449135483582943 | 0.0417464186392616 | 0.0389560309233531 | 0.0363434443949324 | =I11 | |
| Nominal Benefits | 5041269.69749271 | =B14*(1+B11) | =C14*(1+C11) | =D14*(1+D11) | =E14*(1+E11) | =F14*(1+F11) | =G14*(1+G11) | =H14*(1+H11) | =I14*(1+I11) | =J14*(1+J11) |
| Discounted Benefits | =B14/((1+$B$6)^(B13-2008)) | =C14/((1+$B$6)^(C13-2008)) | =D14/((1+$B$6)^(D13-2008)) | =E14/((1+$B$6)^(E13-2008)) | =F14/((1+$B$6)^(F13-2008)) | =G14/((1+$B$6)^(G13-2008)) | =H14/((1+$B$6)^(H13-2008)) | =I14/((1+$B$6)^(I13-2008)) | =J14/((1+$B$6)^(J13-2008)) | =K14/((1+$B$6)^(K13-2008)) |
| NPV | =SUM(B15:K15) | | | | | | | | | |

**Panel B**

| | 2009 | =B20+1 | =C20+1 | =D20+1 | =E20+1 | =F20+1 | =G20+1 | =H20+1 | =I20+1 | =J20+1 |
|---|---|---|---|---|---|---|---|---|---|---|
| Hamm Report Adjustment | =(1/(1-0.0304))-1 | | | | | | | | | |
| Adjusted Growth Rate | =B11 | =C11 | =D11 | =E11 | =F11 | =G11 | =H11 | =I11 | =J11 | |
| Nominal Benefits | =B14*(1+$B$21) | =B25*(1+B22) | =C25*(1+C22) | =D25*(1+D22) | =E25*(1+E22) | =F25*(1+F22) | =G25*(1+G22) | =H25*(1+H22) | =I25*(1+I22) | =J25*(1+J22) |
| Discounted Benefits | =B25/((1+$B$6)^(B24-2008)) | =C25/((1+$B$6)^(C24-2008)) | =D25/((1+$B$6)^(D24-2008)) | =E25/((1+$B$6)^(E24-2008)) | =F25/((1+$B$6)^(F24-2008)) | =G25/((1+$B$6)^(G24-2008)) | =H25/((1+$B$6)^(H24-2008)) | =I25/((1+$B$6)^(I24-2008)) | =J25/((1+$B$6)^(J24-2008)) | =K25/((1+$B$6)^(K24-2008)) |
| NPV | =SUM(B26:K26) | | | | | | | | | |

**Panel C**

| | |
|---|---|
| **Total Increase in Costs (NPV)** | **=B27-B16** |

**Panel D**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Annual Increase in Costs (Actual) | =B25-B14 | =C25-C14 | =D25-D14 | =E25-E14 | =F25-F14 | =G25-G14 | =H25-H14 | =I25-I14 | =J25-J14 | =K25-K14 |
| Annual Increase in Costs (PV) | =B26-B15 | =C26-C15 | =D26-D15 | =E26-E15 | =F26-F15 | =G26-G15 | =H26-H15 | =I26-I15 | =J26-J15 | =K26-K15 |

(1)
OPEB ACTUARIAL VALUATION RESULTS AS OF JUNE 30, 2009 ($ in '0(
FULL FUNDING POLICY (7.75%)

# Exhibit 4

## Actuarial Liabilities- Total Cost per Year
## ($ in thousands)

| | Pay-As-You-Go | | Partial Funding | | Full Funding | |
|---|---|---|---|---|---|---|
| 2008 | $48,219,692 | [a] | $38,302,292 | [a] | $31,172,072 | [a] |
| 2009 | $50,999,731 | [b] | $40,617,287 | [b] | $33,138,650 | [b] |
| 2010 | $53,747,569 | [c] | $42,922,336 | [c] | $35,109,165 | [c] |
| 2011 | $56,433,876 | " " | $45,188,985 | " " | $37,056,035 | " " |
| 2012 | $59,050,566 | " " | $47,410,600 | " " | $38,973,759 | " " |
| 2013 | $61,588,529 | " " | $49,580,010 | " " | $40,856,714 | " " |
| 2014 | $64,031,005 | " " | $51,682,470 | " " | $42,691,734 | " " |
| 2015 | $66,369,464 | " " | $53,711,592 | " " | $44,473,961 | " " |
| 2016 | $68,603,742 | " " | $55,668,833 | " " | $46,206,490 | " " |
| 2017 | $70,725,989 | " " | $57,548,920 | " " | $47,885,793 | " " |

## Actuarial Liabilities- Growth Rates

| | | | | | | |
|---|---|---|---|---|---|---|
| 2009 | 5.77% | =[(b-a)/a] | 6.04% | =[(b-a)/a] | 6.31% | =[(b-a)/a] |
| 2010 | 5.39% | =[(c-b)/b] | 5.68% | =[(c-b)/b] | 5.95% | =[(c-b)/b] |
| 2011 | 5.00% | " " | 5.28% | " " | 5.55% | " " |
| 2012 | 4.64% | " " | 4.92% | " " | 5.18% | " " |
| 2013 | 4.30% | " " | 4.58% | " " | 4.83% | " " |
| 2014 | 3.97% | " " | 4.24% | " " | 4.49% | " " |
| 2015 | 3.65% | " " | 3.93% | " " | 4.17% | " " |
| 2016 | 3.37% | " " | 3.64% | " " | 3.90% | " " |
| 2017 | 3.09% | " " | 3.38% | " " | 3.63% | " " |

**Source:**

State of California- Close Group GASB 43/45 Projections, Actuarial Valuation as of June 30, 2008". Exhibit II(a).