WORK SAFE. FOR LIFE.
WORKERS' COMPENSATION BOARD OF NOVA SCOTIA

2020 Funding Strategy

With financial projections 2020–2024

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EXECUTIVE SUMMARY

The funding strategy outlines the WCB's planned approach to funding current operations and the eventual elimination of the unfunded liability. Funding of the Workplace Safety and Insurance System (WSIS) requires consideration of a number of complex variables and assumptions relating to future events. This creates significant uncertainty and limits our ability to accurately predict a precise funding date. As a result, we communicate the elimination of the unfunded liability as a range of possible dates.

The unfunded liability is expected to be eliminated in 2022. With the combination of less than expected investment returns in 2018 and limited time remaining to recover losses, elimination of the unfunded liability may be optimistic. Please note, a well-funded insurance system has reserves to ensure long term sustainability. To achieve this, a funding ratio well in excess of 100% will likely be required.

We believe the funding plan is viable given that assessment revenues continue to exceed current year claim costs by a substantial margin even in years where we have experienced significant investment losses. For 2020, the total portion of the rate expected to fund current operations is $2.40 leaving $0.25 to offset any shortfall of investment revenue and reduce the unfunded liability. A foundation scenario is used to prepare the financial projections and is the basis of the discussion included here. Details of the financial projections resulting from the foundation scenario are included in Appendix A and contemplate a funding date of 2022.

Annual revisions to the funding strategy are required to reflect actual experience and changes in assumptions. Actual claims experience, assessable payroll (premium revenue), investment experience, benefit enhancements, slow economic recovery and the accrual of costs associated with occupational disease in the latency period are among the factors incorporated into the funding plan.

The foundation scenario includes allowances for increases in annual claims costs incurred to reflect the impact of changes in people, processes and technology; as well as psychological impairments that can significantly challenge return to work. The current plan anticipates that we will continue making progress in reducing workplace injuries and that by 2024, we will reduce injury frequency to 1.56. However, we have revised our estimates relating to duration to reflect recent experience. Following an 11-day increase in Time-Loss Days Paid per 100 Covered Employees (from 241 in 2017 to 252 in 2018), we now expect that previously anticipated reductions in Time-Loss Days Paid per 100 Covered Employees will take longer to emerge. Our new estimates are based on the assumption that improvements will start to emerge in 2020 and that Time-Loss Days Paid per 100 Covered Employees will decrease to 224 days[1] by the end or 2024. Challenges with return to work and the impact of significant investments in people processes and technology is expected to increase costs in immediate future. However, these investments are expected to deliver significant improvements in claim outcomes. As a result, the portion of the rate used to cover current year benefit costs is expected to remain at $1.79 in 2019, $1.77 in 2020 and $1.76 from 2021 to 2025.

The targeted outcomes will be achieved through a continued focus on prevention and return to work; and a comprehensive program of change known as the Business Transformation Advancement Program (BTAP). The cost of the BTAP initiatives is not completely final at this point, but based on actual costs to date and projections for the next few years, we expect this will measure in the tens of millions of dollars for this large scale modernization program. The program will continue to advance over the next year and is expected to increase the portion of the rate used to fund administration expenses and legislated obligations from $0.54 (2018) to $0.67 in 2019 and $0.63 in 2020. By 2024, the portion of the rate used to fund administrative costs is expected to reduce to $0.54.

1 Using the Composite Duration Index, average claim durations are projected to be 121 days in 2024.

The base case currently reflects a combined cost of claims and administration that is expected to decrease from $2.33 (2018) to $2.29 in 2024. The probability of achieving these estimates will be significantly improved based on the BTAP initiatives. As per the current version of the plan, the excess available to fund the shortfall of investment income and reduce the unfunded liability will increase from $0.32 (2018) to $0.33 in 2022; the year the unfunded liability is expected to be eliminated.

We will continue to focus on eliminating the net unfunded liability with the average assessment rate held at $2.65/$100 of payroll. While the portion of the assessment rate needed to fund current operations is expected to decrease over time, we will not make sufficient progress in reducing the unfunded liability if the portion of the rate needed to fund the shortfall of investment revenue increases.

Financial gains occur when either revenue is greater than expected or costs are lower than expected. The plan contemplates a heavy investment in BTAP along with fairly aggressive cost saving targets over the next five years. It is unlikely that any additional savings will occur prior to the estimated funding date as BTAP is in its early stages and implementation efforts will span multiple years.

Significant gains or losses could occur on investment income in any given year. However such large gains or losses are usually offset in a subsequent year. For example, in 2008 significant losses occurred in global financial markets. A considerable portion of these losses were recovered in 2009 and more significantly in 2010. The funding strategy assumes that returns over the next five years will be in line with the long term assumption of approximately 6.0%. If these returns are not achieved, a lengthening of the funding period or a rate increase would be required.

Assessment revenue is another area where gains are theoretically possible. However the increase would have to be significant to impact the funding period. A five percent increase in assessment revenue would require a sustained increase of $500 million in the payroll base for assessable employers.

The proposed 2020 Administrative, Legislated Obligations and System Support budget of $90 million reflects the operational, capital and project investments needed to deliver results in the various areas noted above while maintaining the current average actual assessment rate, unfunded liability retirement date, and a continued focus on reducing claims costs through investment in prevention and return to work.

The net unfunded liability is expected to decrease by $73 million in 2020; the result of a gain of operating revenues over expenses.

The projections shown here are estimates based on the assumptions noted. It is important to note that actual results will vary from the information presented and the variation may be material.

