DB*plus*: A New Option for NUFA's Nipissing University Pension Plan (NUPP) Members

September 2018

General Information

In the spring of 2018, the Colleges of Applied Arts and Technology (CAAT) Pension Plan introduced a second plan design (DB*plus*), which is being made available to most employers and employees in the public, private, and voluntary sectors across Canada.

The pension benefits earned in the original CAAT plan (which now goes under the name "DB*prime*") are known in advance of retirement and do not change over the course of a career. However, "stability contributions" are sometimes required from employers and employees to build reserves in order to avoid potential funding shortfalls or future service benefit changes. CAAT's DB*prime* Plan has in recent years charged additional contributions to build sizeable reserves to withstand future investment volatility and ensure sustainability.

CAAT Plan members and employers currently pay an additional 3% in stability contributions on top of their average 9.2% in "regular" contributions, for a total of about 12.2% each. To give an indication of what that would have meant for NUFA's Nipissing University Pension Plan (NUPP) Members if we had been members of DB*prime*, let's look at a faculty member at the top of the Associate Professor grid earning $139,000 per year. She would have had to contribute $4,200 of her annual salary, in addition to her regular contributions, during each year that the stability contributions were in effect. The employer would also have had to match those contributions.

In contrast, in DB*plus*, the total contributions are fixed, hence employees and employers in this plan will never have to make stability contributions. This enables employers to plan budgets more easily while employees can count on reasonably consistent take-home pay. However, while by far the largest portion of accrued pension benefits earned over a career are known in advance of retirement and do not change, some of the benefits earned are conditional on the funding status of the plan (see below, for more details).

For full-time workers, contribution rates in DB*plus* can be set at any level from 5% to 9%. At Nipissing, the contribution rate will depend on the outcomes of collective bargaining. NUFA will negotiate a contribution rate of 9% on total earnings for its full-time NUPP Members. This includes earnings below the Canada Pension Plan's "Year's Maximum Pensionable Earnings" (YMPE, set at $55,900 in 2018). Each Member's 9% contributions will be matched by the employer (hence contributions will equal 18% of total earnings). (As a contrast, Ontario Teachers' Pension Plan [OTPP] Members currently pay contributions at 10.4% below the YMPE and 12.0% above the YMPE; these contributions are matched by Nipissing.)

A 9% contribution rate is similar to what most of us who are not in the OTPP currently contribute to the NUPP. A rough estimate is that 60% of the NUPP's FASBU members pay pension contributions between 8.0% and 8.5%; 30% pay between 7.5% and 7.9%; and 10% pay between 7.0% and 7.4%. These contributions are then matched by the employer.[1]

In short, *the current contributions of NUPP members are not far from where they need to be in order for us to enter a solid, defined benefit pension plan*.

Sample NUFA Member

In DB*plus*, a Member builds her base pension with yearly contributions, matched by the employer. The base pension is then typically supplemented with annual Average Industrial Wage (AIW) enhancements, in order to preserve the real value of her benefits over the course of her career (see below, for more details). The pension eventually received is not linked to the best five years of her earnings, as would be the case in DB*prime*. Rather, her pension is a product of total earnings and their resulting contributions; the pension accrues over the course of her career.

accrue *verb* to increase over a period of time, often with the periodic addition of contributions

She has accrued a pension of $25,000.

Let's look at a sample Member, examining for illustrative purposes the accrual of her pension at the beginning and ending of her career (the large middle portion of her career has been left out of the table below, while annual earnings and annual contributions have been rounded slightly).[2]

So how exactly would her pension accrue in DB*plus*? Let's look at a few rows in the table. At age 35 in 2018, her first year of employment, she contributes 9% of her salary ($7,110), contributions which are matched by her employer ($7,110 x 2 = $14,220).

The $14,220 is multiplied by an Annual Pension Factor (APF) of 8.5% (.085), which determines her "guaranteed base pension" accrual for the year, at $1,209. Because the AIW enhancement is applied to *last year's* total pension accrual – and she was not in DB*plus* in 2017 – there is no enhancement in her first year of work.

At age 36 in 2019, her second year at Nipissing, her income and her contributions have increased. Her pension accrual for the year is $1,257. Her AIW for 2019 is 2.2% of *2018's* total pension accrual (so, $1,209 x .022 = $27).

Her total pension accrued by the end of 2019 is the sum of:

(1) her total accrual at the end of the previous year ($1,209);

(2) the current year's guaranteed base pension ($1,257); and

(3) the current year's AIW increase ($27).

The new total of her accrued pension is $2,492 ($1,209 + $1,257 + $27).

This pattern continues every year for the rest of her career. All the Member has to do is focus on her teaching and research, while watching her pension contributions grow into a guaranteed defined benefit.

As can be seen in the table, her accrued pension is experiencing its strongest growth toward the end of her career, in accordance with her much higher salaries, contributions, and AIW enhancements. For example, in her last full year of work, at age 64 in 2047, her guaranteed base pension accrual for the year is $3,770, while her AIW increase is $1,830 ($83,199 x .022).

Her total pension accrued by the end of 2047 is the sum of:

(1) her total accrual at the end of the previous year ($83,199);

(2) the current year's guaranteed base pension ($3,770); and

(3) the current year's AIW increase ($1,830).

The new total of her accrued pension is $88,799 ($83,199 + $3,770 + $1,830).

By the end of her 30-year career, she has a pension of just over $93,000 (see the bottom right-hand corner of the table). The $93,000 will be her pension for life, mostly protected from increases in inflation, subject to plan funding. (The CAAT Plan calculates inflation protection at a rate of 75% of the average annual increase in the Consumer Price Index [CPI].)

Age	**A** Year	**B** Annual earnings	**C** Annual contributions (employer + employee at 9% each)	**D** Guaranteed base pension earned this year (8.5% of contributions)	**E** AIW enhancement of 2.2% (applicable to *last year's* total pension accrual)	**F** Total pension accrued to the end of this year
35	2018	$79,000	$14,220	$1,209	$0	$1,209
36	2019	$82,160	$14,790	$1,257	$27	$2,492
37	2020	$85,450	$15,380	$1,307	$55	$3,855
38	2021	$88,860	$16,000	$1,360	$85	$5,299
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62	2045	$227,790	$41,000	$3,485	$1,601	$77,862
63	2046	$236,900	$42,640	$3,625	$1,713	$83,199
64	2047	$246,370	$44,350	$3,770	$1,830	$88,799
65	2048 *	$149,120	$26,840	$2,281	$1,954	$93,034

* Not a full year of service.

Three Funding Levers

As noted, the downside of fixed contributions is that, on occasion, some benefits can be reduced. There are three funding levers specific to DB*plus* which will be used if necessary by the Plan's Board of Trustees to maintain adequate funding levels, in accordance with the CAAT Plan's Funding Policy.

These funding levers affect *future* pension accruals only. Any pension accrued, with each (monthly) contribution, is locked-in and cannot be reduced by law, under the Ontario Pension Benefits Act.

(When reading below, note that the CAAT Plan is 118% funded, as of January 2018.)

The three funding levers are:

(1) *Annual Pension Factor (APF)*: Total annual contributions (employer and employee) are multiplied by the APF to determine your guaranteed base pension accrual for the year. The APF is set by the plan's funding policy; it is currently 8.5%. So with this APF, as we saw in the previous table, an annual contribution of $14,220 multiplied by 8.5% would produce an accrued guaranteed base pension of $1,209.

CAAT would only consider reducing the APF below 8.5% if the overall funding level for the plan fell below 100%. If this occurs, it would lower the guaranteed base pension accrual for that year (prior years would keep the 8.5% accrual).

Conversely, CAAT would consider increasing the APF (to 9.5% or 10.5%) if the plan were in funding levels 5 or 6 (a funded ratio of approximately 128% and above). If this occurs, it would increase the guaranteed base pension accrual for the year.

If the plan's funding level falls below 100%, then once it returns above 100%, CAAT will consider a "catch up," in order to restore pension accruals lost in previous years, as the result of lower APFs.

(2) *Annual Average Industrial Wage (AIW) Enhancements*: Except for your first and last years of work, your annual benefit will typically be augmented by that year's increase in the Average Industrial Wage (AIW). This rate will

fluctuate from year to year. Over the period 1998 to 2017, the AIW increase has averaged 2.2% (so this is the rate which is used for illustrative purposes in the DB*plus* Value Tool).

The AIW enhancement ensures that the purchasing power of an accruing pension remains relatively constant, despite the passage of time. In meeting this objective, DB*plus* focuses on average *wage* increases, not average consumer *price* increases (CPI or "inflation"). This is advantageous to plan members, because in Canada over the 90 years from 1922 to 2013, inflation increased on average 2.9% each year, while the industrial wage increased on average 4.3% each year.

The AIW increase is applied at funding level 3 (100% funded) and above. The AIW increase is not applied below 100% funding.