BACKGROUND

The *Workers' Compensation Act* passed in the spring of 1995 makes specific reference to the Workers' Compensation Board funding requirements in Section 115. That Section states that the WCB must make an assessment on and collect from employers sufficient funds to:

a) meet the costs of all claims payable during the year;
b) subject to Section 116, meet the future costs of all claims for all injuries occurring during the year;
c) pay the expenses incurred in administering this Act; and
d) pay all other amounts payable from the accident fund.

These legislated funding requirements, along with the goal of bringing the workers' compensation system to "full funding" gives the WCB a clear guideline for funding and budgeting on an annual basis. The funding strategy incorporates this foundational guidance and other key assumptions into a financial model that provides a forecast of the approximate year when assets will be sufficient to meet liabilities.

The original funding strategy developed in December 1994, included a wide range of assumptions around the impact of introducing earnings loss as a basis for compensation. The estimated elimination of the unfunded liability in the original funding strategy model was 2039. Since the original estimate, the financial position of the WCB has, for the most part, steadily improved and the period during which the unfunded liability is to be eliminated has been reduced. Up until 2007, the funded position of the WCB improved despite funding challenges arising from new and enhanced benefits such as chronic pain, reinstated survivor benefits, enhanced supplementary benefits, benefits for fire fighters who develop certain types of cancer, and changes to retroactive survivor benefits.

In 2008, investment markets delivered substantial losses and a global economic recession followed. Investment returns showed improvements in 2009 and 2010. However, this was not sufficient to counter the impact of the negative returns in 2008. A setback occurred in 2011, when invested assets grew at a rate well below the revised long term assumption. Markets rebounded from 2012 to 2014 and returns for these years exceeded the long term assumptions by a significant margin. This rebound was somewhat expected as past experience suggests that large fluctuations are often offset by similar opposing variances in a subsequent year. On balance, for the period 1995 to 2018, investment returns averaged 7.0% per annum; exceeding our long term assumption of 6.0%.

The unfunded liability was $304 million at the end of 2018. This represents a funded ratio of about 85.5%. A well-funded insurance system has reserves to ensure long term sustainability. Typically, this requires a funding ratio well in excess of 100%.

Going forward, we remain focused on improving outcomes for injured workers and on reducing the insurance budget in a substantial way. Through persistent effort, we will endeavour to accomplish these goals while achieving relative stability in assessment rates and in the benefits paid to injured workers.

The financial projections of a Workplace Safety and Insurance System (WSIS) are complex and are subject to variance in one or more key variables. Accordingly, annual revisions to the funding strategy are required and can involve material changes in financial projections covering a relatively long period of time. The funding strategy was originally designed to assess alternatives where a choice was to be made between changing rates, changing benefits, or changing the funding period.

While we continue to explore a variety of scenarios, alternatives explored in more recent years are increasingly complex in nature and capturing the impact of these complex scenarios is becoming more challenging. We continue to work with our actuarial consultants to better understand the likelihood and impact of various future events and more accurately predict the impact of changes in the cost structure on the benefits liability.

To a large extent, the funding period has been used to absorb variations between financial projections and actual results. This approach has allowed us to meet a key objective of maintaining a plan to eliminate the unfunded liability while providing relative stability in assessment rates and in the benefit structure. With this in mind, we have constructed a foundation scenario incorporating recent results, assumptions on future performance and the elimination of the unfunded liability in 2022; likely the earliest point in a range between 2020 and 2024.

The target for total revenues for 2020 is $464 million based on:

- a projection for insured firms' assessable payroll of $12.0 billion, yielding assessment revenue of $318 million,
- investment income of $138 million, and
- revenue from self-insured employers of $8 million (administration fee).

In 2020 the unfunded liability is expected to decrease by $73 million. This results from the total revenue target of $464 million minus

- claim costs of $212 million (insured claims),
- the growth in present value of the benefits liability of $106 million,
- administrative costs of $65 million,
- adjustment for future administration costs reducing liabilities by $(2) million ,
- legislated obligations & system support of $20 million, and
- actuarial experience adjustment reducing liabilities by $10 million.

Additional key projection assumptions made in the funding strategy for 2019 and onward include:

- Gross Interest Rate of 5.25 % per annum,
- Investment Income of 7% -2019 to 2022 per annum ; 6% -2023 forward,
- Consumer Price Index (CPI) of 2%,
- Continued progress on savings targets arising from investments in prevention, return to work and service delivery,
- Unfunded liability eliminated in approximately 2020 to 2024 (2022 anticipated in the foundation scenario), and
- Average assessment rate for 2020 is $2.65, holding constant until fully funded.

Long-term disability is the WCB's largest cost area. Although we have seen some improvement in recent years, costs in 2018 rose well above inflation and continues to be of concern. Given the aging workforce and the incidence of chronic pain and post traumatic stress disorder in Nova Scotia, these benefits represent a significant area of risk for the WCB.

The funding strategy presents the foundation scenario on which future annual revisions may be based. The foundation scenario contemplates an average assessment rate of $2.65 in 2019.

Financial gains can occur when revenue is greater than expected and/or costs are lower than expected. The probability of exceeding cost savings targets is currently considered low as we have set aggressive savings goals. However, fluctuations in investments returns could continue throughout the next several years. We therefore caution that it may be unwise to adjust the premium or benefit structure based on gains or losses in this area absent sustained change over multiple years.

Assessment revenue could also generate gains in any given year. However, a significant increase would be required to impact the funding period. For example, a five percent increase in assessment revenue would require a sustained increase in the payroll base for assessable employers of approximately $500 million. Increases in payroll can result from growth in wages, growth in the workforce, and increases in the maximum assessable payroll. If such a sustained increase were to occur, the funding period could be reduced by one to two years.

We expect to see relative stability in the workforce from now until the unfunded liability is eliminated in 2022. If overall growth in the workforce does not occur as expected (more or less), an adjustment to the funding strategy will likely be required.

It is expected that the cost of delivering health care will continue to grow at a rate beyond inflation. Given recent reductions in claim volumes, we project net cost increases averaging less than 1% annually in 2019 with increases of approximately 4% from 2020 forward. In 2018, health care costs made up approximately 28% of total claims costs incurred. The remaining 72% of claims costs incurred are almost all wage related. It therefore seems reasonable that over the longer term, these costs will grow at a rate similar to growth in payroll. We therefore assume wage growth and increases in covered payroll will continue to generate payroll growth approximating CPI plus 1%; consistent with the rate of growth expected on wage related benefits.

Positive economic conditions, combined with operational improvements, have improved the Workers' Compensation Board's actual financial position since December 1994. However, positive variances from the funding plan are subject to reversal as was the case in 2003 with the inclusion of the estimated costs of chronic pain related benefits; in 2007 when we experienced higher than expected costs in both long term disability and health care along with lower than expected investment returns; and most recently in 2008 when we experienced significant losses in our investment portfolio.

Since its adoption, the funding strategy has been adjusted annually to reflect the most recent actual results and to incorporate revised assumptions involving key variables. A limitation of the funding strategy model is that it does not fully reflect the likely changes in the estimated liability that will accompany planned reductions in the cost structure. Given the complexity of the savings targets and the limitations of the model noted briefly above, the funding date of 2022 indicated in the foundation scenario should be viewed as the earliest date within a potential range of dates spanning 2020 to 2024.

RECENT FINANCIAL RESULTS

The operating results for 2018 and 2017 are attributed to the following factors:

	2018 (000's)	2017 (000's)
Assessment revenue in excess of current year costs	$ 29,573	$ 39,044
Investment income above (below) liability requirements*	(123,925)	53,988
Actuarial liabilities and adjustments less than previously anticipated	2,453	8,692
Other comprehensive income from actuarial(losses) on post-employment benefits	5,409	(1,400)
Total comprehensive income	$ (86,490)	$ 100,324

**Surplus/(Shortfall) of investment income relative to growth in present value of the benefits liabilities.*

In workers' compensation, assessment revenue should roughly equal current year costs, otherwise transfers to or from future or past employers are occurring. These intergenerational transfers to current and future employers from past employers will be the case in Nova Scotia until the unfunded liability is eliminated. The elimination of the unfunded liability will discontinue these transfers of wealth. Currently, approximately $0.32 (2018) of the assessment rate is being used to absorb the shortfall between investment income and the growth in the benefits liability, and to eliminate the unfunded liability. If targeted performance indicators and investment returns are achieved as expected, $0.33 of the assessment rate will be used to eliminate the remaining unfunded liability in 2022.

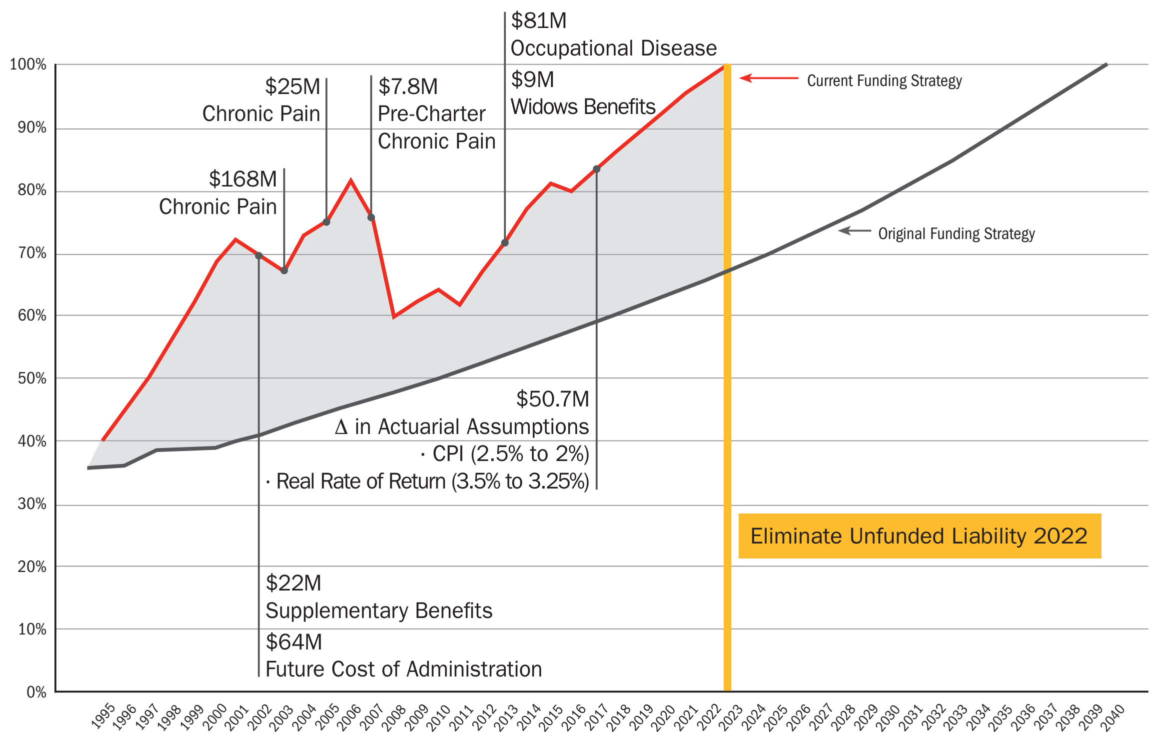
In a system without an unfunded liability, investment income should be expected to equal liability requirements. That is, the invested funds should increase at a rate equal to the increase in the liability. Until we eliminate the unfunded liability, a portion of the assessment rate will be required to absorb the shortfall of investment income.