If the plan's funding level falls below 100%, then once it returns above 100%, CAAT will consider a "catch up," in order to restore pension accruals lost in previous years, when AIW enhancements were not applied.

In sum, given the Plan's strong financial status (currently 118% funded), it is unlikely we would receive lower APFs or a suspension of the AIW enhancements. As a guide to what might happen going forward, the CAAT Plan has increased its members' pensions by 75% of the rate of inflation every year since conditional inflation protection was introduced in 2007.

To speculate on just how many years we might incur lower benefits, we can note that over the half century between 1967 and 2016, annual gross domestic product (GDP) in Canada dropped on only three occasions: by 3.2% in 1982; 2.1% in 1991; and 2.9% in 2009. GDP increased in 47 of those 50 years, though in some years it did so only slightly, as a result of "slow downs" in the economy. Overall, economic growth should be reasonably robust during the vast majority of the years that will make up our careers.

Investment returns, for sure, are more volatile, though they are also strong over time, as evidenced by the CAAT Plan's performance since the financial crisis of 2008 (see the table on the next page).

Year	Net investment rate of return (%)	Plan funding level (%) (on a going concern basis, as of January 1)
2008	- 21.7	104
2009	14.7	97
2010	12.6	96
2011	3.4	101
2012	11.3	102
2013	13.9	104
2014	11.5	105
2015	8.1	107
2016	8.0	110
2017	15.8	113
2018		118

Following the financial crisis of 2008, the worst such crisis since the Great Depression of the 1930s, the plan funding level fell slightly below 100% for two consecutive years (2009 and 2010), then rebounded to 101% funded by 2011. This suggests that if we received lower APFs or a suspension of the AIW increases, these would likely occur over a period of just a few years. Even then, there exists the possibility that these losses would be made up when plan funding levels improved.

Note, too, that when the Plan dropped below the funded level of 100%, it had been at a funding level of 104% (on 1 January 2008). Given the Plan's current funding level of 118%, then, the odds of any benefit reduction occurring are quite small. Keep in mind as well that the type of investment losses which occurred in 2008 took a heavy toll on defined contribution "capital accumulation plans," yet the individual participants in these plans had to bear all the risk of losses on their own.

(3) *Early Retirement Factor (ERF)*: In DB*plus*, if you were to start your pension before age 65, it would be reduced through the application of an Early Retirement Factor (ERF). The ERF will depend on the plan terms in effect at the time of your retirement.[3]

The ERF is set at its highest rate of 5% per year (about 0.42% per month) when the funding level of the plan is below 100%.

The ERF is also set at 5% if the plan is in funding levels 2 (100% funded) or 3 (roughly 100% to 108% funded).

Beginning at funding level 4 (above roughly 108% funded), the plan will consider lowering the ERF to 4% or 3%. (Note that the CAAT Plan is currently in funding level 4, and the initial DB*plus* ERF has been set at 3% per year, or 0.25% per month.)

At funding levels 5 and 6, the ERF must be set at 3%.

In terms of the three funding levers, the ERF is the one most likely to move in a direction that would negatively affect NUFA members, as it would increase to 5% if the plan's funding were to fall below roughly 108%, into funding level 3.

This potential negative, however, only applies if you retire before age 65. Even then, a 5% per year early retirement reduction should be understood as something necessary to subsidize your early retirement. (Note that the CPP reduces benefits by 7.2% per year for those who commence their pension before age 65.)

Reducing the Emphasis on Early Retirement

A major difference between the two CAAT options is that in DB*plus*, there is no "85 factor," by which you can retire with an unreduced pension if you are at least 55 years old and your age and your years of service add up to at least 85. DB*plus* does not have a "60/20 rule" either, where you can retire with an unreduced pension if you are at least 60 years old and have at least 20 years of service.

In DB*plus*, while you can also retire as early as age 50, you cannot take an unreduced pension before age 65. In addition, there are no "bridge benefits" for those who retire before age 65, as there are in DB*prime*. In sum, if you retire before age 65, you will always experience a reduced pension compared to what you would have earned if you waited until age 65 to retire.

Still, DB*plus* seems to align better with NUFA's membership, when compared to DB*prime*. For example, in DB*prime*, few NUFA Members could retire under the "85 factor" with an unreduced pension, given that only 10% of NUFA Members begin work before age 30. To retire at age 55 without penalty, they would have to start work by age 25 at the latest and work 30 years (55 + 30 = 85).