In the recent past, we have seen some significant actuarial experience adjustments related to health care and long term disability costs. As experience appears to be improving, and investments in health care appear to be impacting outcomes, we have incorporated favourable adjustments totalling approximately $30 million from 2019 to 2021. Actuarial adjustments and changes in assumptions, in a stable system, should be held to marginal levels, reflecting minor differences between actual experience and estimates.

FUTURE CLAIMS COSTS AND POTENTIAL SAVINGS

Real changes in claims costs incurred, excluding inflation, may result from the following factors:

1. The **benefit structure** contained in the *Workers' Compensation Act*, which is the governing legislation. A comprehensive review of the legislation was completed in March 2002 (Dorsey Report). Court decisions and resulting legislation periodically change coverage. For example, in 2003, a court decision relating to chronic pain benefits had a significant impact on the unfunded liability and on the estimated claims costs incurred for current and future years. In 2013, legislation was introduced to extend additional retroactive benefits to survivors whose benefits were terminated upon remarriage. These and other changes that have increased the benefits liabilities are chronicled below:



2. **Actuarial and accounting standards** for reporting liabilities of Workers' Compensation Benefits. In 2013, the Actuarial Standards Board adopted a new standard of practice requiring an estimation of liabilities for occupational disease during the latency period. In prior periods, the liability only included an amount for occupational disease confirmed through diagnosis. This change had a significant impact on the benefits liabilities and, to a lesser extent, on the claims cost incurred.

3. **The number and severity of injuries**, which occur in work places across the province. This is normally correlated with the real growth in the economy but also reflects to some degree the shift between different sectors of the economy. This is important, as certain sectors are subject to more workplace injuries than other sectors. In order for the WCB to achieve the targeted results, it is critical that work places across the province embrace prevention and return to work and work with the WCB to improve claim outcomes.

4. **Administrative processes** can have a significant impact on claims costs incurred, primarily due to changes in the way that claims are administered. For example, the WCB's early intervention philosophy is anticipated to reduce claims costs incurred over time by shortening durations for the average claim and reducing the number of claims going on to long term disability. However this philosophy of increased early support has increased some costs as we look more broadly to determine how we might assist injured workers to return to work in a safe and timely manner. These expenses are intended to reduce overall costs by helping injured workers return to work.

It is important to recognize that the *Workers' Compensation Act* of Nova Scotia has legislative language on the process of estimating potential earnings ability (EPEA) requiring that alternative work be both suitable and available. Relative to other jurisdictions, this limits the impact of the EPEA process on claims costs as suitable and available work is difficult to secure in rural Nova Scotia.

Experience with the earnings loss system indicates a lower volume of new long term earnings loss awards from earlier injury years, and a higher than expected volume of these awards from more recent injury years. The increase in long term awards is in part a result of the inclusion of chronic pain as a compensable injury and the run off of claims from injury years 2002 through 2005; the same period that generated sharp increases in short term disability and health care costs.

The pace of long term awards has slowed significantly in recent years. This has led to favourable experience adjustments in long term disability for the last two years. Progress achieved to date is expected to continue into the future and we anticipate continued favourable experience in future years. Additionally, the potential to reduce long term benefit costs seems reasonable and achievable given Nova Scotia's experience relative to other jurisdictions. In 2017, the number of injured workers receiving wage loss benefits six years after the injury (per 100,000 workers) was the highest among all the provinces in Canada and more than double the national average.

In 2018, the cost of funding current injuries (administration, legislated obligations and benefit costs) was $2.33, leaving $0.32 available to fund the short fall of the investment income and apply to the unfunded liability. Based on past experience and planned investments in people, process and technology for 2019, we expect current year costs will increase to $2.45. By 2022, we expect to reduce the cost of current injuries to $2.32 by achieving a reduction in time loss days per 100 covered workers to 242 days (down from 251 days in 2018) and injury frequency of 1.62, down from 1.72 in 2018. Sustaining duration and injury frequency at target levels will be key to the financial sustainability of the system and in positioning the WCB to consider improvements in rates charged to employers and/or benefits paid to injured workers.

A portion of the insurance budget savings will be achieved through a comprehensive program of change that will require significant investment in capital and projects over the next five years. In the short term, investments in technology, business process changes and related depreciation will add approximately $0.13 cents to the portion of the rate used to fund administration and legislated obligations in 2019.

ADMINISTRATION COSTS AND LEGISLATED OBLIGATIONS

The proposed 2020 Administrative, Legislated Obligations and System Support budget of $83 million includes the investments needed to deliver the results targeted in the long term strategy. Maintaining the current average actual assessment rate, unfunded liability retirement date, and projected claims cost reductions continue to be a priority of the WCB. Details regarding the breakdown of operational, capital and project investments are outlined in the 2020 Operational Plan and Budget.

FACTORS CONSIDERED

Funding of the Workplace Safety and Insurance System (WSIS) reflects the balance struck between the level of benefits, rates charged to employers and the WCB's funding position. When financial results are different from the target, whether better or worse, the choice becomes to adjust benefits, rates, or the WCB's funding position by lengthening or shortening the elimination period for the unfunded liability. As the level of benefits is set by the legislature, and is subject to interpretation by the courts, the funding equation is not entirely within the control of the WCB as the neutral administrator.

Many of the variables that influence the funding plan, such as CPI, economic activity and investment returns, are outside the control of the WCB and can be subject to significant variability. While we make every effort to provide reasonable estimates, there are times when extraordinary events can occur that can have a significant impact on the funding plan. For example, the payroll base in Nova Scotia grew considerably in the mid to late 90's and we experienced 30% growth in covered payroll from 1995 to 2000. The growth in payroll together with better than expected investment returns led to significant progress on the elimination of the unfunded liability and the estimated funding period was reduced. Conversely, in 2008 investment markets delivered significant losses globally and a lengthening of the funding period was required.

Factors to consider when constructing a strategy to eliminate the unfunded liability include:

1. **Stability** – regardless of the rate strategy selected, employers prefer to have some certainty and a long-term outlook with respect to the direction rates are heading as opposed to a significant amount of volatility.

2. **Competitiveness** – at more than 2 1/2% of payroll, Nova Scotia rates are currently the highest rates in the country while providing among the lowest benefits to individuals. Certainly any additional increases will diminish Nova Scotia's competitiveness relative to our neighbouring provinces. The Workers' Compensation Board is working with stakeholders to develop strategies to avoid further rate increases.

3. **Public policy** in the context of an unfunded liability - the on-going existence of a large unfunded liability tends to have a dramatic impact on any significant policy or financial initiative of the WCB or the Legislative Assembly when considering new legislation.

4. **Intergenerational transfers** – the sooner the unfunded liability is eliminated, the sooner intergenerational transfers between employers are avoided in terms of payments for past years being absorbed by current and future employers. This is particularly important to the extent that the mix of the economy amongst industrial sectors is changing over time. Even if the actual employers remained relatively consistent over time, their appropriate share of the risk and costs based on their industry sector might change over time.

5. **Security** – the continued existence of an unfunded liability calls into question the sustainability of the fund and the security of future benefits.

RATIONALE FOR KEY ASSUMPTIONS

A key point to emphasize throughout the discussion of the estimates used in establishing the funding strategy is the interdependence of various assumptions.

In some cases, the relationship between two or more assumptions plays a more significant role in the projections than the choice of individual assumptions. For example, when determining the assessment rate required to fund the cost of future injuries, it is the relationship between the rate of claims cost increase and assessable payroll growth rate that is more important than either of the individual rates. Therefore, it is important to take care in setting both individual assumptions and the relationships among the various assumptions.

The rationale for the various assumptions proposed is as follows:

1. **Consumer Price Index Assumption**

   Based on an analysis of CPI using a running 10-year, 20-year and 50-year average, the long-term assumption for CPI is 2.0%.

   For planning, the Conference Board of Canada's forecast as of March, 2018 indicates the following inflation rates for Nova Scotia):

2019	2.1%
2020	2.0%
2021	2.0%
2022	2.1%
2023	2.2%
2024	2.0%

The long-term assumption of 2.0% is considered the most relevant for the Workers' Compensation Board's long-term financial planning, as we are primarily concerned with specific components of inflation; wages and health care costs, rather than the general inflation rate.

2. **Claims Costs Incurred**

The original funding strategy assumed claims costs incurred would grow at the rate of inflation (CPI) except for health care costs which would grow at CPI plus 0.5%. The inflation assumption for health care costs was increased to CPI plus 1% in 2002, CPI plus 1.5% in 2003, CPI plus 1.75% in 2004 and CPI plus 3.5% in 2005. For 2018 through 2023, we assume health care costs will grow at a rate of CPI plus 2.25%. For the most part, all other benefits are expected to grow at CPI plus 1%.

3. **Assessable Payroll**

The original funding strategy assumed that the rate of growth in claims costs incurred would exceed the rate of growth in assessable payroll by approximately 1% a year. This was reasonable based on the figures from 1971 to 1992, which indicated the compound rate of growth in assessable payroll was almost 10% versus claims costs incurred and administration, which had grown at almost 12%.

In the most recent ten years (2008 to 2018), the compound rate of growth in claims costs was consistent with the compound growth in payroll at just almost 3%. Data included in the AWCBC Key Statistical measures (2008 to 2017) show the Canadian average experience is that benefit costs increased by about .5% while assessable payroll increased by close to 3%. With the exception of 2009 and 2016, national growth in payroll has been fairly consistent over the past 10 years. However, benefit costs have fluctuated somewhat. Generally and in most years, growth in claims costs is expected to approximate growth in payroll.

In Nova Scotia over the 40-year period of 1979 to 2018, claims costs incurred and administration costs have grown at a compound rate of 6% while assessable payroll has grown at 5%. While the administration budget did grow in the period, the main source of increase in Nova Scotia was claims costs; a result of the implementation of the new earnings loss system in 1996.

In order to eliminate the unfunded liability in 2022, the trend of growth in costs exceeding growth in payroll in Nova Scotia must reverse. From 2019 to 2022, growth in payroll will have to exceed growth in costs. Targeted reductions in the frequency and duration of claims will have to materialize in order to achieve this goal.