In contrast, the vast majority of our Members would be able to retire at age 60 in DB*prime* with an unreduced pension, because they would have at least 20 years of service. If current retirement patterns are anything to go by, though, few of our Members would take advantage of that option. This is related somewhat to our membership in a DC plan, though it is also likely because Members enjoy their jobs; they need to (or want to) earn high incomes; and they perhaps are not ready to retire in their early 60s, given longer lifespans, knowing that Members aged 65 will live, on average, to be close to 90 years old. In short, being in a pension plan that de-emphasizes early retirement, and focuses its funds on delivering larger pensions past age 65, will be beneficial for the vast majority of NUFA members.

The following table is an example of the pension reduction that would occur for our sample Member, giving details for each year between ages 60 and 64. (The projected pensions are obtained by choosing the desired "Retirement Age" for our sample Member, found under "Retirement Assumptions" in the DB*plus* Value Tool.)

Retirement age	**Pension at age 65** (assuming no further contributions past "retirement age")	**Early Retirement Factor (ERF) of 3% per annum**	**Reduced pension, taken at "retirement age"**
64	$87,200	3%	$84,600
63	$81,700	6%	$76,800
62	$76,400	9%	$69,500
61	$71,400	12%	$62,800
60	$66,600	15%	$56,600

Let's say she reaches age 60, and sees that her accrued benefits will give her a pension of $66,600 at age 65. That sounds good to her. However, if she starts her pension now, at age 60, it will drop to $56,600, because her total ERF is 15%. The potential loss of $10,000 a year is jarring, at first glance. That's a lot of money. However, it is not in fact a loss. No one will be going into her bank account each year and withdrawing $10,000.

Focusing on a potential loss may blind her to the potential gain, namely a pension of $56,600 per year for the rest of her life. This will include total pension income of $283,000, which she will receive in her first five years of retirement, between ages 60 and 64. When we compare her two options of retiring at 60 (with a pension

of $56,600) or 65 (with a pension of $66,600), we can see that over her lifetime her pension income under the two options will be similar after roughly 28 years ($283,000 divided by her annual $10,000 "loss"). Things will even out when she is 93 years old!

Of course, our sample Member would have a significantly higher pension if she continued to work past age 60, while making large pension contributions each year. But that's a different option.

At age 60, rather than focus on the ERF, she needs to perform a calculation. She should look at all her potential income sources: her Canada Pension Plan (at age 65, or reduced if taken before 65); her Old Age Security, beginning at age 65; and other savings and investments. She then needs to ask: "If I add my 'reduced' pension of $56,600 to these amounts, is that enough money to adequately cover my annual expenses for the rest of my life?" If she answers "yes" to that question, she should happily retire and not be bothered by imaginary "losses."

But what if our sample Member answers "no" to this question? What if she finds the reduction too much to bear, and so realizes she needs to work a bit longer? What can she do? We are fortunate that the current FASBU collective agreement includes an important option, one that enables Members to work less, while making full pension contributions on their nominal salaries, hence building up the accrued value of their pensions.

Article 27.11 allows a Member to reduce her workload and receive pro-rated pay. Let's look at a Member at the top of the Associate Professor grid earning $139,000. She could, for instance, teach "two and one" (60% of her normal workload) for up to ten years, while earning $83,400 (60% of her nominal salary). She could request to pay pension contributions on her nominal salary of $139,000 and have the employer match those contributions.

Let's assume, instead of ten years, she works just two more years at 50% of her income ($69,500), teaching "two and one" in her second-last year and "one and one" in her last year. The income she earns will be more than the pension (of $66,600) she would have been pleased to take, so she's in a healthy financial position. The teaching load is relatively light, so that shouldn't be a concern either.

At age 62, her accrued benefits would give her a pension of $76,400 at age 65. With a 9% ERF (as she now has just three years to go to reach age 65), her reduced pension would be $69,500. Note that this is about $3,000 higher than the

unreduced pension of $66,600 she had accumulated at age 60 and was quite satisfied with, but could not take until age 65, unless she accepted a 15% reduction.

In short, her problem has been solved by a slight change of plan, one that would have her working at a relatively leisurely pace over the last two years of her career.

Value of the Pensions

Pensions in DB*plus* will be roughly similar to pensions in DB*prime*. Both plans are designed to return roughly $8 in benefits for every $1 of contributions that Members make over an entire career.