The Average Assessment Rate Table in Appendix A indicates the importance of the relationship between the rate of growth of claims costs incurred and assessable payroll. All other things being equal, if payroll and costs grow at expected rates the average rate for current year costs will decrease from $2.33 in 2018 to $2.32 in 2022.

4. **Real Rate of Return**

The funding strategy has a real rate of return assumption of 3.25% in 2019. Analysis indicates that 3.25% is a realistic real rate of return and is comparable with other jurisdictions and the Canadian national average. The real rate of return coupled with our long term CPI assumption of 2.00%, yields a nominal rate of 5.25%.

Declines in market values in 2008 indicate how quickly gains may be erased. During this period the market value of the WCB's portfolio declined by $210 million reflecting a $35 million draw down to cover benefit payments and a 16% decline in the value of securities held.

For financial statement reporting purposes all realized and unrealized gains and losses are recorded directly into income. This can create significant volatility in reported income in any given year. For purposes of our funding plan, the WCB believes smoothing of investment returns more appropriately captures our long term expectations.

Our approach is to estimate investment income based on a pattern that will yield a nominal rate of return approximating 6.0% over the life of the funding period. In 2015 we contracted Mercer to conduct an asset liability study to assess the probability of eliminating the unfunded liability as per the funding plan. An integral part of the study was centered on expected investment returns. The current funding plan assumes that over the next 10 years, investment returns will exceed the real rate of return assumption. The results of the asset liability study suggest a high probability that the current asset mix will yield 10-year returns above the long term real rate assumption of 3.25%.

Short term variations between the anticipated investment revenue and the actual investment revenue are expected. To remain in line with the long-term real rate of return assumption in the funding strategy, an adjustment may be required to balance the actual short-term returns to the expected long-term returns. Changes in the market value of the portfolio, along with normal annual activity generated investment losses of -1.4% in 2018.

We have modeled the expected investment returns such that the long term average of 6% per year will be achieved in the year the unfunded liability is eliminated; however there could be variations with some years exceeding 6% and others falling short. Investment losses will challenge the elimination of the unfunded liability unless these losses are recovered over the next three year. As such, in order to preserve the previously published funding date, investment returns will have to reach 7% in the next 3 years. If the foundation scenario were to unfold as expected, the overall financial yield from 1996 to 2022 forward would be almost 7%.

5. **Mortality**

   The mortality assumption that underlies the calculation of liabilities and claims costs incurred for long-term disability and survivors' pensions will also influence the projections. The 2018 benefits liability valuation utilizes the 1983 Group Annuitant Mortality Table (with 10% margin) as the basis underlying liabilities under those categories for which a mortality assumption has been made. There are newer versions of the Group Annuitant Mortality Table and it is prudent to review the reasonableness of the mortality assumption from time to time. Given the general trend over recent years to increased life expectancies, it is possible that future valuations will feature actuarial adjustments in respect of mortality. Such adjustments, in the absence of other offsetting adjustments, would lead to increases in both liabilities and claims costs incurred projections. However, the magnitude of such adjustments would be small (less than one percent of benefits liabilities) as the largest component of long term disability costs relates to extended earnings replacement benefits payable to age 65. The current table assumes virtually all earnings loss award recipients will collect benefits until age 65. A change in the group annuitant mortality table will therefore impact only the costs associated with permanent impairment awards which are becoming a smaller portion of total long term disability costs.

KEY AREAS OF UNCERTAINTY

There are key areas of uncertainty that the WCB considers when it deliberates with respect to the funding strategy. Some of these areas of uncertainty include:

1. **Changes in the Provincial Economy**

   A combination of factors including the Conference Board of Canada projections were used to estimate the size of the Nova Scotia workforce for the next several years. During this period, we expect some growth in salaries generally along with some increases in the maximum assessable payroll. Based on this, we have incorporated payroll growth into the funding strategy averaging 3.3% for 2018 to 2022. A significant variance from this assumption would have a material impact on the plan.

2. **Long Term Disability Costs**

   From an actuarial perspective, the WCB has limited experience to date with long term disability costs in an earnings loss environment. The plan includes a series of assumptions around reductions in costs available through improvements in durations and return to work outcomes. Beyond the savings noted, no other provisions have been made to claims costs incurred or the benefits liability that may result from actual experience in earnings loss.

3. **Legislative Framework**

   The claims costs incurred side of the funding equation is driven primarily by legislative decisions with respect to benefit levels. The March 2002 report titled "The Nova Scotia Workers' Compensation Program, A Focused Review" (The Dorsey Report) contained recommendations for program enhancements. Changes, such as increases in indexing, increases in maximum assessable earnings, and elimination of the three-worker rule are considered longer-term objectives and are not considered in the foundation scenario.

4. **Inflation**

The Workers' Compensation Act prescribes a partial indexing formula to be applied to clinical rating system (CRS) pensions, permanent impairment benefits (PIB), and extended earnings replacement benefits (EERB). Due to partial indexing, CPI increases that differ from the long term assumption represent a risk to the accident fund. This occurs because inflationary increases to benefits are calculated at 50% of CPI. If CPI is higher than expected, the gap between actual CPI and the indexing applied to benefits is larger resulting. in lower than expected increases to the benefits liability. If CPI is lower than expected, the difference between actual CPI and the amount of indexing applied to benefits is smaller and would therefore result in higher than expected increase in the benefits liabilities.

5. **Coverage for New Conditions**

The cost estimates assume that there will be no change in the WCB's policy, practice, or experience and that there will be no coverage for new conditions. Any provision for new benefit costs flowing from judicial decisions, legislative amendments, and/or changes in WCB policy except as expressly noted in this document will require revisions to the funding strategy.

6. **Financial Reporting Standards**

The financial statements of the WCB are prepared in accordance with International Financial Reporting Standards (IFRS) for publicly accountable entities as at December 31, 2017. Two of the more significant standards that impact the WCB include accounting for investments and liabilities recorded at market value.

Since 2004, the WCB has recorded investments at market value. The adoption of IFRS in 2011 had no impact on net income. However the recording of unrealized gains now flows directly into investment income rather than through other comprehensive income.

It is anticipated that proposed IFRS standard17 – Insurance Contracts will require that liabilities be recorded at fair market value beginning in 2021. This standard will have material impacts for the WCB's financial reporting by introducing new recognition and measurement approaches for insurance revenue and liabilities that could impact the funded position significantly. In 2017, the WCB revised assumptions related to CPI (2.5% to 2.0%) and the real rate of return (3.5% to 3.25%) to bring us closer to the applicable rate that would be required under IFRS. The real rate and CPI combine to a nominal rate of 5.25%. If we used the long bonds rate with duration similar to our benefits liabilities, the discount rate would likely be closer to 3.2% today and the benefits liabilities would increase by an estimated 15%.

Without any adjustment, such an increase could impact both the funding period and the average rates and could lead to a funding date beyond 2022. The long term assumption used today effectively smoothes the impact of fluctuations in the market value of liabilities. Upon adopting the proposed standard, smoothing will no longer be appropriate or permissible for financial statement reporting. However the WCB believes that smoothing of the discount rate in the funding plan will continue to be appropriate. If accounting standards require that the WCB record liabilities at market value for financial statement purposes, it is likely that the 5.25% long term assumption would be maintained in the funding strategy for planning and rate setting purposes. We expect that the process will be similar to that used to smooth in fluctuations in investment income.

7. **The attached projections are estimates based on the assumptions noted. Actual results will vary from the information presented and the variation may be material. References to an anticipated elimination of the unfunded liability should be read as the earliest point within a range spanning 2020 to 2024.**

Although the Funding Strategy clearly labels assumptions as such, many users may credit the strategy with more certainty and precision than warranted given the number and nature of assumptions it contains. Users are reminded that the Funding Strategy is our best estimate of what will happen given the assumptions. As noted in previous Annual Reports and the Funding Strategy, actual results will differ from the projections and these differences may be material.

APPENDIX A: 2019–2024 FINANCIAL PROJECTIONS

	2018 Actual	2019 O Budget	2019 Forecast	2020 Budget	2021 Projection	2022 Projection	2023 Projection	2024 Projection
REVENUE:								
Assessments - Regular Classified	$298,378,000	$303,914,000	$308,934,000	$318,172,000	$327,688,000	$337,488,000	$303,268,000	$312,487,000
Assessments - Self Insured	$7,151,000	$6,800,000	$7,500,000	$7,500,000	$7,500,000	$7,500,000	$7,500,000	$7,500,000
Investment Income	($25,253,000)	$103,800,000	$128,486,000	$138,438,000	$149,453,000	$161,496,000	$152,519,000	$161,717,000
	$280,276,000	$414,514,000	$444,920,000	$464,110,000	$484,641,000	$506,484,000	$463,287,000	$481,704,000
Claim Costs	202,036,000	$192,405,000	$207,303,000	$212,161,000	$216,744,000	$223,938,000	$231,458,000	$239,239,000
Growth PV of Benefits Liability	98,672,000	$102,398,000	$100,273,000	$105,537,000	$111,076,000	$116,909,000	$123,047,000	$129,507,000
Administration Costs *	58,848,000	$65,142,000	$67,572,000	$64,941,000	$60,299,000	$59,490,000	$59,345,000	$60,601,000
Liability for Future Administration Costs	(2,128,000)	($2,000,000)	($2,000,000)	($2,000,000)	($2,000,000)	($2,000,000)	($2,000,000)	($2,000,000)
OCI OPEBs Actuarial Gains/Losses	(5,409,000)	$0	$0	$0	$0	$0	$0	$0
Legislated Obligations	16,299,000	$18,437,000	$18,285,000	$18,919,000	$19,297,000	$19,683,000	$20,077,000	$20,479,000
System Support	901,000	$1,017,000	$1,017,000	$1,037,000	$1,057,000	$1,078,000	$1,100,000	$1,122,000
Actuarial Experience Adjustments	(2,453,000)	($10,000,000)	($10,000,000)	($10,000,000)	($10,000,000)	$0	$0	$0
	$366,766,000	$367,399,000	$382,450,000	$390,595,000	$396,473,000	$419,098,000	$433,027,000	$448,948,000
EXCESS OF OPERATING /REVENUES OVER EXPENSES	($86,490,000)	$47,115,000	$62,470,000	$73,515,000	$88,168,000	$87,386,000	$30,260,000	$32,756,000

* Excludes Total Capital

	2019 Forecast	2020 Budget	2021 Projection	2022 Projection	2023 Projection	2024 Projection
Unfunded Liability,End of Year	($241,321,000)	($167,806,000)	($79,638,000)	$7,748,000	$38,008,000	$70,764,000
Funded Ratio, End of the Year	89.4%	92.7%	96.7%	100.3%	101.4%	102.5%

Notes:

1) The average assessment rate used to calculate revenue is $2.65 through 2022 and estimated at $2.30 in 2023.