Still, according to CAAT's analysis, for the same contributions, DB*plus* will produce slightly *higher* pensions from age 65 onward, perhaps in the order of 5% to 10%. This is because the focus is on building bigger lifetime pensions per contribution dollar, whereas DB*prime* uses more of each contribution dollar for ancillary benefits which are not used by all members – for example, early retirement bridge benefits. NUFA Members, then, will do very well in the DB*plus* plan.

Furthermore, in addition to secure lifetime pensions, both DB*plus* and DB*prime* have the following features:

(a) post-retirement inflation protection of 75% (conditional on plan funding);

(b) a guarantee of five years' worth of pension benefits; and

(c) survivors' pensions set at 60% of Members' pensions, with no reduction to Members' pensions to pay for this feature (which is the case with most pension plans or when buying an annuity).

Purchasing an Accrued Pension Benefit

If we successfully negotiate to enter DB*plus*, Members will have the option to use the money in their NUPP (and other registered savings such as RRSPs) to purchase an accrued pension benefit. The final method of calculating these purchases has yet to be determined by CAAT; they are in the process of creating an Actuarial Cost Estimator for DB*plus* that will give Members a general idea of how much of an accrued pension benefit they could purchase.

A Member who makes a purchase would then add to her accrued pension benefits during her remaining working years at Nipissing. Both her newly-purchased pension accruals and her future accruals would be entitled to receive AIW increases, conditional on the funding level of the Plan.

Note that NUFA Members will not be required to purchase accrued pension benefits in DB*plus*; they can continue to invest their DC balances in their Manulife funds. They can also use any portion of their DC balance (say, 70%) to purchase accrued pension benefits in DB*plus* while leaving the rest (in this case 30%) in their Manulife funds.

We would also apply to CAAT for an "opt out," which would enable NUPP Members aged 55 and over to continue putting their monthly contributions into the Manulife DC plan for the remainder of their careers.

For further information, please see the DB*plus* website:

https://www.dbplus.ca

Appendix 1

Annual Salary Increases of a Sample NUFA Member, 2003-2018

In the DB*plus* Value Tool, we assumed our sample Member's annual earnings increased at a rate of 4%, which occurs mainly because of "Progress Through the Ranks" (PTR). So while 4% might seem high, as can be seen below, it is a somewhat conservative estimate.

The following table shows the typical career trajectory of a NUFA faculty member, using salary data from current and previous collective agreements. It presumes the individual was promoted to Associate Professor in her seventh year.

Over this 15-year period, her average annual salary increase was 5.6%. Over the last seven years (2012 to 2018), her average annual salary increase was 4.3%.

Salary as of May 1 in this year	Step on the grid	Salary	Annual increase (%)
2003	Assistant 1	55,700	
2004	2	59,800	7.4
2005	3	63,700	6.5
2006	4	67,900	6.6
2007	5	72,200	6.3
2008	6	76,700	6.2
2009	Associate Base	83,200	8.5
2010	Associate 1	88,400	6.3
2011	2	93,800	6.1
2012	3	97,500 (1% salary scale increase)	3.9
2013	4	102,300	4.9
2014	5	107,300	4.9
2015	6	111,300 (0% salary scale increase)	3.7
2016	7	115,900	4.1
2017	8	121,000	4.4
2018	9	126,200	4.3

Notes

[1] This "sliding scale" of contributions is a function of the fact that NUPP members contribute 5.7% on earnings up to the YMPE and 10% on earnings above the YMPE. An Assistant Professor making $82,000 is contributing 10% on just $26,100 of income ($82,000 minus $55,900), which results in total contributions of about $5,800 and an overall blended contribution rate of roughly 7.1%. Meanwhile, a Professor earning $156,540 is contributing 10% on $100,640 of income ($156,540 minus $55,900), which results in (maximum) total contributions of $13,250 and an overall blended contribution rate of roughly 8.5%.

[2] For further details beyond what are provided here, enter the following assumptions in the DB*plus* Value Tool. Her date of birth is 1983-07-01 (so she is 35 years old); her annual earnings in her first year of employment are $79,000; her retirement age is 65; and her annual earnings increase is 4%. It does not matter if she has a spouse. All of the "Pension Plan Assumptions" used are the default parameters found in the Value Tool. You can also enter your own information (age, earnings, etc.) in the Value Tool to see how much pension you might receive.

[3] Any changes to the parameters in DB*plus* would be announced about one year in advance. If the results of an actuarial valuation as of January 1 of a given year require a change in the ERF, or any other funding-level-based parameter, it would not take effect until the following January 1 at the earliest. Valuation results at January 1 are known by the February Board meetings.