2) It is important to note that these cost estimates assume that there will be no change in the WCB's policy, practice, or experience and that there will be no coverage for new conditions. Any provision for new benefit costs flowing from judicial decisi

3) The Statement of Operations reflects the administrative expenses net of an adjustment for the liability for future administrative expenses. This adjustment is approximately 6% of the difference between claims costs incurred (CCI) and claims payments

4) Based on administrative budget assumptions and funding strategy projections.
(Funding Strategy - May 2019).

5) As of January 1, 2018 the WCB has adopted IFRS 15 as related to revenue recognition. The change impacts revenue and claims costs incurred for Self-insured employers. In previous years, reported revenue included amounts billed to self-insured firms to

2018 - 2023 PROJECTION ASSUMPTIONS
AVERAGE ASSESSMENT RATE

	Claims Cost Incurred and Admin	Shortfall* and Unfunded Liability	Total
2018	$2.38	$0.27	$2.65
2019	$2.45	$0.20	$2.65
2020	$2.40	$0.25	$2.65
2021	$2.34	$0.31	$2.65
2022	$2.32	$0.33	$2.65
2023	$2.30	$0.00	$2.30

* Shortfall in investment income relative to the growth in present value of the benefits liability.

APPENDIX B: CURRENT FUNDING STRATEGY & ASSUMPTIONS

Rate of $2.65 through 2022
Administration and Legislated Obligations Budget 2019-2024
Payroll Growth (Per Target Assumptions)
Claims Cost Incurred and Investment Income - See Assumptions Tab
CPI - 2%

Workers' Compensation Board of Nova Scotia

$ 2.65

Calendar Year	Total Assessment Rate	Assessable Payroll ($millions)	Total Revenue ($millions)	Assessment Revenue ($millions)	Assessment Penalties ($millions)	Self Insured Admin Fee ($millions)	Investment Revenue ($millions)	Recognized Inv Revenue ($millions)	Change In OCI Investments 2004-2010	Smoothing of Investments ($millions)	Admin & Leg. Obl. ($millions)
2016	2.65	10,502	379.933	278.6670	1.196		100.070	100.070	-	0.00	61.107
2017	2.66	10,880	451.998	287.4210	1.335		163.242	163.242	-	0.00	63.346
2018	2.65	11,281	280.276	296.8910	1.487	7.151	(25.253)	(25.253)	-	0.00	*73.920*
2019	2.65	11,620	444.920	307.9341	1.000	7.500	128.486	128.486	-	20.00	84.874
2020	2.65	11,969	464.111	317.1721	1.000	7.500	138.438	138.438	-	20.00	82.897
2021	2.65	12,328	484.641	326.6882	1.000	7.500	149.453	149.453	-	20.00	78.653
2022	**2.65**	**12,698**	**506.484**	**336.4879**	**1.000**	**7.500**	**161.496**	**161.496**	**-**	**20.00**	**78.251**
2023	2.30	13,142	463.286	302.2677	1.000	7.500	152.518	152.518	-	0.00	78.522

Rate of $2.65 through 2022
Administration and Legislated Obligations Budget 2019-2024
Payroll Growth (Per Target Assumptions)
Claims Cost Incurred and Investment Income - See Assumptions Tab
CPI - 2%

Workers' Compensation Board of Nova Scotia

Calendar Year	LTD ($millions)	Survivors ($millions)	TERB ($millions)	Rehab Income ($millions)	Health Care ($millions)	Rehab Non-Incon ($millions)	Total Incurred Claims ($millions)	Total Incurred Claims plus Admin. ($millions)	Growth in PV of Liab ($millions)	Adj. To Ben. Liab. ($millions)	BOY Estimated Liabilities ($000s)	BOY Estimated OCI ($000s)	BOY Estimated Assets ($000s)	BOY Gross UL ($000's)	BOY Net UL ($000's)	BOY Estimated Funded Percentage	Surplus (Deficit) From Op's ($000's)	Total Comp. Income ($000's)
2016	89.222	1.936	36.777	0.00	51.501	0.754	180.190	240.430	108.682	(35.154)	1,963,391	0	1,581,525	381,866	381,866	80.55%	65,108	65,108
2017	92.528	1.591	38.418	0.00	53.125	0.704	186.366	248.312	111.809	(11.247)	2,002,025	0	1,684,400	317,625	317,625	84.13%	101,724	101,724
2018	101.054	2.792	41.027	0.00	56.280	0.883	202.036	281.365	98.672	(2.453)	2,043,629	0	1,826,329	217,300	217,300	89.37%	(91,899)	(91,899)
2019	102.086	2.876	44.760	0.00	56.672	0.909	207.303	292.177	100.274	(10.000)	2,100,431	0	1,796,640	303,791	303,791	85.54%	62,470	62,470
2020	103.148	2.962	46.034	0.00	59.080	0.937	212.162	295.059	105.537	(10.000)	2,200,705	0	1,959,383	241,321	241,321	89.03%	73,515	73,515
2021	103.743	3.051	47.394	0.00	61.591	0.965	216.744	295.397	111.076	(10.000)	2,306,242	0	2,138,435	167,807	167,807	92.72%	88,168	88,168
2022	**106.855**	**3.142**	48.738	**0.00**	**64.209**	**0.994**	**223.938**	**302.189**	**116.909**	**-**	**2,417,317**	**0**	**2,337,679**	**79,639**	**79,639**	**96.71%**	**87,386**	**87,386**
2023	110.061	3.237	50.200	0.00	66.938	1.024	231.458	309.980	123.047	-	2,534,226	0	2,541,974	(7,748)	(7,748)	100.31%	30,260	30,260